A REVIEW OF EXPLORATION ACTIVITY

AND RECOMMENDATIONS FOR FUTURE WORK

WITHIN

EXPLORATION LICENCES 4739, 4959,

5078, 5079, 5100, 5081 and 5461

ARLTUNGA - HALES RIVER REGION

NEAR ALICE SPRINGS

NORTHERN TERRITORY

F. GARSIDE.

ALPHA EXPLORATION SERVICES PTY LTD

JULY 1988

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SUMMARY

A four day inspection of Exploration Licence areas 4739, 4959, 5078, 5079, 5081, 5100 and 5461 held by Conapaira Metals Pty Ltd and a review of literature and earlier exploration reports has determined that:

* gold mineralisation occurs within quartz reefs associated with major fault structures and lineaments.

* selected areas within the above tenements are sufficiently prospective for potential economic concentrations of gold to justify a staged ongoing exploration programme.

* in general, previous exploration was
  - devoid of a clear strategy
  - poorly documented

* EL's 4959, 5079, 5081 and many of the sub-blocks of EL's 5078 and 5100 are not sufficiently prospective and should be relinquished.

A strategy, programme and budget for a staged ongoing exploration programme for the prospective tenement areas is presented. The budget estimate is

Stage 1 - $ 60,000

Stage 2 - $130,000

ABSTRACT

A review of exploration to date within Northern Territory Exploration Licences held by Conapaira Metals Pty Ltd has been performed.

Recommendations for future exploration to fully evaluate the economic mineral potential of the E.L.'s are presented.

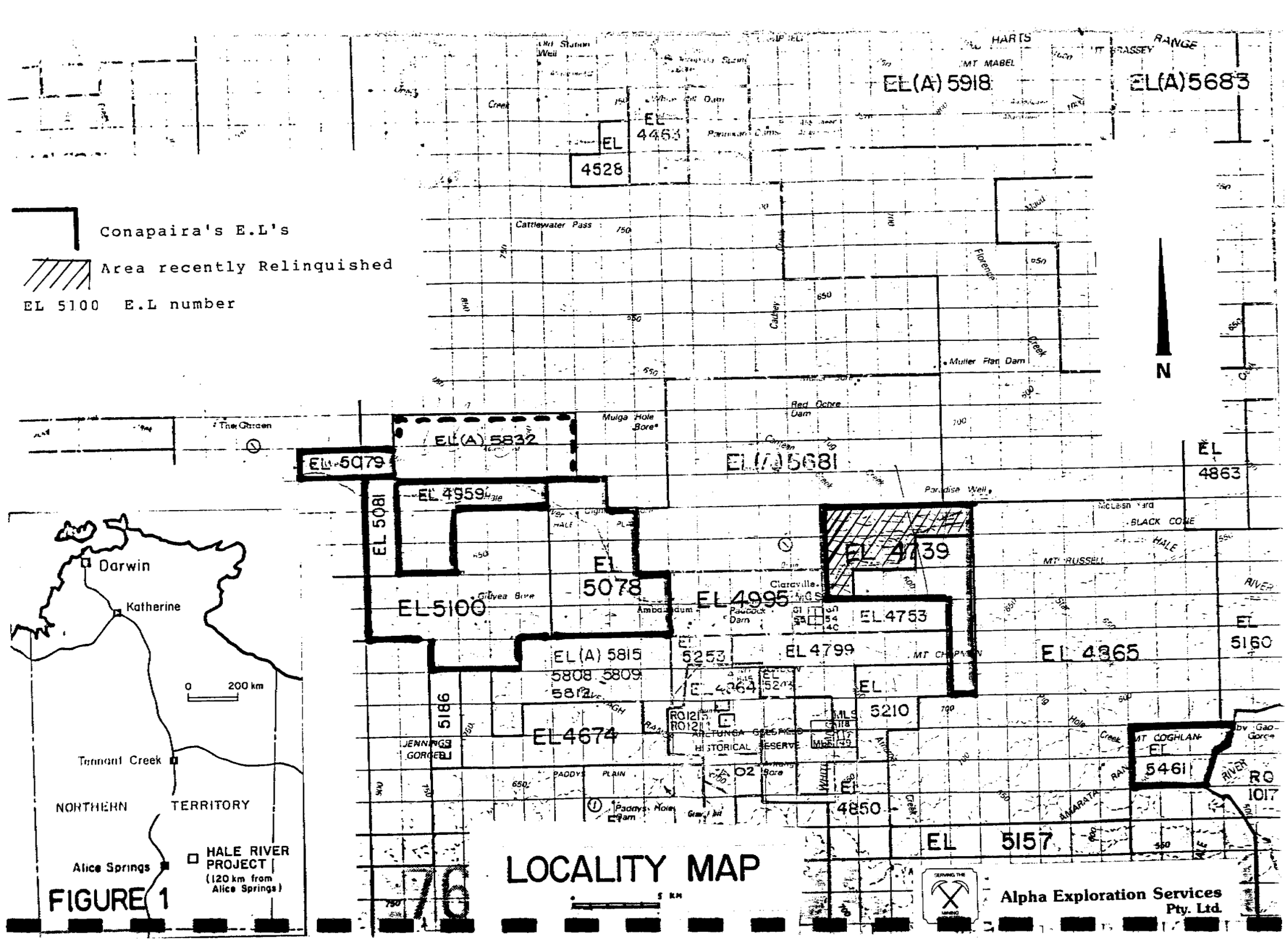
1. INTRODUCTION

In June 1988, Alpha Exploration Services Pty Ltd (Alpha) was commissioned by Conapaira Metals Pty Ltd (Conapaira) to review exploration to date and prepare a strategy and budget for an ongoing exploration programme within the Exploration Licences of Conapaira's Hale River prospects.

As part of this review from June 28 to July 2 1980 the author visited the E.L. areas in the company of Mr Russell Raynor. Mr Raynor is a prospector who has spent many years prospecting and exploring the Arltunga - White Range region. His experience and local knowledge proved invaluableduring the site visit.

Exploration Licences in which Conapaira have an interest are: EL 4739, EL 4959, EL 5078, EL 5079, EL 5081, EL 5100 and EL 5461. The location of these tenements are shown in Figure 1.

During the field visit only portions of EL 4739, 4959, 5078, 5100 and 5461 were inspected due to time restrictions and access difficulties. E.L.'s 5079 and 5081 were not visited.


Conapaira's E.L's
Area recently Relinquished
EL 5100 E.L number
EL(A) 5918
EL(A)5683
EL 4463
EL 4528
Cattlewater Pass
Muller Flat Dam
Red Ochre Dam
Mulga Hole Bore
EL(A) 5832
EL 5079
EL 5081
EL 4959
EL(A)5681
EL 4863
EL 4739
EL 5078
EL5100
EL 4995
EL 4753
EL(A) 5815
5808 5809
5812
EL 5253
EL 4799
EL 4365
EL 5160
EL 5210
EL 5186
EL4674
JENNINGS GORGE
ARETUNGA GEOLOGICAL HISTORICAL RESERVE
PADDYS PLAIN
Paddys Hole Dam
EL 4850
EL 5157
EL 5461
RO 1017
MT COGHLAN
MT RUSSELL
BLACK COMB
Paradise Well
The Garden
Darwin
Katherine
Tennant Creek
NORTHERN TERRITORY
Alice Springs
HALE RIVER PROJECT
(120 km from Alice Springs)
0 200 km
N
LOCALITY MAP
5 KM
FIGURE 1
76
Alpha Exploration Services Pty. Ltd.

2. LOCATION AND ACCESS

The Hale River Prospects of Conapaira are located in the Arltunga - White Range region of the Northern Territory 120 kilometres east-north east of Alice Springs.

Access to the region is fair via the bitumen Ross River Highway to the Arltunga - Claraville Road turnoff thence a well maintained gravel and dirt road to the Arltunga Pub and Historical Reserve. Access to some portions of the leases is very poor with no vehicle access available.

EL's 4739, 4959, 5078, 5079, 5081 and 5100 are located within the Claraville and Ambalindum Stations. These stations are owned by Bill and Don Cavenagh. EL 5461 is located in the Mount Coghlan - Ruby Gap area.

Vegetation over most of the area is sparse. Good rains for the months prior to the site visit resulted in a moderate cover of grass over most of the hills and gullies. The occasional desert oak and small salt bush trees are found dotting the ridges. Along the Hale River and its major tributaries the vegetation is dominated by stands of ghost gums and other large eucalypts.

3. REGIONAL GEOLOGY

3.1 General

The rocks of the region belong to the Arunta Block which are believed to be early to mid Proterozoic in age. These rocks consist of schists and gneisses with quartzites, foliated granitic rocks and amphibolites.

Shaw, et al (1984) has further identified the area as a section of the early Proterozoic Cadney metamorphic rocks of the Strangeways Metamorphic Complex. The Heavitree Quartzite unconformably overlies the metamorphic rocks of the Arunta Block. The Heavitree Quartzite is the basal unit of the sedimentary Amadeus Basin. Throughout the southern portion of the region this quartzite forms prominent ridges and ranges rising up to 400 metres above the surrounding country.

The White Range Quartzite, which outcrops to the south and west of the study area has been reported as being part of the Arunta metamorphic complex (Ref. 1). Shaw has mapped it as a part of the Heavitree Quartzite (Ref. 2).

3.2 Structural and Metamorphic Geology

Structurally the region is tightly folded and dissected by numerous faults and shear zones. Workers in the area have recognised at least five periods of deformation within the region with some evidence of up to seven discrete tectonic events (Ref. 3). The regional strike is generally north westerly varying to westerly in the western portion. The several periods of deformation have resulted in varying degrees of metamorphism. Maximum metamorphic grade reached appears to be amphibolite facies with subsequent retrograde metamorphism to upper greenschist facies. Both these grades are observed with large amphiboles present in many rocks and epidote occurring in some units.

The major structural feature in the study area is the Wheal Mundi Fault. This fault has a roughly North-south strike and has associated smaller faults and shear zones.

3.3 Mineralisation

Quartz veining is common throughout the region with two and possibly three recognisable suites of quartz injection into the surrounding rock as follows:

1. Gun metal - blue quartz associated with silicification of schists and gneissic rocks. This quartz has a characteristic blue colouring probably resulting from submicroscopic pyrite inclusions. This silicification appears to have been disrupted by latter tectonic events. Plates 1 and 2 shows parallel "bedded" bluish quartz reefs and quartz within a green, epidote rich rock unit. It is not known whether any tests have been made to ascertain the precious metal content of this silicification. Generally the iron oxide content is low. Some staining and weathered pyrite was observed.

2. Predominant ridges of clear white "buck" quartz was observed over much of the region. These reefs almost invariably strike from east-west to southeast-northwest. The colour of this quartz is always white with only very minor iron oxide (limonite) staining on fracture planes. Assays have shown negligible gold content (Ref. 4).

Plate 1 - Bedded quartz reef in volcanic(?) rock unit.

Plate 2 - Gun metal blue quartz in epidote rich rock unit

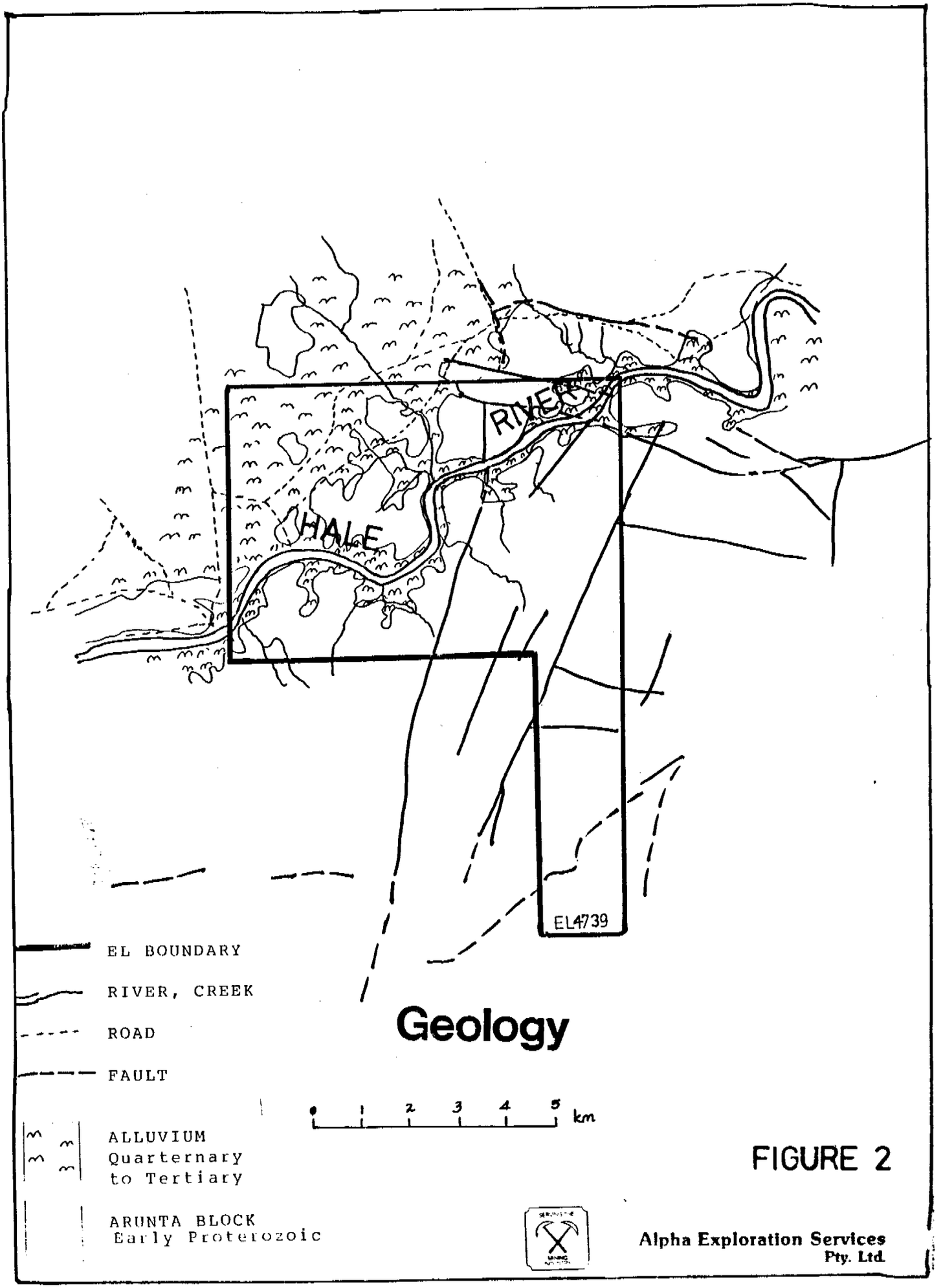
3. Pyrite - ironstone quartz reefs. These units are the main auriferous bodies within the region. They generally strike between 000 degrees and 020 degrees magnetic and exhibit pods and zones of gossanous ironstone within basically white quartz. On freshly broken surfaces medium grained euhedral pyrite crystals and aggregates of pyrite are visible. Gold associated with arsenic is reported with grades ranging up to 40.8 grams per tonne (Whitfield, 1987) (Ref. 5).

4. LOCAL GEOLOGY

This description of the local geology of each Conapaira EL is based on observations made during the field visit to the area and discussions with Mr R. Raynor.

4.1 EL 4739

This EL is situated in the eastern section of the Hale River Basin and forms an inverted "L" shape. It extends from the Hale River south for 5.5 kilometres and east for 8.6 kilometres. The "leg" extends south for another 5.5 kilometres and covers a 1.8 kilometre wide strip of country to the east of Mount Chapman. The extent and main geological features of the EL 4739 are shown in Figure 2.



Geology

FIGURE 2

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Pty. Ltd.

Lithology

The major rock types within El 4739 are micaceous schists and gneisses and the minor rock types are medium and coarse grained amphibolites and amphibole rich gneisses and schists. These units appear to be metamorphosed intermediate to basic volcanic extrusives and intrusives. Abundant white plagioclase crystals are associated with the amphiboles. Foliated acidic rocks are also present. These rocks are dominated by quartz and white mica. They have few mafic minerals and resemble to some degree schistose rhyolitic dykes and extrusives.

Structure

The Wheal Mundi Fault passes just to the west of Mount Chapman and strikes almost due north through the western portion of the EL. In the northern portion of the area the strike of the fault swings to the east-north-east. Two smaller faults run sub parallel to the Wheal Mundi and are located to the east. These major faults are easily identified on air photographs especially the Wheal Mundi Fault as the Wheal Mundi Creek follows it for much of its length. Several smaller conjugate faults were observed in the field. These conjugate faults displace the major quartz reefs and rock units by up to 100 metres. The trend of the rock units is generally west of north except toward the north of the area where they swing further to almost due west. The regional schistosity and foliation produced by folding generally parallels the lithological strike.

Mineralisation

The three types of silicification mentioned in the Section 3 above can be observed in this Exploration Licence.

The dominant quartz mineralisation types in the area are:

"Buck" quartz reefs which outcrop as dominant ridges of over 1 metre in width and up to 50 metres along strike. Other reefs are only 2-3 metres long and 5-10 cm wide. These reefs strike between 090 degrees and 130 degrees magnetic.

The economic potential of these reefs is zero as sampling and assaying has revealed negligible gold content. (Ref. 5)

Gossanous - Ironstone quartz reefs. The observed strike of these reefs are without exception between 000 degrees and 020 degrees magnetic and vary in strike length from 30 metres to several hundred metres. Maximum width of the reefs observed was 0.5 metres with the average around 0.2 metres. Only four reefs were visited and inspected. All of these were within the region of the Wheal Mundi Fault. Unfortunately, due to lack of access and time restraints the reefs to the east of Mount Chapman could not be examined.

The observed reefs all exhibited extensive iron staining and gossanous iron stained vugs and boxwork within a white quartz matrix. Upon breaking with a hammer, the fresh surface showed euhedral pyrite crytals and aggregates as well as iron oxide remnants after pyrite. According to Mr. R. Raynor assay results from rock chip samples collected by him on these reefs ranged from <1g/t up to 30g/t. This higher result was from a sample of heavily pyritised quartz obtained from the base of an old pit on the "Wheal Mundi" Reef.

Upon tracing the "Wheal Mundi" Reef south along strike into an adjoining EL, a large (4m x 6m) outcrop of massive ironstone consisting of gossanous hematite and limonite with only minor quartz was observed. The quartz reef continued south of this ironstone "blow". Also observed was a unit of, what in hand specimen, appeared to be a basic tuffaceous unit consisting of white feldspar, amphiboles and biotite with a high percentage by volume of disseminated iron oxides after pyrite. Small pyrite casts were observed. No known assay has been made of this type of mineralisation. As this outcrop occurred outside of Conapaira's lease no sample was taken.

In a bulldozer cutting made (in 1987) across the Wheal Mundi reef to allow access for a drill rig, white Kaolin staining and alteration of some of the surrounding rock is evident. This occurs for several metres to the west of the quartz reef itself. Plates 3, 4 and 5 show the Wheal Mundi reef with zones of alteration adjacent to it. Iron oxides are present along fractures, cleavage planes and joints associated with the alteration. At the present time no assay work has been done to determine the gold content, if any, of this alteration zone.

4.2 EL'S 4959, 5078, 5079, 5081 AND 5100 (HALE BASIN)

These five Exploration Licences cover a depression in the basement Arunta Block which is filled with Cainozoic sediments deposited by the Hale River. These sediments consist of up to 100 metres of alluvial sands, sandy clays, clay and carbonaceous units and contain "concealed and confined palaeochannels filled with permeable unconcolidated sand..." (Ref. 6).

In the southern sections of EL's 5078 and 5100 the metamorphic rocks of the Arunta Block outcrop and rise several hundred metres above the Hale Plain, forming steep sided ridges incised by streams and gullies. The location and major geological features of these five EL's are shown in Figure 3.

The physiography of the Hale Basin and ridges to the south are depicted in Plates 6 and 7.

Plate 3 - The 'Wheal Mundi' reef. View looking South

Plate 4 - Wheal Mundi Reef. Note iron-staining

Plate 5 - White staining and alteration near Wheal Mundi reef

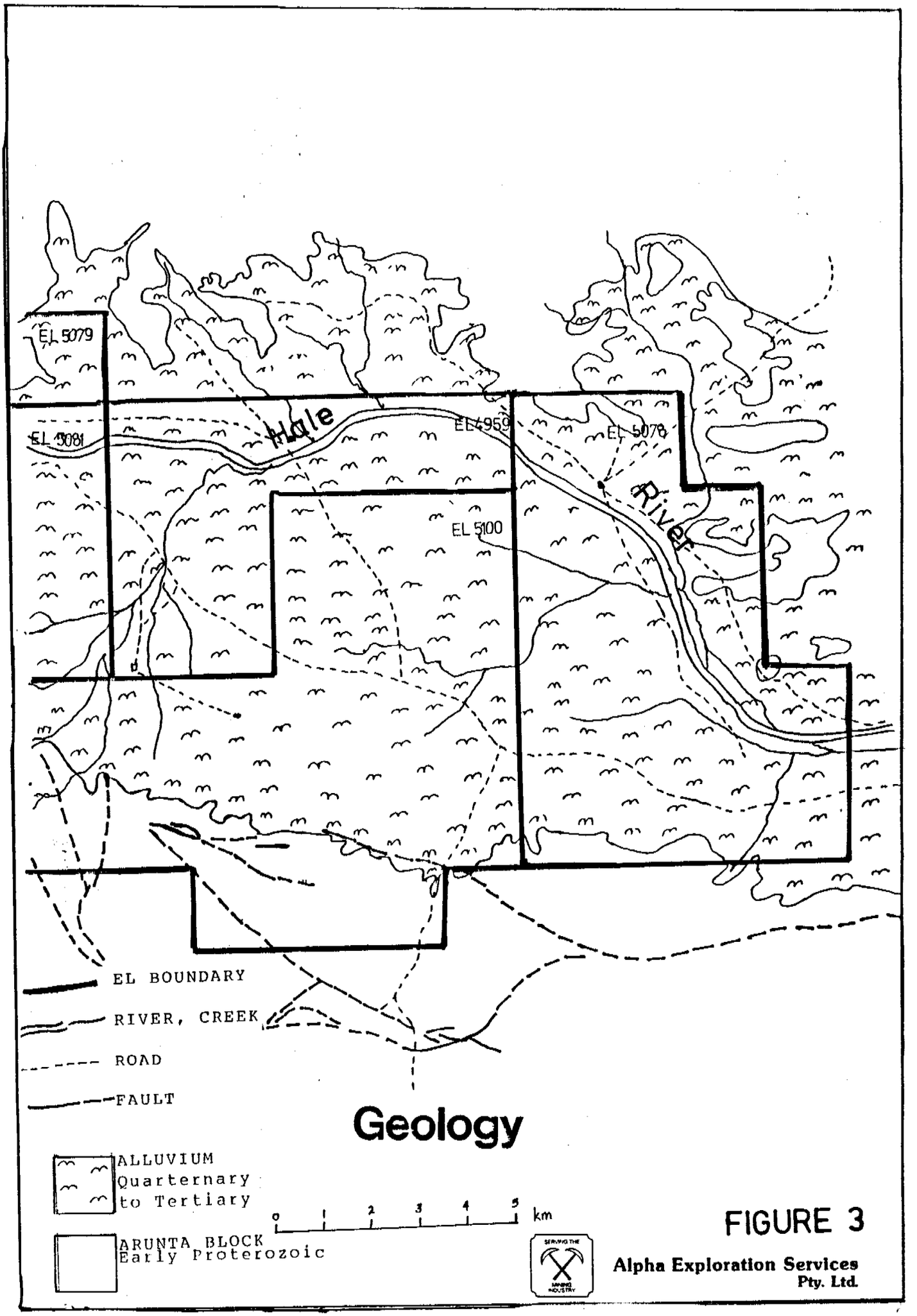


FIGURE 3

Alpha Exploration Services Pty. Ltd.

Plate 6 - Physiography of the Hale Basin EL 5100
View to north

Plate 7 - EL 5100 View to South overlooking banded quartz reef

Lithology

The geology of the Hale Basin is that of a fluviatile environment in an elongate depression within the high grade metamorphic rocks of the Arunta Block. This depression is divided into two sub basins by a basement high. These two basins are named the Claraville Sub-basin to the east and larger Garden Sub-basin to the west (Ref. 6). The total dimensions of the basins are approximately 40 kilometres long by an average width of 8 kilometres.

The main surface features of the Hale Basin are the current Hale River channel and its tributaries and low (5 metre) ridges of calcrete, and ferricrete with underlying Kaolin rich horizons. Along the Hale River these ridges form terrace like deposits of subangular quartz and country rock fragments with well rounded lateritic ironstone pebbles. Typical ridges are depicted in Plate 8.
A sample of the rock contained within these ridges is depicted in Plate 9.

Rotary drilling conducted by Alcoa in 1980 delineated the stratigraphy and lithology of the sediments within the basin. Three main units were recognised (Ref. 6):

1. A widespread carbonaceous horizon centrally positioned in the Tertiary sequence.

2. An upper unit of unconsolidated sand situated above the carbonaceous horizon.

Plate 8 - View from Tertiary ridge in EL 4959 across Hale River

Plate 9 - Gravel at top of Tertiary ridge

3. A lower unit of unconsolidated sand situated beneath the carbonaceous horizon.

Lateral variations of lithologies are evident throughout the sub-surface geology and indicate facies changes associated with a fluviatile environment (Ref. 6).

In the Arunta Block rocks outcropping in the south of the area, high grade metamorphic rocks were observed to follow a general north west to westerly trend with apparent dips to the north. Rock types observed are generally sedimentary in origin due mainly to their fine grained nature and fine schistosity and cleavages developed. Some horizons exhibit a coarser grained development with medium sized amphiboles with white and biotite mica developed. These rocks could possibly have been volcanic in origin and they often show signs of silicification with bedded and stockwork quartz veining. Other rocks associated with these "volcanic" units (including many of these units) show extensive epidote development. Many of these rocks are entirely green in colour due to abundant epidote and chlorite. This tends to indicate that, like the rest of the region, metamorphism reached at least the amphibolite grade with a subsequent retrograde metamorphism to mid to upper greenschist grade.

Structure

No structural features are visible within the Cainozoic sediments of the Hale Basin. In the metamorphic rocks to the south one major fault was observed bearing 220 degress magnetic. The displacement could not be estimated as continuation of the rock units were not seen on other sides of the fault line. Many small faults with displacements in the order of metres to tens of metres were observed.

Mineralisation

Little is known about the mineralisation within the area covered by the five EL's. Alcoa's exploration concentrated on the search for a uranium deposit within the Tertiary sediments of the Hale River Basin. Alcoa concluded that economic concentrations of uranium are not present (Ref. 6).

However during the course of the preliminary drilling in mid 1979, Alcoa assayed for other elements (including gold) known to be associated with uranium deposits. Gold could be expected to occur in the coarse sediments of the palaeochannels throughout the Tertiary sequence.

Results failed to detect any significant mineralisation with only one sample showing more than a trace of gold (0.04ppm a sample of coarse grained, pebbly sands). However "Sampling methods were not favourable for the collection of gold because the fine fractions were commonly washed out of the coarse-grained units with mud or blown out with air" (Ref. 7).

Table 1 shows the geochemical results from the mid-1979 Alcoa drilling programme.

The hardrock mineralisation of the rocks of the Arunta Block which outcrop in the south of the area indicate two potential targets:

* bedded quartz reefs associated with rocks of possible volcanic origin, and

* Cross cutting quartz reefs showing zones of intense iron staining.

Bedded Quartz Reefs

The first of these types is the oldest of the two as the cross cutting reefs disrupt these to some extent where they intersect. The quartz is generally a gun metal blue-grey believed to be due to submicroscopic inclusions of pyrite. In some gold provinces this can be indicative of precious metal mineralisation. Iron oxide stains and zones due to the oxidisation of pyrite occur in the quartz and volcanic host rock. Pyrite casts were observed in some hand specimens.

Sample number	U_3O_8	Cu	Pb	Zn	Mo	V	Au	As	Se	Alteration
HR088/76	25	10	<5	25	2	20	0.01	<1	<1	Unoxidised
HR092/56	<1	7	<5	27	5	30		<1	<1	Unoxidised
/94	2	6	<5	14	5	<10		<1	<1	Unoxidised
/100	<1	4	<5	25	4	20	<0.01	<1	<1	Unoxidised
/106	2	6	5	66	6	<10	0.01	<1	<1	Unoxidised
HR098/66	<1	10	10	40	2	<10		<1	<1	Unoxidised
HR093/50	<1	35	20	43	<1	10		<1	<1	Oxidised
/66	<1	9	7	52	3	10	<0.01	<1	<1	Oxidised
HR095/24	3	21	7	130	5	30	0.04	<1	<1	Oxidised
HR092/26	<1	6	<5	115	2	20	0.01	<1	<1	Oxidised
HR098/26	<1	6	<5	10	2	10	0.01	<1	<1	Oxidised
HR094/34	<1	6	<5	27	4	<10	0.01	<1	<1	Oxidised
/42	<1	5	<5	18	2	<10	<0.01	<1	<1	Oxidised
HR087/66	<1	8	<5	32	7	50		<1	<1	Oxidised

TABLE 1 : GEOCHEMICAL ANALYSIS OF UNCONSOLIDATED SANDS (values in ppm)

(after Howard, R.W. 1987. Ref.6)

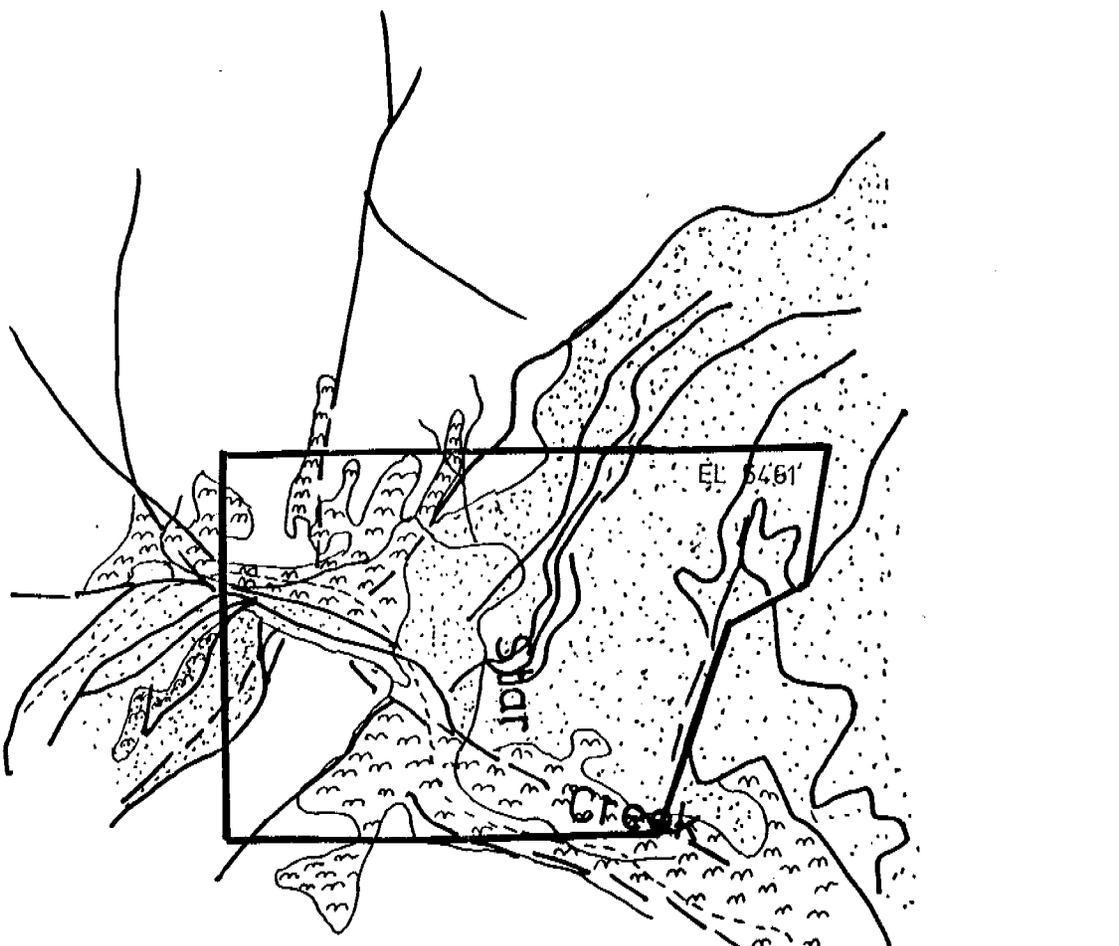
Cross Cutting Quartz Reefs

The cross cutting white quartz reefs trend north west. Although many of these reefs examined were mostly devoid of intense iron staining, several reefs had zones up to 2 metres in length along the reef showing limonite and hematite possibly after pyrite. Intermittent zones of a box work - like structure were observed along the reefs.

To date, no assay work has been carried out to determine the precious metal content of these reefs. Mr. Russell Raynor collected a sample for assay from each of these reef types.

4.3 EL 5461

EL 5461 is located further to the east of Arltunga in the Amarata Range. It covers approximately 6 sub-blocks and is bounded on its eastern flank by the Ruby Gap National Park. Access is from Arltunga through Atnarpa Station and via four wheel drive track to Ruby Gap Gorge. The location and major geological features of EL 5461 are shown in Figure 4.



EL BOUNDARY

RIVER, CREEK

ROAD

FAULT

Geology

ALLUVIUM
Quarternary
to Tertiary

0 1 2 3 4 5 km

AMADEUS BASIN
SEDIMENTS
Late Proterozoic
to Early Palaeozoic

ARUNTA BLOCK
Early Proterozoic

FIGURE 4

Alpha Exploration Services Pty. Ltd.

Lithology

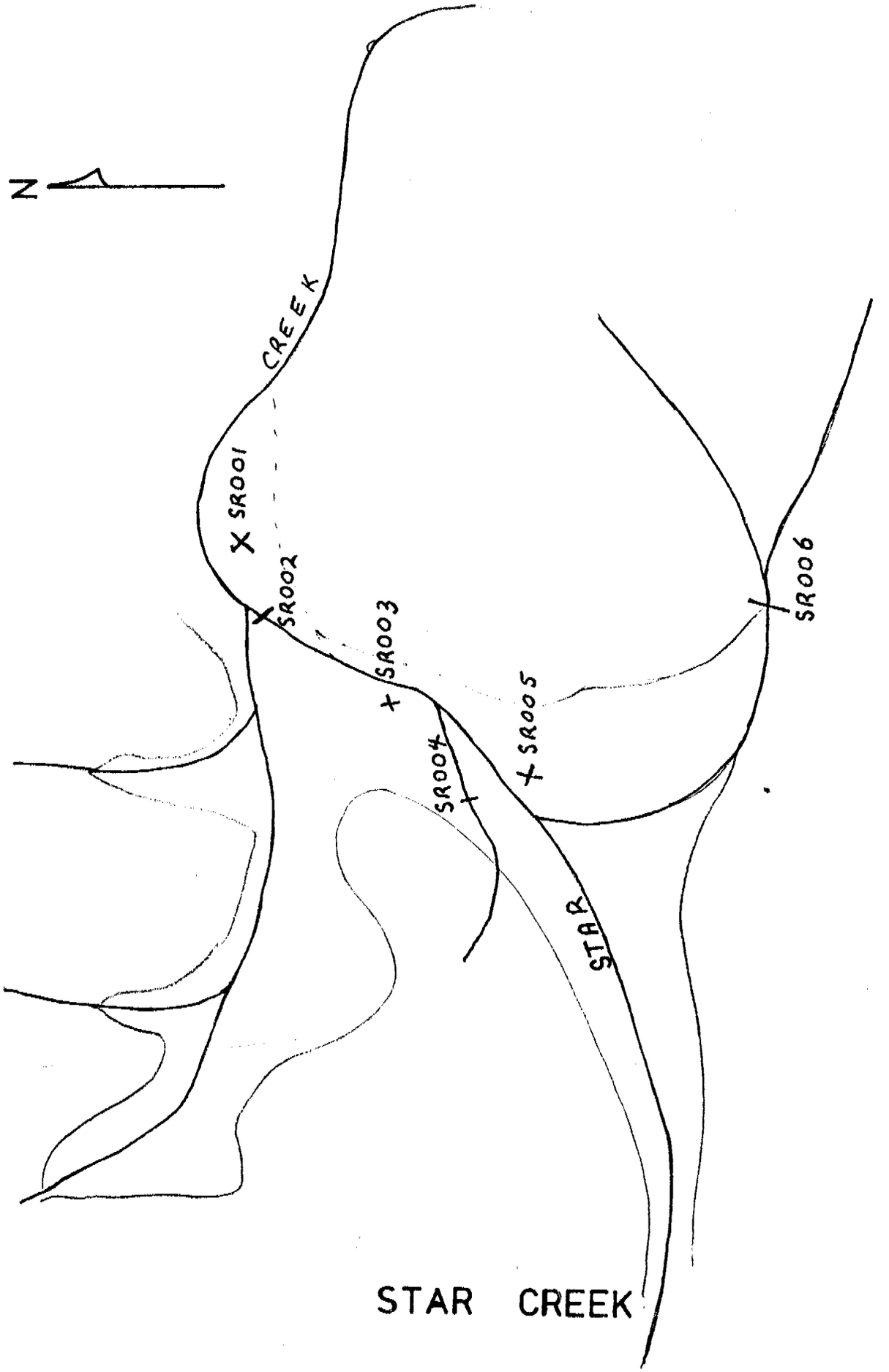
The geology of this lease is dominated by the Heavitree Quartzite which outcrops as spectacular ridges. Underlying the quartzite are gneisses, amphibolites and schists of the Arunta Block. These schists have chlorite developed indicating that the rocks have been retrogressively metamorphosed to the greenschist grade. White acidic dykes intrude these schists. In hand specimen the dyke rocks has a felsitic texture with no apparent phenocrysts. Minor pyrite casts were observed in some specimens.

The Star and Pig Hole creeks pass through the EL and the EL was applied for to secure the alluvial deposits along these creeks. Star creek drains the eastern section of the gold workings around Mount Chapman in the Arltunga Gold field. Historically gold has been recorded as being worked in the alluvials of Star Creek. The alluvial deposit of most interest occurs up stream from a rock bar and basement high where the creek flows through the Amarata Range.

The alluvium consists of mostly active stream sediments and to a lesser extent, low river terraces with some elevated flood plain and eluvial terraces. Typical alluvium is depicted in Plates 10 and 11. Six samples were taken of the alluvium by Mr R. Raynor during the inspection of the area. Previous samples taken by Mr Raynor gave a result of 0.27g/t and 9g/t (Ref. 4). The 9g/t result seems dubious as no assay report has been seen by the prospector. It was given to him in conversation. The sample locations are shown in the sketch plan of Figure 5. During the site visit a sample was taken from the same position by Mr. Raynor.

Plate 10 - View of Star Creek alluvials looking North west

Plate 11 - Sample SR005 location and view to the south east



SAMPLE LOCATIONS FIGURE 5

At the locality of sample SR006, gossanous ironstone fragments were identified in one of the tributaries draining the hills and ridges to the east. Unfortunately no inspection was made of that portion due to the onset of heavy rains.

Results of the analysis for gold of the samples were not available at the time of writing this section. The results if available before binding will be included in Appendix 1.

Structure

No structural features were observed in this EL. Shaw (Ref. 2) indicated numerous faults associated with the base of the Heavitree Quartzite - Arunta Block contact. Faulting of the quartzite probably corresponds to gaps in the ridges of this rock through which Star Creek and other streams flow.

Foliation within the schists generally trends towards the west and south west with observed dips varying.

Mineralisation

Apart from the obvious potential for alluvial gold in the sediments of the Star and Pig Hole creeks, acid dykes and quartz veins were identified throughout the Exploration Licence. Both these show some degree of iron mineralisation although no previous work has been carried out to determine the mineral content. The occurrence of ironstone rock fragments in the drainage elements suggest potential mineralisation upstream.

5. MINING AND EXPLORATION HISTORY

Alluvial gold was first discovered in the area by Joseph Hele in 1887 with reef gold being discovered shortly after. No accurate records exist for early reef mining in the area as much of the crushing and winning of gold from quartz was done by dolly pot. A government stamp battery was erected and commissioned in early 1898. (Ref. 8). The White Range Goldfield was discovered shortly before this in 1897. Crushing and production figures for the area up until the end of operation of the battery in 1932 are as follows (Ref. 8).

White Range field		6,753 tons crushed
	for	11,673 ozs recovered.
Attunga field		2,536.42 tons crushed
	for	2,456.37 ozs recovered.

The largest mines in the Arltunga field were the Wheal Fortune and Wheal Mundi. Both these mines are associated with quartz reefs near and parallel to the Wheal Mundi Fault.

Workers who have conducted geological examinations of the workings are H.Y.L Brown in 1888, 1890, 1896 and 1902: W.H. Matthews in 1905 and P.S. Hossfeld in 1935/36.

6. RECENT EXPLORATION ACTIVITY

In 1979, Alcoa was granted EL 1860 over the Hale Basin. They were primarily searching for uranium in the Tertiary sediments deposited by the Hale River. The concept was based upon a "roll-front" type of deposit in sandstone similar to the Wyoming area in the United States and Lake Frome in South Australia. (Howard, Alcoa 1980) (Ref. 7). The theory is that uranium in solution within an unconsolidated sand unit will be deposited along the oxidised/unoxidised sediment interface. Exploration was designed to locate this interface and to test for uranium and associated minerals. The exploration tools used were rotary drilling and resistivity mapping of the sand horizons.

An oxidation front in unconsolidated sands was detected and anomalous uranium existed but it was not of an economic significance (Ref. 6).

The exploration of all of Conapaira's El's was managed by Cesium International Pty Ltd.

EL 4739

El 4739 was granted to Conapaira Metals Pty Ltd in 1985. Mr. Russell Raynor has prospected this area for many years and has recognised ironstone and sulphide bearing quartz reefs. Rock chip samples taken by him has shown results up to 40g/t (Ref. 5). Subsequent to this a helicopter survey and ground traverses were carried out. A total of 55 rock chip samples were collected and assayed. Results are presented in Table 2, reproduced from Whitfield's, (1987) (Ref. 5). Whitfield identified 8 targets "earmarked" for drilling.

TABLE 2 continued.

Sample	Sample Width (m)	Outcrop Dimensions	Au* (g/t)	Ag (ppm)	As (ppm)	Cu (ppm)	Description
87 R16	GRAB	0.6 x 180	0.06	<1	<0.5	5	Py. Q.
87 R17	GRAB	0.5 x 220	0.23	<1	<0.5	170	C-g py-brg bucky Q.
87 R18	GRAB	-	53.2	<1	29	198	Py. Q off ore paddock - "Wipe Out" Mine.
87 R19	GRAB	-	0.25	<1	<0.5	17	Star Creek alluvial - 40 cms deep - north.
87 R20	GRAB	-	0.05	<1	2.0	15	Star Creek alluvial - 40 cms deep - south.
87 R21	GRAB	0.3 x 120	0.34	<1	<0.5	2	Py - Co_3 - brg wh. Q vein in biot. gneiss.
87 R22	0.12	0.12 x 10	40.8	<1	23	24	Lim. (py.) Q reef in 1 m old working.
87 R23	0.3	0.3 x 20	2.96	<1	4.0	38	Py. Q vein.
87 R24	GRAB	-	0.17	<1	<0.5	28	Carbonaceous shale at collar of old Alcoa drill hole "Cox Bore".
87 R25	GRAB	0.5 x 30	0.09	<1	<0.5	11	Lim. (py.) Q.
87 R26	GRAB	0.3 x 40	0.04	<1	3.0	13	Lim. (py.) Q.
87 R27	GRAB	1 x 350	0.05	<1	2.0	15	Lim. (py.) Q.
87 R28	GRAB	1 x 10	0.01	<1	4.0	27	Lim. (py.) Q.
87 R29	GRAB	0.8 x 150	0.02	<1	5.0	15	Py. white mass. Q.
87 R30	GRAB	1 x 120	0.22	<1	40	12	C-g lim. (py.) Q.
87 R31	GRAB	0.4 x 40	0.13	<1	14	77	Py. Q. vein.
87 R32	GRAB	0.8 x 150	0.05	<1	20	35	Heavy py. Q vein.
87 R33	GRAB	0.2 x 5	0.02	<1	21	40	C-g py brg Q.

Cont'd.

TABLE 2

HALE RIVER PROJECT

RECONNAISSANCE SAMPLING RESULTS

Sample	Sample Width (m)	Outcrop Dimensions	Au* (g/t)	Ag (ppm)	As (ppm)	Cu (ppm)	Description
87 R 1	GRAB	2 x 20	0.43	<1	<0.5	1960	Lim. (py.) malach-brg mass. white Quartz.
87 R 2	GRAB	1 x 400	0.05	<1	2.0	41	Pyrite-bearing Quartz vein.
87 R 3	GRAB	100 x 100	0.04	<1	<0.05	16	Epidote-rich siliceous lim (py) Q veined granite (Arunta Block).
87 R 4	GRAB	100 x 400	0.04	<1	29	63	Lim. (py) clusters in Q alluvial wash (5%).
87 R 5	1.8	1 x 120	0.03	<1	30	32	Pyritic white massive Quartz Reef - Wheal's Mundi.
87 R 6	GRAB	0.8 x 50	0.07	<1	53	480	Py. lim. Q with boxwork.
87 R 7	15.0	15 x 50	0.06	<1	7.0	7	Py. Q veins in swarm ? stockwork.
87 R 8	GRAB	2 x 25	0.02	<1	<0.5	12	Py. grey chert.
87 R 9	GRAB	0.3 x 10	0.60	21	<0.5	3.2%	Malachite-brg py. Q off 10 m shaft dump.
87 R10	1.0	1 x 200	0.11	<1	5.0	530	Mala. - lim. boxwork in Q in 1 m old digging - Orange Tree.
87 R11	1.0	1 x 130	0.02	<1	<0.5	317	Wh. goe. lim. c-g py.-brg Q.
87 R12	GRAB	0.8 x 450	0.04	<1	<0.5	169	Mala - + py. - brg Q - "Matrix".
87 R13	GRAB	-	32.7	<1	18	70	Py. Q off ore paddock.
87 R14	1.0	1.0 x 40	0.51	<1	2.0	23	Silic. oxid. chl. py - brg gneiss.
87 R15	GRAB	-	2.62	<1	5.0	95	Py. Q off ore paddock.

Cont'd.

TABLE 2 continued.

Sample	Sample Width (m)	Outcrop Dimensions	Au* (g/t)	Ag (ppm)	As (ppm)	Cu (ppm)	Description
87 R51	GRAB	-	x	<1	1.0	32	Heavy minerals - Hale River.
87 R52	GRAB	0.5 x 60	0.03	<1	80	14	Lim. (py) wh. Q.
87 R53	1.5	1.5 x 140	0.07	<1	22	11	Lim. (py) Q.
87 R54	GRAB	1.2 x 60	0.07	<1	12	37	Lim. (py) Q.
87 R55	GRAB	2.3 x 20	0.03	<1	8.0	10	Garnet-Q rock.

* Values in ppm (g/t). Analysed by S.G.S. Perth using Fire Assay 50g (Au & Ag) and Atomic Absorption Spectroscopy (Cu & As).
lim = limonitic, py = pyritic, Q = quartz, c-g = coarse-grained, v = very, m-g = medium-grained, brg = bearing, & tour. = tourmaline.

(after Whitfield, G.B., 1987. Ref. 5)

Little other exploration has been attempted and no work on the basement rocks in the southern sections of EL 5078 and 5100 has been performed.

EL 5461

Exploration Licence EL 5461 has only recently been granted and to date very little exploration activity has taken place. During the previously mentioned helicopter survey of the EL's, G.B. Whitfield accompanied by Russell Raynor recognised the alluvial potential of a section of Star Creek. (Ref. 4).

The alluvials of interest are a deposit which has formed on the upstream side of a rock bar like barrier where Star Creek passes through the Amarata Range (see Figure 4). During the helicopter survey two samples were taken of the alluvials (87R19 and 87R20). Table 2 shows the assay results as 0.25g/t and 0.05g/t Au respectively. The location of the sample points is not accurately known although Mr. Raynor pointed out the position of one of the sample points during the recent site visit. Six samples were taken by Mr. Raynor during the site visit for analysis of gold content. The positions of each sample was photographed and marked using white ribbon showing the sample number and these ribbons were tied to the nearest tree. Figure 5 shows the positions of the samples and Table 3 contains sample descriptions. Of particular note was the occurrence of several gossanous ironstone fragments in the small streams of sample location SR006. Unfortunately time restraints prevented an inspection of the surrounding hills .

Access and drill pads were prepared on most of the targets with 16 holes to be drilled using reverse circulation (R.C.) drilling. Before drilling commenced the drillrig was moved to EL 4959 where it was to explore the Hale River Basin sediments using Rotary Air Blast drilling (RAB). The drilling contractor refused to drill on EL 4739 due to unsuitable access (Ref. 9).

HALE BASIN EL's 4959, 5078, 5079, 5081 and 5100

Exploration work carried out by Conapaira within these EL's concentrated on the Tertiary alluvial sequence of the Hale Basin.

Work consisted of rotary air blast (RAB) drilling of the sediments in the search for alluvial gold. The targets for this drilling programme were the palaeochannels identified by the drilling programmes of Alcoa of Australia Ltd.

Conapaira's programme was designed and executed under the direction of Cesiun International Pty Ltd. This drilling proved unsuccessful because the drilling method was apparently not suitable for the ground conditions. The maximum depth reach for three holes attempted was 25m out of a planned 80 metres. All three holes lost circulation and subsequently collapsed. Samples taken every one metre, were abandoned and not submitted for assay as they were deemed not representative due to the circulation problems. (Ref. 9). All samples are still on site.

At the time of writing no assay results were available for these samples (submitted to Fox Anamet Laboratories, Sydney).

7. CONCLUSIONS

Based upon a limited review of literature an inspection of the tenements and an assessment of exploration work carried out to date by Conapaira Metals Pty Ltd, the following conclusions can be drawn for each area.

EL 4739

- Gold mineralisation is known to occur within the area in the form of discrete iron oxide-pyrite rich quartz veins. Gold is associated with Arsenic.

- These mineralised quartz veins are associated with major faults within the region. eg. the Wheal Mundi Fault.

- No systematic testing of the quartz veins within the area covered by the licence has been performed. Only random reconnaissance sampling with inadequate recording of sample positions has brrn carried out.

- No attempt has been made to determine whether mineralisation occurs within the host rocks as well as the quartz veins. The possibility exists for gold to occur in the host rocks as some units of basic volcanics show extensive pyritisation.

- Vehicular access to many parts of the licence is inadequate and in places non-existent. Improved access is required.

- A potential alluvial resource may exist in the major drainage elements such as the Wheal Mundi Creek. This creek and its tributaries drain known gold mineralised areas. No exploration or previous mining has been performed on these alluvial deposits. They should be examined in detail.

HALE BASIN EL'S 4959, 5078, 5079, 5081 and 5100

- The drilling programme of the Hale Basin sediments was poorly thought out and executed. The drilling technique was inadequate for the conditions.

- Previous exploration strategy for this area is not clear. It is assumed that the drilling was intended to delineate and sample the palaeochannels and associated coarse sediments within the alluvial sequence.

- The depths at which these horizons occur and the grades to be expected in such a depositional environment would make the exploration of these deposits not practical.

- The rocks of the Arunta Block which outcrop in the southern section are largely unexplored. This area deserves some systematic exploration.

EL 5461

- Alluvial gold has been historically mined from Star Creek.

- One surface sample has indicated that alluvial gold exists in the sediments of Star Creek where it passes through the Amarata Range. Results of samples submitted for analysis will help determine whether follow up work on these alluvials is warranted.

- No work has been performed on the surrounding hard rock potential of the area. Geochemical reconnaissance surveys should be performed.

8 RECOMMENDED EXPLORATION

Due to the lack of a systematic exploration strategy during the previous programme much of the Exploration Licences remain unexplored, in particular:

* the area of EL 4739 east of Mount Chapman;
* the southern portion of El 5078 and El 5100, and
* all of El 5461.

The systematic exploration work considered appropriate for each area is described below. The programmes are designed to be executed in stages with each subsequent stage being subject to the results and conclusions provided by the previous stage.

EL 4739 - CLARAVILLE

Due to problems with mobilising heavy machinery and the availibility of drill rigs in this remote area every effort should be made to co-ordinate the use of this equipment so that maximum benefit is gained from them. This means scheduling the work in each area so that the equipment can be moved from one project straight onto the next.

All attempts should be made to utilise equipment currently at the White Range and Winnecke gold mines.

Strategy:

1. Systematic sampling of known reefs to determine the grade at the surface and possibly identify high grade ore shoots. Determine whether mineralisation extends into host rocks.

2. Upgrade access to eastern section of licence and identify further mineralised zones.

3. Determine alluvial gold potential of the Wheal Mundi Creek drainage system.

4. If adequate tonnages of inferred resource of near surface ore can by identified as a result of 1 to 3 above drilling should be commenced to determine ore extensions at depth and upgrade the deposit category to indicated resources.

Programme

Stage_1

a. Rock chip samples of the known quartz reefs should be taken every 20 metres along strike with samples taken of the host country rock if possible. Detailed notes and mapping of the reefs and host rocks are needed. Sample points should be adequately marked using either paint or coloured ribbon with metal tags showing the sample number. All sample points must be accurately marked on a base map.

b. Stream sediment sampling of the creeks that drain the eastern section of the EL. This can be performed using trail bikes or three wheeled motorised cycles. All sample points must be tagged as in a). and accurately plotted on a base map.

Stage 2 a. Upgrading of tracks to current known hard rock mineralised and alluvial areas. Access will be required to the eastern portion of the EL to allow further exploration of the anomalous areas identified in Stage 1 (b).

b. The use of an excavator to dig pits and trenches in the alluvial deposits of the Wheal Mundi Creek and its major tributaries. Channel sampling through the various horizons are to be made every 0.5 metres.

c. Trenches should be cut across the strike of the quartz reefs if mineralisation is shown to extend into the host rocks. These trenches should be located at least every 40 metres along the reef or less if the grade of the reef proves extremely variable.

Hale Basin EL's

Strategy

1. Future exploration should be directed at the unexplored southern sections of EL's 5078 and 5100.

2. Multi-element analyses should be performed on initial geochemical drainage samples to locate any anomalous mineralisation.

3. Ongoing exploration would be designed once anomalous areas and mineralisation type are defined.

Programme

Stage 1

a. Mapping and structural interpretation from air photos to identify regional features such as faults and lineaments which could include reef structures and possibly mineralised zones.

b. A drainage geochemical survey should be conducted to locate anomalously mineralised areas. Each sample should be analysed for Gold, silver, copper, lead, arsenic, antimony, tungsten, Bismuth and platinum.

This will assist the determination on sample points for the subsequent drainage geochemical survey.

Access will need to be created by bulldozer into any areas identified as anomalous in Stage 1. This should be scheduled to coincide with the availibility of the dozer following the programme in EL 4739.

EL 5461 - STAR CREEK

Strategy

1. Fully test the alluvial deposits in Star and Pig Hole Creeks.

2. Evaluate the mineral potential of country rock. No exploration has been performed to determine the mineral potential of the surrounding rocks. Especially for minerals such as Gold , silver and copper. Initially all samples will require multi-element analyses to assist identification of the style of mineralisation.

Programme

Stage_1

a. A drainage geochemical survey is required to determine the mineral potential of the surrounding country rocks. This should be performed using air photography to select sample points.
Multi-element analyses should be performed, assaying for gold, silver, copper, lead, zinc, arsenic, antimony, tungsten, bismuth and platinum.

Stage_2

a. Access to the EL requires substantial upgrading as the track from Atnarpa Station to the Ruby Gap Gorge is a four wheel drive only track and is not suitable for heavy vehicles in several places. Also access to areas of anomalous mineralisation identified in Stage 1 will be needed if such areas exist. Access to various parts of the alluvial deposits may be needed.

b. Pitting and costeaning of alluvials and channel sampling at 0.5 metres vertical intervals if safety allows or if not, horizon sampling from the excavator or backhoe bucket.

c. A follow up programme designed around the type of mineralisation identified in Stage 1 (a). This could include - Soil geochemical survey or rock chip sampling and mapping of any mineralised outcrop.

9. BUDGET

The budget estimate for the above recommended programme of work is presented below. Separate estimates are provided for each tenement group.

All estimates are at current rates and costs as of July 1988.

EL 4739 - CLARAVILLE

Stage 1

Geological (including reporting)	15 days @$350/day		5250
2 Field Assistants	7 days @$175/day		2450
2 x 4WD Vehicle Hire	7 days @$150/day		2100
Fuel			500
2 x Trail Bikes	7 days @$ 75/day		1050
Field messing 3 persons x	7 days @$ 50/day each		1050
Airfare (Geologist Only)	Sydney-Alice Springs-Sydney		700
Taxi Fares			60
Overnight Accomodation in Alice Springs			100
Overnight Meals			80
Field Consumables			1000
Assaying (including Freight)			4000
Reporting (printing, binding and typing)			300
Drafting			700
Phone/Fax			50
			19390
Total Stage 1		say.....	$20000

Stage 2

Geological (including reporting)	45 days @ $350/day		15750
Field Assistant	30 days @ $175/day		5250
4x4 Vehicle x2	30 days @ $150/day		9000
Fuel			2500
*Bulldozer (wet hire)	80 hrs @ $150/hour		12000
*Excavator (wet hire)	80 hrs @ $100/hour		8000
Meals and Accommodation	2 persons x 30 days @ $ 50/day		3000
	2 persons x 8 days @ $ 50/day		800
Field Consumables			2000
Assaying (including Freight)			12000
Airfares (Field Geologist)	Sydney-Alice Springs-Sydney		700
Taxi Fares			60
Overnight in Alice Springs	2 x 100 per day		200
Reporting (typing,printing and binding)			800
Drafting			1500
Phone/Fax			150
Contingency			5000
Total Stage 2		say.....	$79000

*This item does not include mobilisation. The cost of mobilisation could be spread over all three projects.

HALE BASIN EL'S

Stage 1

Geological (including reporting)	10 days @ $350/day	3500
Field Assistant	5 days @ $175/day	875
4x4 Vehicle Hire	5 days @ $150/day	750
Fuel		200
Meals and Accommodation		900
Airfares		700
Taxi Fares		60
Field Consumables		1000
Assaying (including Freight)		10000

Reporting:

Typing, printing, binding	300
Drafting	1000
Sub-Total	19385
Contingency 10%	2000
Total	say.....$22000

EL 5461 - STAR CREEK

Stage 1

Geological (including reporting)		15 days @ $350/day	5250
Field Assistant		5 days @ $175/day	875
4x4 Vehicle Hire		5 days @ $150/day	750
Fuel			200
Meals and Accommodation	2 persons x	5 days @ $ 50/day	500
Field Consumables			750
Assaying			5000
Aerial Photography			500
Airfares	Sydney-Alice Springs-Sydney		700
Taxi Fares			60
Overnight in Alice Springs		2 x 100 per day	200
Reporting (typing, printing and binding)			200
Drafting			700
			15685
Contingency			2000
Total Stage 1		say.....	$18000

EL 5461 - STAR CREEK

Stage 2

Geological (including reporting)	20 days @ $350/day		7000
Field Assistant	7 days @ $175/day		1225
4x4 Vehicle Hire	7 days @ $150/day		1050
Fuel			300
*Bulldozer (wet hire)	30 hrs @ $150/hour		4500
*Excavator (wet hire)	50 hrs @ $100/hour		5000
Meals and Accommodation	2 persons x 7 days @ $ 50/day each		700
	1 person x 5 days @ $ 50/day		250
	1 person x 3 days @ $ 50/day		150
Field Consumables			1500
Assaying			10000
Reporting (typing, printing and binding)			500
Drafting			1000
Phone/Fax			100
Airfares	Sydney-Alice Springs-Sydney		700
Taxi Fares			60
Overnight in Alice Springs	2 x 100 per day		200
			34235
Contingency			3000
Total Stage 2		say.....	$38000

*Items not included in the above figures are

1. Mobilisation of heavy equipment such as bulldozer and excavator $2000

2. Project supervision by a Senior Geologist. This includes checking of report and optional site visit.

Geological	20 days @ $450/day	9000
Airfare	Sydney-Alice Springs-Sydney	700
Vehicle hire	3 days @ $150/day	450
Accommodation	Overnight in Alice Springs	200
Meals on Site	3 days @ $ 50/day	150
TOTAL		$10500

Both these items would be utilised to cover all the above projects from the one cost outlay.

BUDGET SUMMARY FOR ONGOING EXPLORATION

	Stage 1	Stage 2	Total
EL 4739-CLARAVILLE	20,000	79,000	99,000
HALE BASIN EL's	22,000	UNKNOWN	22,000+
EL 5461-STAR CREEK	18,000	38,000	56,000
	$60,000	$117,000	$177,000
Mobilisation of heavy equipment			2,000
Project Supervision			10,500
			$189,500

10. REFERENCES

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APPENDIX 1

STAR CREEK ASSAY RESULTS

DISCUSSION

Six 5kg samples were taken by Mr. R. Raynor from the alluvials of Star Creek in EL 5461. They were labelled SR001 to SR006. The results are presented in the following table and the approximate sample locations are indicated on Figure 5.

Samples SR002, SR003 and SR005 were taken from the active and terrace alluvial deposits while SR001, SR004 and SR006 were taken from a flood terrace and two small tributaries of Star Creek respectively.

Analyses techniques were:-

1. Screen to remove coarse fraction
2. Subsample undersize and fire assay for gold.

The results are encougaging as all samples indicated the presence of gold.

Sample SR004 was taken from a small gully that drains the north western hills of the E.L. The anomalous result suggests that gold may be shedding from these hills. Further work will be required to confirm this.

The assay results for the above samples are not conclusive however they do suggest that further exploratory work is required.

FOX ANAMET

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FACSIMILE TRANSMISSION

TO: ALPHA EXPLORATION

ATTENTION: FRED GARSIDE FAX NO: 2622281

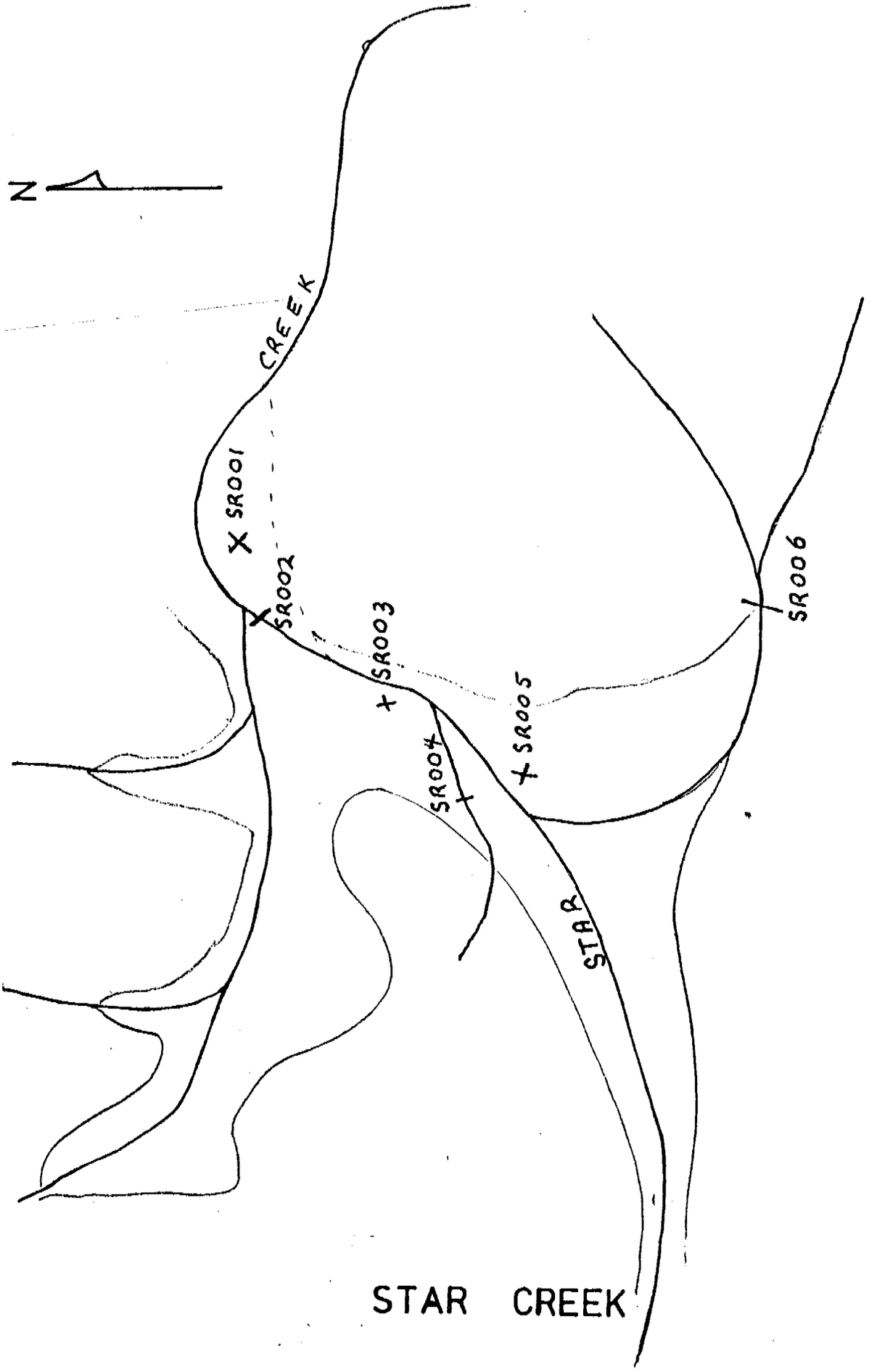
FROM: STEVE RAYNOR PAGE 1 OF 1

DATE: 16-7-88

SUBJECT: ASSAY RESULTS

MESSAGE:

	g/t Au
SR001	0.02
2	0.03
3	0.05
4	0.08
5	0.06
6	0.05
HR007	0.05
SL008	0.04
SL009	0.09
UNLABELED	<0.01
WHEAL HUNDY	0.05



SAMPLE LOCATIONS FIGURE 5

APPENDIX 2

AREAS RECOMMENDED TO BE RELINQUISHED

The areas shaded on the following map are sub blocks that, based upon information reviewed and observations in the field, have little prospectivity.

These areas are:-

1. All sub blocks of El 4959.

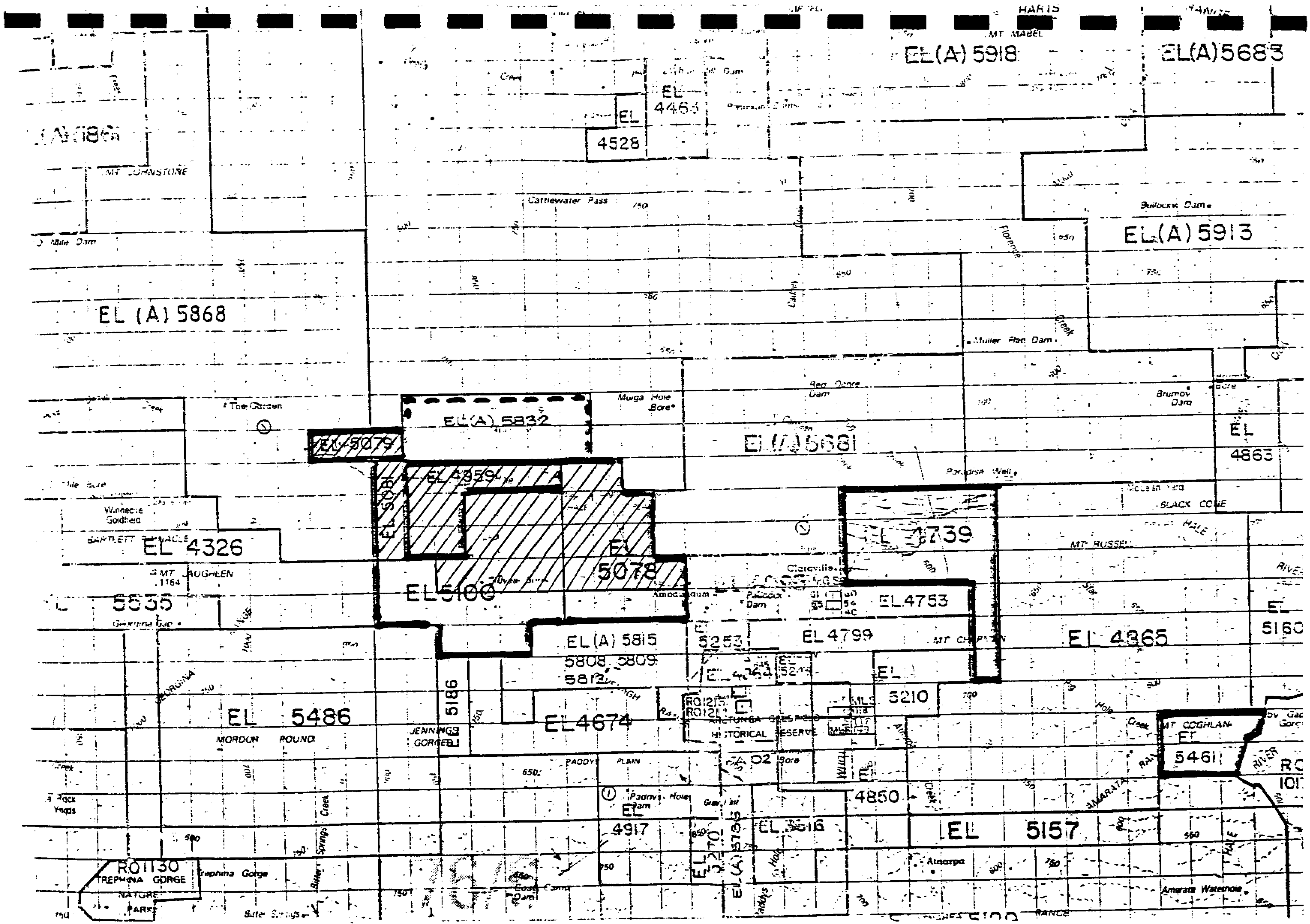
2. All sub blocks of El 5079.

3. All sub blocks of EL 5081.

4. 12 sub blocks of EL 5078.

5. 10 sub blocks of EL 5100.

All sub blocks are within the Hale Basin. The Tertiary sediments of this basin may contain gold concentrations but the volumes involved, the exploration difficulties and cost involved and the volume and depth of potentially 'barren' sediments makes the exploration of these areas impractical.


HARTS
MT MABEL
EL(A) 5918
EL(A) 5683
EL 4463
EL 4528
MT JOHNSTONE
Cattlewater Pass
Bullocky Dam
EL(A) 5913
EL (A) 5868
Muller Flat Dam
Red Ocre Dam
Mulga Hole Bore
Brumby Dam
The Garden
EL(A) 5832
EL 5079
EL(A) 5681
EL 4863
Paradise Well
EL 4559
EL 5081
BLACK CONE
EL 4739
MT RUSSELL
Winnecke Goldfield
BARTLETT PINNACLE
EL 4326
MT LAUGHLEN
1164
EL 5078
Claraville
EL 5100
Paddock Dam
EL 4753
5535
Georgina Gap
EL(A) 5815
5808, 5809
5812
5253
EL 4799
MT CHAPMAN
EL 4865
5160
EL 5210
5186
EL 5486
MORDOR POUND
JENNINGS GORGE
EL4674
ARLTUNGA GOLDFIELD
HISTORICAL RESERVE
MT COGHLAN
EL 5461
PADDYS PLAIN
EL 4850
Paddys Hole Dam
EL 4917
EL 5157
RO1130
TREPHINA GORGE
NATURE
PARK
Trephina Gorge
Bitter Springs
Atnarpa
AMARATA
Amarata Waterhole
RIVER