REPORT ON MINERAL CLAIMS

N1016-1027, SOUTH HOWLEY, N.T.

KAKADU RESOURCES LTD.

August, 1989

D.Holden

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SUMMARY:

The area of Mineral Claims N1016-1027 is regarded as highly prospective for economic gold mineralisation. Although exploration to date has failed to produce any significant results, the area still contains both structural and stratigraphic elements favourable for a Cosmopolitan Howley style deposit. Further detailed exploration is necessary within the claims.

INTRODUCTION:

The following report covers the work completed to the year ending August 1989 on Mineral Claims N1016-1027 existing as excisions within exploration licence 4867.

The area of the claims (and surrounding licence) is considered highly prospective for gold due to its close association (structurally,stratigraphically and geographically),to the Cosmopolitan Howley mine.

LOCATION AND PHYSIOGRAPHY:

The Claim areas lie south of the Stuart highway adjacent to the Old Stuart Highway, approximately 165km south of Darwin. (See figure 3).
The terrain is gently undulating to rolling hills becoming progressively more pronounced towards the north east. Access is easily gained off the old and recent Stuart Highways and the Fountain head road, although cross country movements would be severely restricted during the Wet.

The area is covered in savannah grasslands and scattered eucalypti woods.

TENURE:

There are 12 adjoining mineral claims totalling 140 hectares as excisions within the surrounding exploration licence 4867.
Kakadu were granted the claims in 1986 for a term of three years. Renewal of the claims has recently been applied for.

WORK COMPLETED:

During 1989, Compass Resources N.L. and Kakadu Resources conducted geological studies within the area of the claims. This work included discrete rock chip sampling, extensive regional airmagnetic data and aerial photograph interpretation, and a

literature review.
Rock chip sampling has been from two discrete sites as shown in figure 5 with the samples fire assayed for gold at the A.A.L laboratory in Pine Creek.
Airmagnetic interpretation and aerial photograph interpretation has allowed major fault trends to be inferred and these are shown in figure 6.

REGIONAL GEOLOGY:

Regionally the field area is situated within the Pine Creek Geosyncline (a macroscopic structure of some 40,000 km^2), in the Katherine and Darwin region of the Northern Territory. The regional geology was mapped in detail by Walpole et al (1968) and later Needham et al (1980). However a good outline of the history of the syncline has been written by Eupene & Nicholson (1984) and may be summarized as follows:

> Approximately 2400-2100 myr, arkose, pelitic, carbonate and iron-rich sediments were deposited upon a crystalline Archaean basement. This sequence suffered deformation and amphibolite facies metamorphism through to 2000 myr. Uplift and erosion of these sediments led to the deposition of early Proterozoic sediments of arkose, conglomerates, carbonaceous mudstones, limestones and tuff beds as fluviatile sediments and turbidities with a final flysch sequence of greywacke and shales. Near the end of the deposition, igneous dykes and silts were intruded followed by further deformation and lower greenschist metamorphism. The metamorphism is dated at approximately 1800 myr. Extensive granitic intrusions associated with a second deformation episode occurred at approximately 1760 myr.

Eupene & Nicholson (op. cit.) further suggest that volcanic, volcaniclastics and other sediments of Early Proterozoic age were deposited during the waning stages of granitic intrusion, into fault controlled depressions upon the metamorphic terrain.
Final sedimentation has occurred during a period of continued tectonic quiescence.
Regional geology and chronostratigraphic table are shown in figures 1 and 2.

LOCAL GEOLOGY:

Full representation of the South Alligator group sediments is

found within the area of the claims. South of the area is exposure of the sands, shales and argillites of the Wildman siltstone (Mount Partridge Group). Progressing north passes into carbonaceous and ferruginous siltstones of the Koolpin formation (which covers a large area of claims 1017-1027); the medium to coarse grained silicic beds of the Gerowie tuff and eventually into the coarser greywackes and lesser siltstones of the mount Bonnie formation.
Within the southwestern corner of the block of claims, outcrop of Zamu dolerite is found. This intrusive is coarse to porphrytic and in places weathered to a red/yellow clay.
Moving from the south to the north crosses the northern limb of a large antiformal fold referred to as the Howley anticline. The anticline is a broad, open fold to the south.
There is a post fold deformation phase seen as an east-west flexural component with the trend of the hinge folded from north/south to northwest/southeast in the vicinity of the claims.

RESULTS AND DISCUSSION:

The area of the claims is geologically favourable for hosting a significant gold deposit similar in style and genesis to the Cosmopolitan Howley mine.

The claims are located in a similar stratigraphic position to the Cosmopolitan Howley and just two kilometres to the east.
Although results of the exploration to date may be disappointing (Giocomo 1988), enthusiasm for the property is still maintained for the following reasons.

Firstly, previous sampling within the Koolpin formation has shown that although depleted gold values may be found at the surface subsequent elevated grades have been found at depth. Grades on the order of magnitude of 0.1grams/tonne at the surface may therefore be indicative of significant sub-surface mineralisation

Secondly the Koolpin may have preferential stratigraphic horizons with the lower stratigraphy (be it syngenetic or lithologically controlled mineralisation), carrying the economic grades. Within the area of the claims, this target remains untested.

Finally, late syn to post fold faulting within the geosyncline has proven highly prospective for shear zone related gold mineralisation especially those faults trending either north northeast or north northwest. Two such structures pass through the claim area. These may be very similar to the fractures which have generated the stacked shear packets found within the Cosmopolitan Howley Mine.

CONCLUSIONS AND RECOMMENDATIONS:

Further detailed and intensive exploration is definitely required within the area of the mineral claims. It is unfortunate that exploration to date has failed to produce encouraging results however the area remains highly prospective based upon both lithological and structural considerations. Re-assessment of the exploration data generated this far is still continuing with a view to deciding a future exploration programme.

REFERENCES;

Nicholson P and Eupene G., (1984); Controls on gold mineralisation in the Pine Creek Geosyncline.

Proceedings of the Aus I.M.M. Conference,Darwin. August 1984

Giocomo S., (1988): Annual Report on Exploration licence 4867.

Unpublished report for Department of Mines.

Dinniss River	Burrell Creek		Greywacke, siltstone, mudstone, rare chert, iron formation and conglomerate	>3000
South Alligator	Mount Bonnie	Upper	Mudstone, siltstone, chert, iron formation	100-250
		Lower	Greywacke, mudstone, siltstone, chert, carbonaceous mudstone, rare conglomerate	50-150
	Gerowie Tuff		Chert, mudstone siltstone	200-400
	Koolpin	Upper	Carbonaceous mudstone, mudstone, siltstone	50-150
		Middle	Iron formation, mudstone, carbonaceous mudstone, siltstone	30-100
		Lower	Carbonaceous mudstone, mudstone, siltstone, limestone	0-350
Mount Partridge	Wildman Siltstone		Mudstone, phyllite, siltstone, carbonaceous mudstone, sandstone	200-400
	Mundogie Sandstone		quartzite, arkose, pebble conglomerate, mudstone, siltstone	>500

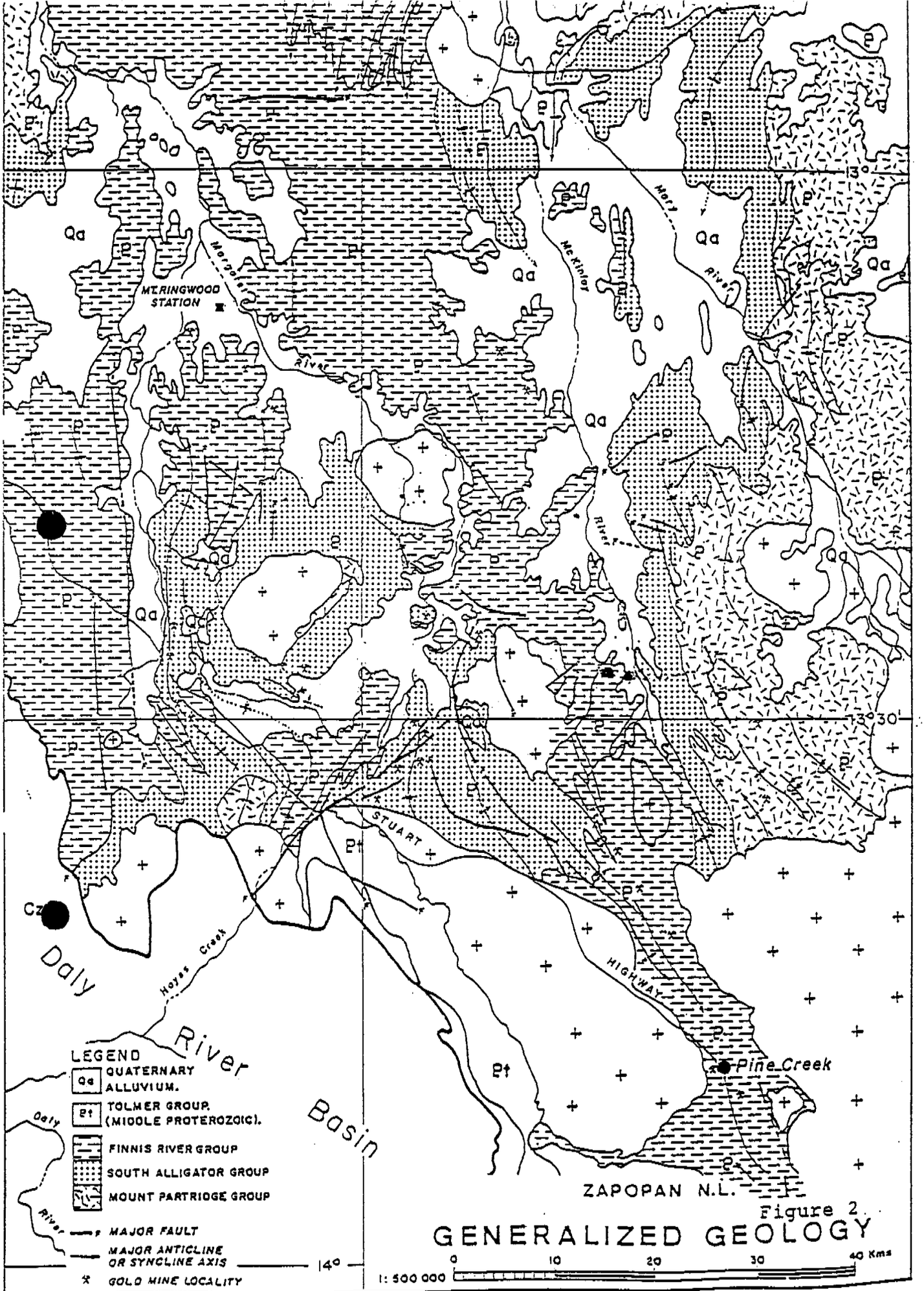
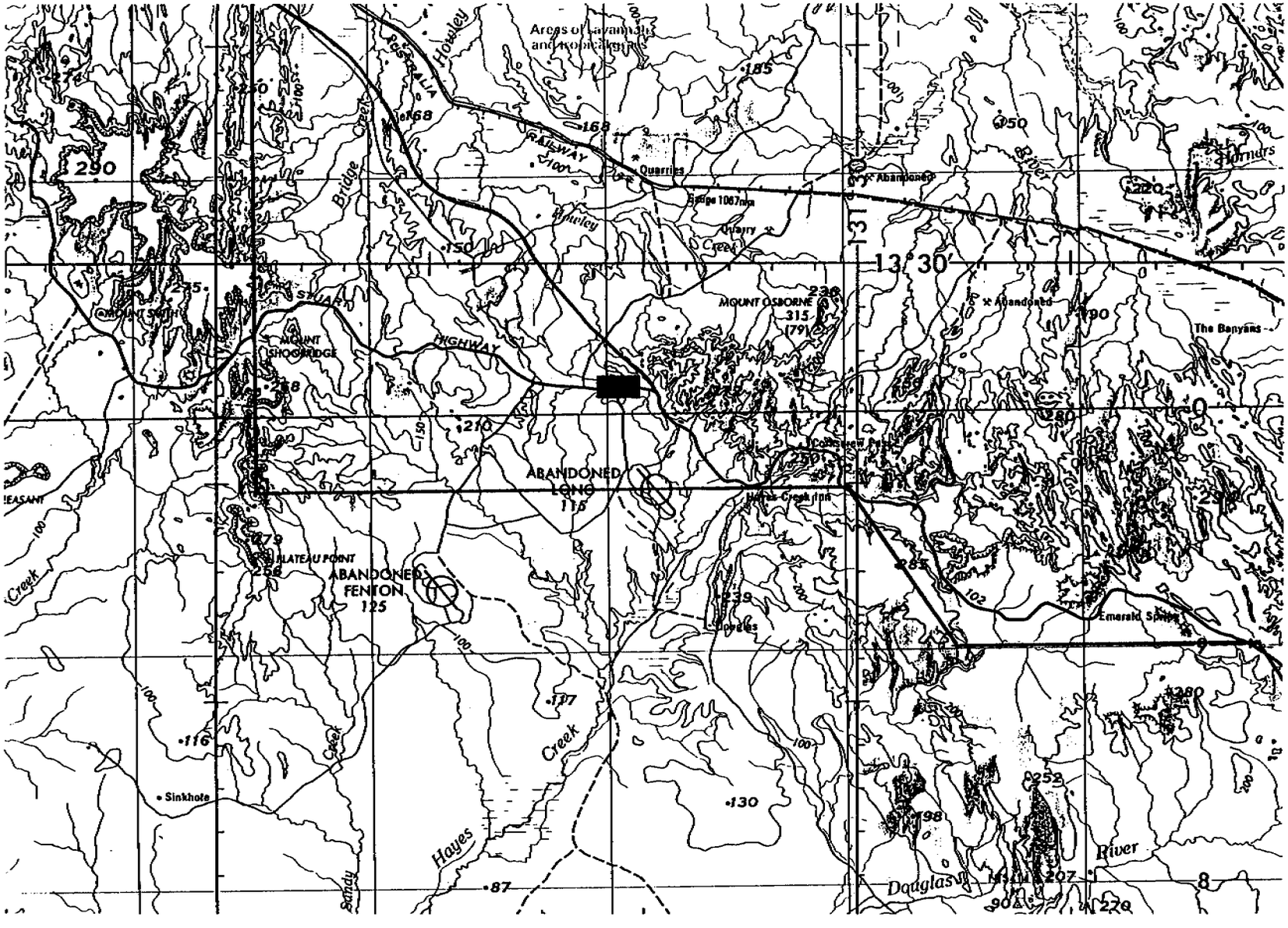


Figure 2.

GENERALIZED GEOLOGY



Scale 1: 250 000

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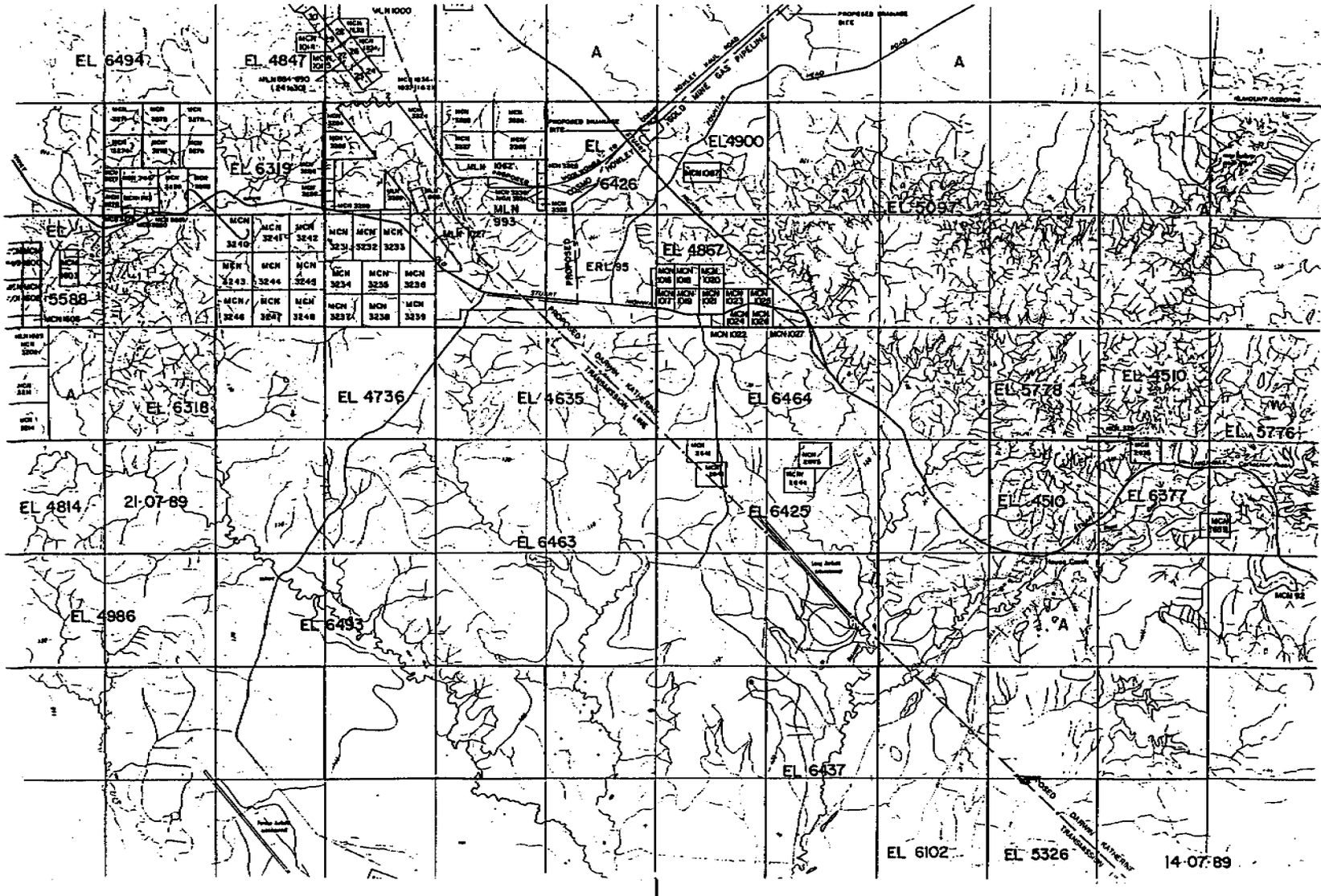
LOCALITY MAP

MCN's 1016 – 1027

FIGURE 3



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TENEMENT MAP

MCN's 1016 – 1027

FIGURE 4

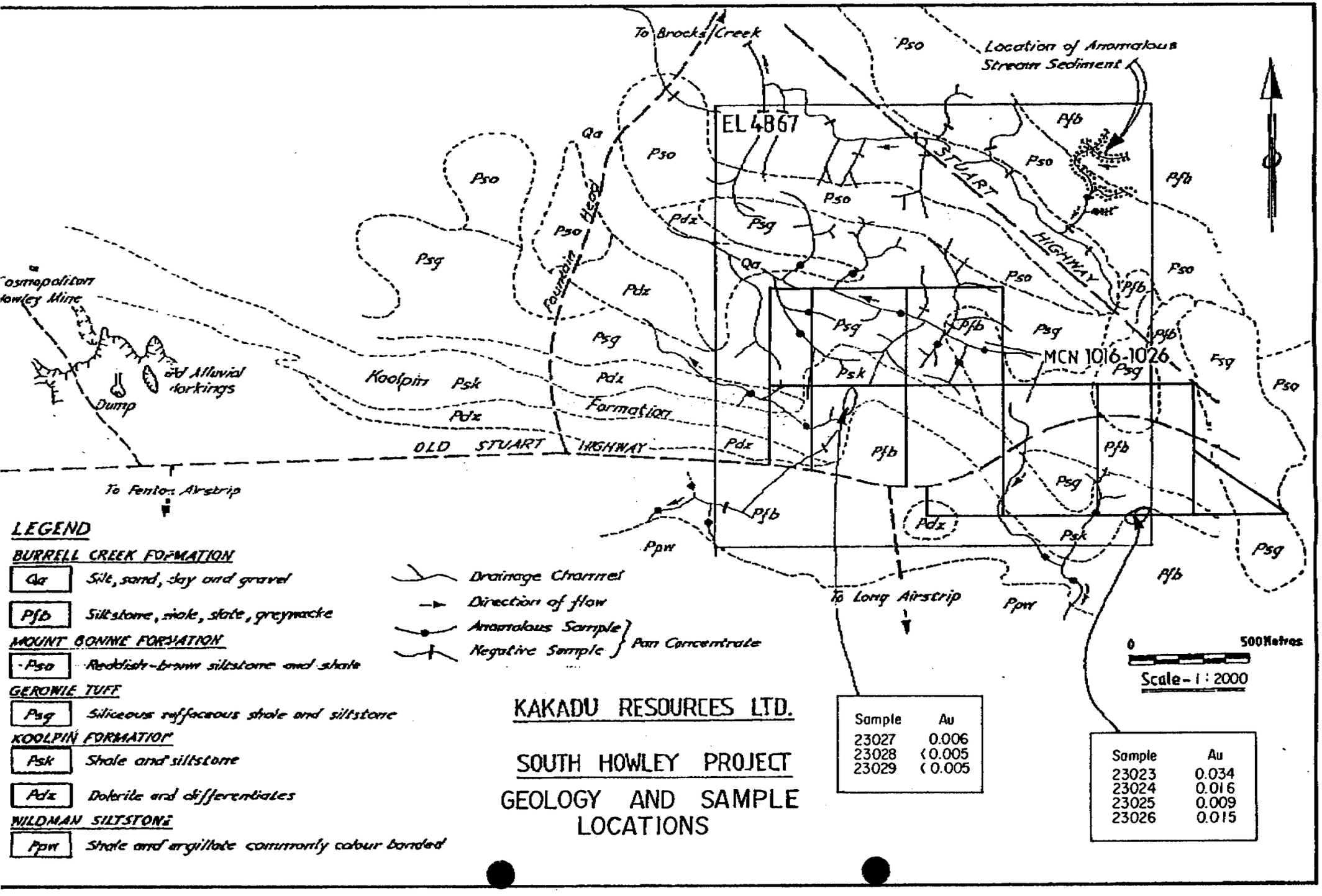
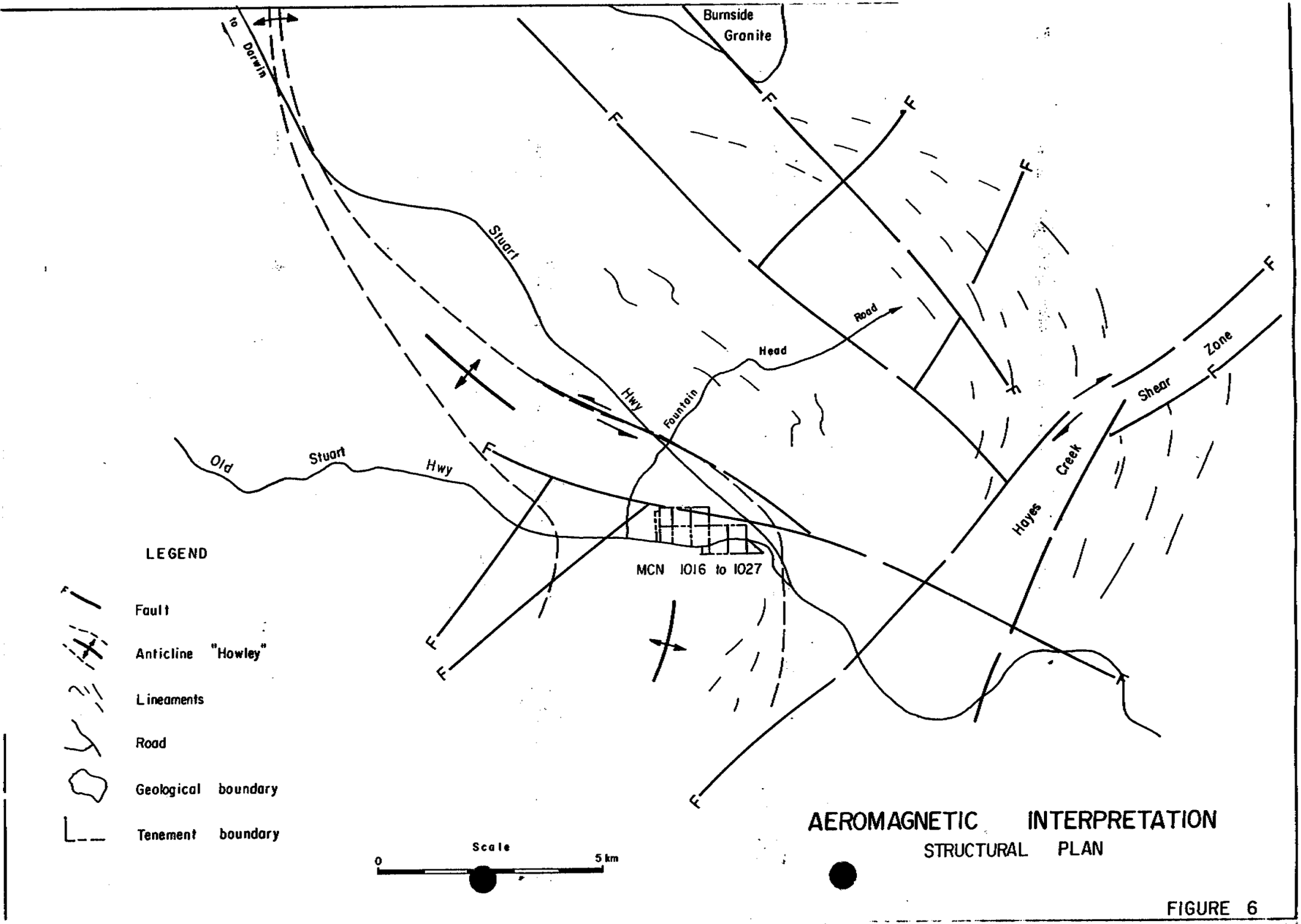

To Brocks Creek
Location of Anomalous Stream Sediment
EL 4867
MCN 1016-1026
STUART HIGHWAY
OLD STUART HIGHWAY
Fountain Head
Cosmopolitan Howley Mine
Old Alluvial Workings
Dump
Koolpin Formation
To Fenton Airstrip
To Long Airstrip
Qa
Pso
Psg
Pdz
Psk
Pfb
Ppw
LEGEND
BURRELL CREEK FORMATION
Qa Silt, sand, clay and gravel
Pfb Siltstone, shale, slate, greywacke
MOUNT BONNIE FORMATION
Pso Reddish-brown siltstone and shale
GEROWIE TUFF
Psg Siliceous tuffaceous shale and siltstone
KOOLPIN FORMATION
Psk Shale and siltstone
Pdz Dolerite and differentiates
WILDMAN SILTSTONE
Ppw Shale and argillite commonly colour banded
Drainage Channel
Direction of flow
Anomalous Sample
Negative Sample
Pan Concentrate
KAKADU RESOURCES LTD.
SOUTH HOWLEY PROJECT
GEOLOGY AND SAMPLE LOCATIONS
Sample Au
23027 0.006
23028 < 0.005
23029 < 0.005
Sample Au
23023 0.034
23024 0.016
23025 0.009
23026 0.015
0 500 Metres
Scale - 1 : 2000

FIGURE 5



AEROMAGNETIC INTERPRETATION

STRUCTURAL PLAN

FIGURE 6