Anglo Australian Resources N.L.

Annual Report 1996

EL 15/95 "GLADSTONE"

Russell Fulton
Grant MacDonald
October, 1996

AMG REFERENCE POINTS ADDED

335002

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335903

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1.0 SUMMARY

Historical research has indicated that the Gladstone area has the potential to host high grade mesothermal structurally controlled/hosted gold-quartz reefs. Although generally narrow, widths of up to 2 metres are reported with grades in excess of 1oz/tonne not uncommon.

The idea that reported drops in grade with depth were metallurgical was tested by two short diamond drill holes targeted on the Royal Tasman No.2 reef beneath the reported depth of old workings. Both holes intersected the reef which appears as clean white microcrystalline quartz. Gold assays in both cases were very low.

Sampling of mullock heaps at old mine workings gave some promising results with seven samples returning assays of over 30g/t Au, and a maximum of 125.7 g/t from the Portland mine.

Landsat image interpretation picks out the fundamental ESE trends strongly, as well as the important N-S to NNE trending features which occur in the area of gold mineralisation north and east of the Portland mine.

Interpretation of recently enhanced aeromagnetic, radiometric and gravity data shows fundamental, non-lithological ESE and ENE trends in the Gladstone area which terminate other features. Mineralised sites in the northern area lie near a major ENE trending magnetic feature. There is a magnetic grain in the Mathinna Group sediments with a N-S to NNE trend along which some mineralised sites are aligned in the area north and east of the Portland mine.

2.0 INTRODUCTION

2.1 Location

E.L. 15/95 "Gladstone" is located in the far north east of Tasmania, containing the township of Gladstone in the south west corner of the licence (Figure 1).

2.2 Tenure

The licence was granted to Anglo Australian Resources N.L. on the 10th of November, 1995. The licence covers an area of 167 square kilometres.

2.3 Land Status/Usage

The land is almost entirely private freehold and is mostly used for sheep farming. One property, Rushy Lagoon, occupies approximately 80% of the licence area. The south-west corner of the licence area covers the small township of Gladstone, with numerous buildings. Around the township of Gladstone there are many old mine workings associated with both gold and tin deposits.

2.4 Topography/Vegetation

The majority of the licence area is relatively flat and less than 100 metres above sea-level, except for the extreme south-west corner which rises up some 300 metres towards Mount Cameron. The northern half has been mostly cleared to pasture, whilst the southern half is vegetated by open eucalypt forest, although denser near watercourses.

2.5 Access


5 cm
Figure 1. Location map for EL 15/95 - Gladstone
Scale 1:250,000
15/95
AMG 599020E, 5480030N
AMG 584060E, 5429050N
CAPE PORTLAND
Swan Island
RINGAROOMA BAY
GREAT MUSSELROE BAY
Musselroe Point
Poole
CAPE NATURALISTE
Rushy Lagoon
Gladstone
Boobyalla
Bowlers Lagoon
Campbells Pt
Tucker Hill
Quakers Ranges
Stumpys Bay
Boulder Point
George Rocks
Cod Bay
Purdon Bay
Deep Creek
Ansons Bay
Policemans Point
EDDYSTO
Pioneer
Winnaleah
Herrick
Moorina
Derby
Weldborough
Goshen
Pyengana
Alberton
Legunia
Priory
Binalong Bay
Bayview
Akaroa
Stieglitz
ST HELENS
Parnella
Parkside
St Helens Island
Mount Cameron
South Mount Cameron
Little Mount Horror
Banca
Morgans Hill
Swain Hill
Wagners Hill
Wild Pig Hill
Wurrawa Hill
McGoughs Lookout
Mount Michael
Weld Hill
Frome Hill
Emu Hill
Bells Hill
Rattler Hill
Bendover Hill
Mt Nisbet
Coplestones Hill
Strochnetters Hill
Mt Pearson
Doctors Peak
The Gardens
The Shades
Bayleys Hill
Mt William
Tasman Hwy
Rattler Range
Ringarooma River
Musselroe River
George River
Great Northern Plain
Foster Islands
Lanoma Pt
Maclean Island
Baynes Island
Petal Point
Foster Inlet
Charmouth Hill
Tregaron Lagoons
Lyme Regis
Little Musselroe Bay
Hawkhaw Island
Hawkhaw Point
Bobbers Marshes
Boobyalla Plains
Vicarys Creek
Marsh Creek
Cuckoo Cr
Little Musselroe R
Ringarooma Tier
Boobyalla Beach
Boobyalla River
Little Boobyalla Cr
Walpole River
Ruby Cr
Amber Cr
Gilham Cr
Old Chum Cr
Great Teddy
Little Boggy Cr
Boggy Creek
Big River
Ansons River
Broad Creek
Groves Creek
Bens Creek
Icena Cr
Cray Creek
Icena Creek
Wyniford
Frome River
Main Creek
Cascade Dam
Black River
Cascade R
Weld River
Ransom Cr
Lennens Ridge
Groom Cr
Marguerita Ridge
Mother Logans Creek
Dead Horse Cr
Forester Cr
Gentle Annie Cr
Fraser Rivulet
Spurs Creek
Last Creek
Larsen Cr
Cascade Creek
Gardens Lagoon
Big Lagoon
Sloop Lagoon
Grants Lagoon
Boat Harbour Point
Grants Point
Moulting Bay
GEORGES BAY
Maurouard Beach
Golden Fleece R
Powers R
Hunt Mine Cr
Launceston Creek
Constable Creek
Steels Marsh
Rayners Hill
Mt Echo
Flagstaff
Fairlea
Tin Tier
Valleys New Country
Big Sugarloaf
Second SL
First SL
111
222
551
271
310
562
816
463
365
282
214
184
328
95
60
58
41
12
13
335007
AMG REFERENCE POINTS ADDED

Access is very good. There are many tracks in and around the township of Gladstone, whilst at Rushy Lagoon there is free access through paddocks as well as along the network of roads and tracks servicing the property.

3.0 GEOLOGY

The Eastern Tasmanian Terrane (Banks and Baillie, 1989) is the southernmost Australian expression of the Lachlan Fold Belt, and in north-eastern Tasmania it is comprised of an early Ordovician to early Devonian folded succession of turbiditic quartzwackes and pelites, the Mathinna Group (Powell and Baillie, 1993), which have been correlated with rocks of the Melbourne Trough in Victoria. Mathinna Group rocks have undergone regional low-grade metamorphism, and thermal metamorphism where they have been intruded by calc-alkaline granitoid batholiths of Devonian age. Thermal aureoles are commonly sharply defined and vary in width from about 800 to 5000 metres. Flat-lying sediments of the late Carboniferous/Early Permian to Triassic Parmeener Supergroup unconformably overlie both the Mathinna Group sediments and the Devonian granitoids. The Parmeener Supergroup rocks are intruded by thick sheets of Jurassic dolerite. Areas of Tertiary basalt and associated Tertiary sediments occur in north-eastern Tasmania and in some places have filled pre-existing drainage systems to form deep leads, some of which contain alluvial gold. Quaternary alluvium occurs in river valleys, and in the near the coast, Quaternary windblown sands obscure much of the bedrock.

Gold mineralisation occurs in the Mathinna Group sediments throughout north-east Tasmania. At some locations the gold mineralisation appears to be granitoid related, e.g. Golden Ridge and Lisle-Golconda-Panama, and in other locations there is no spatial relationship to granitoids e.g.. the Lyndhurst-Alberton-Mathinna-Mangana "gold corridor" and Lefroy. In this respect, there are similarities with the gold mineralisation in Victoria.

Locally, Mathinna Group sediments outcrop over about 35% of the licence area and consist of regionally metamorphosed turbiditic sandstones, mudstones and lithicwackes (Baillie, 1984). Where they are contact metamorphosed, they are comprised of spotted pelite, psammite and minor schists. Devonian granites associated with the Eddystone and Blue Tier Batholiths intrude the Mathinna Group on the northern and southern portions of the licence area, respectively. In the north, a biotite-muscovite granite (Musselroe Pluton) outcrops and has produced a narrow <1 kilometre wide thermal aureole in the Mathinna Group rocks. In the south, a biotite-hornblende granodiorite of the Gardens Pluton has produced a thermal aureole of up to 2 kilometres

Figure 2. Geology of Gladstone Prospect.
(modified from Eddystone and Boobyalla 1:50,000 geological atlas series.)
Scale 1:70,000

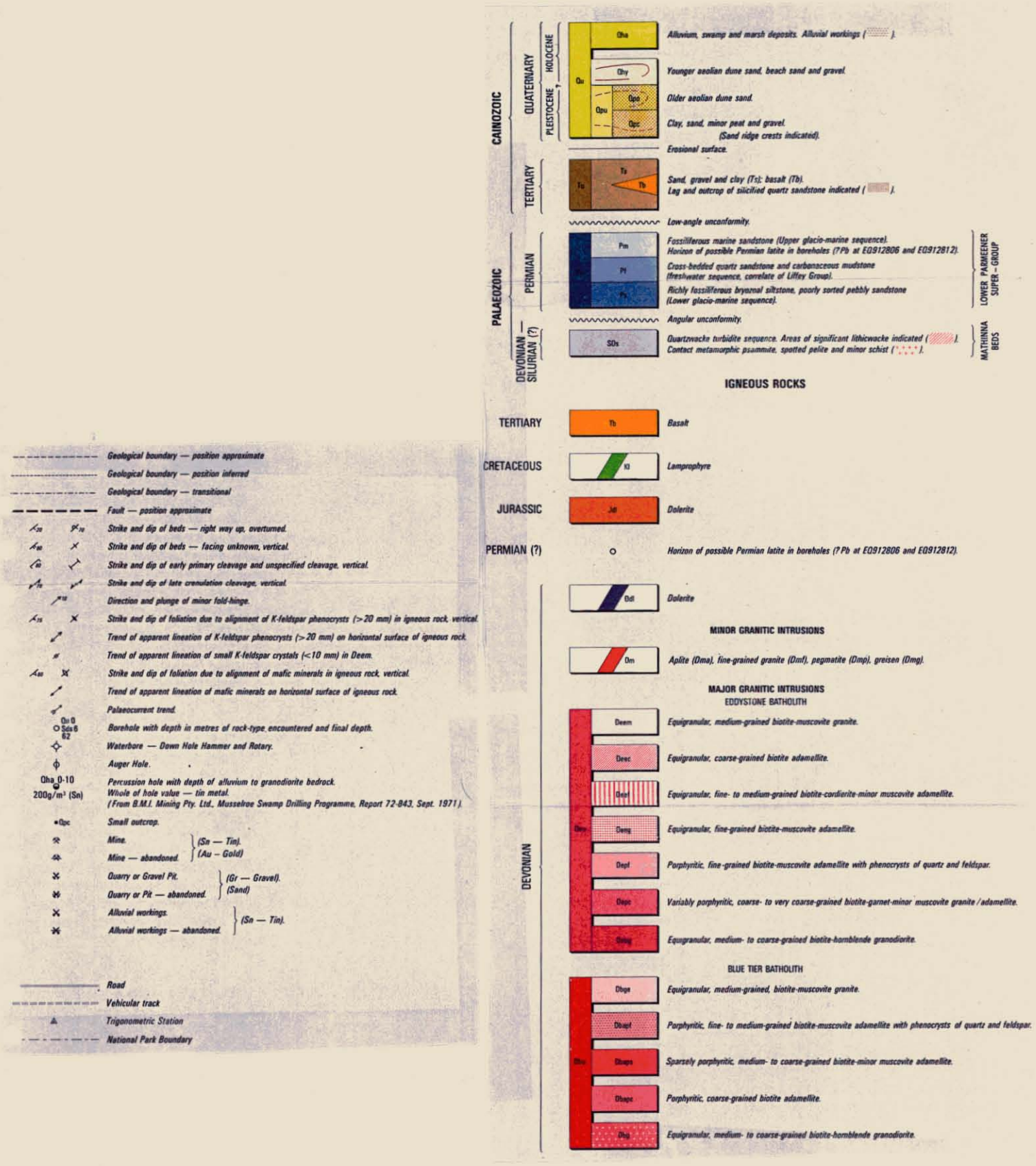
0 1 2 3 4 5 km

5 cm

5470000 mN

600000 mE

335011



Geological boundary — position approximate
Geological boundary — position inferred
Geological boundary — transitional
Fault — position approximate
Strike and dip of beds — right way up, overturned.
Strike and dip of beds — facing unknown, vertical.
Strike and dip of early primary cleavage and unspecified cleavage, vertical.
Strike and dip of late crenulation cleavage, vertical.
Direction and plunge of minor fold-hinge.
Strike and dip of foliation due to alignment of K-feldspar phenocrysts (>20 mm) in igneous rock, vertical.
Trend of apparent lineation of K-feldspar phenocrysts (>20 mm) on horizontal surface of igneous rock.
Trend of apparent lineation of small K-feldspar crystals (<10 mm) in Deem.
Strike and dip of foliation due to alignment of mafic minerals in igneous rock, vertical.
Trend of apparent lineation of mafic minerals on horizontal surface of igneous rock.
Palaeocurrent trend.
Qhi 8
Sds 6
82
Borehole with depth in metres of rock-type encountered and final depth.
Waterbore — Down Hole Hammer and Rotary.
Auger Hole.
Qha 0-10
200g/m³ (Sn)
Percussion hole with depth of alluvium to granodiorite bedrock.
Whole of hole value — tin metal.
(From B.M.I. Mining Pty. Ltd., Musselroe Swamp Drilling Programme, Report 72-843, Sept. 1971).
•Qpc
Small outcrop.
Mine. (Sn — Tin).
Mine — abandoned. (Au — Gold)
Quarry or Gravel Pit. (Gr — Gravel).
Quarry or Pit — abandoned. (Sand)
Alluvial workings. (Sn — Tin).
Alluvial workings — abandoned.

Road
Vehicular track
Trigonometric Station
National Park Boundary

width, although the granodiorite outcrops in only a few places, being largely covered by Tertiary gravels and sands. Near the Gladstone township, a biotite granite of the Poimena Pluton has been intruded by a later phase of biotite-muscovite granite which contains a cassiterite bearing greisen responsible for the alluvial tin mineralisation found in the district. The thermal aureole in the Gladstone area is up to 5 kilometres wide. On the western side of the licence area, large areas of bedrock are covered by Quaternary windblown sands. A small amount of Permian sediment and Jurassic dolerite are present.

Tin mineralisation occurs as a primary deposit in a greisened granite near the Gladstone township, and as alluvial deposits to the north and east of the township.

Gold mineralisation occurs in two different settings in the licence area. Within the contact aureole of the Gladstone granitoids, associated with tin mineralisation, and north-east of Gladstone in an area free of thermal metamorphism.

Near the township of Gladstone at Fly-By-Night Creek, gold occurs in parallel series of generally thin quartz veins which trend north-west and is generally associated with arsenopyrite and lesser chalcopyrite. Cassiterite and wolframite often occur within the same vein systems (Twelvetrees, 1916; Nye, 1933). Roach (1994) suggests that textural evidence indicates that gold mineralisation occurred before thermal metamorphism and that tin mineralisation was subsequent to thermal metamorphism. At nearby Coarse Gold Creek, quartz veins contain gold with no sulphides.

Gold mineralisation occurs in an area some 8 -12 kilometres north-east of Gladstone township in structurally controlled vein systems with varying orientations - NNW, E-W and N-S. The mineralisation lies outside the thermal aureole of the granitoids and Roach (1994) has suggested that the Mathinna Group rocks are at least 2 kilometres thick in the vicinity of the Portland Mine. The gold is associated mainly with arsenopyrite, but also with galena and sphalerite at Portland, which also has significant silver. Most of the mines in this area report increasing sulphidic component at depth, suggesting a process of near-surface secondary enrichment. No cassiterite or wolframite occurs in this area associated with gold mineralisation.

4.0 EXPLORATION PHILOSOPHY

Anglo Australian Resources N.L. is a small gold/base metal explorer. Anglo Australian Resources N.L.'s target model is one or more narrow but high grade gold-quartz reefs with a total gold content of ~100 000 oz's at a grade of >10g/t. Research has indicated that large tonnage low grade gold deposits are very unlikely to exist.

A number of such gold-quartz reefs were worked in the area in the latter part of last century and the early part of this century. Reported drop in grades with depth is an oft cited cause in the closure of these mines. There is some evidence that this drop was metallurgical and not real. Anglo Australian Resources N.L. believes that there is potential for economic gold mineralisation at depth beneath old workings with the gold possibly refractory or finer grained.

These gold-quartz reefs are structurally hosted within the Ordovician-Devonian Mathinna Beds. These structures themselves may be recognisable as dislocations in the weakly, but sufficiently, magnetic Mathinna Beds. Alternatively favourable structural settings such as anticlinal hinges may be recognisable in the available aeromagnetic data. These structures may also have a surface expression recognisable from landsat imagery.

Known gold-quartz reefs discovered by early prospectors almost certainly outcropped. Undiscovered gold-quartz reefs at shallow depths may be expected to be overlain by soils anomalous in gold with a this anomalism exhibiting a reasonably coherent dispersion pattern away from the reef for some distance. A broader dispersion pattern is expected from the more mobile metal elements commonly associated with gold in these reefs. The most significant of these elements is arsenic.

Drill targets may be defined by old workings, favourable structures or gold and/or arsenic soil geochemical anomalism, or any combination of the three.

5.0 PREVIOUS EXPLORATION AND MINING

Mining started north-east of Gladstone at the Blue Bell mine in 1870, with most mining in the early 1880's. Total production for the Gladstone field was reported as 57.9 kilograms from hard rock sources and 103 kilograms from alluvials.

TABLE 1. PREVIOUS PRODUCTION GLADSTONE AREA

Mine	Production (Au in kg)	Grade (g/t)
Royal Tasman	51.3	17.3
Portland	2.9	32.5
Flemings	2.3	9.6
Coarse Gold Creek	0.4	30

Most workings did not extend to significant depth, Portland being one of the deepest at around 60 metres. Most old workings are now inaccessible due to caved-in adits or waterfilled and/or collapsed shafts. The only open adit is the North Tasman Adit.

The Royal Tasman No.1 and Royal Tasman No. 2 may or may not have fault offsets of the same reef, there being some conjecture (Nye, 1932). The Royal Tasman No.1 reef was worked by two shafts, two adits and open stopes to a depth of 22 metres, with stoping along strike for 73 metres. The reef is reported to range in width from 0.6 metres to 2.25 metres (Thureau, 1881; Nye, 1932). The grade is reported to have decreased with depth, however Twelvetrees (1916) reports that gold from the deeper level is held in pyrite and arsenopyrite and was unable to be won. Another problem reported for the Royal Tasman Mine was the use of inferior stone because of the need to keep the 15 stamp battery fed. The Royal Tasman No.2 reef was stoped over 26 metres to a depth of 33 metres with the reef reported as being from 1.2 to 1.8 metres wide (Nye, 1932). It appears to have been faulted at either end.

The Royal Standard reef is reported as being up to 6.5 metres wide and though visible gold is noted, no grades are reported.

The Flemings reef was worked to a depth of 10 metres and ranged in width from 0.2 to 0.6 metres wide. The production shown in Table 1. includes small amounts of quartz from other dumps. It does not include the gold won from the

amounts of quartz from other dumps. It does not include the gold won from the sulphide concentrates. Nye (1932) reports that the grab samples of such concentrate have returned up to 60 ounces/ton.

The Portland mine was worked to a depth of 63 metres on a reef 0.15 to 0.3 metres wide. High silver grades were also reported from this mine (Twelvetrees, 1916). This mine failed due to the increasing sulphide content at depth, the gold not being able to be separated by simple crushing.

The Blue Bell mine was worked to a depth of around 35 metres on two reefs, one of which was 1 metre wide. Gold is reported from silicified wall rock in this mine. It would appear that sulphidic quartz was the end of this mine as well (Nye, 1932).

The Grand Flaneur mine, near the Blue Bell, was worked to about 20 metres depth on a 0.6 to 0.9 metre wide reef. Little is known of the history of this mine.

Most mining in the Gladstone area was carried out in the 1880's with brief revivals in the depressions of the 1890's and 1930's. It would appear that the major reason for failure of mines in the Gladstone area was increasing sulphide levels at depth. No large scale cyanidation appears to have been attempted though Nye (1932) reports that "in 1901-1902 the Royal Tasman tailings were cyanided with, it is stated, good results".

Previous exploration in the area has tended to focus on the tin potential of the area.

Santos (Whitehouse, 1983) assayed soil samples for both tin and gold, obtaining some scattered anomalous gold values in the general vicinity of the old workings. The detection limit for gold was 0.3 g/t. Six trenches were dug and channel sampled to follow up these anomalies. Results were generally low with 2 metres at 0.85 g/t Au in a zone of NNW trending fine veins the best assay.

Placeco (Morrison and Davidson, 1987) carried out gold exploration in the Gladstone area in conjunction with exploration on tenements over other gold fields in the north-east. Placeco carried out a regional aeromagnetics survey as well as trial ground magnetics, self-potential, resistivity and soil (Au, As, Ag, Cu, Pb, Zn) over the Portland mine. A summary of their results is

- there are recognisable magnetic and non-magnetic lithologies in the Mathinna Group which can be detected by the aeromagnetics. Structures can be recognised (faults and folds) in the Mathinna Group, and discrete magnetic

be recognised (faults and folds) in the Mathinna Group, and discrete magnetic highs within the granitoids, which may be significant in understanding gold mineralisation genesis and location.

- radiometric data is useful for delineating boundaries between granitoid plutons
- "no immediate discernible response pattern or signature for the mineralised areas" , however there are some subtle linear features in the area of the Portland and Blue Bell mines which may be related to structures controlling mineralisation.
-ground magnetics support aeromagnetics in the Portland mine area. Spike anomalies may reflect quartz veining.
- self-potential also gave contourable anomalies trending north-west, parallel to magnetics.
- arsenic proved to be a strong and clear indicator of mineralisation with peaks of 690ppm. The anomaly was open-ended to the west, along the strike of the reef.
- lead and zinc values support the arsenic anomaly
- gold defines an anomalous zone over old workings (at the 50 ppb contour) with highs of 110 ppb.

Placeco's proposed programme of trenching at Portland and further enhancement of regional aeromagnetics and radiometrics was not carried out.

McOnie (1983) undertook a comprehensive review of the occurrences of gold in north-east Tasmania for Goldfields Exploration.

6.0 WORK CONDUCTED AND RESULTS

6.1 Introduction

In the year from November 1995 to October 1996 the following work has been conducted by Anglo Australian Resources N.L.

- Research the history of the all known old workings in the licence area.
- Drill two diamond drill holes under the Royal Tasman No.2 old workings and sample the outcropping Royal Standard reef.
- Purchase in interpret the landsat imagery over the Gladstone area.
- Enhance and interpret the existing good quality aeromagnetic, radiometrics and gravity data over the licence area.

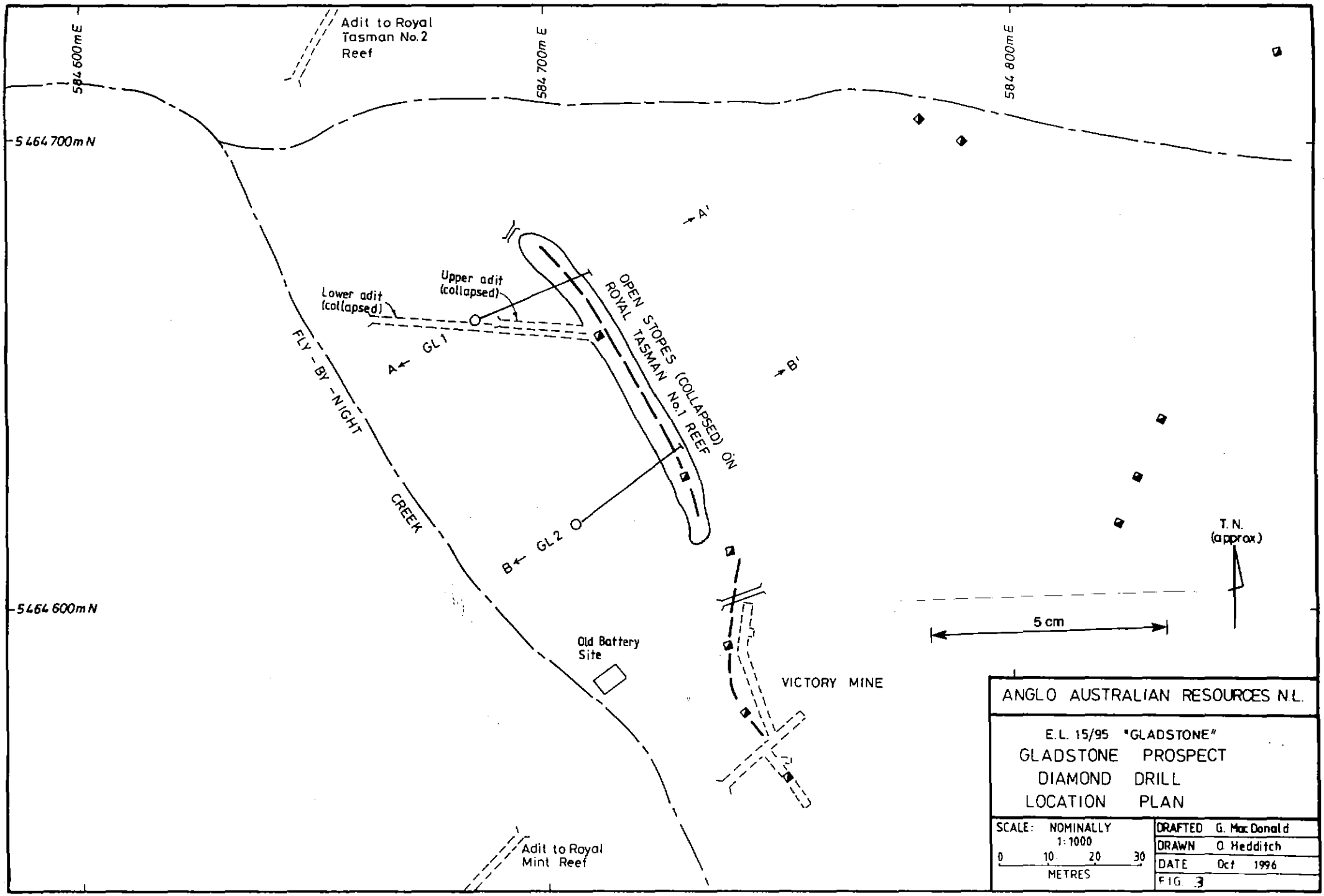
6.2 Historical Research

A thorough search has been made of the Mineral Resources Tasmania records. The significant findings relating to the Gladstone area have been incorporated into the appropriate sections of this report.

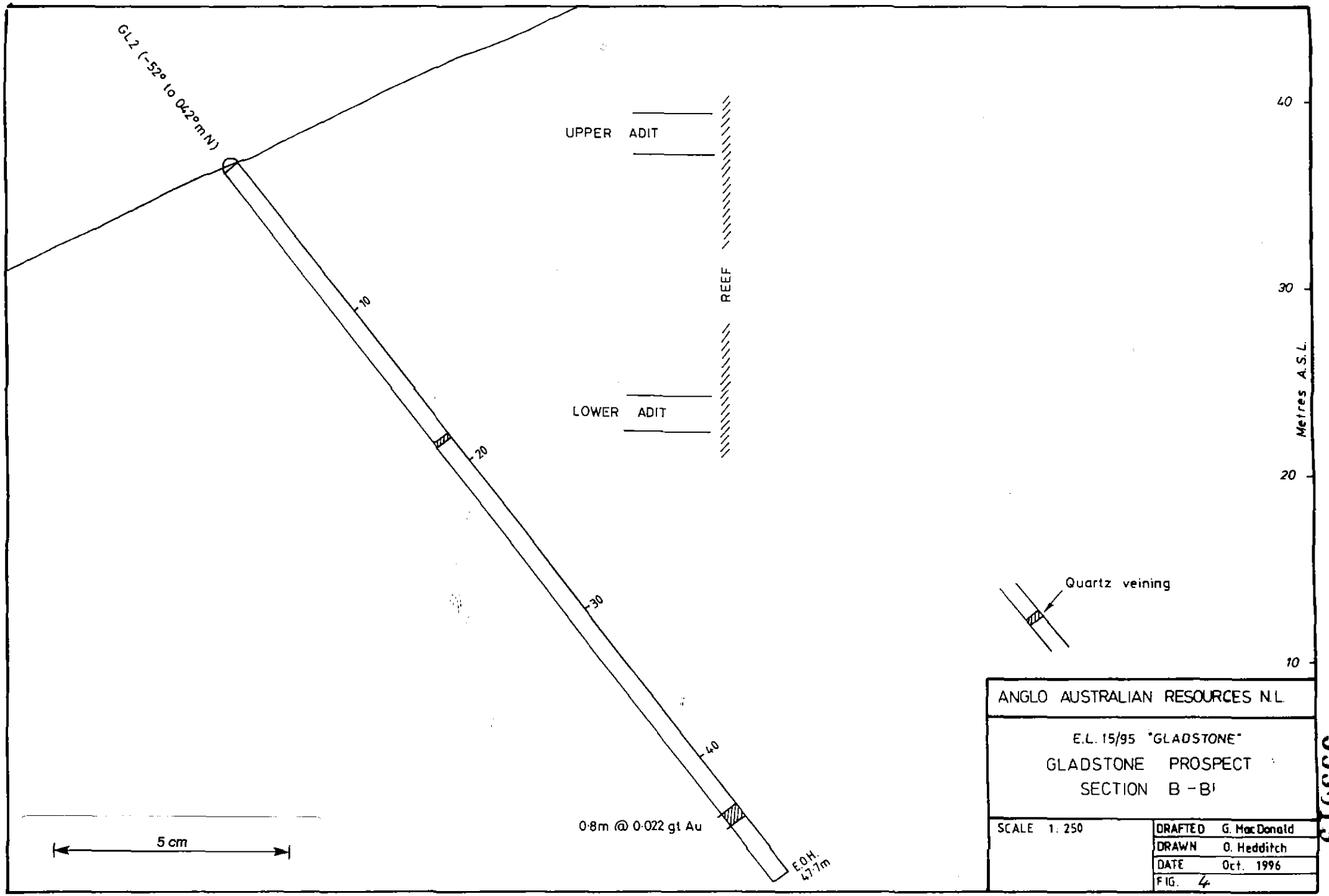
6.3 Diamond drilling/rock sampling

Historical research, particularly Nye (1932), had identified the Royal Tasman No.1 reef to have both significant width and high grades but only having been worked to shallow depths. These facts coupled with the location of outcrop of the reef towards the top of the slope between the Fly-By-Night creek and the Gladstone township made the reef an immediate drill target which could be efficiently tested with Nick Poltock's man portable diamond drill.

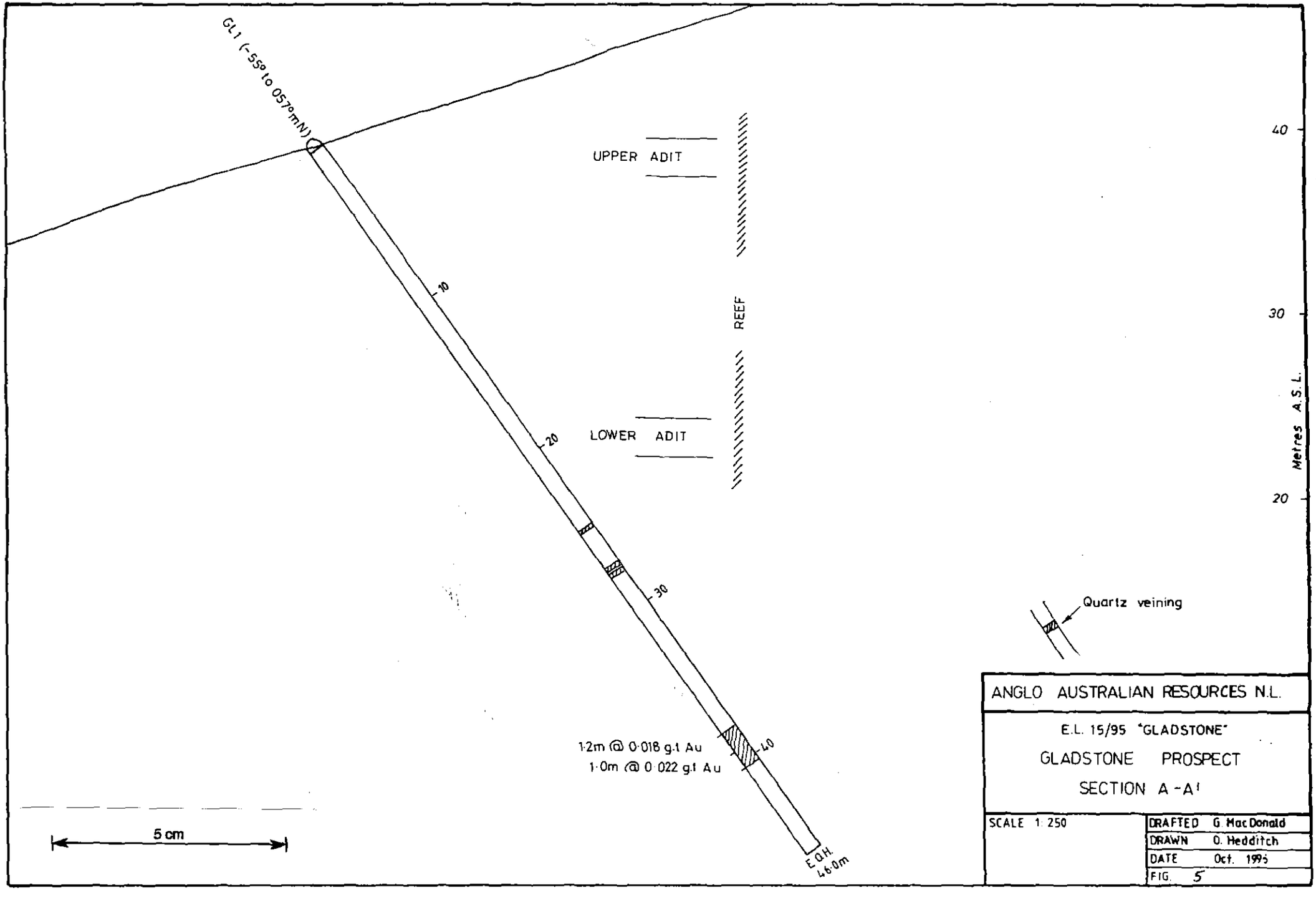
Two diamond drill holes (totalling 93.7 metres) were drilled into the reef in January 1996. The first was drilled from the tip head of the collapsed No.1 adit (see figure 3) with the second drilled at a slightly lower R.L. approximately 40 metres to the south east on a old dray track leading along the hill. The holes were designed to intersect the reef at 15m to 20m below the reported maximum depth of old workings.


584 600mE
584 700m E
584 800mE
Adit to Royal Tasman No.2 Reef
5 464 700m N
5464 600m N
A'
B'
Upper adit (collapsed)
Lower adit (collapsed)
GL1
A
OPEN STOPES (COLLAPSED) ON ROYAL TASMAN No.1 REEF
FLY-BY-NIGHT CREEK
B GL2
T.N. (approx)
5 cm
Old Battery Site
VICTORY MINE
Adit to Royal Mint Reef
ANGLO AUSTRALIAN RESOURCES N.L.
E.L. 15/95 "GLADSTONE"
GLADSTONE PROSPECT
DIAMOND DRILL
LOCATION PLAN
SCALE: NOMINALLY 1:1000
0 10 20 30
METRES
DRAFTED G. MacDonald
DRAWN O. Hedditch
DATE Oct 1996
FIG. 3

335018


GL2 (-52° to 042°m N)
UPPER ADIT
REEF
LOWER ADIT
10
20
30
40
Metres A.S.L.
40
30
20
10
Quartz veining
0·8m @ 0·022 gt Au
E.O.H. 47·7m
5 cm
ANGLO AUSTRALIAN RESOURCES N.L.
E.L. 15/95 "GLADSTONE"
GLADSTONE PROSPECT
SECTION B - B'
SCALE 1: 250
DRAFTED G. MacDonald
DRAWN O. Hedditch
DATE Oct. 1996
FIG. 4

335019


GL1 (-55° to 057°mN)
UPPER ADIT
LOWER ADIT
REEF
10
20
30
40
40
30
20
Metres A.S.L.
Quartz veining
1·2m @ 0·018 g.t Au
1·0m @ 0·022 g.t Au
E.O.H.
46·0m
5 cm
ANGLO AUSTRALIAN RESOURCES N.L.
E.L. 15/95 "GLADSTONE"
GLADSTONE PROSPECT
SECTION A - A¹
SCALE 1: 250
DRAFTED G. MacDonald
DRAWN O. Hedditch
DATE Oct. 1995
FIG. 5

335920

The Royal Tasman No.1 reef intersection in each hole was assayed by Analabs for gold alone using fire assay/AAS with a detection limit of 8 ppb.

At the time of the drilling a channel sample and grab sample were taken from the Royal Standard reef where it outcrops on the main road. This reef is interpreted to be either a fault offset of the Royal Tasman No.1 and No.2 reefs, or en echelon to these latter two reefs. These were also assayed in the same way as above.

Problems were encountered with the highly fractured nature of the indurated siltstones resulting in a number of short runs, however, both holes intersected the reef at the interpreted depth. Unfortunately the reef in both cases was clean and white with only trace sulphides seen in GL2's intersection.

GL1 (-55 to 057MN for 46.0 metres) intersected massive medium grey to beige green siltstones and lesser medium grey shaley siltstones with thermal metamorphic spotting (chiastolite?) often visible. Apart from the main Royal Tasman No.1 reef intersected from 38.1m to 40.3m (true width of ~1.8m's) the hole intersected a second zone of quartz veining from 24.8m to 29.5m. Only the main reef was assayed, returning 1.2m at 0.018g/t Au from 38.1m to 39.3m and 1.0m at 0.022g/t Au from 39.3m to 40.3m (average of 0.021 and 0.023g/t Au).

GL2 (-54 to 042MN for 47.7metres) intersected a similar sequence of siltstones and shaley siltstones. The main Royal Tasman No.1 reef was intersected from 43.2m to 44.0m (true width of ~0.65m's) with a second zone of quartz veining intersected between 15.5m and 18.5m, probably correlatable with the second western zone intersected in GL1. Only the main reef was assayed, returning 0.8m's at 0.022g/t Au.

The drilling was technically successful in that the reef was intersected in both drill holes and hadn't pinched out or been worked to greater depths that reported. The width of the reef was significant, particularly in GL1. The lack of gold mineralisation is not unexpected in structurally hosted mesothermal quartz veins in which gold mineralisation is often focused into discrete shoots separated by barren quartz or lode slate. The theory that reported drops in grade with depth were metallurgical and due to gold becoming finer and/or refractory remains incompletely tested as it still possible that this occurs within sulphidic gold shoots.

The grab and channel sampling of the Royal Standard reef where it outcrops on the road also returned disappointing results with the grab sample <0.008g/t Au and the channel sample ~1.5m at 0.021g/t Au.

6.4 Rock sampling

A program of sampling from mullock heaps at a number of old workings in the Gladstone area was undertaken, with the following results:

Table 2. Mullock Sampling Gladstone Area

Sample	Location	Description	Result (g/t Au)
Au)			
F1	Flemings	grey qtz c arsenopyrite > pyrite	0.48
F2	Flemings	grey qtz/silicified siltstone	0.03
RT1-1	Royal Tasman # 1	50% pyrite, 50% qtz	0.19
RT1-2	Royal Tasman # 1	laminated qtz	0.02
RT1-3	Royal Tasman # 1	marble-like c limonitic fractures	0.03
RT2-1	Royal Tasman # 2	marble-like c limonitic fractures	82.25
RT2-2	Royal Tasman # 2	marble-like qtz	16.6
RT2-3	Royal Tasman # 2	marble-like qtz	28.2
RT2-4	Royal Tasman # 2	laminated arsenopyrite-rich qtz	0.64
BB1	Blue Bell	arsenopyrite-rich qtz	0.08
BB2	Blue Bell	arsenopyrite-rich qtz	0.05
P1	Portland	gossan	41.4
P2	Portland	laminated arsenopyrite-rich qtz	41.0
P3	Portland	as above with galena	23.3
P4	Portland	arsenopyrite-rich qtz	125.7
P5	Portland	as above with galena and sphalerite?	30.3
GF1	Grand Flaneur	laminated blue/grey qtz	30.7
GF2	Grand Flaneur	arsenopyrite-rich qtz	4.3
GF3	Grand Flaneur	partly oxidised laminated qtz	39.5
GF4	Grand Flaneur	arsenopyrite-rich qtz	0.6

6.5 Landsat image interpretation

A series of Landsat Thematic Mapper - image maps, interpreted features maps and exploration guides were prepared by the Alpine Exploration Group, and their report is attached as Appendix C. The interpreted features maps pick out many of the linear trends which are also interpreted from the aeromagnetics and radiometrics. ESE trends are strong, whilst the N-S to NNE trends are apparent near the Portland and Blue Bell mines. A circular feature south-east of the Portland mine may be significant.

6.6 Geophysical interpretation

Enhancement of available gravity, aeromagnetic and radiometric data was carried out by the Dr. Bob Richardson at Mineral Resources Tasmania and interpreted by Leaman Geophysics. The interpretation map and report is attached as Appendix D. The interpretation is summarised as follows:

- non-lithological ENE and ESE features are fundamental
-the data sets are not obviously compatible and there is no correlation between magnetics and gravity.
- most magnetic character is related to Mathinna Group sediments and there is a distinctive magnetic grain trending N-S to NNE derived from alternating band of shale and sandstone. The magnetic character terminates within the thermal aureoles. Some mineralised sites in the north appear to be related to magnetic
- the gravity field is granitoid-controlled and is not correlated with known mineralisation
-mineralised sites in the north lie near a major ENE magnetic feature
- radiometric data shows N-S to NNE trends which correlate roughly to the magnetic data
- the Portland mine is abnormal structurally and lithologically.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Perhaps the most significant conclusion from the historical research and field sampling is that the reported high gold grades are real. Mining was stopped in the last century due to an inability to extract gold from the increasingly sulphidic ore encountered at depth, although still carrying plenty of gold. Although veins can be relatively narrow, widths of 2 metres are not uncommon, and there is no reason for believing that the veins may peter out at depth.

Interpretation of enhanced aeromagnetic, gravity and radiometric data as well as Landsat imagery have proved to be effective in delineating structures associated with gold mineralisation north-east of Gladstone. N-S to NNE trending structures appear to be important in this area as well as ENE and ESE features.

Based on the results of work undertaken so far, future work will probably include trenching at the Portland and Blue Bell mines, soil sampling at Portland, mapping and sampling a long, deep drainage channel at the Grand Flaneur, channel sampling at the Big Musselroe reef, ground magnetics over all the old mine environs, soil sampling around the Gladstone township, further drilling.

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APPENDIX A

DIAMOND DRILL LOG

335027

Drill hole:	GL1
Co-ordinates	
Easting:	584684mE
Northing:	5364662mN
Azimuth:	057 degrees magnetic
Dip:	-55 degrees
RL:	39m
Final depth:	46.0m
Hole commenced:	10th January 1996
Hole completed:	17th January 1996
Driller:	Nick Poltock
Rig:	Custom built man portable
Core size:	0m to 23.7m TT55, 23.7m to E.O.H. TT45
Logged by:	Grant MacDonald

Summary: The hole intersected massive medium grey to beige green siltstones and lesser medium grey shaley siltstones with thermal metamorphic 'spotting' often visible. A zone of quartz veining was intersected between 24.8m and 29.5m with the main Royal Tasman No.1 reef intersected at the expected depth between 38.1m and 40.3m. There is only trace sulphide in only some of this quartz veining.

Log:

0m to ~0.5m	No core
0.5m to 7.3m	Weakly weathered siltstone with 'spotting' indicating thermal metamorphism. 'Spots' are generally around 2mm in diameter. At 5.2m is a minor puggy fault associated with a 2cm thick quartz vein.
7.3m to 11.4m	Medium grey moderately siliceous siltstone with mottled appearance due to 'spotting'. Below 8.5m is an increase in quartz veining. These veins are extensional quartz-clay (after sericite?) and are generally at low angles to the core axis with the fibre orientation perpendicular to the orientation of the vein.
11.4m to 13.8m	Beige green zone apparently due to increased quartz veining. Some quartz veins >5cm can be seen to be due to silica flooding of siltstone. There is no sulphide associated with this veining.
13.8m to 17.0m	Pale grey siltstone with occasional minor zones of silicification/veining. There are no sulphides but some silicification/veining contains ferruginous fractures.
17.0m to 18.3m	Medium grey chloritic (?) shaley siltstone with a gross banded texture at ~50degrees to the core axis. The banding is due to carbonate alteration of the shaley matrix around metamorphic

'spots'. The core becomes beige green downhole. There is a minor puggy/broken core zone at ~15.0m.

18.3m to 23.0m — Light grey to beige green siltstone with mottled appearance in parts due to 'spotting'. There is a broad moderately puggy zone of broken core from 22.1m to 23.3m.

23.0m to 31.0m — Beige green siltstone with a number of significant quartz veins. The siltstone between these larger veins is cut by extensional quartz veins <10mm. None of these veins are mineralised but occasionally contain a dark mineral (chlorite?) along with the quartz. Major quartz veins are listed;

- 24.8m to 25.0m — Vein with trace pyrite on fracture surfaces and minor chlorite(?).
- 27.15m to 27.40m — Quartz vein with no sulphides or chlorite.
- 27.90m to 29.00m — Quartz vein with no sulphides but occasional ferruginous fractures and minor chlorite(?).
- 29.00m to 29.50m — Beige green siltstone with ~40% extensional quartz veining.

31.0m to 38.1m — Medium grey to beige green siltstone with only very minor quartz veining. Bedding at 33.5m is at 45 degrees to the core axis.

38.1m to 40.3m — Massive white quartz reef, interpreted to be the Royal Tasman No. 1 reef. The quartz is microcrystalline or 'marbly' in appearance and contains no sulphides. The upper contact with the wall rocks is sharp and discrete but in broken core. The lower contact is less discrete with occasional quartz veining in the wall rocks adjacent to the contact. 38.1m to 39.3m assayed 0.018 ppm Au. 39.3m to 40.3m assayed 0.023 and 0.021 ppm Au.

40.3m to 46.0m — Medium grey siltstone with occasional extensional quartz veins adjacent to the contact with the reef. The quartz contains no sulphides but minor chlorite (?). The siltstone near to this contact contains irregular, diffuse but distinct red patches to a few ten mm's across.

46.0m E.O.H.

335029

DIAMOND DRILL LOG

Drill hole:	GL2
Co-ordinates	
Easting:	584706mE
Northing:	5464618mN
Azimuth:	042 degrees magnetic
Dip:	-52 degrees
RL:	37m
Final depth:	47.7m
Hole commenced:	17th January 1996
Hole completed:	23rd January 1996
Driller:	Nick Poltock
Rig:	Custom built man portable
Core size:	0m to 15.5m TT55, 15.5m to E.O.H. TT45
Logged by:	Grant MacDonald

Summary: The hole intersected massive beige green to mottled 'spotted' siltstones and lesser darker grey shaley siltstones. There is a zone of very weakly mineralised (pyrite) quartz veins between 15.5m and 18.5m with the Royal Tasman No.2 intersected at the expected depth between 43.2m and 44.0m. There is only trace chalcopyrite seen in this reef.

Log:

0m to ~0.5m	No core
0.5m to 8.5m	Weakly weathered siltstone. Moderately puggy to ~3.8m.
8.5m to 10.0m	Medium grey mottled 'spotted' siltstone.
10.0m to 11.0m	Darker grey chloritic (?) shaley siltstone in broken core.
11.0m to 12.1m	Medium grey mottled 'spotted' siltstone.
12.1m to 12.5m	Puggy broken core.
12.5m to 13.5m	Medium grey mottled 'spotted' siltstone.
13.5m to 15.0m	Beige green to mottled siltstone with occasional minor <10mm extensional quartz veins generally at low angles to the core axis.
15.0m to 15.5m	Minor shear at 45 degrees to the core axis in shaley siltstone.
15.5m to 18.5m	Beige green siltstone with occasional zones with minor quartz veining, e.g. from 18.2m to 18.5m which has trace pyrite with the quartz.
18.5m to 24.5m	Beige green siltstone with negligible quartz veining.
24.5m to 42.9m	Beige green siltstones and medium grey mottled siltstones with diffuse contacts except at 39.9m where the contact is discrete and at 35 degrees to the core axis. This is supported by similar bedding (?) orientations at 39.6m and 40.1m. There is negligible quartz veining.

42.9m to 44.0m	Quartz reef interpreted to be the Royal Tasman No.2 reef. From 42.9m to 43.2m the core shows banding or 'laminations' of roughly equivalent amounts of quartz and clayey (sericitised ?) wall rock siltstone. The bands are <2mm's and are at 75 degrees to the core axis. From 43.2m to 44.0m is massive quartz reef with a trace chalcopyrite. Other than this the quartz is white and clean but is slightly more translucent than the reef in GL1. From 43.2 to 44.0m the reef assays 0.022 ppm Au.
44.0m to 47.7m	Medium grey mottled 'spotted' siltstone with the red patches near to the contact with the reef as seen in GL1. The siltstone contains some extensional quartz veining with trace pyrite generally at moderate to low angles to the core axis.
47.7m E.O.H.	

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APPENDIX B

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335031

Phone (004) 316837 | 14 Thirkell St. COOEE TAS 7320 | Fax (004) 318890

ANALYTICAL REPORT No. 101210.60.11624

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

INVOICE TO:

Anglo Australian Resources N.L.
Level 1/44 Ord Street
WEST PERTH WA 6005

ORDER No.	PROJECT
G MACDONALD	

DATE RECEIVED	RESULTS REQUIRED
12/02/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
1	07/07/96	1	5

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
GL1 38.1-39.3 & others	DC Prep : GP032	Au,Au(R),Au(S)/GG309
GL1 38.1-39.3 & others	DC Prep : GP032	Cu,Pb,Zn,As/GA140

RESULTS TO

Mr G MacDonald
Anglo Australian Resources N.L.
Mangana Road
FINGAL TAS 7214

RESULTS TO

RESULTS TO

REMARKS

AUTHORISED OFFICER

Appendix 13

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Analabs Pty. Ltd.
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335032

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No	REPORT DATE	CLIENT ORDER No	PAGE
	101210.60.11624	07/07/96	G MACDONALD	1 OF 1

	SAMPLE No.	Au	Au(R)	Au(S)	Cu	Pb	Zn	As	As
METHOD		GG309	GG309	GG309	GA140	GA140	GA140	GA140	HA140
1	GL1 38.1-39.3	0.018	-	-	14	<3	13	135	-
2	GL1 39.3-40.3	0.023	-	0.021	27	3	35	<50	10.0
3	GL2 43.2-44.0	0.022	-	-	390	57	456	239	-
4	RS CHANNEL	0.021	-	-	8	<3	7	<50	39.0
5	RB FLOAT	<0.008	-	-	4	<3	4	<50	14.0
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24	DETECTION	0.008	0.008	0.008	2	3	2	50	0.5
25	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

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Analabs Pty. Ltd.
A.C.N. 004 591 864

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335033

Phone (004) 316837
14 Thirkell St. CODEE TAS 7320
Fax (004) 318890

ANALYTICAL REPORT No. 101210.60.11088

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA.

INVOICE TO:
Anglo Australian Resources N.L.
Level 1/44 Ord Street
WEST PERTH WA 6005

ORDER No.: G MACDONALD
PROJECT:
DATE RECEIVED: 17/07/95
RESULTS REQUIRED: ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	26/07/95	1	27

SAMPLE NUMBER	SAMPLE DESCRIPTION	ELEMENT/METHOD
VARIOUS	RO Prep : GP033	Au,Au([illegible])(S)/GB309

REMARKS

RESULTS TO:
Anglo Australian Resources N.L.
Level 1/44 Ord Street
WEST PERTH WA 6005

RESULTS TO:
Mr G MacDonald
Anglo Australian Resources N.L.
Mangana Road
FINGAL TAS 7214

RESULTS TO:

AUTHORISED OFFICER

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335034

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	101210.60.11088	26/07/95	G MACDONALD	1 OF 2

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		[illegible]	GG309	[illegible]						
1	GF 1	30.700	-	-						
2	GF 2	4.340	-	-						
3	GF 3	39.500	-	-						
4	GF 4	0.616	-	-						
5	BB 1	0.083	-	0.076						
6	BB 2	0.050	-	-						
7	S.W.D. 1	0.025	-	-						
8	S.W.D. 2	<0.008	-	-						
9	E.O.W 1	0.011	-	-						
10	S 1	<0.008	-	-						
11	S 2	<0.008	-	-						
12	A 1	2.540	2.760	-						
13	A 2	0.024	-	-						
14	F 1	0.480	-	-						
15	F 2	0.028	-	-						
16	P 1	41.400	-	-						
17	P 2	41.000	-	-						
18	P 3	23.300	-	-						
19	P 4	125.70	60.400	66.200						
20	P 5	30.340	-	-						
21	RT1 1	0.196	-	-						
22	RT1 2	0.016	0.014	-						
23	RT1 3	0.026	-	-						
24	RT2 1	124.00	193.00	141.00						
25	RT2 2	16.640	-	-						

[illegible]

IS = insufficient sample
SNR = sample not received

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335035

Analabs Pty. Ltd.
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ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	101210.60.11088	26/07/95	G MACDONALD	2 OF 2

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	RT2 3	28.200	-	-						
2	RT2 4	0.640	-	-						
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	0.008	0.008	0.008						
25	UNITS	ppm	ppm	ppm						

[illegible] sample not received

AUTHORISED

APPENDIX C 90-3424 R

335036

Landsat Thematic Mapper - Image Maps

Denison Project
Gladstone Project
Tasmania

prepared for

Anglo Australian Resources N.L.
1st Floor, 44 Ord Street
West Perth, Western Australia 6005
619 322 5811

by

Henry Truebe
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3113 East Table Mountain Road
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August 15, 1996

Landsat Thematic Mapper - Image Maps

Denison Project
Gladstone Project
Tasmania

Summary and recommendations

Remote sensing information has been found to be a useful supplement to existing geologic maps at projects undertaken by Anglo Australian Resources. Work on remote sensing image-maps covering the Denison project area was begun in June of 1995; this work was later expanded to include the Gladstone area. The basic data for this work is a Landsat thematic mapper scene acquired 19 May 1995 which covers an area of 110 x 60 kilometers in northeastern Tasmania. A total of forty eight maps were made and are included in this report.

The maps are of six kinds. The True color, False color and PET image maps were made directly from the satellite data by using various enhancement techniques. Geologic maps provided by AAR were scanned using a color scanner, rotated and cropped to fit a standard map format. The Existing maps allow convenient comparison to the remote sensing image maps. Maps showing Interpreted features were derived from the above maps to illustrate areas of possible hydrothermal alteration and linear features as well as the locations of known gold deposits. A final map was created to show areas with the highest gold exploration potential.

The Exploration guides maps outline areas worthy of further exploration. In general the favorable areas coincide with the Denison and Gladstone goldfields. It should be noted that these favorable areas were determined rather subjectively are only intended to supplement recommendations of personnel who are familiar with the projects. The maps in this report have been arranged so that they may be conveniently reviewed by people who are familiar with the area. My work will be successful if it provides new insights and guides to prospective ground.

335038

Landsat Thematic Mapper - Image Maps

Denison Project
Gladstone Project
Tasmania

Contents

Landsat Thematic Mapper - Image Maps

Denison Project
Gladstone Project
Tasmania

Report on work done

This report covers two project areas being explored by Anglo Australian Resources, N.L. in northeastern Tasmania, Australia (Figure 1). It was felt that the application of remote sensing to the exploration effort would provide a new perspective to an area that has already seen considerable geologic mapping. The initial request for work, made in June of 1995, covered only the Gladstone project area. The area was soon expanded to cover both the Denison and the Gladstone project areas.

Each of the project areas were broken into four quadrangles at a scale of 1:100,000 with a 2 km overlap (Figure 1). Breaking the map coverage in to smaller areas reduces printing costs and allows maps to be copied widely available color copies. It also makes the maps convenient for field use without folding. For a larger perspective the four maps of each project area may be joined by using manual mosaicing techniques.

The boundaries of the maps fall at UTM coordinates and therefore will be at a slight angle to maps whose boundaries fall on longitude and latitude boundaries. Both UTM and longitude and latitude are shown on all the maps. The exact boundaries of the project areas are not shown on the quadrangles.

Existing Maps

Most of the Denison area is covered by the Pipers River quadrangle (Marshall, 1965) at a scale of 1:63,360. The Gladstone area is covered by the Blue Tier quadrangle (McClenaghan, and Williams, 1983), the Boobyalla quadrangle (Baillie, Turner, and

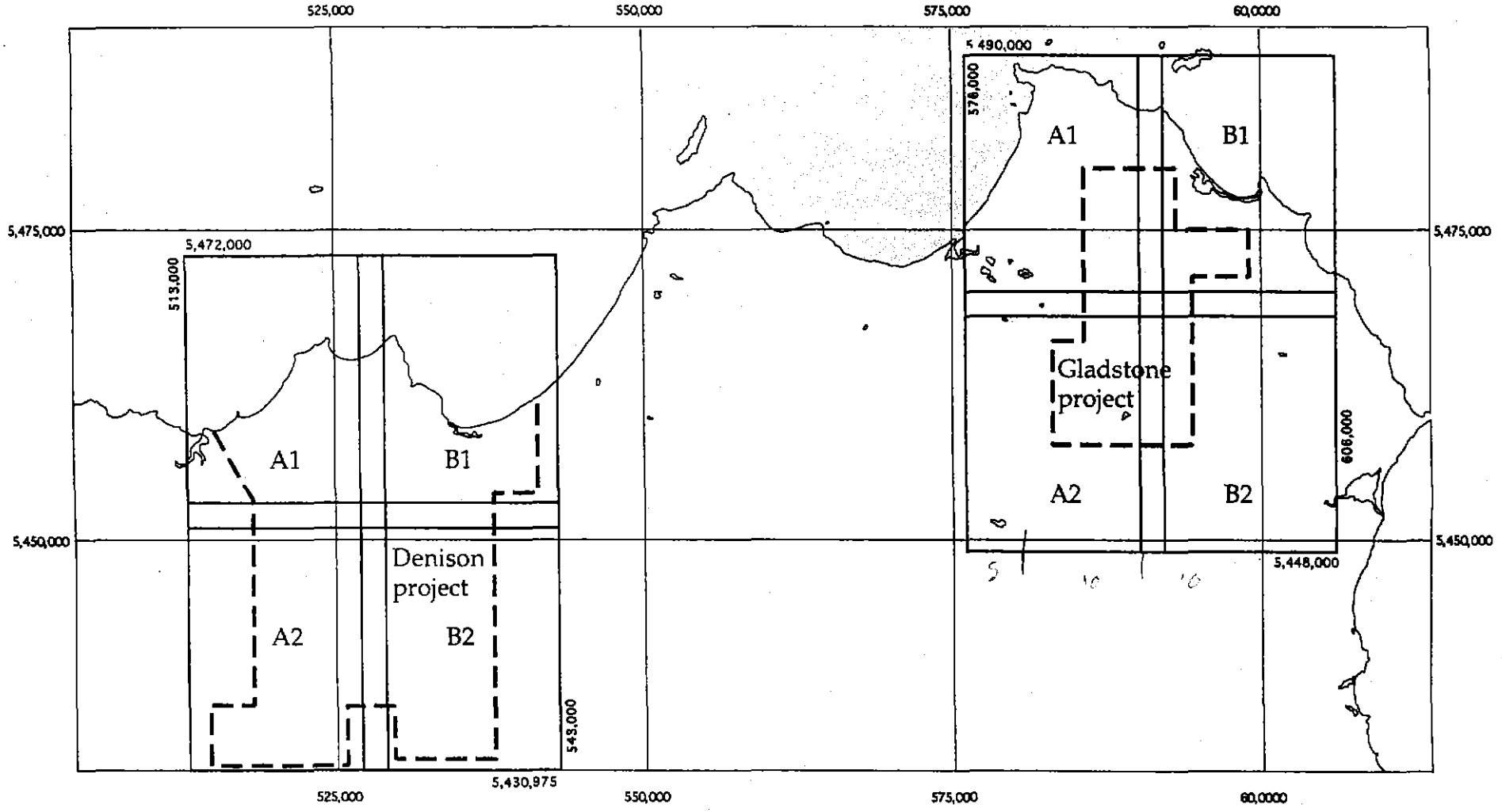

Figure 1. Approximate locations of the Denison and Gladstone Project areas (green) in northeastern Tasmania. Map quadrangles (black) show boundaries (with UTM coordinates), naming conventions and areas of overlap.

Cox, 1979), the Eddystone quadrangle (Baillie, 1979) and the Ringarooma quadrangle (Brown, and all, 1977), all published at a scale of 1:50,000.

The geologic quadrangle maps (above) were scanned using a color scanner, registered to the UTM map projection and electronically trimmed to fit within the boundaries of the Denison and Gladstone maps. The scale of the maps was reduced about 50% so some detail is lost but it should be relatively easy to refer to the original maps if necessary.

Data and image processing

The project areas fall at the boundary of two, nominal Landsat scenes - 090/088 and 090/089. A 110 km (east-west) by 60 km (north-south) sub-scene was created from the Landsat data by ACRES (Australian Center for Remote Sensing). Original data were acquired by the Landsat 5 satellite on 19 May 1995, a date at which clouds did not obscure northeastern Tasmania. The data were re-sampled using cubic convolution to create a UTM map projection with 25 meter pixels.

As work progressed on the data it was discovered that images were rather dark (limited dynamic range of the data), perhaps because of the latitude. Efforts to improve the dynamic range of the data by histogram stretching increased problems with noise and striping (particularly obvious in the ocean areas). The results shown on the maps represent a compromise that shows as much discrimination as possible without introducing objectionable noise.

Image maps

Three image maps were created for each quadrangle - True color, False color and PET (proprietary enhancement technique). The true color image map (123 -> BGR) shows the area approximately as it would appear to a human eye from an aircraft above the property. The blue on the map is energy reflected in the blue part of the

electromagnetic spectrum (TM band 1), the green on the map is energy reflected in the green part of the electromagnetic spectrum (TM band 2) and the red on the map is energy reflected in the red part of the electromagnetic spectrum (TM band 3). The False color image map (257 -> BGR) shows a different perspective. The blue on the map is energy reflected in the green part of the electromagnetic spectrum (TM band 2), the green on the map is energy reflected in the near infrared part of the electromagnetic spectrum (TM band 5) and the red on the map is energy reflected in the mid infrared part of the electromagnetic spectrum (TM band 7).

The band combination used for the False color map is different than the one I use in more arid parts of the world. There it is more effective to use TM bands 1, 4 and 7 mapped to blue, green and red. If this combination were used for Tasmania the resulting images would be brilliant green because of the strong vegetation reflectance in band 4. The 257 combination reduces the vegetation effects considerably.

The PET image map was generated using ratios of the same bands (2, 5 and 7) divided by the first principal component of all bands. The intent is to remove topographic shadows and to emphasize the differences in surface materials. Again, Tasmania is blessed (?) with abundant vegetation and unfortunately the surface materials that can be discriminated are plants and not rocks.

Interpreted features

Basic photo-interpretation techniques may be applied to data acquired by satellite as well as to aerial photographs. Because of the great amount of vegetation and advanced weathering in the project areas the discrimination of lithologic types is difficult to impossible. Fortunately is is also unnecessary, since good published maps exist. The perspective provided by remote sensing does have advantages in the recognition of linear features that may not be obvious on the ground. The linear features may or may not be high-angle faults associated with gold mineralization.

The linear features shown on the Interpreted features maps are commonly caused by alignments of features on the ground - valleys, ridge lines, streams, etc. An effort was made to ignore man-made linear features such as field boundaries and roads but this was not entirely successful, particularly in the interpretation of the PET image where topographic references are obscured. The alignment of sand dunes caused by the apparently strong northwest winds generated some linear features that are probably not related to the underlying geology.

It should be remembered that the linear features shown on the maps are not always faults. However, if a particular linear feature or group of linear features coincides with known fault or vein directions, the linear features could allow the recognition of more prospective ground.

Additional processing of the TM data allows the automatic recognition of features that may not be obvious using simple photo interpretation techniques. One very effective enhancement is to create ratio images. By dividing, for example, TM band 3 (visible red) by TM band 1 (visible blue) one can create an image showing areas that are "bright" in the red band and "dim" in the blue band. Hematitic soils are bright in the red part of the spectrum and dim in the blue part of the spectrum; these would appear as bright areas on the ratio image. The same operation reduces white areas (clouds, snow, some sands, etc), which are "bright" in both red and blue, and black areas (basalts), which are "dim" in both red and blue to neutral grays. The end result is the automatic selection of anomalously red areas from the data. Further image processing can isolate the anomalous areas and show them on a map.

Another effective ratio is band 5 divided by band 7 which enhances phylosilicate minerals such as clays and sericite. Both the 3/1 and 5/7 anomalies are shown on the Interpreted features maps. It should be noted that the anomalies are not infallible (dry, yellow-red vegetation, for example, can create a false iron-oxide anomaly) and the ratios should be used to extend field interpretations rather than replace them.

Gold deposits shown on the Interpreted features maps are those shown on the published maps. I have assumed that the alluvial deposits down stream from the Gladstone goldfield are gold, not tin, deposits since they are shown somewhat ambiguously as "alluvial workings" on the map.

It is interesting to note that tidal fluctuations in Tasmania seem to be great and that the TM data were collected at the time of low tide. This provides some of the best, vegetation-free outcrop in the region and shows geology beyond the limits the published maps.

Exploration Guides

The Exploration Guides maps for the Denison and Gladstone were derived intuitively by looking at the Existing and Interpreted features maps. Features that were spatially related to known gold deposits were considered to be important to the occurrence of gold mineralization. The coincidence of favorable features indicated areas that were especially favorable. This general procedure is commonly followed by exploration geologists using overlaying maps and was described as early as 1948 by McKinstry. A more formal approach incorporating multiple data types (Truebe, 1994) was not undertaken for this work.

Three factors were considered to be important for the occurrence of gold deposits in the Denison project area. These were proximity to known gold deposits, contact metamorphosed Mathinna series sedimentary rocks and NE-SW trending linear features. The area of influence of known gold deposits was determined by measuring the mean distance between deposits. The mean plus one standard deviation was found to be 4 kilometers and this figure was used to set the area of influence. The outlines of metamorphosed Mathinna series rocks were traced from the Existing geologic maps layer, with some extrapolation into areas covered by post-Mathinna rocks. The NE-SW linear features were traced from the Interpreted features map layer and expanded to about 1 km. These features are shown on the

Exploration Guides maps and areas of coincidence of two or three of the features are outlined.

Two factors were considered to be important for the occurrence of gold deposits in the Gladstone project area. These were proximity to known gold deposits and contact metamorphosed Mathinna series sedimentary rocks. These features were outlined on the Exploration Guides maps and areas of coincidence of two of the features were outlined.

It should be noted that the Exploration guides are highly subjective and I would give no argument to geologists having other opinions. The only firm belief I have is that the presence of known gold deposits is a good indication of gold potential. NE-SW linear features in the Denison area seem important, but NE-SW linear features may be important in the Gladstone area as well as the Denison area. Gold deposits in both project areas seem correlated with contact metamorphosed Mathinna rocks and strong case could be made for metamorphism as an ore-forming mechanism (Phillips and Hughes, 1995). However, gold deposits in the Alberton quadrangle (McClennaghan and all, 1993) are found in un-metamorphosed Mathinna rocks.

References

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335049 **Gladstone Project**
Quadrangle A1

Explanation:
TM band 1 - blue
TM band 2 - green
TM band 3 - red

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

True color image map

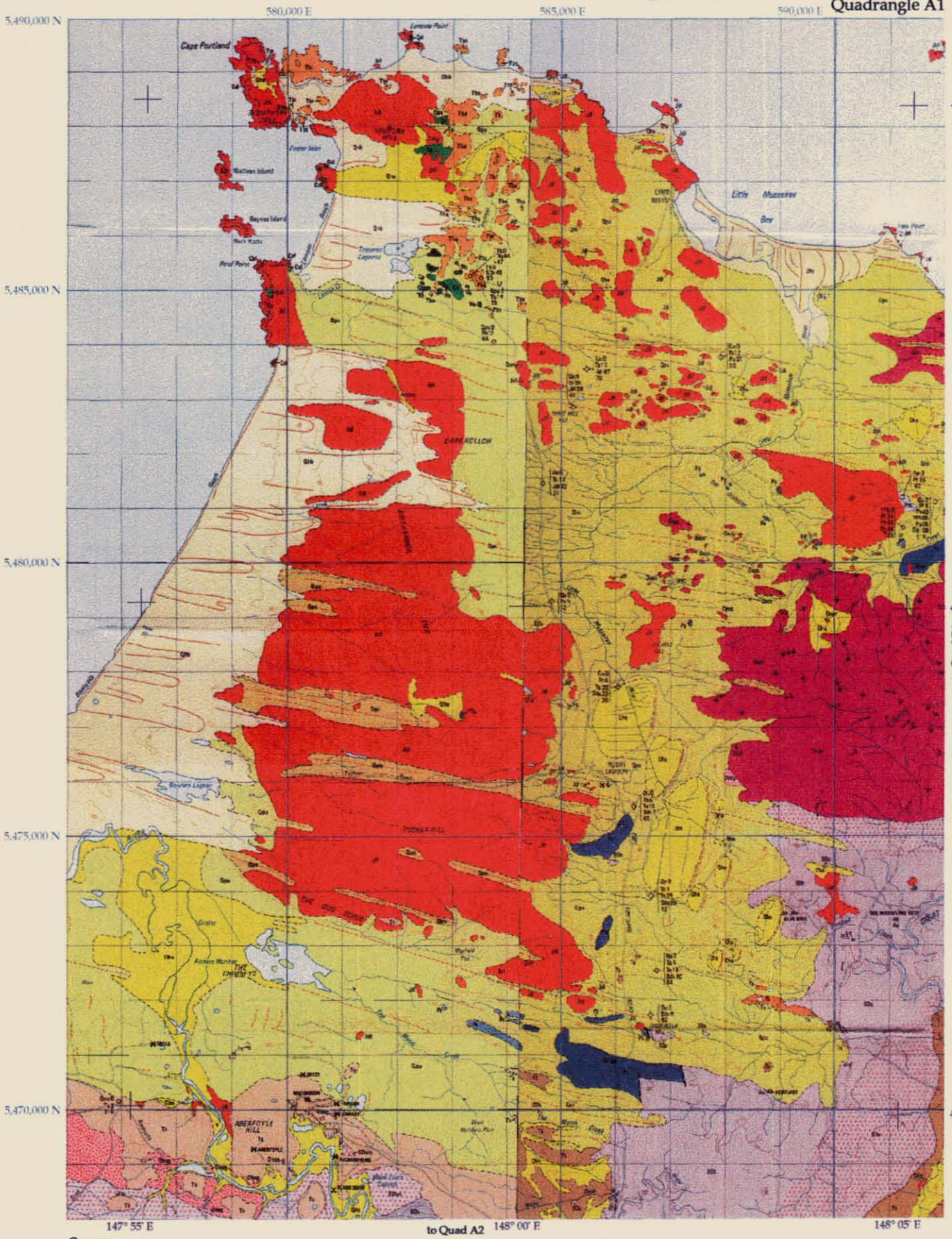
0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A1

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335050 **Gladstone Project**
Quadrangle A1



Sources
west part: Baillie, and all 1979
east part: Baillie, 1984

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Existing Geologic Maps

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A1

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335051

Gladstone Project
Quadrangle A1

580,000 E
585,000 E
590,000 E

5,490,000 N
5,485,000 N
5,480,000 N
5,475,000 N
5,470,000 N

40° 45'
40° 50'
40° 55'

to Quad B1

5 cm

147° 55' E
to Quad A2
148° 00' E
148° 05' E

Explanation:
TM band 2 - blue
TM band 5 - green
TM band 7 - red

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

False color image map

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A1

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335052

Gladstone Project
Quadrangle A1

580,000 E
585,000 E
590,000 E
5,490,000 N
5,485,000 N
5,480,000 N
5,475,000 N
5,470,000 N
40° 45'
40° 50'
40° 55'
147° 55' E
148° 00' E
148° 05' E
to Quad B1
to Quad A2
5 cm

Explanation:

PET is a proprietary enhancement technique designed to remove topographic shadows and emphasize surface materials.

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

PET image map

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A1

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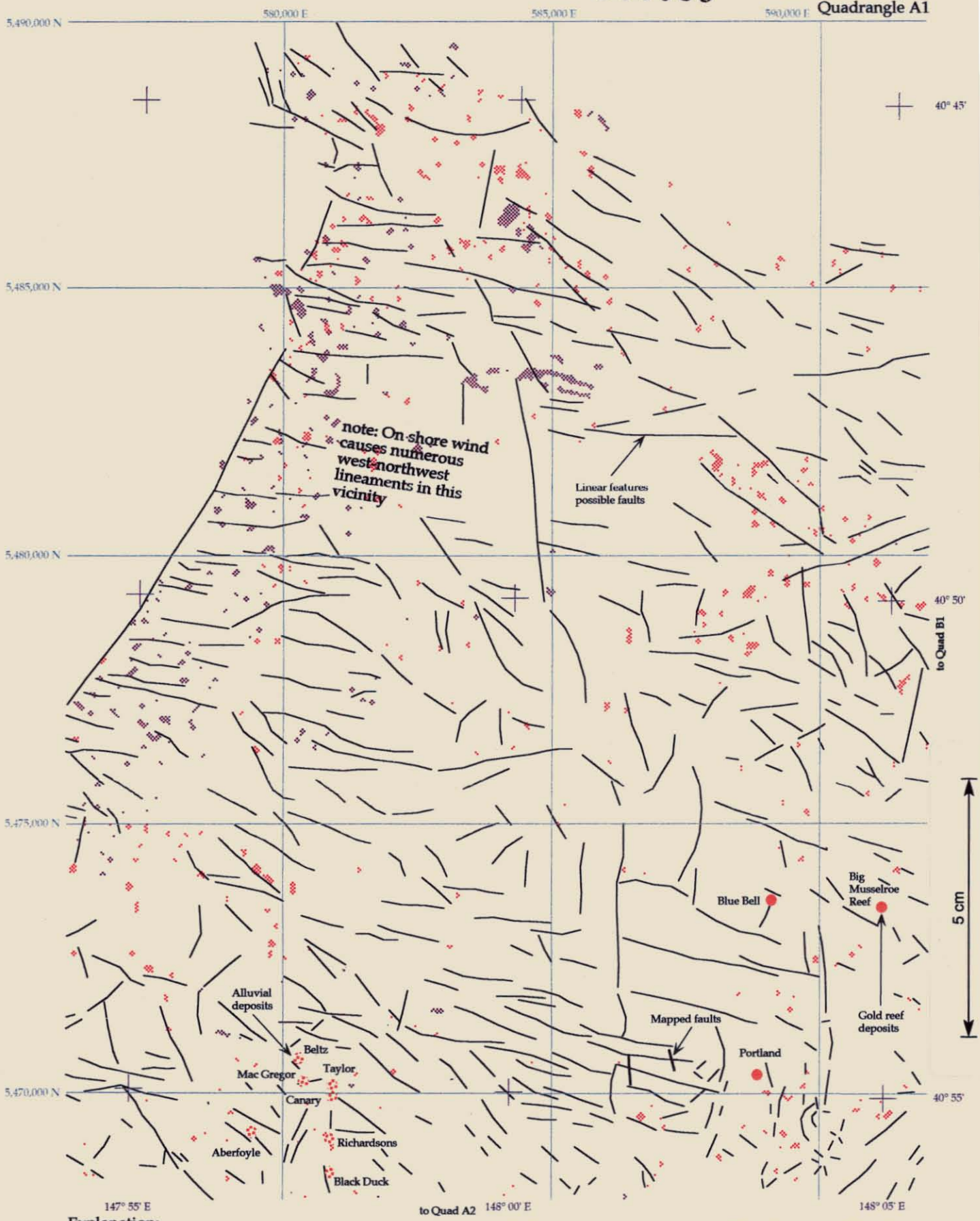
Anglo Australian Resources N.L.
Perth, Western Australia

335053

Gladstone Project
Quadrangle A1



Explanation:
High 3/1 ratio (iron enhancement) shown as red
High 5/7 ratio (clay enhancement) shown as purple
Other features are labeled on map

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Interpreted features

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A1

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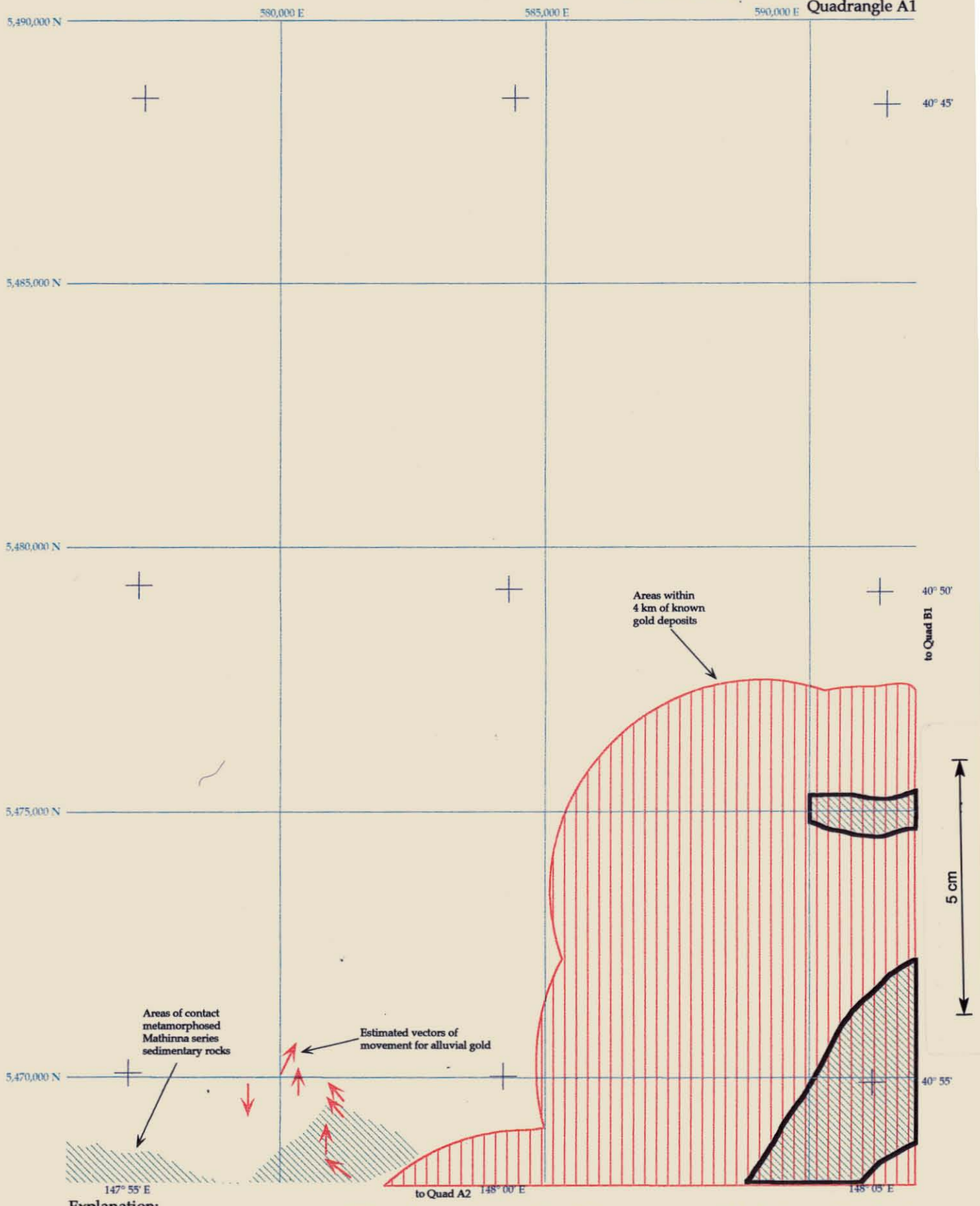
Perth, Western Australia

335054 **Gladstone Project**
Quadrangle A1



Explanation:
Areas containing 2 favorable factors are surrounded by heavy black line.

13 August 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Exploration Guides

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A1

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335055

Gladstone Project
Quadrangle A2

580,000 E

to Quad A1

585,000 E

590,000 E

5,470,000 N

5,465,000 N

5,460,000 N

5,455,000 N

5,450,000 N

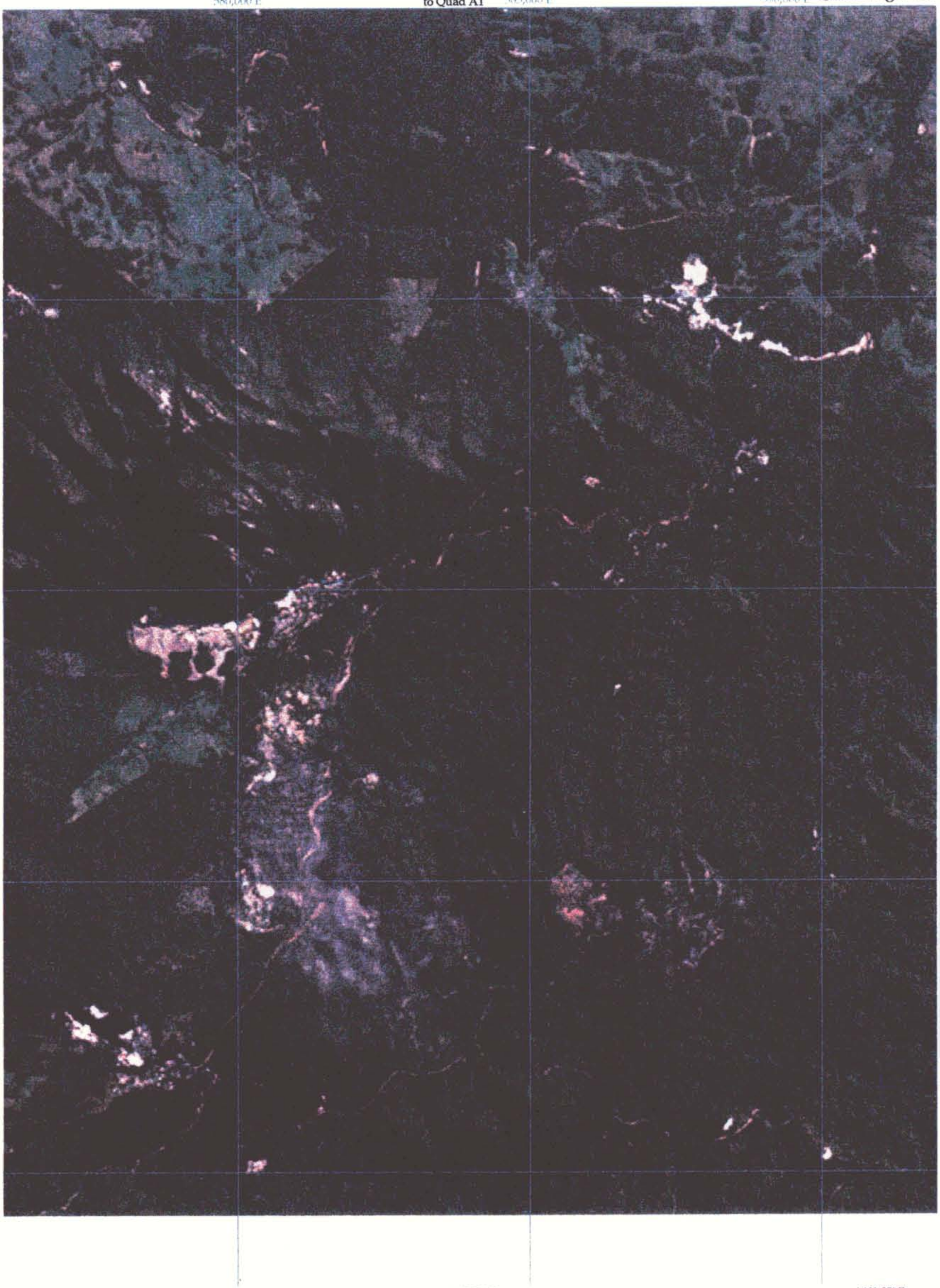
40° 5

41° 00

to Quad B2

41° 05

5 cm



147° 55' E

148° 00' E

148° 05' E

Explanation:
TM band 1 - blue
TM band 2 - green
TM band 3 - red

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

True color image map

0 1 2 3 4 5 km

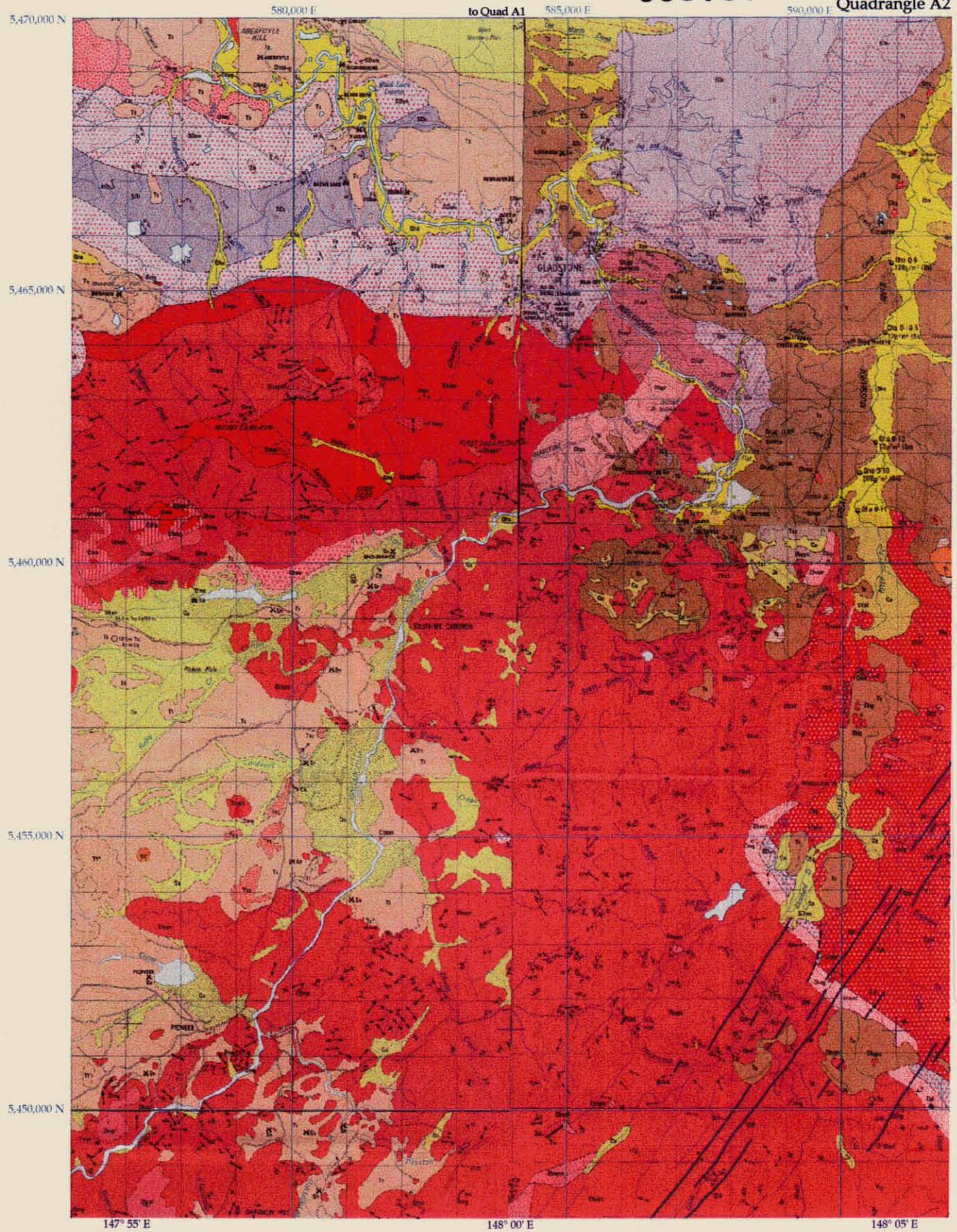
Scale 1:100,000

Gladstone Project
Quadrangle A2

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335056

Gladstone Project
Quadrangle A2



Sources:
northwest part: Baillie and all, 1979
northeast part: Baillie, 1984
southwest part: Brown and all, 1977
southeast part: McClenaghn and all, 1983

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Existing Geologic Maps

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A2

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335057

Gladstone Project
Quadrangle A2

580,000 E

to Quad A1

585,000 E

590,000 E

5,470,000 N

5,465,000 N

5,460,000 N

5,455,000 N

5,450,000 N

40° 5

41° 00

to Quad B2

5 cm

41° 05

147° 55' E

148° 00' E

148° 05' E

Explanation:
TM band 2 - blue
TM band 5 - green
TM band 7 - red

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

False color image map

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A2

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335058

Gladstone Project
Quadrangle A2

580,000 E | to Quad A1 | 585,000 E | 590,000 E

5,470,000 N | 5,465,000 N | 5,460,000 N | 5,455,000 N | 5,450,000 N

40° 5 | 41° 00 | 41° 05

to Quad B2

5 cm

147° 55' E | 148° 00' E | 148° 05' E

Explanation:
PET is a proprietary enhancement technique designed to remove topographic shadows and emphasize surface materials.

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

PET image map

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle A2

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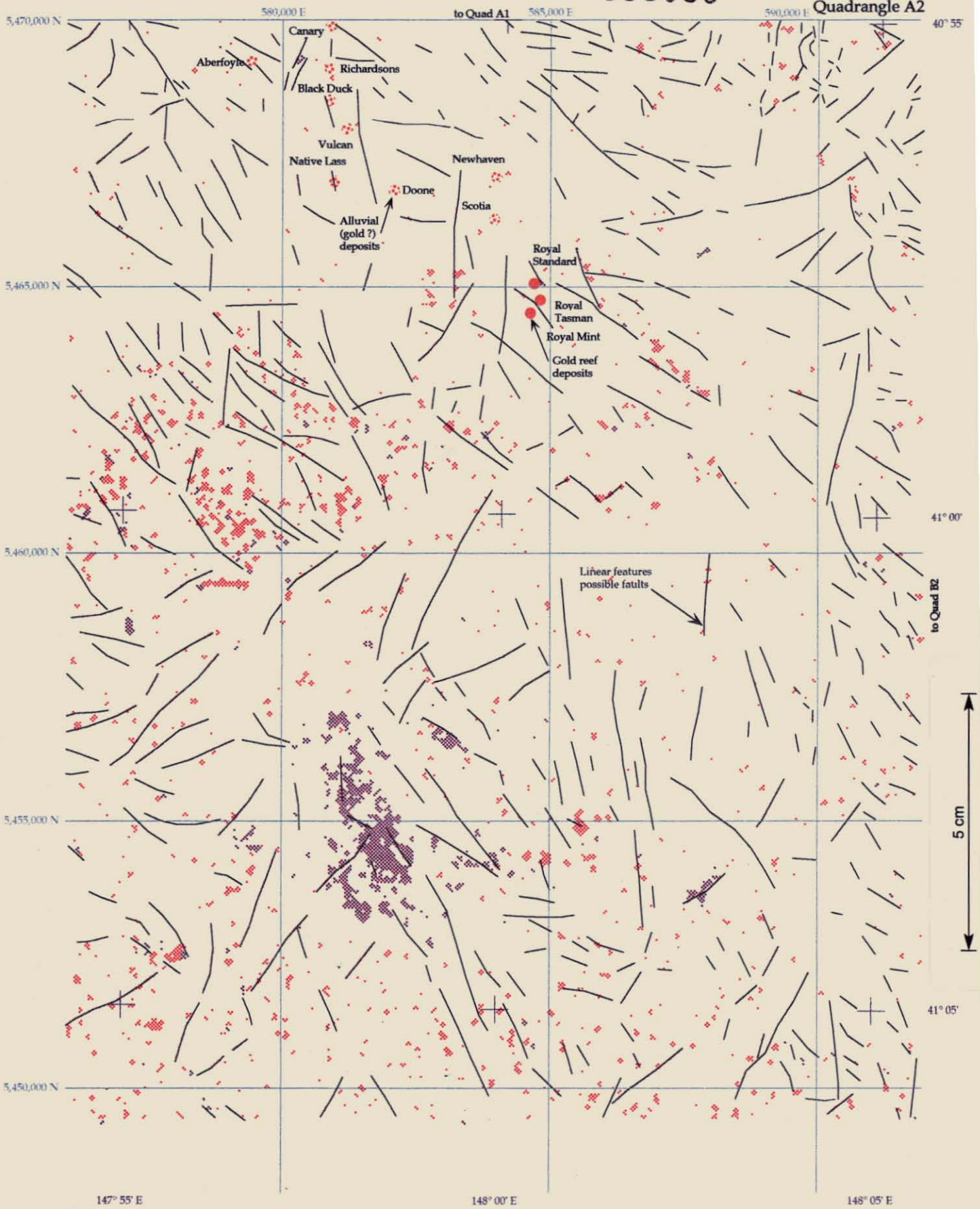
Anglo Australian Resources N.L.
Perth, Western Australia

335059

Gladstone Project
Quadrangle A2



Explanation:
High 3/1 ratio (iron enhancement) shown as red
High 5/7 ratio (clay enhancement) shown as purple
Other features are labeled on map

24 June 1996
Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Interpreted features

0 1 2 3 4 5 km

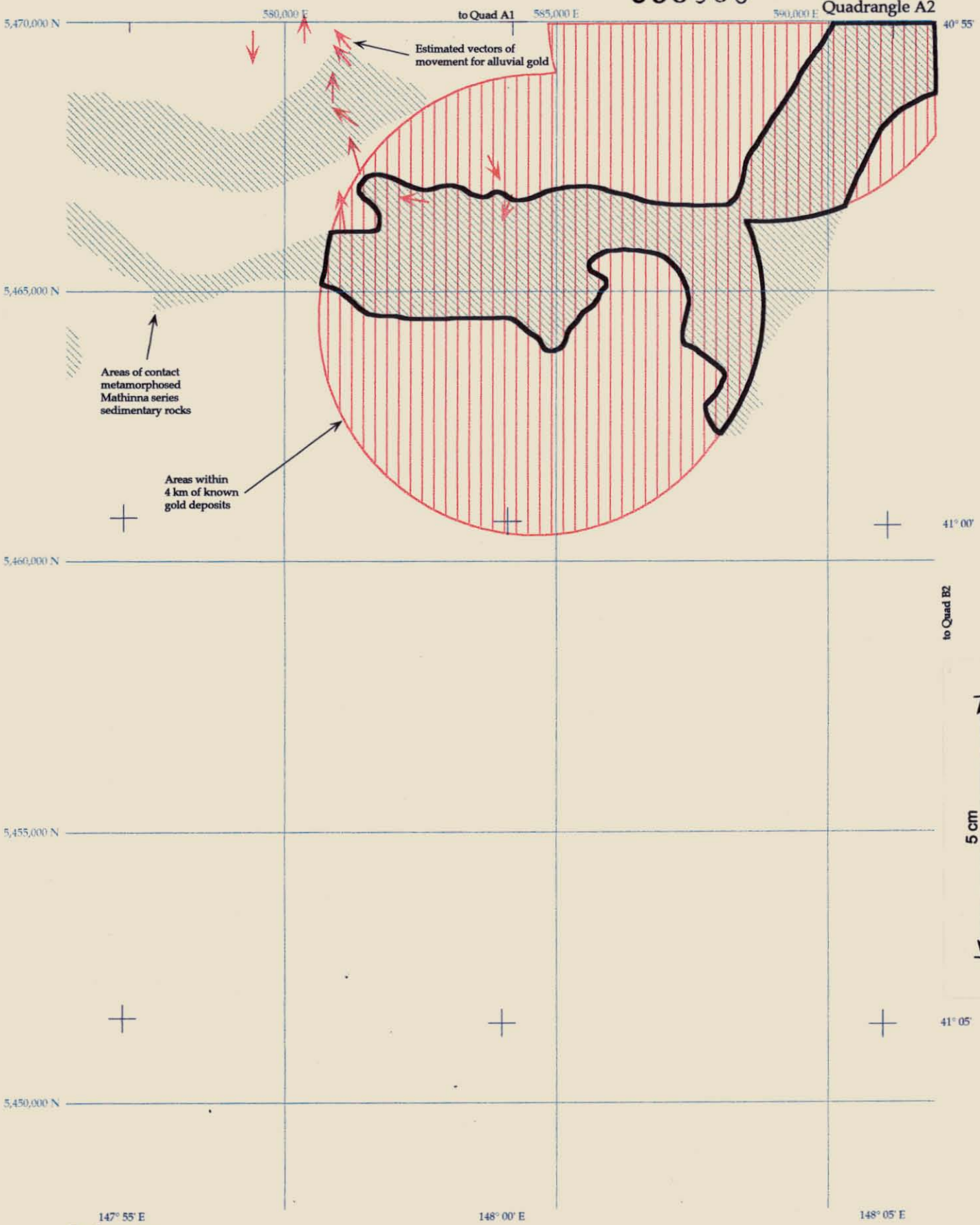
Scale 1:100,000

Gladstone Project
Quadrangle A2

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335060

Gladstone Project
Quadrangle A2



Explanation:
Most favorable areas containing 2 favorable factors are surrounded by heavy black line.

Exploration Guides

Gladstone Project
Quadrangle A2

13 August 1996
Image processing and graphics
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Tucson, Arizona

0 1 2 3 4 5 km

Scale 1:100,000

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335061

Gladstone Project
Quadrangle B1

590,000 E
595,000 E
600,000 E
5,490,000 N
5,485,000 N
5,480,000 N
5,475,000 N
5,470,000 N
40° 45
40° 50
40° 55
to Quad A1
5 cm
148° 05' E
to Quad B2 148° 10' E
148° 15' E

Explanation:
TM band 1 - blue
TM band 2 - green
TM band 3 - red

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

True color image map

0 1 2 3 4 5 km

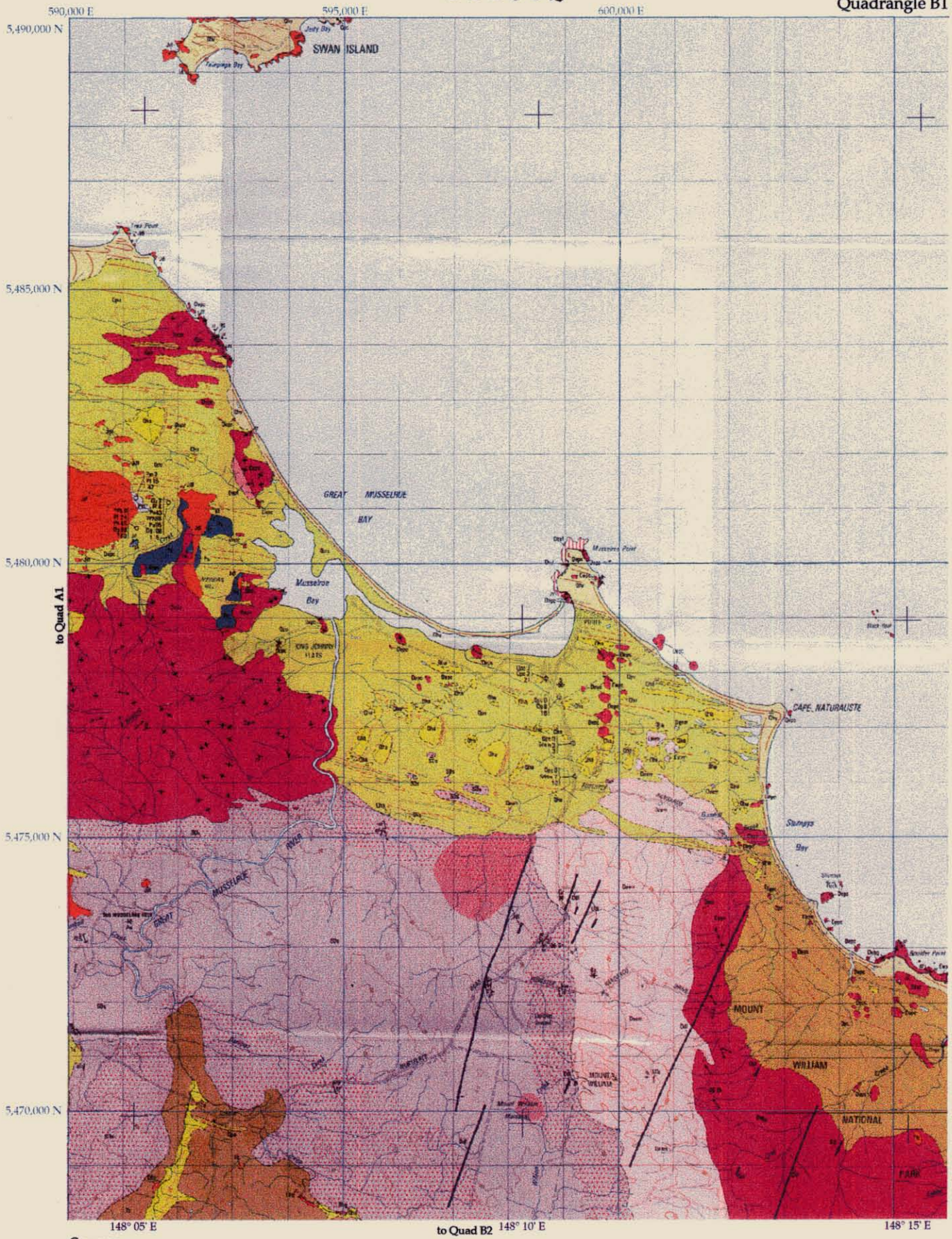
Scale 1:100,000

Gladstone Project
Quadrangle B1

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335062

Gladstone Project
Quadrangle B1



Source:
Baillie, 1984

Existing Geologic Map

Gladstone Project
Quadrangle B1

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

0 1 2 3 4 5 km

Scale 1:100,000

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335063

Gladstone Project
Quadrangle B1

590,000 E
595,000 E
600,000 E
5,490,000 N
5,485,000 N
5,480,000 N
5,475,000 N
5,470,000 N
40° 45
40° 50
40° 55
to Quad A1
5 cm
148° 05' E
148° 10' E
148° 15' E
to Quad B2

Explanation:
TM band 2 - blue
TM band 5 - green
TM band 7 - red

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

False color image map

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle B1

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335064

Gladstone Project
Quadrangle B1

590,000 E
595,000 E
600,000 E
5,490,000 N
5,485,000 N
5,480,000 N
5,475,000 N
5,470,000 N
40° 45
40° 50
40° 55
to Quad A1
5 cm
148° 05' E
148° 10' E
148° 15' E
to Quad B2

Explanation:

PET is a proprietary enhancement technique designed to remove topographic shadows and emphasize surface materials.

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

PET image map

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle B1

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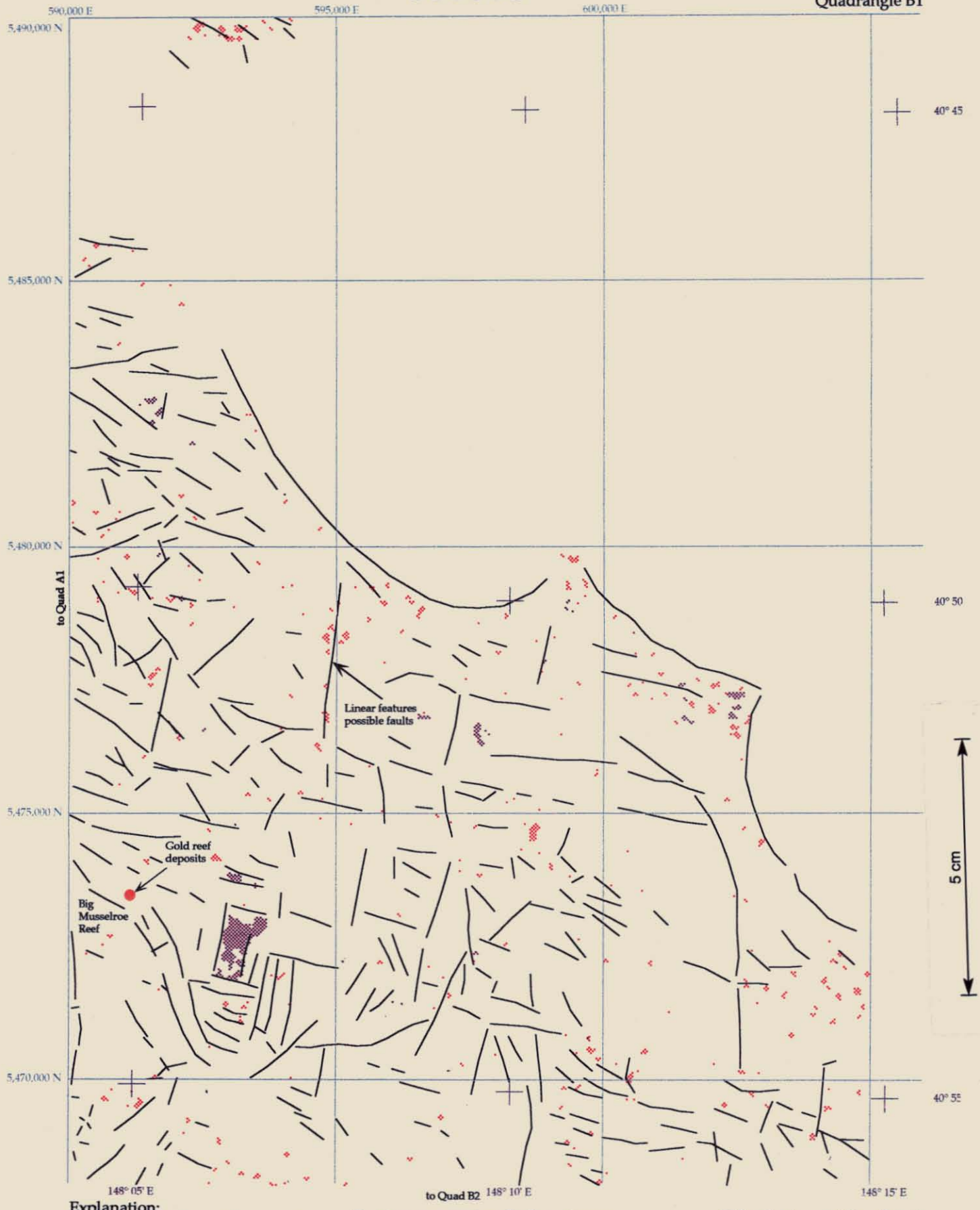
Anglo Australian Resources N.L.
Perth, Western Australia

335065

Gladstone Project
Quadrangle B1



Explanation:
High 3/1 ratio (iron enhancement) shown as red
High 5/7 ratio (clay enhancement) shown as purple
Other features are labeled on map

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Interpreted features

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle B1

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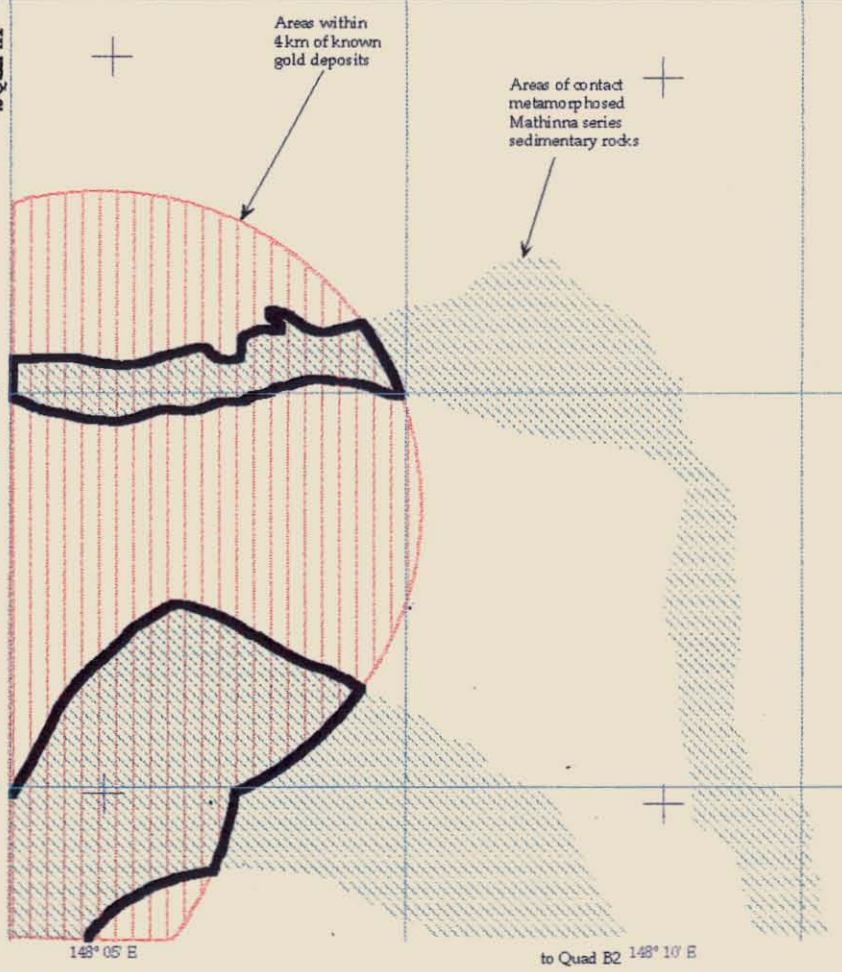
Anglo Australian Resources N.L.
Perth, Western Australia

335066

Gladstone Project
Quadrangle B1

590,000 E
595,000 E
600,000 E
5,490,000 N
5,485,000 N
5,480,000 N
5,475,000 N
5,470,000 N
40° 45
40° 50
40° 55
148° 05' E
148° 10' E
148° 15' E
to Quad A1
to Quad B2



5 cm

Explanation:
Most favorable areas containing 2 favorable factors are surrounded by heavy black line.

13 August 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Exploration Guides

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle B1

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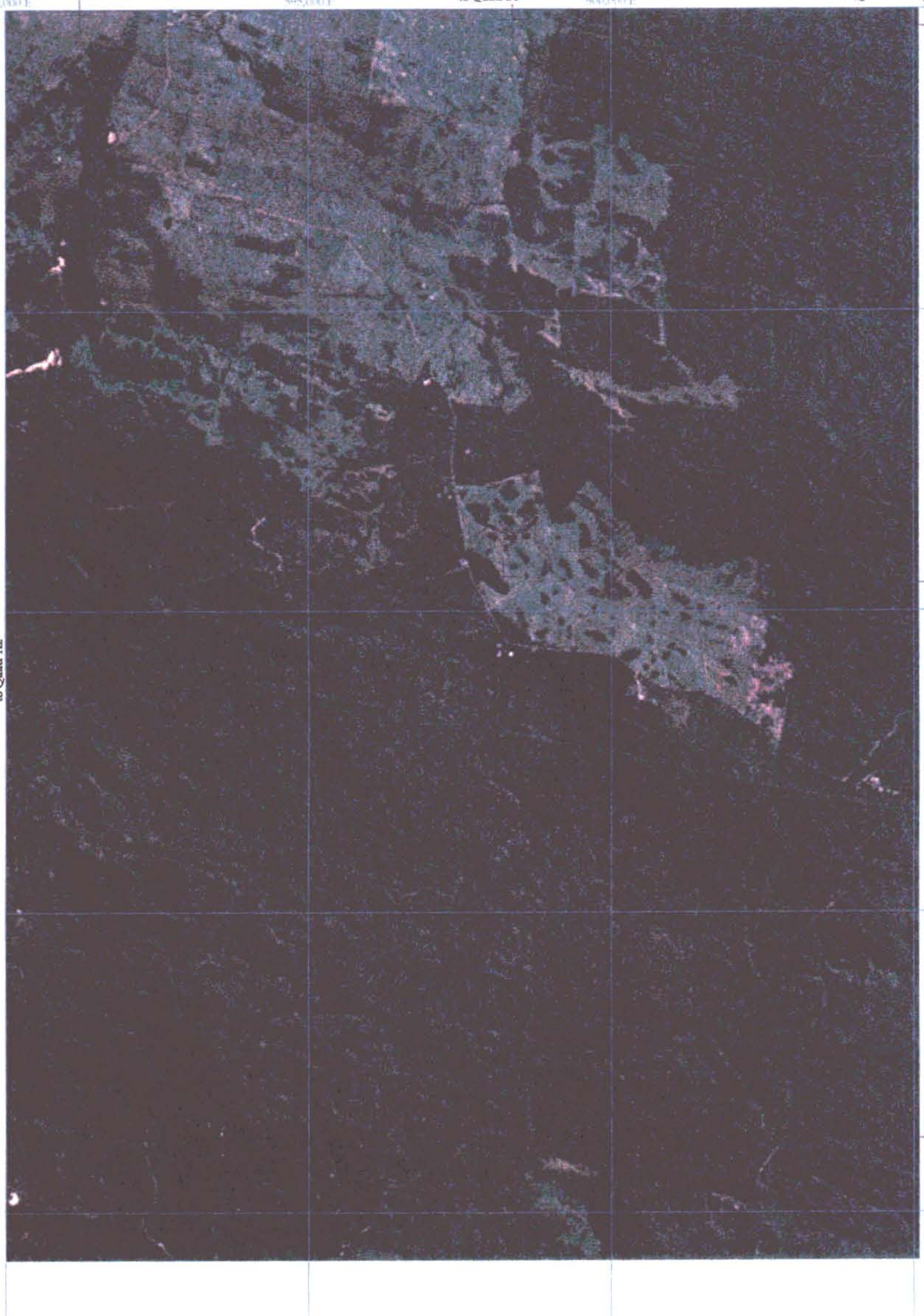
Perth, Western Australia

335067

Gladstone Project
Quadrangle B2



Explanation:
TM band 1 - blue
TM band 2 - green
TM band 3 - red

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

True color image map

0 1 2 3 4 5 km

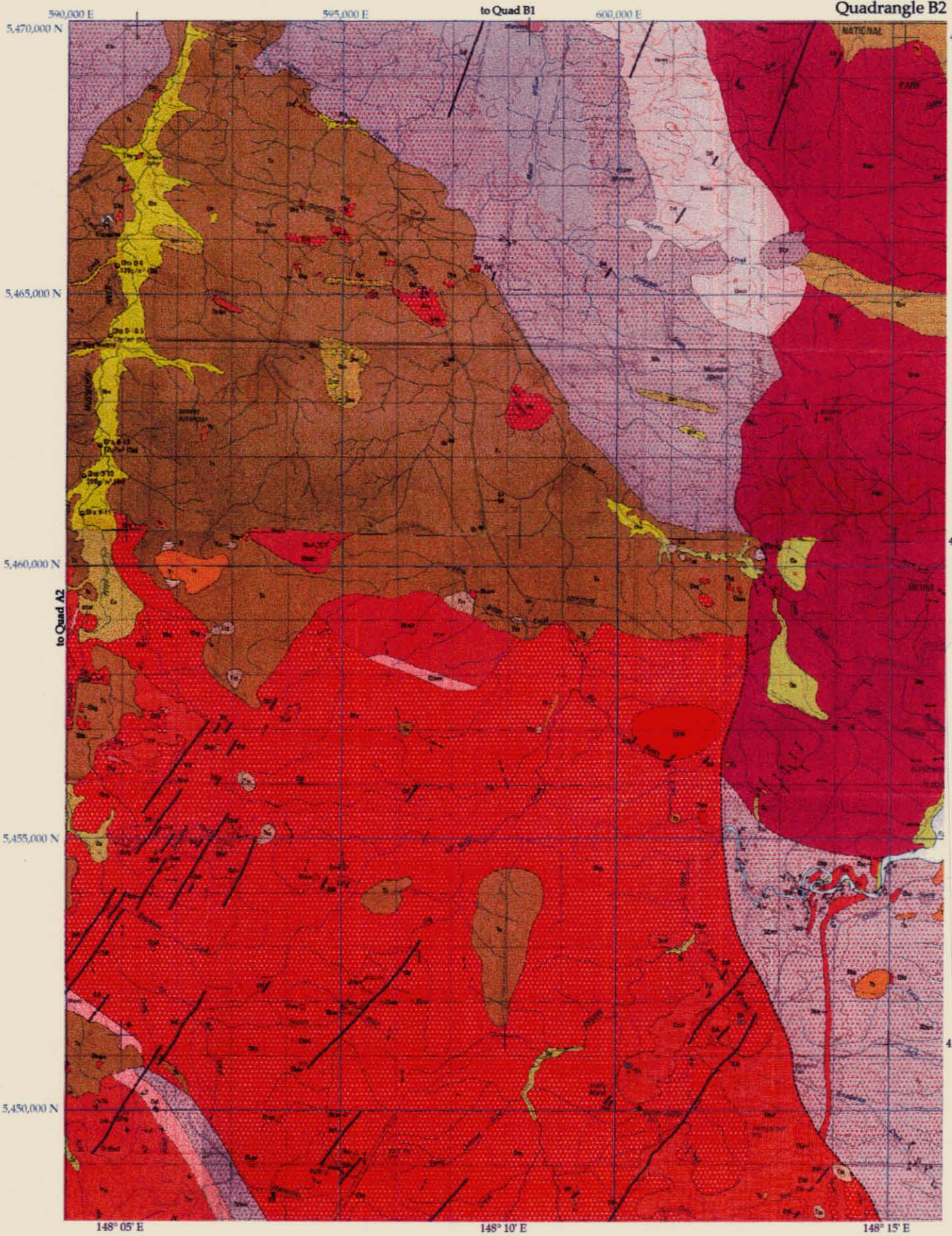
Scale 1:100,000

Gladstone Project
Quadrangle B2

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335068

Gladstone Project
Quadrangle B2



Sources:
top part: Baillie, 1984
bottom part: McClenahgn, 1983

Existing Geologic Maps

Gladstone Project
Quadrangle B2

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

0 1 2 3 4 5 km

Scale 1:100,000

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335069

Gladstone Project
Quadrangle B2

590,000 E
595,000 E
to Quad B1
600,000 E
5,470,000 N
40° 55'
5,465,000 N
5,460,000 N
41° 00'
to Quad A2
5,455,000 N
5,450,000 N
41° 05'
5 cm
148° 05' E
148° 10' E
148° 15' E

Explanation:
TM band 2 - blue
TM band 5 - green
TM band 7 - red

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

False color image map

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle B2

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335070

Gladstone Project
Quadrangle B2

to Quad B1

595,000 E

600,000 E

5,470,000 N

40° 55' S

5,465,000 N

5,460,000 N

41° 00' S

to Quad A2

5,455,000 N

5 cm

5,450,000 N

41° 05' S

148° 05' E

148° 10' E

148° 15' E

Explanation:
PET is a proprietary enhancement technique designed to remove topographic shadows and emphasize surface materials.

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

PET image map

0 1 2 3 4 5 km

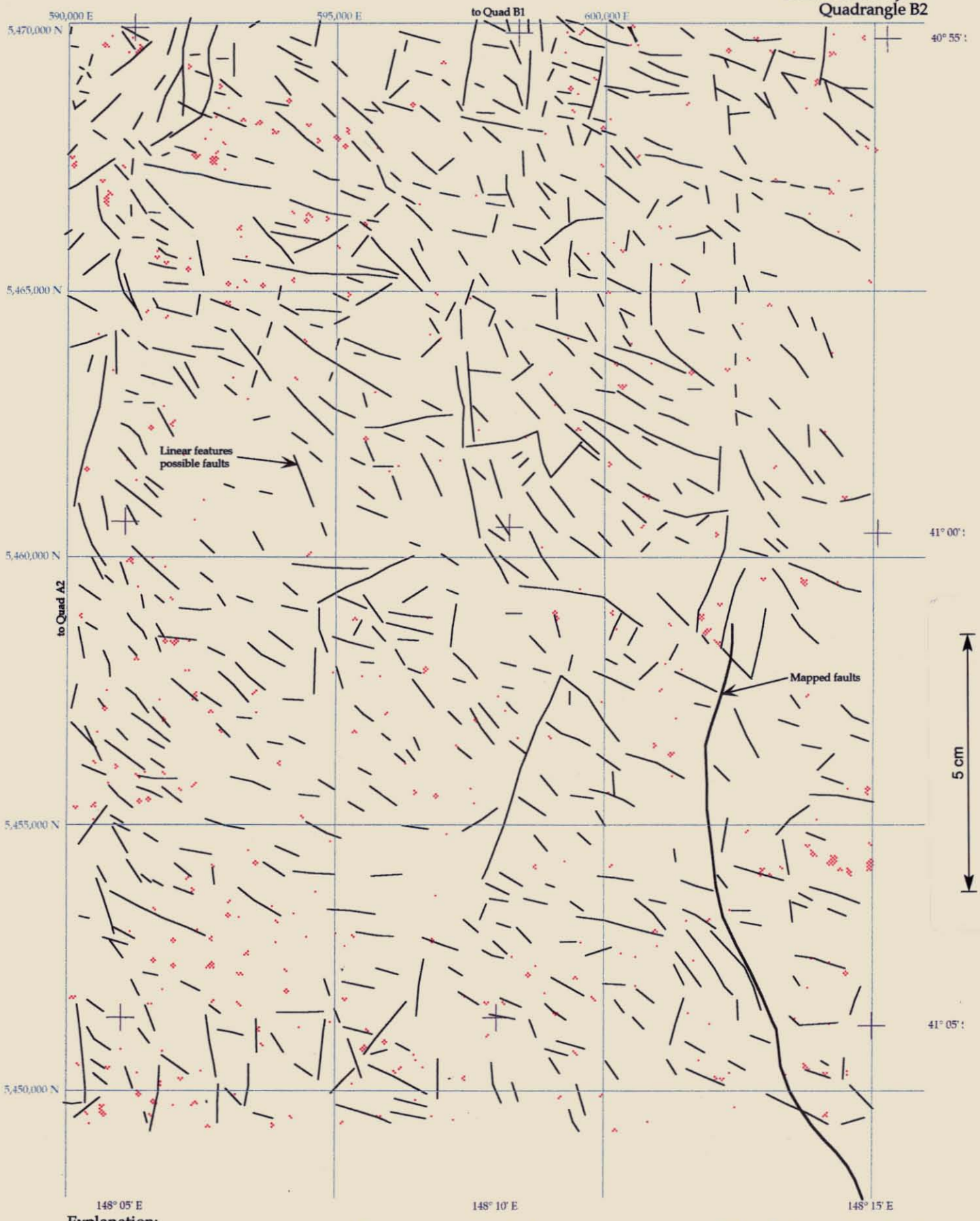
Scale 1:100,000

Gladstone Project
Quadrangle B2

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335071

Gladstone Project
Quadrangle B2



Explanation:
High 3/1 ratio (iron enhancement) shown as red
High 5/7 ratio (clay enhancement) shown as purple
Other features are labeled on map

24 June 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Interpreted features

0 1 2 3 4 5 km

Scale 1:100,000

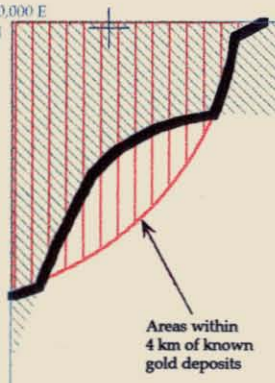
Gladstone Project
Quadrangle B2

prepared for
Anglo Australian Resources N.L.
Perth, Western Australia

335072

Gladstone Project
Quadrangle B2

590,000 E
595,000 E
to Quad B1
600,000 E
5,470,000 N
40° 55' S
5,465,000 N
41° 00' S
5,460,000 N
to Quad A2
5,455,000 N
41° 05' S
5,450,000 N
148° 05' E
148° 10' E
148° 15' E



Areas of contact metamorphosed Mathinna series sedimentary rocks

5 cm

Explanation:
Most favorable areas containing 2 favorable factors are surrounded by heavy black line.

13 August 1996

Image processing and graphics
Alpine Exploration Group
Tucson, Arizona

Exploration Guides

0 1 2 3 4 5 km

Scale 1:100,000

Gladstone Project
Quadrangle B2

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Perth, Western Australia

APPENDIX D

GLADSTONE PROJECT AREA

EL 15/95, Tasmania
Anglo Australian Resources NL.

INTERPRETATION OF GEOPHYSICAL DATA - NORTHEAST TASMANIA

LEGEND

DATA

Data supplied and processed by Mineral Resources Tasmania, June 1996.
Data utilised: Total magnetic intensity (TMI), shadowed from NE & SE.
Residual magnetic intensity (1500 m continuation separation), shadowed from SE.
First vertical derivative, magnetic field, shadowed from NE and S.
Aspect of magnetic field, observed & shadowed from NE.
AGC, 3D analytic signal enhancements, TMI.
Residual Bouguer anomaly (2.67 gm/cc) with relief of total counts radiometric, TMI from S and NE.
Total counts radiometrics, shadowed from SE.
Multicomponent radiometrics, shadowed from SW and NW.
Radiometrics and TMI, shadowed from SW.
Landsat, channel 741.
NETGOLD data release literature.

Scale: 1.50 000. Selected for sharpest presentation of the data - a function of sampling and processing.

- Magnetic features
- Radiometric features
- Gravity features
- EL boundaries
- Known gold mineralisation (alluvial, vein)

INTERPRETATION

The interpretation was undertaken with two objectives; to outline structural fabric and to attempt identification of regional patterns associated with known mineralisation in order to guide exploration and understand fabric.

Most features marked have been extracted from magnetic data. Overlay of the fabric map and source images may show some variation in position due to filtering and shading effects. Mean positions are shown unless the actual position can be identified. Trends shown represent those present and confirmed but there may be some omissions. Where several methods display the same feature then it may be represented by more than one line. This is a measure of its possible significance.

The region is marked by an expanse of Jurassic dolerite to the NE, granitoids near Gladstone and in far N, E and SE. Most magnetic character is related to Mathinna Beds and not granodiorites as elsewhere. The distinctive magnetic grain (N-S to NNE) is a lithological response to alternating shales and sandstones (variably metamorphosed) and there are some local suggestions of folding. The magnetic Mathinna terrane is terminated up to 1 km from granites - perhaps due to aureole temperature effects.

There are some disruptions evident within the Mathinna terrane and these trend to the NW. The terrane is partly overlain by remnants of Tertiary channels and volcanics and these yield a spotty character trending NNW. This trend also marks one edge of the dolerite corner; the other edge is oriented ENE.
The granitoids are not magnetically distinctive.
The ruling grain (non lithological) is ESE or ENE and many units clearly terminate along these or feather into them.

The data sets are not obviously compatible and there is no correlation between magnetics and gravity (any formats) and many magnetic features extend into granite-affected zones. The gravity field is granitoid-controlled while the radiometrics are partly so. There are also few direct correlations between magnetics and radiometrics but the magnetic terrane can be subdivided along one belt. Distinct domains can be recognised in each data set. Relatively low Bouguer values reflect the enclosing granitoids and the several km o preserved Mathinna Beds in the centre of the area. The magnetic data set is lithologically dominated (above) but some aspects are independent of basic lithology. Several of these fabric wedges are sub triangular and ENE/ESE features are fundamental to their form. The radiometric data set contains obvious granite-related effects and an irregular outline of parts of other domains. It is not inclusive of any other. This is interesting since the radiometric implications are largely free of surface and sand cover effects (although these are recognisable).

Mineralisation is apparently dispersed or anomalous but some comments are possible. There is no obvious correlation of any sort between mineralised sites and the gravity field. This may be due to gross regional bias or lack of adequate detail (even though this area has some of the best gravity coverage in NE Tas). There are partial correlations with magnetic responses.
The Gladstone sites fall within a magnetically disturbed area (possibly cultural) with distinct fabric and terminations (almost certainly geological). Several other sites (more easterly) are aligned close to one magnetic unit or structure and the northern sites lie near a regionally significant ENE belt. Aspects of this feature are also evident in the gravity data. The isolated Portland Mine is peculiar in these terms and is apparently abnormal structurally and lithologically.
The radiometric data show that regardlesss of home lithology every known is located where components (all) are elevated. This general pattern remains true even where the controlling lithology is buried, thinned or truncated. It is also true of Portland and Gladstone - and this data may offer real discrimination.

Map and interpretation prepared by
D.E. Leaman, Leaman Geophysics, GPO Box 320, Hobart, Tas. 7001
July 1996.

96-3929

ANNUAL REPORT 1996- EL 15/95
"GLADSTONE" - ANGLO AUST.RES.
FULTON/MACDONALD