



**EXPLORATION PERMIT FOR MINERALS 14378**

**LAKE MONDURAN**

**ANNUAL REPORT**

**FOR THE PERIOD**

**1 AUGUST 2005 TO 31 JULY 2006**

**BY**

**D.I. YOUNG**

**DUE DATE: 4 AUGUST 2006**

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Department of Natural Resources, Mines and Water, Brisbane  
ActivEX Limited, Brisbane

**Registered Office**  
Sky Level  
301 Coronation Drive,  
Milton, QLD, 4064  
Telephone: 07 3369 6025  
Facsimile: 07 3369 6077



## TENEMENT REPORT INDEX

**OPERATOR:** ActivEX Limited

**PROJECT:** Lake Monduran

**TENEMENTS:** Exploration Permit for Minerals:

**TITLE:** EPM 14378, Lake Monduran. Annual Report for the Period 1 August 2005 to 31 July 2006

**HOLDER:** ActivEX Limited

**DUE DATE:** 31 August 2006

**REPORT PREPARED BY:** D.I. Young

**AUTHOR:** D.I. Young

**STATE:** Queensland

**LATITUDE:** -24° 44' 00"

**LONGITUDE:** 151° 52' 30"

**MGA**                      **mN:** 7264200

**mE:** 386100

**1 : 250,000 SHEET:** Bundaberg SG-56-02

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**MINERAL FIELD:** Rosedale

**COMMODITY:** Copper, Gold, Molybdenum, Zinc

**KEYWORDS:** Literature Review, Rock chip sampling, magnetic susceptibility readings

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## 1 EXECUTIVE SUMMARY

EPM 14378 is a unique area and was acquired with the dual aim of exploring for volcanogenic massive sulphide base and precious metal deposits and porphyry copper/gold deposits.

### *Structural Setting*

The area is located in a horst block structure (Goodnight Block and Gympie Province) of Carboniferous and Permian sediments and volcanics belonging to the Goodnight Beds and the Gympie Group. This horst is flanked by the Coastal Block to the west and the Maryborough Basin to the east, both of which have generally younger lithologies.

The horst block is controlled by the Electra Fault system (see figure 2), a major north-northwest deep seated structural feature with subsidiary faults in the EPM area. These are known as the Bell Booth Fault and Bullyard Fault.

### *Mineralization*

Previous exploration of this part of the horst block was mainly carried out in the 1970's. Stream and soil sampling in that period highlighted five anomalous zones in addition to the historic workings. The anomalous zones are known as Murrays Creek, Rosedale Anomaly, Native Dog, Pinnacle prospect and CBS. Three of these anomalies are particularly significant and require further work.

Copper stream and soil geochem from previous explorers highlighted the Native Dog area in the centre of EPM 14378 (see figure 3). This anomalous area covers an area of 15sq km and contains the Mulgi Lode (Rosedale Copper workings) and the Native Dog Tungsten/Molybdenum workings. Little definitive work was subsequently carried out to investigate this area but it would appear the geochemistry reflects mineralization in a roof zone of diorite intrusion(s). Four diamond drill holes were drilled at Native Dog by CRAE in the early 1970's based only on brief mapping. They intersected interesting molybdenum mineralization in association with greisenisation of the granite intrusives.

Anomalous copper stream and soil geochem in the north-eastern part of the EPM highlighted the Rosedale anomaly. This anomalous area is associated with a large magnetic high centred just west of the Rosedale township and associated low lying to the south. Limestones in the area make the zone prospective for skarn mineralisation associated with the magnetic effects.

Stream, soil sampling and mapping has also defined a highly anomalous zone associated with a mineralized volcanic sequence at the Pinnacle Prospect. Here, Zn-Pb-Ag mineralization occurs within a xenolithic rhyolite host, as disseminated sulphides throughout the sericitised pyroclastics and as discontinuous veinlets in zones of sericite carbonate alteration. A broad zone of altered pyroclastics carries extensive low grade mineralization highlighted by two drill intersections of 126.6m @ 0.08%Pb, 1.03%Zn and 91.6m @ 0.14%Pb, 0.87%Zn. The zone is interpreted as a mass flow breccia pile related to growth faulting.

### *Exploration Activities*

Activities during the reporting period have included a complete compilation of previous exploration data into digital form, enabling a re-evaluation of the EPM area within a GIS environment. This re-evaluation has focused attention on the three key prospect areas and initial field activities have been commenced.

Initial field activities have included mapping and sampling of the Native Dog Prospect area and the Rosedale Anomaly. Rock chip sampling has highlighted anomalous gold values derived from the area of workings at Native Dog in association with elevated copper, molybdenum, tungsten

and bismuth values. Peak values of 2.3 ppm Au, 0.19% Cu, 405ppm Mo, 0.37% Bi and 890 ppm W were received from samples in the area.

A comprehensive sampling program of the area is underway.

Anomalous copper values were also returned from the Mulgi lode area with values up to 1.47% Cu in association with elevated bismuth (peak 0.54%) and zinc (peak 1190ppm). The elevated values were derived from gossanous zones close to a mafic diorite contact. No gold is associated. Results of mapping and sampling from this area suggest the strongly anomalous copper in stream values are not associated with mineralisation but are in fact an artefact of andesitic volcanics with high background copper values. These andesites were found in the area of the stream sediment anomaly and have also been found in other areas where elevated soil copper values occur.

A suite of samples in conjunction with magnetic susceptibility readings were taken from the Rosedale Anomaly area. The magnetic anomaly is clearly associated with moderate to strongly magnetic andesitic volcanics which have been variably skarnised. The strongest part of the aeromagnetic anomaly at surface coincides with outcrops of the best development of skarn with the magnetite bearing andesites showing stockwork epidote veining developed. Magnetic susceptibility readings up to 50 times background were recorded from this outcrop. No elevated metal values were found to be associated with the skarn development. Overall iron contents were low. Several ground magnetic traverses are proposed to enable modelling of the magnetic body.

## 2 TENEMENT STATUS

Tenement	Holder	Date of Grant	Area (km <sup>2</sup> )
EPM 14378	ActivEX Limited (100%)	1 August 2005	224.6

EPM 14378 (Lake Monduran) is a 72 sub-block EPM which was granted to Findex Pty Ltd on 1 August 2005 for a period of 5 years. The title was transferred to ActivEX Limited (which at that time was a wholly owned subsidiary of Findex Pty Ltd) on 21 December 2005. The grant is approximately 225 square kilometres and the permit is due to expire on 31 July 2010.

There are no Mining Leases which form exclusions to EPM 14378.

### Block Identification Plan - Brisbane

Block	Sub-Block
526	z
527	f,g,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z
528	q,v
598	e,u,z
599	a,b,c,d,e,f,g,h,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x
670	e
671	a,b,c,d,f,g,h,j,l,m,n,o,r,s,t,u,w,x,y,z
743	c,d,e,h,k

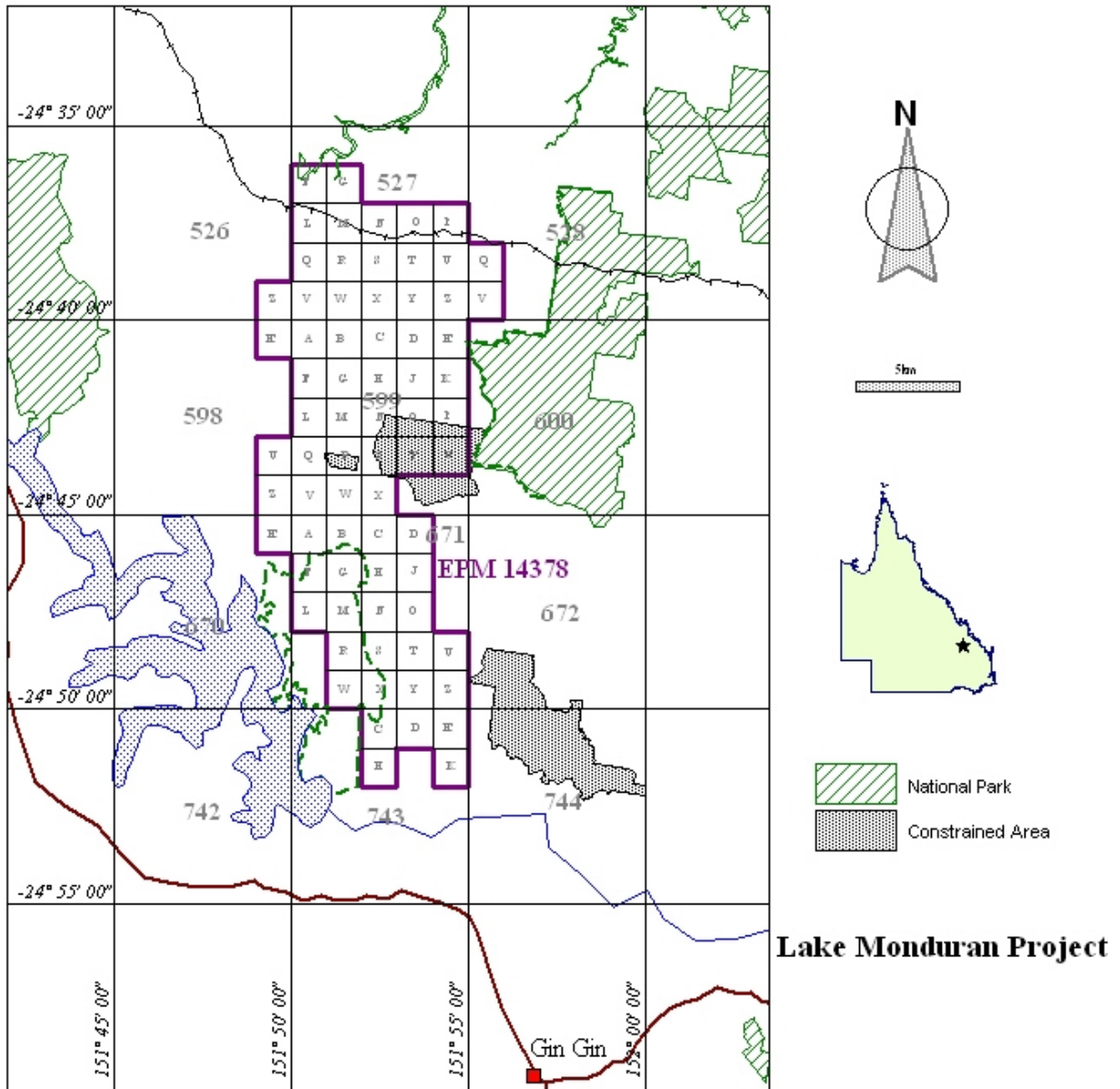
### Expenditure Commitment – EPM 14378

Year	Commitment
Year 1 – to 31 July 2006	\$50,000
Year 2 – to 31 July 2007	\$70,000
Year 3 – to 31 July 2008	\$90,000
Year 4 – to 31 July 2009	\$100,000
Year 5 – to 31 July 2010	\$120,000

### 2.1 LOCATION AND ACCESS

EPM 14378 “Lake Monduran” consists of 72 sub-blocks located 55km west north-west of Bundaberg in south east Queensland. The EPM lies in the south-western portion of the Bundaberg 1:250,000 sheet area and is centred on latitude 24° 44’ 00”; longitude 151° 52’ 30” (see figure 1).

Access to the prospect from the south Queensland town of Gin Gin is north via the Bruce Highway for 10 kilometres then formed gravel roads and farm tracks for a further 10km north. Water supplies are located close at hand within the Fred Haigh Dam catchment and high tension powerlines between Gladstone and Maryborough cross the EPM. The north-south railway and the small town of Rosedale lie within the northern boundary of the tenement.



**Figure 1. Lake Monduran Project, Location Map**

## 2.2 NATIVE TITLE

The EPM is granted over all tenure types within the area and therefore certain areas (particularly the State Forest areas) are subject to Native Title Protection Conditions (NTPC). Agreement has been made with the Port Curtis Coral Coast Claimants to allow “Agreed Exploration Activities” to proceed under the NTPCs prior to the first phase of drilling activities.

## 2.3 EXPLORATION RATIONALE

Exploration Permit for Minerals 14378 “Lake Monduran” was acquired with the dual aim to explore for porphyry copper – gold - molybdenum style mineralization associated with the Native Dog and Rosedale target areas and volcanogenic massive sulphide deposits associated with the Pinnacle target area. These areas have had limited testing since being first drilled in the 1970s.

## 2.4 DATA REVIEW

A total of eleven previous Permits have been held over parts of this area. They are listed below in Table 1 which shows details of the companies involved, their target philosophy, work done, and outcomes. The general approach has been to use stream geochemistry to lead into areas of mineralization. This has resulted in several new prospect areas being defined.

Most of the previous work was directed at two prospect areas, the Native Dog Molybdenum Prospect and the Pinnacle (Langdon) Prospect both of which have been advanced to drilling stage by follow up soil and rock chip sampling and geological mapping, and in the case of Pinnacle, trenching and petrology.

Drilling was limited to nine holes at Pinnacle Prospect and four holes at Native Dog.

The drilling at the Native Dog Prospect by CRAE, which was limited to four shallow vertical holes, led to an inferred estimate of 160,000 tons per vertical foot grading around 100 ppm molybdenum.

Both Otter and Salamander drilled the Pinnacle (also known as Langdon) Prospect and recorded low base metal results and very low gold results in fragmental felsic rock types. Five shallow vertical percussion holes and three angled diamond drill holes, mostly drilled on one section line, traversed a mineralized volcanic fragmental unit with wide zones of low grade zinc and lead mineralisation. Pasminco carried out a UTEM (ground electromagnetic) survey at the Pinnacle Prospect.



**Table 1. Previous Exploration**

EPM	Company	Date	Coverage	Target	CR's	Techniques	Outcomes
87M	MIM	1957	All	Base Metals	CR 85.		No work in current area.
584M	CRA Exploration	1980	All	Porph Cu-Mo	CR 7824, 3515, 3401, 3400.	Geological mapping, stream sampling, soil sampling, diamond drilling (4).	Native Dog Prospect – defined 160,000 tons per vertical foot @ >100ppm Mo
816M	Anglo American	Nov 1974	All	Pb Zn	CR 4996, 4995, 4564, 4319, 4234, 3950, 3547.		No detailed work in current area
1267M	Otter Exploration	Jan 1977	Pinnacle	Base Metals	CR 20401, 20400, 20399, 20398, 20396, 20394, 6866, 5902, 5798, 5797.	Stream, soil sampling, resistivity/IP surveys, ground mags, aerial photography, geological mapping, rock sampling, trenching, petrology, percussion (5) diamond drilling (3).	Mineralized volcanics over 1000X350m tested to 200m depth in 8 holes, best 1m @ 9.35%, 11m @ 2.18% Pb+Zn
1335M	Pacminex	April 1975	Nth 1/3	Base Metals	CR 5195.	Aeromagnetics, aerial input survey, ground mag, mapping, stream sampling, soil sampling.	Six anomalies followed up on ground, no anomalous values. Rosedale mag anomaly attributed to culture
1618M	Otter/Anglo	Sep 1976	All	Base Metals	CR 5973, 5902.	Stream sampling	No detailed work in current area
2574M	Freeport	Aug 1979	80% of western blocks	Bulk tonnage precious metals	CR 11668, 10557, 9865, 8917	Geological mapping, stream sediment sampling, rock chip sampling, soil sampling.	In three best areas (CBS, Murrays Creek, Bonanno Zinc) no significant gold or alteration found.
3697M	Planet	Jan 1986	N 1/2	Au, bulk and Carlin style	CR 15821, 14863, 14407.	Rock chip sampling, ground magnetics, photogeology, mapping, petrology.	Magnetic anomaly targets considered at depth, no drilling done.
4849M	Salamanda Gold Mines	Feb 1983	20%, 8 sb	Au	CR 19220, 18856, 18228..	Stream sampling, bulk leach sampling, rock chip sampling, diamond drilling (1).	Significant meterage of base metals but very low gold values.
9068M	Findex/Pasm inco	Oct 1996	All	Base Metals	CR 28937, 26241, 26240, 25290.	Geological mapping, ridge soil sampling, rock chip sampling, UTEM surveys, Pinnacle Prospect	No significant anomalies, North Dam gossan found, no UTEM anomalies
10786M	MIM Exploration	Nov 1996	Nth 1/2	Porph Cu-Au, bulk Au	CR 28076	Aeromagnetic interpretation, field checking	Found intermediate intrusives, no alteration

### 3 GEOLOGY

The Lake Monduran Project area is located on the structural boundary of the Wandilla and Gympie Provinces. Both these provinces are accretionary wedges, the Wandilla being Late Devonian to Carboniferous age rocks and the Gympie Province being Permian to Early Triassic in age. In the Lake Monduran area the boundary between these provinces is the Electra Fault which is a major north-west trending fault system active through to the Triassic and Tertiary. The fault system is made up of several significant structures all down thrown to the east (see figure 2) forming a horst block on the western side of the EPM.

The older Wandilla sequence rocks are found west of the Electra Fault and consist of volcanoclastic turbidites, spilitic pillow basalts, radiolarian cherts and jaspers (Goodnight Beds), representing a deep marine continental slope and oceanic basin. Locally, small volcanic rifts of andesitic and rhyolitic volcanics are developed and these are the main focus of exploration for base metal sulphide mineralisation.

The Gympie Province occurs east of the Electra Fault and consists of mafic volcanics, volcanoclastic sediments and limestones (Gympie Group), representing a shallow marine continental margin and basin. Both provinces are intruded by post orogenic granites of Late Permian to Late Triassic age which are the focus for porphyry style mineralisation and are of similar age to other eastern Queensland porphyry hosts.

The severe north-west trending faulting and shearing has affected the sequences during the Late Palaeozoic through to the early Mesozoic as evidenced by the Electra, Bullyard and other faults (locally known as Bell Booth and Haigh faults) in the area (late Triassic?). Splaying on the Electra Fault is apparent in the Lake Monduran area radiating from a point south of the current tenement. This zone of radiation appears to contain most of the acid volcanic occurrences and may be controlling their development. Evidence of volcanic rifting in this area in the form of growth faults, coarse pyroclastics and talus breccias was found during mapping by Young (1993) which suggest that the faults were active at the time.

The distribution of the later intrusives (elongate association) shows that the structures were probably actively controlling some of the intrusions while there is also evidence of fault offsets of the intrusives suggesting the faults were active right through to the Triassic.

North of the current tenement, sub-volcanics of the Agnes Water Volcanics are found restricted to the horst block (see figure 2) showing that the block has subsided during the Triassic period. Cemented gravels flanking the drainages and extending north to the Lowmead beds show continuing subsidence in the block in the Tertiary but patchy lateritisation suggests late Tertiary uplift and emergence continuing within the faulted block until more recent times. This extended structural activity over a wide time interval suggests that the north northwest structures are probably deep seated, fundamental structures.

#### 3.1 STRATIGRAPHY

On the west side of the Electra Fault within the horst block (see figure 2) the area is underlain by sediments of the **Goodnight Beds** (Carboniferous - Permian?). These sediments are greywackes, siltstone, shale with andesitic volcanics and pyroclastics and associated cherts, with minor acid pyroclastics. The sediments and volcanics were deposited on the continental slope and adjacent oceanic basin – formerly known as the Wandilla Slope and Basin and are deep water pelagic sediments and volcanoclastics with associated intermediate and basic volcanics. Mapping by Young (1995) in the area has broadly subdivided this unit into volcanic and sedimentary facies.

The unit has been isoclinally folded ( $D^1$ ), sheared and metamorphosed. A phyllitic cleavage is variably developed throughout these rocks appearing dominantly as a fracture cleavage in the competent lithologies and as a more pronounced schistosity ( $S^1$ ) within the pelitic units. Faulting has been predominantly normal although over-thrusting has been recognised (Ellis et. al. 1976).

This sequence is intruded by the Permo - Triassic **Diamond Hil Granite**, which is topographically recessive and made up of granite, syenogranite with abundant microgranite and is of complex form. It is essentially unstrained but shows local foliation, apparently related to later faulting.

East of the Electra Fault, Permian **Gympie Group** (formerly Biggenden Beds) equivalents occur. They probably represent a later accreted continental slope and basin environment with some evidence of shallow marine conditions. Mapping by Freeport has subdivided this unit into volcanic and sedimentary suite and this has been adopted by recent mapping by von Gnielinski (2005). The sediments are sandstones, shales, mudstone and conglomerate with rare limestones and cherts. The volcanic facies consists of flows and pyroclastics of andesitic, spilitic and basaltic composition. Local hydrothermal alteration has been recognised. In the Native Dog area sediments and volcanics of the Gympie Group are intruded by the Watalgan Granite. The granite has been greisenized and intruded by a later micro-granite which has imposed a thermal aureole within the Gympie Group.

The Gympie Group sediments and volcanics are complexly folded (related to north west faulting). and affected by at least two episodes of granitic intrusions, the Diamond Hill Granite and later Watalgan Granite and minor Triassic Felsic intrusives.

The Triassic **Watalgan Granite** is composed of leucocratic biotite granite, granodiorite and lesser quartz diorite and is generally not foliated except in close proximity to the Electra Fault system. It occurs east of the Electra Fault and has a fine grained aplitic variety which is intruded sub-parallel to the structure. Note the Electra Fault zone in this area is a complex zone of faulting rather than a single structure.

### 3.2 MINERALISATION

Several historic workings are known in the project area. Small superficial manganese workings are common, with occurrences known at Pinnacle, Rosedale and Ferngrove. Copper workings are known at the Mulgi Lode (Rosedale Copper Prospect) where minor workings were found in porphyries and diorites and at Royals Creek where copper occurs in quartz veins hosted by epidote rich andesites (see figure 2).

Gold is recorded at Highfields Prospect but no details are noted and also at Bell Booth Prospect (just outside the EPM) where gold occurs in quartz reefs near the contact of a small granite intrusive.

The most extensive workings in the project area occur at Native Dog Prospect where minor historic production of tungsten and molybdenum has been recorded.

Comprehensive stream and scattered ridge and spur soil sampling shows copper (plus zinc and lead) anomalous catchments. Copper in streams clearly defines the northern part of the Native Dog area as strongly copper anomalous and the Rosedale target as a weaker copper anomalous zone. The Native Dog workings are further defined by molybdenum in soil samples over the

area. Lead and zinc stream sampling clearly locates the Pinnacle Prospect as a single, strong anomaly further defined by grid based soil sampling.

### **3.2.1 Local Geology and Mineralisation – Pinnacle Prospect**

The local geology (see figure 4) in the Pinnacle area (which is located entirely within the horst block) is dominated by sediments of the **Goodnight Beds**. They are made up of an apparent east facing sequence which can be crudely divided into two units.

The lowest (western) unit is made up of haematitic jasper and greywacke, andesitic volcanics and tuffs and sediments. One semi-continuous jasper unit provides an excellent marker bed within this unit.

The eastern part consists of phyllites, siltstones and mudstones with lesser sandstones, black carbonaceous shales are locally important. Inter-bedded with the sediments are acid fragmentals and breccias. These have been shown by previous drilling by Salamander to be inter-bedded with the sediments whereas in the past they have been considered to be either unconformably overlying the sediments or intrusive (Freeport) and therefore Triassic age. They are variably affected by the deformation ( $D^1$ ) which imparts a foliation in the highly altered varieties.

The acid volcanics crop out continuously over 12km, striking approximately north-south apparently conformably interbedded with the surrounding sediments and having a zone width of 5km. They are represented dominantly by porphyritic (intrusive) rhyolites (could be interpreted as rhyolitic cryptodomes) which contain ubiquitous weak pyrite. Lesser rhyolite tuffs, agglomerates and volcanic xenolithic breccia flows occur (mass flows with sub-rounded volcanic clasts in a trachytic tuffaceous matrix). There are several units of rhyolites with one being better developed, containing the bulk of the fragmental varieties.

Within this main rhyolite unit, fragmental varieties are confined to a zone 3km long which coincides with a jog or flexure in the stratigraphy (this jog is shown by offset of the jasper marker bed in Figure 2) and significant splaying of the Electra Fault system. This structural association appears to have created a zone of extension in which rifting has allowed the accumulation of a coarse grained volcanic pile (matrix supported volcanic breccias). On the eastern contact of the fragmental pile a talus or fault breccia occurs (with dominantly phyllite clasts, clast supported) which may indicate the locus of a growth fault or half graben structure. This structure also appears to be a horse tail or spur of the main Electra Fault system.

Three main areas of more intense deformation can be recognised within the Goodnight Beds:-

- associated with the jasper/chert zone,
- associated with the main fragmental unit and
- associated with the eastern rhyolite.

This intense deformation is manifest mainly in the pelitic rocks but weakly in the acid fragmentals, although patchy areas of strongly deformed rocks coincide with more strongly altered volcanics as at Pinnacle. Steep dips ( $S^1$  and  $S^0$ ) are predominant in these zones of intense deformation with shallower dips apparent between zones. A crenulation cleavage ( $S^2$ ) is also apparent showing shallow north dips except for occasional reversals (shallow south dips) in the northern parts of the fragmental unit.

The Pinnacle prospect (as drilled in the past) is the most intensely altered section of this pile and occurs on the flank of the volcanic pile. The alteration at surface is intense sericitic and argillic

alteration and contains limonite as partial fillings of angular cavities mostly after pyrite.

Petrology by previous explorers described the volcanics as altered acid pyroclastics, typically lithic vitric tuffs with a certain ignimbritic character. Most marked alteration was the pervasive development of essentially random sericite and anhedral quartz in varying proportions. Iron rich, typically sideritic, carbonate is a more or less a pervasive accessory alteration phase which developed simultaneously. Sporadic late stage quartz veins are apparent epigenetic features.

The attendant sulphides show three characteristics –

- Random disseminations in the sericitised/silicified volcanics.
- Discontinuous veins with associated carbonate, interspersed with sericite-quartz or rarely intersecting sericite veins.
- Selective replacements by carbonate of feldspar phenocrysts and feldspar crystal fragments.

The petrologist concluded that the mineralization was epigenetic, the bulk of which being associated with carbonate developments, as aggregates and late stage veinlets. Mineralized xenoliths are interpreted as the normal product of auto-brecciation and flow scavenging.

The best results in these holes were:-

- LPH-1 24 m grading 2.08% lead plus zinc including 1 m grading 9.35% lead plus zinc
- LPH-4 38 m grading 1.85% lead plus zinc

This provided sufficient encouragement to drill three diamond drill holes (LDH1–3) on the section. Cores showed a wide zone (175 m true width) of low grade mineralization (see figure 5 and Table 2) within the altered, east dipping fragmentals. Distinct zonation is recognised with a central zinc zone and peripheral lead silver zone:-

**Table 2 – Drill Hole Composites**

HOLE	From	To	Interval (m)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag (ppm)
<b>LPDH1</b>	16	50	34	134	756	13923	4.6
inc	45	46	1	850	8500	85000	2.0
<b>LPDH2</b>	17	23	6	92	5925	3158	15.0
<b>LPDH4</b>	0	49	49	57	7605	7942	23.9
inc	11	49	38	57	8349	10186	27.0
inc	11	22	11	67	10000	11800	30.0
<b>LPDH5</b>	20	22	2	135	13000	21000	4.0
<b>LDD2</b>	128	254.6	126.6	41	813	10299	6.9
inc	130.5	137.0	6.5	29	3666	8201	14.2
and	147.0	170.10	23.1	41	361	13252	5.3
and	184.1	202.4	18.3	56	1254	10996	10.9
inc	199.3	202.4	3.1	98	973	16548	9.2
and	235.8	254.6	18.8	55	369	12654	5.8
inc	251.9	254.6	2.7	83	404	21870	7.1
<b>LDD3</b>	57.9	128.7	70.8	39	2776	5656	10.8
inc	57.9	78.5	20.6	32	3200	3815	7.6
	93.0	184.6	91.6	55	1430	8699	9.3
inc	99.0	101.3	2.3	19	5382	7417	31.3
and	111.9	128.7	16.8	70	3701	8816	15.2
inc	116.8	120.1	3.3	102	1803	14166	10.5
	166.0	184.6	18.6	76	425	10660	6.5

The Pinnacle mineralisation is apparently not gold anomalous; however gossanous rocks anomalous in copper (to 2800 ppm copper) and gold (to 1.3 ppm gold) are located 2 km north of the Pinnacle. Two small pits were found on the gossans, which occur in an area of poorly outcropping rhyolite and sediments.

### **3.2.2 Local Geology and Mineralisation – Native Dog Prospect**

The geology of this area is dominated by Gympie Group sediments and volcanics which are intruded by the Watalgan Granite. The Gympie Group sediments consist of greywackes, siltstones and minor limestones which are hornfelsed and skarnised in part. The volcanics comprise andesitic volcanics, minor porphyritic andesites and agglomerates. Skarns are also developed in the andesitic volcanics.

This sequence is intruded by granites, aplites and sericitised porphyries of the Watalgan Granites, diorites and mafic diorites (?gabbros), possibly related to the Miriam Vale Granodiorite and rhyolite dykes, the latter being possible relatives of the Agnes Waters Volcanics.

The principle thermal effects are related to the Watalgan Granite. A large area of sericitisation or greisenisation occurs on the northern boundary of the Watalgan granite complex in contact with the sediments associated with complex stockwork quartz veining and sheeted quartz veins. This zone has an associated molybdenum anomaly.

Further to the north in the Mulgi lodes area occur apophyses of diorites. Their relationship to the Watalgan Granites is unknown but they have the same intrusive relationship with the Gympie Group sediments as do the Watalgan Granites but with restricted thermal effects. The Mulgi Lode was described by CRAE as a vein deposit, with a strike length of 300 m, within diorite intrusives (and feldspar porphyries) showing bleaching and hornfelsing at contacts with the Gympie Group sediments and volcanics.

This prospect is defined by an area (greater than 5 km<sup>2</sup>) of copper anomalous stream samples in the vicinity of the Mulgi Lode (Figure 6). This anomalous zone was interpreted to extend south-east to the Native Dog workings but stream sample coverage is poor south of the Mulgi Lode area.

Rock samples, taken during the program, show that the localised clay alteration is associated with stringer style quartz veining and massive gossans after sulphides in a confined zone close to the diorite contact (possible fault zone). Rock chips from this area have assayed up to 6% copper with high bismuth values (to 0.54% Bi) and lesser zinc (max 1190ppm) however no gold values were returned (see Appendix I). The copper anomalous stream values occur over a zone extending 1 km east and at least 1.5 km north of the Mulgi Lode workings and this zone was mapped and sampled with a view to defining the extent of mineralisation. Little evidence of mineralisation was found and rock chip samples from the area suggest the anomaly is related to the high background values of copper in the andesitic volcanics rather than a mineralising event e.g. LM0039 is relatively unaltered andesite with a background of 195ppm Cu. The lack of evident mineralisation and poor gold values downgrade this prospect area.

The Native Dog workings expose molybdenum-tungsten mineralisation in sheeted and stockwork quartz veining with associated greisen development in the Watalgan Granite (see figure 7). Minor drilling was carried out at Native Dog workings in the 1970s by CRAE searching for molybdenum mineralisation. The holes were located within a soil grid which showed an

extensive zone of anomalous molybdenum over 2km strike and up to 490m wide. The soil grid area was limited to the area of workings and returned molybdenum values up to 357ppm. Three holes were drilled to approximately 100 m but the fourth hole (70ND04) was abandoned. The best result from the drilling was 3m grading 1192 ppm molybdenum within a broader zone of lower grades (54.2 m grading 317 ppm molybdenum, 70ND01) within a stockwork of thin quartz veins. Copper and tungsten values were low.

CRAE did not carry out gold assaying during drilling or surface sampling. At a later date, Salamander collected five rock chip samples from the Native Dog area, of which two were anomalous in gold with a maximum value of 1.2 ppm gold. Sampling during the current program collected 14 samples from the northern part of the workings (see figure 7). Of the samples taken, 45% were anomalous in gold with a high of 2.3g/t gold. Anomalous values of copper up to 0.2% and molybdenum up to 405ppm were also returned. Included in these anomalous results were previously unidentified gossanous veins extending 370m north of the workings.

The Company is commencing a detailed sampling campaign in the area to define the extent of the anomalous values.

### **3.2.3 Local Geology and Mineralisation – Rosedale Prospect**

This area is dominated by sediments of the Gympie Group being mainly andesitic volcanics, red and grey shales and limestones. No evidence of intrusives have been seen in the area however geochemical and magnetic evidence supports the presence of intrusives.

At the Rosedale Prospect, copper anomalous stream sediments define an area greater than 4 km<sup>2</sup>. The Rosedale manganese workings occur in the anomalous zone and they are hosted by red and green shales being a narrow shear hosted deposit.

The copper anomalous zone coincides with a complex magnetic low feature surrounded by a large positive magnetic feature to the north. The most prominent magnetic “high” has never been drill tested. The exploration target in this area is porphyry style copper mineralization with associated magnetite skarn style mineralisation (see figure 8) which may be prospective for poly-metallic mineralisation or for magnetite.

During the current program the area was mapped and sampled – aimed at identifying porphyry style mineralisation in the area and to define the extent of development of magnetite associated with the large magnetic high. No anomalous rock chip samples were returned from the area from 16 samples taken (highest value 333ppm Zn). Iron contents were up to 9-13% Fe but insufficient for economic magnetite development.

Magnetic susceptibility readings taken from the area are tabled below. Highest readings corresponded to the shallowest (peak) part of the aeromagnetic anomaly and also the highest iron content (LM0058) of 12.9% returned from sampling. These were taken from an outcrop of strongly magnetic andesitic volcanics with significant magnetite developed. The outcrop was strongly epidote veined with minor quartz veining. While the rock was significantly altered the development of magnetite was poor and no anomalous metals were associated with the alteration. High values of copper in soils within the anomalous drainage were inspected and found to be related to andesitic volcanics with high background copper values.

Sample No	Magnetic Susceptibility (x 10 <sup>-6</sup> cgs)
LM0001	1862
LM0002	1335
LM0003	1744
LM0004	2046
LM0005	2300
LM0006	2800
LM0007	3800
LM0008	2200
LM0009	9335
LM0010	7500
LM0057	2300
LM0058	9335

The Company is considering several ground magnetic traverses across the body to enable modelling of the source to determine if increased concentrations of magnetite are likely at depth.



## 4 CONCLUSIONS AND RECOMMENDATIONS

The area has undergone extensive surface exploration mostly carried out in the late 1970s which has evaluated the occurrences of mineralisation and defined anomalous geochemical zones in stream and soil sampling. The Pinnacles Prospect, Native Dog Prospect and the Rosedale Prospect stand out as being particularly anomalous and have been the target of the current program of mapping and sampling.

At the Pinnacle Prospect significant base metal mineralization has been intersected in a volcanic rift system. The zone is highly prospective for VMS style base metal deposits, which may occur adjacent to deep seated mineralising structures. The mineralisation intersected in drilling to date has been confined to a single cross section within a zone of anomalous soil samples which may be up to 3500m long. This zone has not been delimited in all directions, at surface or at depth. Geological control is insufficient to model the shape of the mineralised structure at present and therefore the extent of the mineralised body has not been determined.

Further soil sampling is required to fully delineate the anomalous geochemistry in conjunction with detailed mapping of the grid area to refine the interpretation of the mineralising model and to aid in drill targeting. Gravity is a tool which has been used successfully in these environments and a detailed survey of the Pinnacles area is proposed. Further drilling is required to test the zone of anomalous geochemistry, EM conductors within the area and the extent of known mineralisation.

Strongly anomalous copper in soil, rock and stream samples lying between the Mulgi Lode (copper) and Native Dog workings (molybdenum) have been mapped and sampled during the period. This work has downgraded the Mulgi Lode area with anomalous copper in streams being related to andesitic volcanics with a high background copper content. Mineralisation is restricted to a narrow fault controlled zone limited in strike to <300m and unlikely to have significant thickness (although this has not been established as the old working have been bulldozed by the property owner). The mineralisation is not anomalous in gold.

The Native Dog Prospect is based on a zone of workings for tungsten and molybdenum developed within a greisenised granite contact. Workings are developed on extensive quartz vein stockworks and sheeted veins over a strike length of 2km and up to 490m wide. Soil sampling in the 1970s indicated a zone of anomalous molybdenum but no assays for gold were carried out at the time. Recent sampling by ActivEX from the central part of this zone has returned anomalous gold from 45% of the samples with a high of 2.3g/t gold. Anomalous values of copper up to 0.2% and molybdenum up to 405ppm were also returned. The Company is progressing with systematic sampling of the area to define potential drill targets.

The Rosedale Prospect has been mapped and sampled with no anomalous results being identified. Iron contents up to 13% Fe were found associated with the highest magnetic susceptibility readings which corresponded with the shallowest (peak) part of the aeromagnetic anomaly. These iron contents are not significant. Several ground magnetic traverses are proposed to enable modelling to be carried out to determine if higher magnetite contents can be expected at depth.

No anomalous base or precious metals were returned during the sampling program and high copper values in previous soil sampling programs have been related to andesitic volcanics with high background copper values.

## 5 BIBLIOGRAPHY

- Barnard, S, 1976 A-P 1267M Langdon, Quarterly Report for period to 30/09/1976, Aust. Anglo American Ltd.  
Unpubl. CR .5798
- Barnard, S, Prudden, J.M., 1989 A-P 1618M, Langdon, Final Report Aust. Anglo American Ltd.  
Unpubl. CR .5973
- Basford, P.W., 1994 Interpretation of Utem Collected at the Pinnacles, Lake Monduran, EPM 9068, Queensland, Pasminco Exploration.  
Unpubl. CR.
- Bichard, A.N., 1977 A-P 1267M Langdon, north west of Bundaberg, Annual and Final Report for 1977, Aust. Anglo American Ltd.  
Unpubl. CR .6866
- Cranfield, L.C., et. Al. 1991 Geology of the Maryborough 1:250,000 Sheet Area.  
Geol. Surv. Old. Publ.
- Ellis, P.L., and Whitaker, W.G., 1976 Geology of the Bundaberg 1:250,000 Sheet Area.  
Geol. Surv. Old. Rept. 90.
- Guy, C.W., 1989 Final Report for A-P 4849M, Bundaberg, for period ended 18<sup>th</sup> January 1989, Salamander Gold Mines.  
Unpubl. CR .19220
- Houston, A, 1996 Mount Maria, EPM 10786, Annual and Final Report for the period ended 27<sup>th</sup> November 1996. MIM Exploration.  
Unpubl. CR .28076
- Kelso, I.J. and Basford, P.W., 1994 Second Annual Report for the year ending 28/10/94, EPM 9068 (Lake Monduran), Pasminco Exploration.  
Unpubl. CR 26240.
- Kelso, I.J. and Young D.I., 1993 Year 2 Partial Relinquishment Report for the year ending 28/10/93, EPM 9068 (Lake Monduran), Pasminco Exploration.  
Unpubl. CR26241.
- Kerwick, R.J, Barnard, S., Prudden, J.M., 1976 Langdon Project, north of Gin Gin A-P 1267M and A-P 1618M, Annual Report for 1976, Aust. Anglo American Ltd.  
Unpubl. CR .5902
- Kerwick, R.J, 1974 A-P 1267M Langdon, Annual Report for period to 31/12/1974, Aust. Anglo American Ltd.  
Unpubl. CR .5302
- Kirk, C.M., 1988 Six Monthly Report for A-P 4849M, Bundaberg, for period ended 4<sup>th</sup> August 1988, Salamander Gold Mines.  
Unpubl. CR .18856
- Kirk, C.M., 1988 Six Monthly Report for A-P 4849M, Bundaberg, for period ended 4<sup>th</sup> February 1988, Salamander Gold Mines.  
Unpubl. CR .18228
- Kochmann, G., Porter, T.M., 1970 Progress Report on A-P 584M Dawes Range, S.E. QLD period to 31/12/1969, CRA Exploration Pty Ltd.  
Unpubl. CR .3401
- Kochmann, G., 1971 Report on Drilling of Native Dog Molybdenum – Tungsten Prospect A-P 584M Dawes Range, S.E. QLD, CRA Exploration Pty Ltd.  
Unpubl. CR .3515
- Morton, C.C., 1933 Cherry Bell Workings, Bell Booth, Rosedale District.  
Old. Govt. Min. J., 34, pp 158-159.
- Pertzel, B.A., 1984 A-P 3697M, Rosedale, Six Monthly Report for period ended 1<sup>st</sup> September 1984, Planet Resources N.L.

- Planet Resources N.L. 1985 unpubl. CR .14407  
Final Report for A-P 3697M, Rosedale, for period ended 1<sup>st</sup> September 1985, Planet Resources N.L.
- Reid, J.H., 1943 unpubl. CR .15821  
Native Dog wolfram workings, Rosedale Mineral Field, Bundaberg district.  
Old. Govt. Min. J., 44, p10.
- Robinson, H. A., Munoz, R.L., 1973 Unpubl. CR .20398  
Progress Report No.1 for A-P 1267M Langdon, for period August-September 1973, Aust. Anglo American Ltd.
- Robinson, H. A., Munoz, R.L., 1973 Unpubl. CR .20399  
Progress Report No.2 for A-P 1267M Langdon, for period October-December 1973, Aust. Anglo American Ltd.
- Robinson, H. A., 1973 Unpubl. CR .5016  
Annual Report for A-P 1267M Langdon, for period 31/12/1973, Aust. Anglo American Ltd.
- Robinson, H. A., 1975 Unpubl. CR .20394  
Progress Report No.7 for A-P 1267M Langdon, for period January-March 1975, Aust. Anglo American Ltd.
- Robinson, H. A., 1975 Unpubl. CR .20400  
Progress Report No.8 for A-P 1267M Langdon, for period April-June 1975, Aust. Anglo American Ltd.
- Robinson, H. A., 1975 Unpubl. CR .20396  
Progress Report No.9 for A-P 1267M Langdon, for period July-September 1975, Aust. Anglo American Ltd.
- Robinson, H. A., 1975 Unpubl. CR .20401  
Progress Report No.10 for A-P 1267M Langdon, for period October-December 1975, Aust. Anglo American Ltd.
- Shepherd, S.R.L., 1953 Old. Govt. Min. J., 54, pp331-332.  
Rosedale Mineral Field.
- Von Gnielinski, F.E., 2005 GSQ Publication  
Rosedale Surface Geology.
- Wroe, J.A. and Puce, J., 1981 unpubl. CR .8917  
A-P 2574M, Langdon, Progress Report for period ended 31/03/1981, Freeport Australia Inc.
- Wroe, J.A., 1981 unpubl. CR .9865  
A-P 2574M, Langdon, Progress Report for period 1/04/1981 to 30/09/1981, Freeport Australia Inc.
- Wroe, J.A., 1982 unpubl. CR .10557  
A-P 2574M, Langdon, Progress Report for period 1/10/1981 to 30/03/1982, Freeport Australia Inc.
- Wroe, J.A., 1982 unpubl. CR .11668  
A-P 2574M, Langdon, Final Report for period 1/4/1982 to 20/09/1982, Freeport Australia Inc.
- Young, D.I., 1992 unpubl. CR.  
Lake Monduran, EPM 9068, Literature Review, November 1992.
- Young, D.I., 1993 unpubl. CR .25290  
Lake Monduran, EPM 9068, Annual Report for the year ended 28th October 1993. Pasminco Exploration.
- Young, D.I., 1995 unpubl. CR .28937  
Lake Monduran, EPM 9068, Final Report October 1995. Findex Pty Ltd.



**APPENDIX I**  
**Rock Chip Sample Ledgers**