## **EXPLORATION PERMIT 4774 M**

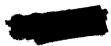
**Cloncurry Queensland** 

COMPIDENTIAL

Report on Exploration for the period 2.6.93 to 1.6.94

Kingsgate Consolidated N.L.

01.11.28193



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#### 1.0 SUMMARY

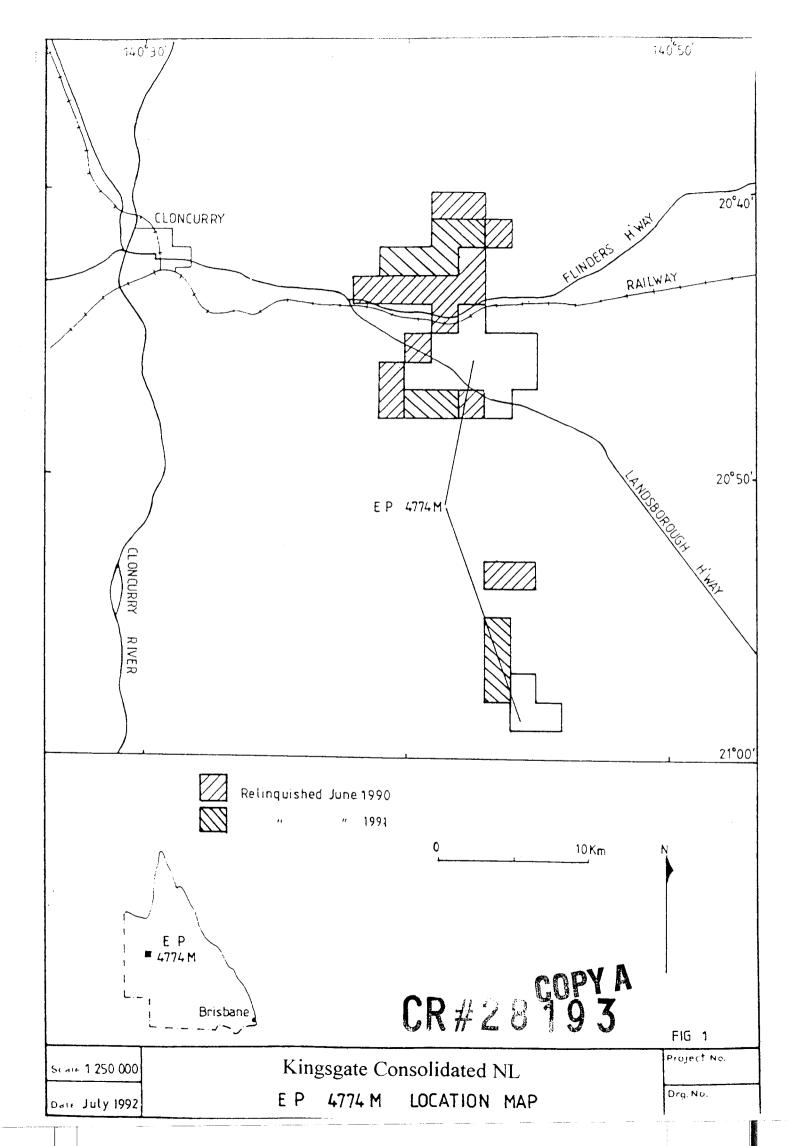
EPM 4774 is owned 100% by Kingsgate Consolidated N.L. following its purchase from Epoch Mining N.L. and Devex Limited in 1992 and the purchase from BHP of a 5% royalty interest in 1993.

During 1994 an active exploration program of sampling RC drilling was carried out in the following areas: Iron Duke, Falcon, Comstock prospects, WOW, and the Wynberg Prospect.

#### 2.0 INTRODUCTION

Details of work completed within the EPM and the results of that work for the year to 1/6/94 are given in this report. Exploration including detailed reconnaissance, gridding, mapping, sampling, reverse circulation drilling and detailed assessments were carried out at the following prospects: .

- Wynberg
- WOW
- Iron Duke/ Falcon/ Comstock



#### 3.0 CONCLUSIONS AND RECOMMENDATIONS

Detailed field work including detailed reconnaissance, gridding, mapping, sampling and detailed assessments, at four prospects and reconnaissance prospecting, mapping and literature research is believed to have enhanced the prospectivity of the EPM.

The amount of field work was limited during a period of discussions and negotiation with BHP regarding the purchase by Kingsgate Consolidated NL of a royalty interest held by BHP in the title. This transaction has subsequently taken place and the title is being transferred to Kingsgate.

Rock chip sampling and mapping led to the recommendation for further work including a programme of RC drilling as follows,

Wynberg. 72 holes drilled to date. 280,000 tonnes at 4.0 g/t Au, geological resource.

4 to 6 RC holes required to extend resource and to resolve structural problems. Further geological mapping required.

Metallurgical testing required.

WOW. Only one hole to date. 6m at 1.9 g/t Au.

Further geological mapping required.

Infill gridding and soil sampling required.

1 RC hole required to define load direction.

Iron Duke/ Little Duke. North south trending Au, Cu, bearing structure near Mount Freda CIP plant. Max 2.5m at 9.6 g/t Au in shaft.

2 RC holes at Little Duke and 1 hole at Iron Duke required.

Falcon. North south Au, Cu bearing structure parallel to Iron Duke line. 2 RC holes required to test load width and depth extent of mineralisation.

New Target generation. Limited mapping and sampling to be completed adjacent to Mt Freda leases, and in following up on stream sediment anomalies throughout EPM 4774.

Total programme 12 to 14 RC holes totaling 450 to 550 metres.

#### 4.0 TENEMENT DETAILS

Exploration Permit 4774, which originally comprised 121 sub-blocks, was granted to Utah Development Company Limited on 2nd June, 1987 for a period of 2 years.

The area was reduced to;

80 sub-blocks in June, 1988,

40 sub-blocks in June, 1989,

24 sub-blocks in June, 1990,

14 sub-blocks in June, 1991.

The sub-blocks now included in EPM 4774 are as follows;

Cloncurry Block Identification Map - Series B

Blocks	Sub - Blocks
609	X
681	BCDEFGHJKO
825	PU
826	Q

#### 5.0 LOCATION AND ACCESS

CR#28 193

See figure 1

EPM 4774 is in two segments.

The main portion of 11 sub-blocks is situated approximately 25 kilometres south-east of Cloncurry in north-west Queensland.

Cloncurry is located 795 kilometres west of Townsville by sealed highway.

Rail and air services connect Mt Isa with Townsville and Brisbane.

Two major sealed roads, the Flinder's and Lansborough Highways cut through the EPM. Away from these roads, access to the area is by a network of station and mine roads which are passable to 4wd vehicles for most of the year.

The 3 sub-block area, 38 kilometres south-south-east of Cloncurry is accessed via the Landsborough Highway and the Mt Freda Mine road which turns off to the south-west 45 kilometres from Cloncurry.

EPM 4774 is partly covered by palaeo-alluvium and Mesozoic and younger sediments which restricts work to some degree.

#### 6.0 GEOLOGY

The oldest rocks exposed in EPM 477M are metasediments and metavolcanics of the Middle Proterozoic Soldiers Cap Group. On a regional scale these rocks constitute a portion of the Eastern Succession of the Mount Isa Block.

The Soldiers Cap Group is intruded by granites of Middle Proterozoic age which crop out extensively to the north-west and south of the EPM. Within the EPM they are represented by a number of small areas of outcrop of recently de-roofed high level intrusives.

Unconformably overlying the Soldiers Cap Group, mainly in the northern and western parts of the EPM, is an irregular, sub-horizontal sheet of calc-silicates and calc-silicate breccias referred to as the Gilded Rose Breccia (formerly the Doherty Formation breccia). The breccia is considered to have been derived from original Corella Formation.

Minor thin remnants of flat lying Mesozoic sediments cap some of the higher topographic areas at the South-western end of the EPM. Tertiary to recent alluvial deposits are developed in some area, particularly to the east.

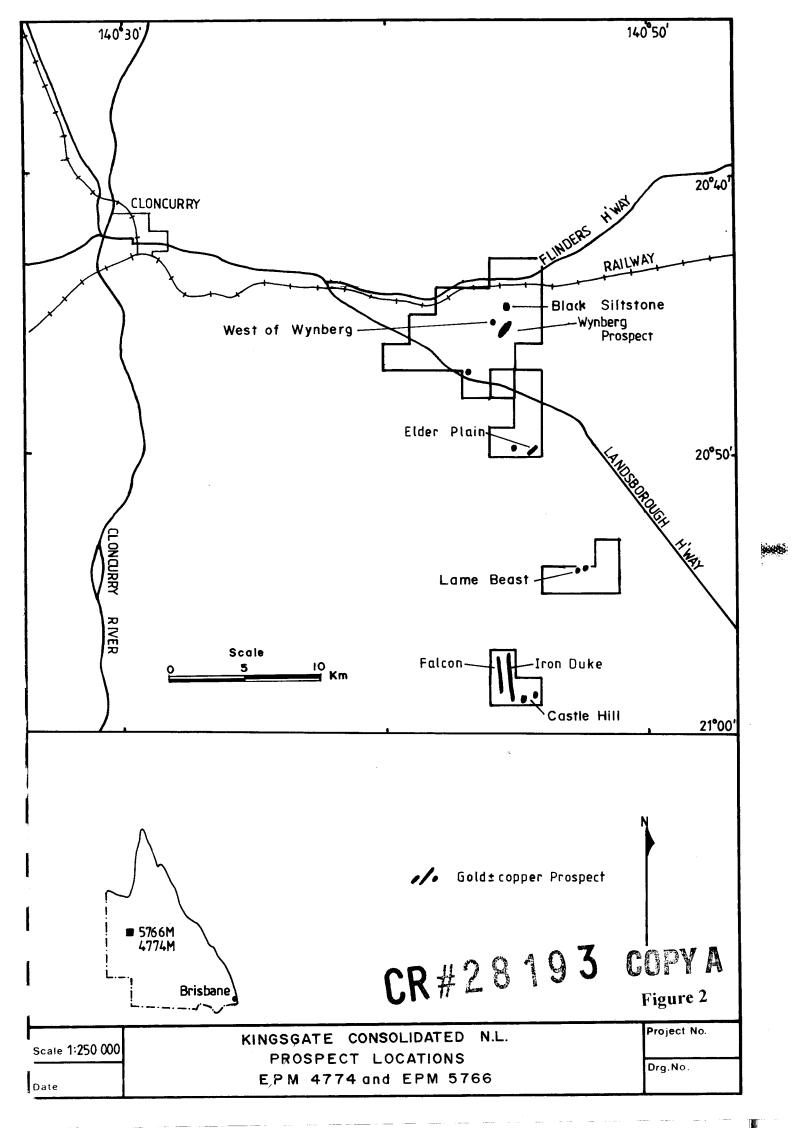
Mapping conducted east of the Fisher Fault has clarified the geology to some degree there, however structural trends and bedding orientation clearly visible on air photos west of the fault are far less visible to the east, making interpretation difficult. Furthermore, to the north, east and south, extensive sheets of palaeo-alluvial clays and gravels cover the basement. Much of the remaining area is obscured by Quaternary sands and gravels of the present creek system.

By far the best sections of outcropping rocks east of the Fisher Fault are found in the beds of the major creeks and their tributaries. For this reason formal traverses were not found to contribute much to the processes of interpretation, compared with creek bed mapping.

Other problems have compounded the difficulty of obtaining useful data in this area. Many of the cherty sediments show little evidence of lamination, and foliation has destroyed most evidence of bedding in the non-silicified material. A preponderance of strike data taken on one part of a stream would be followed by a total lack of interpretive data elsewhere. For these reasons most of the subdivisions of the Soldiers Cap Group of BHPM cannot be recognised east of the Fisher Fault.

Immediately south of the Landborough Highway and abutting the Fisher Fault is an outlier of probable Pon3, the youngest division of the Mount Norna Quartzite. These rocks have been subject to a higher degree of metamorphism than the overlaying sandstones exhibiting some schistosity, with subordinate carbonated, schist, amphibolite and schisty amphibolite. They have been intruded in part by dykes of felsic volcanics and are uncomfortably overlain by remnant inliers of Gilded Rose Breccia consisting of chaotic block structures and megabreccias of calc-silicate rocks derived from original Corella Formation.

The Toole Creek Volcanics are tentatively divided into two units on lithological grounds as opposed to BHPM's four units. The first unit is composed of dominant amphibolite which may be fine to coarse grained, occasionally carbonate altered. The subordinate interbedded metasediments are dominated by Fine and medium grain arenites with interbedded cherts, shales, mudstones and minor carbonates with scapolites. The Toole Creek Volcanics particularly near the Fisher Fault. These inliers become less abundant to the east.



#### 7.0 SUMMARY OF PREVIOUS WORK

Prior to the granting of EPM 4774M, work performed by BHPM/UDCL on prior titles had resulted in numerous broad gold and copper anomalous areas being defined chiefly by stream sediment geochemistry. It was found that stream sediment anomalies and ridge and spur soil geochemistry were too general to pinpoint costean and drill targets.

In the first two periods of the current EPM work was undertaken to delineate anomalies sufficiently to target costeans and drill sites. This was achieved through re-assessment of all previous data, follow-up intense stream sediment sampling and processing of all information through statistical analysis. The re-assessment highlighted anomalies thought to have a close bedrock source.

Subsequent work for 1988 concentrated on 14 prospects which were assessed and evaluated in the report to the period 2.6.88 to 1.12.88. Many are now considered to be unlikely to yield significant mineralisation, others have yielded narrow discontinuous zones of gold mineralisation or broad areas of low grade mineralisation. These have been designated prospects of lower priority and may be further evaluated at a later date.

A strong programme of field work was undertaken during 1989 including stream sediment geochemistry, extensive RAB bedrock drilling, ground magnetics, costeaning and RC drilling. This work emphasised the potential importance of the Wynberg gold prospect near the eastern edge of the E.P.M.

During the following two years limited work was carried out due to budget constraints and field work was confined to field checking and re-evaluation of previously gathered data. Detailed metallurgical testwork was carried out on Wynberg ore samples.

A re-organisation of the operating joint venture, with the entry of Kingsgate Consolidated N.L. in early 1992 led to a rejuvenation of activity which to June 1992 included re-evaluation of the geophysical and geochemical data within the current tenement area of 14 sub blocks as well as a study of publicly available data on other companies' prospects in the area. In May 1992 a programme of geological mapping and RC drilling was conducted at the Wynberg gold prospect and field checking at WOW Little Duke Gold and other prospects.

#### 8.0 ASSESSMENT OF PREVIOUS WORK

#### 8.1 WOW Prospect

A number of anomalous gold values obtained in stream sediment samples indicated that potential existed for the discovery of similar style gold mineralisation to that of the Wynberg

Follow up base geochemical sampling resulted in anomalous copper to 1000ppm coincident with gold to 299ppb and arsenic to 320ppm.

The anomalous zones are interpreted as lens shaped, trending east to west and parallel to rock strike. They tend to be associated with sediments rather than amphibolite, particularly on the northern part of the grid.

RAB holes drilled over the stronger soil anomalies indicated that a good correlation existed, with soil results. Average copper and arsenic in soils was lower than that for RAB. This may be due to leaching and dissemination. Gold on the other hand was more than twice as abundant in soils as in bedrock, perhaps due to gravity concentration and relative insolubility, but may have originated from palaeo-alluvial cover prior to stripping of the regolith in the area.

Two costeans were excavated across the strongest Eu, As and Au anomalies.

The first costean at 2300E x 3720N - 3772N was within siltstones and fine sandstones, in part cherty and silicified, with Amphibolite. Rock assays confirmed a bedrock source for the soils and RAB data.

The second costean at 2205E x 3820N - 3870N intersected. Cherts grading to fine sandstone, and silicified siltstones. Assaying once again confirmed a bedrock source for the soils and RAB data.

One percussion hole WOW2 (220

3E x 3845N) was drilled at a declination of 60 degrees north to test at depth, mineralisation detected in the costean on 2205E. Gold was anomalous throughout, as was copper and arsenic. A 6 metre intersection from 28 metres to 34 metres averages 1.93pm Au. Due to the broad anomaly on the surface it is not possible at this stage to definitely determine the dip of the mineralised zone, however if the 1.93ppm Au drill intersection correlates with the 0.63ppm Au costean interval then the dip is very steeply north. Based on the copper and arsenic geochemistry and experience at the Wynberg Prospect it is possible that the lode may be dipping at about 55 degrees to the north, in which case the hole would have run down the footwall of the lode, which would therefor not have been adequately tested.

#### 8.2 Wynberg Prospect

A large proportion of the north, mid and south-west sections of the grid are covered by palaeoalluvials and more recent alluvials and elluvium (see plate 7). Outcrop is poor and best seen in the beds of adjacent creeks. Costeaning has provided the best views of the underlaying rocks. It is still uncertain what position within the Toole Creek Volcanics these rocks occupy.

Five main units are now recognised. These are:-

AMPHIBOLITE 1

An altered crystalline amphibolite.

AMPHIBOLITE 2

Ferro silicate, calc altered retrograde amphibolite.

METASEDIMENT 1:

Undifferentiated fine grain sediments with varying degrees of alteration.

Siltstones, shales, fine sandstone, chert.

**METASEDIMENT 2:** 

Phyllite composed of siltstones and fine to (rarely) medium grained

sandstone, micaceous. Well foliated. May belong to the underlying Mt

Norna Quartzite.

ALBITITE

Medium grained silica rich albitied, probably related to other

felsic intrusives found throughout the EPM. It is intrusive to the

**Soldiers** 

Cap Group.

Bedding is identified mainly in costeans as fine laminations in cherty rocks. In the southern part of the Wynberg grid, bedding appears to trend in a north-east (grid) direction; in the central part of the grid trends north-south (grid) and in the northern part trends north-west (grid). Bedding dips are generally between 65 degrees east to vertical. The amphibolite in the eastern part of the grid appears to trend generally north-south (grid) and it is most likely intrusive. the albitite on the eastern side of the grid is also probably intrusive.

A variety of exploration techniques have been utilised at Wynberg and those of value appear to be RAB bedrock geochemistry, trenching and RC drilling. Soil sampling and outcrop sampling have generally proven to be of less value due to supergene leaching of gold. Geochemical contamination within and adjacent to palaeo-alluvials and at times enrichment of gold in soils and streams as lag concentrations on the ancient land surface.

The lenses of gold mineralisation within the area are structurally controlled and appear to strike between north-east grid and north-west (grid) and dip at angles from steeply east to 45 degrees west. The structures are mineralised within both the sediments and the amphibolites. Due to the lack of outcrop, and the weathered nature of the bedrock in most costeans, the structures have not been mapped and are therefore not well understood.

To date the mineralised zones have not been visible in RC drill samples. This has caused considerable technical difficulties in the drilling programmes and has probably led to the drilling of a number of blank holes and or to the drilling of holes down dip in some lenses.

In the 1989 programme, costeans excavated between 6000N and 6300N indicated a number of zones which warranted testing at depth by drilling. One costean on 6400N, which was thought to be along strike from three gold anomalous costeans, contained low gold values. However this is not considered to mark the northern limit of mineralisation. Costeans on sections 5950N and 6050N intersected strongly anomalous gold mineralisation in areas not previously considered to be anomalous, indicating that there may be a number of, as yet unidentified, lenses of gold mineralisation within the grid area. A costean at about 4920E on line 5300N indicated that the western lens continues at least 100 metres south of the most southerly drill intersection. RC dipping and had potential to contain a significant resource. Intersections in the western lens included, 16m @ 3.1 g/t Au and 10m @ 7.0 g/t Au.

Drilling on the other lenses mostly limited their potential if the interpretations of dip and strike were correct, but it did not test the interpretation that some of the leases may be dipping to the west, which is possible in view of the results on the West Lens.

Visible copper mineralisation and a gold anomalous stream sediment in the vicinity of 7000N on the Wynberg grid indicated that there is potential for additional gold mineralisation grid north of the currently established Wynberg Prospect grid.

Exploration during the year to June 1992 at Wynberg included the drilling of 11 reverse circulation drill holes, limited geological traversing, levelling drill collars in the West Lens be clinometer, and plumbing holes in the West Lens for standing water level.

#### 8.3 Little Duke and Iron Duke Prospects

The Little Duke and Iron Duke prospects are located approximately 1 kilometres north-east of the Mount Freda Mine. The Iron Duke lode is situated in the lower part of POT1 and consists of quartz-siderite-jasperoidal material which lies along an amphibolite-metasediment contact. The lode persists for approximately 900 metres to the north-north-west. Little Duke is located approximately 500 metres south of Iron Duke and contains a north-north-east striking lode of quartz-siderite brecciated lode material. The Little Duke lode has been developed by a shaft approximately 9 metres deep, however no records are available regarding its production and grade. The mullet dump suggests very small amount of horizontal development. The lode is located in a host of black siltstone. With adiacent amphibolites and metacarbonates.

Previous exploration has included rock chip sampling, gridding and soil sampling.

The lode was found to be discontinuous and in some locations perhaps en echelon in character. The width of the lode varies between 0.1 and 2.5 metres and is almost everywhere anomalous in copper and arsenic with and localling anomalous in gold. The small workings at Little Duke and the very shallow potholes at Iron Duke appear to have been targeting copper. Gridding by the Devex, Epoch joint venture over the Little Duke, Iron Duke zone indicated soil geochemical anomalies in copper, arsenic and gold. However the anomalies were discontinuous with highest levels of anomalism in the Little Duke and of the grid.

The presence of a semi-continuous structurally controlled lode system in a host of black shales and the anomalies nature of the lode and in places the host rock gives this prospect potential for containing significant tonnages of near surface gold enrichments. The proximity of this area to the moth balled Mount Freda CIP gold processing plant may allow modest tonnage discoveries to be viable in a trucking and toll treatment or joint venture situation at Mount Freda.

#### 8.4 Falcon Prospect

This prospect is located approximately 320 metres west of Iron Duke and is on the southern end of a north-south striking structurally controlled lode system.

The Falcon and Falcon north lode systems cover a length of at least 1200 metres and are represented as a discontinuous structurally controlled quartz-carbonate veins in dark shales with adjacent amphibolites. Of basil POT1. Which is conformable with the amphibolite-black shale contact between PON3D and POT1.

In some areas the lode was mapped as oxidised quartz, siderite, tourmaline, scheelite and muscovite. It has a width of approximately 0.7 metres although highly variable. This lode is almost every anomalous is copper, arsenic and gold.

An earlier soil sampling grid carried out by the Epoch Devex joint venture to find over the southern portion of this lode contained a number of discontinuous anomalous sections.

Numerous very small copper scratchings are located along this structural line with the target being copper and scheelite. No commercial production seems to have taken place.

#### 8.5 Comstock Prospect

The Comstock line of mineralisation is located approximately 420 metres west of the Falcon line. The lode consists of a number of discontinuous parallel structurally controlled quartz carbonate veins in fine grained amphibolite, biatite, muscovite-schist host rocks. Some commercial production appears to have taken place at Com in the southern end of the two main lines of lode. Rock chip sampling indicated the anomalous nature of the lodes with particularly in gold.

This zone was gridded and soil samples by the Devex Epoch joint venture, who also cut a number of costeans and drilled two percussion holes under the Comstock lode.

The two percussion drill holes defined a quartz lode dipping approximately 80 degrees to the west. Hole 1 intersected the lode between 27 and 28 metres down hole with best assays of 2 metres at 2.4 g/t gold between 26 and 28 metres and 1 metre of 1.2 g/t gold between 28 and 29 metres. Hole number 2. was drilled appears to have intersected the lode between 32 and 40 metres down hole and returned values in the interval 18 metres to 31 metres down hole averaging 0.42 g/t gold. This section has an estimated true width of 5.5 metres and contained a best interval 1 metre of 1.2 g/t gold. Within the interval between 18 and 31 metres there are minor quartz veins but there do not appear to be any significant quartz development.

The Comstock quartz lode on the boundary between a shistose siltstone amphibolite appears to have some potential due to the width of the mineralised rock sweep.

#### 9.0 FIELDWORK COMPLETED

#### 9.1 WOW Prospect

#### 9.1.1 Gridding

The existing grid was extended and soil sampled. See Plate 2.

#### 9.1.2 Mapping

Geological mapping was carried out over the grid extensions.

#### Rock types include -

<u>Chert</u> - very pale hard, fractured rocks, usually with dark flecks. Least common rock type <u>Siliceous Siltstone</u> - light to dark grey, blocky in nature, pearly outcropping. grades into chert an silica end and black siltstone an non silica end.

<u>Black Siltstone</u> - very subdued outcrop. Has a well developed cleavage at 280 degrees - 320 degrees. Despite low outcrop, it has widespread outcrop, particularly in the NE section of the grid where the cleavage is in the range 275 - 330 average 310. In the NE sector it contains ferruginous quartz veins, in one case carrying 1.7 g/t Au.

Amphibolite occurs in 2 layers and mostly seen as quartz and quartz Fe float. Rarely amphibolite. Cut in the SE trench. Appears to have an influence on copper values.

#### 9.1.3 Drilling

One reverse circulation drill hole WOW 2 was drilled to try and intersect the mineralisation evident on the surface and in drill hole WOW 1 resulting in a gold intersection of 4m @ 3 g/t. See Plate 2 and Appendices 1, 2 and 3 for location and results.

#### 9.2 Wynberg Prospect

#### 9.2.1. Drilling

During this period 6 reverse circulation holes were drilled in this area to further define the known extent of the gold mineralisation. See Plate 5 and Appendices 4,5 and 6 for hole locations and results.

#### 9.3 Iron Duke and Little Duke Prospects

#### 9.3.1 Gridding

During the period, an extensive gridding program was undertaken in the Iron Duke and Little Duke prospect areas in the most southerly section of EPM 4774.

The grid was pegged to cover the strike length of the Little Duke and Iron Duke mineralisation and their southerly and northerly extensions. The grid covers length of 1,100 metres with grid north at 345 degrees magnetic and crosses the Mt Freda mine road. Cross lines were pegged at 50 metre spacings as shown on plate No.4

#### 9.3.2 Mapping

Geological mapping was undertaken along cross lines and in the more important sections of the gridded area. In order to define the controls on the gold copper mineralisation. During mapping all workings both large and small were plotted.

#### 9.3.3 Sampling

A total of 37 rock chip samples were taken within the grid area.

As shown on plate 1 and appendix 13, the samples were taken within and adjacent to gold, copper workings and across zones and horizons showing evidence of structure, veining and alterations. Samples were assayed for copper and gold with results being plotted on plate 4 and assay sheets for samples ID 12 to ID 37 being located in the attached appendix.

Plate 1 and appendix 13 also shows a previous soil sampling program carried out by the company. With assays for gold, copper and arsenic.

#### 9.3.4 Drilling

3 reverse circulation holes were drilled beneath surface, anomalously high, gold samples. See Plate 4.

#### 9.4 Falcon Prospect

#### 9.4.1 Gridding

Small old workings have been developed at many locations along an approximate 345 degree magnetic direction both north and south of the old Falcon prospect.

A base line 215 metres long was pegged in the vicinity of these workings and with a tie line at 400 metres north joining this grid to the Iron Duke, Little Duke grid. The base line was pegged out 345 degrees magnetic and no crossed lines were necessary due to proximity of workings to the base line.

#### 9.4.2 Mapping

All visible workings, gold copper prospects and workings within approximately 150 metres of the base line were plotted and a limited amount of geological mapping undertaken. The grid may be seen on plate 1.

#### 9.4.3 Sampling

A total of 40 rock chip samples were taken within the Falcon Grid area.

Almost all samples were taken in old workings in an effort to determine the grade of the structurally controlled quartz veins that the prospectors were sinking and also in an effort to work out if the host rocks on either side of the veins systems were mineralised with copper and or gold. All samples were assayed for gold and copper with sample locations being plotted on plate 4 and assay sheets being located in the attached appendix.

#### 9.4.4 Drilling

2 reverse circulation holes were drilled beneath elevated gold surface samples. See Plate 1 and Appendices 7, 8 and 9 for hole locations and results.

#### 9.5 Comstock Prospect

#### 9.5.1 Gridding

A tie line was taken west from the Falcon base line at 1600 metres north to join the Comstock line of mineralisation some 400 metres to the west. Base lines at 345 degrees magnetic were extended north at 1400 metres east for a distance of 500 metres, and south at 1300 metres east for a distance of 200 metres. No crossed lines were necessary here due to the proximity of workings to the base lines.

#### 9.5.2 Mapping

All workings within a distance of 100 metres were plotted accurately in an effort to obtain information on the number and direction of the structurally controlled mineralised veins. A limited amount of geological mapping was undertaken to broadly define the stratigraphic controls.

#### 9.5.3 Sampling

A total of 6 rock chip samples were taken in and adjacent to workings to determine the tenor of the mineralised veins and the adjacent host rocks.

Samples C 01 to C 06 are located with results on plate 4 and assay sheets are attached in the appendix

Previously taken soil samples with copper, gold and arsenic values are also plotted.

#### 10.0 RESULTS AND ASSESSMENT OF FIELDWORK

#### 10.1 WOW Prospect

#### 10.1.1 Mapping

The WOW Prospect grid area worked on during the period is shown in Plate 1 is located in a gentle east facing slope and contains little or no palaeo-alluvial

The main rock types present are chert, siliceous siltstone, black schistose siltstone and amphibolite.

The amphibolites appear to be conformable with the general strike of the sequence in a direction approximately 10 degrees magnetic. The chistosity and or cleavage appears to be parallel or almost parallel with the strike of the bedding indicating a fold axis in the 110 degrees magnetic direction. Bedding/cleavage intersections were not sited in the field.

#### 10.1.2 Geochemistry

#### Cu

The overall trend of anomalous Cu as shown by the >200+ppm Cu contour is WNW-ESE and forms an oval shape with long axis in that direction, although it is well open to the SE. The p>200 values occur in all rock types. Amphibolite may have an effect with the southern belt forming the boundary of the +200 value and the northern belt possibly causing elevated values.

Within the 200ppm Cu area, the detail of the elevated, say >400 ppm values, is more complex. The >400 ppm areas appear to individually trend E-W but collectively may form an en-echelon pattern trending NW-SW.

#### Αu

The anomalous zone of gold as shown by the 100 ppb contour covers a similar area to the 200ppm Cu. However the Au anomaly is more complex and has some outlying islands of anomalism in the SE area of the grid. Further, the easternmost line 2400E has a number of extreme values - 19.5ppm and 282 ppm Au in an area which, although well down the slope, appears from mapping to be good for soil geochem and has widespread although subdued outcrops and almost no lag quartz and silcrete. It may be necessary to auger this and other lines to the east, if sampled. The >200ppm  $\Delta u$  contour area covers a number of small areas but is broadly similar to Cu with similar trend although not so clear cut.

#### General Comments

#### Geochem

The position of the Cu, Au anomalous area, half way down the eastern slope of the ridge indicates that we are dealing with a genuine bedrock anomaly here and not shedding from palaeo-alluvial. Thin palaeo-alluvial style of material rounded quartz, silcrete etc, does occur in patches on the slope and on the ridge but bears no recognisable relationship to the anomaly.

#### Structure - Strat

The stratigraphy, of amphibolite, siliceous siltstone, chert is common in this area and the anomalous mineralisation is assumed to be either purely structurally hosted, or structure/favourable stratigraphy controlled.

#### Work to be Done

- 1. Finalise the grid mapping with close attention to amphibolited structures.
- 2. Sampling extend the soil grid by ongoing if necessary. Particularly to the E and SE.
- 3. Rock chip as necessary any interesting outcrops and proximal float. Try some broad lines of rock chip in areas of reasonable outcrop.
- 4. \* Trenching try using corner of grader blade to make contour cuts for sampling.
- 5. Check all sample points and delete samples taken in alluvium.

#### Sampling Procedure WOW Infill Programs

Samples were taken in areas of outcrop and colluvium not in alluvium. Sample taken using a mattock at depths 5-15m.

Dry sieved to 20 mesh in the field.

Sieved to 80# in lab.

#### 10.2 Wynberg Prospect

WYN 73 was drilled in the WYN 1 lens and was located at 5095mE 5175mN, 30 metres grid south of WYN71. See plan . WYN 73 was sited to intersect the interpreted southerly extension of the mineralised structure intersected in WYN 71 which returned 4m at 5.05g/t Au from 18 to 22m down hole.

This structure based on a surface trench result of 4m at 5.8g/t Au and an intersection of 2m at 1.1 g/t Au between 45 and 47m down hole has been interpreted to be dipping west at 73°.

An alternative interpretation allows for one shallow west dipping and one steeper east dipping mineralised structure.

WYN 73 intersected a siliceous (cherty) siltstone sequence similar to WYN 71 and WYN 1, and like WYN 71, contained a zone of very fractured, mud brown rubbly material containing visible <1% malachite, azarite and 2-25% quartz, associated with the gold mineralisation.

WYN 73: 16-24m 8m @ 2.86g/t Au containing 18-22m 4m @ 4.65g/t Au

Regardless of the interpretation accepted, WYN 73 has extended the mineralisation in WYN 1 lens, 30 metres to the south. As WYN 71 and 73 intersected the zone at the same depth, it is possible to establish a strike of 349°grid or 024° mag. Copper values in WYN 73 were anomalous throughout, with a minimum value of 319 ppm Cu and a maximum of 7870 ppm. The highest values were associated with the gold mineralisation. No sulphides were recorded in the hole.

Arsenic values were considered anomalous in the range 180-470 associated with the gold mineralisation. Outside the gold mineralise zone values were below 80 ppm and not considered anomalous.

WYN74 was drilled on the WYN 1 lens, in order to target the northerly extension of mineralisation intersected in WYN 71. WYN 74 was located at 5089mE, 5229mN some 25m north of WYN71. It intersected a similar require of cherty siltstones to 30 metres and then very black softer siltstones to its terminal depth of 42 metres.

No significant gold zone was intersected with only 2 x 2 metre samples returning greater than 0.1g/t Au. Cu was >200 ppm between 28 and 34 metres. Au was anomalous. Maximum value 70 ppm.

Sulphides were first recorded at 31 metres down hole length. The strike on the main gold mineralised structure of 349°(grid) believed to have been established by WYN 71 and 73 indicated that it should have been intersected by WYN 74 in the range 13-19 metres down hole, depending on the interpretation of dip adopted.

The failure of WYN 74 to intersect the gold bearing structure, and the much reduced Cu values throughout the hole suggest a termination or offset of the northerly extension of the structure between WYN 71 and WYN 74.

The direction and extent of the gold structure to the south of WYN 73 is unknown. 16 metres south, a trench was sampled and returned no values over 0.02g/t Au. However it does contain significant copper anomalism >400ppm. Recent mapping has indicated a possible fault running in a direction of grid 305° just South of WYN 73. The presence of this possible fault in interpreted by the presence of an clan gate series of outcrops of possibly downfaulted gilded rose breecia as shown in the geology plan.

Further mapping in the immediate vicinity of WYN 1 lens is required prior to siting the next drill hole.

#### 10.3 Iron Duke and Little Duke Prospects

Mapping and sampling on the Iron Duke, Little Duke grid is believed to define the stratigraphy, structural control and geometry of the mineralisation. As maybe seen on plate 4 the line of mineralisation at Little Duke is at angular variance to that at Iron Duke.

The lode at Little Duke consists of a full breccia of silicified shales and perhaps carbonates to chert, sidorite, jasper. At Little Duke itself the outcrop of these rocks of the breccia zone is quite prominent and up to 3 metres high and 30 metres long. Elsewhere this load is subdued in outcrop but mapable due to veining and brecciation. The lode extends at a bearing of 355 degrees magnetic and is mappable for a distance of 170 metres north of the Little Duke shaft and 155 metres south of the Little Duke shaft. Shallow scratchings are common along this line. The lode reaches it's maximum development at the Little Duke prospect. Here the breccia is approximately 3 metres wide as shown

in the north and south walls of the shaft itself. And in the prominant outcrop immediately north of the shaft. The lode at the shaft is dipping to the east at 75-80 degrees.

Rubble on the mulloch dump of the shaft includes copper carbonates carrying considerable gold. Sampling of the lode to the north of the shaft including the prominent outcrop of breccia material gave highly anomalous results with the first 50 metres averaging 0.96 ppm Au and the next 35 metres averaging 1.6 g/t AU. Mullock from the shaft gave a value of 3.0 g/t Au although this sample is not believed to be representative. Further sampling at Little Duke during this period of reporting was mainly confined to the shaft itself. Sample CR 2507 taken across the southern wall of the shaft over a length of 2.5 metres, at a distance of 2 metres below the surface returned a value 9.36 g/t Au. The next sample across the lode itself taken at 5 metres depth across 2.0 metres of the north wall breccia returned a value of 1.97 g/t Au. It is interesting to note here that a wall rock sample on the western side of LD 3 over 0.65 metres of footwall returned a value of only 0.15 g/t Au. A third sample of load breccia was taken at a depth of 7.5 metres below surface. Across 2.0 metres of the northern wall breccia. This sample LD 1 returned a value of 1.14 g/t Au.

All of the breccia load material exposed in the shaft wall to a depth of 9.5 metres was highly oxidised without any copper minerals being visible. The assay results from the three chip samples between 2 metres and 7.5 metres deep appear to indicate a strong level of enrichment in the upper few metres.

Little Duke appears to be in a host rock of siltstones, marls, and amphibolite.

As shown on plate four the Iron Duke lode which runs at grid north or 345 degrees magnetic is at variance to the Little Duke line of lodes. Interestingly the line of the Iron Duke lode may well intersect the Little Duke lode at about the area of the Little Duke shaft.

Mineralisation along the Iron Duke lode appears to be scattered, with no particular consistent line of lode at any one point except in the vicinity of the Iron Duke workings.

This line of mineralisation is hosted by siltstone and amphibolite. And is characterised by a line of barren looking quartz at surface in both the southern or road end of the line and in the vicinity of Iron Duke.

At Iron Duke a well defined lode system over a width of approximately 10 metres was mapped for a distance of 80 metres centred upon the main Iron Duke shallow open cut. Here the lode material consists of jasper and quartz and feruginous quartz, commonly with malachite staining. The lode appears to be in a number of lines with the main or eastern line reaching a maximum development of 1 metre. this eastern lode appears to dip at approximately 75 degrees to the east.

Cross cutting features are evidenced by at least 1 quartz jasper vein striking at 045 degrees magnetic and dipping 30 degrees to the south. The host appears to be deeply altered amphibolite.

Rock chip sampling across the lode at Iron Duke gave a best value in ID 3 of 8.4 g/t Au and 2.55% copper over a width of 1.00 metres in the north wall of a shallow open cut. Other samples were anomalous in both copper and gold.

Previous sampling had returned values as high as 30.5 g/t Au however these are believed to have been grab samples of highly mineralised material.

This general grid area requires further consideration and it is recommended that more detailed mapping be undertaken with a view to establishing drill targets on the Iron Duke and Little Duke lines of mineralisation.

During June 1993 Cloncurry Mining N.L. carried out a small sampling program in the area covered by the Iron Duke. A total of 11 samples numbered 10100 - 10110 were taken at a number of locations on surface and in workings for maximum values of 2.14 ppm Au in the Iron Duke workings and 2.14. A number of other chip samples were anomalous for examples 0.48 ppm Au in sample 10107 taken from siderite, yellow jasper, quartz veining within an anticlinal fold in shale. These samples and results do not support a concept of pervasive mineralisation in the wall rocks of these narrow lodes. Sample assay sheets and descriptions are attached in the appendix.

#### 10.4 Falcon Prospect

the Falcon line of mineralisation as shown on plate 4 extending from 1200 metres north to 2500 metres north contains 2 main mineralising and structural elements.

- 1. A north south quartz + or carbonate load striking grid north (345 degrees magnetic), occurring as a discontinuous series of parallel loads over a width of approximately 100 metres as shown by the distribution of shallow workings.
- 2. A series of north west, south east striking and commonly shallow dipping quartz siderite loads, the larger of which cuts through the Falcon Prospect. A smaller set of lodes in the 315 325 magnetic direction cuts across the Falcon line at about 925 metres north. At this point the veining in workings dips at approximately 30 degrees to the south west. These cross cutting features may bare some relationship to the Mt. Freda lode direction.

Most rocks in this zone consist of siltstone and amphibolite.

Sampling returned numerous values greater 1.0 ppm Au however these were generally over quite narrow widths. The highest value was in shaft at 1980 north which returned 36.9 ppm Au over 0.28 metres. A further sample towards the base of the shaft returned 2.15 ppm Au over 0.35 metres. This further indicates near surface enrichment of gold in this area.

Sampling in foot wall and hanging wallrocks in many of these workings returned anomalous but low values. Thereby indicating minimal potential for broad near surface gold ore body.

An earlier phase of soil sampling in the southern 1/4 of the Falcon grid contained numerous anomalous gold values. Many of these are considered to be contamination due to earlier workings in the general vicinity however a number of anomalous samples require follow up investigations.

The most interesting mineralisation occurs along the Falcon line at approximately 1450 north at a point in the lode line where the north west, south east trending reports carbonate veining intersects. Here the lode appears to have a number of elements over a width of approximately 10 - 15 metres with narrow zones carrying values of 2.5, 5.2, and 8.3 g/t Au. The host rocks here appear to be carrying anomalous gold in the range of 0.2 - 0.7 ppm Au. This area requires further investigation.

#### 10.5 Comstock Prospect

As shown on Plate 4 the 2 Comstock line of lodes appear to strike in a direction of approximately 355 degrees magnetic. Away from the larger prospecting and mining operations at the southern end which were the subject of costeaning and drilling by the joint venture in earlier periods. The results of chip sampling was disappointing. In the western line of mineralisation highest value of 1.39 ppm Au over 0.17 metres was achieved and in the eastern zone a maximum grab sample of 2.69 ppm was returned from a mullock sample and 1.39 ppm Au over 0.17 metres from veining in small workings at the northern ends. Considering the nature of the drill results, the soil sample lines and these chip samples, the Comstock area is considered to have limited potential for economic gold and or copper mineralisation.