426001

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 1 0F 2
R REID, R CLOSE

MICROFILMED
FICHE No.014655-62

PLUTONIC OPERATIONS LIMITED

(ACN 004 680 997)

MINERAL RESOURCES
EL 29/94
19 MAR 1998
See folio 64

RED HILLS

EL 29/94

Volume 1

REPORT ON EXPLORATION

DURING THE PERIOD 20 OCTOBER 1995 TO 21 OCTOBER 1997

R. O. Reid
R. J. Close

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 1 0F 2
R REID, R CLOSE

AI/OCT97/REDHILLS.BC

426002

CONTENTS

1.0 INTRODUCTION

2.0 LOCATION AND ACCESS

3.0 PREVIOUS EXPLORATION

4.0 EXPLORATION PHILOSOPHY

5.0 WORK CONDUCTED

- 5.1 INTRODUCTION
- 5.2 RED HILLS GEOLOGY
  - 5.2.1 INTRODUCTION
  - 5.2.2 STRATIGRAPHY
    - 5.2.2.1 Felsic Lava and Volcano-sedimentary Associations
    - 5.2.2.1.1 Felsic Lava and Breccia Association (RHL)
    - 5.2.2.1.2 Volcano-Sedimentary Association
    - 5.2.2.2 Black Shale Horizon
    - 5.2.2.3 Quartz-feldspar-phyric Lavas and Volcaniclastics
    - 5.2.2.4 Basalt
    - 5.2.2.5 Volcanic facies model
  - 5.2.3 STRUCTURE
    - 5.2.3.1 Folding
    - 5.2.3.2 Faulting
- 5.3 MINERALISATION AND ALTERATION
  - 5.3.1 INTRODUCTION
  - 5.3.2 ALTERATION
  - 5.3.3 MINERALISATION
    - 5.3.3.1 Volcanic Hosted Massive Sulphide (VHMS) Mineralisation.
    - 5.3.3.2 *Stringer Vein* Pyrite-Chalcopyrite-Magnetite Mineralisation
    - 5.3.3.3 Gold (Pb-Zn) Quartz-Carbonate Vein Stockworks
  - 5.3.4 A Model For Development of Mineralisation at Red Hills
  - 5.3.5 Vectors
- 5.4 GRIDDING

CONTENTS

5.5 GEOCHEMISTRY

5.5.1 Drill Core Sample Results

5.5.2 Rock Chip Sampling

5.5.3 Soil Sampling

5.6 GEOPHYSICS

5.6.1 Moving Loop EM

5.6.2 Ground Magnetics

6.0 CONCLUSIONS

REFERENCES

LIST OF FIGURES

Figure 1: Location and Tenement Plan

Figure 2: Regional geology

Figure 3: Local geology and targets

Figure 4: Grid Extent and Moving Loop EM survey coverage

Figure 5: Ti/Zr ratios distribution for Red Hills Volcanics

Figure 6: Stereographic projections of poles to bedding and cleavage.

Figure 7: Zinc Number data for all Red Hills mineralisation styles.

Figure 8: C-Horizon Geochemistry Au Contours

Figure 9: C-Horizon Geochemistry Cu Contours

Figure 10: C-Horizon Geochemistry Pb Contours

Figure 11: C-Horizon Geochemistry Zn Contours

Figure 12: C-Horizon Geochemistry As Contours

Figure 13: C-Horizon Geochemistry Fe Contours

Figure 14: C-Horizon Geochemistry Mn Contours

Figure 15: Red Hills Ground Magnetics

Figure 16: Red Hills Drill Section 5364500N

Figure 17: Red Hills Drill Section 5363900N

Figure 18: Red Hills Drill Section 5363700N

Figure 19: Red Hills Drill Section 5363400N

426004

LIST OF PLATES

Plate 1: Geology of the Red Hills Grid

Plate 2: Red Hills Reconnaissance Geology

Plate 3: Red Hills Prospect Long Section 382250E

Plate 4: Drill Section 5365570N

Plate 5: Drill Section 5365330N

Plate 6: Drill Section 5365150N

Plate 7: Drill Section 5365100N

Plate 8: Drill Section 5364900N

Plate 9: Drill Section 5364750N

Plate 10: Drill Section 5364500N

Plate 11: Drill Section 5363900N

Plate 12: Drill Section 5363700N

Plate 13: Drill Section 5363400N

Plate 14: Au soil geochemistry

Plate 15: Cu soil geochemistry

Plate 16: Pb soil geochemistry

Plate 17: Zn soil geochemistry

Plate 18: As soil geochemistry

LIST OF APPENDICES

I GEOLOGY OF THE SOUTHERN AREA EL 29/92 (HERRMAN, 1996)

II GEOCHEMISTRY

- a) Soil Sample Assay Data
- b) Rock Chip Sample Data
- c) Drill Core Sample Data

III GEOPHYSICS

- a) Moving Loop EM Survey Report
- b) Ground Magnetics Survey Report

SUMMARY

The Red Hills EL29/94 contains Central Volcanic complex sequences and overyling Tyndall Group stratigraphy which are highly prospective for VHMS mineralisation and Henty-style gold mineralisation.

Plutonic exploration during the past two years has involved detailed mapping, soil geochemistry, drill hole relogging, ground magnetics and a Moving Loop EM survey over a new AMG grid. This work has confirmed the northern adits copper-rich mineralisation may be the root zone of a felsic VHMS hydrothermal system which was eroded and redeposited in debris flow hosted volcaniclastics of the lower mineralisation horizon (LMH). Weak gold and base metal values with silica-sericite-pyrite alteration in the overlying basal Tyndall Group Lynchford Member sediments, mark the waning phase of the hydrothermal system.

Sedimentalogical and geochemical vectors indicate the LMH has potential to host a significant polymetallic resource along the eastern limb of the Shale Synform surrounding the high-grade massive sulphide intersection in drill hole RH5.

EM anomalism in the Red Hills northern adits area may also indicate the presence of remnant massive sulphides within the stringer zone mineralisation.

Late Cambrian granite-related K-feldspar-chlorite-magnetite $\pm$ chalcopyrite alteration at Red Hills has overprinted the VHMS alteration and obscured stratigraphic correlations. Subsequent deformation of the Cambrian succession was accompanied by auriferous quartz-carbonate veins in the Western ridge lava sequence.

Proposed exploration will involve drilling the priority polymetallic and gold targets, together with regional evaluation of the prospective lower Tyndall Group sequence.

1.0 INTRODUCTION

Exploration Licence 29/94 covers an area of approximately 16 square kilometres central to the Cambrian Mount Read Volcanics Belt (MRV) in Western Tasmania (Fig. 1). The tenement was granted to Plutonic Operations Limited on 22 October 1994.

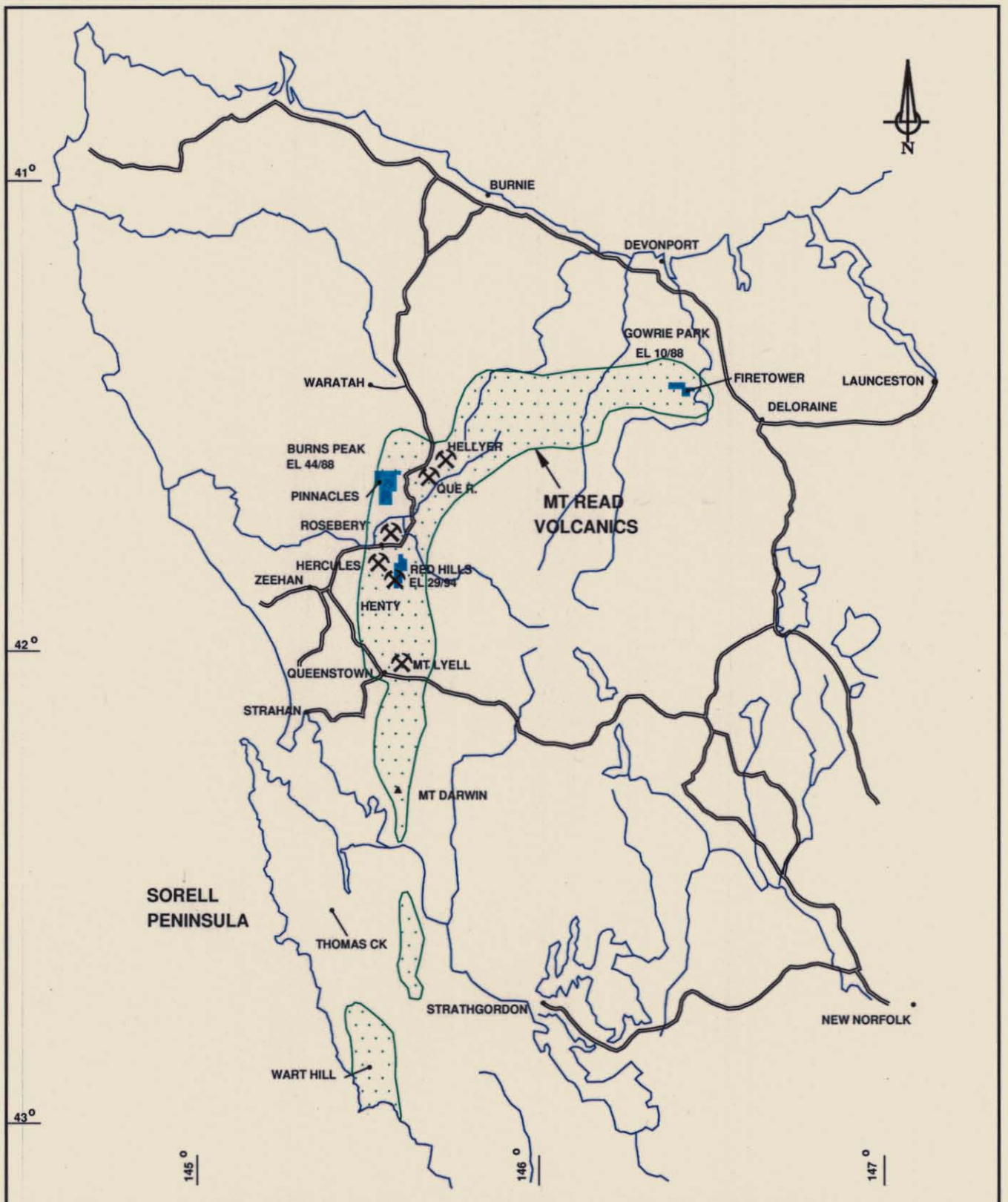
This report details exploration activity on EL 29/94 for the past two years of the license ending 21 October 1997. Exploration by previous companies has been directed at the copper-gold potential of the chlorite alteration pipe within the Red Hills lava, and at the exhalative base metal and gold potential of the overlying felsic volcanic and black shale package to the west of the lava. The high prospectivity of the latter volcaniclastic sequences is evidenced by the RH5 drill intersection of 2.8m of banded massive sulphide (assaying 34.5% Zn, 11.4% Pb, 0.3% Cu, 250 g/t Ag and 6.5 g/t Au) and an inferred resource of 1 million tonnes at ~ 2 g/t Au delineated in the vicinity of that drill hole (Purvis et al 1983).

An important feature of the Volcanic Hosted Massive Sulphide (VHMS) deposits of the MRV is their stratigraphic setting. Most deposits of this type occur at or near the boundary between the Central Volcanic Complex (CVC) sequences and Tyndall Group (TG) or equivalent stratigraphy (The White Spur Formation, Southwell Subgroup). This boundary represents a change in volcanism from feldspar-phyric (CVC) to quartz-feldspar-phyric (TG) volcanics. The exploration potential of E.L 29/94 rates very high for VHMS as both CVC and TG stratigraphy exists within this mineralised and structurally complex area.

2.0 LOCATION AND ACCESS

EL 29/94 lies several kilometres east of Mt Read in Western Tasmania, within a two to three kilometre wide corridor extending north from Lake Westwood and Julia Peak to the southernmost slopes of Mt Murchison, (Fig. 2).

426007





LEGEND

REVISION	Plutonic Resources Limited	
Technical Report No.	PROJECT: 706 - 710	
CHECKED BY:	TENEMENTS	
DATE: AUG 1996 SCALE:	FILE: d:\tasmania\tenement\tasten3.dgn DATE: 18-Feb-98 14:42	DWG. NO.:

FIGURE 1

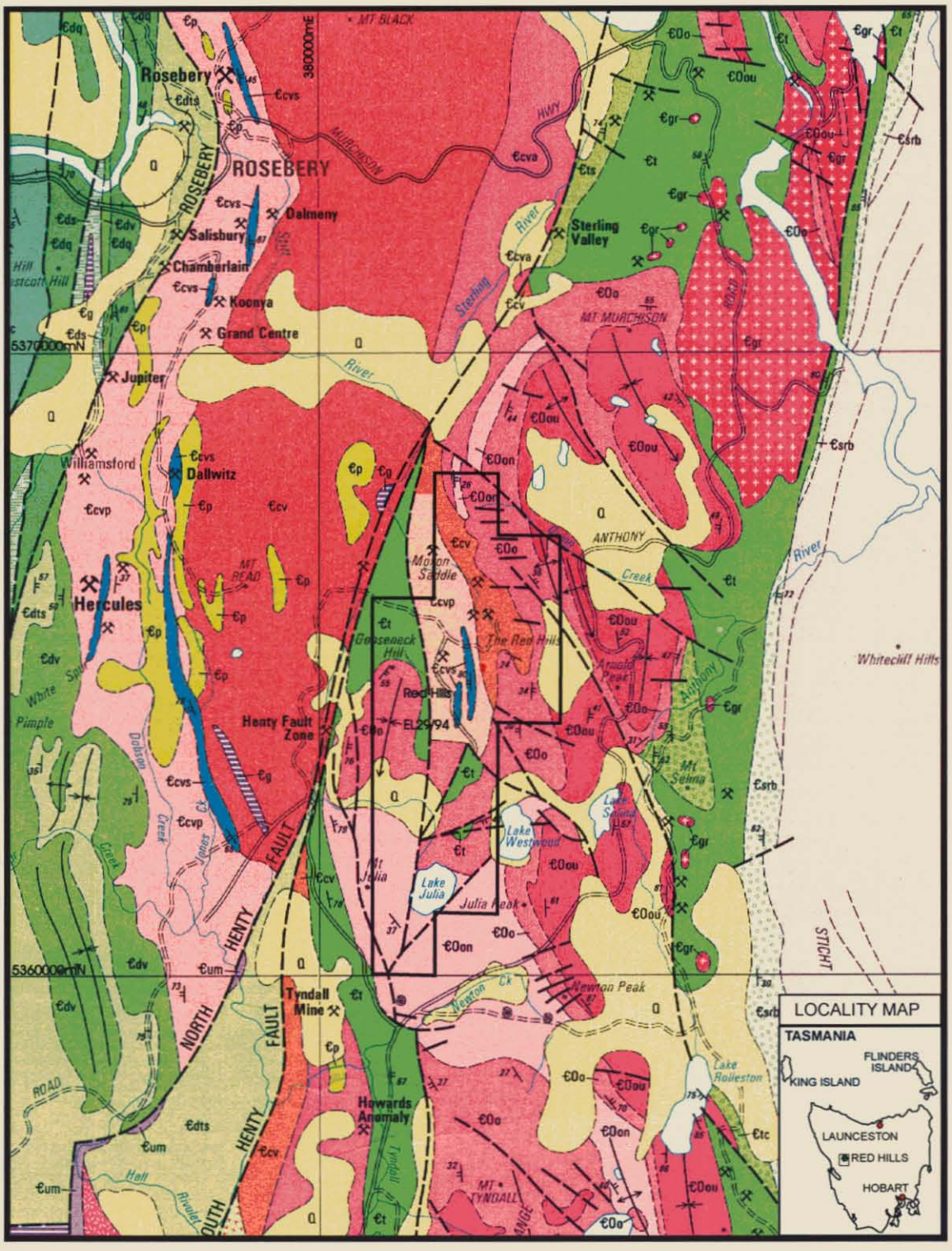
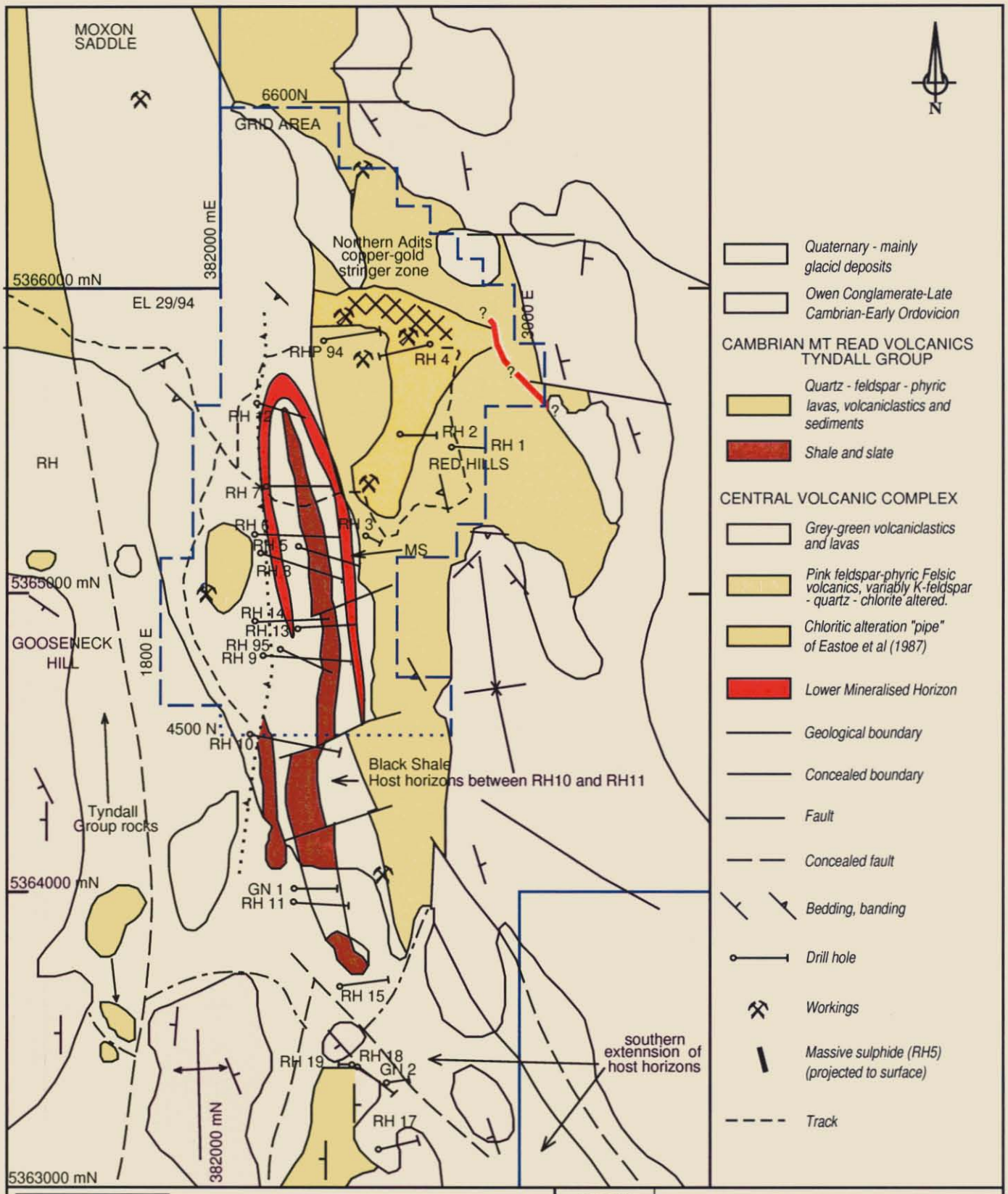


Figure 2: Whole Tenement Regional Geology



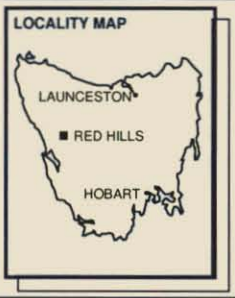


FIGURE 3

500m 0 1km

REVISION	**PLUTONIC OPERATIONS LIMITED** A.C.N. 004 680 997
Technical Report No.	PROJECT: RED HILLS
CHECKED BY:	RED HILLS EL 29/94 SUMMARY GEOLOGY AND TARGETS
DATE: MAR 1998 SCALE:	FILE: d:\tasmania\redhills\rhilt14a.dgn DATE: 10-Mar-98 10:19 — DWG. NO.:

5 cm

426010

Access to the license area is by public roads to RGC's Henty Gold Project Mining Lease and then by four wheel drive all weather vehicle tracks to the Red Hills area. This access has been improved to a standard suitable for truck mounted drill rig by minor blasting and flattening of a troublesome steep section at (380750mE, 5366150mN) east of the Henty Fault zone. Foot access is also possible from the Henty-Anthony Road, which passes along the eastern margin of the license. During May to November, the efficiency of fieldwork is heavily weather dependent due to the elevated and exposed nature of the area. A short induction of Plutonic personnel was required by Henty Gold Project to allow egress through their mining lease to the EL area.

EL 29/94 occupies an environmentally sensitive area, in mountain country within the South West Conservation Area. Vegetation is composed of large expanses of button grass and intermittent low scrub with local mature rainforest in more protected areas. The latter containing significant stands of King Billy Pine, particularly in the gully south and west of the Red Hills summit. Concern for the preservation of indigenous tree species, particularly King Billy Pine was expressed during the approval process for griding over the central target area. Particular care has been taken to avoid cutting of these tree species during subsequent griding. Measures were also undertaken to avoid the introduction and/or spread of Phytophthora cinnamomi (die back) disease.

3.0 PREVIOUS EXPLORATION

The Red Hills area has been explored by numerous companies over a long period dating back to the turn of the century, but principally within the last 40 years. A summary of previous exploration in the Red Hills area is given in Reid and Close (1995).

4.0 EXPLORATION PHILOSOPHY

Plutonic's primary interest in the Mt Read Volcanics is the discovery of economic VHMS mineralisation. The highly VHMS prospective Central Volcanic Complex / Tyndall Group boundary is believed to occur within the Red Hills tenement. This stratigraphy combined with the close proximity and similarity of mineralisation to that at the Henty Gold Mine are considered to be highly favourable factors. Thus in the Red Hills area, Plutonic's exploration targets are both polymetallic VHMS and the related Cambrian gold mineralisation.

Apart from the one high-grade polymetallic intersection over 2.8 metres in drill hole RH5, a protracted history of exploration has not produced further base metal intersections with economic potential. However, upon review of previous data the combination of favourable mineralisation factors identified at Red Hills suggests there is potential for a significant polymetallic resource, and a gold only target that should be tested.

Relevant factors are:-

1. The recognition of the VHMS prospective Central Volcanic Complex / Tyndall Group boundary within the tenement.

2. Banded exhalative Pb-Zn-Ag-Au mineralisation in RH5 within a proximal volcaniclastic sequence directly above an extensive pervasive chlorite-K-feldspar- silica altered zone, represented by the Red Hills.

3. A large vein stockwork stringer-zone of pyrite-magnetite-chalcopyrite-gold mineralisation at the northern end of the Red Hills, hosted by the pervasive chlorite-K-feldspar alteration assemblage.

4. Syngenetic massive pyrite and anomalous base metals (up to 5.8% Zn, 1.6% Pb in RH11) with associated footwall VHMS alteration in a more distal upper exhalative position at the base of a black shale unit.

426012

The data review highlighted the following targets requiring evaluation:

1. In the vicinity of the RH5 polymetallic-gold mineralisation, there are no drill holes intersections within 150 metres of the surface, and strike extensions to the south remain inadequately tested.

2. The volcaniclastic sequence directly overlying the northern strongly mineralised footwall stringer-zone in the vicinity of the 1 North Adit has not been drill tested for a proximal massive sulphide deposit. This area was identified by CRAE to have near coincident IP, EM, magnetic and geochemical anomalism.

3. There is considerable strike potential to locate a distal polymetallic deposit to the south around drill holes RH11 and 15 which intersected significant base metal sulphides in the lower black shale unit,.

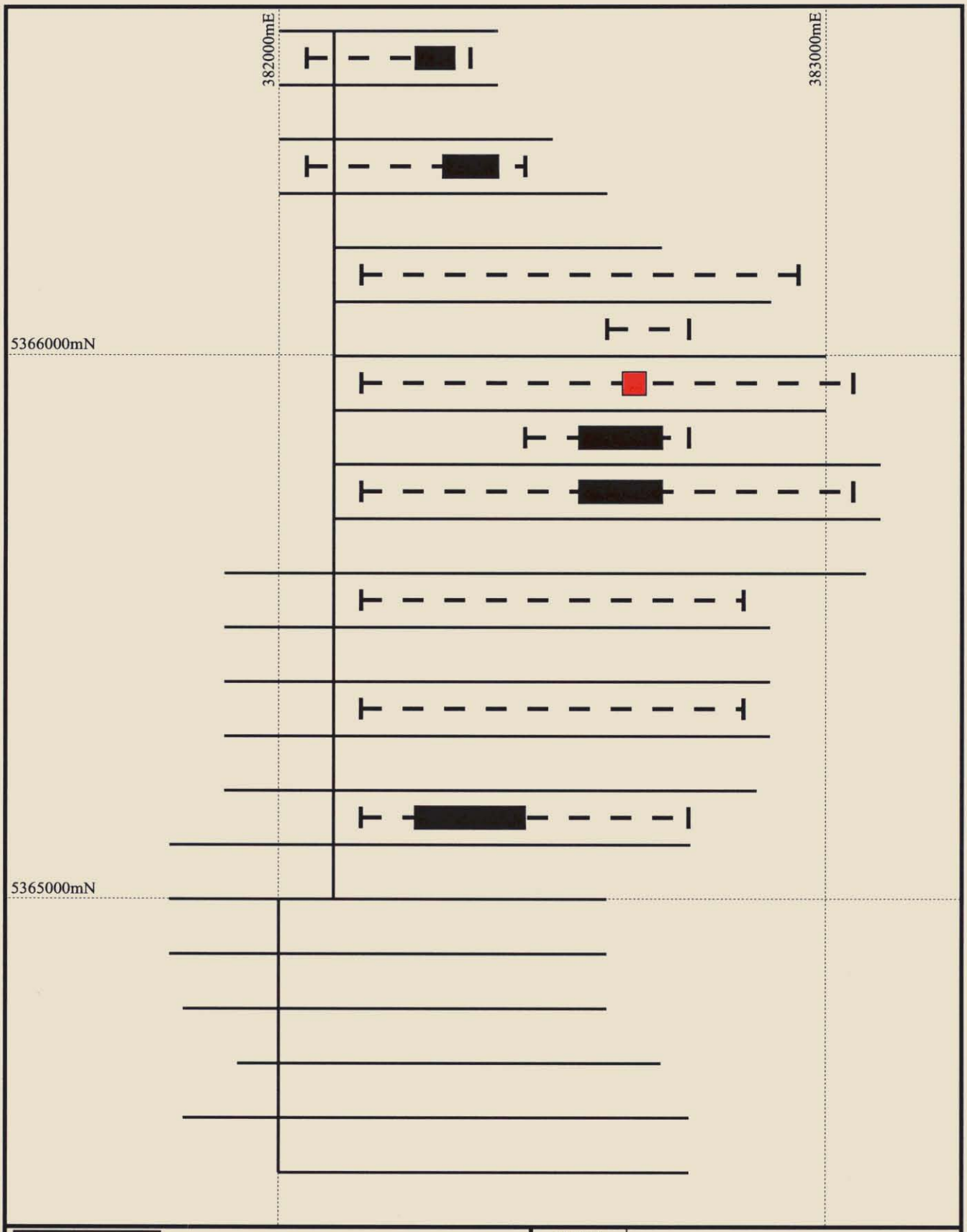
4. Structures within the Tyndall Group and the Central Volcanic Complex have not be adequately evaluated for remobilised Henty-style gold mineralisation.

5.0 WORK CONDUCTED

5.1 *INTRODUCTION*

The principal objective of the Red Hills Work Program was to assess the base metal and gold potential of the tenement area. Initial exploration involved the compilation and review of previous work. Due to the multiplicity of previous exploration grids, Plutonic fieldwork commenced with the establishment of an AMG orientated grid (Fig. 4) encompassing the central portion of the tenement.. Subsequently, the grid area was remapped with focus on volcanic facies and structural interpretation (Plates 1 and 2) and reconnaissance regional mapping was conducted to the edge of the Owen Conglomerate cover. Surface mapping, was complimented by re-logging and interpretation of existing drill holes (Plates 3 to 12).

426013



LOCALITY MAP

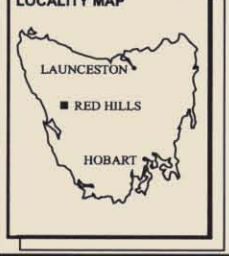


Figure 4: Grid Extent and Moving Loop EM Coverage.

Moving Loop EM reading line.

-ve MLEM anomaly

+ve MLEM anomaly.

grid line

250m 0 500m

REVISION	PLUTONIC OPERATIONS LIMITED A.C.N. 004 680 997
Technical Report No.	PROJECT: RED HILLS - TASMANIA
DRAWN BY: R REID CHECKED BY:	RED HILLS EL 29/94
DATE: OCT 1996 SCALE: 1:10000	REF : FILE: RHEMGRID.cdr DATE: October-96 DWG NO.:

5 cm

The entire Plutonic grid was C-horizon soil sampled at 25m intervals along the 100m spaced E-W grid lines. All samples were analysed for Cu, Pb, Zn, Fe, Mn, As and Au to aid targeting of mineralisation and for geological interpretation. Limited rock chip sampling for a similar suite of elements was also completed.

Geophysical surveys involved a ground magnetic coverage of the entire grid area together with a moving loop EM survey, principally targeted at locating sulphide mineralised conductors in the northern portion of the grided area.

5.2 RED HILLS GEOLOGY

5.2.1 INTRODUCTION

Tasmanian Mines Department mapping of the Red Hills area (McNiell, 1987) showed the geology is dominated by feldspar and lesser feldspar-quartz phyric volcaniclastics and lavas, assigned to the Central Volcanic Complex (CVC). The overlying quartz-feldspar-phyric lavas, volcaniclastics and epiclastics of the Tyndall Group (TG) outcrop to a lesser extent along the eastern and western margins of the lease, as well as in the south. The unconformably overlying Cambro-Ordovician Owen Conglomerate has a similar distribution.

The CVC volcanics are differentiated into two principal volcanic packages comprising felsic lava and a volcaniclastic dominated sequence. The dominantly feldspar-phyric lava of rhyolitic to rhyodacitic composition, outcrops as a prominent high ridge in the east with a small outlier, the "Western Ridge" located west of the RH5 area. These 'Red Hills lavas' are evident as a belt of pervasively altered near un-differentiable reddish felsic volcanics, the reddish colour presumably resulting from widespread K-feldspar alteration with iron stained zones which are variably silica-chlorite altered. This intense alteration commonly masks the primary volcanic textures and prevents adequate subdivision of the sequence.

The bulk of the volcanics to the west of the 'Red Hills lavas' are classed as dominantly feldspar-phyric felsic pyroclastic units, including ignimbritic units (McNeill, 1987). These volcanics are locally weakly quartz-phyric and are further subdivided here to comprise both the CVC and TG. This subdivision results from recent re-definition of TG stratigraphy by White and McPhie (1996).

In terms of the regional geological setting, the Red Hills stratigraphy is here loosely and informally correlated from oldest as upper CVC (sub Lower Mineralised Horizon; LMH), Lynchford Member of the Lower TG (LMH up to and including the "Black Shale"), Mount Julia Member and Zig Zag Hill Formation. The nature of these units and these tentative correlations is discussed below in terms of volcanic facies associations.

A strong structural overprint in the form of a moderate to strong foliation with shearing and later brittle style faulting has disrupted the volcanics.

The understanding of the Red Hills geology relies largely upon mapping of volcanic facies and structural interpretation as few marker horizons are recognised in the lower portion of the volcanic sequences. The volcanics are very difficult to characterise due to the extent of alteration and locally strong foliation development. However, outcrop is good in most areas, except where forest cover and glacial scree or alluvium obscures the volcanics in the south and south west of the tenement refer Herrman (1996) in Appendix 1. A series of variably open to tight almost isoclinal northerly trending and southerly plunging folds are recognised in the Red Hill grid area. This is mainly evident from logging of drill core in the central (RH5) area where a prominent black shale-volcaniclastic siltstone horizon is the locus for a major synform referred to as the shale syncline.

VHMS mineralisation has been identified along two principal horizons/stratigraphic positions. At the base of a major black shale unit and along lower mineralised horizon (LMH), containing the RH5 intersection. The LMH is commonly marked by altered polymict breccias and siliceous exhalates with silicification extending up to shale horizon possibly reflecting the migration of the hydrothermal system upward through the intervening high density turbidite deposited volcaniclastic sandstones between the principal VMS horizons.

5.2.2 STRATIGRAPHY

5.2.2.1 Felsic Lava and Volcano-sedimentary Associations

These volcanics are stratigraphically the oldest in the Red Hills area. Outcrop distribution is extensive along the eastern, northern and central western portions of the license area. They are host to VHMS mineralisation, incorporating the Lower Mineralised Horizon (LMH) and extending up to the base of black shale mineralised horizon. This facies association apparently incorporates the CVC/TG boundary at approximately the LMH position, which marks the first appearance of quartz phenocrysts in the host volcanics.

The spatial and temporal distribution of these volcanics is complex, reflecting folding and the interbedding of two principal volcanic facies associations. The volcano-sedimentary association mainly comprises pumiceous weak to moderately feldspar-phyric felsic volcaniclastic sandstones and lithic volcaniclastic sandstones with minor interbedded volcaniclastic siltstones. This facies is the most volumetrically important and probably represents relatively distal deposition from a volcanic centre via high density turbidite or mass flow related processes. The second facies association , the Red Hills Lava (RHL), comprises lavas and associated breccias which probably represent a combination of both proximal and distal partly reworked hyaloclastite bearing deposits related to lava emplacement.

Identification of these volcanic facies is problematical along the 'Red Hills' ridge in the east of the tenement area as outcrops are often strongly indurated with alteration masking primary volcanic features. These volcanics have traditionally been identified as dominantly 'lava' (eg. McNeill, 1987; Jenkins, 1991; Purvis et al, 1983). However, recent mapping demonstrates the volcanics contain a significant volcaniclastic as well as coherent lava component with the previous interpreted lava distribution reflecting the bounds of a large alteration system. The alteration comprises pervasive and domainal K-feldspar, chlorite and lesser silica alteration resulting in distinctive red stained outcrop.

Volcaniclastic textures in the RHL are obviously most readily apparent outside the bounds of the alteration, but relicts of these textures can be identified within the 'lavas'. For example, volcaniclastic siltstone rafts and disrupted beds are evident at 2300E, 6130N and similar although strongly indurated examples are located nearby at 2380E, 6040N. Another example is facing within thin graded beds in the basal portion of drill hole RH16 (Plate 6). Despite these observations the nature of the outcrop precludes an accurate volcanic facies interpretation within the more altered rocks.

5.2.2.1.1 Felsic Lava and Breccia Association (RHL)

Coherent lavas are expressed as massive and sometime blocky outcrop with uncommon flow banding and rare spherulitic texture providing unequivocal evidence of their eruptive nature. Hand specimen reveals a cream to light tan coloured, flinty feldspar-phyric rock with aphanitic groundmass. The mineral composition suggests a dacitic composition, or rhyodacite as is indicated by McNeill (1987).

Lava outcrop is dominantly north of 5000N where coherent lavas are flanked by compositionally similar monomict block breccias in units varying from 20 to 50 metres thickness. The breccias exhibit open framework to near close packed texture with sub-rounded to angular clasts of feldspar-phyric coherent felsic (lava) and flow banded lava. Their matrix is feldspar-phyric and may display a chloritic pumiceous texture. Jig saw fit is not evident, suggesting these breccias represent a partly reworked hyaloclastite facies related to seafloor extrusive lava emplacement.

The precise stratigraphic positioning of the dacitic lavas suite at Red Hills is problematic and there is evidence of intermittent extrusive activity during the entire deposition of the CVC package. Lavas are well exposed along the western ridge (5100N; 2000E), along strike to the north of 6100N and on the Red Hills ridge, east of the small shale syncline. The lavas may have been extrusive early in the CVC sequence but were definitely emergent during the formation of the lower mineralised debris flow, as this unit clearly bears juvenile lava clasts. Even later activity is evidenced by probable sills within the basal portion of the black shale horizon reported by Herrmann (1996).

5.2.2.1.2 Volcano-Sedimentary Association

The dominant lithologies within this association are pumiceous weak to moderately feldspar-phyric felsic volcaniclastic sandstones and lithic volcaniclastic sandstones. Polymictic volcaniclastic breccia is intimately associated with the lava facies and has been correlated with the Lower Mineralised Horizon (LMH) or the volcanic sequence directly beneath it. Sparsely distributed rock types comprising the LMH include pale green and grey volcaniclastic siltstones, and grey chert. The commonly massive volcaniclastic sandstone units within this facies association were probably formed by high density turbiditic flows.

In the northern-central portion of the Red Hills area, the stratigraphy of the volcaniclastic association can be roughly divided into three principal components which are allotted partly on the basis of both distribution of mineralisation and volcanic facies. Recognised sequences in order from oldest to youngest include the footwall volcanics, the LMH and sub black shale massive volcaniclastic sandstones. Few characteristics readily differentiate each sub division and among these only the LMH represents a reliable marker horizon in the local context.

Footwall Volcanics

Pumiceous lithic felsic volcaniclastic sandstones are common throughout the footwall to the LMH. This lithology is matrix dominated and commonly display lithics of felsic lava up to 40cm, but mostly 5 to 10cm in diameter. A relationship to the lava margin block breccias is illustrated by gradation outward from this facies to pumiceous lithic volcaniclastic sandstone containing clasts of the same composition. However a direct genetic link is not implied as the matrix differs between these volcaniclastics. Sparsely distributed quartz phenocrysts are locally evident within the pumiceous lithic volcaniclastic sandstone matrix, but are apparently absent in the lava and proximal breccia facies. These facies immediately adjacent to the coarse lava breccias may incorporate and re-deposit lava hyaloclastite slightly more distal to the coherent lava flows.

Best examples of this lithology are evident west of the shale syncline, near 1800E, 5200N. Weak silicification is apparent in outcrop here as spidery dendritic veinlets. These rocks possibly represent less altered equivalents of the massive de-textured volcanics in the eastern Red Hills area. Key features for tentative correlation are the occurrence of disseminated magnetite and poorly expressed relict breccia textures with rarely observed quartz phenocrysts.

Most lithologies within the footwall to the LMH display little internal stratification. However in the central north and at 2060E, 5680N highly disrupted beds and clasts of grey volcaniclastic siltstone are observed to form a mappable horizon. Elongate banded clasts/rafts (to 1.5m) of siltstone present within pumiceous lithic volcaniclastic sandstone were possibly formed as flow base rip up clasts. This feature in conjunction with rare thinly bedded outcrops (eg. 2380E, 5690N) which may represent flow top stratification, are pointers to a high density turbiditic origin for at least part of these volcaniclastics. Spatial distribution of these features indicates that individual units maybe up to 100m or more in thickness.

Lower Mineralised Horizon and Polymict Volcaniclastic Breccias .

The Lower Mineralised Horizon (LMH) represents the lowest stratigraphic horizon at which VHMS exhalative mineralisation has been identified and is considered to mark the approximate position of the CVC/TG boundary. The LMH is often represented by a mineralised breccia unit, but also incorporates equivalent lateral facies variants in the form of lithic volcaniclastic sandstones. The polymetallic massive sulphide intersection in RH5 is interpreted to lie within the latter facies shown in Plates 3 to 13.

This unit is most easily recognised in drill core from the variety of clast types up to block size. These include:- cherty siliceous clasts, semi massive sulphide, carbonate clasts and juvenile lava clasts, the latter being most common. The clast types present clearly point to an intimate association with emergent lava facies and also indicate erosion of a sea floor VHMS system.

426020

The breccia units vary considerably in thickness from greater than 20m to as little as 2 metres. Facies variation is also apparent with the LMH commonly expressed as a breccia to the west of the central shale syncline whereas to the east it is notably thinner and less clast rich. Here, the LMH is more typically represented by lithic volcaniclastic sandstone in RH5 and approximately 1m of breccia accompanied by a similar width of py-sph-gal semi-massive sulphide in RH16. This thinning to the east may represent a relative topographic high to the west with a more distal from source depositional setting eastwards. A unique example of a near totally monomict gold mineralised silica-pyrite clast bearing breccia within RH16 (197-227m) to the west of the syncline illustrates that the breccias are localised in channels proximal to an eruptive source.

Outcrop of apparently monomict lava clast bearing volcaniclastic breccia, very similar to the lava facies association, are found to directly correlate with weakly polymictic breccia at depth in some drill holes. This applies particularly to the west side of the syncline where the unit position is more reliably extrapolated to surface, whereas to the east the mineralised horizon is difficult to identify in outcrop This is partly related to the previously mentioned thinner and less clast rich expression here. However a principal outcrop at 5525N, 2340E, displays a 1 metre thick close packed hematite-veined volcaniclastic breccia, enclosed by weak to moderately silicified (veinlets and pervasive) weakly banded quartz-feldspar phyric volcaniclastic sandstone. The outcrop is weakly foliated and banded, and in hand specimen reveals a cream coloured, medium to coarse grained texture. Elevated gold in soils (1.2ppm) immediately south of this zone may be related to a more hydrothermally altered zone in the LMH. The overlying felsic sequence to the west at 5350N, 2475E is notably silica-sericite-pyrite altered, therefore this area may be relatively proximal to a hydrothermal fluid source.

Grey Chert

Grey exhalative chert/siliceous siltstone? commonly lies stratigraphically above or is incorporated within mineralised debris flow units. Exposure at seafloor is clearly shown by eroded grey cherty clasts within breccia units. An alteration style texturally identical to this unit is also commonly developed at the base of shale horizon, where grey "cherty" alteration forms irregular matrix pervasive zones indicating formation via alteration/replacement. Whereas the massive cherts possibly represent an exhalite.

Massive Volcaniclastic Sandstones (sub- black shale)

The interval between the LMH and base of the black shale unit is characterised by non - descript feldspar+/-quartz-phyric volcaniclastic sandstones with volcaniclastic textures only locally evident. On surface these rocks present as massive fine grained light green to cream and foliated 'ashy' appearing felsic volcanic. Fiamme or psuedofiamme are not a prominent feature of this unit relative to the pumiceous lithic volcaniclastics in the west.

The volcaniclastic sandstones are evident within drill core as a massive homogeneous medium grained felsic volcanic possessing little or no apparent internal structure. They are variably feldspar phyric and locally weakly quartz-phyric. The de-textured appearance is most probably related to pervasive silicification and perhaps partial recrystalisation.

The volcaniclastic sandstones are commonly weakly quartz-phyric on both sides of the shale syncline centered at 2300E, but are more quartz-phyric in a poorly defined belt extending along the east side of the syncline, north of RH7 (5350mN). This unit apparently encloses the lower mineralised debris flow horizon. Spherulitic appearing (q-phc?) silica-chlorite altered felsic volcanics outcroping east of RH5 may correlate with these rocks. Jenkins (1991) mapped an altered q-f-porphyry immediately SE of the RH5 area (2480E, 5050N) which in thin section comprised 50% phenocrysts of which 40% were quartz.

Similar facies are evident on the western limb of the syncline, but here quartz is less obvious and the footwall sequence may be locally truncated by faulting. Elsewhere, in the NE part of the Red Hills grid at (3100E, 5650N) and (2950E, 6000N), spherulitic textured outcrop has previously been mapped by McNeill (1987) as q-f-porphyry. Considering the similarities to facies described in the eastern syncline area, a tentative correlation is implied. This hypothesis requires an anticlinal fold closure through 'The Red Hills' ridge and indicates the LMH may be repeated in this area. The occurrence of a block breccia adjacent to quartz-crystal volcaniclastic sandstone at 3000E, 5700N and the old workings (No 1 East) within quartz-feldspar porphyry having nearby archival Zn soil anomalism (300ppm Zn; TCR 70-654) support this assumption.

The quartz-poor massive volcaniclastic sandstone unit is tentatively correlated with the Lynchford Member (Lower Tyndall Group) defined by White and McPhie (1996). These quartz-phyric volcanics could reflect a partial mixing of detritus from both CVC and Tyndall Group (/Eastern Quartz Porphyritic Sequence?) source areas. A single occurrence of a quartz-feldspar crystal rich clast in a CVC hosted lithic volcaniclastic (2340E, 6100N), interpreted as footwall to the LMH, indicates erosion of a rhyolitic volcanic terrain at that time. These observations suggest the Tyndall Group/CVC boundary may be transitional, with Tyndall Group volcanism commencing at or prior to formation of Lower Mineralised Horizon breccias. The change in Ti/Zr ratios from the more clearly CVC like (4 to 6) to Tyndall-like (10 to 15) above the LMH tentatively places the TG/CVC boundary at the LMH.

5.2.2.2 Black Shale Horizon

This unit is dominated by black shale in the northern most exposures and drill holes between 5000N and 5400N, but a volcaniclastic component is increasingly evident to the south. The shale is typically dark grey to black and finely laminated, but more massive intervals with very fine grained silty texture are locally apparent. Black shale outcrops well on track surfaces in the central and southern most parts of the grid area, but elsewhere outcrop is scant with the shale occurring beneath Quaternary glacials and within forested gullies. The gullies perhaps reflect preferential erosion of this unit. The base of the shale represents the uppermost of two base metal mineralised horizons at Red Hills.

In the north, minor grey volcaniclastic siltstone and feldspar-crystal rich sandstones are interbedded with black shale. Grey volcaniclastic siltstone is evident at the base of shale at 2350mE, 5150mN and a similar lithology with black shale interbeds is apparent at 2375mE, 4100mN. Further south in RH11 (3400mN) Herrmann (1996) reports this lithology as a minor component associated with black shale.

Feldspar crystal-rich volcaniclastic sandstone uncommonly forms thin interbeds in drill core. In outcrop exposures of up to 5m or more in thickness occur (eg. 2305mE, 4680mN; 2440mE, 4080mN and 2375mE, 4100mN) and these locally display thin black shale interbeds. This lithology is not apparent further south.

426023

The black shale horizon is interpreted to occupy the hinge zone of a steeply inclined and moderately south plunging syncline in the vicinity of 2300E, between 5000N and 5400N (Plates 1 and 3)

South of 4600N Herrmann (1996) reports various interbedded lithologies including fossiliferous? limestone breccias, limy sands, sericitic quartz-phyric sandstones and coherent quartz-porphyritic rhyolite from the upper 90 metres of RH11 with dacitic sills in the lower 70 metres before passing into CVC-like lithologies.

These observed lithologies in conjunction with feldspar-crystal rich volcaniclastic sandstones found to the north, support Herrmann's (1996) tentative correlation with the Lynchford Member of the basal Tyndall Group, as described by White and McPhie(1996). The recognition of interbedded CVC -like volcanics near the base and quartz-feldspar-phyric, clearly Tyndall Group volcanics near the top within the black shale unit highlights the transitional nature of this unit across a regionally significant volcanic boundary.

5.2.2.3 Quartz-feldspar-phyric Lavas and Volcaniclastics

This section of the stratigraphy is readily identified as quartz-feldspar phyric rhyolitic lavas and volcaniclastics belonging to the Mt Julia Member of the Lower Tyndall Group. Their distribution is restricted to the eastern, western and southern margins of the lease, where they generally appear to be in disconformable? contact with the CVC sequences. To the south however, Herrmann (1996) describes a clearly continuous comformable sequence partly interbedded with and overlying the black shales of the Lynchford Member. This suggests the area to the north was partially emergent during deposition of the Tyndall Group.

5.2.2.4 Basalt

Basalt is relatively uncommon, being observed as thin (<1m thick) dykes in drill core only. The basalts are variably ferromagnesian mineral (hornblende/pyroxene?)-phyric with fine grained to aphanitic groundmass and carbonate filled amygdales. Basalts commonly occur within or relatively proximal to felsic volcanic breccia horizons in northern drill holes, but also extend up into the black shales to the south and drillholes RH10,11. This observation and evident proximity to faults in some instances suggests an origin as late dyke intrusions.

5.2.2.5 Volcanic facies model

The following points simply summarise the likely Cambrian volcanic facies development.

1. Active CVC volcanism forming a rhyodacitic/dacitic lava centre with associated proximal breccias flanked by pumiceous volcaniclastic sandstone deposition from relatively distal sources via high density turbiditic and/or mass flow related processes.

2. Onset of VHMS mineralisation corresponding to the latter part of the CVC volcanism and initiation of TG volcanism, shown by partial mixing of distal TG and CVC provenance volcanism in high density turbiditic flows overlying the LMH breccias.

3. Black shale deposition representing the time of greatest quiescence prior to onset of and transgression of readily recognised feldspar-quartz-phyric Tyndall group volcanism, represented by the Mount Julia Member.

5.2.3 STRUCTURE

The Red Hills area is interpreted to be more structurally complex than previously considered, with the volcanic sequences deformed by a series of approximately north -south aligned steeply west inclined tight to open folds. Locally, faulting further complicates the picture, however field mapping and drill core observations have somewhat clarified the geological distribution, but many gaps are still apparent. The following outlines the current understanding of Red Hills structure.

Cleavage development is variable but typically moderately developed and close spaced in the finer lithologies. Stereographic projection of data in figure 6 illustrates the relatively uniform steep west dip(~70^0) and roughly NNW (~350^0) strike of cleavage throughout the area.

426025

5.2.3.1 Folding

The nature of folding within Cambrian stratigraphy at Red Hills is not well documented, although previous workers (Purvis et al, 1983) have indicated the likely hood of such structures controlling black shale distribution. Folds within the Owen Conglomerate stratigraphy mapped by McNeill (1987) are a guide to confirming the presence and approximate locations of folds within the Cambrian volcanic stratigraphy beneath. The current interpretation within the lease area is a central synform flanked by two antiforms localised along the Western and Red Hills ridges at 2000E and 2200E respectively (Figure 3 & Plate 1)

A limited geochemical data set shows the Ti/Zr distribution within volcanics at Red Hills has a north-south aligned trend of alternating low (<10) and high (>10) ratios, which could be indicative of a broad fold pattern within the volcanics (Figure 5). These low and high values approximately conform to the CVC and Tyndall Group respectively (Herrmann, 1996).

Few reliable structural features are preserved at outcrop scale to support the fold model. That is, few bedding-cleavage relationships are visible to determine fold vergence, which is not surprising considering that these fabrics are near parallel in most cases. Similarly, clear examples of bedding or primary banding are scarce, but a poles to bedding plot for reliable data (Fig. 6) supports the fold model proposed. A fold axis trend of 179^0 with shallow southerly plunge of 33^0 is calculated from this data. A key outcrop within shale at 2300E, 5200N exhibits a perpendicular bedding/cleavage intersection, confirming the presence of a fold axis in this vicinity.

Further north, at 2250E, 6140N ptygmatic folding within a grey volcaniclastic siltstone indicates proximity to a fold closure or fault zone is likely.

426026

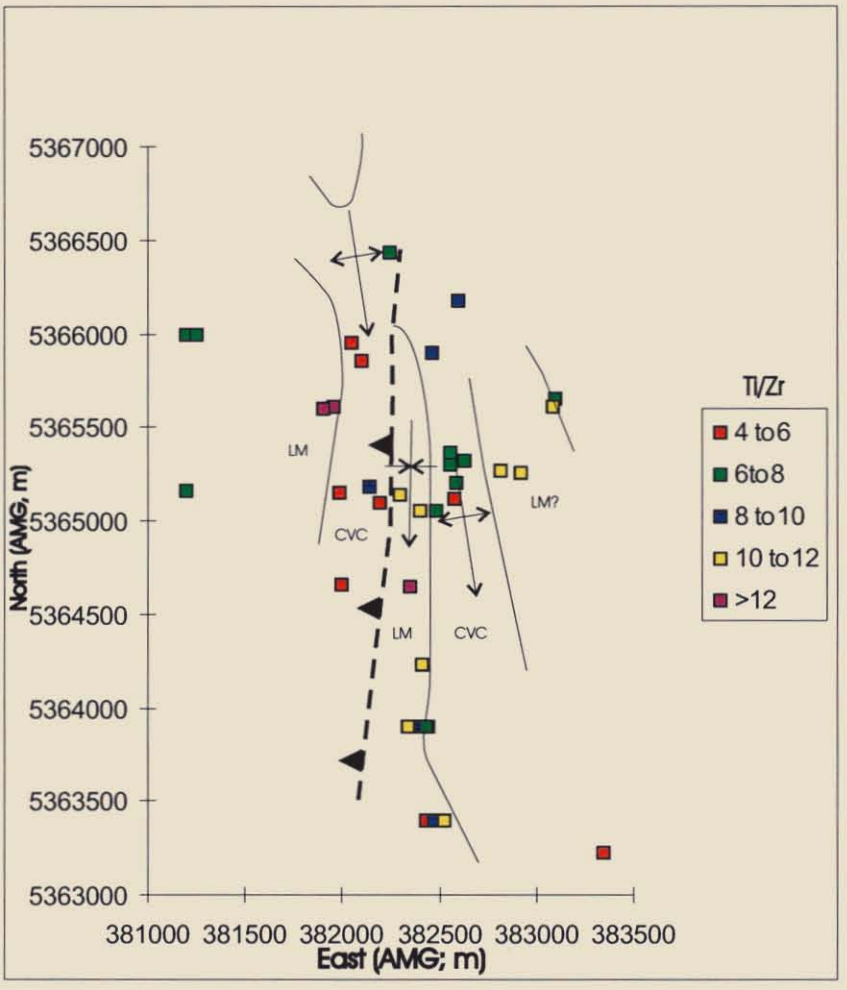


Figure 5: The distribution of Ti/Zr at Red Hills with key structural features.

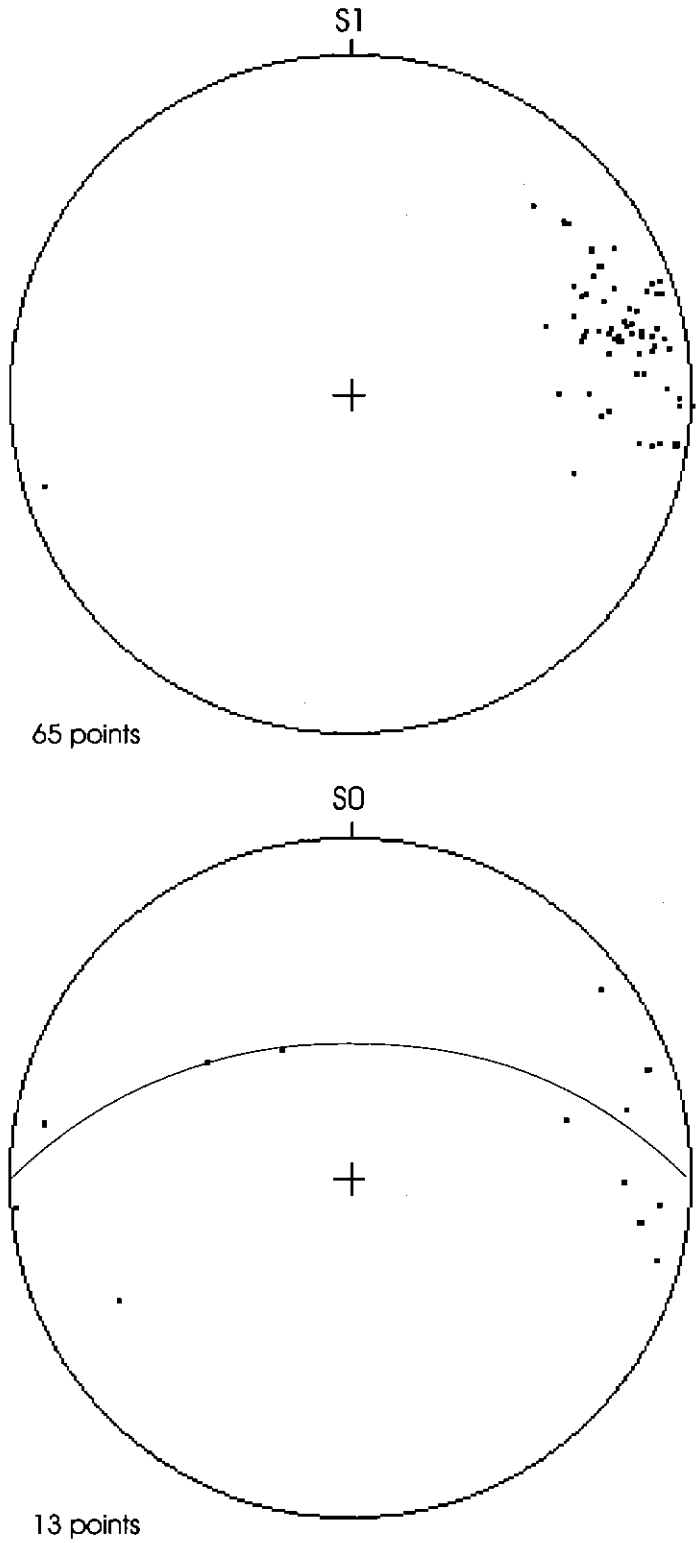


Figure 6: Stereographic projections for poles to cleavage (top; strike ~350^0/ ~70^0 dip) and poles to beds (bottom; trend 179°, plunge 30°).

Features indicative of folding within drill core include:-

1. Extreme variation in unfaulted black shale thickness, possibly indicative of thin fold limbs and thickened hinge zones.

2. Symmetry of mineralised volcanic breccias (LMH) both east and west of the black shale.

3. Symmetry of pyritic semi massive sulphide or stringer pyrite enclosing black shale in RH7 and RH8.

4. Facing reversals downhole, as in RH16.

Tight limbed inclined folds (~70 degrees) with western limbs locally overturned are postulated with evidence largely gathered from interpretation of drill sections. The main fold closure identified lies within the black shale, unit west of the silica-K-feldspar-chlorite altered "Red Hills lavas". A southerly plunge to this structure pinches out most of the LM in the north, but to the south of 4500N the fold closure is interpreted to open up, becoming a broad limbed fold in the vicinity of drillholes RH18, 19 north west of Lake Westwood (Hermann 1996).

Fold patterns for the rest of the tenement area are difficult to identify largely because of the sheared and altered nature of the outcrops and paucity of discrete marker units. Fold tightness appears to be variable and may be partly dependant upon the large differences in strain modulus between altered and less altered volcanics as well as between volcaniclastics and lavas.

Coherent lava outcrop and strongly altered and indurated volcanics along the high ridge of 'The Red Hills' probably acted somewhat coherently during Devonian deformation resulting in an open anticlinal fold relative to the adjacent tighter shale syncline to the west. Similarly, the hinge of an inferred anticline closure hosted in dacite lava along the western ridge at ~2000E, 5100N contains strong development of Devonian bucky quartz veins and reefs which possibly reflect the brittle nature of the lava's during deformation. The less coherent volcaniclastics and shale have been subject to more plastic deformation and are interpreted to host fold wavelengths of approximately 400m.

426029

5.2.3.2 Faulting

In the Red Hills grid area, northerly and ENE trending faults have been recognised. Principal evidence for faulting comes from drill core. Here, faulting is indicated by zones of strong shearing sometimes accompanied by dextral offset kink bands (eg. RH6R @ 95m; Plate 5). Zones of broken core are further pointers and these locally contain thin (<20cm) puggy cataclastic zones (eg. RH14R @ 227m; Plate 7). Bed offsets are also apparent with interpretted fault movement of greater than 50m indicated by the possible faulted transposition of the LMH to a position up-hole and proximal to the black shale in both RH9 & 13 (Plates 8 and 9). Devonian quartz-carbonate veins are commonly evident in the vicinity of interpreted faults.

At surface, faults and /or shear zones are indicated by zones of strong foliation and sometimes by lineation of quartz veins.

A steep westerly dipping fault centred on approximately 2200mE has been interpreted to transgress most of the grid from north to south. In the south (2000E, 3900N) CVC lithologies form the west side hangingwall, abutting MJM units in the fault footwall. Further north along this "Western" fault in the RH5 area, CVC lavas abut LM and upper most CVC volcaniclastic lithologies. These observations imply reverse movement, west side up. The "Western" fault extends north to at least RH12, where intense foliation defines the structure at surface beside the drill collar. North of this position a topographic lineament separating lavas from inferred footwall volcaniclastics may represent continuation of the fault.

A second inferred fault extends south on 2300E from approximately 4900N to 4400N. A faulted sliver of black shale and nearby strong quartz veining in the vicinity of 2450E, 4150N may represent southward continuation of this structure. North of 4900N, evidence for the fault is scant which possibly indicates termination or offset of the fault where it intersects an approximately ENE oriented inferred fault. The latter fault was identified from mapping where three consecutive samples bearing black shale were obtained from the vicinity of 2425E, 5000N, whereas shale was not mapped along strike to the south. Shale outcrops to the west at 2325E, 4900N indicate dextral fault offset of up to 80m on the ENE trending fault.

426030

5.3 MINERALISATION AND ALTERATION

5.3.1 INTRODUCTION

The Red Hills area is host to three principal mineralisation styles:-

1. Stratabound polymetallic - gold VHMS
2. Stringer vein Cu-(Au)-Mt (Granite-related)
3. Gold in "Devonian" quartz vein stockworks

The VHMS mineralisation is best expressed as a 2.8m lens of banded sphalerite and galena, grading 0.32% Cu, 34.5% Zn, 11.35% Pb, 250g/t Ag and 6.55g/t Au in RH5. Whereas the stringer veins are represented by py-cpy-mt mineralisation in the northern adits area. Jenkins (1991) provides supplementary descriptions of this mineralisation and accompanying alteration styles. He recognises a pipe-like zone of pervasive chloritic alteration with lesser k-feldspar extending along 'The Red Hills'. This alteration is flanked by a chlorite-sericite alteration zone on the western and to a lesser extent the eastern margin of 'The Red Hills'. Recent mapping supports this broad zonation pattern, however, in addition widespread silicification is also recognised. The third mineralisation style is recognised along the Western ridge where a well developed quartz (siderite) vein stockwork in a dacitic lava unit carries significant gold and minor Pb-Zn values.

5.3.2 ALTERATION

Alteration is pervasive with K-feldspar, chloritisation, sericitisation and silicification masking primary textures in the volcanics, especially the 'Red Hills Lava'. A broad alteration pattern is evident with zonation from chlorite-K-feldspar to chlorite-silica pervasive styles along the western margin of 'The Red Hills' and to the north. Silification extends beyond the bounds of the silica-chlorite alteration and is locally accompanied by sericite +/- pyrite alteration which is not necessarily related to the K-feldspar-chlorite-silica zonation pattern.

K-feldspar frequently forms isolated domainal patches enveloped by pervasive chlorite alteration. Jenkins (1991) found K-feldspar to be early and later overprinted by chlorite, which is in agreement with the temporal distribution of granite related alteration described by Large (et al, 1996) for this district.

In the later chlorite-silica alteration, chlorite is commonly evident as patches compared to the pervasive nature within the chlorite-K-feldspar alteration style. Strong silicification within this zone has given the volcanics a massive and highly indurated character inhibiting volcanic facies assessment in many cases.

Silicification has been recognised to extend west of the chlorite-K-feldspar zone up-sequence as far as the black shale unit in RH9. The silicification within and above the LMH possibly reflects the migration of a hydrothermal system upward through a fresh influx of rapidly deposited high density turbidite emplaced volcaniclastics. Spidery, often anastomosing silica veinlets commonly evident within volcaniclastics in the vicinity of the western most mapped lavas, may represent a distal expression of this silicification.

Pyritic siliceous clasts within a largely monomict breccia associated with the LMH in the upper portion of RH16 (Plate 5) indicate that at least part of the silica alteration was related to exhalative chert-hosted mineralisation at this stratigraphic level.

Silica-sericite-pyrite alteration is well developed along the eastern margin of the shale syncline north of the RH5 area. Principal outcrops along tracks at 2375E, 5400N and 2400E, 5250N display pyrite in disseminated and semi-massive sulphide replacement zones, with pyrite locally reaching 30% but more typically from trace to 5%. The western side of the syncline hosts similar but much less extensive alteration at 2275E,5100N to the west of RH5. These alteration zones occur between the LMH and the black shale unit and are considered to be an expression of ongoing VHMS hydrothermal activity following exhalation during deposition of the LMH.

Peak assays from 7 rock chips of the silica-pyrite-sericite alteration north of RH5 are 109ppm Cu, 2218ppm Pb, 1449ppm Zn and 0.117ppm Au. In contrast, at depth in drill core (RH7; Plate 4) the alteration intensity and geochemistry is much reduced relative to the surface expression, with weak alteration evident in the hangingwall of a thin intersection of the LMH breccia. However, above the volcaniclastics in RH7, the shale is enveloped by disseminated and stringer pyrite accompanied by silicification with pyritic massive (30cm) and semi-massive sulphide containing low base metal values at the base of shale position. Stockwork veined and disseminated concentrations of pyrite at the base of black shale are also evident further south within drillholes RH9 and RH11. The distribution of metal grades and alteration styles described here is similar to that at the Henty Gold Mine, cf Halley and Roberts, (1997).

Carbonate alteration is of limited extent, but occurs in several forms:- 1) late fracture filling veins, 2) blebby psuedoclastic patches, occasionally with sphalerite or galena rich cores (eg. RH16; Plate 6) and 3) clasts within volcaniclastic units (eg. Plate 1, 6, & 8).

5.3.3 MINERALISATION

Two principal styles of mineralisation, namely VHMS and granite-related, have previously been identified at Red Hills. The VHMS mineralisation is primarily developed along two main horizons but is also weakly developed in the intervening CVC-transitional TG volcaniclastic stratigraphy. In contrast, "granite-related" mineralisation in the form of pyrite-chalcopyrite-magnetite-chlorite veining forms a discrete mineralisation style within the "Red Hills Lava" to the east. A third newly recognised style is quartz-carbonate-vein hosted gold mineralisation which appears to be restricted to the western ridge lava.

5.3.3.1 Volcanic Hosted Massive Sulphide (VHMS) Mineralisation.

The Lower Mineralised Horizon (LMH) is host to two closely related styles of base metal-gold mineralisation. These are a polymetallic massive sulphide and a more diffuse enveloping gold-silica ± zinc association.

A 2.8m intersection of banded zinc-rich massive sulphide assaying 48% combined Zn-Pb-Cu, 250 g/t Ag and 6.5 g/t Au in drill hole RH5 was the first and remains the best massive sulphide intersection within the lease area. The texture, sulphur isotope and zinc number signatures of this intersection all attest to its interpreted VHMS origin, although the lens is not proven to be in situ since convincing footwall style alteration is not intersected directly beneath this interval. Given that no similar massive sulphides have been intersected in adjacent drillholes and the presence of pyrite-banded siliceous clasts scattered within other intersections of LMH breccia, it is suggested that the VMS mineralisation in this area has been transported within a sequence of debris flow breccias.

A monomict mineralised clast breccia in RH16, drilled beneath RH5 suggests the mineralised source may be quite proximal. However, examples of more convincing in situ base metal mineralisation occur in the basal portions of drill holes RH9, 15 and 16 within and beneath grey siliceous volcaniclastic siltstone which superficially resembles an altered black shale. This mineralisation comprises narrow zones of pyritic semi-massive and massive sulphide as well as sphalerite, galena and pyrite in disseminated, foliation parallel bands, stringer and less commonly blebby form.

Another form of LMH mineralisation is a disseminated sphalerite-gold-silica association which is typically best developed within the breccia facies. Zinc number data for this style of mineralisation (figure 7) form a distinct peak at approximately 90 which possibly indicates formation via some form of zone refining of VHMS fluids.

Within the shale unit mineralisation comprises sparsely disseminated sulphides (sph, gal, py) and minor development of sulphidic bands. Figure 7 clearly illustrates that most zinc number data fall within the expected VHMS range (mean 60 to 77; Huston and Large 1997). Assay values are typically low tenor but appear to increase slightly to the south of drill hole RH9.

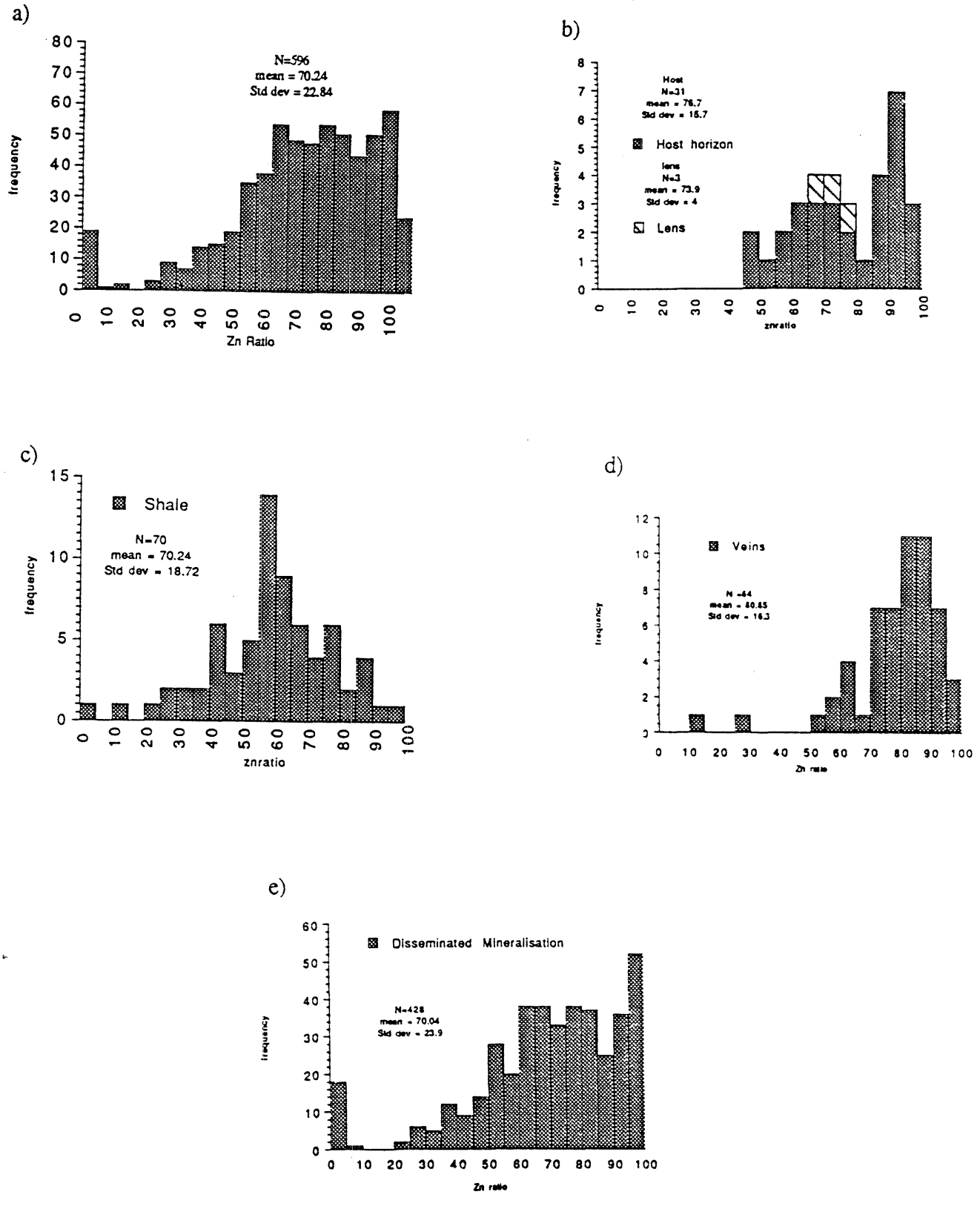


Fig 7 : Zn Ratio plots for the Red Hills assay data
a) Whole data set.
b) Host horizon and massive sulphide lens.
c) Shale hosted mineralisation.
d) Vein mineralisation.
e) Disseminated mineralisation.
(After Jenkins, 1991)

5.3.3.2 Stringer Vein Pyrite-Chalcopyrite-Magnetite Mineralisation

Large (et al., 1996) suggest a genetic link between VHMS mineralisation and Cambrian granites, particularly in the Mount Lyell area. They observe copper mineralisation proximal to the intrusions and gold concentrating further west and at higher stratigraphic levels. Cambrian granite is modeled to occur beneath the Red Hills area at relatively shallow depth in their interpretation, and therefore much of the copper mineralisation at Red Hills could be granite related and similar to mineralisation at Jukes Pty, Mt Selina and in the Mt Darwin area. Large (et al, 1996) also ascribes the Prince Lyell copper-gold mineralisation to this type. The association is still speculative, however, and is considered to result from a relatively distal mixing of rising magmatic fluids with deeply circulating seawater within a permeable felsic volcanic sequence.

Disseminated pyrite and magnetite is common throughout the northern end of 'The Red Hills'. At Adit 1N, strong pervasive chlorite alteration envelops py- cpy vein and massive sulphide replacement style mineralisation. Accessory minerals include probable arsenopyrite and gold along with minor K-feldspar and magnetite. Pyrite-cpy veining /replacement style mineralisation is also sporadically evident elsewhere within chloritised volcanics. The strong and highly variable ground magnetic expression over "The Red Hills" probably reflects magnetite distribution within the intrusion-related alteration.

5.3.3.3 Gold (Pb-Zn) Quartz-Carbonate Vein Stockworks

A major irregular stockwork of fine quartz veinlets and veins to 10cm thick culminating in a near massive anastamosing network of bucky white quartz veins occur along the western ridge at 2000E from 4950N to 5200N. The zone trends north and may have a steep westerly dip towards an old adit in the western face of the ridge at 5015N, 1935E. At this locality there is irregular development limonitic-siliceous gossanous material derived from a stockwork of quartz ± siderite veinlets with minor galena, sphalerite and traces of pyrite. Mullock samples grade up to 0.6% Pb, 0.26% Zn, 8g/t Ag and 1.47 g/t Au, but surface rock chips along the ridge assay up to 2.6 g/t gold with associated base metal anomalism. Soil samples up to 1.36g/t Au (Figure 14) define a 250 metre long mineralised target zone which appears restricted to the massive lava host unit.

5.3.4 A Model for Development of Mineralisation at Red Hills

1. Initiation of hydrothermal system driven by or derived from rising granite magma following eruption of the Red Hills rhyodacite lava. This resulted in a copper-rich sulphide stockwork at the northern end of Red Hills and an overlying development of exhalative massive sulphide at the LMH (top of CVC).

2. Continuing hydrothermal activity disturbed by lava related debris flow / talus deposition along the LMH, with partial erosion of existing VHMS mineralisation and lavas.

3. High density turbiditic emplacement of volcaniclastic sandstone over the LMH swamping the waning hydrothermal system. This results in development of sub seafloor mineralisation laterally along the LMH breccias in the form of pervasive silicification with disseminated Zn and Au mineralisation (analogous to Henty MQ). Silica-sericite-pyrite alteration and stringer base metal mineralisation (analogous to Henty MZ) forms in the overlying thick turbiditic sandstone unit.

4. A second weaker exhalitive mineralised horizon develops at the base of black shale (analogous to Henty massive pyrite) and ongoing minor Zn, Au deposition with pyrite under a regime of low thermal gradient within the LMH.

5. Cambrian granite intrusions progressively moving towards surface during this sequence of events may have contributed Cu, Zn and Au? by magma devolatilisation (see Reid, 1997). Late in the sequence of events when the intrusions are nearest surface, they generate extensive sub-seafloor chlorite-K-feldspar alteration and possibly associated py-cpy-mag veins, disseminations and replacement zones analogous to Prince Lyell style.

6. During the Devonian deformation phase gold was remobilised into quartz-carbonate vein stockwork within the competent western ridge dacite lava unit.

5.3.5 Vectors

A broad regional picture of the geological evolution of the MRV in the Red Hills area is vital to development of models targeting VHMS mineralisation in the area. Whereas on the local scale alteration vectors in combination with volcanic facies analysis may provide useful guides to mineralisation. Since soil sampling, outcrop mapping, geophysical surveys and drilling has to date not revealed the presence of a significant body of massive sulphide mineralisation it must be assumed that any MS deposit has been eroded or exists at considerable depth beyond the range of surficial surveys. The discussion below explores the likely vectors toward VHMS mineralisation.

Clast compositions and facies within the LMH breccia/debris flows provide a key to locating VHMS style mineralisation at Red Hills. The dominance of fine-grained cherty and carbonaceous clasts within polymictic LMH breccias, and the pyrite, sphalerite and galena sulphides present suggest that possibly only the upper part and peripheral facies of a zoned mound massive sulphide deposit was removed during formation of the LMH breccia facies. In this case there remains potential for the majority of a copper-rich mound core to have remained un-eroded and largely intact during the Cambrian events. In the footwall CVC sequence to the LMH, the Cu soil geochemistry and known copper mineralisation in the northern adits area suggests this could have been the facies of higher temperature VHMS fluids. The presence of a weak EM conductor at 5940N, 2650E suggests a proximal copper-rich exhalative deposit may be present in this area.

In terms of volcanic facies distribution, the LMH between 4800mN and 5600mN (Plate 3) on the western side of the syncline centred at 2300mE is represented largely by coarse breccia facies. Whereas on the eastern side of the syncline the LMH comprises thinner and more sparsely distributed breccia facies (eg RH 7, 12, 13,) and lithic volcaniclastic facies are more prevalent in RH5 and RH6. Further, south of RH5 on the eastern limb, the LMH is largely represented by mineralised grey siliceous fine-grained volcaniclastics in RH 14,16 and 9?. These observations provide a local vector for LMH debris flow breccia facies as being derived from the CVC lava rich sequence to the west along the western ridge. However, the absence of significant base metal mineralisation or related alteration in this western area suggests a different source for the mineralisation.

In general terms mineralised clasts are sparsely distributed, but in RH16 a largely monomict sil-py clast bearing breccia with weak gold-base metal values occurs at the LMH level west of the shale syncline. This particular unit is not evident elsewhere in drill core to the north or south therefore a proximal vector to mineralisation to the east is implied here. This is supported by localised anomalous zinc soil geochemistry and weak silica sericite pyrite alteration vertically above the RH16 intersection.

The presence of the massive sulphide intercept in RH5 on the eastern limb together with the better gold-base metal grades in exhalative? chert sequences in RH6, 8 and 16, suggests vectors towards the most likely site of remaining VHMS mineralisation as either in the keel of the synform at depth or updip to the east. In the latter case, the deposit may have overlain the Red Hills and has now been largely removed by erosion with the copper-pyrite mineralisation in the northern adit area representing a remnant of the underlying stringer zone. There remains the remote possibility of an insitu mound deposit in the LMH downdip at depth in the shale syncline. However, it is more likely that any significant mineralisation in this position is a transported volcaniclastic hosted deposit.

A possible vector south to VHMS mineralisation in the LMH is supported by the UTEM anomaly data of Aberfoyle (TCR 89-3023). Strong UTEM anomalism extends from the south to approximately 5000N and is centred on 2300mE at its northern most extent. Drill holes in this vicinity of the anomaly intersect weakly mineralised black shale which can readily explain the anomaly, however the fold model proposed suggests the main mineralised target the LMH lies at depth beneath the UTEM anomaly axis here and at present remains untested.

In summary, the vectors discussed indicate moderate potential for VHMS discovery in the LMH, west of the Red Hills and along the eastern limb or keel zone of the shale synform south from 5300mN. There is good potential for definition of a low-grade Henty style (open pittable) gold deposit over 300m of strike centred on the RH5 intersection along the eastern limb of the LMH. The presence of a localised MLEM anomaly east of the northern edits area could indicate a remnant copper-rich massive sulphide zone exists.

5.4 GRIDDING

Gridding at Red Hills commenced in August 1995. The N-S AMG orientated base line was surveyed using a theodolite and EDM. Cross lines aligned at 90° to the base line were spaced every 100m and pegged at 25m intervals. These grid lines were emplaced with minimal cutting and care to preserve sensitive trees such as the King Billy Pines, in accordance with the environmental guide lines stipulated by the Tasmania Resources and Development. The total length of grid cross lines cut and surveyed was 17 km (Fig. 4).

5.5 GEOCHEMISTRY

5.5.1 Drill Core Sample Results

Logging of existing drill core identified previously unsampled intervals of both the LMH and base of black shale mineralised horizons at Red Hills. Eighteen drill core intervals (17371 to 17388) were sampled including several re-samples of previously analysed mineralised intervals from RH4 and RH12. Samples were analysed at the Analabs facility at Burnie for Au by method GG309 and for Cu, Pb, Zn, Fe, Mn and Ag by method GA140, results are presented in Appendix IIc.

In general the intervals were only weakly mineralised, with a maximum 861ppm, Pb, however significant Zn, Cu and Au anomalism was detected. Re-sampling of previously tested pyrite-chalcopyrite-chlorite stringer mineralisation from RH4 returned encouraging results. Re-sampling returned 2m @ 2.1% Cu and 0.53 g/t Au from 250 m compared to original sampling of 3m @ 0.89% Cu from 149m.

In drill hole RH6R a 3m interval from 155m of mineralised silicified debris flow assayed 0.81% Zn and 0.70 g/t Au, whereas in RH7 a 4m zone from 96m of grey siliceous tuffeceous siltstone assayed 0.25% Zn and 0.04 g/t Au.

5.5.2 Rock Chip Sampling

A total of 24 rock chip samples were analysed by Analabs at Burnie for base metals and gold, results are appended. Areas sampled include a silica-sericite-pyrite mineralised zone up dip from the RH5 intersection, mineralised outcrop between RH10 and RH11, the western ridge stockwork zone and the area to the west towards the Gooseneck.

Seven altered rock chip samples were collected from outcrop north of the RH5 LMH (2360E, 5375N). Base metal and gold results were only weakly anomalous with maximum values of 0.12 g/t Au of 109ppm Cu, 2218ppm Pb and 1449ppm Zn.

Rock chip sampling of mullock (4) and irregular quartz-siderite stockwork veining (6) over the Western Ridge returned encouraging but erratically distributed results up to 2.62g/t Au. Subsequent analysis for Au in soils returned similar broadly spaced anomalous results with maximum analysis of 1.36g/t. Further detailed evaluation of this area is given in Appendix I - Herrmann (1996).

5.5.3 Soil Sampling

Soil sampling of the Plutonic grid (fig. 4) was intended to aid targeting of polymetallic VHMS mineralisation and assist interpretation of the distribution of the mineralised horizons. A total of 688 C-horizon soil samples were collected at 25m intervals along the 100m spaced grids. Samples were analysed at Analabs by AAS method GA140 for Cu, Pb, Zn, Fe, Mn and As, and by fire assay method GG309 for Au. Geochemical anomalism with peak analyses of 537ppm Cu, 225ppm Pb, 522ppm Zn and 1.36ppm Au are shown in contoured data plots presented as Figures 8 to 14 and Plates 13 to 17.

The distribution of base metal anomalism mimics sampling by earlier explorers (eg. Mt Lyell and The Consolidated Syndicate). Copper distribution is virtually restricted to the Red Hills ridge with peak values along with Fe and minor Au - As in the northern adits area where values are most intense.

426041

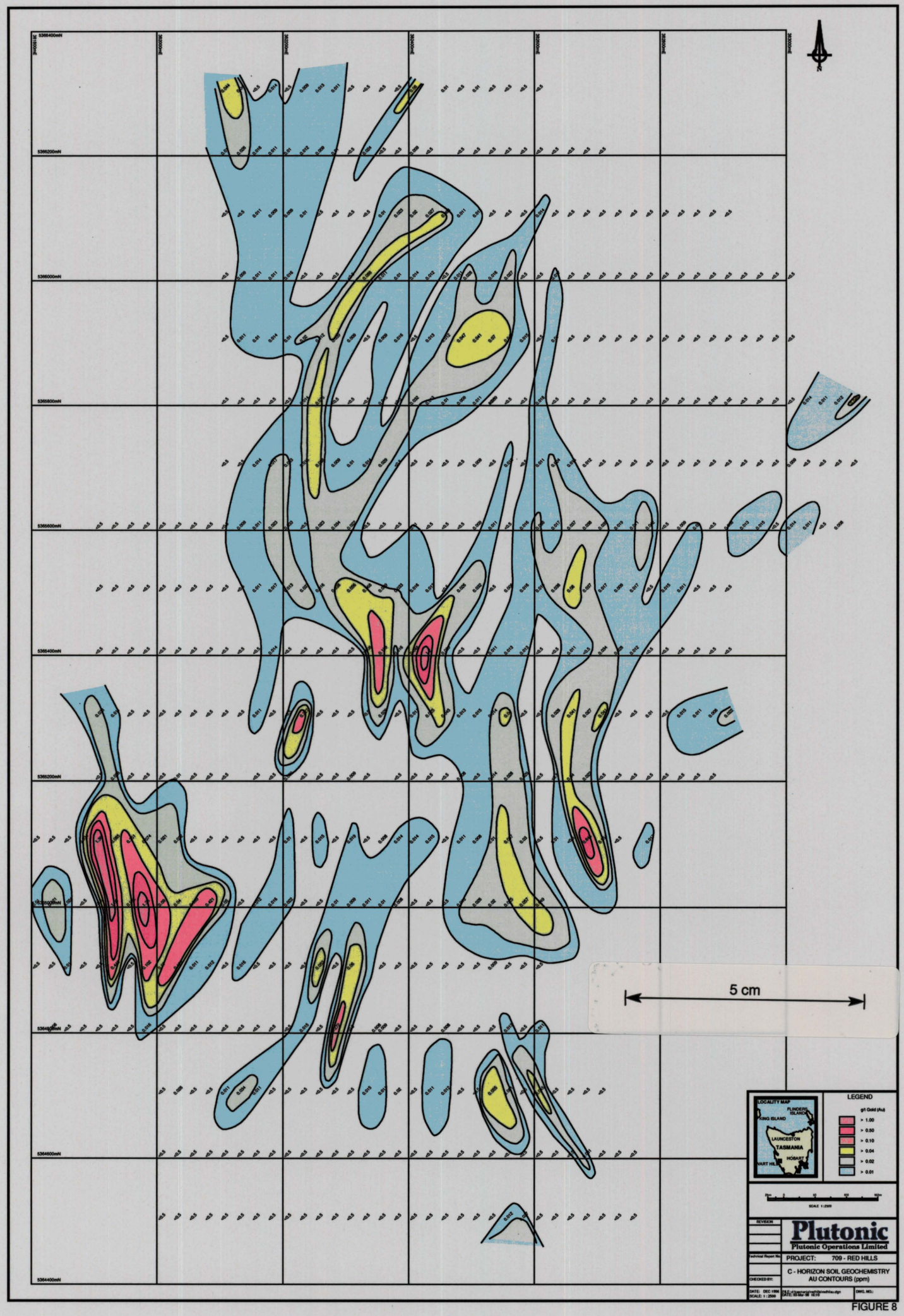


FIGURE 8

426042

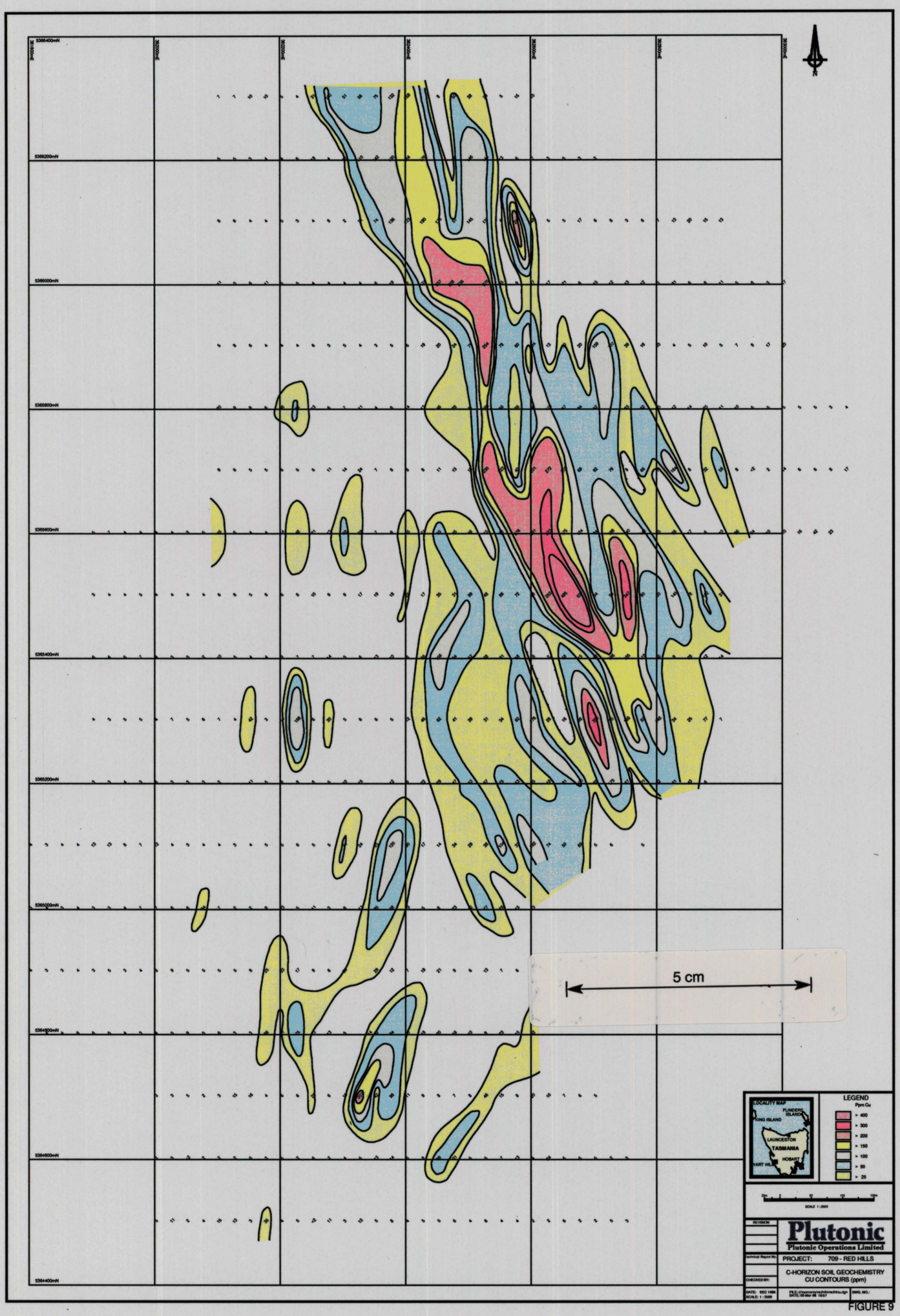


FIGURE 9

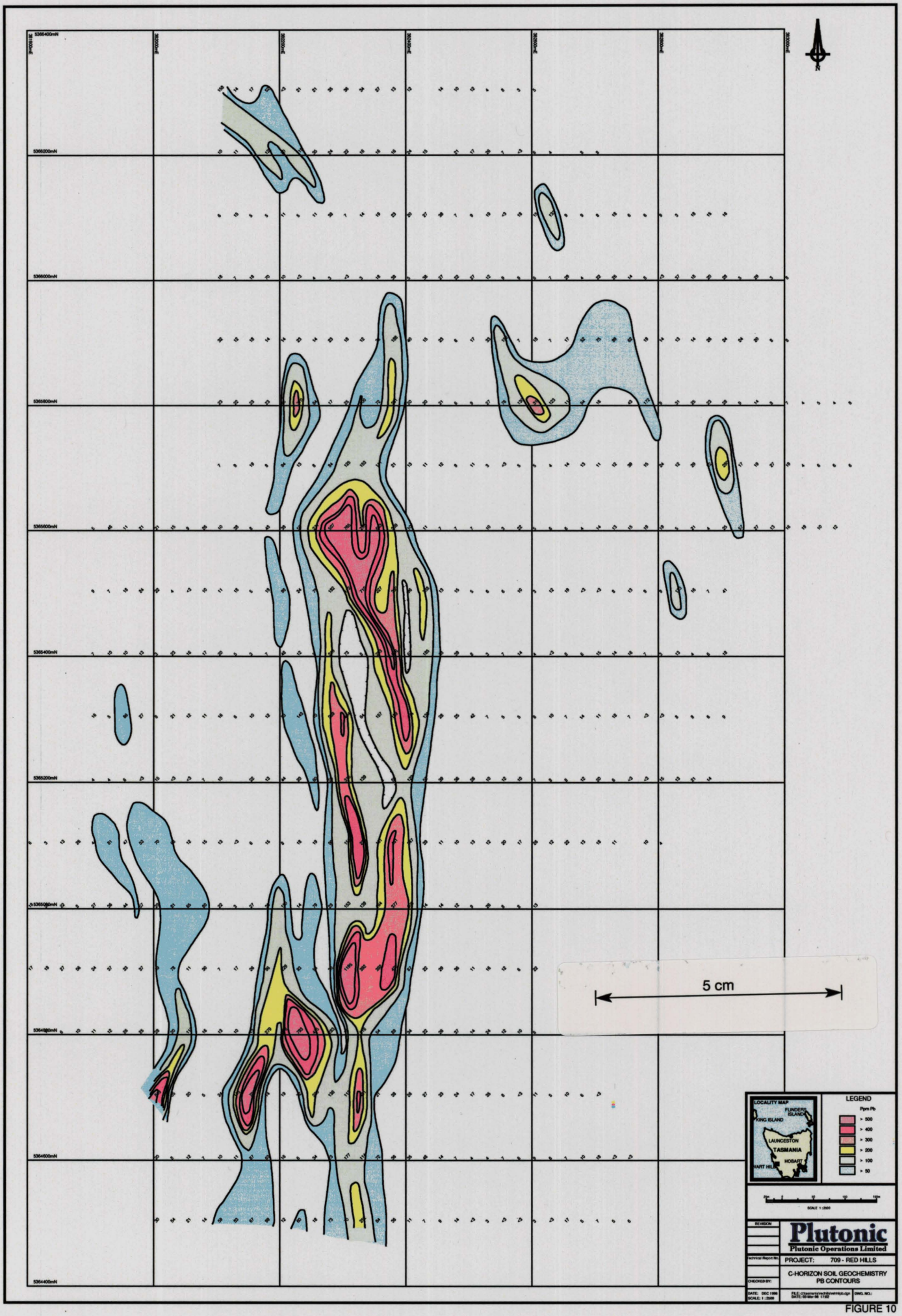

5366400mN
5366200mN
5366000mN
5365800mN
5365600mN
5365400mN
5365200mN
5365000mN
5364800mN
5364600mN
5364400mN
5 cm
LOCALITY MAP
FLINDERS ISLAND
KING ISLAND
LAUNCESTON
TASMANIA
HOBART
WART HILL
LEGEND
Ppm Pb
> 500
> 400
> 300
> 200
> 100
> 50
Plutonic
Plutonic Operations Limited
PROJECT: 709 - RED HILLS
C-HORIZON SOIL GEOCHEMISTRY
PB CONTOURS
REVISION
CHECKED BY:
DWG. NO.:

FIGURE 10

426044

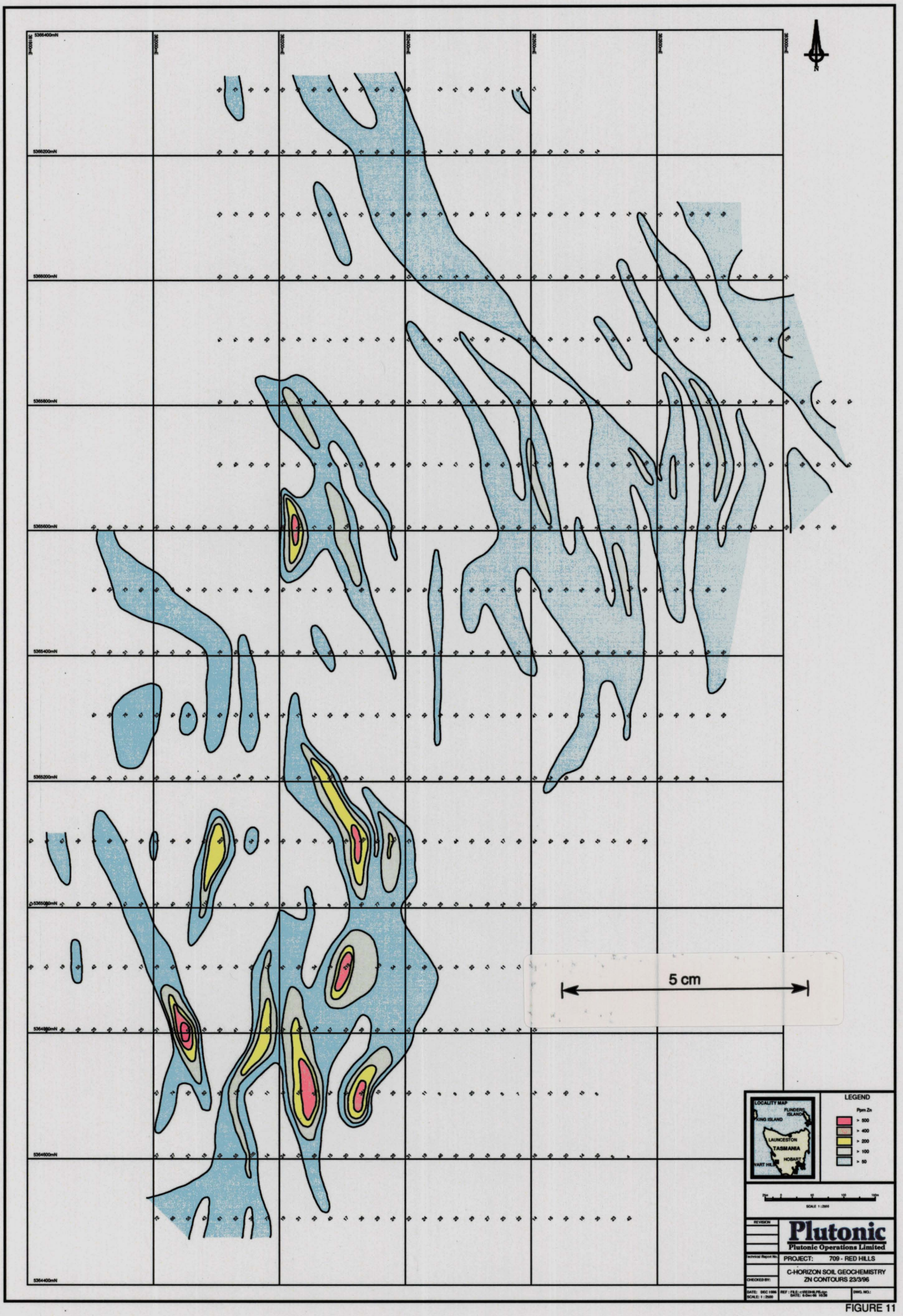


FIGURE 11

426045

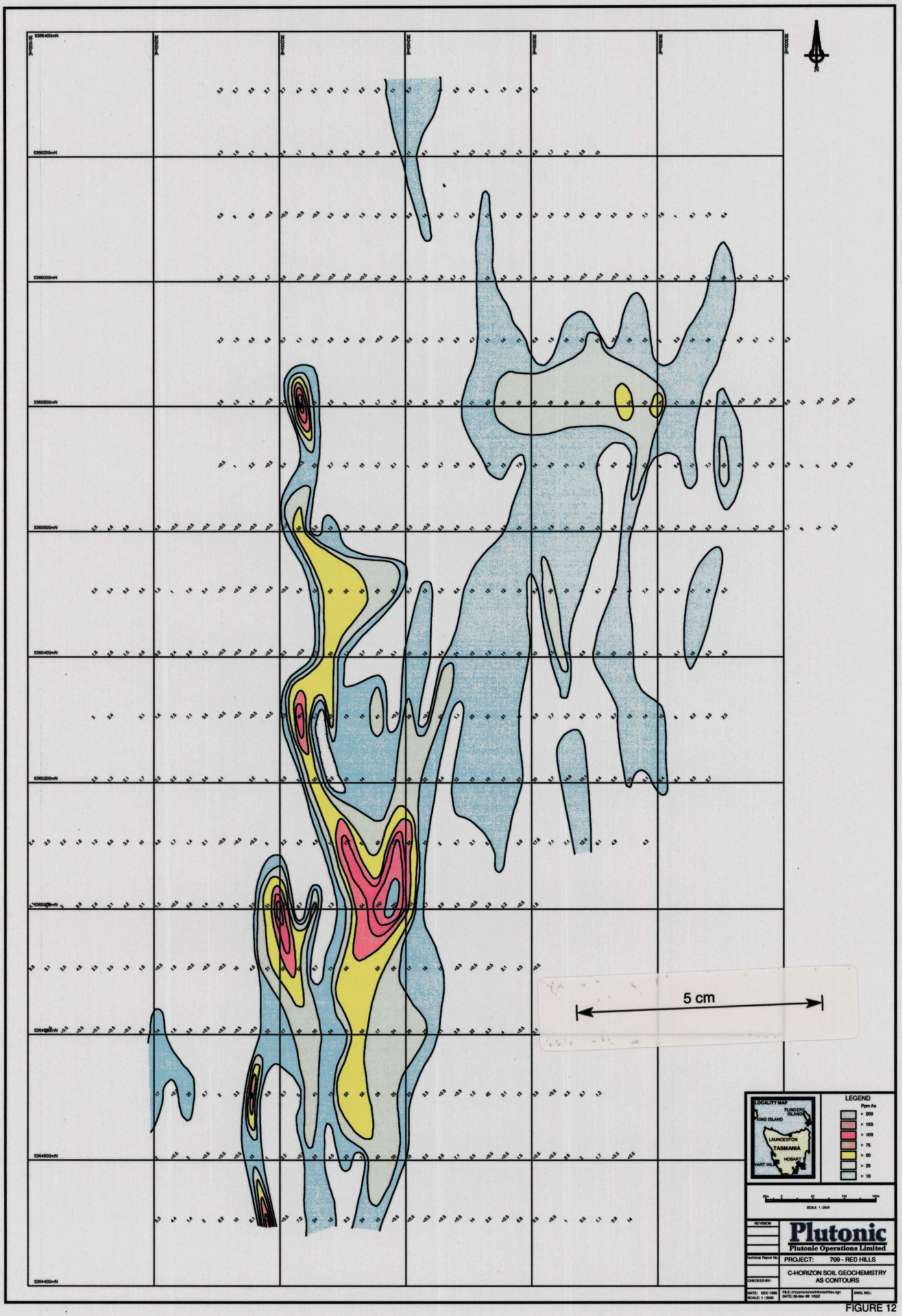


FIGURE 12

426046

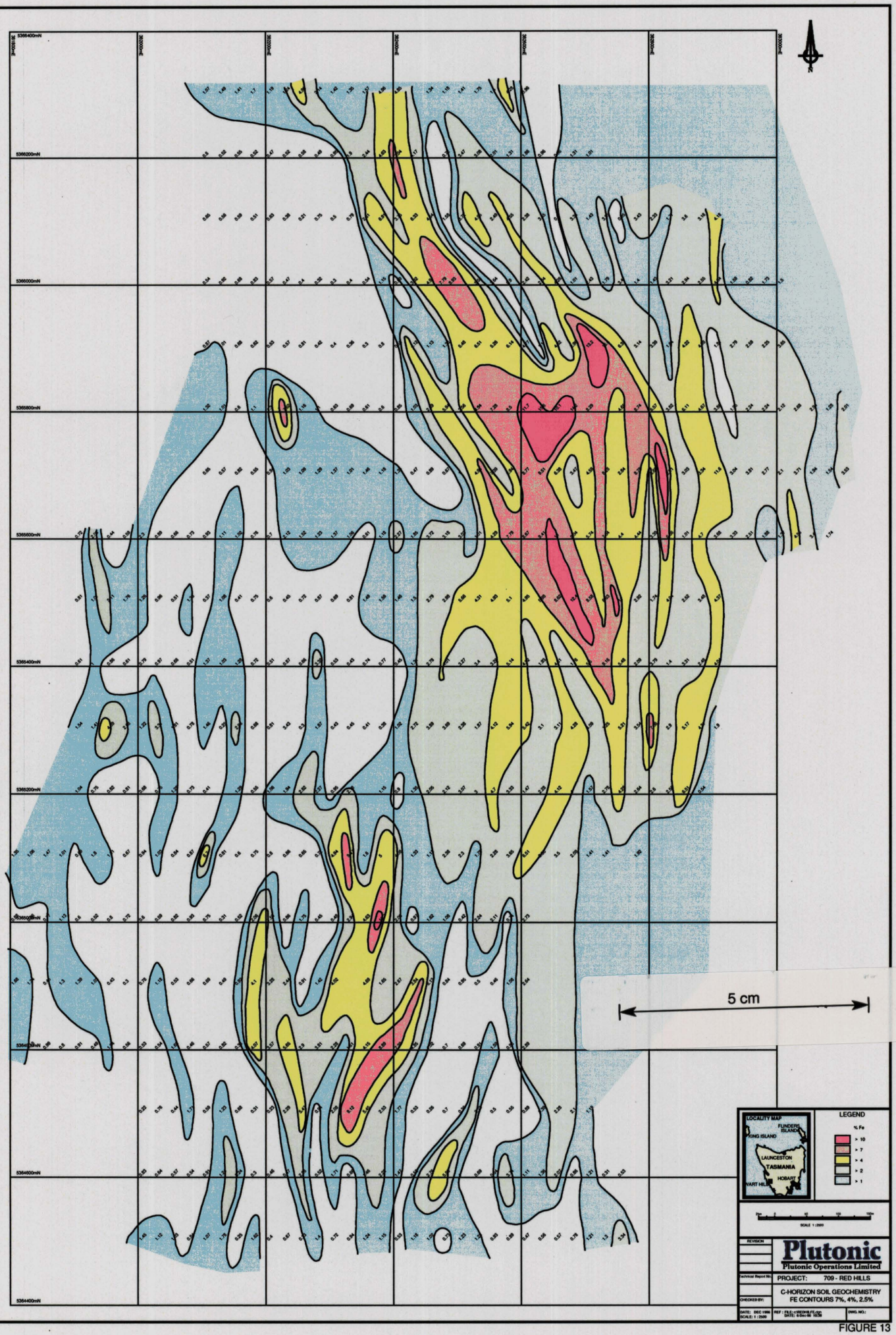


FIGURE 13

426047

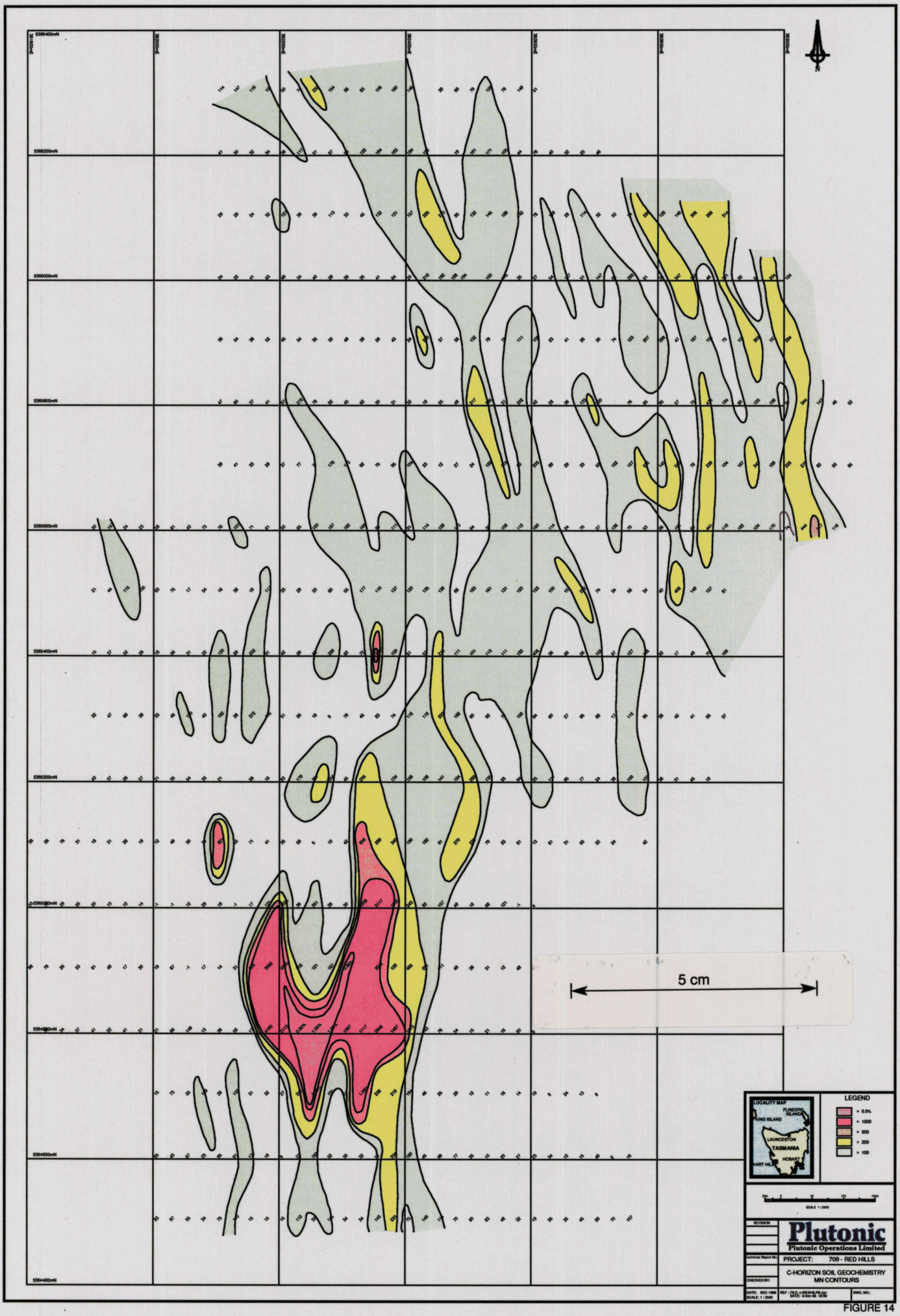


FIGURE 14

Lead and Zinc anomalism is mostly confined to the volcaniclastic sequences to the west and particularly the LMH and black shale units. In the forested areas in the southern part of the grid, high Mn and Fe values with anomalous Pb-Cu relate to goethite-manganese wad which has scavenged the base metals.

Gold geochemistry in soils has outlined a number of anomalies that are found in many cases to correspond with the interpreted or mapped surface location of the LMH. Other more disparate or spot high gold anomalism, particularly that over the chlorite-K-feldspar altered Red Hills, is linked to "footwall" pyrite-magnetite-chalcopyrite stringer mineralisation. In general, gold values are low across the copper anomalous Red Hills alteration zone but there is little evidence for Cu-Au zonation about an underlying Cambrian granite as advocated by Large et al (1996).

Two principal areas of strong gold anomalism were outlined by the soil sampling survey. These are a 1.2ppm Au high linked to the LMH at 5365400N, 382425E and an extensive anomalous zone in the vicinity of what is herein referred to as the "Western Ridge" (~5365000mN, 381950mE). Gold geochemistry in soils has outlined a number of anomalies that are found in many cases to correspond with the interpreted or mapped surface location of the LMH. Other more disparate or spot high gold anomalism over the chlorite-K-feldspar altered Red Hills, is linked to footwall pyrite-magnetite-chalcopyrite stringer mineralisation.

The Western Ridge gold target comprises a 300m long gold anomaly with peak analysis to 1.36ppm Au. Gold anomalism is apparently associated with extensive (Devonian?) quartz-siderite vein stockwork in a dacite lava unit, but anomalism also occurs in adjacent volcanic breccias. These breccias are similar to the LMH breccia facies but a direct link cannot at present be shown. This zone has only a weak base metal expression, suggesting that mineralisation is not directly VHMS related, but could be remobilised from underlying Cambrian gold mineralisation.

5.6 GEOPHYSICS

5.6.1 Moving Loop EM

A moving loop EM survey conducted over 2 weeks during March 1996 covered the Plutonic grid north of and including the 5000mN line (Fig. 4). Limited additional N-S Gridding between lines in the survey area was required to improve access through thick bush areas for the EM crew. Readings on lines south of 5000mN were not attempted because of the prohibitive time and effort expected for completion of a survey of this type in the thick forest of this area. This survey found no major new conductors of economic significance, however, a series of negative EM responses were located on lines 6550N, 6350N, 5850N, 5750N and 5150N. These responses are attributed to IP effects related to zones of disseminated sulphide.

In the northern adits area a two station early channel EM anomaly detected at 5365950N, 382650E is interpreted to be a response from a lens or vein of pyrrhotite-bearing magnetite-chalcopyrite-pyrite mineralisation within chlorite-K-feldspar altered volcanics. This EM anomaly warrants drill evaluation to determine whether any significant massive sulphides exist central to the broad halo of disseminated mineralisation known in this area.

A very weak positive EM response was also located at the interpreted surface expression of the LMH, above and immediately east of the massive sulphide zone in drill hole RH5 along the 5150N line. This EM response lies within a wide zone of negative EM values which correspond to previously defined IP highs surrounding the LMH and shale syncline. To the south this Lynchford Member stratigraphy is characterised by IP chargeability and UTEM anomalism which provided the focus for Aberfoyle's drilling north of Lake Westwood.

Further discussion and survey parameters are presented in a report on the Moving Loop EM survey by company geophysicist Llew Wynn (Appendix III).

426050

5.6.2 Ground Magnetics

The Red Hills grid was surveyed at 5m intervals along 100m spaced E-W lines. Colour contoured data is presented in Figure 15 and Plate 18. The ground magnetic survey of the Red Hills grid system was partly recorded concurrent with the EM survey but was completed following grid extensions in April 1997. A second base station magnetometer ran concurrently with field data collection in order to assess and correct for diurnal variations in the Earth's magnetic field. The magnetic survey is discussed by L Wynn in Appendix III B.

The data shows that the Red Hills alteration zone has an intense but highly variable magnetic expression which appears directly related to disseminated and vein controlled magnetite in a broad area but focussed from 5600N to 6000N in the northern adits area. To the west volcaniclastic sequences exhibit low magnetic values within a northerly trend.

426051

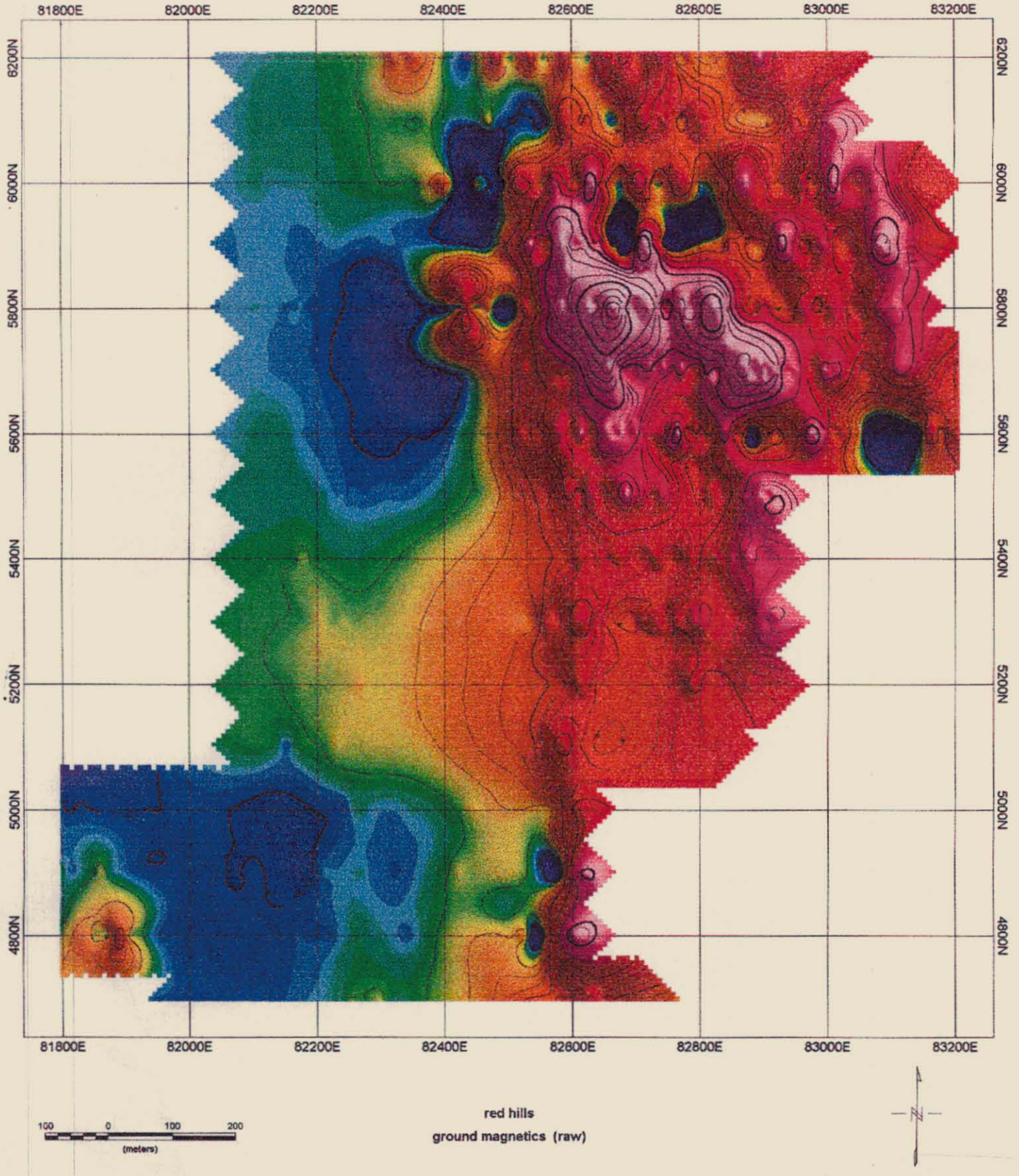


Figure 15

5 cm

6.0 CONCLUSIONS

1. Mapping and drill hole relogging has shown that strata bound VHMS mineralisation is localised in felsic volcanic-debris flow volcaniclastic sequences at the top of the Central Volcanic Complex and within Lynchford Member lower Tyndall Group sediments.

2. Geochemical and volcanic facies vectors suggest a proximal hydrothermal centre existed in the Red Hills northern adits area, with partial erosion of massive sulphides into volcaniclastic sequences deposited into a developing basin to the south west.

3. Prime VHMS prospectivity occurs in the Lower Mineralised Horizon (LMH) on the eastern limb of the Shale Synform where previous drilling has outlined a zinc-gold rich target zone surrounding drill hole RH5.

4. Remnant proximal massive sulphides indicated by EM anomalism may occur in the northern adits Cu-rich stringer vein zone.

5. Distal shale sequences of the Lynchford Member south of Red Hills may correlate with the Henty host horizon and are therefore prospective for polymetallic massive sulphides and remobilised Henty-style gold mineralisation.

6. Stockwork quartz-carbonate veins with low-grade gold along the Western ridge represent a new exploration target.

7. Proposed Plutonic exploration in 1998 includes diamond drilling three priority targets, the LMH around RH5, EM anomalism in the northern adits area, and the gold zone along the Western ridge.

8. Regional exploration will involve the search for new targets within the prospective Lynchford Member extending undercover to the south.

REFERENCES

Corbett, K. D., 1990. Stratigraphy, Palaeography and Geochemistry of the Mt Read Volcanics. in Burrett, C. F.; Martin, E. L. (eds) 1989. Geology and Mineral Resources of Tasmania. Special *Publication Geological Society of Australia 15.*

Halley, S. W., and Roberts, R. H., 1997. Henty: a shallow-water gold-rich volcanogenic massive sulphide deposit in western Tasmania. *Ecomonic Geology.* 92. 438-447.

Huston, D. L., and Large, R. R., 1987. Genetic and exploration significance of the Zinc Ratio (100Zn/(Zn+Pb)) in massive sulphide systems. *Economic Geology.* 82. 1521-1539.

Jenkins, D. R., 1991. Volcanology, mineralisation and alteration of the Red Hills, western Tasmania. *Unpub Hons Thesis. Uni of Tas.* p90.

Large, R., Doyle, M., Raymond, O., Cooke, D., Jones, A., and Heaseman., L., 1996. Evaluation of the role of Cambrian granites in the genesis of world class VHMS deposits in Tasmania. *Ore Geology Reviews.* 10: 215-230.

Mc Neill, A. W., 1987. Map 4. Geology of the Mt Murchison area. Mt Read Volcanics Project. *Tasmanian Mines Department Publication.*

Mc Neill, A. W., 1989. Technical Progress Report for the period August 1988 to September 1989, Lake Margaret, EL 5/85. *Unpublished Tasmanian Mines Department Report TCR 89-3023. Aberfoyle.*

Purvis, J. G., Jones, M. T., Fitzgerald, F. G., and Poltock, R. A., 1983. A Geological Review of the Tyndall Exploration Licence 9/66, Western Tasmania. Gold Fields Exploration Pty. Limited. *Tasmanian Company Report 83-1995.*

Reid, R. O., 1997. Intrusion related Cu mineralisation at the Thomas Creek Prospect, southwestern Tasmania. *Unpub Masters of Economic Geology Thesis. CODES - University of Tasmania.*

Reid, R. O., and Close, R. J., 1995. Annual Report on Exploration Activity for the 12 months to October 1995, EL 29/94, Red Hills. *Unpublished Tasmanian Mines Department Report. Plutonic Operations Ltd.*

426054

APPENDIX I

Geology of the Southern Area EL 29/92

By W. Herrman 1996

PLUTONIC OPERATIONS LIMITED

MEMORANDUM

TO: Rob Reid (Tasmania) and Bob Close (Sydney)

FROM: Wally Herrmann

DATE: April 10, 1996

SUBJECT: RED HILLS - EL 29/94; GEOLOGY OF SOUTHERN AREA

These notes record my observations and interpretations of limited drill core logging and outcrop mapping in the southern and western parts of EL 29/94 during February and March 1996.

Reconnaissance Mapping - Southern Area

A few days reconnaissance mapping was carried out in the southern parts of the EL with the objectives of examining the sparse exposure for signs of hydrothermal alteration and attempting to elucidate the litho-stratigraphy of the Tyndall Group volcanics (which appear to be dominant in that area) to allow comparison with that of the Henty gold deposit, 900m west of the EL boundary. This has been facilitated by the timely publication of a detailed study of the stratigraphy and palaeovolcanology of the Tyndall Group by White and McPhie (1996).

Their work "has led to division of the Tyndall group into two formations, the Comstock Formation and the overlying Zig Zag Hill Formation, and subdivision of the Comstock Formation into two members, the Lynchford Member and the overlying Mt Julia Member".... "The first stage of Comstock Formation sedimentation (Lynchford Member) reflects subaqueous syn-eruptive redeposition of pyroclastic debris generated from an adjacent subaerial to shallow marine, andesitic to dacitic, explosive volcanic terrane. Fine grained turbidites, massive mudstone units, lithic breccia units and massive carbonates also accumulated in the basin during this time. The overlying Mt Julia Member was generated by subaqueous syn-eruptive redeposition of pyroclastic debris sourced from an adjacent subaerial to shallow marine, rhyolitic to dacitic, explosive volcanic terrane. Subaqueous rhyolite lava dome complexes also developed on the sea floor during this stage. The overlying Zig Zag Hill Formation records post eruptive erosion and reworking of the subaerial to shallow-marine source areas (probably in response to tectonic uplift) supplying a large proportion of polymict, epiclastic debris to the marine basin."

It has exploration significance as it appears that the Henty Gold deposit (>506,000t @ 26.9g/t Au = >$218M in situ), despite showing some elements of structural control has, according to *Corbett & Green (1995), "an essentially stratigraphic Cambrian VMS character.* It is associated with a major hydrothermal alteration zone in the lower part of the Tyndall Group [TG] volcanic sequence and [the] underlying Central Volcanic Complex [CVC] rocks." That is: the Henty favourable horizon is at or close to the stratigraphic boundary between CVC and Tyndall Group. It reportedly extends at least 6km to the south of the mine to Howards Anomaly-Tyndall Creek where Aberfoyle intersected barite rich mineralisation with 2.1m @ 8%Zn, 5%Pb, 256g/tAg and 0.7g/tAu. Drawing a longer bow, the horizon may also be represented at Tasman Crown & Comstock, 19km south of Henty.

Although these deposits are smallish or sub-economic, some are rich (in situ ore values: Henty ~$460/t, Tasman Crown ~$560/t) and this stratigraphic level (if the supposed correlations are correct) represents an extensive favourable horizon with potential for larger high grade

deposits. Corbett & Green (1995), noted the proximity of "the Great Lyell Fault which was active during the Cambrian and could well have provided a hydrothermal plumbing system.....and has a deep intersection with the exhalative horizons."

The results of my reconnaissance mapping are plotted on Figure 1 (PLATE 2)

The best exposure in the southern Red Hills area is south of RH18 & 19 where massive to well bedded, sericitic, quartz crystal rich sandstones, lithic sandstones and breccias appear to form the eastern limb and hinge zone of a NNE trending anticline and pass conformably upwards through a thin unit of hematitic, mixed volcaniclastic-siliciclastic sandstone-breccia (=Jukes Conglomerate) to thick, cobbly siliciclastic conglomerate of the Owen Conglomerate. Cross bedding in both the volcaniclastic and mixed volcaniclastic-siliciclastic sandstones suggest deposition partly by traction in fairly shallow water.

These features suggest a correlation with the Zig Zag Hill Formation (ZZH) (of White & McPhie, 1996) and a conformable transition between the upper part of the Tyndall Group and siliciclastic Owen Conglomerate.

Somewhat similar sericitic, qtz xtal rich rocks outcrop ~800m to the NNW, in a small area ~150m west of the collar of RH11. These, however include some possible fine pumice breccia, are rather diffusely thick bedded, without cross bedding and, although they are probably of the Tyndall Group, are a little harder to pin down in the stratigraphy. They dip steeply WSW which is consistent with the dip of the nearest black shale-siltstone exposure (150m to NE) and (if the structure is simple) are probably up sequence from the latter.

About 50m to the west, and separated from the above by a SSE flowing creek and a line of bucky quartz reefs, are pink and green aphyic to sparsely feldspar phyric "dacitic" lava breccias and massive volcaniclastic sandstones? more typical of the CVC rocks north of 382000E / 5365000N. They occupy an across strike width of ~200m succeeded westward by a gap of ~150m and then, scattered along the powerline, a few outcrops of Tyndall type qtz-feldspar phyric pink-grey massive rhyolite and rhyolitic lithic breccia-sandstone with sparse clasts of mudstone. The outcrop is scant but these lithologies seem to most resemble the Mount Julia Member (MJM) of the Comstock Formation; ie: "middle" Tyndall Group. These are in turn succeeded westward, after a gap of ~150m, by westerly dipping Owen Conglomerate on the eastern limb of the syncline trending through Gooseneck Hill.

The CVC type rocks near 381900E / 5363900N thus appear to be an inlier within Tyndall Group rocks, possibly of the Mt Julia Member. Owen Conglomerate 300m to the south is folded about a broad shallowly south plunging antiform but it is unlikely that the entire thickness of Tyndall Group exists (obscured) in the intervening distance.

The SSE flowing creek at 382000E could mark a fault zone on which west side up movement could account for the prescence of CVC rocks. This possible fault could extend to the SSE just west of RH 18 &19 and be involved in the discrepancy between the westerly dipping sequnce in those holes and the ZZH-Owen anticline nearby to the south (see discussion of Section 5363400N, below). If so, however, a complex rotational movement on the fault is implied: west side up in the north and west side down in the south.
Alternatively, and probably more likely, a NNE trending fault in this position could link up with the thrust fault zone inferred by Rob Reid further north, between the hill above the Western Adit and the black shale unit.

The outcrop is very scattered and I doubt if the structural relationships could be fully elucidated by further surface mapping.

The MRV Project 1:25,000 map infers a number of faults in this area (one of them apparently forming the contact between CVC and TG northwards up to Moxon Saddle) but not much is known about their dip and displacement. Apart from the apparent conformity between ZZH? and Owen Conglomerate south of RH18 & 19, there is not much evidence that the structures in

the Owen are faithfully reflected in the underlying volcanic sequences.

The outcrops of volcanics in this southern part of the EL are devoid of significant hydrothermal alteration or sulphide mineralisation; many contain fresh feldspar and the CVC correlates near 381900E / 5363900N contain fresh accessory magnetite. The bucky quartz reefs and marginally silicified dacitic lava/breccia in the same area are not anomalous in base metals or gold (sample Nos: 15271-15273).

Reconnaissance Mapping - Northwestern Area

I did some cursory mapping along the access track from the western boundary down to about the Western Adit (384920E / 5365025N), mainly to see what the TG-CVC relationship was like there.

Rocks on the ridge north of the Gooseneck are massive coherent quartz-feldspar phyric rhyolite; on the western side they are coarsely porphyritic (qtz xtals ~5mm) and could well be intrusive but on the eastern side they are progressively finer (phenocrysts ≤3mm), faintly to distinctly spherulitic and within about 200m of the CVC contact they display regular colour banding and were probably coherent lavas. There are no indications of hydrothermal alteration apart fom an almost ubiquitous pervasive network of fine anastomosing siliceous veinlets which, however, contain negligible pyrite and are not associated with feldspar destructive alteration of the host. On the basis of the dominance of coherent quartz phyric rhyolite a correlation with the Mount Julia Fmn. of White & McPhie (1996) seems most likely.

Their eastern contact is reasonably well exposed on the track and appears to be sharp and planar, trending about 345°/steep W, sub parallel with the local cleavage and shows no signs of being a major fault as depicted by MRV Project 1:25,000 mapping. Covello (1995) came to the same conclusion. If this contact is depositional then the Lynchford Member of the Tyndall Group is entirely missing here, as it also appears to be at East Mt Lyell ~~(apelt.)~~. (White + McPhie, 1996)

East of the contact there are massive, feldspar phyric, pink and green blotchy sericitic-chloritic, volcaniclastic breccias (almost certainly originally containing a fair proportion of pumice clasts) as well as variable amounts of pink "dacitic" lithics up to 300mm diameter in places. Identical rocks exist in the area between the Gooseneck and Western Adit. They seem quite massive, probably emplaced as a series of thick mass flows, and occupy an apparent stratigraphic thickness of ~400m. East of this, the ridge along 383000E is largely of sparsely feldspar phyric, flow laminated to massive "dacitic" lava and minor lava breccia or hyaloclastite.
These coherent and volcaniclastic (probably pumiceous) feldspar phyric rocks are typical of the CVC.

The volcaniclastics have a murky more or less sericitised and/or chloritised matrix and moderate to strong cleavage but the phyllosilicate alteration is not notably associated with pyrite and does not seem to be feldspar destructive. Feldspar crystals in some samples are well preserved and in others rather fuzzy and stretched along the foliation but my general impression is that the pervasive phyllosilicate alteration of the matrix is "background" devitrification of unstable glassy-pumiceous components and does not have any particular zonal-hydrothermal significance. The coherent types tend to be more flinty with less phyllosilicates in the banded or spherulitic matrix and generally are relatively unaltered.

The most mineralised looking outcrops observed in the western areas are on the small hill above the Western Adit. The host rock there is a pinkish buff coloured, flinty, very sparsely feldspar phyric "dacite". It is cut by a moderate to intense (1-10%) irregular stockwork of fine quartz veinlets and veins upto ~100mm thick, culminating in a near massive (80%) anastomosing network of bucky white quartz veins running along the crest of the hill. Most of the larger veins have a northerly trend and moderate to steep easterly dip and have no visible

sulphide although patches of limonitic-siliceous gossanous material exist in a few places.

Mullock from the adit (which was driven ~15m eastwards, about 30m below the crest of the hill) includes fresh samples with irregular stockwork of quartz +/- siderite veinlets with minor galena, amber-grey sphalerite and traces of pyrite and possible chalcopyrite. The veins constitute ~2-3% of the volume of mullock and range from hairline to ~20mm in thickness. Although the stockwork may be described as pervasive the hydrothermal effects were not; apart from rare traces of disseminated pyrite, the mineralisation is entirely restricted to veins and the wall rock seems unaltered - rare fresh feldspar phenocrysts are preserved close to veins and there are no apparent alteration selvedges around veins.
The larger veins tend to be bucky and may contain coarse siderite but rarely sulphide; the overall sulphide content of the mullock is <0.5%. Some "high graded" samples of mineralised mullock are anomalous in metals with maxima from 3 samples of: 0.6%Pb, 0.26%Zn, 12.7%Fe, 0.9%Mn, 50ppmAs, 8g/tAg and 1.47g/tAu, (Table 1).

A total of nine rock chip samples from this area (3 mullock, 6 outcrop) suggest that gold distribution is erratic up to 2.6g/t, usually associated with anomalous base metals but not always present where base metals are anomalous. The majority of bucky white quartz veins are barren and the anomalous metals are associated with sparse gossany patches, presumably derived from siderite - sulphide assemblages as seen in the mullock. From the reasonable available exposure, it is evident that these gossan ex siderite-sulphide patches constitute a small proportion, < 5%, of the bulk of the veins and an even smaller proportion of the host rock but it may be significant that one of the samples (15281) of wall rock to a gossany vein is also weakly mineralised.

The massive flinty "dacite", which hosts the vein system on the hill, passes abrubtly northwards off the ridge into compositionally related chaotically flow banded lava and blocky lava breccia; this transition coincides with the petering out of the vein system. It may be that the hill represents a dome like massive feeder? facies adjacent to the extrusive and flow brecciated unit extending northwards and that there was a competency control on brittle deformation which has focussed the vein system.

On these limited observations, it does not look very favourable for a bulk tonnage - low grade gold mining venture but it probably warrants at least some follow up systematic rock chip sampling and possibly shallow RC drilling if the gold proves to be reasonably extensive.

SECTION 5363400N

Aberfoyle drill holes RH 18 & 19 intersect a westerly dipping (and probably westerly facing) sequence of coherent rhyolites and dacites, associated volcaniclastics and black shale with minor volcaniclastic siltstones. Lithological differences are supported by Aberfoyle's side grind Ti and Zr data (Noonan, 1990) which are re-tabulated in Table 2 and plotted in Figure 8.

From the top down the sequence comprises:

A: Massive coherent quartz phyric Rhyolite with traces of centimetre scale flow banding and relict spherulites, it has common patchy-pervasive hematite staining of felsic matrix but otherwise is relatively unaltered, lower contact possibly peperitic; >70m thick. Ti/Zr ~4-5 with fairly tight range of Zr values (210-240ppm).

B: Chloritic-feldspathic massive feldspar>quartz phyric crystal-lithic sandstone ~10m thick sandwiched between 15m and 5m thick polymictic volcaniclastic breccia units. Clasts in breccias range to 100mm and are dominantly pink Qtz+Fs phyric lava, lenses of carbonate and grey mudstone in green-grey chloritic to locally pinkish felspathic crystal rich sandy matrix. Disseminated magnetite exists as an accessory phase in the pink lava clasts and

detrital grains in the matrix and sandstone. The sandstone locally has centimetre scale alternating blurry bands of pink Kspar and green chlorite alteration (but no signs of feldspar destructive sericite-qtz alteration); Ti/Zr range: 17-26.

C: Sericitic-siliceous massive to planar interbedded grey volcaniclastic siltstone and fine-medium grained qtz-fs crystal rich sandstone; no magnetite, fs fairly fresh; 5-15m thick. Ti/Zr: 5-8; there are only two samples (Fig 8), one of which has low immobile element values probably attributable to greater qtz crystal content rather than alteration mass changes.

D: Fissile black slate and minor grey "ashy" volcaniclastic siltstone; layering generally parallel to cleavage with some evidence of transposition, ≤1% fine disseminated Py, locally up to 1% disseminated Po and traces of brown Sp in cleavage // smears and veinlets. At least ~120m thick, possibly inflated by felsic sills, Ti/Zr range: 15-19.

E: Massive coarse Qtz-(Fs) porphyritic Rhyolite; exists in two coherent units (~5m and 20m+) near top of black slate (unit D), not fully penetrated by RH19; possible peperite in upper porphyry of RH 18 suggests emplacement as sills or burrowing flows. Essentially fresh, Ti/Zr: 8-9.

F: Sericitic-siliceous massive fs phyric "Dacite"; peperitic upper and lower contacts and 3m intraformational peperite suggest emplacement as coherent sills within black shale and volcaniclastic siltstones (unit D). Contains some domainal silicification but feldspar looks fairly fresh; trace disseminated Py and Sp <0.2% total. 90m thick in RH18, Ti/Zr: 8-9.

G: Sericitic feldspar phyric "dacitic" volcaniclastics grading down from bedded siltstone-sandstone with minor breccia, through massive crystal-(lithic-pumiceous) sandstone to coarse polymictic breccias. The breccias have matrix supported clasts of pink aphyric and Fs phyric "dacite" to 100mm, flattened lenses of white carbonate, minor cherty siltstone and pumice in a fs crystal rich, murky, sericitic, probably partly pumiceous matrix. Feldspar essentially fresh, <0.1% disseminated Py; Ti/Zr: 6-7.5.

The lower, feldspar phyric group occupies a narrow range of Ti/Zr ratios (6-10) and includes some pumiceous volcaniclastics which could be magmatically related to the sills/lavas as noted in petrographic descriptions by Tony Crawford (Appendix IV of McNeill, 1989). They are, on the basis of Ti/Zr ratios, probably rhyolitic but I have used the field name "dacite" to distinguish them from the quartz phyric types higher in the sequence. They most likely belong to the Central Volcanic Complex (CVC) of Corbett, 1992.

The upper quartz-feldspar and quartz phyric group, in contrast, occupies a broad range of Ti/Zr ratios from 4 to 26. The magnetite bearing sandstones and breccias of unit B have a distinctly dacitic Ti/Zr signature despite their abundant quartz, the QF porphyry and sericitic QFxt sandstones (units E and C respectively) are intermediate and the quartz phyric (unit A) lava is the most evolved rhyolite. The Ti/Zr data is consistent with these units (B-C/E-A) forming a magmatic differentiation series. The prominance of quartz phenocrysts indicates a correlation with the Tyndall Group. More specifically, the blurry compositional-colour banding in massive sandstones of unit B resembles that of the "Comstock Tuff" and the abundance of felsic lavas suggests that this sequence (A-B-C-E) is equivalent to White & McPhie's (1996) Mt Julia Member of the Comstock Formation.

If so, the the black shale-siltstone unit (D), marking the up sequence change from feldspar phyric felsic CVC volcanics to quartz-feldspar phyric and quartz phyric TG felsic volcanics, occupies the same stratigraphic position as the Lynchford Member elsewhere. The Lynchford Member, according to White & McPhie (op cit.), is generally 60-200m thick and consists of quartz poor crystal rich dacitic-andesitic volcaniclastic sandstone, carbonate and fossiliferous limestone, laminated grey/black mudstone and sandstone and minor volcaniclastic lithic breccias. They noted that the black mudstone probably represents pelagic sedimentation (ie;

not directly related to volcanic eruptions). If the tentative correlation is correct, the apparent absence of quartz poor volcaniclastics and the dominance of black shale-siltstone in the lower part of the TG in RH18, may indicate an environment more distal from vulcanism or at least somehow isolated from early syn eruptive volcaniclastic sedimentation.

Core bedding-cleavage relationships and correlations between RH18 and 19 indicate a moderate (50°) westerly dip. We do not have core or a geological log from DDH GN2 (collared 120m east of RH18 by RTZ in late 1950s) but annotations on Aberfoyle's cross section (LMarg 14 *in*: McNeill, 1989, TCR 89-3023) indicate a ~140m thick sequence of black shale with minor ash volcaniclastics and three intervals of rhyolitic intrusive. The sediments are likely correlates of unit D in RH18 and 19 and would be consistent with the westerly dip; the felsic intrusives are likely correlates of units E (QF porphyry) or F (Fp Dacite) which are interpreted as intrusive sills and have no particular structural implications.

This westerly dip is anomalous in respect of NE to SE dipping and facing sericitic quartz phyric felsic volcaniclastic bedded sandstones and breccias which outcrop 100-500m to the south and appear to pass conformably upwards to siliciclastic Owen Conglomerate. Some undefined structural complexity, possibly a NW trending - moderately SW dipping fault, is implied between these "upper Tyndall Group" (=ZZH Fmn) correlates and the sequence intersected in the drill holes.

Examination of RH17, indicates that the upper 72m of the hole is in massive, possibly east facing, chloritic to sericitic quartz phyric volcaniclastic breccias and sandstones (probable correlates of MJM and ZZH) which pass transitionally through hematitic, mixed volcaniclastic-siliciclastic sandstone-breccia (=Jukes Conglomerate) into siliciclastic Owen Conglomerate. Core to bedding angles are obtuse (>70°) suggesting a westerly dip with local overturning which is difficult to resolve with the nearby outcrops and the west facing of the sequence RH18 & 19.

As noted briefly above, the felsic volcanics in RH18 & 19 do not seem to be significantly altered. Major and immobile trace element analyses of single samples from units A, E and F in RH18 (shown in Table 3) generally appear to support this interpretation with no strong Na2O depletion or high Alteration Index (AI) in the last two. The sample from unit A, however, has AI=99 due to very low CaO and Na2O but otherwise does not appear altered; the sample is from 52.3m downhole and I suspect that the Ca-Na depletion may be due to surficial leaching.

There are still significantly anomalous base metals associated with the black shales this far south (eg: RH18 291.2-299.5m, 8.3m @ 0.3%Pb, 0.7%Zn) but it is notable that mineralisation of this tenor is not restricted to black shales and exists also in the feldspar phyric "dacite" sills intruding the shale and in the mixed volcaniclastics below it.

SECTION 5363700N

RH15 was collared about 250m north of RH18 & 19 but (in terms of the projected apparent strike of ~330°) about 100m further east; there is no outcrop in the intervening distance except an outlier of, possibly flat lying, Owen Conglomerate.

The upper part of the hole is in massive to laminated black shale-siltstone in which layering is mostly transposed parallel to cleavage except at ~100m depth where layering is locally folded sub parallel to LAC and (by using the steep regional cleavage to "orient" the core) suggests a small synformal fold plunging at ~30° to the south.

At 71-78m and 107.5-115.7m there are zones of siliceous-volcaniclastic fine sandstone-siltstone grading to grey cherty siltstone which in the upper interval fine down hole and in the lower fine up hole. Although there are no small scale facing indicators, these metre scale transitions could indicate upwards fining of turbiditic-volcaniclastic inputs into otherwise

pelagic dominated sedimentation. If so, these facings are consistent with and roughly symmetrical about the small synform at 100m. This evidence is very tentative but consistent with the interpretation that the black shale occupies a synclinal hinge zone.

The lower half of the hole is in non-descript pink and green feldspar phyric-dacitic lithic-pumiceous volcaniclastic sandstones and breccias with a 30m thick unit of coherent feldspar (qtz) phyric dacite lava or sill near the end of the hole.

Although the contact zone between black shale and the lower volcanics is sheared, possibly faulted, the lithological association is similar to that of the middle and lower part of the RH18 sequence, ie: possible correlates of the Lynchford Member and CVC.

There is some patchy semi pervasive silicification (eg: 254-258m) and mottled pink and green Kspar-chlorite (Red Hills type) alteration. However, the most interesting occurs in an apparent fault sliver of strongly qtz-sericite-carbonate altered nondescript felsic volcanic with ~5% disseminated Py in the sheared contact zone with black shale contact at 146-151.5m. Similar alteration is not present in the fine pumice breccia? below the contact and it may be either shear related or very restricted to the top of the CVC volcanic seqence and disrupted by the shear.

Zones of strong pervasive pink-grey silicification occur at 186-188m and 188.6-191m in association with disseminated magnetite and intense quartz + barite + galena veining; this has the appearance of massive barite-galena in places but elsewhere there are small brittle veins of similar type which appear to post date the pervasive qtz-magnetite alteration.
The fine grained siliceous-chloritic siltstone? unit immediately below 191m was previously interpreted as "possible host rock" (GFEL core log by F.Fitzgerald) presumably equivalent to the cherty siltstone associated with massive sphalerite in RH5; it contains minor Sp-Gn-Py in deformed veinlets with quartz and carbonate. Rob Reid (pers comm) agrees that this correlation is a possibility; although the underlying volcaniclastics include much sandstone and lesser polymictic breccias than the RH5 "polymictic debris flow unit", it could be a more distal facies of the same favourable horizon. The barite-galena mineralisation, if it is stratiform and not entirely veiny, also supports a relatively low temperature system or a setting relatively distal from the hydrothermal centre. Once again, however, the absence of feldspar destructive alteration in the footwall is not a favourable indicator.

Mineralisation in the black shale unit consists of nearly ubiquitous blebs and flattened streaks of Po-Py rarely exceeding 0.5% and rather sporadic blebby and veiny Sp-Gn; some of the qtz-sulphide veinlets seem folded and probably predate Devonian deformation but there is nothing convincingly stratiform.

Section 5363900N

RH11 intersected a sequence with several similarities to the middle and lower parts of RH18. The upper 90m is in a bedded sequence of black shales, sericitic quartz phyric volcaniclastic sandstones, limy sandstones and coarse fossiliferous? limestone breccias including a 4m thick sill? of grey coherent coarse quartz porphyritic Rhyolite identical to that near the upper contact of black shales in RH 18 & 19. Below that is 90m of black mudstone (interrupted by a few thin basaltic dykes) followed by a 70m mixed zone of black-grey mudstone and feldspar phyric "dacite" sills with peperitic contacts passing eventually into massive volcaniclastic sandstone and feldspar phyric fine pumice breccia.

The fossiliferous? carbonates interbedded with the black mudstone - quartz phyric volcaniclastic sandstone sequence supports the earlier tentative correlation with the Lynchford Member. It may be possible to get some palaeontological data out of the carbonates to firm up the correlation. The prescence of quartz porphyry in the upper parts of the black shale sequences and the similarity in major element and Ti-Zr compositions of feldspar phyric

"dacite" sills (cf: 15282 & 15284 with 15294 in Table 3) supports a correlation between holes RH11 and RH18.
Bedding-core angles in RH11 suggest a steep westerly dip of the bedded sequence which is consistent with that in RH18 & 19, and nearby outcrops within ~200m north, east and west of the collar. This is also consistent with the earlier discussion of outcrops at 382050E 5363900N being possible correlates of the Mt Julia Member.

Several samples from the CVC sequence in RH11 have been analysed for major and immobile trace elements (Table 3) in order to assess the intensity and style of alteration and to try and see through the pink and green blotchy (Red Hills type) alteration to infer precursors.

Firstly: it is apparent that the two samples of feldspar phyric "dacite" sills do not have strong plagioclase destructive alteration.

Secondly: the grey and pinkish grey variations in the pervasively qtz-(sericite) altered massive volcaniclastic sandstone near the top of the CVC sequence (15285, 15286) are not strongly Na depleted and the pinker (more feldspathic looking) lower part (15286) has surprisingly higher Fe2O3 and K2O than the upper grey part - (this is one of those situations where the analyses *don't support the visual observations and one suspects the samples might have been* switched!).

Thirdly: of the four pumice breccia? samples (15287-15290) the small range of Ti/Zr suggests they could be co-magmatic, possibly from the same eruptive unit. The first two are least altered (with ≥2% Na2O and lowish AI) but the high Al2O3 and immobiles Ti, Zr and P2O5 of 15287, relative to the others, suggests a mass loss mainly due to silica removal.

The second two (15289, 15290), in contrast, are relatively strongly altered having lost nearly all their CaO and Na2O and hence scoring high in AI. The very chloritic 15289 appears to have gained an equivalent amount of Fe2O3, presumably in Fe rich chlorite, to end up with about neutral mass balance. The pink Kspar rich 15290 seems to have gained in K2O and lost a little Fe2O3 and SiO2. It is notable that both of these alteration types do not seem to have involved major net mass changes and that Si, Mg and S have not been major mobile components.

This is not typical of Australian VHMS proximal footwall alteration zones in which addition of Si, Fe, Mg and S and loss of Na are characteristic. This small set of data is consistent with Rob Reid's interpretation that the mottled pink and green Kspar-chlorite "Red Hills type" assemblages are attributable to hydrothermal alteration superimposed on felsic pumiceous volcaniclastics (and perhaps other volcanic facies) and not necessarily restricted to a particular "lava" unit; ie: it is an alteration boundary rather than a volcanic facies boundary.

Section 5364500N

RH10 is ~600m north of RH11 and there are no obvious correlations apart from the black shale which is only ~25m thick in RH10.

Massive, coherent, sparsely feldspar phyric "dacite" and associated breccias in the upper section of the hole are most like the rocks around the "Western Adit" hill. They pass down hole into massive feldspar phyric felsic volcaniclastic sandstones enclosing two narrow intervals of black mudstone at 232-254m and 296-302m. In both cases the felsic volcaniclastic on the immediate downhole side of the black mudstone units is, over an interval of ~4m, strongly sericitised with an anastomosing network of deformed pyritic "stringer" veins upto 20mm thick and contributing ~5-10% Py to the rock. This looks like good VHMS footwall stringer type alteration.

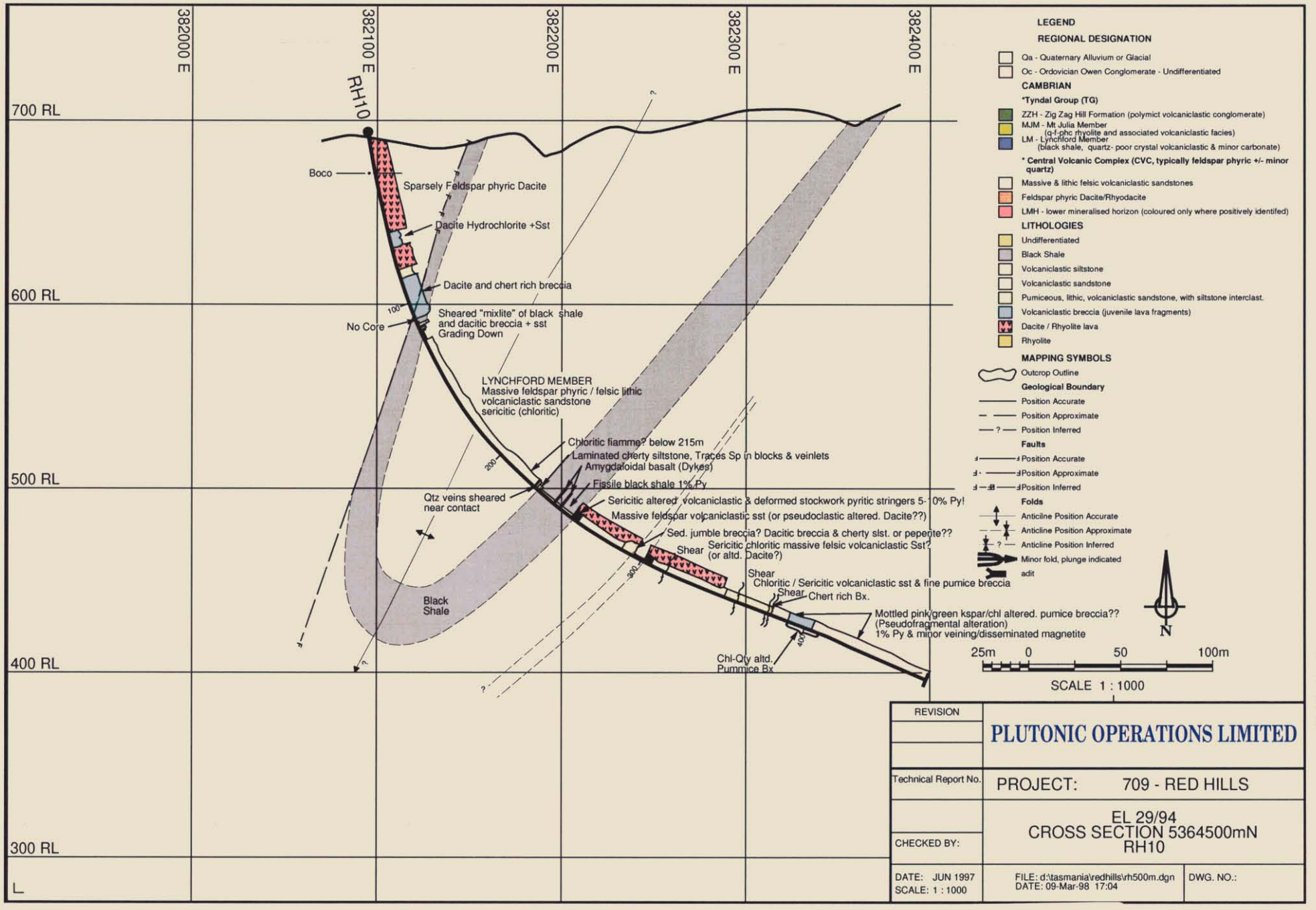
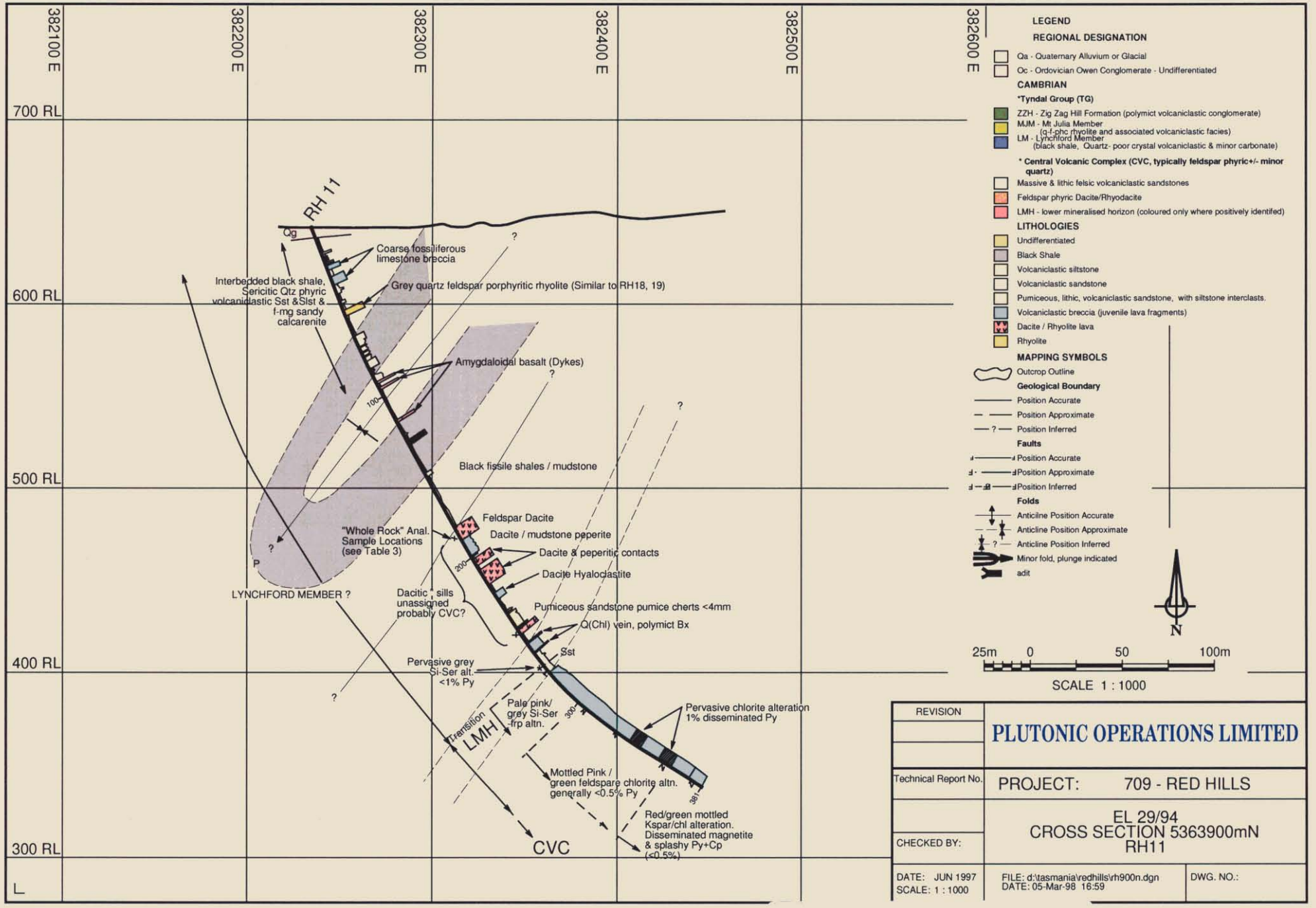


FIGURE 16

426063



REVISION	**PLUTONIC OPERATIONS LIMITED**
Technical Report No.	PROJECT: 709 - RED HILLS
CHECKED BY:	EL 29/94 CROSS SECTION 5363900mN RH11
DATE: JUN 1997 SCALE: 1 : 1000	FILE: d:\tasmania\redhills\rh900n.dgn DATE: 05-Mar-98 16:59 — DWG. NO.:

5 cm

FIGURE 17

A96061

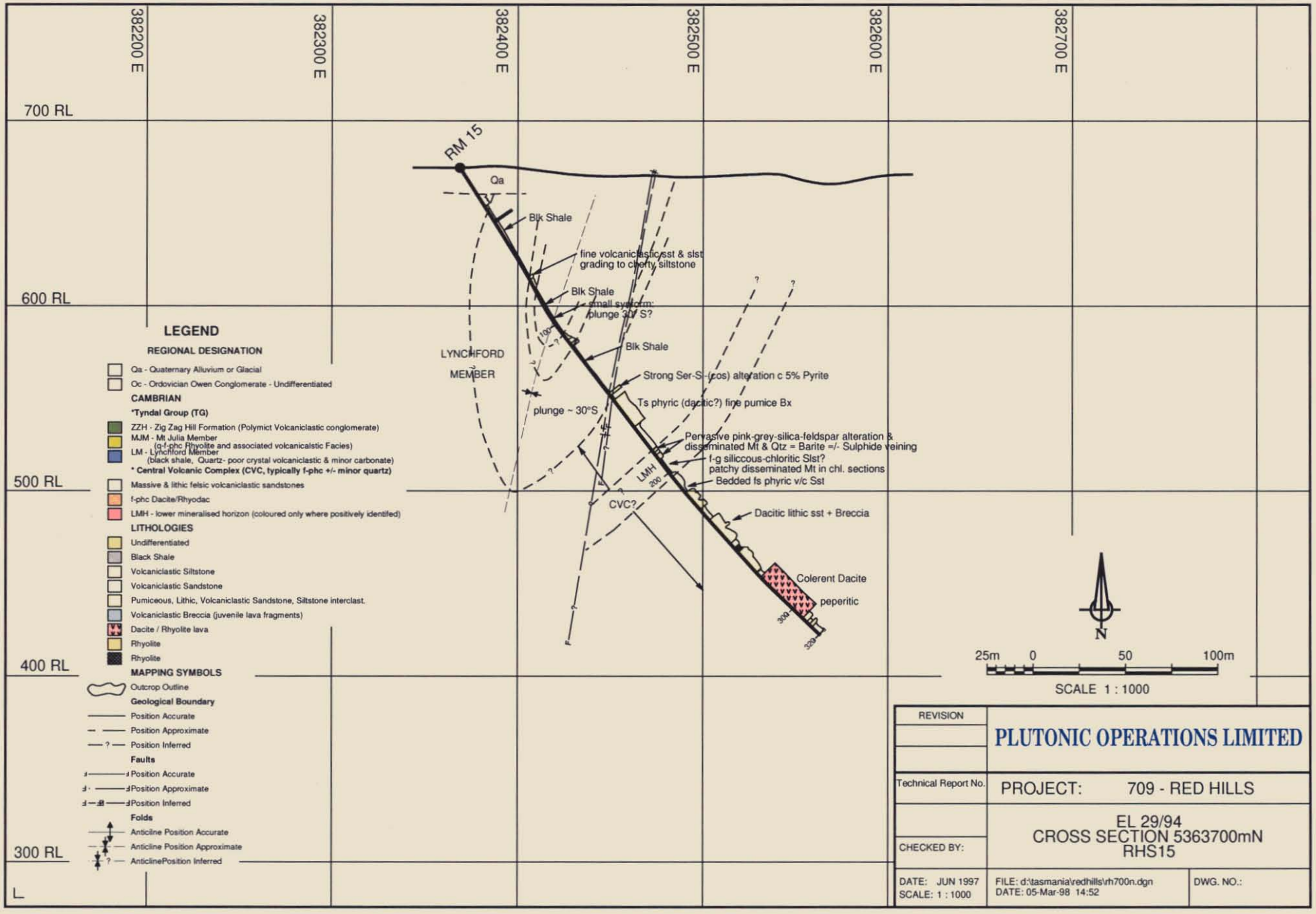


FIGURE 18

426963

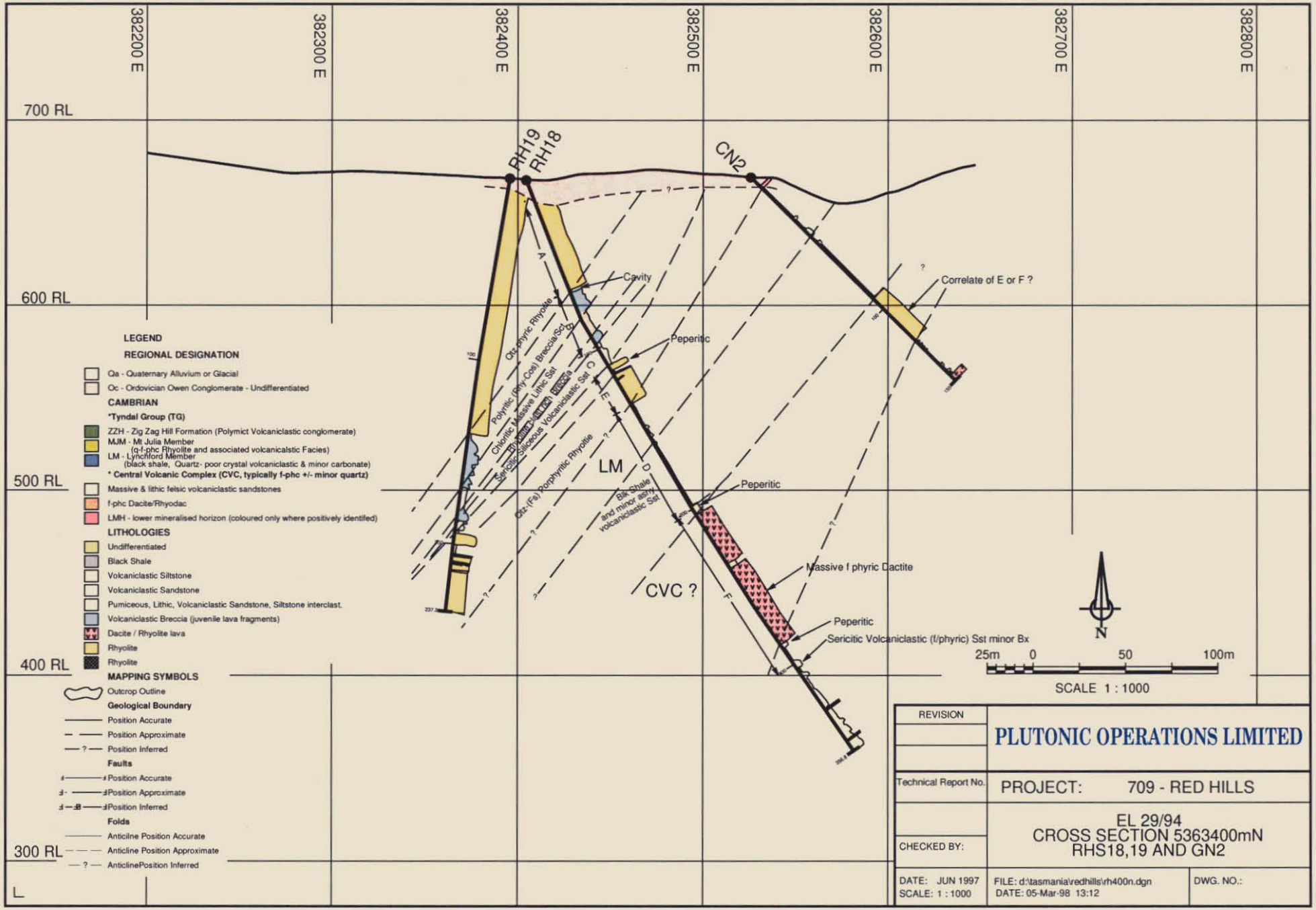


FIGURE 19

426066

The association of alteration at the base? of black mudstone units suggests permeability contrasts - ie: mudstone "caprocks" - have controlled hydrothermal flow in the volcaniclastic sequence but it is discouragingly restricted and of uncertain significance. However, I recall similar alteration adjacent to black shales in RH9 to the north and it may be possible to piece these and other? occurrences together to form a picture of intensity and thickness variations which may provide exploration vectors.

The lower part of the hole is in massive fine pumice breccia? with alteration gradually intensifying from "normal" sericitic, through a green-grey chloritic transition into the mottled pink and green Kspar-chlorite "Red Hills type" associated with patchy 1% Py and diseminated/veiny minor magnetite.

CONCLUSIONS

The evidence from some critical drill holes, RH11 and RH18, suggests that the black shale horizon at Red Hills could be equivalent to part of the Lynchford Member marking the transition between the underlying feldspar phyric CVC and the overlying dominantly quartz phyric Tyndall Group. Scanty published information indicates that this is the approximate stratigraphic level of the Henty Gold deposit, Howard's Anomaly and possibly Tasman Crown and Comstock, representing a locally favourable horizon for VHMS and gold mineralisation.

The black shale horizon and immediately underlying volcaniclastic sequence at Red Hills has been covered by UTEM surveys over a strike length of ~4.5km and drilled at relatively shallow depths over about 2km of strike. It has been shown to be weakly mineralised over the latter extent but no proximal (quartz-sericite-pyrite) footwall alteration or consistent alteration vectors have been identified.

Sparse exposures of (pre Owen Conglomerate) felsic volcanics in the western quarter of the licence appear to be mainly of the middle and upper formations of the Tyndall Group (Mt Julia Member and Zig Zag Hill Formation - interpreted to lie stratigraphically above the Henty & Red Hills favourable horizon) and do not show significant VHMS related alteration.

Apart from deeper and or closer spaced "exploratory-stratigraphic" drilling of the favourable horizon there is no obvious focus for further exploration in the southern and western part of the licence. Much of it, however, is fairly open heathland and could be relatively easily covered by systematic fixed loop EM surveys.

REFERENCES

Corbett, K.D. & Green, D. 1995. Geological Notes for ETA 400-South Henty. Tasmania Development & Resources, "Tasxplorer" ETA Newsheet.

Covello, L. 1995. Red Hills Technical Review. Unpublished Report to Plutonic.

Jenkins, D.R. 1991
. Volcanology, mineralisationand alteration of the Red Hills, Western Tasmania. Unpublished BSC Hons thesis, Geol. Dept. University of Tasmania.

McNeill, A.W. 1989. Lake Margaret EL 5/85 Tasmania, Technical Progress Report for the period 8/88 to 9/89. Aberfoyle Report, TCR 89-3023.

Noonan, D.J. 1990. Lake Margaret EL 5/85 Tasmania, Technical Progress Report for the year ended October 1990. Aberfoyle Report, TCR 90-3190.

White, M.J. & McPhie, J. 1996. Stratigraphy and Palaeovolcanology of the Cambrian Tyndall Group, Mt Read Volcanics, western Tasmania. Aust. Journal of Earth Sciences 43, 147-159.

ATTACHMENTS

Figure 1	Geological Plan	1:5,000
Figure 2	Cross Section 5363400N (RH18 & 19)	1:1,000
Figure 3	Cross Section 5363700N (RH15)	1:1,000
Figure 4	Cross Section 5363900N (RH11)	1:1,000
Figure 5	Cross Section 5364500N (RH10)	1:1,000
Figure 6	Cross Section 5363400N (west to Henty Fault)	1:10,000
Figure 7	Cross Section 5363900N (west to Henty Fault)	1:10,000
Figure 8	Ti-Zr scatterplot of RH18 side grind analyses.	
Figure 9	Ti-Zr scatterplot of volcanics from RH11, 16 & 18.	
Figure 10	Ti-Zr scatterplot of volcanics analysed by Jenkins, 1985.	
Figure 11	Red Hills UTEM Locations & MRV Project Geology	1:10,000
Table 1	Analytical results of rock chip samples around the Western Adit.	
Table 2	Ti & Zr data from RH18 side grind sample analyses.	
Table 3	Major and immobile trace element analyses: samples from RH11, 16 & 18.	
Table 4	Major and trace element analyses: samples by Jenkins 1991.	

Graphic Core Logs: RH 10, 11, 15, 17, 18 & 19.

Table 1 Red Hills - Western Adit area; Rock chip Geochemical Results

from ANALABS Report No: 111715.60.11754 11/04/96

	Sample	Type	Location AMG	Description	Cu ppm	Pb ppm	Zn ppm	Fe %	Mn ppm	As ppm	Bi ppm	Ag ppm	Au ppm
S	15271	RC outcrop	381975E5363870N	wkly Silicifd pink aphyric Dacite lava breccia	11	42	57	1.0	53	4	<10	<1	<0.008
	15272	"	381990E5363930N	White bucky Qtz vein, (no sulphides)	7	5	9	0.4	14	3	<10	<1	<0.008
	15273	"	381980E5363930N	Stockwork of fine Qtz veinlets in aphyric Dacite Bx, wall rock to above	30	18	38	1.0	39	9	<10	<1	<0.008
	15274	Rc mullock	381920E5365025N	Buff aphyric Dacite with Qtz veinlets +/- Sld, Gn, Sp	25	2344	2650	4.7	3664	50	<10	3	1.470
	15275	"	"	" "	8	6100	171	1.5	611	14	<10	8	<0.008
	15276	"	"	Buff aphyric Dacite with Qtz + Sld veinlets	19	59	1305	12.7	9000	5	<10	<1	<0.008
	15277	RC outcrop	382000E5365060N	Barren, white, bucky Qtz vein	12	92	176	1.2	223	3	<10	<1	<0.008
	15278	"	381995E5365005N	Barren, white, bucky Qtz vein total ~3% vol in Dacite	12	47	62	0.8	51	3	<10	<1	<0.008
	15279	RC mullock	381975E5365045N	Gossany buff Dacite with Qtz stockwork veins	31	808	2568	5.8	2546	4	<10	<1	<0.008
	15280	RC outcrop	381985E5365050N	Slightly gossanous bucky Qtz eins in Dacite	119	453	450	3.4	70	12	<10	5	2.620
	15281	"	"	Fe stained altd? Dacite; wall rock to above	79	506	258	2.0	387	8	<10	1	0.163
	15282	"	381995E5365115N	Gossany buff Dacite with Qtz stockwork veins	8	28	536	13.2	3851	5	<10	<1	<0.008

426069

426070

Table 2 RED HILLS - RH18 side grind Geochem Data

(from: Noonan, 1990; TCR 90-3190)

Sample	From m	To m	Int m	Unit	Ti ppm	Zr ppm	Ti/Zr calc	Cu ppm	Pb ppm	Zn ppm	Zn Ratio (Zn>500)	
517901	14.1	24.1	10.0	A QpRhy	1000	240	4.2	10	20	75		
517902	24.1	34.1	10.0	A QpRhy	1050	230	4.6	10	10	70		
517903	34.1	44.1	10.0	A QpRhy	990	210	4.7	10	35	85		
517904	44.1	54.1	10.0	A QpRhy	1100	230	4.8	10	15	75		
517905	54.1	63.0	8.9	A QpRhy	1150	220	5.2	10	10	80		
517906	63.0	73.0	10.0	B QFsst/bx	3000	170	17.6	25	15	145		
517907	73.0	83.0	10.0	B QFsst/bx	4100	160	25.6	25	<5	140		
517908	83.0	97.5	14.5	B QFsst/bx	4400	170	25.9	15	5	220		
517909	97.5	107.5	10.0	C SerQFsst	1500	190	7.9	30	20	105		
517910	107.5	112.1	4.6	C SerQFsst	610	120	5.1	90	10	120		
517912	112.1	122.1	10.0	E QFporphR	1550	180	8.6	15	110	255		
517913	122.1	134.2	12.1	E QFporphR	1750	220	8.0	10	65	145		
517914	134.2	140.7	6.5	D BlkSh/slst	2400	160	15.0	60	135	335		
517915	140.7	140.9	0.2	H Basalt	14500	250	58.0	55	5	150		
517916	140.9	148.8	7.9	D BlkSh/slst	2600	140	18.6	110	550	730	57	
517917	148.8	152.8	4.0	D BlkSh/slst	2400	140	17.1	45	500	2000	80	
517918	152.8	157.5	4.7	D BlkSh/slst	2800	190	14.7	35	220	390		
517919	157.5	167.5	10.0	D BlkSh/slst	2400	150	16.0	65	400	1600	80	
517920	167.5	176.2	8.7	D BlkSh/slst	2250	120	18.8	65	1650	2300	58	
517921	176.2	186.2	10.0	D BlkSh/slst	2100	130	16.2	60	1300	1700	57	
517922	186.2	197.9	11.7	D BlkSh/slst	2250	140	16.1	90	720	1550	68	
517923	197.9	207.9	10.0	F Peperite	2250	250	9.0	30	135	320		
517924	207.9	217.9	10.0	F FpDacite	2250	240	9.4	30	155	375		
517925	217.9	225.0	7.1	F FpDacite	2200	240	9.2	25	300	490		
517926	225.0	229.0	4.0	F FpDacite	2050	210	9.8	55	450	1200	73	
517928	229.0	230.0	1.0	F FpDacite	2250	250	9.0	40	350	1550	82	
517929	230.0	231.0	1.0	F FpDacite	2550	300	8.5	30	65	135		
517930	231.0	232.0	1.0	F FpDacite	1800	210	8.6	75	1250	2050	62	
517931	232.0	233.0	1.0	F FpDacite	1600	210	7.6	130	4100	5550	58	
517932	233.0	234.0	1.0	F FpDacite	1600	210	7.6	95	4350	4950	53	
517933	234.0	235.0	1.0	F FpDacite	1550	200	7.8	55	4450	6650	60	
517934	235.0	236.0	1.0	F FpDacite	1600	200	8.0	20	3750	3350	47	
517935	236.0	237.0	1.0	F Peperite	1700	190	8.9	30	555	340		
517936	237.0	238.0	1.0	F Peperite	1600	190	8.4	25	1500	1650	52	
517937	238.0	239.0	1.0	F Peperite	2100	240	8.8	25	700	1150	62	
517938	239.0	249.0	10.0	F FpDacite	1950	220	8.9	50	410	1150	74	
517939	249.0	259.0	10.0	F FpDacite	2050	230	8.9	45	460	995	68	
517940	259.0	269.0	10.0	F FpDacite	2050	220	9.3	30	160	150		
517941	269.0	279.0	10.0	F FpDacite	2000	220	9.1	38	10	85		
517943	279.0	287.6	8.6	F FpDacite	2000	220	9.1	40	750	215		
517944	287.6	288.6	1.0	F Peperite	1050	100	10.5	30	3000	1900	39	
517945	288.6	289.6	1.0	F Peperite	2050	230	8.9	30	3050	3500	53	
517946	289.6	290.6	1.0	F Peperite	1400	140	10.0	55	5900	4950	46	
517947	290.6	291.2	0.6	F Peperite	2250	260	8.7	100	2050	6350	76	
517948	291.2	296.0	4.8	D BlkSh/slst	1800	140	12.9	90	3600	7650	68	
517949	296.0	297.0	1.0	D BlkSh/slst	1700	120	14.2	130	3150	9100	74	
517950	297.0	298.0	1.0	D BlkSh/slst	2250	190	11.8	105	570	7700	93	
517951	298.0	299.5	1.5	D BlkSh/slst	1750	170	10.3	125	1350	4650	78	
517952	299.5	300.5	1.0	G Fpsst	1700	270	6.3	800	235	350		
517953	300.5	301.5	1.0	G Fpsst	1800	240	7.5	110	195	275		
517954	301.5	302.5	1.0	G Fpsst	1750	270	6.5	430	630	4800	88	
517955	302.5	312.5	10.0	G Fpsst	1850	310	6.0	15	95	180		
517956	312.5	323.5	11.0	G Fpsst	1900	310	6.1	15	125	210		
517957	323.5	332.5	9.0	G Fpsst	1700	280	6.1	15	65	600	90	
517958	332.5	342.5	10.0	G Fpsst/bx	1850	320	5.8	20	315	275		
517959	342.5	352.5	10.0	G Fpsst/bx	1700	270	6.3	50	40	90	67	MEAN
517960	352.5	356.8	4.3	G Fpsst/bx	1500	260	5.8	120	250	95	14	ST. DEV.

Table 3 **RED HILLS VOLCANICS - Analyses of core samples from RH 11, 16 & 18**

ANALABS Report No: 111715.60.11820 17/04/96

Sample	Location	Gp	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	CO2	S	LOI	Total	Nb	Y	Zr	Ti/Zr	A.I.
			%	%	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm		
15283	RH11 186.6	X	67.70	0.41	14.90	5.61	0.22	1.80	1.07	0.72	3.61	0.10	0.81	0.12	3.58	100.65	12	32	272	9.1	75
15284	RH11 248.3	X	68.30	0.40	14.10	3.48	0.16	1.22	2.39	1.71	3.50	0.10	1.80	0.15	3.82	101.13	12	32	274	8.7	54
15285	RH11 271.2	Y	73.40	0.23	12.70	3.07	0.05	0.98	0.58	1.07	5.48	0.03	0.70	0.16	2.21	100.66	14	35	298	4.6	80
15286	RH11 276.0	Y	75.50	0.25	12.10	2.63	0.05	0.72	0.33	2.23	3.59	0.03	0.84	0.02	2.14	100.43	11	34	298	5.1	63
15287	RH11 303.8	Z	68.50	0.40	15.20	4.22	0.09	1.20	0.55	2.55	4.93	0.08	0.51	0.02	2.31	100.55	14	37	380	6.3	66
15288	RH11 325.3	Z	70.20	0.31	12.50	5.48	0.21	0.83	1.14	2.00	4.45	0.06	0.95	0.15	2.24	100.52	11	29	296	6.2	63
15289	RH11 355.9	Z	71.00	0.32	12.20	9.44	0.22	0.92	0.09	0.03	3.17	0.07	0.11	0.03	2.49	100.08	11	33	299	6.3	97
15290	RH11 373.3	Z	72.30	0.29	12.40	3.46	0.08	0.48	0.10	0.07	8.90	0.05	0.12	0.02	0.85	99.12	10	30	317	5.4	98
15291	RH16 86.5	R	70.70	0.23	13.70	3.26	0.15	0.44	1.38	0.73	5.53	0.03	1.76	0.02	3.35	101.31	12	45	307	4.5	74
15292	RH18 52.3	A	77.40	0.19	12.10	2.36	0.01	0.55	0.00	0.03	5.42	0.02	0.13	0.01	1.94	100.16	13	44	247	4.6	99
15293	RH18 129.8	E	70.80	0.32	12.20	3.45	0.12	0.96	2.74	1.68	3.00	0.05	2.13	0.01	3.97	101.43	16	32	231	8.2	47
15294	RH18 241.0	F	66.50	0.40	14.10	3.74	0.16	0.57	3.19	1.81	4.88	0.10	2.31	0.12	3.88	101.76	9	29	252	9.5	52
15295	STANDARD RH1		76.70	0.08	11.10	1.67	0.03	0.96	0.89	0.79	5.83	0.00	0.30	0.37	1.05	99.77	12	37	138	3.3	80
		Method	OX408	**	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OM612	OM613	OX408		GX401	GX401	GX401		

A.I. = 100*(MgO+K2O)/(MgO+K2O+CaO+Na2O)

X = FpDacite (similar to F)

Y = grey & pinkish-grey siliceous/sericitic massive volcaniclastic sandstone?

Z = variably altered fine Pumice Breccia

R = check with Rob Reid; similar lithology to Group Y?

A, E, & F = as in Table 2

** TiO2 values are means of analyses by OX408 and GX401 (gives best fit with STD RH1)

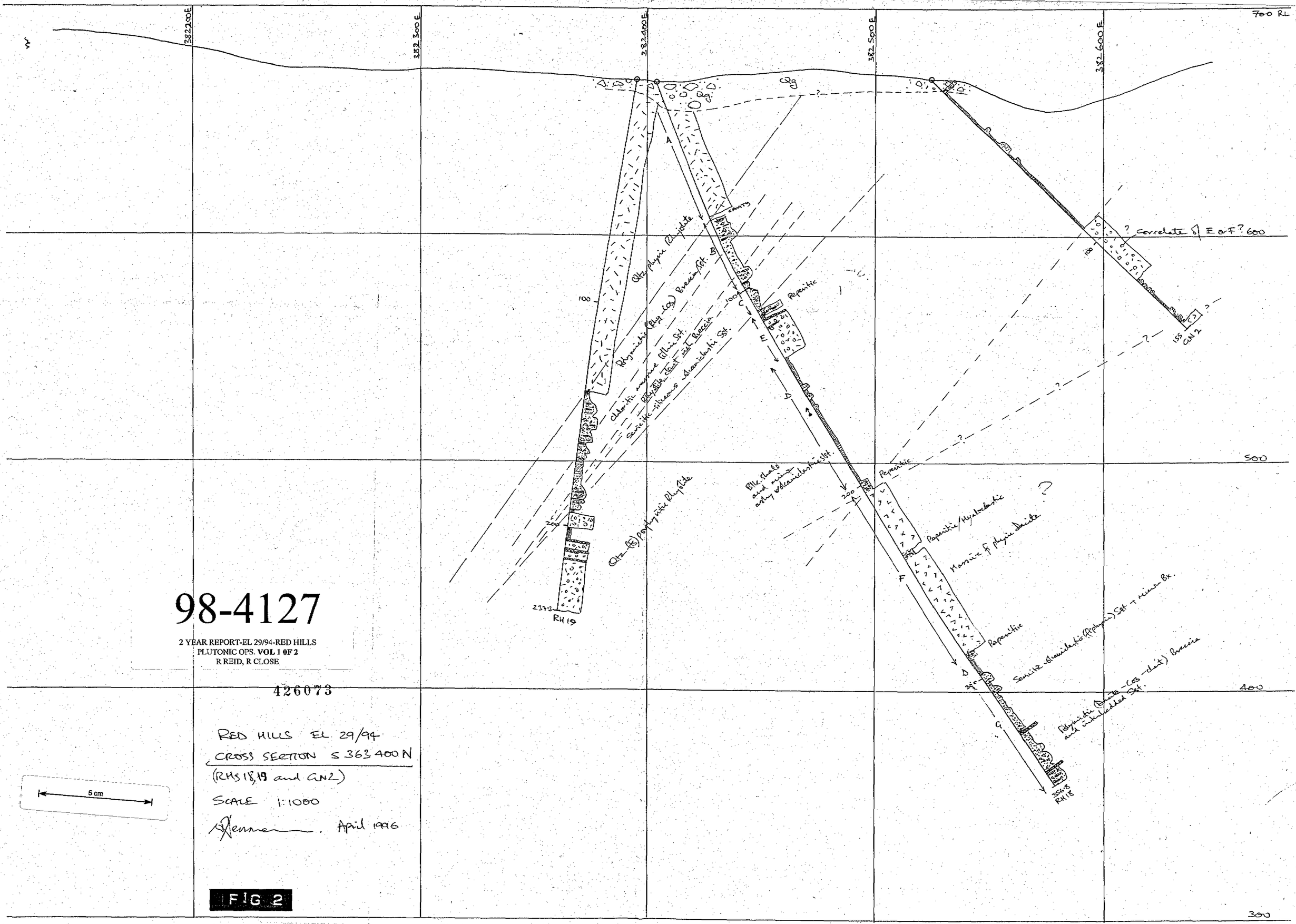
MASS CHANGES in RH11 Pumice Breccias (Gp Z) relative to least altered precursor? 15288; Zr as immobile monitor

in g/100g		SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	CO2	S	Nett change g/100g
15287	RH11 303.8	-17	0	-1	-2	-0	0	-1	-0	-1	-0	-1	-0	-22
15289	RH11 355.9	0	0	-0	4	0	0	-1	-2	-1	0	-1	-0	-2
15290	RH11 373.3	-3	-0	-1	-2	-0	-0	-1	-2	4	-0	-1	-0	-7

4263 74

Table 4. RED HILLS VOLCANICS (Data from Jenkins, 1991)

Sample	Group		SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	LOI	Total	Cu	Pb	Zn	Nb	Y	Zr	Ti/Zr	A.I.
3079	a2		76.11	0.21	14.12	1.79	0.00	0.51	0.03	0.87	4.72	0.03	1.75	100.14	0	20	42	16	53	295	4.3	85
3067	a2		80.36	0.16	10.98	1.24	0.02	0.15	0.04	1.68	4.85	0.03	1.07	100.58	2	53	280	12	33	223	4.3	74
3077	a2		72.65	0.25	13.69	3.37	0.09	0.57	0.57	3.08	3.58	0.04	2.33	100.22	0	15	58	15	49	304	4.9	53
3281	a2		74.46	0.25	12.11	3.38	0.07	0.57	1.44	3.10	1.88	0.05	2.43	99.74	8	207	108	14	46	253	5.9	35
4023	a2		66.57	0.35	16.54	5.80	0.07	1.37	0.04	0.34	3.85	0.02	5.12	100.07	40	62	132	14	31	343	6.1	93
3282	a2		73.59	0.31	13.61	4.17	0.04	0.83	0.09	1.66	2.89	0.03	2.61	99.83	4	61	268	14	49	282	6.6	68
	a2	Avg	74.0	0.3	13.5	3.3	0.0	0.7	0.4	1.8	3.6	0.0	2.6	100.1	9	70	148	14	44	283	5.3	68
	a2	SD	4.5	0.1	1.9	1.6	0.0	0.4	0.6	1.1	1.1	0.0	1.4	0.3	15	70	103	1	9	42	1.0	21
3317	a1		69.60	0.22	9.16	13.44	0.12	1.70	0.01	0.03	0.94	0.02	3.78	99.02	360	6	200	11	29	207	6.4	99
3313	a1		69.22	0.32	12.59	6.41	0.03	0.77	0.00	0.00	6.79	0.06	3.13	99.32	48	11	51	14	40	284	6.8	100
3311	a1		68.48	0.32	13.34	6.00	0.03	0.74	0.02	0.75	8.17	0.06	2.12	100.03	49	7	66	12	46	270	7.1	92
30611	a1		67.65	0.39	14.01	3.37	1.26	0.20	0.06	0.53	9.03	0.08	3.20	99.78	7	8	118	14	36	324	7.2	94
3314	a1		71.71	0.36	12.01	4.53	0.03	0.66	0.04	0.76	6.83	0.06	2.05	99.04	53	11	38	15	39	290	7.5	90
RH5-215	a1		63.25	0.37	14.98	8.94	0.38	1.04	0.54	0.30	5.69	0.16	3.03	98.68				12	49	274	8.1	89
	a1	Avg	68.3	0.3	12.7	7.1	0.3	0.9	0.1	0.4	6.2	0.1	2.9	99.3	103	9	95	13	40	275	7.2	94
	a1	SD	2.8	0.1	2.0	3.6	0.5	0.5	0.2	0.3	2.8	0.0	0.7	0.5	145	2	66	2	7	38	0.6	5
30712	b		79.28	0.24	8.82	4.39	0.12	0.86	0.29	0.67	2.99	0.12	2.54	100.32	175	8	148	5	12	154	9.4	80
4027	b		64.10	0.48	15.99	6.92	0.03	1.84	0.13	2.22	5.31	0.08	2.79	99.89	0	4	89	14	67	298	9.7	75
40212	b		54.32	0.30	9.90	24.21	0.07	3.63	0.17	0.44	3.09	0.17	3.28	99.58	42	16	240	9	21	180	10.0	92
RH5-194	b		57.59	0.51	17.40	4.02	0.48	0.54	1.45	0.42	12.93	0.12	4.56	100.02	400	750	1655	18	41	301	10.2	88
RH5-106	b		64.64	0.45	14.49	5.93	0.36	1.08	3.19	2.44	2.82	0.09	4.85	100.34	12	27	115	13	35	258	10.4	41
30610	b		68.30	0.42	13.99	3.49	1.32	0.32	0.08	1.12	9.12	0.12	1.88	100.16	6	160	375	11	31	238	10.6	89
3319	b		71.77	0.43	14.09	3.36	0.01	0.87	0.01	0.23	6.37	0.05	2.35	99.54	50	6	31	13	31	241	10.7	97
RH5-87	b		67.84	0.43	14.93	3.29	0.27	0.49	3.18	0.06	4.81	0.09	5.55	100.94	31	41	52	13	32	240	10.7	62
3293	b		64.48	0.39	13.74	13.04	0.35	1.43	0.04	0.26	2.38	0.09	3.59	99.79	41	32	145	10	30	196	11.9	93
3296	b		80.04	0.42	10.43	2.40	0.09	0.55	0.04	2.44	1.89	0.05	1.53	99.88	14	116	128	18	28	169	14.9	50
	b	Avg	67.2	0.4	13.4	7.1	0.3	1.2	0.9	1.0	5.2	0.1	3.3	100.0	77	116	298	12	33	228	10.8	77
	b	SD	8.3	0.1	2.8	6.7	0.4	1.0	1.3	1.0	3.5	0.0	1.3	0.4	124	229	487	4	14	51	1.6	19
RH5-196	Host		67.23	0.20	9.45	12.49	0.04	2.75	0.03	0.67	3.42	0.08	3.19	99.55	172	172	450	13	30	179	6.7	90
RH6R-158	Host		85.88	0.15	6.59	2.50	0.02	0.38	0.18	0.07	2.20	0.08	2.06	100.11	19	228	204	8	26	108	8.3	91
3291	Tyn		75.84	0.18	11.32	2.45	0.01	0.47	0.13	0.81	5.64	0.05	1.75	98.65	4	7	26	16	34	204	5.3	87



98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. **VOL 1 OF 2**
R REID, R CLOSE

426073

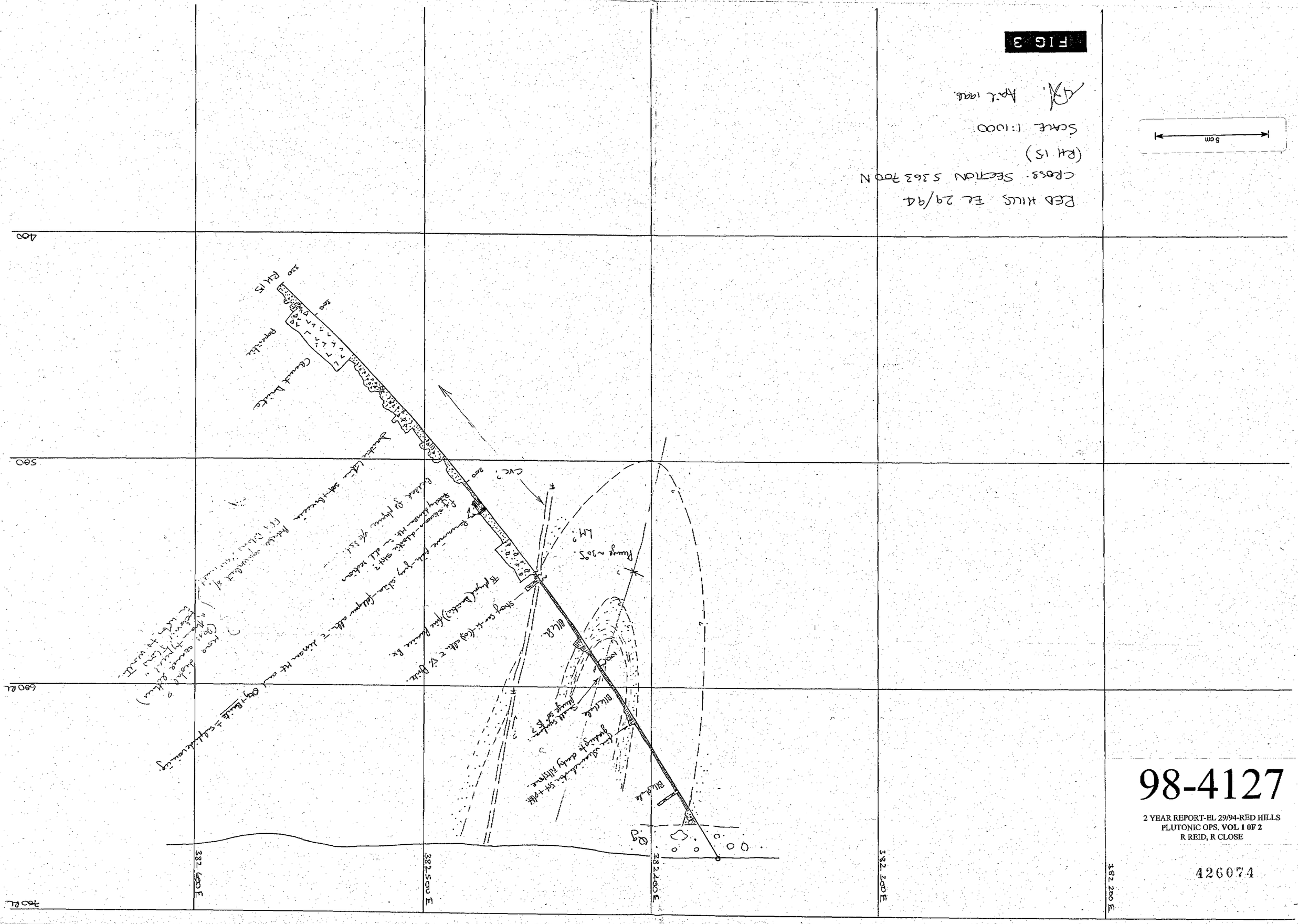
RED HILLS EL 29/94
CROSS SECTION S 363 400 N
(RHS 18,19 and CN2)
SCALE 1:1000
[redacted], April 1996

FIG 2

FIG 3

Red Hills EL 29/94
Cross Section 5363700N
(RH 15)
Scale 1:1000
Apr. 1998.

5 cm


400
500
600 RL
700 RL
RH 15
Chert breccia
Dacite
Rhyolite
Basalt
Basalt
Basalt

382 000 E

382 100 E

382 200 E

382 300 E

382 400 E

600 RL

500 RL

400 RL

300 RL

426075

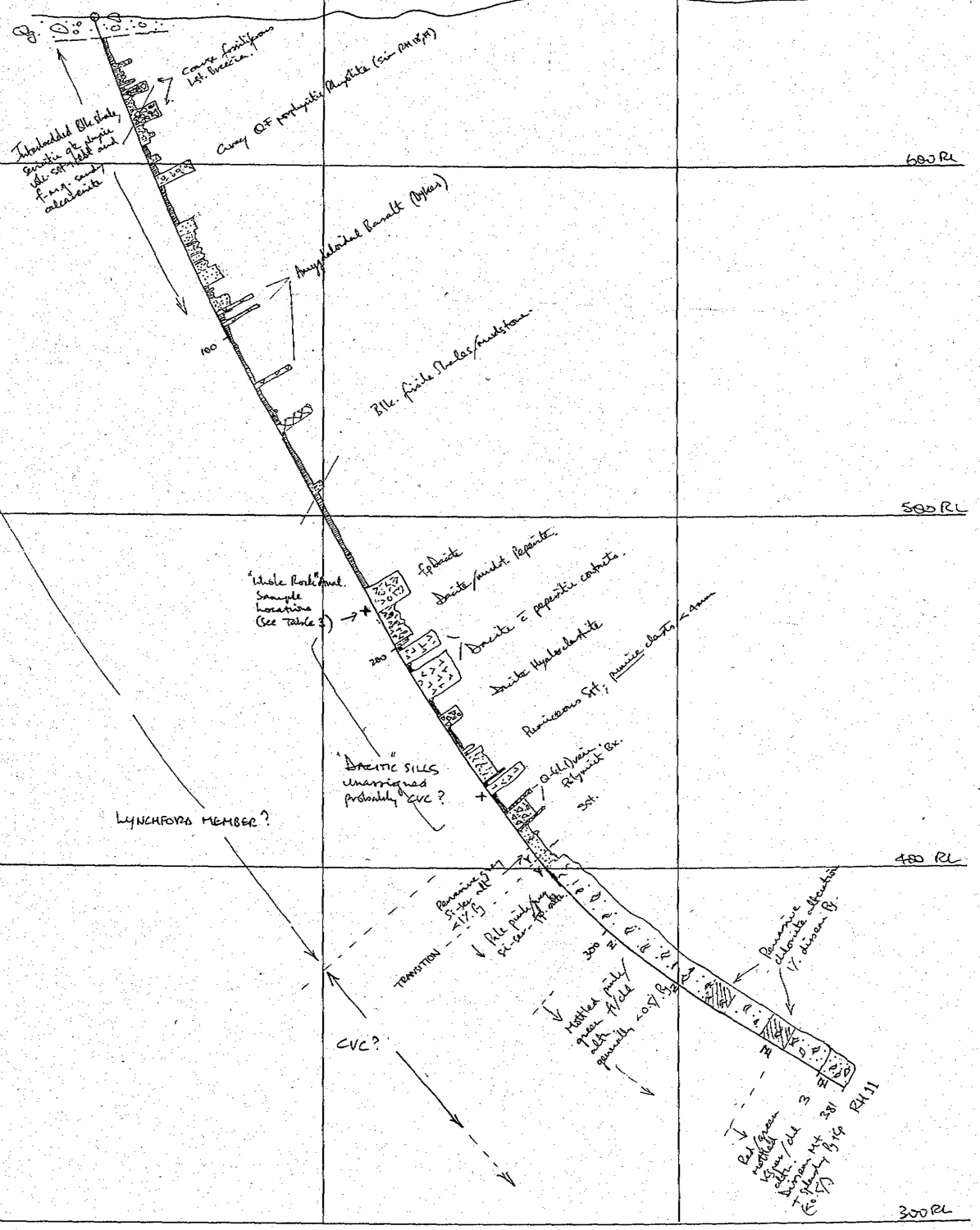
98-4127

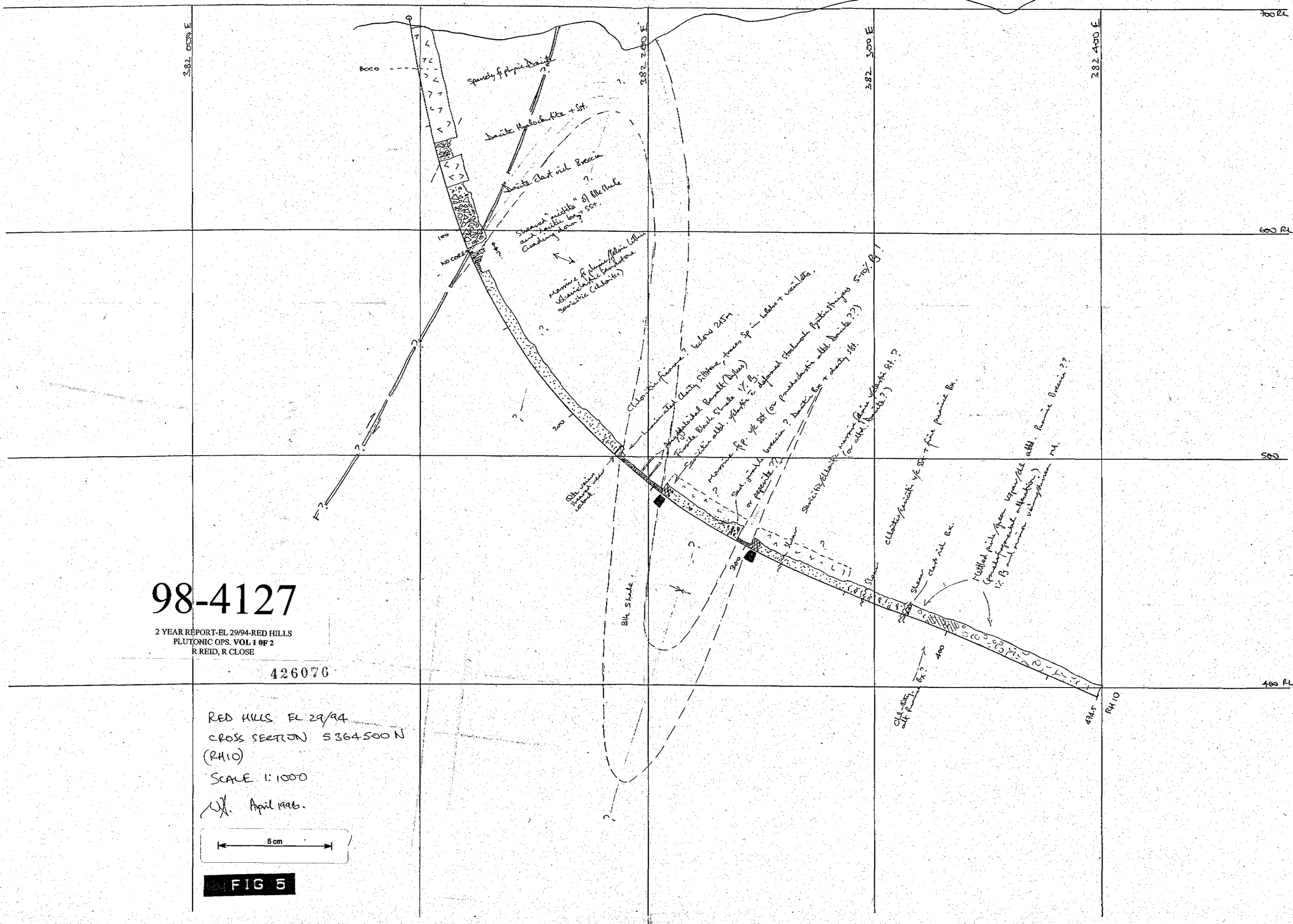
2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 1 OF 2
R REID, R CLOSE

RED HILLS EL 29/94
CROSS SECTION S 363 900N
(RH 11)
SCALE 1:1000
April 1996.

5 cm

FIG 4





98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. **VOL 1 OF 2**
R REID, R CLOSE

426076

RED HILLS EL 29/94
CROSS SECTION 5364500 N
(RH10)
SCALE 1:1000
April 1996.

5 cm

FIG 5

380 000 E

381 000 E

EL 29/94

GOOSENECK (SOUTH)

80m

MSM

CVC

CVC Fault?

CVC Fault?

MSM?

LM?

CVC?

381 000 E

382 000 E

383 000 E

EL 29/94

1000 RL

900 RL

800

700

600

500m

RIVERLINE

MSM

LM

CVC

RHYS

RHYS

?

5 cm

SECTION 5363 400N 1: 10,000

FIGURE 6

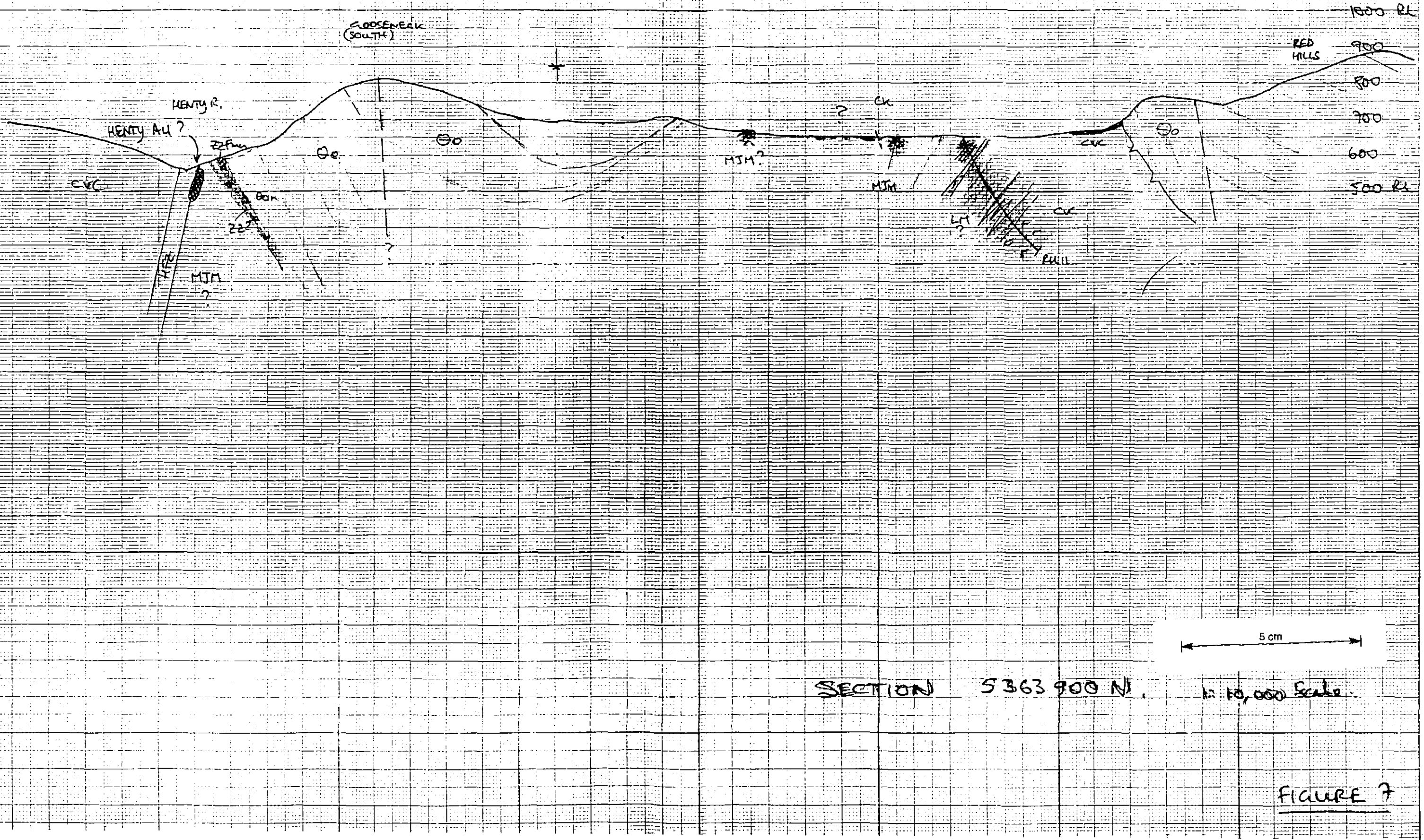
426078

380 000 E

381 000 E

382 000 E

383 000 E



SECTION 5363 900 N. 1:10,000 Scale.

FIGURE 7

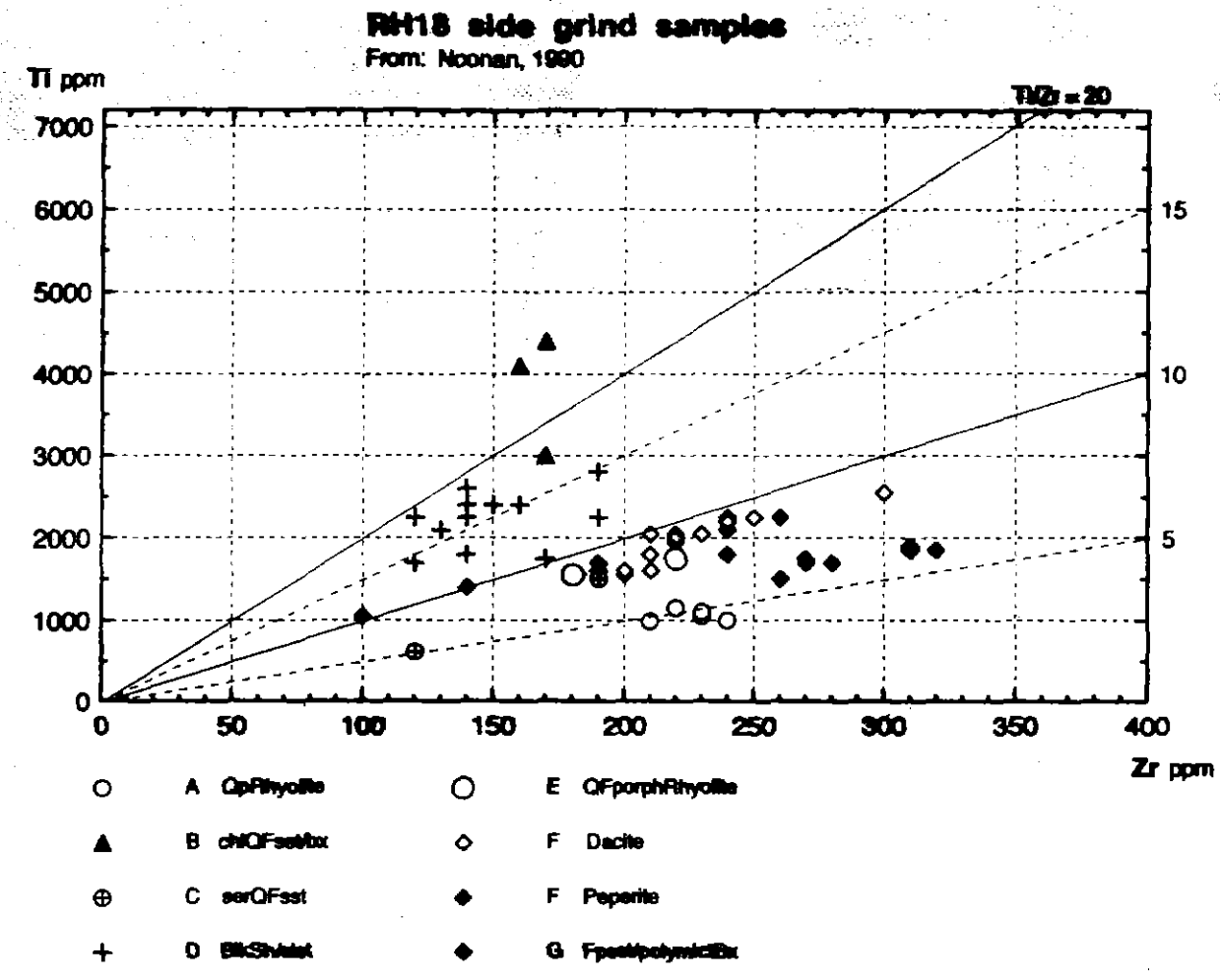


Figure 8. Ti-Zr scatterplot of RH18 side grind analyses

5 cm

GEOPEKO LIMITED
KING ISLAND
LEGEND:
Scale:
DATE:
GEOL:
DWN:
CHKD:

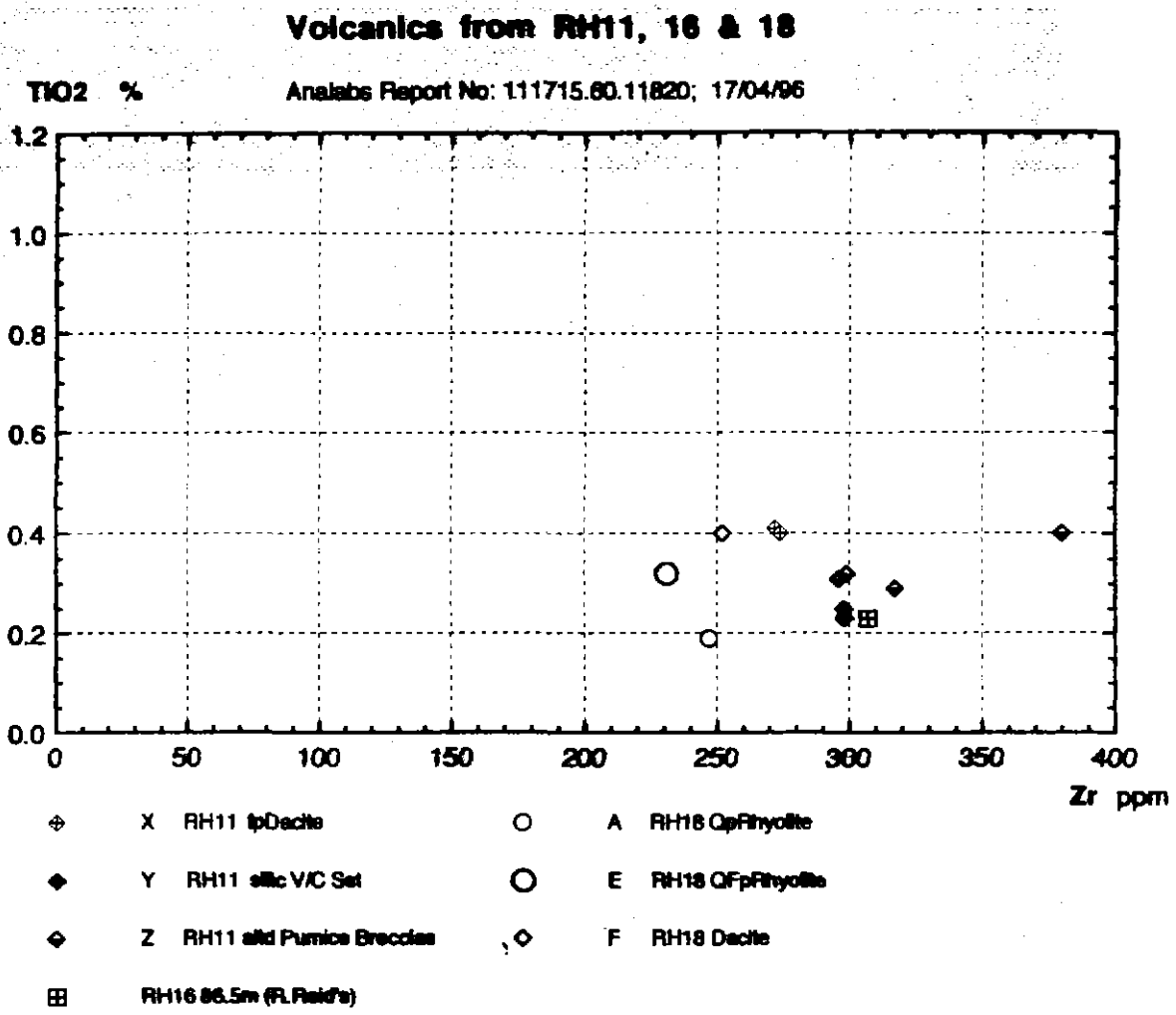
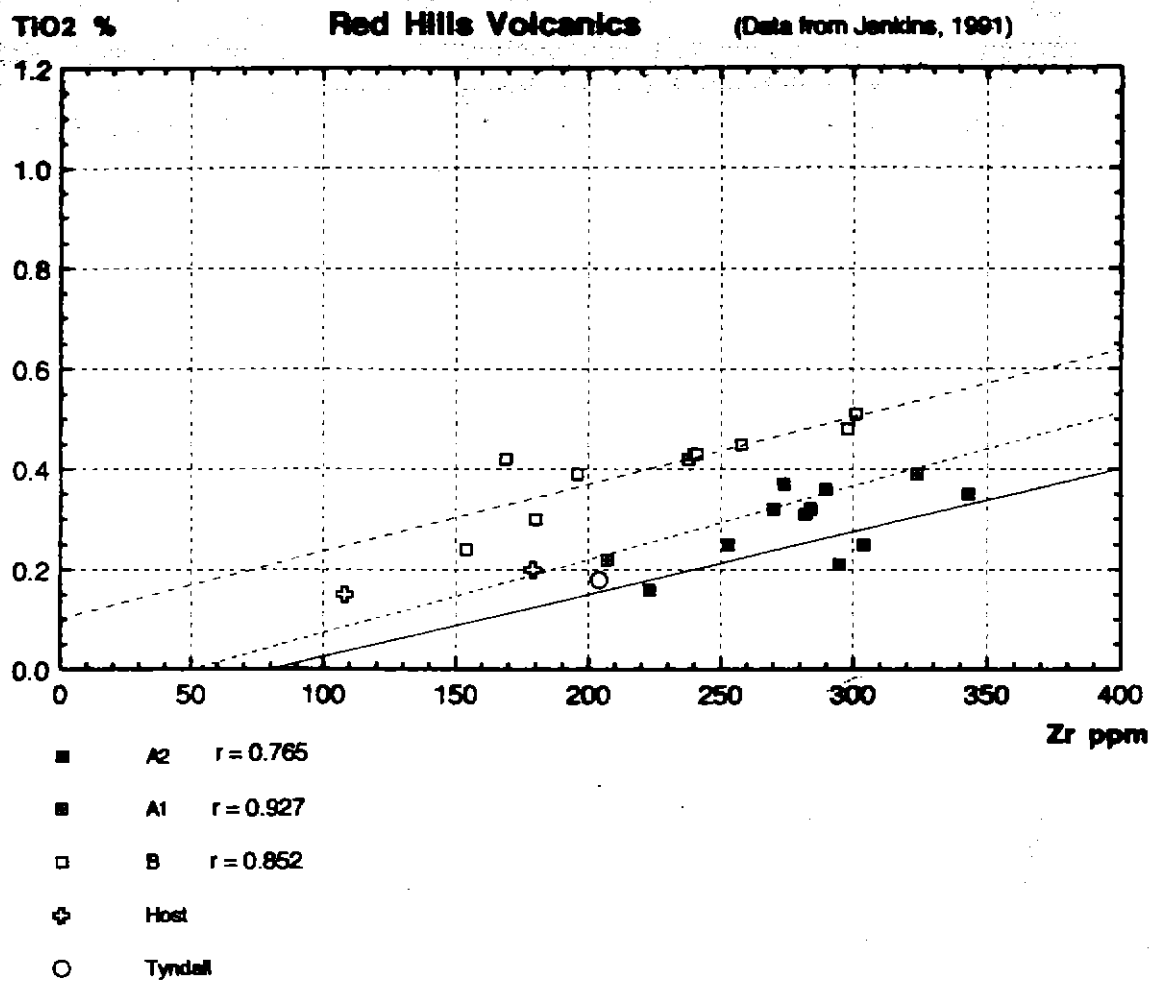


Figure 9. Ti-Zr scatterplot of volcanics from RH11, 16 & 18.



5 cm

Figure 10.

Ti-Zr scatterplot of volcanics analysed by Jenkins, 1991

GRAPHIC CORE LOG		Hole No. RH 10	Depth m
Scale	1: 400	Project Red Hills EL	
By	W. HERRMANN	Section	
Date	3 April 1996	Collar co-ords E	N RL
Page	1 of 5	Az. °G °M	Incl. °

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
	No core		
4.0			Massive pinkish-grey, sparsely fp phyric Dacite — pervasive coherent Feldspathic, virtually qtz!, v. weak cleavage negligible Py or carb. alt. Fs ppts 2mm, <2%. Nearest analogue is flinty sparsely fp phyric buff dacite on hill above western edit
8			
16			
24		BOCO	
32			5 cm
40			
48			
56			lower contact apparently sharp + planar // S_2
64		cl: 30° Bd // cl. 35-40°	Sericitic/silicified bedded to massive Dacitic lithic/clastic breccia and sandstone. Probably compositionally similar to above unit more fp xtls and fewer chlor pseudos, some breccia fabric & jigsaw fit; mainly grey sandy matrix Relatively weak ser. - CO_3 alt. ~ 0.2% fine Py.
72			Massive pink-grey sparsely fp phyric to aphyric Dacite — similar to unit above 58m
80		cl 40°	chloritic Dacite-Pumice Breccia 5-10% of 2-30mm clasts pink aphyric dacite in mainly foliated grn grey chlorite-sericite matrix. Contact transitional down
88			Sericitic clast rich Dacite-Pumice Breccia Closely crowded clasts pink-grey buff aphyric Dacite mainly 5-50 mm, subangular and minor chlorite fiamme, clast framework supported (>60% clasts) with mainly sericitic foliated (presumably originally (sandy ash) matrix. Fairly weak (ser alt <0.5% Py
96			
100			

4260082

GRAPHIC CORE LOG		Hole No. RH 10	Depth m
Scale 1:		Project	
By		Section	
Date		Collar co-ords E	N RL
Page 2 of 5		Az. °G °M	Incl. °

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
108			Clast content diminished to <10%, over last 0.5m.
NO CORE		Shd + Bx	Sheared Mixite of black slate and basaltic plagioclase breccia + sst, appears to be transposed sheared (tectonic) mixture of downward fining basaltic breccia + sst and black slate
116	fining down?		
		cl: 40°	Sericitic massive fg grey siltstone, minor fg v/clastic sst beds slightly calcareous but mostly argly/sericitic.
124			
132			Sericitic (chloritic) massive to diffusely bedded fg plagioclase lithic volcaniclastic sandstone.
		cl: 45-50°	Probably several cycles from mg argly sst to fg sst and finer basaltic argillite gritty sst base grading + bedding contacts downhole
140			Increase of chloritic alteration possible ex pumice clasts below 215m. (= pumice rich top?)
148			Otherwise very massive non descript, weakly altered ± <0.5% fg. Minor patchy semi pervasive pink (K-spar ± Albite?) alteration often on selvedges in zones of Q-Ca± veining.
156			
		cl: 50°	
164			5 cm
172		cl: 50°	
180			
188		cl: 45°	
196			
200			

426033

GRAPHIC CORE LOG		Hole No. RH10	Depth m
Scale 1:		Project	
By		Section	
Date		Collar co-ords E	N RL
Page 3 of 5		Az. °G °M	Incl. °

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description
208			5 cm
216			
		cl: 45°	
224		cl: 80°	locally shearing vein contact
	Brecciated	Cos veins.	
		Bd 70°	Laminated siliceous clasty V/clastic Siltstone ± trace
232			vein sp. in blebs + veinlets
			Finely/laminated black carbonaceous slate
			± ~1% fine dissem Py.
240			Amygdaloidal basalt ± chilled margin
248		Bd//cl: 70°	
			Sericitic/(Siliceous) nondescript massive felsic
256			dacite/clastic (SST?) with stockwork & anastomosing
			deformed pyritic stringer veins to 20mm ~ 10% Py
			diminishing downhole
264			Sericitic/Siliceous ± massive felsic dacite/clastic
			sandstone ± pervasively fragmental Dacite?
272			Nondescript grey blocky granular? felsic
			except for local pyrite bit pervasive?
			elemental silicon alteration
280			Moderate ± destructive Ser-chlorite calc host
			generally only ~0.5% Py
288		cl 60°	Sericitic massive Dacite/clastic ± siliceous
			Composite weakly related to above but with
			prominent wispy chloritic fragments and patches
			± irregular fine clasty sedimentary - like
			like fragile breccia interaction between
296		1% Py	clasty siltstone and Dacite only pervasive
		vein control	over Rare Alteration + Py similar to above
300			

420084

GRAPHIC CORE LOG		Hole No. RH10	Depth m
Scale 1:		Project	
By		Section	
Date		Collar co-ord	RL
Page 4 of 5		Az.	°

5 cm

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
300		←	laminated Slt-vfg, fissile Py-rich sdt-tuff ± Py Dacitic lapilli & Anastomosing Py stringers Similar to 259-258m ~ 3% Py. Sericite alt
308			Sericitic massive foliated volcaniclastic Ht Lith well wordesignt but appears to have relict granular fabric, could however be coherent? Moderately ser altd ± ~0.5% Py.
316			
		Minor Shear Zone 0.5m.	
324			Chloritic Sericitic massive foliated volcaniclastic Sst Continuum with above but rather chloritic greenish grey, more distinctly foliated very blurry texture - could be anything but probably is volcaniclastic, possibly pumiceous. Moderately Py but pervasive & destructive ser chl alt
332			
340			
		Boundary imperceptible.	
348			Sericitic (Chloritic) massive foliated volcaniclastic sandstone and fine pumice Breccia Patchy dissem Py to 1%
356			
		Minor Shearing	
364			Chloritic/Sericitic & plagioclase phyric volcaniclastic Sst and fine pumice Bx probably similar to above but with stronger patchy pervasive chlorite alt ass d.c. ± ~2% dissem Py > Po
372			
		Shear Zone 5% broken core	
380			Fine Dacitic lithic clast rich fine Vc Breccia chloritic ± sericitic massive patchy Py.
388			Blotchy pink-green Hyp-chl alt pseudofragmental rock precursor unknown but possible fine Pumice Lx (Dacitic)
		Transition	(No detectable Ht or Py)
396			Chloritic-siliceous grey green massive pseudofragmental fine Pumice Lx? fine wispy lenses of chl in mottled grey siliceous groundmass, alteration variant of above - resembles grey green chl-silica dominated ex felsitic pink [illegible] alt
400			

420085

GRAPHIC CORE LOG	Hole No. R410	Depth m
Scale 1:	Project	
By	Section	
Date	Collar co-ords	RL
Page 5 of 5	Az.	°

5 cm

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
408			TRANSITIONAL ALT. BOUNDARY Mottled pink and green (Red Hills type) kspar/chl-silica alteration ± patchy 1% Py and diffuse - veining mica alt.
416			Remains intensive but rare/sparse fine pumice breccia. No evidence for coarse fragmental fabric, nothing to formed protolith original alteration fabric.
424			Pink alteration in places pervasive over several metres, elsewhere patchy averaging 20-40% of volume
432			
440			
448			
456			
464			
472			EOH

426086

4260087

GRAPHIC CORE LOG		Hole No. RH 11	Depth	m
Scale 1:		Project		
By		Section		
Date		Collar co-ords	5 cm	RL
Page 2 of 4		Az.		°

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
100			Blk mudstone 0.5% diseam Py
108			Fg grey massive sericitic "arsby" siltstone/mudstone 0.5% - 1% diseam blebs Py + Po
116			Pk porphyritic Dacite.
			Blk mudst 1% diseam Po, sparse cross cut veinlets and clay "bands" 2 to 1 cm.
128			Broken + fractured grey vein with sphalerite patches coarse massive Py +/- subordinate Po(Sp + Cpy.
132			
			Fine grey arsby sericitic mudst. 0.2% diss Py.
140			
148		Bd // clay 50-55°	M.f.g. grey sericitic foliated chloritic Sph ± Cpy mudst with mudst intraclasts Diss Po etc.
156			Friable blk Mudst. and minor intbd. arsby sericitic v/c Sbt.
		Bd // to 60°	
164		Bd // clay 80°	
172		Bd // clay 60°	
180			Transitional/reworked contact or Ignimbrite?
			Sericitic - chloritic massive uniform to pseudo clastic ? phyric texture or massive Dacite ? Has prominent dark chl. "pseudoclasts" which have 1-2 cm ovoid shape but could be variation in hydrothermal ? Alteration dominantly sericitic - chloritic, weakly ? distinctive Py at <0.5% diss
196			Rhyolite ? Irregular - to wispy patches of dove grey to blk glassy appearance 10% in pseudo clastic matrix similar to above.
200			

4260883

GRAPHIC CORE LOG	Hole No. RH 11	Depth m
Scale 1:	Project RED HILLS	
By W.HERRMANN	Section	
Date	Collar co-ords	RL
Page 1 of 4	Az. °G	°

5 cm

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
0	No Core		Unconsolidated (rotary) gravels + cobbles
2		Bd // clvg 35°	Blk ?, shale/slst. Blebby - fine disseminated py (generally < 1%)
16			Qtz plagar sericitic felsic V/c ?ST.
24		Bd // clvg 35°	Finely interbedded blk slate and f-M.g. calcarenite (fining U?/slst) with minor qtz plagar felsic V/c ash in some calc. beds. Carbonate ~ 15% increasing downhole and becoming more sandy.
32		Bd // clvg 10°	Coarse fossiliferous limestone (rudstone) ± sparse blk mudst matrix
40			Bdd. sandy-silty calcarenite ± minor ?lithic and qtz xtal ultramylonitic ?ST. Bd mostly // clvg but locally discordant ± fine bedding + small folds indicating moderate - steep S dip + plunge. eg. 28m, 41m.
48		Bd // clvg 40°	Finbd silty calcarenite and qtz xt sericitic V/c ?ST. Massive grey sericitic Qtz ?porphyry, ?coherent similar to Qfeldsp in ?H:18 - 19. ± qtz + ?c bearing tension veins. Contacts sharp but undul.
56			Blk Mudst
64			Finely interbedded sericitic qxt felsic V/c ?ST - slst and blk mudstone ± minor lining beds. Bedding mostly clvg but locally folded eg. 79m where bedding is wavy // to clvg indicating steep S plunging small (cm-m Sz clvg) folds.
80		Bd ~0° Clvg 50°	
88			
96		—	Amygdaloidal ?mafic sharp chilled contact.

GRAPHIC CORE LOG		Hole No. RH 11	Depth m
Scale 1:		Project	
By		Section	5 cm
Date		Collar co-ords	RL
Page 3 of 4		Az. °G	°

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
200			Diffuse bedded sericitic pumiceous polymict lithic (q kt) felsic volcaniclastic Sst. Grading coarse to fine → downhole, pumice relict tube pumice but non abundant dk wispy fiamme, lithics mainly rounded grey cherty Rhyt. Qtz xts <5% suggest mixed Tyth - CVC source.
208			Massive (sericitic) mainly faintly fp phyric dacite (similar to lower sills in RH 18?) Sericitic but not fully fp destructive <0.1% Py. Patchy weak dk pseudoclastic all
216		transposed bedding contact	
		→ dip 70°	Blk mudstone, finely
224			Sericitic-chloritic fine hyaloclastite? 6x of similar dacite comp. as above.
			Blk(Py) mudstone v. Py diss'n and in fine hairline veinlets.
232			
		fig. felsic v/c Sst.	
			Massive to diffuse bedded (sericitic) fp xtal rich pumiceous volaniclastic sandstone. Abundant small relict pumice clasts <4 mm, fp xts very fresh, few blk mudst. and grey cherty v/c felst clasts <10 mm, (No qtz xts)
240			
248			Massive fp phyric dacite similar 208-218 m but more abundant fp xts (≈10%) weakly sericitized
		Repeat of lower contact	
			Blk mudstone passing downhole into grey colour sericitic v/c siltstone.
256			
			Siliceous sericitic polymict volaniclastic breccia Matrix (supported clasts mainly) grey cherty or silicified felsic volcanic in coarse sandy granular matrix which is pervasively silica-sericite altered but contains <1% disseminated pyrite.
264			
		Grey silica sericite altn.	Massive siliceous/sericitic fg. ashy felsic v/c Sst. No recognisable fp xts, very bland monotonous but identified as Sst. by 20 cm "bed" of coarser fp xt rich Sst at 266.3 m. Must generally be composed largely of compacted devitrified ashy materials? Sericitic but doesn't look very altered, zero Pyrite in both grey and pink zones.
272		Pale pink-grey silica-sericite altn?	
Indistinct contact			
280			
			Massive siliceous-feldspathic fp phyric fine Pumice Breccia or pumiceous sandstone. Fresh unaltered or weakly chl-cc-(Qz) dtl. fp xtals to 2mm, ~5% evenly distributed in very mainly grey to pinkish grey siliceous-sericitic ashy matrix with faint wispy relict fabric suggestive of compressed tube pumice or lithic fabric.
288			
296			
300			Fairly blocky core 300 m but below 1m becoming increasingly mottled with

426089

426050

GRAPHIC CORE LOG

Scale 1:
By
Date
Page 4 of 4

Hole No. RH11 Depth m
Project
Section
Collar co-ords
Az. °G

5 cm

RL °

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description
300			greenish grey Qtz-chl-ser domains — there are pseudo clastic alteration blotches — no evidence for 'intra-formanta' clasts. Py content generally low <0.5% except for scattered blebs in the most intensely chloritized patches and locally, pervasive fine dissem at around 323 m (upto 1%) Non Magnetic. (~ 0.00001 cgs)
308		Pink and grey green blotchy mottling.	
316			
324			
332			
340		Indistinct alteration/ colour boundaries	Zone of more chloritic pervasive grey green Qtz-chl (ser) alt. obscuring pink mottling (ie essentially pervasive type 2 chl alt. which above is dominant in patches between pink blotches)
348		Pink/grey green mottled ~ At 300 - 314m	Observes wispy/pumice fabric and ?? ie is more ? destructive? assoc ~ 1% Py NOT magnetic. Patchy pinkish clastic fabric defined by wispy patches remains relict to 3cm. (MS: ~ 0.00001 cgs)
356		As for 314 - 341 m except coarsest over 0.5 m.	Precursor unrecognizable but presumed similar to pumice lst with more pervasive destructive alt.
364			Precursor indeterminate but as above? Brecciated + dk green finely mottled colour has appearance of early pervasive ?? alt. dominantly overprinted by partly fracture controlled ? destructive chlorite (qtz) alteration (latter is associated with blebby granular dissem Mt. and sparse blebby to splashy cpy > Py (generally < 0.5% to 1% locally) Mag susc. abruptly increases to 0.0002 - 0.0005, locally 0.001 (except for <0.00001 in pervasive pink relict
372			
380			
381.0 EOH			Have little doubt that colour/fabric variants are due to alteration changes — no evidence yet for coherent "Red Hills" lava.

GRAPHIC CORE LOG	Hole No. RH 15	Depth m
Scale 1:	Project RED HILL	
By W Hamm	Section	5 cm
Date March 14, 1996	Collar co-ords	
Page 1 of 2	Az. °G	

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
240			chloritic massive/diffusely bedded coarse felsic/lithic volcaniclastic sandstone and breccia
248			
226			chloritic/silicious fg. volcaniclastic sst, massive
234			Diffuse bedded weakly chl-ser-silicious altd felsic (dacitic) lithic sandstone and breccia
242			Mag susc. < 0.00005
250			
		semi pervasive silicification.	
258			Abundant pink dacite clasts ± dissem grnd mass Ht, MS to 0.0015
266			Chloritic massive to diffuse bedded dacitic v/c breccia and polymict lithic felsic sandstone. Clasts are sparsely fp phyric, no quartz phenos or xtal frags in matrix.
274			contact obscure.
282			Massive weakly silicified/chloritic/sericitic pseudofragmental feldspar (qtz) porphyritic dacite, probably largely coherent, possibly partly hyaloclastic particularly below ~300 m. Evenly distributed 2 mm grey fp ~5% and 2mm bluish qtz ~1-2% in mottled pink and green silica-fp/chl dominantly altered matrix. Mag susc. generally ~0.0001. Fp in relict phenos quite fresh.
290			
298			

426091

GRAPHIC CORE LOG		Hole No. RH 15	Depth m
Scale 1:		Project RED HILLS	
By		Section	
Date		Collar co-ords	5 cm
Page 2 of 2		Az. °G	

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
306			Mag susc. variable 0.0002 – 0.002 ± local diseam + veins Mt = Red Hills type Chl-Mt-Py.
310			Intrusive hydroclastite? Pepperite? mixture of fg(Q)p basalte as above and fine siliceous cherty slst. passing transitionally downhole into murky volcaniclastic sandstone Mag susc < 0.00002.
318			Chloritic massive murky feldsic (dacitic) volcaniclastic sandstone. No quartz xtals; occasional ragged pale fg phyric basalte lithics. chlorite in fine domainal pseudo fragmental fabric unit could be overprinting fine hydroclastite derived lithic set
			Mag susc variable 0.0002 – 0.002 according to disseam Mt.

GRAPHIC CORE LOG		Hole No. RM 17	Depth 208 m m
Scale 1:		Project Red Mills EL 29/94	
By WMERRIMAN		Section	
Date 2 May 1996		Collar co-ords	5 cm RL
Page 1 of 1		Az. °G	°

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description
0		30 mm	Massive Qxt rich - Rhy lithic sericitic (chloritic) volcaniclastic Bx-Sst. Lithics leached above 8m locally hematitic.
8	clast supp.	10 mm	
16		100 mm	Massive Qxt rich - Rhy lithic chloritic-sericitic slightly granitoid volcaniclastic breccia. More chloritic than unit uphole, with patchy CO3 alt'n and diffuse detrital Mt.
24		Bd: 80° ?	F.g. sericitic/hematitic siltstone.
32			Massive chloritic-sericitic (Qtz xt poor < 1%) feldspar-mafic? phyric sandstone ± arkosic, autoclastic matrix. Few rounded lithics < 10mm, 1-2% diffuse granular detrital Mt.
	XXXXXXXX		Broken core ± fragments Mullock V. Qtz + clst.
40	Int bedd Sst + f.Sst. f.g. clasts Sst		(as above)
		Zone of very broken core - poor recovery	Mostly greenish chloritic qtz xt poor v/c Sst.
48			
56		20 mm	Massive chloritic grey sericitic Qtz xt rich arkosic-psammitic and locally Rhy lithic volcaniclastic sandstone.
			Very sericitic arkosic but not strongly hydrothermally altered. Negligible Py.
64		clvg: 70°	
		5 mm	
72	Hem		Hematitic conglomerate - Breccia, mostly rounded qtz ite clasts in hematitic qtz rich coarse sandy matrix.
80			
			Open Conglomerate. Framework supported qtz ite cobbles mostly 20 - 100 mm in sparse interstitial hematitic sandy matrix.
88			
		continues	+ EOH
		208 m	Narrow mafic dykes at ~ 200 m.

42 60 93

GRAPHIC CORE LOG

Hole No. RH 18 Depth 356.8 m
Scale 1: Variable
Project REDHAWKS EL 29/94
By W Herrmann
Section
Date March 1996
Collar co-ords
Page 1 of 5
Az. °G
5 cm
RL °

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description
14	No core		
		@ 40 m clv // fl bd? ~45° ATC	Sericitic massive quartz phyric Rhyolite ~5% equant clear 2mm qtz phenocrysts evenly distributed in moderately foliated pale buff-green/pink-grey sericitic matrix. Generally rather chalky as if weakly leached, no sulphides, patchy minor hematite staining.
60		@ 49 m clv = 40°	
64	CAVITY		CAVITY, few pieces of sericitic/cleaved QFpR as above.
68			Chloritic massive QFxt - lithic Sst. Breccia ± flattened lenses CO3, grey mudstone and pink-grey QFpR lithics to 1cm in green grey foliated chl-sandstone matrix ± significant qtz xtal component and disem detrital Mt! - (distinctly magnetic) All clasts matrix supported. Clast concentration ~5%. Transitional increase in pink QFpR (± accy Mt lithics to 100mm below 73m. cluster of CO3 lenses near 76.5m, still magnetic ± qtz xtal component of matrix. Clast concentration ~10-15% below 73m
72			
72.7 *			
76			
80			chloritic massive lithic volcaniclastic sst; similar to matrix of above with rather less sandy, granular (or finer?) quartz and pink Rhy lithics <1% generally < 10mm (rare exception 30mm at 86.8m), dark green chlorite clasts, detrital Mt local clv // "bands" or trains of blotches to 20mm Thick sequence pink albite/K-spar alteration (resembling Comstock Tuff?) Some fine sandy zones below 84m but not distinctly graded.
84			
88			
92			Pink QFpR clast rich breccia with similar matrix etc to above and mottled patchy pink perasitic alteration.
96			Chl-ser massive Qxt-lithic sandstone with small felsic volc clasts and lenses CO3 increasing below 96.5m. Only faintly magnetic

42609

3.85 21.0

WP ~ 52.2

ATC Retr. 57.7

GRAPHIC CORE LOG

Hole No. RH 18 Depth m

Scale 1: Project

By Section

Date Collar co-ords

Page 2 of 5 Az. °G

5 cm

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description
100		Bd//cv. 45°	Sericitic - siliceous massive to diffuse bedded f.g clasts "ashy" felsic volcaniclastic siltstone and fine interbedded f-m.g. fs-qtz xtal bearing mucky sericitic lithic dominated volcaniclastic sandstone. Clearly different provenance to units above possibly more compositionally akin to QpR at top of hole. No Mt.
106.0 * 106		cl: 45°	Fs xtls in sandy beds very fresh white. No significant Pyrite but Mt absent.
110			
114	Sheared	Mlt Mode	Crcy siliceous/sericitic Qtz Porphyry c irregular pegmatitic? inclusions blk shale. Bushy Qtz + chl + cos vein (no sulphides)
118			Sericitic coherent Qtz (Fs) Porphyry. 10% equant qtz phenocrysts 3-5 mm evenly dispersed in dove grey siliceous quartzo-feldspathic fine felsic matrix. Rare fuzzy fs phenocrysts and minor shreds of sericite. Qtz crysts commonly often fractured. matrix c spaced micro shear/cleavage. irregular cos (Siderite) fracture veins + blebs.
122		cl: 50°	
(WR) 130.2 *			
134		cl. 45° contact sharp + broken.	Identical to possible Qpr sills in RH 19.
138		cl: 30°	Fissile Black (Pyritic) Shale/Slate.
142		cl: 50°	
146		cl: 60°	
150			Crcy sericitic "ashy" f.g volcaniclastic silt

4260.3

GRAPHIC CORE LOG		Hole No. RH 18	Depth m
Scale 1:		Project	
By		Section	5 cm
Date		Collar co-ords	RL
Page 3 of 5		Az. °G	°

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast φ & Structure	Description
152			f.g. grey "coky" V/c sericitic siltstone.
156		cl. 45°	Bedding finely // dlg. No facings obtained.
		minor flaser.	
160			Volcaniclastic sandstone, graded with coarse sand at base, indicates young up hole (70% confidence)
164			Fissile to massive black carbonaceous (pyritic) shale.
188			Prominent 0.5–1% transposed blebs and bands of pyrrhotite below 175 m also rare brown sphalerite assoc. ± Po or in fine angular veinlets. (< 0.1%)
192			
196			
199.2 * 200			Propeite: Intrusive hyaloclastite and possible resedimented hyaloclastite; intrusion between coherent fs phyric dacite (below) and fine grey clasty sandstone. Trace disseminated fg and brown blebby Sp but fx only weakly sericitized
204			
208		contact transitional.	Sericitic/siliceous massive fx phyric Dacite – probably coherent. Petrographic log AJL suggests coherent fs phyric dacite ± devitrification and possible domainal silicification. fx blurry but looks fairly fresh. Trace disseminated Py + brown Sp < 0.2%
236			Interflow hyaloclastite/propeite similar to 198–207 m
240.3 *			Sericitic/siliceous massive sparsely fx phyric Dacite, compositionally similar to previous Dacite unit.

42 0986

GRAPHIC CORE LOG

Scale 1

By M. Harvey

Date

Page 4 of 5

Hole No. RH 18 Depth m

Project

Section

Collar co-ords

Az. °G

5 cm

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
276.4 *			Mostly virtually fresh; weak pervasive chl (sm) alt^n ~ 270 – 276m. Otherwise massive and non-descript, possible velcit flow bands (light/dark cm scale) at ~ 283.5m @ 45° UAC.
284			
288			Rhyolite: dense intrusive hyaloclastite interbanded w/ fg pumiceous dacite (above) and massive black, rather flinty mudstone. Rather prominent 0.2% brown Sp. minor Py, Cpy in blebs and fine impersistent veinlets in both lithotypes possibly favouring more brittle? dacite which has rather pervasive dark grey grey chl-ser matrix alt^n highlighting pale lens called fg phenocrysts.
292		cl: 40° UAC	
296		cl 40° UAC	Massive fissile v/c slate and minor altd. (tramp?) grey v/c clst. Ubiquitous 0.2% dissem blebs Po aligned ∥ clvg and in occasional seam mm-cm bands ~ 10cm apparent deformed veins ∥ same minor Py, Sp.
300		cl	
304		cl: 30° Bd: 80° (Dip 60-70°W)	Diffuse bedded (sericitic) felsic volcaniclastic mudstone with interbedded (slumped or intraclastic?) fine dusty grey clst and minor clst/lithic v/c breccia. Bx clasts ind. grey dusty clst, pink dacite and fine pumiceous fragments/or velcit tube pumice. Weak ser–Chl alt^n mostly fresh or weakly carbonated? fg.
308			
310.3 *			Trace ~0.2% dissem Py + pale Sp. Considerable evidence of small scale slump folding +/or transposition of sandy + silty layering. Clvg. generally more acute ~ 30° to bed in direction steep w. dip of bedding but possibly complex.
312			
316		cl: 30°	
320			Massive (weakly sericitic/carbonated) fg. xtal (lithic/pumiceous) felsic volcaniclastic clst.
322.2 *			Overall grainsize increasing down hole with small proportion ~10% fine-v.fine dacitic lithics clasts to 6mm and possible fine pumice clasts/fragments. Fs mostly very fresh + pink.
328		cl 40°	Rd. dusty grey fg. v/c siltstone.
		Rocky Bay.	

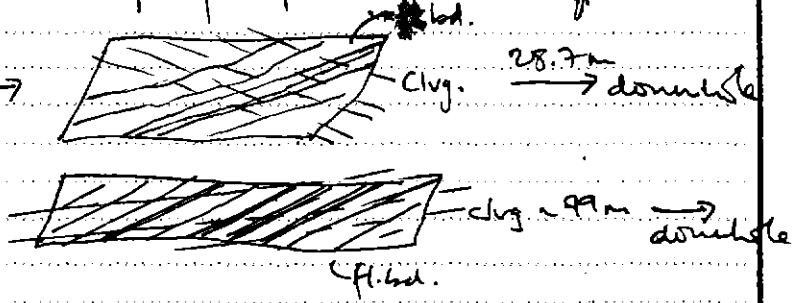
GRAPHIC CORE LOG		Hole No. RH 18	Depth m
Scale 1:		Project	
By		Section	5 cm
Date		Collar co-ords	RL
Page 5 of 5		Az. °G	°

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
330			Sericitic massive fr xtal – pumiceous felsic volcaniclastic sandstone. Pink fs xtls 2mm, sl. evenly distributed & thin wispy dk "laminae" and sparse pinkish fs dacite lithics in massive homogeneous sericitic ground mass; not granular like previous units, could be largely reworked glassy pumice?, lithics preclude coherent origin. Fr weakly carbonated, mudd pitted moderate Q-ser-fsy alt at lower contact.
334			
338			
342			Interbedded finely bedded felsic v/c sandstone and coarse polymict breccia. Clasts dominantly fs. pkish dacite, lesser green clasts v/c chl. and possible pumice fiamme. Matrix weakly fsr chl alt. Pyrite fs fresh.
346		cl: 45-50°	
350		Broken	Qtz
352.2			Massive polymictic volcaniclastic Breccia. Angular to rounded / irregular clasts sl pink aphyric and fr pkish dacite 5mm to 100mm ~20% wst, with flattened irregular lenses & white carbonate minor clasts chl and possible lt. altd. pumice clasts matrix supported in coarse fs xtl rich mudd sericitic volcaniclastic matrix, partly, partly pumiceous. Fs xtls essentially fresh. Trace disp By <0.1%.
354			
356.5		cl: 50°	
EOH			

426033

GRAPHIC CORE LOG	Hole No. RH 19	Depth 237.3 m
Scale 1:	Project RED	
By W. Stevenson	Section	5 cm
Date	Collar co-ords	
Page 1 of 3	Az. °G	

426093

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
4			Qa: Quaternary glacial debris, pink boulders + cobbles of silicified quartzite.
8			Sericitic, massive, quartz porphyritic Rhyolite.
12			~5%, 2-3 mm grey translucent quartz phenocrysts with occasional very euhedral p. crystals to 5 mm, evenly dispersed in pale greenish grey to purplish grey (hematite stained) feldspathic/sericitic matrix. Feldspar pxts generally indistinct, could be represented by minor greenish wisps of sericite. Local centimetre scale flow banding ± faint preserved relict spherulites.
16		fl. bd. @ 28.7 m 10° CAL bl: 10° CAL opposite sense →	
20			
92			Rocks quite coherent and uniform. Patchy pervasive, very common pale purplish pink hematitic staining in felsic matrix ± occasional 1-2 mm ragged bleb hematite but otherwise relatively unaltered.
96			
100			Zone of semi pervasive silicification and pink albite? alteration associated ± barren quartz-feldspar (pink) vein. No sulphide.
			(Sericitic) massive quartz porphyritic Rhyolite (as above) Near unequivocal weak pervasive hematite staining — sub aerial oxidation during emplacement? as lava?

GRAPHIC CORE LOG		Hole No. RH 19	Depth m
Scale 1:		Project	
By		Section	5 cm
Date		Collar co-ords	
Page 2 of 3		Az. °G	

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
			Downhole contact irregular, partially sheared.
140		gradational Bd // clvg 45° LAC	Siliceous fine grained clasty volcaniclastic siltstone. Contact slightly "baked".
144		Bd // clvg ~40° LAC	Sericitic/chloritic/carbonated diffuse to well bedded qtz xtal rich volcaniclastic sandstone with abundant thin flattened lenses whitish grey carbonate and rare carbonated collapsed pumice clasts. Matrix contains ~5% qtz xtals to 2mm in foliated sericitic/chloritic siltstone base with considerable interstitial carbonate.
148			
152			chloritic-sericitic-carbonated massive qtz xtal rich volcaniclastic sandstone ± abundant pink Qtz-Fs phyric rhyolite clasts to ~40mm and lesser carbonate lenses. Rhy clasts ~5% vol. contain trace accessory magnetite. Still CO_3 in matrix.
156			No unequivocal facings though apparent grain size grading.
160		Bd // clvg 40° LAC	Most of this sequence below 150m contains trace disseminated presumably detrital MAGNETITE and is faintly to distinctly magnetic.
164			
168	Minor pink bands in green chl. base	Shear. Banding ~40° LAC	Chloritic-Feldspathic massive → pink + green banded chloritic volcaniclastic sandstone. No lithics, <u>abundant disappearance</u> of qtz xtals; small blurry fs xtals in mushy chloritic clastic base with spaced cm scale blurry bands of pink pervasive K-spar/Albite altn. Subcm granular Mt. throughout.
172			
176			Minor veinlets white carbonate form ladder network in pink bands
180			
184			Chloritic-carbonated massive - diffuse bedded Rhyolitic? lithic Qtz-Fs xtal rich volcaniclastic sandstone breccia. Similar to above 166m. Distinctly magnetic ± diffuse Mt. Pinkish grey felsic lithics tend to be aphyric and weakly carbonate altered.

Random Zr < 500 ppm.

GRAPHIC CORE LOG	Hole No. RH 19	Depth m
Scale 1:	Project	
By	Section	5 cm
Date	Collar co-ords	
Page 3 of 3	Az. °G	

Depth m	Mean Grainsize Mud 0.5 2 8 32 mm	Max. clast ϕ & Structure	Description
			Increase in dark grey "cherty" aphyric lithic clasts to 2-3%, ~10 mm in last few metres
	← contact sharp but wavy.		
190		Bd // clvg ~35° LAC	Siliceous-sericitic interbedded grey volcaniclastic siltstone and f-m-g, fs-qtz xtal vitric volcaniclastic sandstone. Bedding generally 10-50 cm thick planar to undulating probably partly transposed. No definite facing. Trace disem. Py.
	contact indeterminate		
194		Bd // clvg 30-35° LAC	Thin bedded fissile black slate and minor (10%) cm thick interbedded pale grey siliceous volcaniclastic siltstone. 1-2% disem bedding Py.
			Massive siliceous coherent Qtz Porphyry. = sill? Fl. equant Qtz phenocrysts 4-6 mm and minor blebby grey fs in homogeneous dove grey fine grained felsic matrix. Weak alteration and network of fine brittle CO_3 fracture veinlets. Upper contact planar could be modified by minor Qtz veining and some transport in veining of adjacent slate. Lower contact planar // clvg ~10° Platy slightly brecciated.
198		Trace disem Py ~0.1%	
		Trace veins Sp, Py.	
Anomalous Zn ~ 700 ppm		Clvg: 30°	Fissile Black slate and minor siltstone 1% fine disem Py partly stratabound in fine layering; layering generally // clvg but strong evidence of transposition eg: 202.8m. Down hole contact probably sheared.
202			
	Trace brown Sp // clvg.	Clvg: 30° Clvg: 55°	
206			Buckwy Qtty-(Carb-chl) Vein ± few brec. frags Qpr.
210			Massive homogenous coarse Q(f) Porphyry similar to 194 - 199.8 m. Probable coherent sill.
214			Patchy bushy qtz veins (± some semi massive green grey chlorite and straw CO_3) especially above 215m. Contact assumed by sudden veining. Trace disem Py <0.1% Not magnetic. Relict fs phenocrysts below 235m very fresh.
230			
234			
238	237.3 EOH		

42510 1

APPENDIX II

A) Soil Sample Assay Data

B) Rock Chip Sample Data

C) Drill Core Sample Data

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426103

SAMPLE RECORD SHEET

PROJECT NAME: REA HILLS ! CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: AS ABOVE

SAMPLER: PAUL VANNINI SAMPLE TYPE: SOIL (CHIP) DATE: 10-1-96

HOLE I.D.: P.O. No.: 207063.

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17011	SOIL/C	6450N 8200E	2000E > 2750E 17011-17040
2		6450N 8202.5E	
3		6450N 8205.0E	
4		" 2075E	
5		" 2100E	
6		" 2125E	
7		" 2150E	
8		" 2175E	
9		" 2200E	
S 17020		" 2225E	
1		" 2250E	
2		" 2275E	
3		" 2300E	
4		" 2325E	
5		" 2350E	
6		" 2375E	
7		" 2400E	
8		" 2425E	
9		" 2450E	
S 17030		" ~~2500E~~	2475E
1		" ~~2525E~~	2500E
2		" ~~2550E~~	2525E
3		" ~~2575E~~	2550E
4		" ~~2600E~~	2575E
5		"	2600E
6		" 2625E	
7		" 2650E	
8		" 2675E	
9		" 2700E	
S 17040		6450N 2725E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426104

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: AS ABOVE

SAMPLER: P. VANNINI SAMPLE TYPE: Soil other DATE: 10-1-96

HOLE I.D.: P.O. No.: 2017063

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17041	Soil/C	6450oN 8275oE	ENDS of Line.
2		6460oN 8200oE	COMM LINE 2000E 7275oE
3		6460oN 8202.5E	
4		4600N 2050E	
5		" 2075E	
6		" 2100E	
7		" 2125E	
8		" 2150E	
9		" 2175E	
S 17050		" 2200E	
1		" 2225E	
2		" 2250E	
3		" 2275E	
4		" 2300E	
5		" 2325E	
6		" 2350E	
7		" 2375E	
8		" 2400E	
9		" 2425E	
S 17060		" 2450E	
1		" 2475E	
2		" 2500E	
3		" 2525E	
4		" 2550E	
5		" 2575E	
6		" 2600E	
7		" 2625E	
8		" 2650E	
9		" 2675E	
S 17070		6460oN 2700E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426105

SAMPLE RECORD SHEET

PROJECT NAME: Rat Hills CODE: 729 TENEMENT: (or SHEET No.)

PROSPECT NAME: Mt Arbour

SAMPLER: P. VANNINI SAMPLE TYPE: Soil & Hor DATE: 10-1-96

HOLE I.D.: P.O. No.: 201063

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17071	Soil/C	64600N 8275E	
2		8275oE	END of LINE
3	✓	64700N 8200oE	Comm Line
4		4700N 2025E	
5		2050E	
6		2075E	
7		2100E	
8		2125E	
9		2150E	
S 17080		2175E	
1		2200E	
2		2225E	
3		2250E	
4		2275E	
5		2300E	
6		2325E	
7		2350E	
8		2375E	
9		2400E	
S 17090		2425E	
1		2450E	
2		2475E	
3		2500E	
4		2525E	
5		2550E	
6		2575E	
7		2600E	
8		2625E	
9		2650E	
S 17100		64700N 8267SE	CONTINUE

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

426106

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

SAMPLE RECORD SHEET

PROJECT NAME: Rats Hills CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: AS ABOVE

SAMPLER: DON VANNINI SAMPLE TYPE: SOIL CHOR DATE: 10-1-96

HOLE I.D.: P.O. No.: 2017068

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17101	Soil/C	64700N 82700E	END of Line.
2	V	64800N 82000E	COMM OF LINE
3		4800N 2025E	
4		" 2050E	
5		" 2075E	
6		" 2100E	
7		" 2125E	
8		" 2150E	
9		" 2175E	
S 17110		" 2200E	
1		" 2225E	
2		" 2250E	
3		" 2275E	
4		" 2300E	
5		~~2325E~~	2320E
6		" 2350E	
7		" 2375E	
8		" 2400E	
9		" 2425E	
S 17120		" 2450E	
1		" 2475E	
2		" 2500E	
3		" 2525E	
4		" 2550E	
5		" 2575E	
6		64800N 2600E	END OF LINE
7		64900N 82000E	COMM OF LINE
8		4900N 82025E	
9		" 2050E	
S 17130		" 2075E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

426107

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

SAMPLE RECORD SHEET

PROJECT NAME: Rabbit Hills CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: Rabbit Hole

SAMPLER: Paul Vannini SAMPLE TYPE: Soil/Chip DATE: 10-1-96

HOLE I.D.: P.O. No.: 201703

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17131		6490mN 8210mE	Cont Line
2		4900mN 2125mE	
3		2150mE	
4		2175mE	
5		2200mE	
6		2225mE	
7		2250mE	
8		2275mE	
9		Note Skip 2325mE 2300mE	
S 17140		2350mE	
1		2375mE	
2		2400mE	
3		2425mE	
4		2450mE	
5		2475mE	
6		2500mE	
7		2525mE	
8		2550mE	
9		2575mE	
S 17150		6490mN 2600mE	End of Line.
1		6500mN 8200mE	Comm of Line.
2		5000mN 2025mE	
3		" 2050mE	
4		" 2075mE	
5		" 2100mE	
6		" 2125mE	
7		" 2150mE	
8		" 2175mE	
9		" 2200mE	
S 17160		" 2225mE	Cont'd.

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426103

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: AS ABOVE

SAMPLER: Dave VANNINI SAMPLE TYPE: Soil CHIP DATE: 20-1-96

HOLE I.D.: P.O. No.: 201 7063

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17161	Soil/C	6500mN 8225mE	CONTINUED ✓
2		5000N 2275E	
3		" 2300E	
4		" 2325E	
5		" 2350E	
6		" 2375E	
7		" 2400E	
8		" 2425E	
9		" 2450E	
S 17170		" 2475E	
1		" 2500E	
2		" 2525E	
3		" 2550E	
4		" 2575E	
5		6500mN 2600E	END of LINE.
6		6510mN 8200mE	COMM of LINE 8210mE
7		5100N 2125E	
8		5100N 2150E	
9		" 2175E	
S 17180		" 2200E	
1		" 2225E	
2		" 2250E	
3		" 2275E	
4		" 2300E	
5		" 2325E	
6		" 2350E	
7		" 2375E	
8		" 2400E	
9		" 2425E	
S 17190		" 2450E	CONT ?

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426109

SAMPLE RECORD SHEET

PROJECT NAME: Reid Hicks CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: AS ABOVE

SAMPLER: Paul Vannini SAMPLE TYPE: Soil CHIP DATE: 10-1-96

HOLE I.D.: P.O. No.: 2017063

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17191	Soil/C	6,5100N 82475E	CONTINUE LINE
2		5100N 2500E	END OF LINE.
3		65300N 82100E	SAMPLE ABRASION SKIP 65200N
4		53900N 2125E	
5		" 2150E	
6		" 2175E	
7		" 2200E	
8		" 2225E	
9		" 2250E	
S 17200	✓	" 2275E	
1		" 2300E	
2		" 2325E	
3		" 2350E	
4		" 2375E	
5		" 2400E	
6		" 2425E	
7		" 2450E	
8		" 2475E	
9	✓	65300N 2500E	END OF LINE
S 17210	✓	65400N 82100E	COMM OF LINE [redacted]
1		5400N 2125E	
2		" 2150E	
3		" 2175E	
4		" 2200E	
5		" 2225E	
6		" 2250E	
7		" 2275E	
8		" 2300E	
9		" 2325E	
S 17220		" 2350E	CONTINUED

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426110

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: 78 Above

SAMPLER: Paul Vannini SAMPLE TYPE: Soil & Rock DATE: 10-1-95

HOLE I.D.: P.O. No.: 201763.

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17221	Soil/C	65400N 82375E	Continue Line
2		5400N 2400E	
3		" 2425E	
4		" 2450E	
5		" 2475E	
6	✓	" 2500E	Comp of Line
7	Soil/C	65500N 82100E	Comm of Line
8		5500N 2125E	
9		" 2150E	
S 17230		" 2175E	
1		" 2200E	
2		" 2225E	
3		" 2250E	
4		" 2275E	
5		" 2300E	
6		" 2325E	
7		" 2350E	
8		" 2375E	
9		" 2400E	
S 17240		" 2425E	
1		" ~~2450E~~	2450E
2		" ~~2475E~~	2475E
3	✓	65500N 82500E	End of Line
4	Soil/C	65600N 82100E	Comm of Line
5		5600N 2125E	
6		" 2150E	
7		" 2175E	
8		" 2200E	
9		" 2225E	
S 17250		" 2250E	Continue

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426111

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: TG TENEMENT: (or SHEET No.)

PROSPECT NAME: Gt Abort

SAMPLER: Paul Sannini SAMPLE TYPE: SOIL C HOR DATE: 10-1-92

HOLE I.D.: P.O. No.: 2017 0 L 3

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17251	SOIL/C	6560ON 8227SE	CONTINUE
2		5600N 2300E	
3		" 2325E	
4		" 2350E	
5		" 2375E	
6		" 2400E	
7		" 2425E	
8		" 2450E	
9		" 2475E	
S 17260	"	6560ON 2500E	END OF LINE
1		6570ON 8210OE	COMM OF LINE
2		5700N 2125E	
3		" 2150E	
4		" 2175E	
5		" 2200E	
6		" 2225E	
7		" 2250E	
8		" 2275E	
9		" 2300E	
S 17270		" 2325E	
1		" 2350E	
2		" 2375E	
3		" 2400E	
4		" 2425E	
5		" 2450E	
6		" 2475E	
7		6570ON 8250OE	END OF LINE
8		6580ON 8210OE	COMM OF LINE
9		5800N 2125E	
S 17280		" 2150E	CONTINUE

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426112

SAMPLE RECORD SHEET

PROJECT NAME: Rose Hills - CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: N Abound

SAMPLER: Paul Vannini SAMPLE TYPE: Soil/Chip DATE: 10-1-90

HOLE I.D.: P.O. No.: 2017063

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17281	Soil/C	6580ON 8217.5E	CONTINUED
2		5800N 2200E	
3		" 2225E	
4		" 2250E	
5		" 2275E	
6		" 2300E	
7		" 2325E	
8		" 2350E	
9		" 2375E	
S 17290		" 2400E	
1		" 2425E	
2		" 2450E	
3		" 2475E	
4		" 2500E	
5		6580ON 8252.5E	END OF LINE.
6		6590ON 8210E	COMM OF LINE.
7		5900N 2125E	
8		" 2150E	
9		" 2175E	
S 17300		" 2200E	
1		" 2225E	
2		" 2250E	
3		" 2275E	
4		" 2300E	
5		" 2325E	
6		" 2350E	
7		" 2375E	
8		" 2400E	
9		" 2425E	
S 17310		6590ON 8245E	CONTINUED

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426113

SAMPLE RECORD SHEET

PROJECT NAME: Rat Hills - CODE: 739 TENEMENT: (or SHEET No.)

PROSPECT NAME: 96 ABank

SAMPLER: Paul Varnini SAMPLE TYPE: Soil C Hor DATE: 10-1-96

HOLE I.D.: P.O. No.: 2017063

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17311	Soil/C	65900N 8247[illegible]	Continued.
2		5900N 2500E	End of Line
3	Soil/C	66000N 8210[illegible]	Comm of Line
4		66000N 2125E	
5		" 2150E	
6		" 2175E	
7		" 2200E	
8		" 2225E	
9		" 2250E	
S 17320		" 2275E	
1		" 2300E	
2		" 2325E	
3		" 2350E	
4		" 2375E	
5		" 2400E	
6		" 2425E	
7		" 2450E	
8		" 2475E	
9		66000N 8248[illegible]	End of Line
S 17330		66100N 8210[illegible]	Comm of Line
1		66100N 2125E	
2		" 2150E	
3		" 2175E	
4		" 2200E	
5		" 2225E	
6		" 2250E	
7		" 2275E	
8		" 2300E	
9		" 2325E	
S 17340		66100N & 2350E	Continued.

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426114

SAMPLE RECORD SHEET

PROJECT NAME: Rock Hill CODE: 709 TENEMENT: (or SHEET No.)

PROSPECT NAME: Mt Abbott

SAMPLER: Ron Yamanaka SAMPLE TYPE: Soil CHOR DATE: 10-1-96

HOLE I.D.: P.O. No.: 2017063

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17341	Soil/C	6610ON 82375E	Continued.
2		6100N 2400E	
3		" 2425E	
4		" 2450E	
5		6100N 2475E	
6	✓	6610ON 82500E	End of Line.
7	✓	6620ON 82100E	Comm of Line
8		6200N 2125E	
9		2150E	
S 17350		2175E	
1		2200E	
2		2225E	
3		2250E	
4		2275E	
5		2300E	
6		2325E	
7		2350E	
8		2375E	
9		2400E	
S 17360	✓ No 2450E ?	2425E	
1		2475E	
2		2500E	
3		2525E	
4		2550E	
5		2575E	
6	✓	2600E	End of Line
7			
8			
9			
S 17370			

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426115

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: R Reid SAMPLE TYPE: ½ Drill Core DATE: 1/2/96

HOLE I.D.: P.O. No.: 2017066

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17371	½ drill core	RH6R, 152.1 to 153.0m	grey siliceous/cherty fg FV
2	↓	153 to 154	mineralised debris flow
3	↓	154 to 155	↓
4	↓	155 to 156m	↓
5	↓	156 to 157	↓
6	↓	157 to 158	grey siliceous/cherty fg FV
7	↓	158 to 159m	grey siliceous/cherty fg FV & pyritic FV
8	↓	RH4, 250 to 251m	MS (60% Py, 1% Cpy?, ch(s)) + stringer Vnd py, cpy.
9	↓	↓ 251 to 252m	ch(oritic FV, stringer Py (5%) cpy (<0.5%) ch(s)
S 17380	¼ core	RH12, 122 to 123m	SCT & mineralised debris flow.
1	↓	↓ 123 to 124m	mineralised debris flow (sil-sph)
2	↓	↓ 124 to 125m	" "
3	½ core	RH7, 109 to 110m	30cm pyritic MS, remainder grades down to py (5%)
4	↓	96 to 97m	lt gn fplic FV, sil-py (tr-1%) overprint, [redacted]
5	↓	97 to 98m	grey v fg FV, discont stringer Py (2%) sph (0.5%) cpy and local sths
6	↓	98 to 99m	" sph (to 1%)
7	↓	↓ 99 to 100m	" "
8	↓	RH7, 100 to 101m	mg FV py (1%) sph (tr) siliceous overprint.
9			
S 17390			
1			
2			
3			
4			
5			
6			
7			
8			
9			
S 17400			

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426110

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: Log- P. VANNINI SAMPLE TYPE: Soil & HQR DATE: 4-3-96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17401	Soil/c	66300N 82100E	✓
2		" 82125E	✓
3		" 82150E	✓
4		" 82175E	✓
5		" 82200E	✓ (225, 250, 275, 300) ✓
6		" 82325E	
7		" 82350E	
8		" 82375E	
9		" 82400E	425 ✓
S 17410		" 82450E	
1		" 82475E	
2		" 82500E	
3		" 82525E	
4		" 82550E	
5		" 82575E	
6		66300N 82600E	✓
7	Soil/c?	66200N 82625E	
8		" 82650E	
9		" 82675E	
S 17420		66200N 82700E	✓
1	Soil/c	66100N 82525E	
2		82550E	
3		82575E	
4		82600E	
5		82625E	
6		82650E	
7		82675E	
8		82700E	
9		82725E	
S 17430		66100N 82750E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426117

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: Loli P. Vannini SAMPLE TYPE: Soil/c DATE: 9-3-96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17431	Soil/c	66100N ~~82800E~~ 82775E	
2		" ~~82825E~~	82800E
3		" 82825E	
4		" 82850E	
5		" 82875E	
6		66100N 82900E	/
7	Soil/c	66000N 82525E	
8		" 82550E	
9		" 82575E	
S 17440		" 82600E	
1		" 82625E	
2		" 82650E	
3		" 82675E	
4		" 82700E	
5		" 82725E	
6		" 82750E	
7		" 82775E	
8		" 82800E	
9		" 82825E	
S 17450		" 82850E	
1		" 82875E	
2		" 82900E	
3		" 82925E	
4		" 82950E	
5		" 82975E	
6	Soil/c	66000N 83000E	/
7		65900N 82525E	
8		82550E	
9		82575E	
S 17460		82600E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426118

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: E4/29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: Lou; P. Vannini SAMPLE TYPE: Soil C Hor DATE: 4-3-96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17461	Soil/C	65900N 82625E	
2		" 82650E	
3		" 82675E	
4		" 82700E	
5		" 82725E	
6		" 82750E	
7		" 82775E	
8		" 82800E	
9		" 82825E	
S 17470		" 82850E	
1		" 82875E	
2		" 82900E	
3		" 82925E	
4		" 82950E	
5		" 82975E	
6		65900N 83000E	✓
7		65800N 82525E	
8		82550E	
9		82575E	
S 17480		82600E	
1		82625E	
2		82650E	
3		82675E	
4		82700E	
5		82750E	
6		82775E	
7		82800E	
8		82825E	
9		82850E	
S 17490		65800N 82875E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426119

SAMPLE RECORD SHEET

PROJECT NAME: Rat Hills CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: Lori P. VAnnini SAMPLE TYPE: Soil/CHIP DATE: 4-3-96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17491	Soil/C	65800N 82900E	
2		" 82925E	
3		" 82950E	
4		" 82975E	
5		65800N 83000E	
6		65800N 83025E	
7		" 83050E	
8		" 83075E	
9		65800N 83100E	
S 17500	Soil C	65700N 82525E	(12/3/96. LOLLARS).
1		" 82550E	
2		" 82575E	
3		" 82600E	
4		" 82625E	
5		" 82650E	
6		" 82675E	
7		" 82700E	
8		" 82725E	
9		" 82750E	
S 17510		" 82775E	
1		" 82800E	
2		" 82825E	
3		" 82850E	
4		" 82875E	
5		" 82900E	
6		" 82925E	
7		" 82950E	
8		" 82975E	
9		" 83000E	
S 17520		65700N 83025E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426120

SAMPLE RECORD SHEET

PROJECT NAME: Reg Hills CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: Lohlar, Paul Vannini SAMPLE TYPE: Soil e/Hor DATE: 12/3/96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17521	Soil e/Hor	65700N 83050E	
2		" 83075E	
3		65700N 83100E	
4		65600N 82525E	65600 N
5		" 82550E	
6		" 82575E	
7		" 82600E	
8		" 82625E	
9		" 82650E	
S 17530		" 82675E	"
1		" 82700E	
2		" 82725E	
3		" 82750E	
4		" 82775E	
5		" 82800E	
6		" 82825E	
7		" 82850E	
8		" 82875E	
9		" 82900E	
S 17540		" 82925E	
1		" 82950E	
2		" 82975E	
3		" 83000E	
4		" 83025E	
5		" 83050E	
6		65600N 83075E	
7		65000N 81875E	
8		" 81900E	
9		" 81925E	
S 17550		" 81950E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426121

SAMPLE RECORD SHEET

PROJECT NAME: Ross Hills EXT CODE: 709 TENEMENT: EL 29/90 (or SHEET No.)

PROSPECT NAME:

SAMPLER: Louis - Paul Vannini SAMPLE TYPE: Soil e/Hole DATE: 2/4/96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17551	Soil Chip	65000N 81975E	
2		65200N 82525E	
3		" 82550E	
4		" 82575E	
5		65300N 82525E	
6		" 82550E	
7		" 82575E	
8		" 82600E	
9		" 82625E	
S 17560		" 82650E	
1		" 82675E	
2		" 82700E	
3		" 82725E	
4		" 82750E	
5		" 82775E	
6		" 82800E	
7		" 82825E	
8		" 82850E	
9		" 82875E	
S 17570		65300N 82900E	
1		65400N 82525E	
2		65400N 82550E	
3		" 82575E	
4		" 82600E	
5		" 82625E	
6		" 82650E	
7		" 82675E	
8		" 82700E	
9		" 82725E	
S 17580		" 82750E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426122

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: Logan, Paul Vannini SAMPLE TYPE: Soil e+kor DATE: 2/4/96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17581	Soil e/kor	65400N 82775E	
2		" 82800E	
3		" 82825E	
4		" 82850E	
5		" 82875E	
7 6		65400N 82900E	/
7		65500N 82525E	
8		" 82550E	
9		" 82575E	
S 17590		" 82600E	
1		" 82625E	
2		" 82650E	
3		" 82675E	
4		" 82800E	
5		" 82725E	
6		" 82750E	
7		" 82775E	
8		" 82800E	
9		" 82825E	
S 17600		" 82850E	
1		" 82875E	/
2		65500N 82900E	
7 3		65100N 81800E	
4		" 81825E	
5		" 81850E	
6		" 81875E	
7		" 81900E	
8		" 81925E	
9		" 81950E	
S 17610		65100N 81975E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426123

SAMPLE RECORD SHEET

PROJECT NAME: Ross Hills CODE: 709 TENEMENT: 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: Logan Rowe Vannini SAMPLE TYPE: Soil+Rock DATE: 2/4/96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17611	Soil/Rock	65100N 82000E	
2		" " 82025E	
3		" " 82050E	Tarm
4		65100N 82075E	
5	Soil/Rock	65000N 81800E	
6		" " 81825E	
7		65000N 81850E	
8		65100N 82525E	
9		" 82550E	
S 17620		" 82575E	
1		" 82600E	
2		" 82625E	
3		" 82650E	
4		" 82675E	
5		" 82700E	
6		" 82725E	
7		65100N 82775E	82775E.
8		65200N ~~82775E~~	81900E
9		" 81925E	
S 17630		" 81950E	
1		" 81975E	
2	x	" 82000E	
3	x	" 82025E	
4	x	" 82050E	
5	x	" 82075E	
6		" 82600E	
7		" 82625E	
8		" 82650E	
9		" 82675E	
S 17640		65200N 82700E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426124

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: P. Vannini SAMPLE TYPE: Soil e Hor DATE: 21-4-96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17641		6520oN 82725E	✓
2		" 82750E	✓
3		" 82775E	✓
4		" 82800E	✓
5		" 82825E	✓
6		" 82850E	✓
✗ 7		6520oN 82875E	✓ Quartz mass Sericite
✓ 8		6530oN 81900E	✓
9		" 81925E	✓
S 17650		" 81950E	✓
1		" 81975E	✓
2	✗	" 82000E	✓
3	✗	" 82025E	✓
4	✗	" 82050E	✓
✓ 5	✗	6530oN 82075E	✓
6		6540oN 81900E	
7		" 81925E	
8		" 81950E	
9		" 81975E	
S 17660		" 82000E	
1		" 82025E	
2		" 82050E	
3		6540oN 82075E	
4		6550oN 81900E	
5		" 81925E	
6		" 81950E	
7		" 81975E	
8		" 82000E	
9		" 82025E	
S 17670		6550oN 82050E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426125

SAMPLE RECORD SHEET

PROJECT NAME: Ross Hills Area CODE: 709 TENEMENT: 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: P. Vannini SAMPLE TYPE: Soil Chip DATE: 21-4-96

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17671	Soil C	6550mN 8207S	
2		6560mN 8190mE	
3		" 8192.5E	
4		" 8195E	
5		" 8197.5E	
6		" 8200E	
7		" 8202.5E	
8		" 8205E	
9		6560mN 8207.5E	
S 17680		6480mN 8182.5E	
1		" 8185E	
2		" 8187.5E	
3		" 8190E	
4		" 8192.5E	
5		" 8195E	
6		6480mN 8197.5E	
7		6490mN 8180mE	
8		" 8182.5E	
9		" 8185E	
S 17690		" 8187.5E	
1		" 8190E	
2		" 8192.5E	
3		" 8195E	
4		6490mN 8197.5E	BATCH
5			
6			
7			
8			
9			
S 17700			

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426126

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: J Foster, R Reid SAMPLE TYPE: Soil DATE: 27/3/97

HOLE I.D.: P.O. No.: 2018626

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 17701	C-Horiz	381875E, 5365200N	
2	Soil	1850E "	
3		1825E "	
4	"	1800E "	
5		1875E "	
6	"	1750E "	
7		1725E "	
8	"	1700E "	
9		1675E 5200N	
S 17710	"	381975E, 5364700N	
1		1950E "	
2	"	1925E, 4700N	
3		381975E, 5364600N	
4	"	1950 "	
5		1925 "	
6	"	1900 "	
7		1875 "	
8	"	1850 "	
9	"	1825E 4600N	
S 17720	Rock chip	381700E, 5365180N	f-g-pke pumiceous lithic F vok sst, ch(w) s.l(lmts)
1	"	381880E, 5365440N	f-pke lithic F vok sst/breccia, qtz-vnd, siliceous gossan
2	"	382000E, 5364700N	f-pke pumiceous FV, ch(w) ser(w) s.l(w) vicinity of 532ppm Zn soil anom
3	"	382435E, 5364180N	Chloritic FV, ser(w) s.l(ufm) py (0.5-1.0%)
4	"	382500E 5364100N	Old prospect trench, chloritic FV, s.l(w) py 05% diss stringers
5	"	Cradle Link Rd	Gossan.
6			
7			
8			
9			
S 17730			

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426127

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME: "

SAMPLER: R Reid SAMPLE TYPE: C/B Horizon Soils DATE: 8/9/95

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 15091	C-Horiz	5200N, 2100E	
2	Soil	2150	
3	"	" 2175	
4	"	2200	
5	"	" 2225	
6	"	2250	
7	"	" 2275	
8	"	2300	
9	"	" 2325	
S 15100	"	2375	
1	"	" 2400	
2	"	2425	
3	"	" 2450	
4	"	2475	
5	"	5200N, 2500E	
6	"	6300N, 2225E	
7	"	" 2250	
8	"	" 2275	
9	"	6300N, 2300E	
S 15110	B-Horiz	5200N, 2100E	
1	Soil	2150	
2	"	" 2175	
3	"	2225	
4	"	" 2275	
5	"	2300	
6	"	2325	
7	"	" 2375	
8	"	2450	
9	"	5200N, 2500E	
S 15120	"	6300N, 2225E	

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426128

SAMPLE RECORD SHEET

PROJECT NAME: Red Hills " CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: R Reid SAMPLE TYPE: B Horiz Soil DATE: 8/9/95

HOLE I.D.: P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 15121	B-Horiz	6300N, 2275E	
2	Soil	6300N, 2300E	
3			
4			
5			
6			
7			
8			
9			
S 15130			
1			
2			
3			
4			
5			
6			
7			
8			
9			
S 15140			
1			
2			
3			
4			
5			
6			
7			
8			
9			
S 15150			

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 2122

PLUTONIC

Plutonic Operations Limited
A.C.N. 004 680 997
Level 37, 100 Miller Street, North Sydney, NSW 2060
Telephone (02) 959 3433, Facsimile (02) 955 9620

426129

SAMPLE RECORD SHEET

PROJECT NAME: RED HILLS CODE: 709 TENEMENT: EL 29/94 (or SHEET No.)

PROSPECT NAME:

SAMPLER: W. HERRMANN SAMPLE TYPE: CORE ROCK CHIP DATE: MARCH 1996

HOLE I.D.: — P.O. No.:

SAMPLE No.	TYPE	INTERVAL/ LOCATION/CO-ORDS	DESCRIPTION
S 15271	R/c o/c	381975E/5363870N	Pink aphyric Dacite lava breccia/silicified
2	"	381990E/5363930N	White Barley Quartz vein, no sulphides.
3	"	381980E/5363930N	Stockwork qtz veinlets in aphyric Dacite Bx
4	R/c MULLOCK	381920E/5365025N	Buff aphyric Dacite ± qtz veinlets +/- Sid, galena, s
5	"	" "	" "
6	"	" "	" ± qtz + sideritic veinlets
7	R/c o/c	382000E/5365060N	White barley quartz veins, barren
8	"	381995E/5365005N	" " " ~3% in buff ap Dacite
9	R/c MULLOCK	381995E/5365045N	Gossanous/qtz stockworked buff Dacite
S 15280	R/c o/c	381985E/5365050N	Slightly gossanous barley qtz veins in Dacite
1	"	" "	Fe stained alt. Dacite wall rock to above
2	"	381995E/5365115N	Gossanous qtz veined Dacite.
3	½ CORE	RH 11 186.6m	
4	"	" 248.3m	
5	"	" 271.2m	
6	"	" 276.0m	
7	"	" 303.8m	
8	"	" 325.3m	
9	"	" 355.9m	
S 15290	"	" 373.3m	
1	"	RH16 86.0→87.0m	
2	"	RH 18. 52.3m	
3	"	RH 18 129.8	
4	"	RH18 241.0	
5	CRUSHED RCA	STANDARD RH 1	
6			
7			
8			
9			
S 15300			

REMARKS:

WHITE: Assay File
PINK: Project File
YELLOW: Field Copy

X-press Printing Co. (077) 72 217

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

Phone (004) 315837 | 14 Thirkell St. CODEE TAS 7320 | Fax (004) 318890

ANALYTICAL REPORT No. 11715.60.11317

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

INVOICE TO:

Plutonic Operations Limited
Level 37
100 Miller Street
NORTH SYDNEY NSW 2060

ORDER No.	PROJECT
2014742	

DATE RECEIVED	RESULTS REQUIRED
12/10/95	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	24/10/95	1	32

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
15091/109	AR Prep : GP031	Cu,Pb,Zn,Ag,Fe,Mn,As/GA140 As/HA140 Au.Au(R),Au(S)/GG309
15110/122		Cu,Pb,Zn/GA140

RESULTS TO

Rob Reid
Plutonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

REMARKS

RESULTS TO

RESULTS TO

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11317	24/10/95	2014742	1 OF 3

	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Mn	Au	Au(R)	Au(S)
METHOD		GA140	GA140	GA140	GA140	GA140	GA140	GG309	GG309	GG309
1	15091	2	10	10	<1	0.41	21	<0.008	-	-
2	15092	11	22	29	<1	1.29	56	<0.008	-	-
3	15093	5	13	14	<1	0.55	16	<0.008	-	-
4	15094	9	44	39	<1	1.06	83	0.009	-	-
5	15095	8	26	70	1	1.94	179	<0.008	-	-
6	15096	8	60	68	1	2.82	207	<0.008	-	-
7	15097	5	26	203	<1	2.27	354	<0.008	-	-
8	15098	10	315	29	<1	0.95	45	0.009	-	-
9	15099	15	139	41	<1	2.18	205	<0.008	-	-
10	15100	12	80	27	1	1.15	134	<0.008	-	-
11	15101	9	129	23	<1	0.90	156	<0.008	-	-
12	15102	22	52	23	<1	1.35	108	<0.008	<0.008	-
13	15103	29	39	40	<1	2.05	141	<0.008	-	-
14	15104	47	36	30	<1	2.12	124	0.008	-	-
15	15105	53	26	38	<1	3.07	269	<0.008	-	-
16	15106	4	21	29	<1	1.24	74	0.009	-	-
17	15107	31	21	90	<1	4.96	232	0.013	-	-
18	15108	100	35	82	<1	2.14	154	0.011	-	-
19	15109	51	36	38	<1	1.42	98	<0.008	-	<0.008
20	15110	4	21	11	-	-	-	-	-	-
21	15111	6	16	20	-	-	-	-	-	-
22	15112	4	3	14	-	-	-	-	-	-
23	15113	11	56	61	-	-	-	-	-	-
24	15114	5	52	29	-	-	-	-	-	-
25	15115	9	158	26	-	-	-	-	-	-

Results in ppm unless otherwise specified IS - insufficient sample

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11317	24/10/95	2014742	2 OF 3

	SAMPLE No.	Cu	Pb	Zn	Ag	Fe	Mn	Au	Au(R)	Au(S)
METHOD		GA140	GA140	GA140	GA140	GA140	GA140	GG309	GG309	GG309
1	15116	11	197	39	-	-	-	-	-	-
2	15117	16	95	21	-	-	-	-	-	-
3	15118	48	58	26	-	-	-	-	-	-
4	15119	36	16	20	-	-	-	-	-	-
5	15120	5	28	33	-	-	-	-	-	-
6	15121	28	28	48	-	-	-	-	-	-
7	15122	24	49	42	-	-	-	-	-	-
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	2	3	2	1	0.01	3	0.008	0.008	0.008
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

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11317	24/10/95	2014742	3 OF 3

	SAMPLE No.	As	As								
METHOD		HA140	GA140								
1	15091	4.1	–								
2	15092	3.2	–								
3	15093	2.0	–								
4	15094	6.9	–								
5	15095	3.1	–								
6	15096	>50.0	– – 50								
7	15097	8.2	–								
8	15098	10.0	–								
9	15099	14.0	–								
10	15100	14.0	–								
11	15101	38.0	–								
12	15102	22.0	–								
13	15103	6.4	–								
14	15104	12.0	–								
15	15105	13.0	–								
16	15106	4.2	–								
17	15107	2.1	–								
18	15108	2.9	–								
19	15109	2.1	–								
20											
21											
22											
23											
24	DETECTION	0.5	50								
25	UNITS	ppm	ppm								

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs
****
Analabs Pty. Ltd.
A.C.N. 004 591 664

4281.1

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

ANALYTICAL REPORT No. 111715.60.11820

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

INVOICE TO:

Plutonic Operations Limited
Level 37
100 Miller Street
NORTH SYDNEY NSW 2060

ORDER No.	PROJECT
2017012	

DATE RECEIVED	RESULTS REQUIRED
16/04/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES
3	17/04/96	1

TOTAL No. OF SAMPLES: 13

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
CS ,15283/15295	CO Prep : GP033	Al2O3,SiO2,TiO2,Fe2O3,MnO,CaO, K2O,MgO,P2O5,SO3,Na2O,LOI, TOTAL/OX408
CS ,15283/15295	CO Prep : GP033	Zr,Nb,Y,Ti/GX401
CS ,15283/15295	CO Prep : GP033	C/OM612
CS ,15283/15295	CO Prep : GP033	S/OM613

RESULTS TO

W Herrman
Plutonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

RESULTS TO

Rob Reid
Plutonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

REMARKS

RESULTS TO

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11820	17/04/96	2017012	1 OF 3

	SAMPLE No.	Al2O3	SiO2	TiO2	Fe2O3	MnO	CaO	K2O	MgO	P2O5
METHOD		OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408	OX408
1	S 15283	14.90	67.70	0.46	5.61	0.22	1.07	3.61	1.80	0.101
2	S 15284	14.10	68.30	0.44	3.48	0.16	2.39	3.50	1.22	0.101
3	S 15285	12.70	73.40	0.25	3.07	0.05	0.58	5.48	0.98	0.034
4	S 15286	12.10	75.50	0.28	2.63	0.05	0.33	3.59	0.72	0.033
5	S 15287	15.20	68.50	0.43	4.22	0.09	0.55	4.93	1.20	0.077
6	S 15288	12.50	70.20	0.34	5.48	0.21	1.14	4.45	0.83	0.060
7	S 15289	12.20	71.00	0.36	9.44	0.22	0.09	3.17	0.92	0.068
8	S 15290	12.40	72.30	0.33	3.46	0.08	0.10	8.90	0.48	0.055
9	S 15291	13.70	70.70	0.25	3.28	0.15	1.38	5.53	0.44	0.032
10	S 15292	12.10	77.40	0.20	2.36	0.01	<0.01	5.42	0.55	0.017
11	S 15293	12.20	70.80	0.34	3.45	0.12	2.74	3.00	0.96	0.055
12	S 15294	14.10	66.50	0.44	3.74	0.16	3.19	4.88	0.57	0.101
13	S 15295	11.10	76.70	0.08	1.67	0.03	0.89	5.83	0.96	<0.005
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.005
25	UNITS	%	%	%	%	%	%	%	%	%

Results in ppm unless otherwise specified
= element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715:60:11830	17/04/96	2017012	2 OF 3

	SAMPLE No.	SO3	Na2O	LOI	TOTAL	Zr	Nb	Y	Ti	C
METHOD		OX408	OX408	OX408	OX408	GX401	GX401	GX401	GX401	OM612
1	S 15283	0.21	0.72	3.54	99.70	272	12	32	2201	0.220
2	S 15284	0.28	1.71	3.82	99.20	274	12	32	2112	0.490
3	S 15285	0.25	1.07	2.21	99.90	298	14	35	1253	0.190
4	S 15286	0.01	2.23	2.14	99.60	298	11	34	1336	0.230
5	S 15287	0.01	2.55	2.31	100.00	380	14	37	2189	0.140
6	S 15288	0.31	2.00	2.24	99.50	296	11	29	1656	0.260
7	S 15289	0.02	<0.05	2.49	99.90	299	11	33	1633	0.029
8	S 15290	0.02	0.07	0.85	99.00	317	10	30	1476	0.033
9	S 15291	0.03	0.73	3.35	99.50	307	12	45	1280	0.480
10	S 15292	<0.01	<0.05	1.94	100.00	247	13	44	1053	0.036
11	S 15293	<0.01	1.68	3.97	99.30	231	16	32	1749	0.580
12	S 15294	0.20	1.81	3.88	99.30	252	9	29	2174	0.630
13	S 15295	0.60	0.79	1.05	99.20	138	12	37	425	0.082
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	0.01	0.05	0.01	0.01	5	3	3	50	0.005
25	UNITS	%	%	%	%	ppm	ppm	ppm	ppm	%

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

4.01687

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11820	17/04/96	2017012	3 OF 3

	SAMPLE No.	S									
METHOD		OM613									
1	S 15283	0.120									
2	S 15284	0.150									
3	S 15285	0.160									
4	S 15286	0.016									
5	S 15287	0.017									
6	S 15288	0.150									
7	S 15289	0.026									
8	S 15290	0.018									
9	S 15291	0.022									
10	S 15292	0.012									
11	S 15293	0.014									
12	S 15294	0.120									
13	S 15295	0.370									
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24	DETECTION	0.005									
25	UNITS	%									

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

125133 **Analabs Pty. Ltd.**
A.C.N. 004 591 664

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

ANALYTICAL REPORT No. 11715.60.11546

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

INVOICE TO:

Platonic Operations Limited
Level 37
100 Miller Street
NORTH SYDNEY NSW 2060

ORDER No.	PROJECT
2017101	

DATE RECEIVED	RESULTS REQUIRED
12/01/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES
30	06/02/96	1

TOTAL No. OF SAMPLES: 356

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
17011/366	SO Prep : GP031	Cu,Pb,In,Fe,Mn,As/GA140,As/HA140
17011/366	SO Prep : GP031	Au,Au(R),Au(S)/GG309
17011/366	SO Prep : GP031	Mn/GA104
17011/366	SO Prep : GP031	Mn/GA104
17011/366	SO Prep : GP031	

RESULTS TO

Rob Reid
Platonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

RESULTS TO

RESULTS TO

REMARKS

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	1 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17011	5	30	72	1.45	-	83	-	-	5.3
2	17012	11	54	66	1.12	-	97	-	-	4.4
3	17013	2	21	55	1.03	-	55	-	-	1.4
4	17014	4	14	43	0.84	-	34	-	-	2.0
5	17015	15	59	61	1.07	-	75	-	-	6.9
6	17016	13	83	82	1.78	-	110	-	-	10.0
7	17017	3	67	39	0.25	-	15	-	-	6.1
8	17018	35	99	72	1.62	-	15	-	194	-
9	17019	4	12	19	0.40	-	16	-	-	<0.5
10	17020	5	60	31	0.67	-	112	-	-	7.2
11	17021	<2	181	33	0.33	-	32	-	-	24.0
12	17022	11	73	45	1.40	-	145	-	-	12.0
13	17023	3	70	17	0.72	-	34	-	-	8.3
14	17024	13	252	36	0.94	-	34	-	-	24.0
15	17025	5	84	29	1.24	-	143	-	-	10.0
16	17026	8	36	24	1.15	-	220	-	-	<0.5
17	17027	4	11	22	0.53	-	75	-	-	<0.5
18	17028	5	7	24	1.18	-	149	-	-	<0.5
19	17029	5	9	28	1.02	-	114	-	-	<0.5
20	17030	6	14	28	0.73	-	70	-	-	<0.5
21	17031	4	<3	29	1.23	-	90	-	-	14.0
22	17032	6	3	27	1.23	-	83	-	-	2.6
23	17033	4	<3	25	0.93	-	48	-	-	<0.5
24	17034	4	<3	22	0.89	-	32	-	-	0.8
25	17035	2	3	14	0.47	-	19	-	-	0.5

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	2 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17036	2	<3	16	0.56	-	35	-	-	<0.5
2	17037	6	17	32	0.57	-	35	-	-	1.0
3	17038	2	5	16	0.78	-	45	-	-	0.5
4	17039	2	7	35	1.21	-	89	-	-	1.1
5	17040	5	5	23	1.30	-	70	-	-	0.9
6	17041	3	6	42	3.34	-	107	-	-	14.0
7	17042	3	20	37	0.83	-	85	-	-	2.0
8	17043	3	8	27	0.64	-	43	-	-	<0.5
9	17044	<2	12	21	0.57	-	67	-	-	3.0
10	17045	2	7	18	0.54	-	23	-	-	<0.5
11	17046	2	10	52	0.91	-	95	-	-	<0.5
12	17047	2	11	55	1.24	-	61	-	-	<0.5
13	17048	6	87	105	3.24	-	171	-	-	18.0
14	17049	3	63	14	0.30	-	19	-	-	1.0
15	17050	5	16	24	0.46	-	9	-	-	2.2
16	17051	2	6	13	0.47	-	22	-	-	<0.5
17	17052	6	34	88	2.26	-	182	-	-	23.0
18	17053	2	23	15	0.52	-	52	-	-	4.5
19	17054	4	177	20	1.71	-	30	-	-	23.0
20	17055	5	114	18	0.66	-	32	-	-	7.7
21	17056	13	72	25	1.46	-	52	-	-	45.0
22	17057	14	36	28	2.22	-	334	-	-	39.0
23	17058	6	35	31	1.47	-	180	-	-	10.0
24	17059	9	48	19	0.52	-	45	-	-	8.2
25	17060	86	14	46	2.76	-	98	-	-	8.8

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	3 OF 30

#	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17061	31	7	35	>5.00	5.98	77	-	-	7.1
2	17062	5	4	20	1.00	-	35	-	-	0.5
3	17063	5	4	18	0.69	-	10	-	-	<0.5
4	17064	7	7	20	0.84	-	20	-	-	<0.5
5	17065	13	6	22	3.74	-	27	-	-	1.5
6	17066	4	9	16	1.11	-	23	-	-	<0.5
7	17067	24	6	20	1.36	-	34	-	-	<0.5
8	17068	5	7	20	2.07	-	12	-	-	8.8
9	17069	5	10	14	0.86	-	15	-	-	2.0
10	17070	5	18	32	1.21	-	48	-	-	1.7
11	17071	2	<3	8	0.31	-	8	-	-	<0.5
12	17072	3	<3	4	0.53	-	16	-	-	<0.5
13	17073	3	813	27	0.22	-	15	-	-	17.0
14	17074	3	35	74	0.76	-	73	-	-	<0.5
15	17075	5	20	25	0.44	-	25	-	-	22.0
16	17076	2	5	82	1.71	-	169	-	-	5.7
17	17077	3	24	24	0.59	-	26	-	-	2.0
18	17078	15	115	133	1.23	-	132	-	-	3.2
19	17079	16	707	27	0.68	-	31	-	111	-
20	17080	4	14	11	0.31	-	32	-	-	0.9
21	17081	6	19	19	0.23	-	27	-	-	6.7
22	17082	6	22	166	2.29	-	247	-	-	5.0
23	17083	29	230	245	>5.00	5.47	>5000	0.78	-	41.0
24	17084	6	138	44	0.94	-	191	-	-	13.0
25	17085	16	113	52	2.08	-	74	-	50	-

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	4 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17086	207	401	341	>5.00	9.12	>5000	1.08	50	-
2	17087	42	31	10	>5.00	5.45	238	-	-	29.0
3	17088	98	38	28	2.53	-	219	-	-	25.0
4	17089	11	26	32	1.77	-	184	-	-	23.0
5	17090	9	27	11	0.53	-	46	-	-	3.3
6	17091	8	33	9	0.26	-	25	-	-	<0.5
7	17092	7	24	9	0.70	-	29	-	-	<0.5
8	17093	8	17	25	0.36	-	12	-	-	1.2
9	17094	46	35	18	3.73	-	11	-	-	42.0
10	17095	15	8	8	0.50	-	16	-	-	3.1
11	17096	8	<3	7	0.55	-	14	-	-	13.0
12	17097	20	11	14	0.89	-	19	-	-	3.8
13	17098	10	5	31	0.39	-	8	-	-	<0.5
14	17099	7	10	20	2.28	-	24	-	-	4.3
15	17100	6	6	15	2.10	-	13	-	-	6.7
16	17101	5	<3	8	1.19	-	9	-	-	1.2
17	17102	4	28	31	0.53	-	21	-	-	14.0
18	17103	5	20	20	0.54	-	66	-	-	1.8
19	17104	9	171	522	1.68	-	149	-	-	3.8
20	17105	5	16	19	0.46	-	13	-	-	<0.5
21	17106	6	13	25	0.57	-	36	-	-	<0.5
22	17107	3	10	41	0.82	-	58	-	-	<0.5
23	17108	3	<3	17	0.38	-	17	-	-	<0.5
24	17109	36	279	201	4.07	-	4193	-	-	22.0
25	17110	21	178	84	3.57	-	2113	-	-	17.0

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	5 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17111	75	793	182	>5.00	5.65	>5000	0.85	-	26.0
2	17112	23	475	104	2.90	-	>5000	1.05	-	30.0
3	17113	13	283	57	3.81	-	>5000	1.08	-	24.0
4	17114	5	38	53	2.28	-	1267	-	-	11.0
5	17115	14	216	39	1.61	-	1117	-	50	-
6	17116	52	54	55	4.15	-	2646	-	-	17.0
7	17117	94	89	71	>5.00	8.89	1487	-	-	24.0
8	17118	50	34	57	>5.00	7.39	1573	-	-	28.0
9	17119	18	22	43	4.85	-	163	-	-	28.0
10	17120	20	26	23	1.02	-	76	-	-	11.0
11	17121	16	37	15	0.70	-	54	-	-	2.9
12	17122	10	14	11	0.69	-	15	-	-	22.0
13	17123	9	24	14	0.91	-	21	-	-	6.3
14	17124	23	12	14	1.59	-	16	-	-	4.0
15	17125	15	10	14	0.88	-	20	-	-	<0.5
16	17126	42	6	12	2.89	-	6	-	-	5.1
17	17127	8	49	79	0.78	-	19	-	-	<0.5
18	17128	9	78	82	1.18	-	67	-	-	1.9
19	17129	5	11	34	0.53	-	<3	-	-	<0.5
20	17130	5	30	23	0.66	-	17	-	-	<0.5
21	17131	5	7	32	0.69	-	14	-	-	<0.5
22	17132	5	17	19	0.49	-	31	-	-	16.0
23	17133	8	26	29	0.92	-	654	-	-	4.9
24	17134	25	96	112	4.10	-	3062	-	-	31.0
25	17135	33	229	81	3.28	-	4935	-	50	-

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	6 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17136	17	93	59	2.44	-	202	-	50	-
2	17137	9	56	34	0.91	-	121	-	-	9.7
3	17138	6	20	78	1.42	-	167	-	-	11.0
4	17139	30	1195	219	4.02	-	>5000	0.98	50	-
5	17140	29	392	119	4.69	-	3242	-	50	-
6	17141	12	428	54	1.65	-	129	-	-	26.0
7	17142	7	67	80	2.67	-	465	-	-	17.0
8	17143	19	22	56	3.84	-	201	-	-	16.0
9	17144	21	29	52	>5.00	8.13	111	-	-	19.0
10	17145	9	36	16	0.84	-	48	-	-	<0.5
11	17146	6	11	22	0.95	-	38	-	-	<0.5
12	17147	13	26	17	0.50	-	31	-	-	<0.5
13	17148	7	12	11	0.46	-	12	-	-	2.1
14	17149	6	6	17	1.08	-	48	-	-	4.3
15	17150	8	22	14	2.64	-	12	-	-	<0.5
16	17151	7	29	34	0.60	-	<3	-	-	1.3
17	17152	8	81	40	0.59	-	<3	-	-	<0.5
18	17153	6	65	37	0.82	-	12	-	-	0.8
19	17154	34	80	115	0.93	-	29	-	-	1.4
20	17155	7	22	27	0.75	-	18	-	-	7.9
21	17156	2	3	7	0.31	-	<3	-	-	2.1
22	17157	2	27	15	0.52	-	17	-	-	3.5
23	17158	9	38	37	2.06	-	125	-	51	-
24	17159	23	150	49	>5.00	7.56	1625	-	193	-
25	17160	5	14	43	0.86	-	36	-	-	6.7

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	7 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17161	11	79	54	1.75	-	951	-	50	-
2	17162	3	28	9	0.45	-	28	-	-	1.3
3	17163	6	153	22	0.48	-	30	-	-	2.0
4	17164	11	139	90	2.94	-	2808	-	84	-
5	17165	95	164	77	4.63	-	3117	-	152	-
6	17166	68	377	69	>5.00	10.70	1035	-	291	-
7	17167	19	306	28	2.05	-	243	-	101	-
8	17168	5	14	15	0.97	-	93	-	-	4.7
9	17169	8	14	28	1.62	-	157	-	-	8.9
10	17170	23	12	13	1.08	-	49	-	-	4.5
11	17171	12	9	6	0.42	-	18	-	-	<0.5
12	17172	77	26	39	2.24	-	68	-	-	5.8
13	17173	28	8	24	2.11	-	121	-	-	5.2
14	17174	15	8	10	0.74	-	<3	-	-	<0.5
15	17175	23	13	20	2.73	-	4	-	-	1.8
16	17176	4	13	253	>5.00	6.70	821	-	-	<0.5
17	17177	3	<3	29	0.81	-	55	-	-	<0.5
18	17178	4	6	54	0.60	-	71	-	-	<0.5
19	17179	5	15	29	0.75	-	41	-	-	8.0
20	17180	5	8	30	0.80	-	35	-	-	2.2
21	17181	6	18	29	0.86	-	58	-	-	5.6
22	17182	5	19	19	0.65	-	5	-	-	4.9
23	17183	5	90	22	0.72	-	10	-	-	19.0
24	17184	51	156	76	4.94	-	42	-	136	-
25	17185	24	2225	285	>5.00	9.47	656	-	51	-

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	8 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17186	25	161	43	1.60	-	289	-	-	48.0
2	17187	120	451	151	5.00	-	340	-	171	-
3	17188	90	247	73	4.08	-	190	-	88	-
4	17189	17	39	29	1.33	-	182	-	-	10.0
5	17190	14	11	41	1.12	-	91	-	-	2.0
6	17191	34	10	44	2.38	-	270	-	-	8.7
7	17192	29	13	30	2.30	-	228	-	-	3.1
8	17193	7	16	93	1.46	-	182	-	-	<0.5
9	17194	4	6	13	0.25	-	28	-	-	<0.5
10	17195	42	10	87	2.06	-	372	-	-	<0.5
11	17196	3	12	34	0.68	-	105	-	-	<0.5
12	17197	14	23	34	0.81	-	51	-	-	8.8
13	17198	198	143	71	3.43	-	26	-	361	-
14	17199	6	10	14	0.30	-	18	-	-	0.7
15	17200	30	259	22	1.87	-	9	-	53	-
16	17201	5	404	26	0.43	-	79	-	-	13.0
17	17202	6	64	15	0.45	-	45	-	-	19.0
18	17203	6	157	27	0.41	-	83	-	-	41.0
19	17204	5	189	18	0.38	-	74	-	-	<0.5
20	17205	12	474	21	1.02	-	118	-	-	38.0
21	17206	46	136	32	2.72	-	118	-	-	<0.5
22	17207	62	28	54	3.89	-	203	-	50	-
23	17208	41	25	32	3.69	-	168	-	-	1.1
24	17209	39	42	21	2.38	-	60	-	-	22.0
25	17210	10	20	76	1.37	-	120	-	-	<0.5

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	9 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17211	5	5	48	1.03	-	89	-	-	<0.5
2	17212	4	3	53	1.28	-	202	-	-	<0.5
3	17213	4	7	39	0.72	-	91	-	-	<0.5
4	17214	9	48	27	0.51	-	42	-	-	8.3
5	17215	7	12	36	0.87	-	69	-	-	<0.5
6	17216	7	8	47	0.66	-	63	-	-	0.5
7	17217	14	219	68	3.38	-	289	-	50	-
8	17218	5	73	27	0.53	-	62	-	-	1.1
9	17219	6	8	17	0.43	-	72	-	-	3.7
10	17220	13	203	38	0.74	-	1020	-	-	<0.5
11	17221	10	506	59	0.77	-	159	-	-	5.1
12	17222	8	67	16	0.45	-	61	-	-	10.0
13	17223	36	185	29	1.31	-	53	-	-	18.0
14	17224	156	38	55	2.78	-	213	-	-	4.4
15	17225	64	39	25	4.01	-	111	-	-	24.0
16	17226	52	8	44	3.27	-	101	-	-	13.0
17	17227	6	11	11	0.37	-	16	-	-	<0.5
18	17228	8	18	30	1.08	-	38	-	-	<0.5
19	17229	5	5	8	0.41	-	18	-	-	<0.5
20	17230	8	19	38	0.75	-	117	-	-	<0.5
21	17231	6	98	40	0.60	-	33	-	-	<0.5
22	17232	8	24	15	0.45	-	29	-	-	0.6
23	17233	10	75	14	0.72	-	33	-	-	15.0
24	17234	9	182	37	0.87	-	60	-	50	-
25	17235	9	112	24	0.69	-	55	-	52	-

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	10 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17236	17	710	98	0.81	-	177	-	55	-
2	17237	19	227	33	1.49	-	110	-	-	29.0
3	17238	18	330	33	1.56	-	137	-	-	28.0
4	17239	25	96	45	1.46	-	120	-	-	0.7
5	17240	17	238	45	1.50	-	135	-	-	13.0
6	17241	35	13	57	2.79	-	138	-	-	5.6
7	17242	31	15	31	2.98	-	68	-	-	6.5
8	17243	99	5	66	>5.00	5.66	183	-	-	15.0
9	17244	45	10	31	0.93	-	76	-	-	<0.5
10	17245	6	38	36	1.11	-	107	-	-	<0.5
11	17246	4	8	33	1.02	-	71	-	-	<0.5
12	17247	4	48	27	0.76	-	61	-	-	<0.5
13	17248	14	38	36	0.70	-	50	-	-	<0.5
14	17249	48	56	223	2.12	-	65	-	50	-
15	17250	21	271	71	1.52	-	150	-	-	5.2
16	17251	13	507	67	1.23	-	197	-	-	13.0
17	17252	58	765	135	1.37	-	162	-	-	5.3
18	17253	28	299	45	1.06	-	166	-	-	2.8
19	17254	7	653	27	0.61	-	80	-	-	0.9
20	17255	9	209	50	1.18	-	111	-	-	<0.5
21	17256	45	107	43	2.27	-	91	-	-	6.3
22	17257	21	11	34	1.85	-	114	-	-	<0.5
23	17258	55	7	48	3.72	-	126	-	-	5.5
24	17259	45	7	44	3.18	-	113	-	-	4.8
25	17260	46	7	41	3.03	-	64	-	-	11.0

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	11 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17261	9	7	22	0.65	-	39	-	-	<0.5
2	17262	6	9	48	0.57	-	41	-	-	1.0
3	17263	5	19	33	0.82	-	33	-	-	2.2
4	17264	5	8	25	0.55	-	29	-	-	<0.5
5	17265	6	94	44	0.94	-	37	-	-	5.4
6	17266	5	13	27	1.03	-	77	-	-	<0.5
7	17267	5	8	34	1.09	-	77	-	-	23.0
8	17268	11	84	89	1.29	-	176	-	-	2.7
9	17269	14	125	41	1.37	-	173	-	-	3.7
10	17270	24	153	57	1.01	-	92	-	-	13.0
11	17271	7	111	39	1.46	-	75	-	-	3.7
12	17272	8	21	38	1.18	-	95	-	-	2.1
13	17273	8	13	29	1.39	-	104	-	-	1.0
14	17274	8	11	12	0.47	-	23	-	-	0.5
15	17275	11	12	14	0.89	-	12	-	-	4.7
16	17276	13	9	17	0.67	-	27	-	-	0.9
17	17277	18	11	21	1.00	-	24	-	-	9.6
18	17278	20	23	45	1.32	-	47	-	-	3.8
19	17279	9	22	45	1.01	-	60	-	-	1.3
20	17280	9	23	21	0.60	-	37	-	-	1.4
21	17281	6	23	42	1.10	-	41	-	-	<0.5
22	17282	36	48	70	1.30	-	97	-	-	2.6
23	17283	52	370	123	>5.00	7.62	272	-	267	-
24	17284	13	84	64	1.16	-	78	-	-	15.0
25	17285	6	17	51	1.10	-	82	-	-	2.2

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	12 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17286	7	25	28	0.63	-	45	-	-	3.0
2	17287	11	100	36	0.69	-	62	-	-	1.2
3	17288	4	72	23	0.61	-	30	-	-	1.7
4	17289	8	231	20	0.60	-	31	-	-	1.6
5	17290	14	20	16	0.85	-	32	-	-	4.3
6	17291	13	20	17	1.03	-	18	-	-	4.2
7	17292	46	21	32	2.59	-	55	-	-	3.3
8	17293	28	6	22	>5.00	5.94	48	-	-	6.5
9	17294	47	9	66	3.56	-	217	-	-	11.0
10	17295	165	9	73	4.54	-	205	-	-	5.7
11	17296	5	32	41	0.87	-	36	-	-	2.3
12	17297	8	12	41	1.01	-	54	-	-	1.8
13	17298	6	18	30	0.68	-	36	-	-	0.8
14	17299	4	14	20	0.62	-	52	-	-	0.6
15	17300	4	14	16	0.53	-	45	-	-	0.7
16	17301	4	23	18	0.57	-	34	-	-	1.1
17	17302	6	14	41	0.81	-	35	-	-	2.4
18	17303	3	23	14	0.42	-	32	-	-	3.8
19	17304	5	18	24	0.40	-	49	-	-	4.8
20	17305	4	12	16	0.36	-	39	-	-	0.6
21	17306	3	32	13	0.30	-	26	-	-	<0.5
22	17307	5	188	27	0.80	-	43	-	-	<0.5
23	17308	6	40	18	0.55	-	24	-	-	0.5
24	17309	19	15	79	4.12	-	289	-	-	2.3
25	17310	20	23	31	1.13	-	37	-	-	1.9

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	13 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17311	24	6	13	1.38	-	38	-	-	2.9
2	17312	75	17	51	>5.00	5.48	132	-	-	4.7
3	17313	11	18	33	0.54	-	24	-	-	0.6
4	17314	5	7	12	0.92	-	22	-	-	6.3
5	17315	6	18	32	0.68	-	41	-	-	1.2
6	17316	11	70	33	0.83	-	63	-	-	4.7
7	17317	5	10	22	0.57	-	49	-	-	0.6
8	17318	5	<3	25	0.47	-	34	-	-	<0.5
9	17319	4	4	14	0.40	-	40	-	-	<0.5
10	17320	4	3	9	0.32	-	29	-	-	<0.5
11	17321	4	<3	10	0.30	-	26	-	-	<0.5
12	17322	4	3	13	0.40	-	25	-	-	<0.5
13	17323	6	18	33	0.54	-	41	-	-	0.5
14	17324	19	38	36	1.15	-	64	-	-	6.5
15	17325	9	5	12	0.69	-	20	-	-	1.1
16	17326	124	38	73	3.32	-	216	-	-	2.6
17	17327	237	27	71	4.90	-	192	-	-	4.9
18	17328	228	22	74	>5.00	7.79	188	-	-	5.7
19	17329	236	27	78	>5.00	8.93	194	-	-	7.8
20	17330	8	6	23	0.65	-	29	-	-	0.8
21	17331	6	15	19	0.56	-	28	-	-	9.0
22	17332	4	5	20	0.59	-	24	-	-	0.9
23	17333	4	5	23	0.51	-	32	-	-	<0.5
24	17334	5	11	31	0.63	-	127	-	-	<0.5
25	17335	3	5	12	0.38	-	39	-	-	<0.5

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	14 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17336	4	11	10	0.21	-	39	-	-	<0.5
2	17337	8	38	62	0.75	-	113	-	-	5.3
3	17338	2	7	21	0.50	-	33	-	-	0.5
4	17339	21	14	31	0.79	-	45	-	-	1.3
5	17340	74	19	63	2.31	-	132	-	-	5.5
6	17341	136	23	59	>5.00	6.91	131	-	-	5.5
7	17342	133	20	66	3.75	-	157	-	-	6.8
8	17343	190	27	85	>5.00	6.33	225	-	-	14.0
9	17344	175	38	73	4.54	-	213	-	-	5.6
10	17345	51	7	35	1.58	-	85	-	-	1.7
11	17346	145	9	49	3.72	-	132	-	-	6.6
12	17347	5	10	23	0.80	-	41	-	-	4.3
13	17348	5	11	19	0.52	-	30	-	-	1.6
14	17349	3	4	25	0.55	-	32	-	-	2.1
15	17350	4	122	20	0.52	-	34	-	-	2.0
16	17351	4	80	18	0.47	-	36	-	-	2.4
17	17352	6	119	33	0.52	-	117	-	-	1.7
18	17353	18	35	25	0.58	-	51	-	-	2.0
19	17354	4	24	27	0.49	-	87	-	-	1.9
20	17355	18	22	38	0.95	-	96	-	-	2.5
21	17356	110	16	75	1.90	-	122	-	-	5.6
22	17357	142	16	58	2.44	-	164	-	-	10.0
23	17358	130	16	67	4.63	-	183	-	-	9.8
24	17359	184	24	85	>5.00	7.04	184	-	-	11.0
25	17360	176	15	95	4.17	-	192	-	-	9.

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	15 OF 30

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	Mn	As	As
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA104	GA140	HA140
1	17361	10	21	14	0.72	-	19	-	-	3.4
2	17362	146	17	57	3.47	-	161	-	-	6.3
3	17363	144	26	59	3.08	-	171	-	-	5.7
4	17364	13	7	43	2.01	-	105	-	-	3.3
5	17365	6	<3	22	1.31	-	44	-	-	1.2
6	17366	7	6	30	1.86	-	76	-	-	4.8
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	2	3	2	0.01	0.01	3	0.01	50	0.5
25	UNITS	ppm	ppm	ppm	%	%	ppm	%	ppm	ppm

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	16 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17011	<0.008	-	-						
2	17012	<0.008	-	-						
3	17013	<0.008	-	-						
4	17014	<0.008	-	-						
5	17015	<0.008	-	-						
6	17016	<0.008	-	-						
7	17017	<0.008	-	-						
8	17018	<0.008	-	-						
9	17019	<0.008	-	-						
10	17020	<0.008	-	-						
11	17021	<0.008	-	-						
12	17022	<0.008	<0.008	-						
13	17023	<0.008	-	<0.008						
14	17024	<0.008	-	-						
15	17025	<0.008	-	-						
16	17026	<0.008	-	-						
17	17027	<0.008	-	-						
18	17028	<0.008	-	-						
19	17029	<0.008	-	-						
20	17030	<0.008	-	-						
21	17031	<0.008	-	-						
22	17032	<0.008	<0.008	-						
23	17033	0.012	-	-						
24	17034	0.027	-	-						
25	17035	<0.008	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	17 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17036	<0.008	-	-						
2	17037	<0.008	-	-						
3	17038	<0.008	-	-						
4	17039	<0.008	-	-						
5	17040	<0.008	-	-						
6	17041	<0.008	-	-						
7	17042	<0.008	-	-						
8	17043	<0.008	-	-						
9	17044	<0.008	-	-						
10	17045	<0.008	-	-						
11	17046	<0.008	-	-						
12	17047	<0.008	<0.008	<0.008						
13	17048	<0.008	-	-						
14	17049	<0.008	-	-						
15	17050	<0.008	-	-						
16	17051	<0.008	-	-						
17	17052	<0.008	-	-						
18	17053	<0.008	-	-						
19	17054	<0.008	-	-						
20	17055	<0.008	-	-						
21	17056	<0.008	-	-						
22	17057	<0.008	<0.008	-						
23	17058	<0.008	-	-						
24	17059	<0.008	-	-						
25	17060	<0.008	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	18 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17061	<0.008	-	-						
2	17062	<0.008	-	-						
3	17063	<0.008	-	-						
4	17064	<0.008	-	-						
5	17065	<0.008	-	-						
6	17066	<0.008	-	-						
7	17067	<0.008	-	-						
8	17068	<0.008	-	-						
9	17069	0.031	0.057	0.028						
10	17070	<0.008	-	-						
11	17071	<0.008	-	-						
12	17072	<0.008	<0.008	-						
13	17073	<0.008	-	-						
14	17074	0.026	-	-						
15	17075	<0.008	-	-						
16	17076	<0.008	-	-						
17	17077	0.011	-	-						
18	17078	0.034	-	-						
19	17079	0.011	-	-						
20	17080	<0.008	-	-						
21	17081	<0.008	-	-						
22	17082	<0.008	<0.008	-						
23	17083	<0.008	-	-						
24	17084	<0.008	-	-						
25	17085	<0.008	-	<0.008						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	19 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17086	0.015	-	-						
2	17087	0.011	-	-						
3	17088	0.020	-	-						
4	17089	<0.008	-	-						
5	17090	0.011	-	-						
6	17091	0.012	-	-						
7	17092	<0.008	-	-						
8	17093	<0.008	-	-						
9	17094	0.055	0.077	0.102						
10	17095	0.081	-	-						
11	17096	<0.008	-	-						
12	17097	0.045	0.031	-						
13	17098	<0.008	-	-						
14	17099	<0.008	-	-						
15	17100	<0.008	-	-						
16	17101	<0.008	-	-						
17	17102	<0.008	-	-						
18	17103	<0.008	-	-						
19	17104	<0.008	-	-						
20	17105	<0.008	-	-						
21	17106	<0.008	-	-						
22	17107	<0.008	<0.008	-						
23	17108	<0.008	-	-						
24	17109	<0.008	-	-						
25	17110	<0.008	-	-						

Results in ppm unless otherwise specified
- = *element not determined*

IS = insufficient sample
SNR = *sample not received*

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	20 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17111	0.015	-	-						
2	17112	<0.008	-	-						
3	17113	0.042	0.272	0.783						
4	17114	<0.008	-	-						
5	17115	0.008	-	-						
6	17116	0.009	<0.008	<0.008						
7	17117	<0.008	-	-						
8	17118	<0.008	-	-						
9	17119	<0.008	-	-						
10	17120	0.008	-	-						
11	17121	<0.008	-	-						
12	17122	<0.008	<0.008	-						
13	17123	<0.008	-	-						
14	17124	0.013	-	-						
15	17125	<0.008	-	-						
16	17126	0.011	-	-						
17	17127	<0.008	0.070	0.019						
18	17128	0.123	0.313	0.082						
19	17129	0.011	-	-						
20	17130	0.012	0.019	-						
21	17131	<0.008	-	-						
22	17132	0.016	0.046	0.018						
23	17133	<0.008	-	-						
24	17134	<0.008	-	-						
25	17135	<0.008	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	21 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17136	<0.008	-	-						
2	17137	0.052	-	-						
3	17138	<0.008	0.016	-						
4	17139	0.060	-	-						
5	17140	<0.008	-	-						
6	17141	<0.008	-	-						
7	17142	<0.008	-	-						
8	17143	<0.008	-	-						
9	17144	<0.008	-	-						
10	17145	<0.008	-	-						
11	17146	<0.008	-	<0.008						
12	17147	<0.008	0.009	-						
13	17148	<0.008	-	-						
14	17149	<0.008	-	-						
15	17150	<0.008	-	-						
16	17151	0.090	-	-						
17	17152	0.040	-	-						
18	17153	0.099	-	-						
19	17154	0.421	-	-						
20	17155	0.050	-	-						
21	17156	<0.008	-	-						
22	17157	0.012	<0.008	-						
23	17158	0.016	-	-						
24	17159	0.022	-	-						
25	17160	<0.008	-	<0.008						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	22 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17161	<0.008	-	-						
2	17162	0.010	-	-						
3	17163	0.009	-	-						
4	17164	0.011	-	-						
5	17165	0.010	-	-						
6	17166	0.008	-	-						
7	17167	<0.008	-	-						
8	17168	<0.008	-	-						
9	17169	<0.008	-	-						
10	17170	0.013	-	-						
11	17171	0.026	-	-						
12	17172	0.013	0.020	0.025						
13	17173	0.025	-	-						
14	17174	0.057	-	-						
15	17175	0.049	-	-						
16	17176	<0.008	-	-						
17	17177	<0.008	-	-						
18	17178	<0.008	-	-						
19	17179	<0.008	-	-						
20	17180	0.010	-	<0.008						
21	17181	<0.008	-	-						
22	17182	<0.008	0.015	-						
23	17183	<0.008	-	-						
24	17184	0.019	-	-						
25	17185	<0.008	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	23 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17186	0.008	-	-						
2	17187	0.014	-	-						
3	17188	<0.008	0.014	-						
4	17189	0.015	<0.008	0.010						
5	17190	<0.008	-	-						
6	17191	0.011	-	-						
7	17192	0.008	-	-						
8	17193	<0.008	-	-						
9	17194	<0.008	-	-						
10	17195	0.011	-	-						
11	17196	<0.008	-	-						
12	17197	<0.008	<0.008	-						
13	17198	0.227	0.195	-						
14	17199	<0.008	-	-						
15	17200	<0.008	-	-						
16	17201	<0.008	-	-						
17	17202	<0.008	-	<0.008						
18	17203	0.026	-	-						
19	17204	<0.008	-	-						
20	17205	0.011	-	-						
21	17206	0.025	-	-						
22	17207	0.045	0.051	-						
23	17208	0.013	-	-						
24	17209	0.015	-	-						
25	17210	<0.008	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	24 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17211	<0.008	-	-						
2	17212	<0.008	-	-						
3	17213	0.014	-	-						
4	17214	<0.008	-	-						
5	17215	<0.008	-	-						
6	17216	<0.008	-	-						
7	17217	<0.008	-	-						
8	17218	<0.008	-	-						
9	17219	0.008	0.008	-						
10	17220	0.199	0.113	0.272						
11	17221	0.016	-	-						
12	17222	0.048	0.051	0.133						
13	17223	1.200	1.190	-						
14	17224	0.029	0.008	-						
15	17225	<0.008	-	-						
16	17226	<0.008	-	-						
17	17227	<0.008	-	-						
18	17228	<0.008	-	-						
19	17229	0.011	-	-						
20	17230	0.017	-	-						
21	17231	0.013	-	-						
22	17232	0.037	0.033	-						
23	17233	0.016	-	-						
24	17234	0.038	-	0.054						
25	17235	0.056	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 581 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	25 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17236	0.068	-	-						
2	17237	0.039	-	-						
3	17238	0.033	-	-						
4	17239	0.016	-	-						
5	17240	0.013	-	-						
6	17241	<0.008	-	-						
7	17242	0.026	-	-						
8	17243	0.032	0.049	-						
9	17244	<0.008	<0.008	-						
10	17245	0.009	-	-						
11	17246	0.011	<0.008	-						
12	17247	0.013	0.034	0.023						
13	17248	0.033	0.021	-						
14	17249	<0.008	<0.008	-						
15	17250	0.023	-	-						
16	17251	0.034	-	0.036						
17	17252	0.022	-	-						
18	17253	<0.008	-	-						
19	17254	<0.008	-	-						
20	17255	<0.008	-	-						
21	17256	0.010	-	-						
22	17257	<0.008	<0.008	-						
23	17258	<0.008	-	-						
24	17259	<0.008	-	-						
25	17260	0.009	-	-						

Results in ppm unless otherwise specified IS = insufficient sample

AUTHORISED

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	26 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17261	<0.008	-	-						
2	17262	<0.008	-	-						
3	17263	0.014	-	-						
4	17264	0.017	-	-						
5	17265	0.033	-	-						
6	17266	<0.008	0.013	-						
7	17267	0.088	-	-						
8	17268	0.009	-	-						
9	17269	0.010	-	-						
10	17270	0.014	-	-						
11	17271	0.029	-	-						
12	17272	<0.008	<0.008	-						
13	17273	<0.008	-	-						
14	17274	<0.008	-	-						
15	17275	<0.008	-	-						
16	17276	<0.008	-	-						
17	17277	0.009	-	-						
18	17278	<0.008	-	-						
19	17279	<0.008	-	-						
20	17280	<0.008	-	<0.008						
21	17281	<0.008	-	-						
22	17282	<0.008	<0.008	-						
23	17283	0.014	-	-						
24	17284	0.075	0.024	0.018						
25	17285	<0.008	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	27 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17286	<0.008	-	-						
2	17287	<0.008	-	-						
3	17288	0.015	-	-						
4	17289	<0.008	-	-						
5	17290	0.032	-	-						
6	17291	0.013	-	-						
7	17292	0.010	-	-						
8	17293	0.009	-	-						
9	17294	0.011	-	-						
10	17295	0.009	-	-						
11	17296	<0.008	-	-						
12	17297	0.011	0.010	-						
13	17298	0.010	-	-						
14	17299	0.014	-	-						
15	17300	0.010	-	-						
16	17301	0.020	-	-						
17	17302	0.012	-	-						
18	17303	0.039	-	-						
19	17304	0.009	-	-						
20	17305	<0.008	-	-						
21	17306	0.009	-	-						
22	17307	0.016	0.013	-						
23	17308	<0.006	-	-						
24	17309	0.013	-	0.010						
25	17310	0.012	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	28 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17311	0.047	-	-						
2	17312	0.041	-	-						
3	17313	<0.008	-	-						
4	17314	0.009	-	-						
5	17315	0.011	-	-						
6	17316	0.011	0.008	-						
7	17317	0.016	0.010	0.014						
8	17318	<0.008	-	-						
9	17319	<0.008	-	-						
10	17320	<0.008	-	-						
11	17321	<0.008	<0.008	-						
12	17322	0.088	<0.008	<0.008						
13	17323	0.011	-	-						
14	17324	0.010	-	-						
15	17325	0.014	-	-						
16	17326	0.012	<0.008	0.011						
17	17327	<0.008	-	-						
18	17328	0.011	-	-						
19	17329	0.028	-	-						
20	17330	<0.008	-	-						
21	17331	<0.008	-	-						
22	17332	0.011	<0.008	-						
23	17333	0.009	<0.008	-						
24	17334	0.009	-	-						
25	17335	0.010	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	29 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17336	<0.008	<0.008	-						
2	17337	<0.008	<0.008	-						
3	17338	<0.008	-	-						
4	17339	<0.008	-	-						
5	17340	0.010	-	-						
6	17341	0.023	-	-						
7	17342	0.020	-	-						
8	17343	0.027	-	0.013						
9	17344	0.088	-	-						
10	17345	0.011	-	-						
11	17346	0.013	-	-						
12	17347	0.010	0.008	<0.008						
13	17348	0.026	0.012	-						
14	17349	0.016	-	-						
15	17350	0.011	-	-						
16	17351	0.010	-	-						
17	17352	0.012	-	-						
18	17353	0.009	-	-						
19	17354	0.010	-	-						
20	17355	<0.008	-	-						
21	17356	<0.008	0.024	-						
22	17357	<0.008	<0.008	-						
23	17358	<0.008	-	-						
24	17359	0.009	-	-						
25	17360	<0.008	-	-						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11546	08/02/96	2017101	30 OF 30

	SAMPLE No.	Au	Au(R)	Au(S)						
METHOD		GG309	GG309	GG309						
1	17361	<0.008	-	-						
2	17362	<0.008	-	-						
3	17363	<0.008	-	-						
4	17364	<0.008	-	-						
5	17365	<0.008	-	-						
6	17366	<0.008	-	-						
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						

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

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

ANALYTICAL REPORT No. 111715.60.11556

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

INVOICE TO:	ORDER No.	PROJECT
Plutonic Operations Limited Level 37 100 Miller Street NORTH SYDNEY NSW 2060	2017102	

DATE RECEIVED	RESULTS REQUIRED
18/01/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	12/02/96	1	7

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
17367/373	RG Prep : GP033 OR AS APPROPRIATE	Cu.Pb.Zn.Ag.Fe.Mn/6A140.As/HA140
17367/373	RG Prep :	Au.Au(R).Au(S)/GB309

RESULTS TO

Rob Reid
Plutonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

REMARKS

RESULTS TO

RESULTS TO

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11556	12/02/96	2017102	1 OF 2

	SAMPLE No.	Cu	Pb	Zn	Ag	Ag	Fe	Mn	As	Au
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA140	HA140	GG309
1	17367	26	349	1110	4	-	3.71	573	3118	0.032
2	17368	109	2218	252	22	-	4.43	214	4076	0.049
3	17369	34	389	1449	2	-	1.99	116	217	<0.008
4	17370	14	356	306	5	-	2.63	285	453	<0.008
5	17371	15	137	41	2	-	3.01	243	1101	<0.008
6	17372	35	1128	193	>50	59	3.87	406	2412	<0.008
7	17373	23	635	130	16	-	4.66	337	1362	0.117
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	2	3	2	1	10	0.01	3	50	0.008
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

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11556	12/02/96	2017102	2 OF 2

	SAMPLE No.	Au(R)	Au(S)							
METHOD		GG309	GG309							
1	17372	-	<0.008							
2	17373	0.114	-							
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							
25	UNITS	ppm	ppm							

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

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

ANALYTICAL REPORT No. 11715.60.11641

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

INVOICE TO:	ORDER No.	PROJECT
Plutonic Operations Limited Level 37 100 Miller Street NORTH SYDNEY NSW 2060	2017066	

DATE RECEIVED	RESULTS REQUIRED
15/02/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
2	23/02/96	1	18

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
17371/88	DC Prep : GP033	Cu,Pb,In,Mn,Fe,Ag/GA140
17371/88	DC Prep : GP033	Au,Au(R),Au(S)/GG313

RESULTS TO:
Rob Reid
Plutonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

REMARKS

RESULTS TO:

RESULTS TO:

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11641	23/02/96	2017066	1 OF 2

	SAMPLE No.	Cu	Cu	Pb	Zn	Zn	Mn	Mn	Fe	Fe
METHOD		GA140	GA104	GA140	GA140	GA104	GA140	GA104	GA140	GA104
1	17371	238	-	294	743	-	1135	-	1.85	-
2	17372	79	-	151	578	-	963	-	1.21	-
3	17373	56	-	183	563	-	526	-	0.91	-
4	17374	590	-	709	>5000	1.05	757	-	0.42	-
5	17375	380	-	614	>5000	0.80	435	-	0.46	-
6	17376	292	-	399	>5000	0.59	556	-	0.68	-
7	17377	41	-	179	325	-	322	-	0.88	-
8	17378	>5000	2.58	72	258	-	556	-	1.10	34.60
9	17379	>5000	1.61	23	535	-	1015	-	>5.00	23.50
10	17380	317	-	524	1784	-	2061	-	1.76	-
11	17381	1861	-	262	872	-	957	-	1.67	-
12	17382	878	-	329	1840	-	473	-	0.76	-
13	17383	51	-	110	214	-	1413	-	0.76	9.0 -
14	17384	431	-	461	2296	-	806	-	2.67	-
15	17385	453	-	861	2471	-	560	-	1.01	-
16	17386	125	-	330	1750	-	1125	-	1.38	-
17	17387	60	-	214	3575	-	>5000	5.17	2.15	-
18	17388	58	-	138	491	-	2570	-	2.56	-
19										
20										
21										
22										
23										
24	DETECTION	2	0.01	3	2	0.01	3	0.01	0.01	0.01
25	UNITS	ppm	%	ppm	ppm	%	ppm	%	%	%

Results in ppm unless otherwise specified IS – insufficient sample

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11641	23/02/96	2017066	2 OF 2

	SAMPLE No.	Ag	Au	Au(R)	Au(S)					
METHOD		GA140	GG313	GG313	GG313					
1	17371	4	0.019	-	-					
2	17372	2	0.028	-	-					
3	17373	2	0.034	-	-					
4	17374	8	0.640	-	-					
5	17375	6	0.659	-	0.732					
6	17376	4	0.812	-	-					
7	17377	2	0.061	-	-					
8	17378	18	0.636	-	-					
9	17379	12	0.429	-	-					
10	17380	3	0.050	-	-					
11	17381	3	0.067	-	-					
12	17382	7	0.067	0.061	-					
13	17383	1	<0.008	-	-					
14	17384	3	0.034	-	-					
15	17385	4	0.025	-	-					
16	17386	1	0.024	-	-					
17	17387	2	0.082	-	-					
18	17388	1	<0.008	-	-					
19										
20										
21										
22										
23										
24	DETECTION	1	0.008	0.008	0.008					
25	UNITS	ppm	ppm	ppm	ppm					

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

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

ANALYTICAL REPORT No.: 11713,40,11714

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

INVOICE TO:	ORDER No.	PROJECT
Plutonic Operations Limited Level 37 100 Miller Street NORTH SYDNEY NSW 2060	2017063	
	DATE RECEIVED	RESULTS REQUIRED
	11/03/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
6	22/03/96	1	99

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
17401/89	BC Prep : GP031	Cu,Pb,Zn,Fe,Mn,As/GA140 Fe/GA104, As/HA140
17401/99	BC Prep : GP031	Au,Au(R),Au(S)/GG309

RESULTS TO: Rob Reid
Plutonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

REMARKS

RESULTS TO:

RESULTS TO:

AUTHORISED OFFICER

426176

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
/	111715.60.11714	22/03/96	2017063	1 OF 6

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	As	As	Au
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA140	HA140	GG309
1	17401	7	158	26	1.07	-	114	<50	5.3	0.044
2	17402	7	14	73	1.49	-	147	<50	3.7	0.040
3	17403	10	17	35	1.41	-	119	<50	2.6	<0.008
4	17404	10	52	38	1.70	-	127	<50	2.7	0.014
5	17405	5	<3	25	1.19	-	50	<50	2.7	<0.008
6	17406	56	34	32	1.35	-	83	<50	2.2	<0.008
7	17407	75	27	82	1.57	-	106	<50	2.3	<0.008
8	17408	132	13	57	4.86	-	160	<50	11.0	<0.008
9	17409	159	12	50	4.85	-	146	<50	9.7	0.060
10	17410	8	14	18	1.34	-	38	<50	10.0	<0.008
11	17411	50	10	21	1.18	-	69	<50	2.6	<0.008
12	17412	38	12	30	1.41	-	79	<50	2.2	0.010
13	17413	29	4	28	1.75	-	126	<50	2.0	<0.008
14	17414	5	8	18	1.40	-	79	<50	1.6	<0.008
15	17415	15	3	64	4.28	-	149	<50	5.8	<0.008
16	17416	10	5	17	0.96	-	51	<50	8.3	<0.008
17	17417	3	4	23	0.96	-	40	<50	1.7	<0.008
18	17418	5	7	13	0.96	-	32	<50	4.1	<0.008
19	17419	3	8	13	1.31	-	25	<50	3.8	<0.008
20	17420	2	8	14	1.01	-	46	<50	10.0	<0.008
21	17421	137	19	47	4.95	-	145	<50	11.0	<0.008
22	17422	6	<3	32	2.49	-	188	<50	2.9	<0.008
23	17423	254	18	44	4.55	-	142	<50	8.8	<0.008
24	17424	48	15	54	2.38	-	78	<50	4.5	0.014
25	17425	5	133	65	3.55	-	139	<50	2.6	<0.008

esults in ppm unless otherwise specified
= element not determined
IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
/	111715.60.11714	22/03/96	2017063	2 OF 6

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	As	As	Au
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA140	HA140	GG309
1	17426	5	9	16	0.80	-	28	<50	1.8	<0.008
2	17427	17	9	40	3.36	-	114	<50	5.2	<0.008
3	17428	6	8	24	1.43	-	32	<50	2.6	<0.008
4	17429	8	18	33	3.85	-	53	<50	3.5	<0.008
5	17430	3	6	14	0.95	-	34	<50	0.5	<0.008
6	17431	6	6	51	3.43	-	288	<50	7.1	<0.008
7	17432	7	9	31	2.33	-	128	<50	7.8	<0.008
8	17433	13	3	33	1.77	-	146	<50	1.0	<0.008
9	17434	20	18	59	3.60	-	306	<50	9.1	<0.008
10	17435	15	15	56	3.16	-	268	<50	7.8	<0.008
11	17436	13	16	59	4.18	-	314	<50	8.4	<0.008
12	17437	270	12	61	>5.00	5.58	150	<50	12.0	0.016
13	17438	55	9	37	3.64	-	105	<50	6.2	<0.008
14	17439	9	9	12	0.90	-	35	<50	2.2	<0.008
15	17440	27	6	20	2.42	-	27	<50	14.0	<0.008
16	17441	17	7	17	2.04	-	54	<50	5.5	0.017
17	17442	21	29	46	4.26	-	137	<50	0.6	<0.008
18	17443	6	4	18	1.01	-	51	<50	<0.5	<0.008
19	17444	15	22	40	2.43	-	147	<50	<0.5	<0.008
20	17445	12	26	22	1.79	-	82	<50	<0.5	<0.008
21	17446	13	14	65	3.47	-	293	<50	8.7	<0.008
22	17447	12	8	22	1.40	-	61	<50	1.8	<0.008
23	17448	3	<3	25	1.43	-	39	<50	1.9	<0.008
24	17449	31	37	96	3.21	-	347	<50	5.5	<0.008
25	17450	6	18	57	2.94	-	269	<50	4.8	<0.008

esults in ppm unless otherwise specified
= element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11714	22/03/96	2017063	3 OF 6

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	As	As	Au
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA140	HA140	GG309
1	17451	8	20	13	2.55	-	46	<50	2.2	<0.008
2	17452	11	28	74	4.64	-	301	<50	28.0	<0.008
3	17453	5	5	24	1.59	-	92	<50	3.2	<0.008
4	17454	8	29	18	0.82	-	61	<50	2.7	<0.008
5	17455	3	3	32	1.73	-	204	<50	3.1	<0.008
6	17456	17	8	31	1.50	-	124	<50	3.1	<0.008
7	17457	254	33	30	>5.00	6.51	79	<50	11.0	0.070
8	17458	78	152	34	>5.00	5.26	78	<50	14.0	0.044
9	17459	60	7	45	>5.00	6.14	111	<50	11.0	0.015
10	17460	184	18	67	4.77	-	108	<50	6.8	<0.008
11	17461	13	7	18	1.10	-	23	<50	1.5	0.010
12	17462	50	17	36	4.82	-	41	<50	16.0	<0.008
13	17463	20	52	19	2.96	-	26	<50	13.0	<0.008
14	17464	159	75	25	>5.00	13.20	30	<50	31.0	<0.008
15	17465	107	99	52	>5.00	16.60	74	<50	<0.5	<0.008
16	17466	39	62	47	>5.00	6.38	123	<50	18.0	<0.008
17	17467	16	19	48	3.14	-	207	<50	12.0	<0.008
18	17468	10	14	67	3.39	-	298	<50	2.0	<0.008
19	17469	4	13	23	1.64	-	47	<50	3.3	<0.008
20	17470	5	14	41	4.22	-	167	<50	14.0	<0.008
21	17471	10	26	47	4.98	-	152	<50	16.0	<0.008
22	17472	5	24	24	1.81	-	73	<50	15.0	<0.008
23	17473	7	24	36	2.79	-	107	<50	3.8	<0.008
24	17474	8	20	70	2.59	-	302	<50	3.1	<0.008
25	17475	17	8	84	2.25	-	157	<50	1.1	<0.008

esults in ppm unless otherwise specified
= element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

426179

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11714	22/03/96	2017063	4 OF 6

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	As	As	Au
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA140	HA140	GG309
1	17476	20	8	109	3.65	-	284	<50	4.3	<0.008
2	17477	185	27	35	>5.00	7.31	76	<50	15.0	<0.008
3	17478	56	76	36	>5.00	7.28	37	<50	35.0	<0.008
4	17479	26	130	50	>5.00	8.50	202	<50	39.0	<0.008
5	17480	96	311	50	>5.00	11.70	42	<50	30.0	0.018
6	17481	115	123	33	>5.00	15.60	28	<50	39.0	<0.008
7	17482	57	111	29	>5.00	10.10	36	<50	42.0	<0.008
8	17483	94	94	43	>5.00	14.20	133	<50	48.0	<0.008
9	17484	52	16	52	>5.00	8.29	230	<50	38.0	<0.008
10	17485	33	43	31	4.65	-	76	50	-	<0.008
11	17486	62	172	51	>5.00	8.74	65	<50	33.0	<0.008
12	17487	35	9	28	>5.00	6.57	95	70	-	<0.008
13	17488	12	31	63	3.82	-	57	<50	11.0	<0.008
14	17489	14	25	41	>5.00	6.11	75	<50	12.0	<0.008
15	17490	25	23	120	4.67	-	478	<50	2.9	0.018
16	17491	11	28	33	3.86	-	184	<50	15.0	0.020
17	17492	10	9	49	1.95	-	80	<50	<0.5	<0.008
18	17493	5	14	34	2.24	-	125	<50	<0.5	<0.008
19	17494	5	8	36	2.24	-	156	<50	<0.5	<0.008
20	17495	5	7	26	2.12	-	81	<50	0.5	<0.008
21	17496	5	4	68	2.68	-	344	<50	12.0	0.014
22	17497	5	5	41	2.94	-	147	<50	<0.5	0.011
23	17498	3	4	22	1.28	-	46	<50	<0.5	0.012
24	17499	4	8	42	2.01	-	52	<50	<0.5	0.046
25										

Results in ppm unless otherwise specified
- = element not determined

IS = Insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11714	22/03/96	2017063	5 OF 6

	SAMPLE No.	Cu	Pb	Zn	Fe	Fe	Mn	As	As	Au
METHOD		GA140	GA140	GA140	GA140	GA104	GA140	GA140	HA140	GG309
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	2	3	2	0.01	0.01	3	50	0.5	0.008
25	UNITS	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

426180

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11714	22/03/96	2017063	6 OF 6

	SAMPLE No.	Au(R)	Au(S)							
METHOD		GG309	GG309							
1	17410	-	0.010							
2	17412	<0.008	-							
3	17422	<0.008	-							
4	17437	0.021	-							
5	17438	-	0.027							
6	17447	<0.008	-							
7	17459	-	<0.008							
8	17462	<0.008	-							
9	17472	<0.008	-							
10	17480	-	<0.008							
11	17487	<0.008	-							
12	17492	-	<0.008							
13	17497	<0.008	-							
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	0.008	0.008							
25	UNITS	ppm	ppm							

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

426181

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

Phone (004) 316837 | 14 Thirkell St, DODEE TAS 7320 | Fax (004) 318890

ANALYTICAL REPORT No. 111715.60.11754

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

INVOICE TO:

Plutonic Operations Limited
Level 37
100 Miller Street
NORTH SYDNEY NSW 2060

ORDER No.	PROJECT
2017081	

DATE RECEIVED	RESULTS REQUIRED
21/03/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
6	11/04/96	1	59

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
17500/54a	BD Prep : BP031	Cu,Pb,Zn,Fe,Mn,As/GA140
17500/54a	BD Prep : BP031	Au,Au(R),Au(S)/GG309
15271/282	BD Prep : BP033	Cu,Pb,Zn,Fe,Mn,Ag,Bi,As/GA140 Fe/GA104
15271/282	RD Prep : BP032	Au,Au(R),Au(S)/GG309

REMARKS

RESULTS TO

Rob Reid
Plutonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

RESULTS TO

RESULTS TO

AUTHORISED OFFICER

426182

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 064

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11754	11/04/96	2017081	1 OF 6

	SAMPLE No.	Cu	Pb	Pb	Zn	Fe	Fe	Mn	Mn	As
METHOD		GA140	GA140	GA104	GA140	GA140	GA104	GA140	GA104	GA140
1	17500	230	3	-	66	4.96	-	192	-	-
2	17501	223	<3	-	87	-	7.39	219	-	-
3	17502	40	5	-	26	2.94	-	39	-	-
4	17503	201	5	-	113	-	8.77	203	-	-
5	17504	272	4	-	67	-	9.51	89	-	-
6	17505	203	14	-	36	-	6.38	29	-	-
7	17506	69	13	-	36	3.47	-	33	-	-
8	17507	92	11	-	69	4.59	-	59	-	-
9	17508	79	12	-	62	-	8.28	152	-	-
10	17509	9	39	-	52	2.84	-	157	-	-
11	17510	66	15	-	109	-	8.78	526	-	-
12	17511	12	24	-	48	3.69	-	145	-	-
13	17512	164	12	-	107	-	27.10	543	-	-
14	17513	8	29	-	31	3.03	-	78	-	-
15	17514	32	22	-	62	3.34	-	239	-	-
16	17515	59	280	-	109	-	11.60	104	-	-
17	17516	8	17	-	37	3.04	-	167	-	-
18	17517	<2	19	-	75	3.81	-	343	-	-
19	17518	2	27	-	43	2.77	-	189	-	-
20	17519	14	19	-	47	2.10	-	228	-	-
21	17520	6	4	-	58	3.71	-	270	-	-
22	17521	6	6	-	45	1.94	-	82	-	-
23	17522	8	6	-	27	1.54	-	93	-	-
24	17523	17	6	-	61	3.53	-	95	-	-
25	17524	15	10	-	19	1.01	-	30	-	-

Results in ppm unless otherwise specified
- = element not determined

IS = Insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11754	11/04/96	2017081	2 OF 6

	SAMPLE No.	Cu	Pb	Pb	Zn	Fe	Fe	Mn	Mn	As
METHOD		GA140	GA140	GA104	GA140	GA140	GA104	GA140	GA104	GA140
1	17525	68	3	-	59	4.29	-	106	-	-
2	17526	276	22	-	82	-	7.79	112	-	-
3	17527	291	5	-	87	-	8.67	160	-	-
4	17528	323	6	-	99	-	9.41	114	-	-
5	17529	175	6	-	39	-	10.00	24	-	-
6	17530	124	4	-	52	-	8.04	70	-	-
7	17531	84	14	-	34	-	5.74	27	-	-
8	17532	198	13	-	91	-	7.64	136	-	-
9	17533	140	15	-	72	4.40	-	70	-	-
10	17534	141	19	-	43	4.44	-	53	-	-
11	17535	25	19	-	56	3.39	-	96	-	-
12	17536	26	5	-	91	-	6.86	193	-	-
13	17537	17	21	-	25	1.01	-	60	-	-
14	17538	6	4	-	93	4.70	-	441	-	-
15	17539	10	25	-	43	3.68	-	119	-	-
16	17540	36	57	-	73	3.33	-	182	-	-
17	17541	24	27	-	47	2.51	-	124	-	-
18	17542	10	13	-	44	1.88	-	170	-	-
19	17543	10	16	-	28	1.37	-	74	-	-
20	17544	16	19	-	89	4.56	-	444	-	-
21	17545	42	10	-	70	3.40	-	517	-	-
22	17546	23	12	-	65	1.74	-	116	-	-
23	15271	11	42	-	57	0.98	-	53	-	-
24	15272	7	5	-	9	0.38	-	14	-	-
25	15273	30	18	-	38	0.96	-	39	-	-

Results in ppm unless otherwise specified
- = element not determined

IS = Insufficient sample
SNR = sample not received

AUTHORISED OFFICER

4.3181

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11754	11/04/96	2017081	3 OF 6

	SAMPLE No.	Cu	Pb	Pb	Zn	Fe	Fe	Mn	Mn	As
METHOD		GA140	GA140	GA104	GA140	GA140	GA104	GA140	GA104	GA140
1	15274	25	2344	-	2650	4.65	-	3664	-	-
2	15275	8	-	0.61	171	1.49	-	611	-	-
3	15276	19	59	-	1305	-	12.70	-	0.90	-
4	15277	12	92	-	176	1.25	-	223	-	-
5	15278	12	47	-	62	0.82	-	51	-	-
6	15279	31	808	-	2568	-	5.78	2546	-	-
7	15280	119	453	-	450	3.38	-	70	-	-
8	15281	79	506	-	258	1.95	-	387	-	-
9	15282	8	28	-	536	-	13.20	3851	-	-
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	2	3	0.01	2	0.01	0.01	3	0.01	50
25	UNITS	ppm	ppm	%	ppm	%	%	ppm	%	ppm

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11754	11/04/96	2017081	4 OF 6

	SAMPLE No.	As	Au	Au(R)	Au(S)	Ag	Bi			
METHOD		HA140	GG309	GG309	GG309	GA140	GA140			
1	17500	8.3	<0.008	-	-	-	-			
2	17501	13.0	0.018	-	-	-	-			
3	17502	7.6	<0.008	-	-	-	-			
4	17503	14.0	0.011	-	-	-	-			
5	17504	9.5	0.024	-	-	-	-			
6	17505	11.0	0.016	-	-	-	-			
7	17506	6.7	0.012	-	-	-	-			
8	17507	10.0	<0.008	-	-	-	-			
9	17508	9.8	<0.008	-	-	-	-			
10	17509	6.5	<0.008	-	-	-	-			
11	17510	37.0	<0.008	-	-	-	-			
12	17511	6.0	<0.008	0.010	-	-	-			
13	17512	9.4	<0.008	-	-	-	-			
14	17513	11.0	<0.008	-	-	-	-			
15	17514	7.1	<0.008	-	-	-	-			
16	17515	32.0	<0.008	-	-	-	-			
17	17516	10.0	<0.008	-	-	-	-			
18	17517	3.2	<0.008	-	-	-	-			
19	17518	2.6	<0.008	-	-	-	-			
20	17519	4.8	<0.008	-	0.009	-	-			
21	17520	2.0	<0.008	-	-	-	-			
22	17521	2.0	<0.008	<0.008	-	-	-			
23	17522	0.9	<0.008	-	-	-	-			
24	17523	5.5	<0.008	-	-	-	-			
25	17524	2.3	<0.008	-	0.011	-	-			

Results in ppm unless otherwise specified
- = element not determined

IS = Insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11754	11/04/96	2017081	5 OF 6

	SAMPLE No.	As	Au	Au(R)	Au(S)	Ag	Bi			
METHOD		HA140	6G309	6G309	6G309	6A140	6A140			
1	17525	9.9	<0.008	-	-	-	-			
2	17526	15.0	0.016	-	-	-	-			
3	17527	14.0	0.038	-	-	-	-			
4	17528	7.8	0.017	-	-	-	-			
5	17529	11.0	0.037	-	-	-	-			
6	17530	13.0	0.038	-	-	-	-			
7	17531	13.0	0.035	-	-	-	-			
8	17532	6.9	0.019	-	-	-	-			
9	17533	10.0	0.011	-	-	-	-			
10	17534	7.8	0.042	-	-	-	-			
11	17535	6.2	<0.008	-	-	-	-			
12	17536	4.9	0.009	<0.008	-	-	-			
13	17537	2.6	0.020	-	-	-	-			
14	17538	2.2	<0.008	-	-	-	-			
15	17539	8.9	0.008	-	-	-	-			
16	17540	7.0	0.013	-	-	-	-			
17	17541	5.5	0.015	-	-	-	-			
18	17542	3.5	<0.008	-	-	-	-			
19	17543	1.7	0.014	-	-	-	-			
20	17544	8.0	0.011	-	-	-	-			
21	17545	14.0	<0.008	-	-	-	-			
22	17546	5.3	0.008	<0.008	-	-	-			
23	15271	4.3	<0.008	-	-	<1	<10			
24	15272	3.1	<0.008	-	-	<1	<10			
25	15273	9.4	<0.008	-	-	<1	<10			

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11754	11/04/96	2017081	6 OF 6

	SAMPLE No.	As	Au	Au(R)	Au(S)	Ag	Bi			
METHOD		GA140	GG309	GG309	GG309	GA140	GA140			
1	15274	50.0	1.470	1.320	-	3	<10			
2	15275	14.0	<0.008	-	-	8	<10			
3	15276	5.0	<0.008	-	-	<1	<10			
4	15277	2.6	<0.008	-	-	<1	<10			
5	15278	2.7	<0.008	-	-	<1	<10			
6	15279	3.6	<0.008	-	-	<1	<10			
7	15280	12.0	2.620	-	-	5	<10			
8	15281	8.0	0.163	0.190	-	1	<10			
9	15282	5.1	<0.008	<0.008	<0.008	<1	<10			
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	0.5	0.008	0.008	0.008	1	10			
25	UNITS	ppm	ppm	ppm	ppm	ppm	ppm			

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 501 664

Phone (004) 316837 | 14 Thirkell St. DOBBE TAS 7320 | Fax (004) 318690

ANALYTICAL REPORT No. 111715.60.11807

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

INVOICE TO:	ORDER No.	PROJECT
Plutonic Operations Limited Level 37 100 Miller Street NORTH SYDNEY NSW 2060	2017085	

DATE RECEIVED	RESULTS REQUIRED
11/04/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
6	23/04/96	1	60

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
17547/17614	9D Prep : GP031	Au,Au(R),Au(S)/9B509
17547/17614	9D Prep : GP031	Cu,Pb,Zn,Fe,Mn,As/9A140 As/HA140

REMARKS

RESULTS TO: Rob Reid
Plutonic Operations Limited
P O Box 282
ZEEHAN TAS 7469

RESULTS TO:

RESULTS TO:

AUTHORISED OFFICER

4.3.1.60

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11807	23/04/96	2017085	1 OF 6

	SAMPLE No.	Au	Au(R)	Au(S)	Cu	Pb	Zn	Fe	Fe	Mn
METHOD		GG309	GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140
1	17547	<0.008	-	-	4	8	43	1.13	-	55
2	17548	<0.008	-	-	3	27	33	0.60	-	20
3	17549	1.060	-	-	3	36	34	0.52	-	13
4	17550	0.082	-	-	4	44	47	0.80	-	12
5	17551	1.260	-	-	7	51	84	0.72	-	14
6	17552	0.014	-	-	37	10	28	3.00	-	135
7	17553	0.028	-	-	75	12	47	4.70	-	85
8	17554	0.029	-	-	53	10	29	3.33	-	94
9	17555	0.014	-	-	31	7	21	1.87	-	92
10	17556	0.040	-	-	34	5	25	4.12	-	79
11	17557	<0.008	-	-	62	5	38	>5.00	5.94	158
12	17558	<0.008	<0.008	-	176	6	41	>5.00	5.42	84
13	17559	0.028	-	-	28	10	40	3.10	-	60
14	17560	0.041	-	-	16	7	20	3.11	-	27
15	17561	0.027	-	-	98	14	50	4.28	-	95
16	17562	0.041	-	-	392	11	61	4.09	-	88
17	17563	<0.008	-	-	20	18	12	1.25	-	17
18	17564	<0.008	-	-	166	7	50	>5.00	5.21	115
19	17565	0.010	-	<0.008	82	<3	47	3.54	-	95
20	17566	<0.008	-	-	148	<3	45	>5.00	7.06	38
21	17567	0.015	-	-	34	8	30	2.90	-	42
22	17568	0.011	<0.008	-	25	8	35	>5.00	5.17	41
23	17569	0.008	-	-	77	6	45	4.37	-	56
24	17570	0.022	-	-	7	9	28	1.90	-	37
25	17571	0.011	-	-	38	3	30	3.40	-	113

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

426190

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11807	23/04/96	2017085	2 OF 6

	SAMPLE No.	Au	Au(R)	Au(S)	Co	Pb	Zn	Fe	Fe	Mn
METHOD		GG309	GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140
1	17572	0.013	-	-	31	7	28	3.26	-	111
2	17573	0.013	-	-	58	14	51	>5.00	5.14	182
3	17574	<0.008	-	-	16	4	51	4.92	-	406
4	17575	<0.008	<0.008	-	2	<3	17	1.93	-	36
5	17576	0.011	-	-	58	8	32	4.81	-	68
6	17577	<0.008	-	-	15	6	44	1.76	-	56
7	17578	0.034	-	-	82	15	66	>5.00	5.50	158
8	17579	0.028	-	-	196	14	62	>5.00	9.16	97
9	17580	0.012	-	-	185	16	60	>5.00	5.48	127
10	17581	<0.008	-	-	118	7	51	2.09	-	108
11	17582	<0.008	-	-	66	3	42	3.79	-	82
12	17583	<0.008	<0.008	-	9	13	21	1.40	-	17
13	17584	<0.008	-	-	28	4	37	3.31	-	48
14	17585	<0.008	-	-	12	6	48	2.48	-	70
15	17586	<0.008	-	-	14	18	95	4.04	-	168
16	17587	<0.008	-	-	48	6	56	4.31	-	161
17	17588	0.008	-	-	88	6	71	4.93	-	131
18	17589	0.016	-	-	72	10	50	>5.00	5.10	120
19	17590	0.019	-	-	78	3	41	4.95	-	153
20	17591	0.038	-	-	252	12	63	>5.00	5.98	100
21	17592	0.060	-	-	495	19	78	>5.00	8.62	157
22	17593	0.037	0.034	-	537	<3	94	>5.00	12.40	222
23	17594	0.017	-	-	94	<3	59	>5.00	8.58	74
24	17595	0.009	-	-	96	8	48	>5.00	6.63	34
25	17596	0.017	-	0.011	347	13	122	>5.00	11.00	56

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

4.3191

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11807	23/04/96	2017085	3 OF 6

	SAMPLE No.	Au	Au(R)	Au(S)	Cu	Pb	Zn	Fe	Fe	Mn
METHOD		GG309	GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140
1	17597	<0.008	-	-	90	9	39	2.92	-	34
2	17598	0.015	-	-	50	9	35	1.74	-	40
3	17599	0.011	-	-	145	123	74	4.04	-	408
4	17600	<0.008	-	-	18	16	37	2.52	-	149
5	17601	<0.008	-	-	102	7	98	3.48	-	157
6	17602	<0.008	-	-	31	41	53	4.37	-	81
7	17603	<0.008	-	-	4	6	43	1.35	-	38
8	17604	<0.008	-	-	3	3	46	1.06	-	26
9	17605	<0.008	-	-	4	13	67	1.47	-	76
10	17606	0.034	-	-	4	26	36	1.01	-	31
11	17607	1.360	-	-	13	44	42	0.69	-	18
12	17608	0.085	0.069	-	13	81	66	1.80	-	31
13	17609	0.351	-	-	8	47	54	1.01	-	26
14	17610	0.074	-	-	7	53	26	0.67	-	19
15	17611	0.021	-	-	12	70	54	0.94	-	12
16	17612	0.032	-	0.024	4	68	36	1.03	-	49
17	17613	<0.008	-	-	3	12	28	0.84	-	30
18	17614	<0.008	-	-	4	15	33	0.87	-	38
19										
20										
21										
22										
23										
24	DETECTION	0.008	0.008	0.008	2	3	2	0.01	0.01	1
25	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm

Results in ppm unless otherwise specified
- = element not determined

IS = Insufficient sample
SNR = sample not received

AUTHORISED OFFICER

4-3102

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11807	23/04/96	2017085	4 OF 6

	SAMPLE No.	As	As							
METHOD		GA140	HA140							
1	17547	<50	8.9							
2	17548	<50	2.6							
3	17549	<50	3.1							
4	17550	<50	4.2							
5	17551	<50	3.1							
6	17552	<50	19.0							
7	17553	<50	17.0							
8	17554	<50	27.0							
9	17555	<50	22.0							
10	17556	<50	21.0							
11	17557	<50	12.0							
12	17558	<50	6.9							
13	17559	<50	7.7							
14	17560	<50	3.3							
15	17561	<50	9.5							
16	17562	<50	7.3							
17	17563	<50	8.7							
18	17564	<50	12.0							
19	17565	<50	14.0							
20	17566	<50	12.0							
21	17567	<50	6.0							
22	17568	<50	8.2							
23	17569	<50	3.8							
24	17570	<50	2.5							
25	17571	<50	7.2							

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

4 of 19

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11807	23/04/96	2017085	5 OF 6

	SAMPLE No.	As	As							
METHOD		GA740	HA140							
1	17572	<50	11.0							
2	17573	<50	25.0							
3	17574	<50	10.0							
4	17575	<50	9.5							
5	17576	<50	26.0							
6	17577	<50	6.9							
7	17578	<50	10.0							
8	17579	<50	20.0							
9	17580	<50	13.0							
10	17581	<50	4.1							
11	17582	<50	5.0							
12	17583	<50	5.1							
13	17584	<50	18.0							
14	17585	<50	5.3							
15	17586	<50	4.9							
16	17587	<50	12.0							
17	17588	<50	12.0							
18	17589	<50	18.0							
19	17590	<50	9.4							
20	17591	<50	30.0							
21	17592	<50	15.0							
22	17593	<50	10.0							
23	17594	<50	8.1							
24	17595	<50	9.4							
25	17596	<50	13.0							

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

4.3291

426195

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11807	23/04/96	2017085	6 OF 6

	SAMPLE No.	As	As							
METHOD		GA140	HA140							
1	17597	<50	7.4							
2	17598	<50	4.6							
3	17599	<50	6.5							
4	17600	<50	11.0							
5	17601	<50	14.0							
6	17602	<50	9.2							
7	17603	<50	2.4							
8	17604	<50	2.3							
9	17605	<50	2.2							
10	17606	<50	1.8							
11	17607	<50	1.2							
12	17608	<50	6.6							
13	17609	<50	3.4							
14	17610	<50	10.0							
15	17611	<50	4.6							
16	17612	<50	1.7							
17	17613	<50	1.4							
18	17614	<50	2.1							
19										
20										
21										
22										
23										
24	DETECTION	50	0.5							
25	UNITS	ppm	ppm							

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

Phone (004) 316837 | 14 Thirkell St, DODEE TAS 7320 | Fax (004) 318890

ANALYTICAL REPORT No. 111713.60.13848

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

INVOICE TO:

Plutonic Operations Limited
Level 37
100 Miller Street
NORTH SYDNEY NSW 2060

ORDER No.	PROJECT
2017086	

DATE RECEIVED	RESULTS REQUIRED
29/04/96	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
3	16/05/96	1	60

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
17615/94	30 Prep + BF03i	Cu,Pb,Zn,Fe,Mn,As/BA140 Fe/GA104 As/HA140
17615/94	30 Prep + BF03i	Au,As(F),Au(F)/GS309

RESULTS TO

Rob Reid
6 Stewart St Street
MOUNT HUBERT TAS 7276

REMARKS

RESULTS TO

RESULTS TO

pp M.A. Good
AUTHORISED OFFICER

426196

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11848	16/05/96	2017086	1 OF 8

	SAMPLE No.	Au	Au(R)	Au(S)	Cu	Pb	Zn	Fe	Fe	Mn
METHOD		GG309	GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140
1	17615	0.010	-	-	3	19	43	0.88	-	53
2	17616	0.121	-	-	4	25	38	0.96	-	39
3	17617	0.024	-	-	3	22	31	0.77	-	29
4	17618	0.010	-	-	38	12	22	1.78	-	70
5	17619	0.057	-	-	104	20	17	2.28	-	23
6	17620	0.030	-	-	33	17	28	3.65	-	81
7	17621	<0.008	-	-	182	26	44	>5.00	6.51	13
8	17622	0.010	-	-	74	12	45	3.88	-	61
9	17623	<0.008	-	-	50	22	26	3.50	-	31
10	17624	0.645	-	-	69	13	43	2.09	-	55
11	17625	0.054	0.028	0.029	5	18	15	1.41	-	22
12	17626	<0.008	<0.008	-	6	11	12	1.41	-	24
13	17627	0.017	-	-	5	10	25	1.92	-	42
14	17628	<0.008	-	-	3	4	30	1.04	-	43
15	17629	0.028	-	-	3	4	31	0.75	-	37
16	17630	<0.008	-	-	4	6	47	0.82	-	26
17	17631	<0.008	-	-	3	<3	45	0.81	-	27
18	17632	<0.008	-	-	6	15	29	0.68	-	21
19	17633	0.010	-	-	3	<3	22	0.75	-	35
20	17634	<0.008	-	-	3	<3	38	1.28	-	54
21	17635	<0.008	-	-	3	7	37	0.73	-	33
22	17636	<0.008	<0.008	-	35	7	15	1.47	-	25
23	17637	<0.008	-	-	19	3	54	2.28	-	111
24	17638	0.040	-	-	81	8	49	4.12	-	95
25	17639	0.022	-	-	100	12	49	4.00	-	77

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER pp M.A. Good

426197

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11848	16/05/96	2017086	2 OF 8

	SAMPLE No.	Au	Au(R)	Au(S)	Cu	Pb	Zn	Fe	Fe	Mo
METHOD		GG309	GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140
1	17640	<0.008	-	-	39	20	16	1.57	-	24
2	17641	<0.008	-	<0.008	175	6	34	2.78	-	38
3	17642	<0.008	-	-	67	<3	43	4.28	-	100
4	17643	<0.008	-	-	21	<3	37	2.64	-	103
5	17644	<0.008	-	-	62	15	30	2.60	-	38
6	17645	<0.008	-	-	61	13	38	2.56	-	31
7	17646	<0.008	-	-	43	21	36	>5.00	6.51	45
8	17647	<0.008	-	-	6	14	9	0.54	-	19
9	17648	0.038	-	-	4	16	45	1.54	-	22
10	17649	0.011	-	-	3	5	39	1.41	-	47
11	17650	<0.008	-	-	5	86	76	4.39	-	69
12	17651	<0.008	<0.008	-	5	27	67	2.68	-	39
13	17652	<0.008	-	-	4	8	53	1.22	-	33
14	17653	<0.008	-	-	7	21	40	3.31	-	46
15	17654	<0.008	-	-	5	12	56	1.81	-	130
16	17655	<0.008	-	-	6	11	47	0.78	-	43
17	17656	<0.008	-	-	6	7	27	0.61	-	15
18	17657	<0.008	-	-	6	10	30	1.00	-	37
19	17658	<0.008	-	-	6	10	31	0.86	-	52
20	17659	<0.008	-	-	7	13	22	0.61	-	26
21	17660	<0.008	-	-	4	3	34	0.79	-	18
22	17661	<0.008	<0.008	-	3	23	37	0.97	-	56
23	17662	<0.008	-	-	5	16	23	0.68	-	31
24	17663	<0.008	-	-	2	17	30	0.51	-	22
25	17664	<0.008	-	-	3	9	46	0.81	-	21

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER pp M.A. Good

426198

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11848	16/05/96	2017086	3 OF 8

	SAMPLE No.	Au	Au(R)	Au(S)	Cu	Pb	Zn	Fe	Fe	Mn
METHOD		GG309	GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140
1	17665	<0.008	-	-	4	7	32	1.07	-	44
2	17666	<0.008	-	-	4	18	73	2.11	-	115
3	17667	<0.008	-	-	5	24	60	1.76	-	100
4	17668	<0.008	-	-	4	22	50	1.26	-	63
5	17669	<0.008	-	-	4	4	77	0.96	-	75
6	17670	<0.008	-	-	4	<3	16	0.51	-	17
7	17671	<0.008	-	-	4	10	33	1.33	-	54
8	17672	<0.008	-	-	5	5	30	0.72	-	50
9	17673	<0.008	-	-	7	46	85	2.08	-	147
10	17674	<0.008	-	<0.008	4	11	18	0.44	-	24
11	17675	<0.008	-	-	4	21	24	0.59	-	23
12	17676	<0.008	<0.008	-	4	21	36	2.30	-	58
13	17677	<0.008	-	-	4	15	40	0.89	-	61
14	17678	<0.008	-	<0.008	3	9	20	0.66	-	43
15	17679	<0.008	-	-	5	26	43	0.73	-	73
16	17680	0.008	-	-	4	10	28	1.13	-	56
17	17681	<0.008	-	-	4	6	26	0.99	-	34
18	17682	<0.008	-	-	6	10	26	0.80	-	37
19	17683	<0.008	-	-	6	11	28	0.91	-	41
20	17684	<0.008	-	-	5	12	20	0.49	-	22
21	17685	<0.008	-	-	4	26	37	1.04	-	41
22	17686	<0.008	0.016	-	3	25	25	0.56	-	21
23	17687	<0.008	-	-	4	17	35	1.68	-	98
24	17688	<0.008	-	-	3	19	37	1.24	-	78
25	17689	0.010	-	-	3	27	19	0.46	-	26

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER pp M.A. Good

196199

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11848	16/05/96	2017086	4 OF 8

	SAMPLE No.	Au	Au(R)	Au(S)	Cu	Pb	Zn	Fe	Fe	Mn
METHOD		GG309	GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140
1	17690	<0.008	-	-	4	56	55	1.30	-	53
2	17691	<0.008	-	-	3	24	42	1.39	-	61
3	17692	0.448	-	-	5	37	42	1.03	-	49
4	17693	<0.008	-	-	3	33	20	0.43	-	17
5	17694	0.102	-	-	4	37	17	0.30	-	30
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	0.01	0.01	3
25	UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm

Results in ppm unless otherwise specified
= element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER pp M.A. Good

426200

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11848	16/05/96	2017086	5 OF 8

	SAMPLE No.	As	As							
METHOD		GA140	HA140							
1	17615	<50	4.1							
2	17616	<50	3.3							
3	17617	<50	3.0							
4	17618	<50	8.3							
5	17619	<50	10.7							
6	17620	<50	5.9							
7	17621	<50	17.6							
8	17622	<50	7.1							
9	17623	<50	7.1							
10	17624	<50	12.4							
11	17625	<50	6.1							
12	17626	<50	4.9							
13	17627	<50	4.3							
14	17628	<50	2.5							
15	17629	<50	1.3							
16	17630	<50	2.1							
17	17631	<50	1.7							
18	17632	<50	2.2							
19	17633	<50	2.2							
20	17634	<50	8.1							
21	17635	<50	3.6							
22	17636	<50	3.0							
23	17637	<50	3.7							
24	17638	<50	14.6							
25	17639	<50	10.1							

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER pp M.A. Book

426201

426202

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11848	16/05/96	2017086	6 OF 8

	SAMPLE No.	As	As							
METHOD		GA140	HA140							
1	17640	<50	4.4							
2	17641	<50	5.8							
3	17642	<50	10.0							
4	17643	<50	5.1							
5	17644	<50	12.2							
6	17645	<50	6.4							
7	17646	<50	9.3							
8	17647	<50	2.7							
9	17648	<50	3.0							
10	17649	<50	2.4							
11	17650	<50	10.1							
12	17651	<50	3.1							
13	17652	<50	1.6							
14	17653	<50	7.5							
15	17654	<50	7.1							
16	17655	<50	3.6							
17	17656	<50	1.6							
18	17657	<50	2.6							
19	17658	<50	1.5							
20	17659	<50	0.9							
21	17660	<50	6.2							
22	17661	<50	2.4							
23	17662	<50	2.9							
24	17663	<50	1.3							
25	17664	<50	2.6							

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER pp M. A. Gee

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	111715.60.11848	16/05/96	2017086	7 OF 8

	SAMPLE No.	As	As							
METHOD		GA140	HA140							
1	17665	<50	2.4							
2	17666	<50	8.2							
3	17667	<50	3.8							
4	17668	<50	1.3							
5	17669	<50	1.0							
6	17670	<50	7.6							
7	17671	<50	3.4							
8	17672	<50	2.5							
9	17673	<50	4.6							
10	17674	<50	0.9							
11	17675	<50	1.0							
12	17676	<50	4.8							
13	17677	<50	<0.5							
14	17678	<50	<0.5							
15	17679	<50	<0.5							
16	17680	<50	<0.5							
17	17681	<50	<0.5							
18	17682	<50	<0.5							
19	17683	<50	<0.5							
20	17684	<50	<0.5							
21	17685	<50	<0.5							
22	17686	<50	6.9							
23	17687	<50	9.8							
24	17688	<50	3.1							
25	17689	<50	2.5							426203

esults in ppm unless otherwise specified
= element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER pp M.U. Goss

Analabs

Analabs Pty. Ltd.
A.C.N. 004 591 664

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
/	111715.60.11848	16/05/96	2017086	8 OF 8

	SAMPLE No.	As	As							
METHOD		GA140	HA140							
1	17690	<50	4.8							
2	17691	<50	2.5							
3	17692	<50	2.5							
4	17693	<50	1.8							
5	17694	<50	1.8							
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	50	0.5							
25	UNITS	ppm	ppm							426204

Results in ppm unless otherwise specified
= element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER pp M. A. Good

Analabs
Analabs Pty. Ltd.
A.C.N. 004 591 664

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

ANALYTICAL REPORT No. PLU202.60.12999

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

INVOICE TO:

Plutonic Operations Limited
Level 37
NORTH SYDNEY NSW 2060

ORDER No.	PROJECT
2018626	

DATE RECEIVED	RESULTS REQUIRED
09/04/97	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
4	24/04/97	1	25

SAMPLE NUMBERS	SAMPLE DESCRIPTION	ELEMENT/METHOD
17701/25	RO Prep : GP033	Cu,Pb,Zn,Fe,Mn,As/GA140
17701/25	RO Prep :	Wt,Au,Au(R)/GG309

RESULTS TO

Rob Reid
Plutonic Operations Limited
P.O. Box 282
ZEEHAN TAS 7469

RESULTS TO

RESULTS TO

REMARKS

AUTHORISED OFFICER

426205

ANALABS

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	PLU202.60.12999	24/04/97	2018626	1 OF 4

	SAMPLE No.	Au	Au(R)	Cu	Pb	Zn	Fe	Fe	Mn	As
METHOD		GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140	GA140
1	17701	0.07	-	2	5	40	1.00	-	52	-
2	17702	0.09	-	<2	19	58	0.77	-	39	-
3	17703	0.08	-	<2	4	25	1.03	-	37	-
4	17704	0.07	-	<2	10	43	0.90	-	28	-
5	17705	0.07	-	<2	14	50	0.92	-	48	-
6	17706	0.06	-	<2	12	65	1.12	-	97	-
7	17707	0.06	0.05	<2	38	72	1.31	-	125	-
8	17708	0.05	-	<2	17	68	1.39	-	118	-
9	17709	0.03	-	<2	12	71	1.63	-	132	-
10	17710	0.04	-	<2	10	43	0.93	-	52	-
11	17711	0.04	-	<2	12	36	1.03	-	49	-
12	17712	0.05	-	<2	<3	43	1.23	-	56	-
13	17713	0.02	-	<2	21	39	0.99	-	75	-
14	17714	<0.01	<0.01	<2	4	34	0.79	-	42	-
15	17715	0.06	-	<2	31	79	1.40	-	80	-
16	17716	0.03	-	<2	31	83	1.39	-	69	-
17	17717	0.03	-	<2	3	7	0.88	-	74	-
18	17718	0.02	-	<2	13	38	1.61	-	71	-
19	17719	0.03	-	<2	54	70	1.84	-	69	-
20	17720	0.08	-	44	14	62	0.55	-	161	-
21	17721	0.02	-	7	160	284	0.65	-	137	-
22	17722	<0.01	-	<2	38	226	1.68	-	527	-
23	17723	<0.01	-	156	60	90	4.84	-	133	-
24	17724	<0.01	<0.01	45	53	190	>5.00	12.90	3112	62
25	17725	<0.01	-	23	125	234	>5.00	32.50	2049	-

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

426206

A N A L A B S

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	PLU202.60.12999	24/04/97	2018626	2 OF 4

	SAMPLE No.	Au	Au(R)	Cu	Pb	Zn	Fe	Fe	Mn	As
METHOD		GG309	GG309	GA140	GA140	GA140	GA140	GA104	GA140	GA140
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	0.01	0.01	2	3	2	0.01	0.01	3	50
25	UNITS	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm

Results in ppm unless otherwise specified
– = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

ANALABS

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	PLU202.60.12999	24/04/97	2018626	3 OF 4

	SAMPLE No.	As								
METHOD		HA140								
1	17701	<0.5								
2	17702	<0.5								
3	17703	2.2								
4	17704	1.4								
5	17705	3.4								
6	17706	1.7								
7	17707	1.2								
8	17708	0.7								
9	17709	1.6								
10	17710	3.8								
11	17711	<0.5								
12	17712	<0.5								
13	17713	<0.5								
14	17714	<0.5								
15	17715	7.4								
16	17716	<0.5								
17	17717	<0.5								
18	17718	<0.5								
19	17719	0.7								
20	17720	2.4								
21	17721	1.2								
22	17722	2.5								
23	17723	43.5								
24	17724	>50.0								
25	17725	39.0								

Results in ppm unless otherwise specified
- = element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

426203

ANALABS

ANALYTICAL DATA

SAMPLE PREFIX	REPORT No.	REPORT DATE	CLIENT ORDER No.	PAGE
	PLU202.60.12999	24/04/97	2018626	4 OF 4

	SAMPLE No.	As								
METHOD		HA140								
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24	DETECTION	0.5								
25	UNITS	ppm								

Results in ppm unless otherwise specified
= element not determined

IS = insufficient sample
SNR = sample not received

AUTHORISED OFFICER

426209

426210

APPENDIX III

GEOPHYSICS

A) Moving Loop EM Survey Report

B) Ground Magnetics Survey Report

426211

PLUTONIC OPERATIONS LIMITED

MEMORANDUM

Ref:709/03/EM

TO : R. Close

CC : R.Reid

FROM : Llew Wynn

DATE : 29 May, 1996

SUBJECT : **RED HILLS - EM SURVEY**

1.0 Introduction

The Red Hills prospect occurs within the Central Volcanic Complex (CVC) which is located within the Mt Read Volcanic belt. The CVC is dominated by a large elongate rhyolite, the Red Hills Lava. The lava is extensively altered and dominated by chlorite and K-feldspar with strong development of magnetite-pyrite-chalcopyrite stringer veins, (R.J. Close).

2.0 Aim

The aim of the EM survey is to test for conductors.

1. Along the contact between the highly altered Red Hills lava dome (footwall to VHMS?) and overlying volcaniclastics.

2. Immediately above this contact - the base of the black shales and the mineralised debris flow (host unit to RH5 mineralistion).

3. East of l and 2 for possible structural repetitions (R.Reid pers. comm.)

3.0 Previous Surveys

Previous EM Surveys conducted by CRA and Aberfoyle along with drill hole locations are shown in Plan TASh 3100.

3.1 CRA

CRA conducted a fixed loop EM (UTEM) survey over part of the Northern Adits area. No significant conductive responses were detected. The ends of the UTEM lines were 1.0 km from the loop edge resulting in a weaker

426212

primary field. In addition, probable N-S orientated folding within this area would cause poor coupling between the primary EM field and potential targets.

The moving loop survey will,

(a) eliminate the ineffective coupling problem; and

(b) extend the EM coverage further east to cover an untested window within the existing coverage.

3.2 Aberfoyle

Aberfoyle conducted 6 (six) Fixed loop EM surveys. Strong anomalies were detected with most loops. These strong anomalies were coincident with a black shale horizon. In addition significant UTEM anomalies were detected over glacial cover in the south. The strongest anomaly (on line 84S) was drilled with RH18. No conductive sulphides were detected.

3.3 Down Hole EM (DHEM)

Follow-up DHEM on RH18 detected an off hole anomaly interpreted to be flat lying and behind (west) of the hole. This anomaly was drill tested with RH19 and black shales were intersected near the interpreted conductor position.

DHEM was also conducted on RH5 and RH12. The black shales in RH5 (30 to 60m) were evident in the early channels (ie moderately conductive). No in-hole or off-hole response were detected at the massive sulphide intersection (196-198.8m) in RH5.

No conductive responses were detected with DHEM surveys of RH12.

4.0 Masking by Conductive Black Shales

The black shales occur between the loop edge and the target horizon(s). EM and DHEM indicate these shales appear to vary in conductivity and the more conductive shales would inhibit the energisation of the conductive targets. This masking effect can be overcome by placing the transmitter loop east of the target zone. Loop (3) was positioned to the east. No additional EM anomalies were detected with the east loop.

426213

5.0 Survey Specifications

A total of 5.8 line km of 100m moving loop was completed by Solo Geophysics from 15/3/96 to 26/3/96. The vertical component was measured from the centre of each loop. Measurements were made at 50m intervals on 200m spaced lines. Infill lines were completed over areas considered highly prospective. An outline of the survey area is shown in Plan TASh 3100.

6.0 Results

The moving loop EM results are presented as profiles of micro Volts per amp at 1:5000 in Appendix 1. (Figures 1 to 10).

7.0 Discussion

The resistive environment produced low amplitude responses.

A two station anomaly was detected on line 65950N centred on 82650E (Figure 6(a)). This anomaly is a low amplitude early channel (channel 13 - 1.625ms) response. This anomalous response was repeated 6 days later. The anomaly was confirmed, Figure 6(b). The anomaly occurs near old workings at the northern end of the Red Hills lava dome. These adits were constructed by early prospectors to access magnetite-pyrite-chalcopyrite stockwork mineralisation. The isolated EM anomaly is most likely responses from an isolated pod of pyrite-chalcopyrite.

The elevated EM data at the western end of Line 65150N (Figure 1), was covered further west by UTEM (Loop 1 - line 32S). No UTEM anomalies were detected in this vicinity.

Large negative EM responses were detected. In very resistive environments, IP sources have been known to appear as strong negative EM responses. Negative EM results on lines 66550N, 66350N, 65850N, 65750N, coincide with IP anomalies detected previously by Mt Lyell Mining (Plan TASh 3100). The strong negative results appear to be reflecting the more intensely altered zones.

Negative EM responses on lines 65350N and 65150N coincide with pyritic black shales. 65150N is the most southern moving loop line surveyed. The black shales increase to the south. The moving loop EM results indicate the black shales on lines 65350N and 65150N are not conductive enough to be detected with EM. The northern most UTEM anomaly was detected at 65000N, 82380E (approximately). The shales here have sufficient graphite to be detected by EM.

426214

8.0 Conclusions

A weak, early channel anomaly was detected at 65950N, 82650E. This isolated anomaly is most likely detecting a small pod of massive pyrite-chalcopyrite.

Strong negative EM response coincide with IP anomalies and may be reflecting the more intense zones of alteration.

No EM targets reflecting conductors of economic significance were detected.

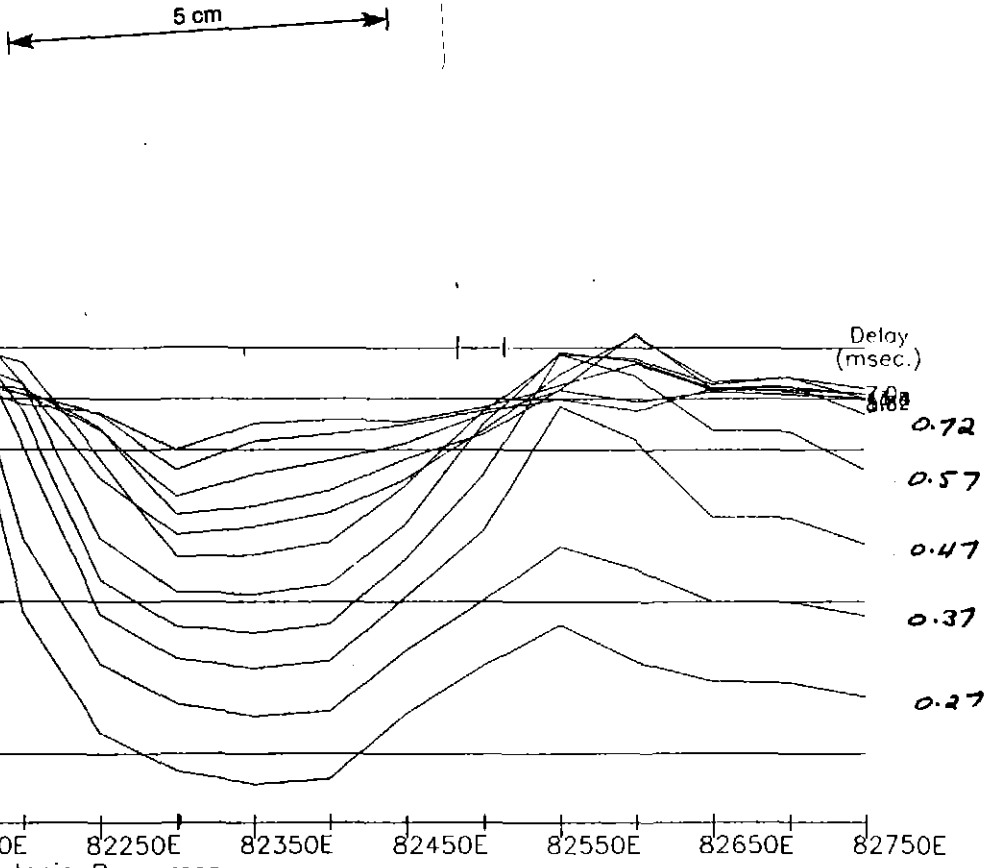
Llew Wynn

423213

APPENDIX 1

EM PROFILES AT 1:5000

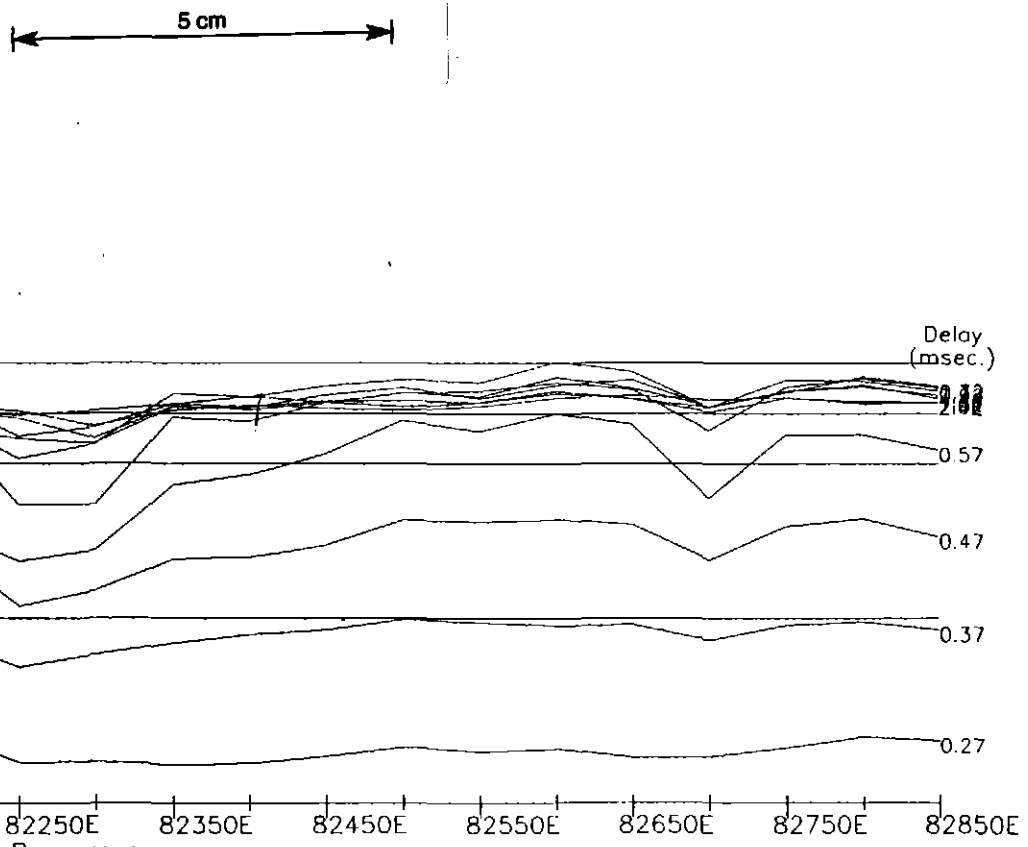
423216



CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 65150N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 – 15 STACKS : : 1024; CURRENT : 6.1 amps
[redacted]

Figure 1

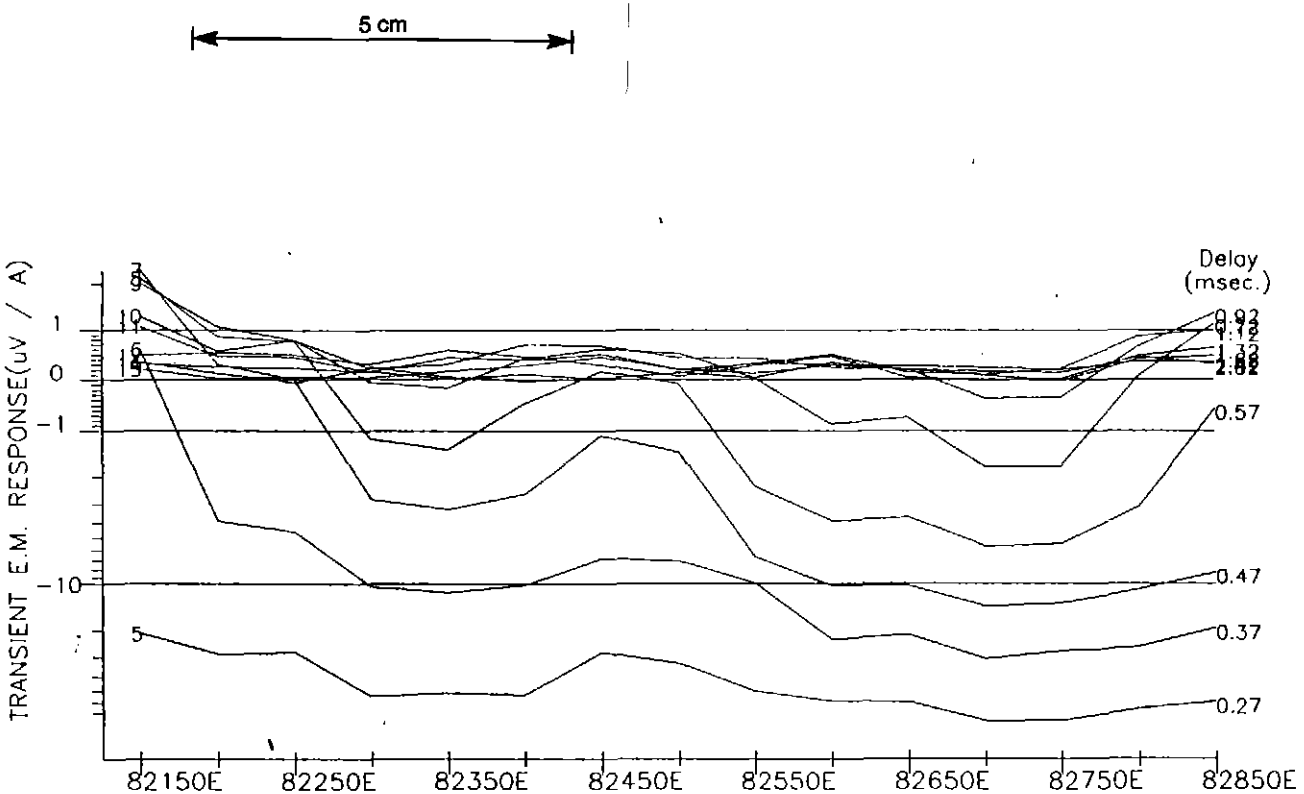
42-8214



CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 65350N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 – 15 STACKS : ; 1024; CURRENT : 6.1 amps
SI M S by O HY & C 3 O S

Figure 2

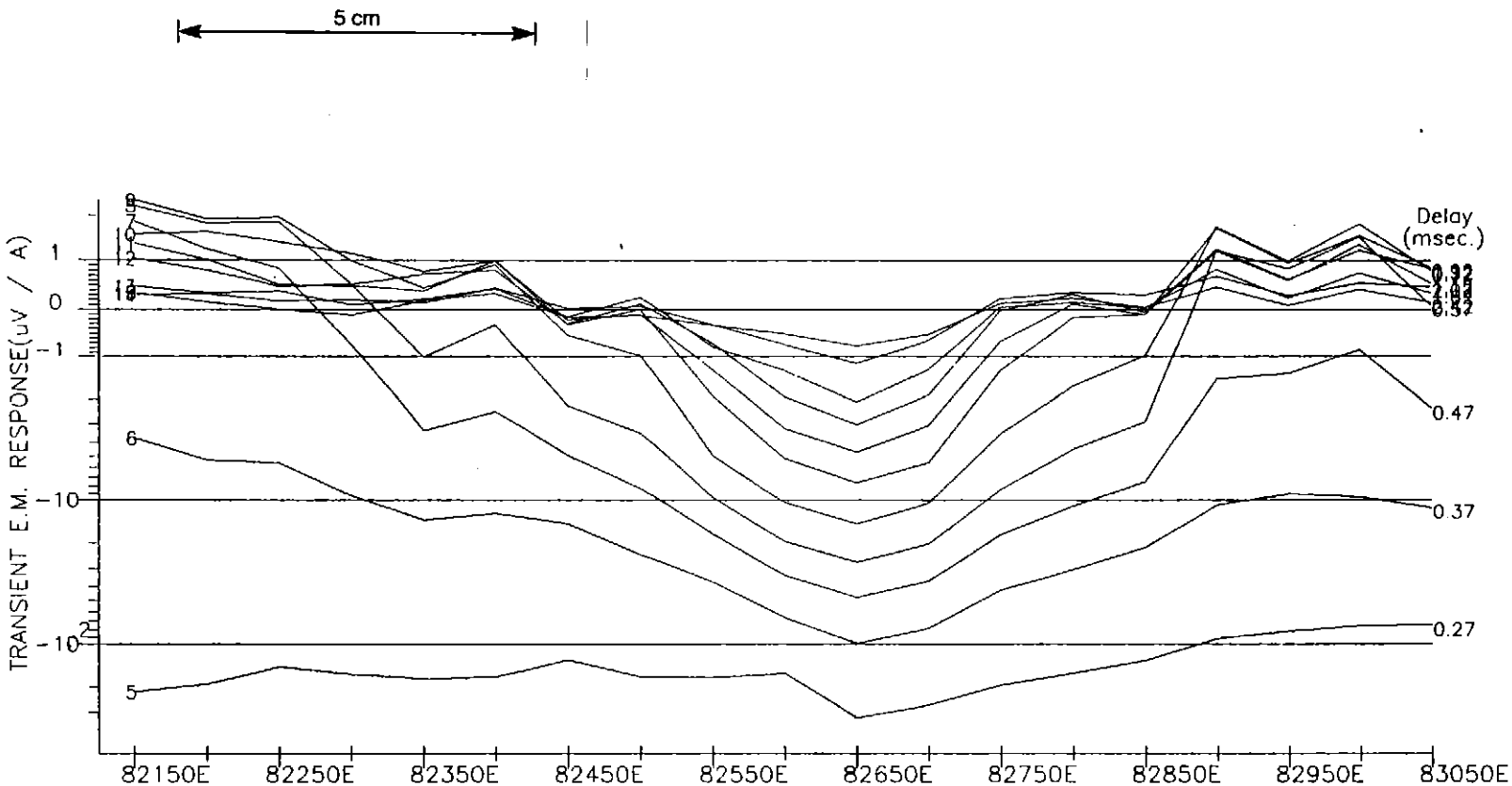
423218



CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 65550N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 - 15 STACKS : ; 1024; CURRENT : 6.1 amps
SIROTEM Survey by SOLO GEOPHYSICS & C[redacted]

Figure 3

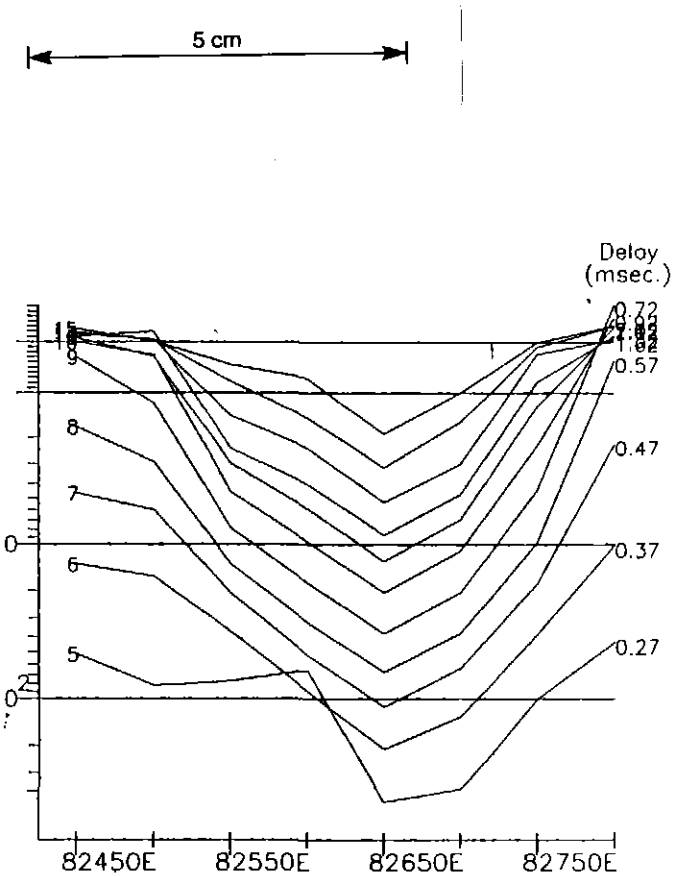
42219



CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 65750N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 - 15 STACKS : ; 1024; CURRENT : 6.1 amps
SIROTEM Survey by SOLO GEOPHYSICS & O[redacted] 21-07-86

Figure 4

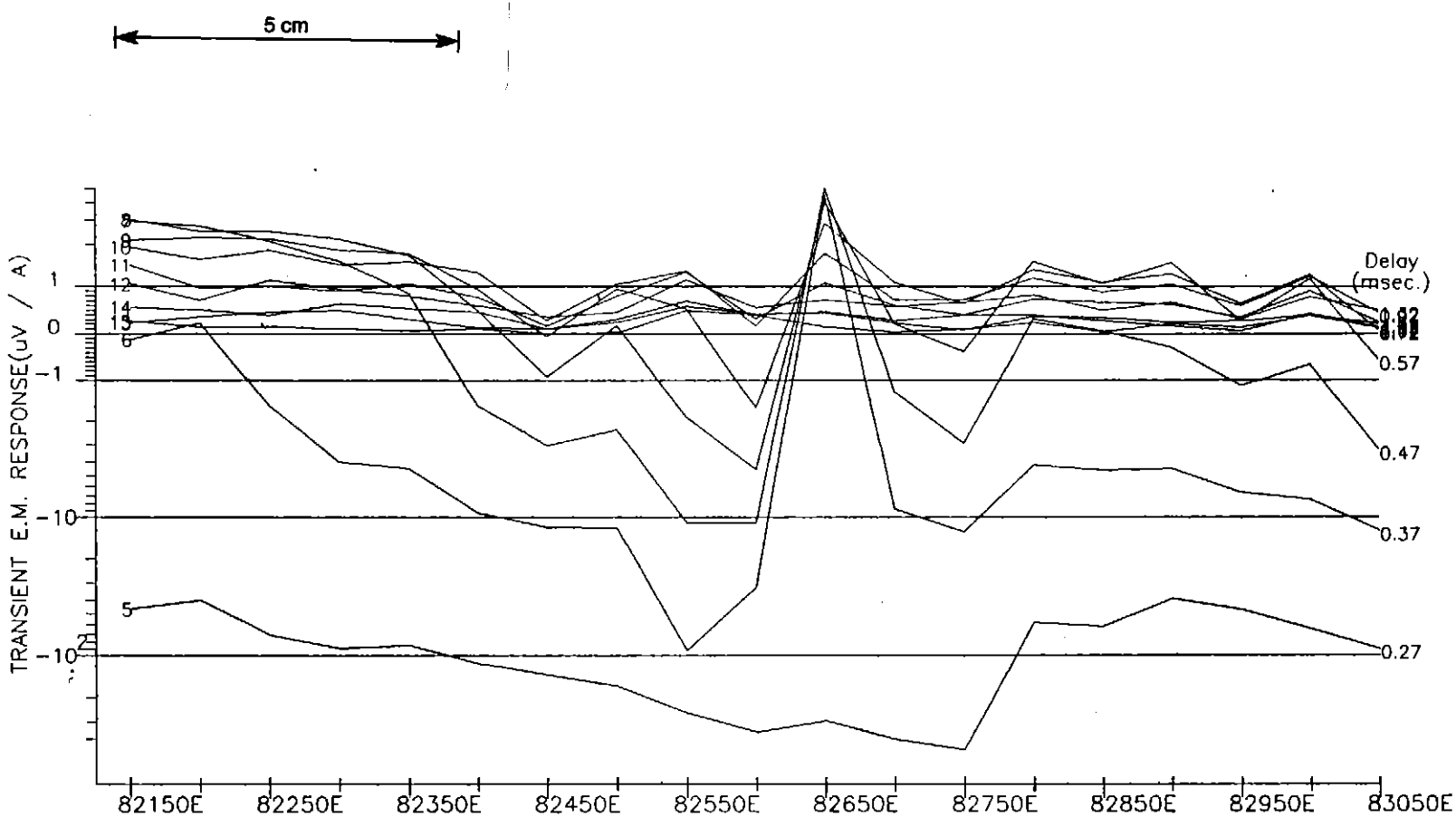
A36220



CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 65850N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 - 15 STACKS : ; 1024; CURRENT : 6.1 amps
SIROTEM Survey by [redacted]

Figure 5

4262221

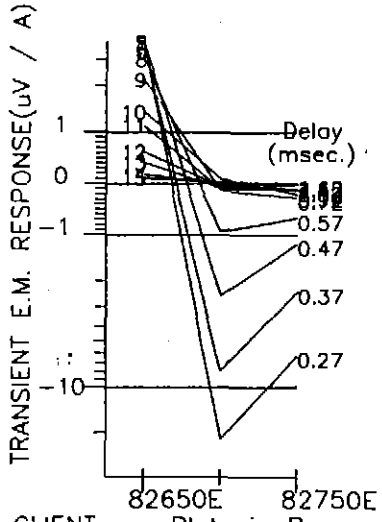


CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 65950N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 - 15 STACKS : ; 1024; CURRENT : 6.1 amps
SIR[redacted] by [redacted]

Figure 6(a).

435222

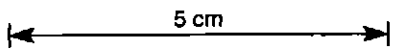
5 cm

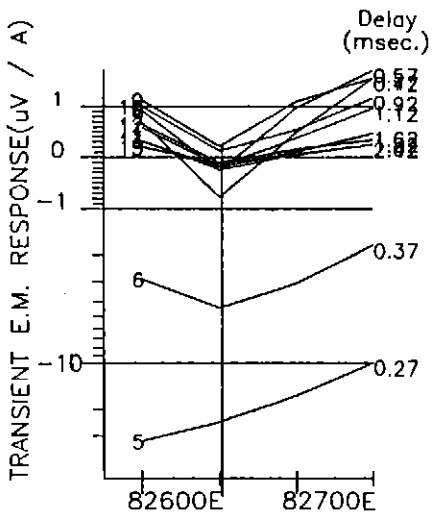


CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 65950N repeat
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 – 15 STACKS : ; 1024; CURRENT : 6.1 amps
SIROTEM Survey by SOLO GEOPHYSICS & CO. --- 25-03-96

Figure 6(6)

423223

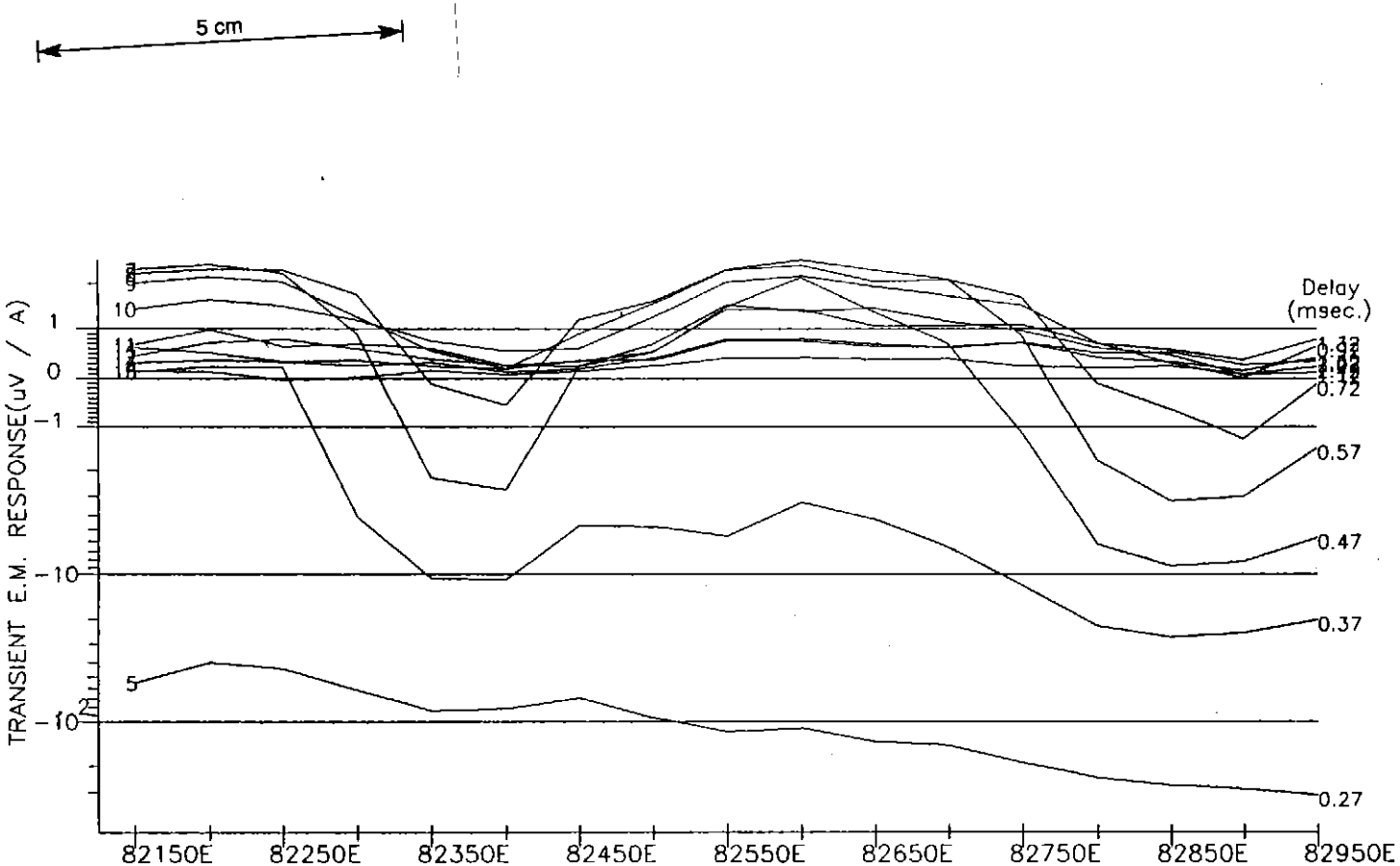




CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 66050N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 – 15 STACKS : ; 1024; CURRENT : 6.1 amps
SIR[redacted] by [redacted]

Figue 7.

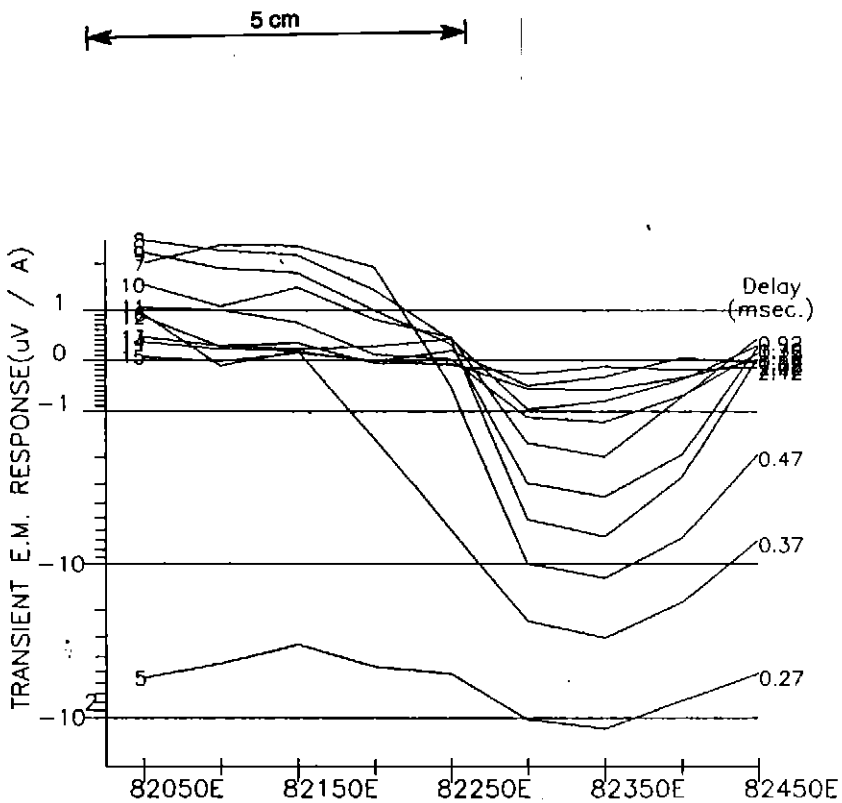
A9822



CLIENT : Plutonic Resources
AREA : Red Hills Tasmania
GRID : Red Hills
LINE REF : 66150N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 – 15 STACKS : ; 1024; CURRENT : 6.1 amps
S[redacted]EM [redacted]y b[redacted]LO[redacted]PHY[redacted] & [redacted]--[redacted]8-[redacted]6

Figure 8.

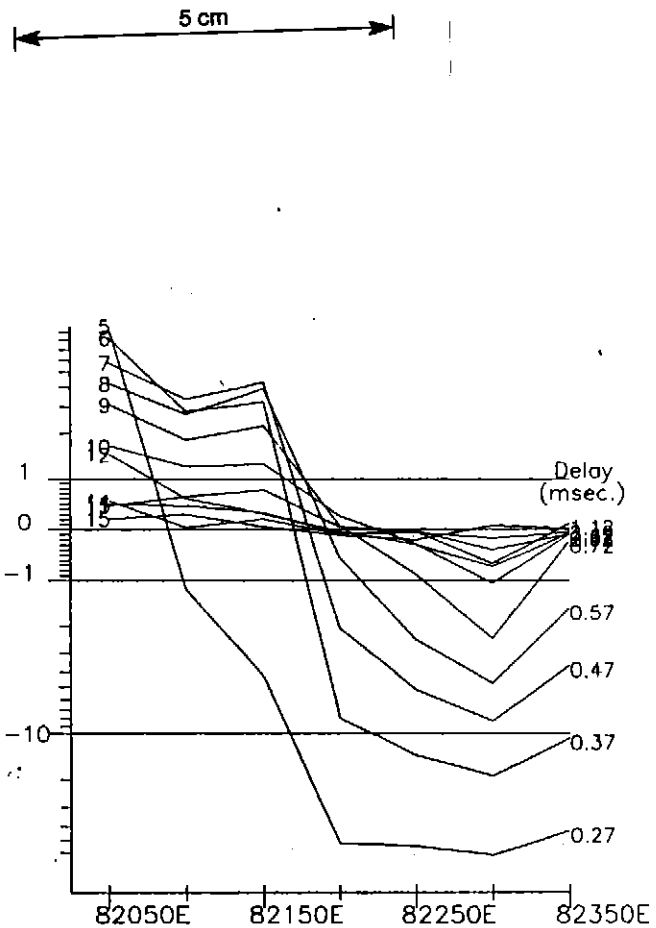
422225



CLIENT : Plutonic Resources
AREA : Red Hill
GRID : Red Hill
LINE REF : 66350N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 – 15 STACKS : ; 1024; CURRENT : 6.1 amps
S[redacted]M [redacted]y b[redacted]LO [redacted]PHY[redacted] & [redacted]--[redacted]5-0[redacted]6

Figure 9

482226



CLIENT : Plutonic Resources
AREA : Red Hill
GRID : Red Hill
LINE REF : 66550N
SCALE 1 : 5000
SIROTEM UNIT : MARK III --- S/N 2173 --- COMPOSITE TIMES
LOOP CONFIGURATION : In Loop
LOOP SIZE : 100 x 100
CHANNELS PLOTTED : 5 – 15 STACKS : ; 1024; CURRENT : 6.1 amps

[redacted]

Figure 10

423227

PLUTONIC OPERATIONS LIMITED

MEMORANDUM

Ref:709/03

TO : R.J. Close

CC : Rob Reid

FROM : Llew Wynn

DATE : 28 May, 1996

SUBJECT : RED HILLS - GROUND MAGNETIC SURVEY

Introduction

A ground magnetic survey totalling 11.05 line km has been completed. The aim of the survey is to test for economic VHMS mineralisation with sufficient magnetite for a magnetic response, and for structure which may indicate repetitions of prospective horizons.

Survey Specifications

Measurements of the total field were made at 5m intervals on 100m spaced lines. The diurnal variation was monitored every 60 seconds with a base station magnetometer.

Results

The magnetic data is presented as stacked profiles and magnetic contours at 1:2500 (Plans 1 and 2).

Discussion

Large magnetic variations were detected, 59543 to 78,334 nT. The most magnetic responses were detected over an extensive alteration zone within the Red Hills Lava. These magnetic anomalies occur on the northern slope of the Red Hills Lava dome and coincide with several adits accessing magnetite-pyrite-chalcopyrite stockwork mineralisation. The source of the magnetic anomalies is interpreted to be from magnetite within pyrite-chalcopyrite stringer veins.

No magnetic trends are evident in the data. This erratic response is expected from stringer-type mineralisation.

Mt Lyell's drillhole DDH RH4 tested the broad magnetic anomaly on 5800N, Figure 1. No significant base metal results were intersected.

Magnetic susceptibility measurements were conducted at 1 and 2m intervals on drillcore from DDH RH4. Three main zones of high magnetic susceptibility were detected, Figure 1. These values were used to model the magnetic anomaly. It was necessary to increase the background magnetic susceptibility from .007 x 10^6 to .009 x 10^6 (cgs) for the modelled data to correlate with the observed data. It is anticipated a more accurate background magnetic susceptibility would be obtained by measuring at smaller intervals (<1m).

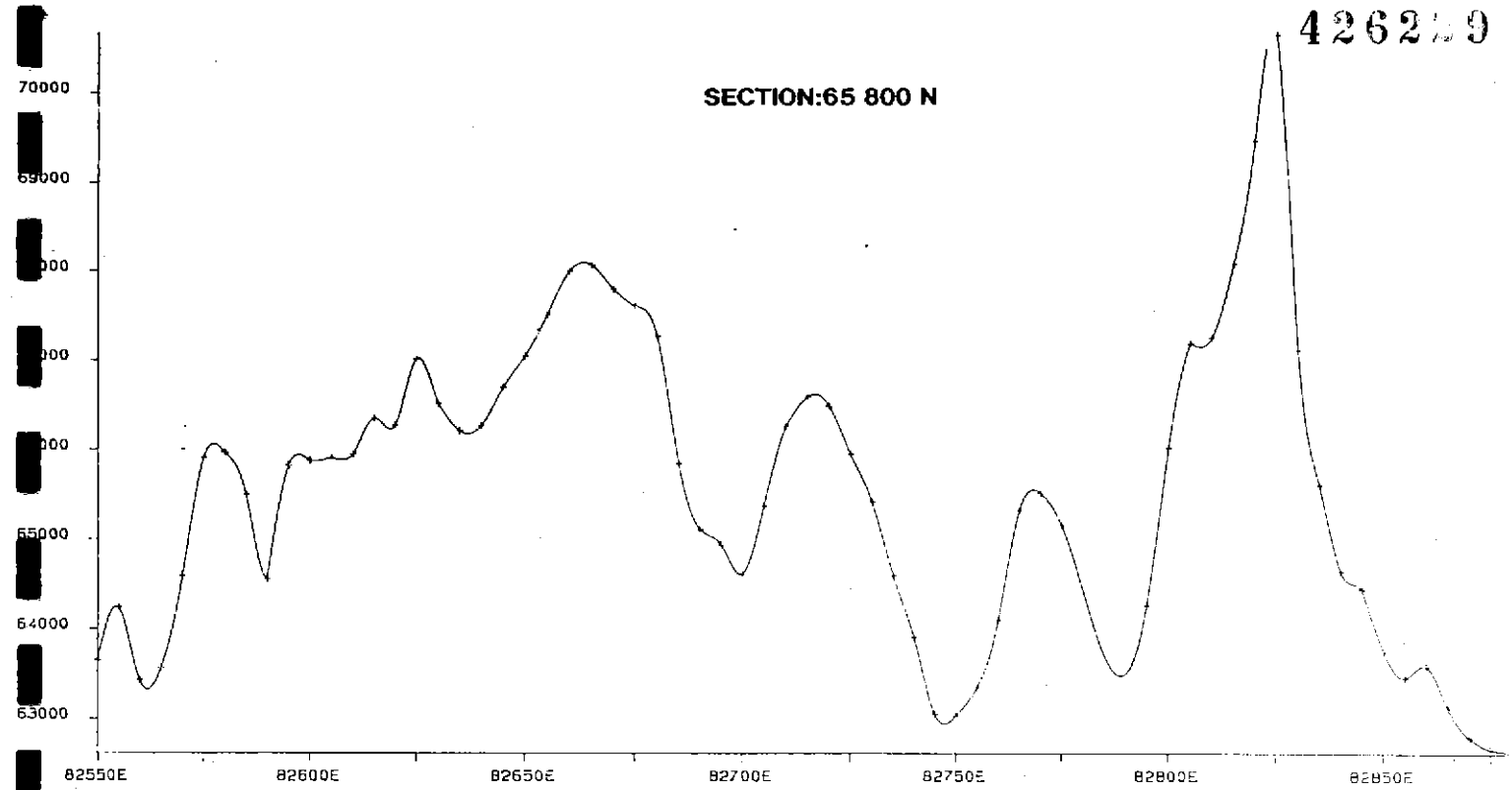
The magnetic responses recorded away from the Red Hills Lava alteration system were relatively quiet, Plans 1 and 2.

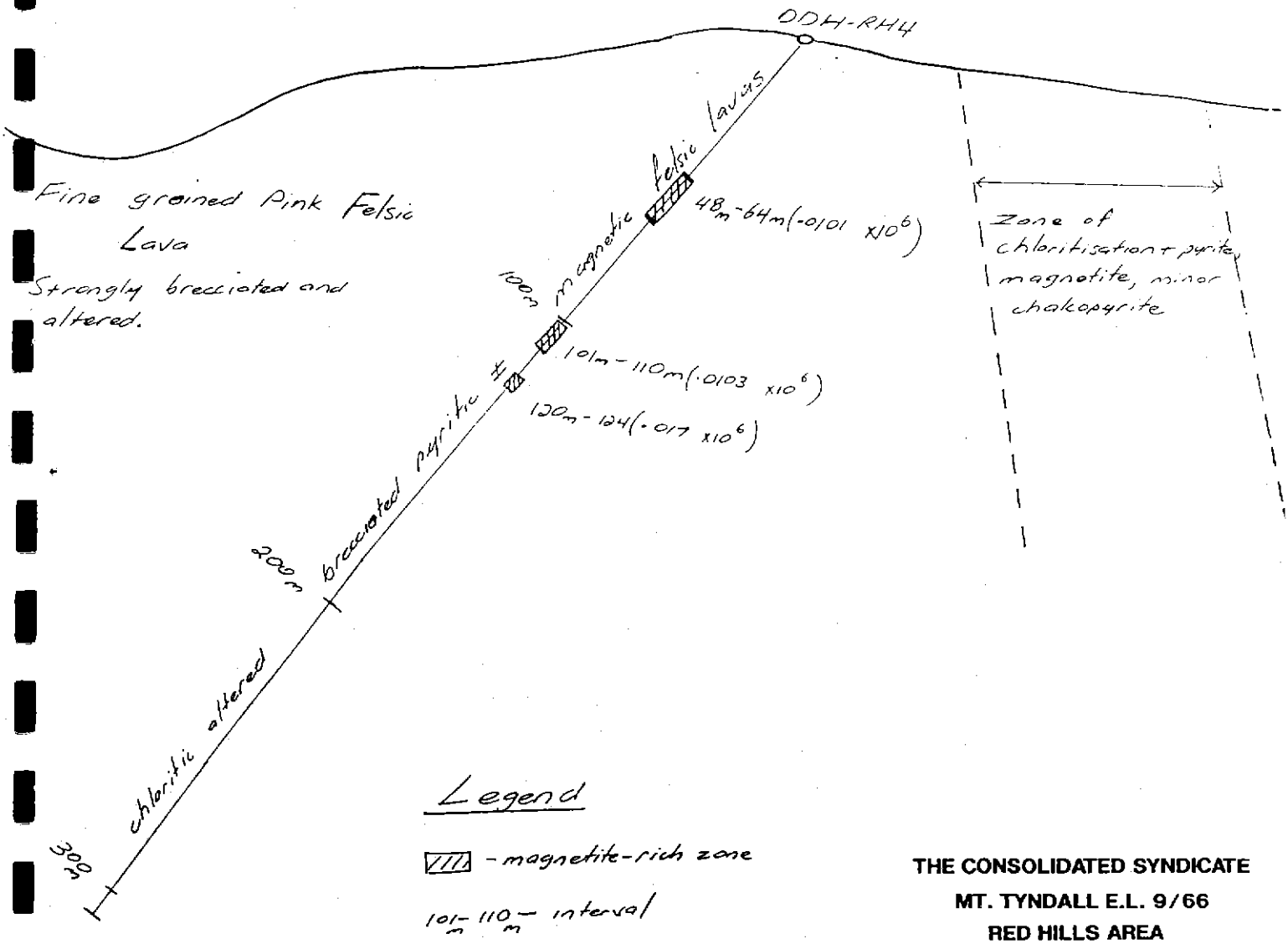
Conclusions

The most magnetic responses coincided with an extensive alteration zone within the Red Hills Lava. These magnetic anomalies are responses from magnetite associated with pyrite and chalcopyrite stringer veins. Drillhole DDH RH4 tested the main magnetic anomaly. No significant base metal results were intersected.

Llew Wynn

Scale: 1:1250





Legend

▨ - magnetite-rich zone

101m - 110m - interval

(0.017) - magnetic susceptibility (c.g.s)

THE CONSOLIDATED SYNDICATE
MT. TYNDALL E.L. 9/66
RED HILLS AREA
D.D.H. R.H. 4

Figure 1.

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 0F 2
R REID, R CLOSE

98-4127

426230

MINERAL RESOURCES
1 8 MAR 1998
TASMANIA

MICROFILMED
FICHE No. 014655-62

PLUTONIC OPERATIONS LIMITED

(ACN 004 680 997)

RED HILLS

EL 29/94

Volume 2

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 0F 2
R REID, R CLOSE

REPORT ON EXPLORATION

DURING THE PERIOD 20 OCTOBER 1995 TO 21 OCTOBER 1997

R. O. Reid
R. J. Close

5 367 000mN

5 366 000mN

5 365 000mN

5 364 000mN

5 363 000mN

Moxon Saddle

MJM?

CVC

MT13 (797-111)

E.L. 5/85 Boundary.

381 260E
5265980N

More CVC?! o/c in this area (unmapped)

Qag

MJM?

The Gooseneck

Julia Creek

Southern most UTEM line (Macfoyle)

RHP94

RH4

RH12

RH2

RH1

RH7

RH6R

RH5

RH3

RH11/RH8

RH14&14R

RH13

RHP95

RH9

RH10

RH15

RH16

RH17

RH18

RH19

UN1

UN2

2950N
2750N
2700N
2650N
2600N
2550N
2500N
2450N
2400N
2350N
2300N
2250N
2200N
2150N
1950N
1300N
1250N
1200N
1150N
1100N
1050N

Inferred sub-surface extension of Blackshale unit depth increasing to ~500m to south.

LEGEND :

Qag	Quaternary	Superficial glacial boulder till and talus	
Oc	Cambro-Ord	Owen Conglomerate	
ZZH	Cambrian	Big Zag Hill Form.	(Upper Tyndall Gp)
MJM	"	Mt. Julia Member	(Middle Tyndall Gp)
LM	"	Lynchford Member	(Lower Tyndall Gp)
CVC	"	Central Volcanic Complex	

SCALE 1: 5000

0 100 200 300 400 500m

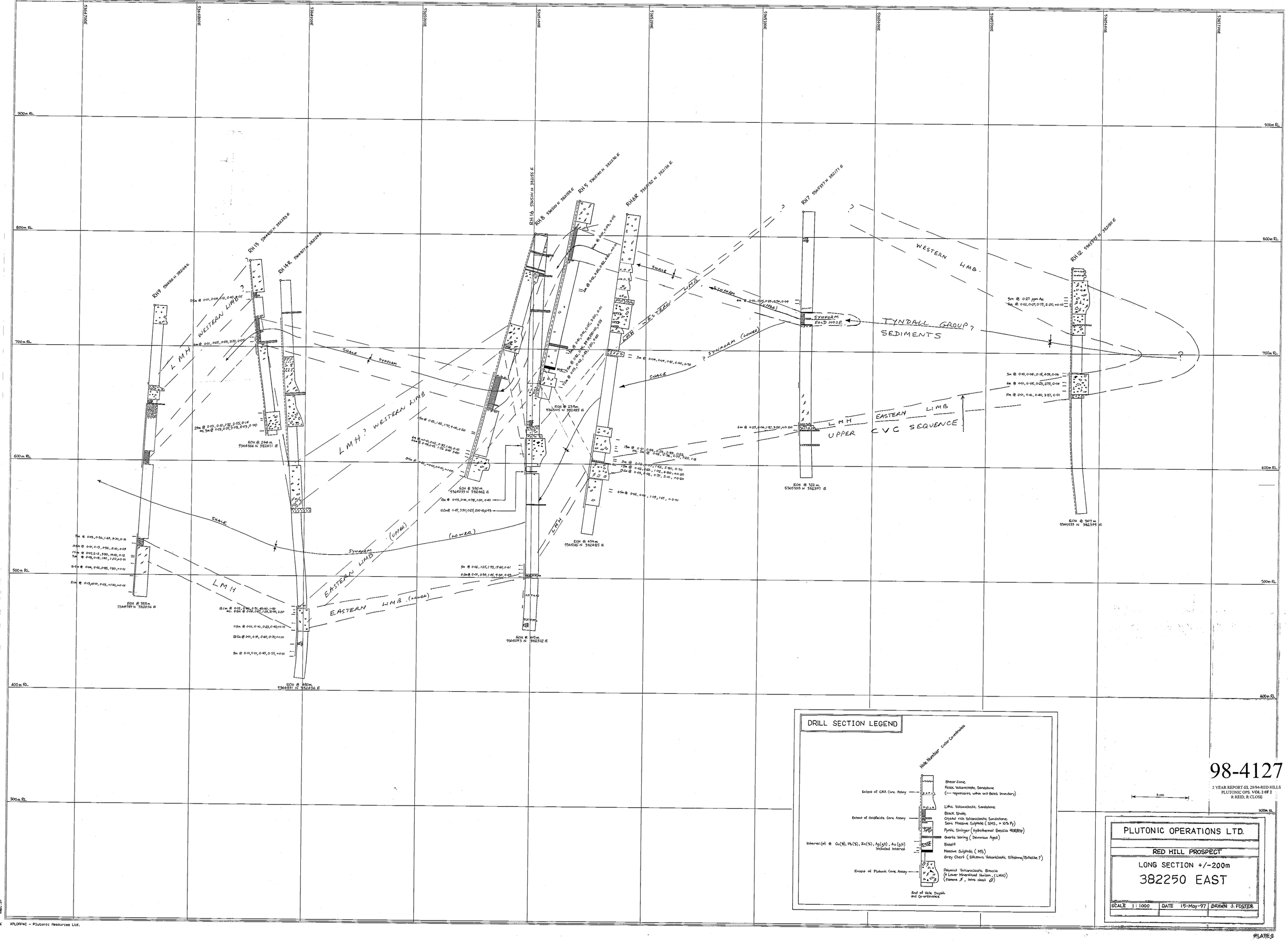
98-4127

2 YEAR REPORT EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 OF 2
R REID, R CLOSE

REVISION	PLUTONIC OPERATIONS LIMITED
Technical Report No.	PROJECT: 709 - RED HILLS
CHECKED BY:	EL 29/94 RECONNAISSANCE GEOLOGY
DATE: MAR 1998 SCALE: 1:5,000	DWG. NO.

426231

PLATE 2



DRILL SECTION LEGEND

5 cm

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS PLUTONIC OPS. VOL 2 OF 2
R REID, R CLOSE

PLUTONIC OPERATIONS LTD.

RED HILL PROSPECT

LONG SECTION +/-200m

382250 EAST

SCALE 1:1000	DATE 15-May-97	DRAWN J. FOSTER

PLATE 3

426232

XPLORPAC - Plutonic Resources Ltd.

Geology & Soil Legislation
Ins 50200 N.

800mRL
750mRL
700mRL
650mRL
600mRL
550mRL
500mRL
450mRL

3602500E
3602750E
3603000E
3603250E
3603500E
3603750E
3604000E
3604250E
3604500E
3604750E
3605000E
3605250E

Shear Zone ?

RH12.

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 OF 2
R REID, R CLOSE

5cm
0 10 20 30 40 50

LACHLAN RESOURCES N.L.
ACN 002651863
PROSPECT RED HILL PROSPECT
SECTION +20m -20m
5365570 NORTH
426233

DRG. No.
SCALE 1:500
DATE 15-Nov-95
PLAN No.

BLK SHALE

SLBX?
not visible @ surface

SVBX

SVBX

RH7.

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 NF 2
R REID, R CLOSE

0 10 20 30 40 50

LACHLAN RESOURCES N.L.

ACN_002651863

PROSPECT : RED HILL PROSPECT

SECTION +20m -20m

5365330 NORTH

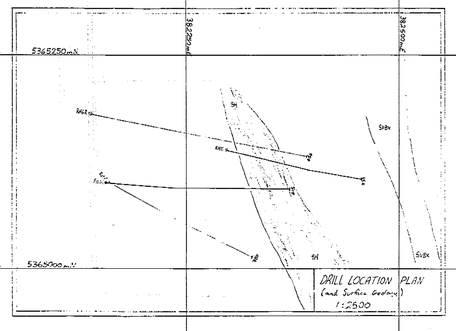
4

ORIG :	COMP :	REF NO.:
SCALE: 1: 500	DATE : 15-Nov-95	PLAN No:
CHKD 1:	CHKD 2:	CHKD 3:

PLATE 5

426234

Note: RH6R collared approx 80m north of RH8 & RH16



98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 OF 2
R REID, R CLOSE

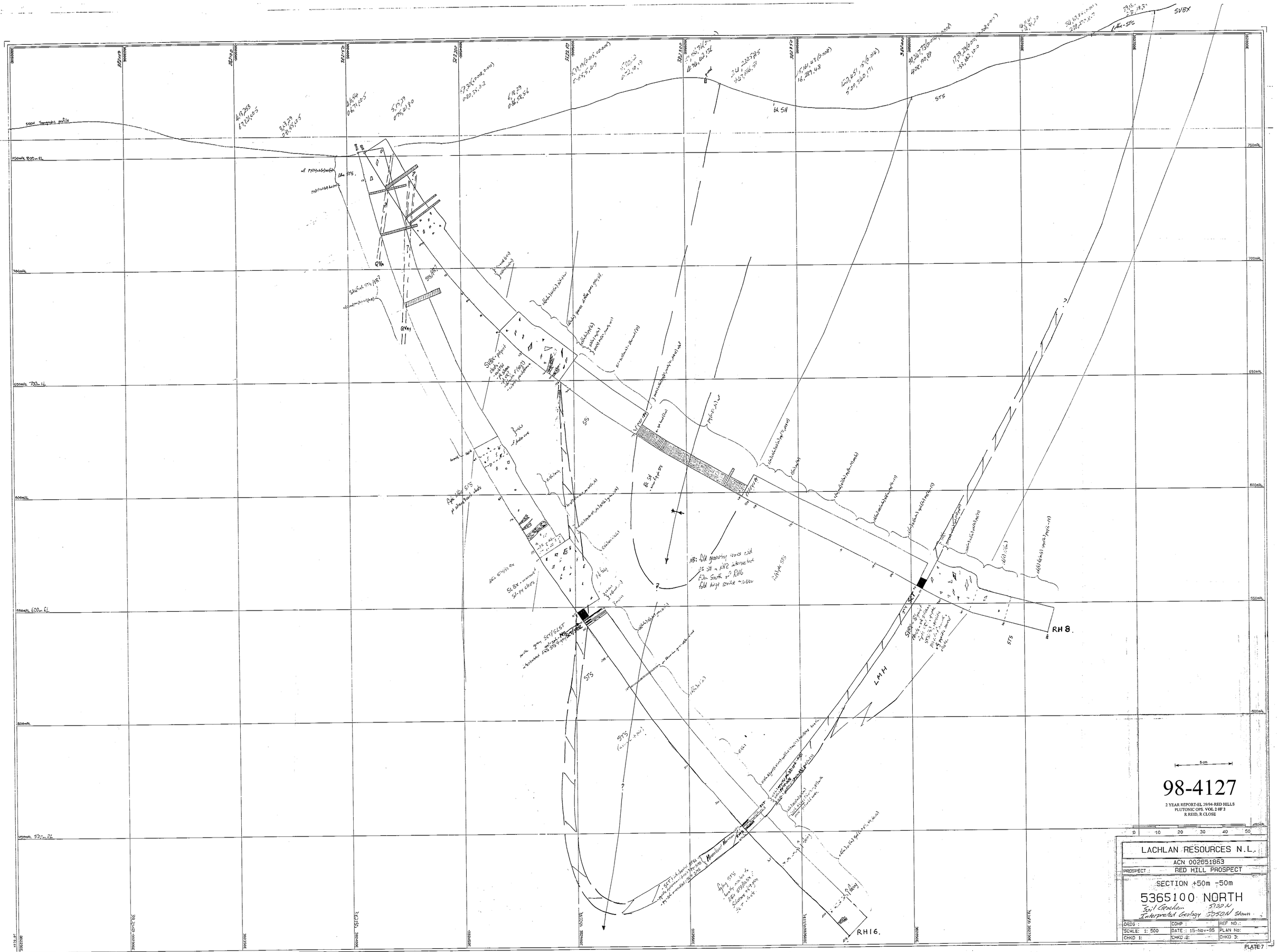
LACHLAN RESOURCES N.L.
ACN 002651863
PROSPECT : RED HILL PROSPECT
SECTION +10m 100m
5365150 NORTH
Geology 5100N line

DRTG :	COMP :	REF NO. :
SCALE: 1: 500	DATE: 15-Nov-95	PLAN No:
CHKD 1:	CHKD 2:	CHKD 3:

PLATE 6

426235

© BRIAN KENTWELL INTERNATIONAL AUSTRALIA



98-4127

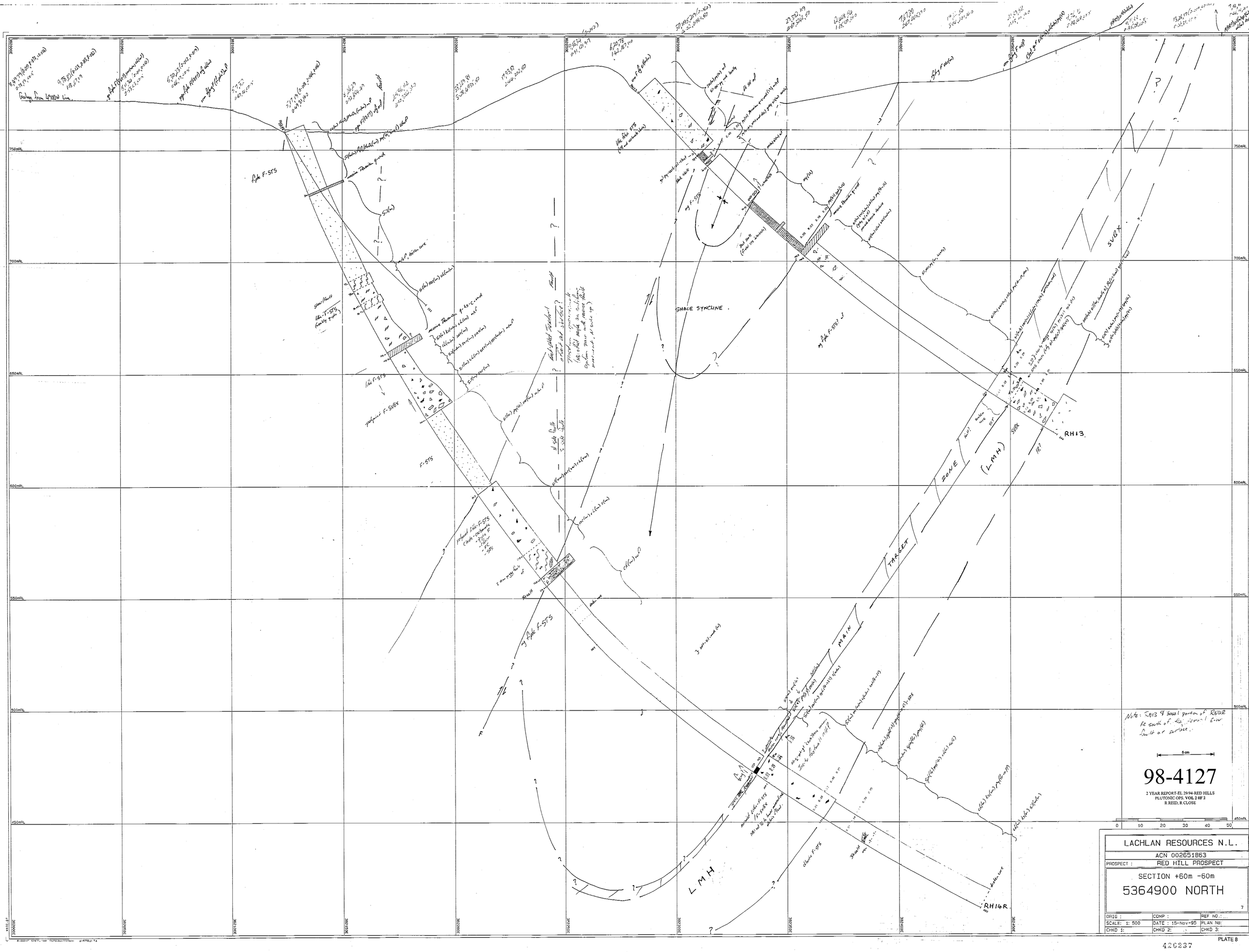
2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 OF 2
R REID, R CLOSE

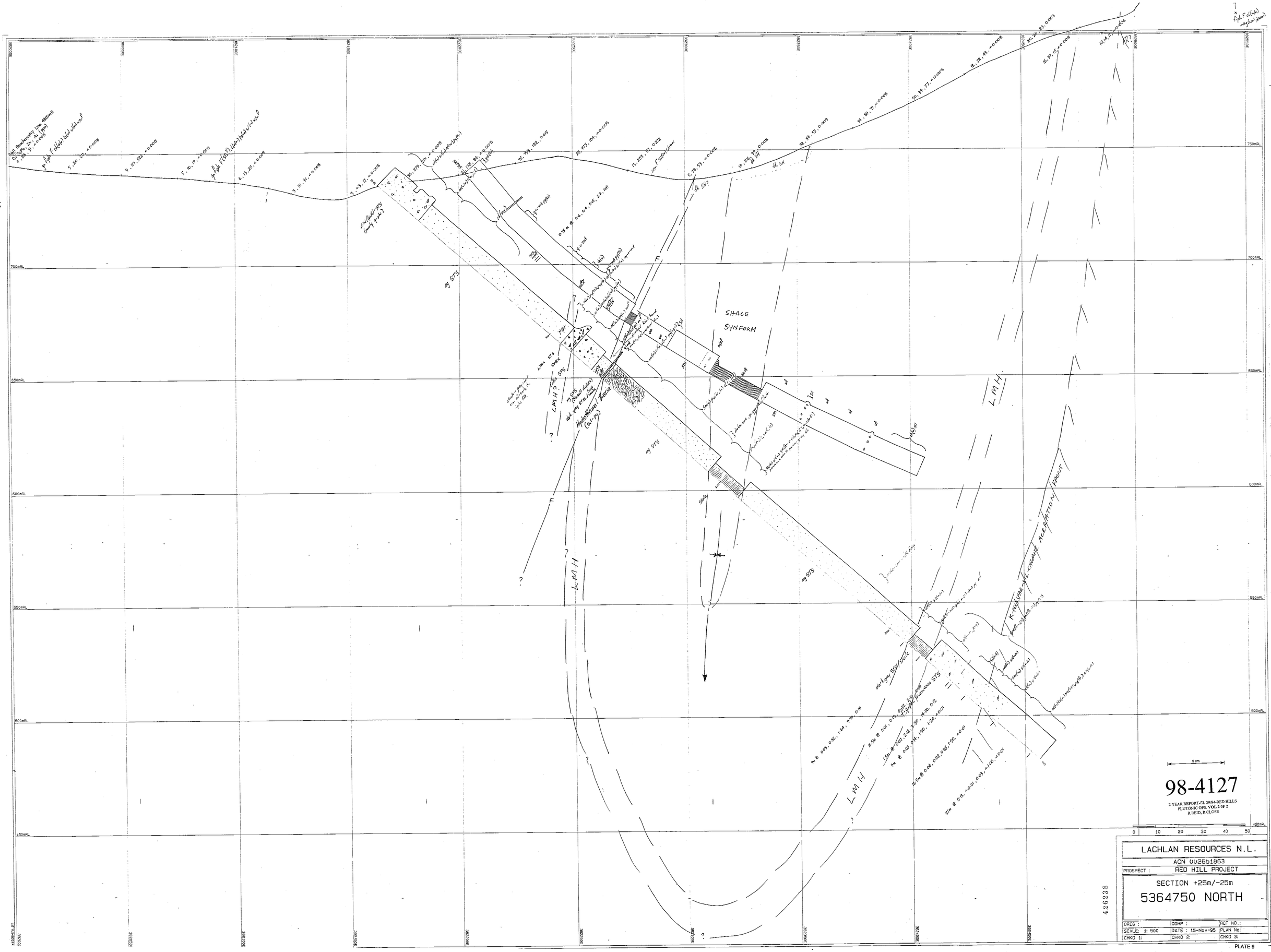
LACHLAN RESOURCES N.L.
ACN 002651863
PROSPECT : RED HILL PROSPECT
SECTION +50m -50m
5365100 NORTH
Soil Geochem 5100N
Interpreted Geology 5050N Skm

ORIG :
COMP :
REF NO.:

SURPAC SOFTWARE INTERNATIONAL, AUSTRALIA

426230


SHALE SYNCLINE
SVBX
TARGET
MAIN
LMH
RH13
RH14R
F-SVBX
F-STS
Note: RH13 & basal portion of RH12 lie south of this vertical E-W section.
98-4127
2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 OF 2
R REID, R CLOSE
LACHLAN RESOURCES N.L.
ACN 002651863
PROSPECT : RED HILL PROSPECT
SECTION +60m -60m
5364900 NORTH
ORIG :
COMP :
REF NO.:
SCALE: 1: 500
DATE : 15-Nov-95
PLAN No:
CHKD 1:
CHKD 2:
CHKD 3:
PLATE 8
426237



5 cm

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. VOL 2 OF 2
R REID, R CLOSE

0 10 20 30 40 50

LACHLAN RESOURCES N.L.		
ACN 002651863		
PROSPECT : RED HILL PROJECT		
SECTION +25m/-25m 5364750 NORTH		
ORIG :	COMP :	REF NO.:
SCALE: 1: 500	DATE : 15-Nov-95	PLAN No:
CHKD 1:	CHKD 2:	CHKD 3:

426233

PLATE 9

382000 E
382100 E
382200 E
382300 E
382400 E
RH10
700 RL
600 RL
500 RL
400 RL
300 RL
Boco
Sparsely Feldspar phyric Dacite
Dacite Hydrochlorite +Sst
Dacite and chert rich breccia
100
No Core
Sheared "mixlite" of black shale and dacitic breccia + sst Grading Down
LYNCHFORD MEMBER
Massive feldspar phyric / felsic lithic volcaniclastic sandstone sericitic (chloritic)
200
Chloritic fiamme? below 215m
Laminated cherty siltstone, Traces Sp in blocks & veinlets
Amygdaloidal basalt (Dykes)
Fissile black shale 1% Py
Qtz veins sheared near contact
Sericitic altered volcaniclastic & deformed stockwork pyritic stringers 5-10% Py!
Massive feldspar volcaniclastic sst (or pseudoclastic altered. Dacite??)
Sed. jumble breccia? Dacitic breccia & cherty slst. or peperite??
Shear
Sericitic chloritic massive felsic volcaniclastic Sst? (or altd. Dacite?)
300
Shear
Chloritic / Sericitic volcaniclastic sst & fine pumice breccia
Shear
Chert rich Bx.
Mottled pink/green kspar/chl altered. pumice breccia?? (Pseudofragmental alteration)
1% Py & minor veining/disseminated magnetite
400
Chl-Qty altd. Pummice Bx
Black Shale
?
?
?

LEGEND

REGIONAL DESIGNATION

- Qa - Quaternary Alluvium or Glacial
- Oc - Ordovician Owen Conglomerate - Undifferentiated

CAMBRIAN

***Tyndal Group (TG)**

- ZZH - Zig Zag Hill Formation (polymict volcaniclastic conglomerate)
- MJM - Mt Julia Member (q-f-phc rhyolite and associated volcaniclastic facies)
- LM - Lynchford Member (black shale, quartz- poor crystal volcaniclastic & minor carbonate)

*** Central Volcanic Complex (CVC, typically feldspar phyric +/- minor quartz)**

- Massive & lithic felsic volcaniclastic sandstones
- Feldspar phyric Dacite/Rhyodacite
- LMH - lower mineralised horizon (coloured only where positively identifed)

LITHOLOGIES

- Undifferentiated
- Black Shale
- Volcaniclastic siltstone
- Volcaniclastic sandstone
- Pumiceous, lithic, volcaniclastic sandstone, with siltstone interclast.
- Volcaniclastic breccia (juvenile lava fragments)
- Dacite / Rhyolite lava
- Rhyolite

MAPPING SYMBOLS

- Outcrop Outline

Geological Boundary

- Position Accurate
- Position Approximate
- Position Inferred

Faults

- Position Accurate
- Position Approximate
- Position Inferred

Folds

- Anticilne Position Accurate
- Anticline Position Approximate
- Anticline Position Inferred
- Minor fold, plunge indicated
- adit

N

25m 0 50 100m

SCALE 1 : 1000

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS, **VOL 2 OF 2**
R REID, R CLOSE

REVISION	**PLUTONIC OPERATIONS LIMITED** (5 cm)	
Technical Report No.	PROJECT: 709 - RED HILLS	
CHECKED BY:	EL 29/94 CROSS SECTION 5364500mN RH10 426239	
DATE: JUN 1997 SCALE: 1 : 1000	FILE: d:\tasmania\redhills\rh500m.dgn DATE: 09-Mar-98 17:04	DWG. NO.:

PLATE 10

382100 E | 382200 E | 382300 E | 382400 E | 382500 E | 382600 E

700 RL
600 RL
500 RL
400 RL
300 RL

RH 11
Qg
Coarse fossiliferous limestone breccia
Grey quartz feldspar porphyritic rhyolite (Similar to RH18, 19)
Interbedded black shale, Sericitic Qtz phyric volcaniclastic Sst &Slst & f-mg sandy calcarenite
Amygdaloidal basalt (Dykes)
Black fissile shales / mudstone
"Whole Rock" Anal. Sample Locations (see Table 3)
LYNCHFORD MEMBER ?
Dacitic " sills unassigned probably CVC?
Feldspar Dacite
Dacite / mudstone peperite
Dacite & peperitic contacts
Dacite Hyaloclastite
Pumiceous sandstone pumice cherts <4mm
Q(Chl) vein, polymict Bx
Sst
Pervasive grey Si-Ser alt. <1% Py
Transition
LMH
Pale pink/ grey Si-Ser frp altn.
Pervasive chlorite alteration 1% disseminated Py
Mottled Pink / green feldspare chlorite altn. generally <0.5% Py
Red/green mottled Kspar/chl alteration. Disseminated magnetite & splashy Py+Cp (<0.5%)
CVC
100
200
300
381

LEGEND

REGIONAL DESIGNATION

- Qa - Quaternary Alluvium or Glacial
- Oc - Ordovician Owen Conglomerate - Undifferentiated

CAMBRIAN

***Tyndal Group (TG)**

- ZZH - Zig Zag Hill Formation (polymict volcaniclastic conglomerate)
- MJM - Mt Julia Member (q-f-phc rhyolite and associated volcaniclastic facies)
- LM - Lynchford Member (black shale, Quartz- poor crystal volcaniclastic & minor carbonate)

*** Central Volcanic Complex (CVC, typically feldspar phyric+/- minor quartz)**

- Massive & lithic felsic volcaniclastic sandstones
- Feldspar phyric Dacite/Rhyodacite
- LMH - lower mineralised horizon (coloured only where positively identifed)

LITHOLOGIES

- Undifferentiated
- Black Shale
- Volcaniclastic siltstone
- Volcaniclastic sandstone
- Pumiceous, lithic, volcaniclastic sandstone, with siltstone interclasts.
- Volcaniclastic breccia (juvenile lava fragments)
- Dacite / Rhyolite lava
- Rhyolite

MAPPING SYMBOLS

- Outcrop Outline

Geological Boundary

- Position Accurate
- Position Approximate
- Position Inferred

Faults

- Position Accurate
- Position Approximate
- Position Inferred

Folds

- Anticilne Position Accurate
- Anticline Position Approximate
- Anticline Position Inferred
- Minor fold, plunge indicated
- adit

5 cm

N

25m 0 50 100m

SCALE 1 : 1000

REVISION	**PLUTONIC OPERATIONS LIMITED**
Technical Report No.	PROJECT: 709 - RED HILLS
CHECKED BY:	EL 29/94 CROSS SECTION 5363900mN RH11
DATE: JUN 1997 SCALE: 1 : 1000	FILE: d:\tasmania\redhills\rh900n.dgn DATE: 05-Mar-98 16:59
	DWG. NO.: 426240

PLATE 11

382200 E | 382300 E | 382400 E | 382500 E | 382600 E | 382700 E

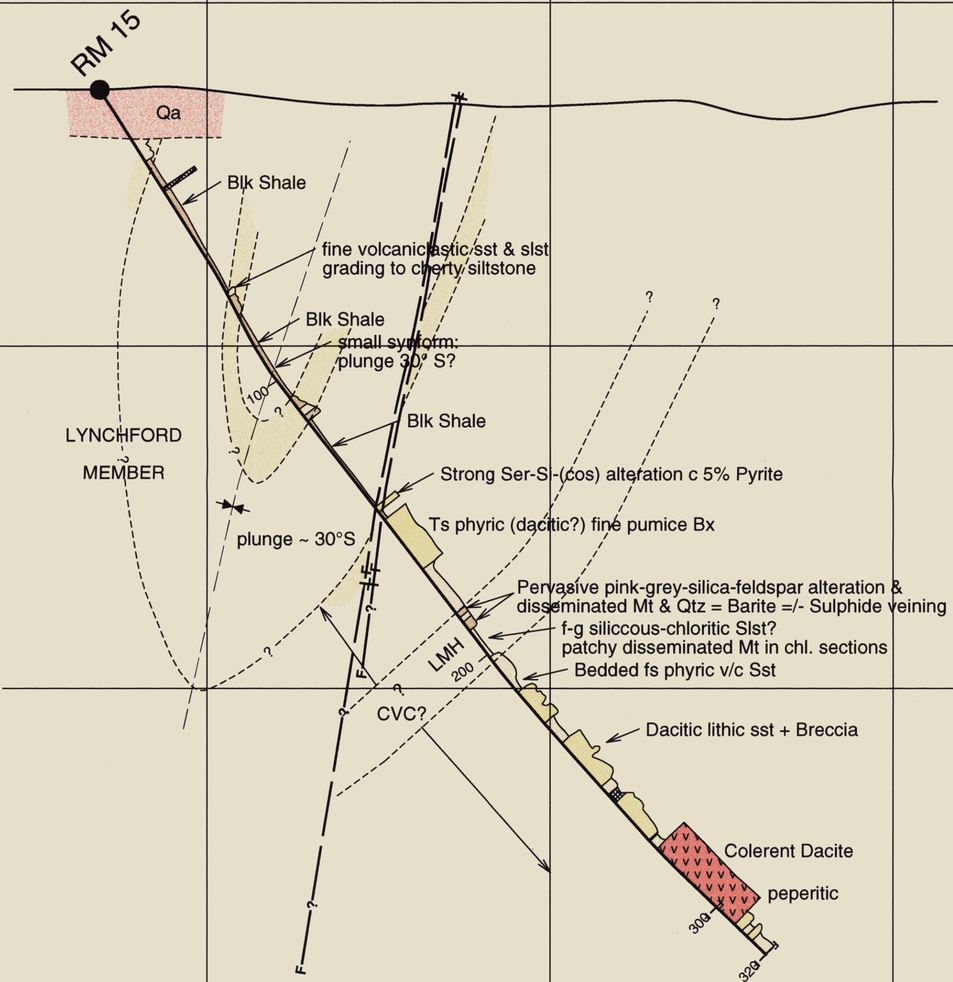
700 RL

600 RL

500 RL

400 RL

300 RL



LEGEND

REGIONAL DESIGNATION

- Qa - Quaternary Alluvium or Glacial
- Oc - Ordovician Owen Conglomerate - Undifferentiated

CAMBRIAN

***Tyndal Group (TG)**

- ZZH - Zig Zag Hill Formation (Polymict Volcaniclastic conglomerate)
- MJM - Mt Julia Member (q-f-phc Rhyolite and associated volcanicalstic Facies)
- LM - Lynchford Member (black shale, Quartz- poor crystal volcaniclastic & minor carbonate)

*** Central Volcanic Complex (CVC, typically f-phc +/- minor quartz)**

- Massive & lithic felsic volcaniclastic sandstones
- f-phc Dacite/Rhyodac
- LMH - lower mineralised horizon (coloured only where positively identifed)

LITHOLOGIES

- Undifferentiated
- Black Shale
- Volcaniclastic Siltstone
- Volcaniclastic Sandstone
- Pumiceous, Lithic, Volcaniclastic Sandstone, Siltstone interclast.
- Volcaniclastic Breccia (juvenile lava fragments)
- Dacite / Rhyolite lava
- Rhyolite
- Rhyolite

MAPPING SYMBOLS

- Outcrop Outline

Geological Boundary

- Position Accurate
- Position Approximate
- Position Inferred

Faults

- Position Accurate
- Position Approximate
- Position Inferred

Folds

- Anticilne Position Accurate
- Anticline Position Approximate
- AnticlinePosition Inferred

N

5 cm

25m 0 50 100m

SCALE 1 : 1000

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS, VOL 2 OF 2
R REID, R CLOSE

REVISION	**PLUTONIC OPERATIONS LIMITED**	
Technical Report No.	PROJECT: 709 - RED HILLS	
CHECKED BY:	EL 29/94 CROSS SECTION 5363700mN RHS15 426241	
DATE: JUN 1997 SCALE: 1 : 1000	FILE: d:\tasmania\redhills\rh700n.dgn DATE: 05-Mar-98 14:52	DWG. NO.:

PLATE 12

382200 E | 382300 E | 382400 E | 382500 E | 382600 E | 382700 E | 382800 E

700 RL

600 RL

500 RL

400 RL

300 RL

RH19
RH18
CN2

A
B
C
D
E
F

Cavity
Peperitic
Peperitic
Massive f phyric Dactite
Peperitic
Sericitic Volcaniclastic (f/phyric) Sst minor Bx
Correlate of E or F ?

Qtz phyric Rhyolite
Polyritic (Rhy-Cos) Breccia/Sst
Chloritic Massive Lithic Sst
Rhyolite clast rich Breccia
Sericitic-Siliceous Volcaniclastic Sst
Qtz-(Fs) Porphyritic Rhyolite
Blk Shale and minor ashy volcaniclastic Sst

LM
CVC ?

100
200
237.3
100
200
300
356.8
100
155

?

LEGEND

REGIONAL DESIGNATION

- Qa - Quaternary Alluvium or Glacial
- Oc - Ordovician Owen Conglomerate - Undifferentiated

CAMBRIAN

***Tyndal Group (TG)**

- ZZH - Zig Zag Hill Formation (Polymict Volcaniclastic conglomerate)
- MJM - Mt Julia Member (q-f-phc Rhyolite and associated volcanicalstic Facies)
- LM - Lynchford Member (black shale, Quartz- poor crystal volcaniclastic & minor carbonate)

*** Central Volcanic Complex (CVC, typically f-phc +/- minor quartz)**

- Massive & lithic felsic volcaniclastic sandstones
- f-phc Dacite/Rhyodac
- LMH - lower mineralised horizon (coloured only where positively identifed)

LITHOLOGIES

- Undifferentiated
- Black Shale
- Volcaniclastic Siltstone
- Volcaniclastic Sandstone
- Pumiceous, Lithic, Volcaniclastic Sandstone, Siltstone interclast.
- Volcaniclastic Breccia (juvenile lava fragments)
- Dacite / Rhyolite lava
- Rhyolite
- Rhyolite

MAPPING SYMBOLS

- Outcrop Outline

Geological Boundary

- Position Accurate
- Position Approximate
- Position Inferred

Faults

- Position Accurate
- Position Approximate
- Position Inferred

Folds

- Anticilne Position Accurate
- Anticline Position Approximate
- AnticlinePosition Inferred

N

5 cm

25m 0 50 100m

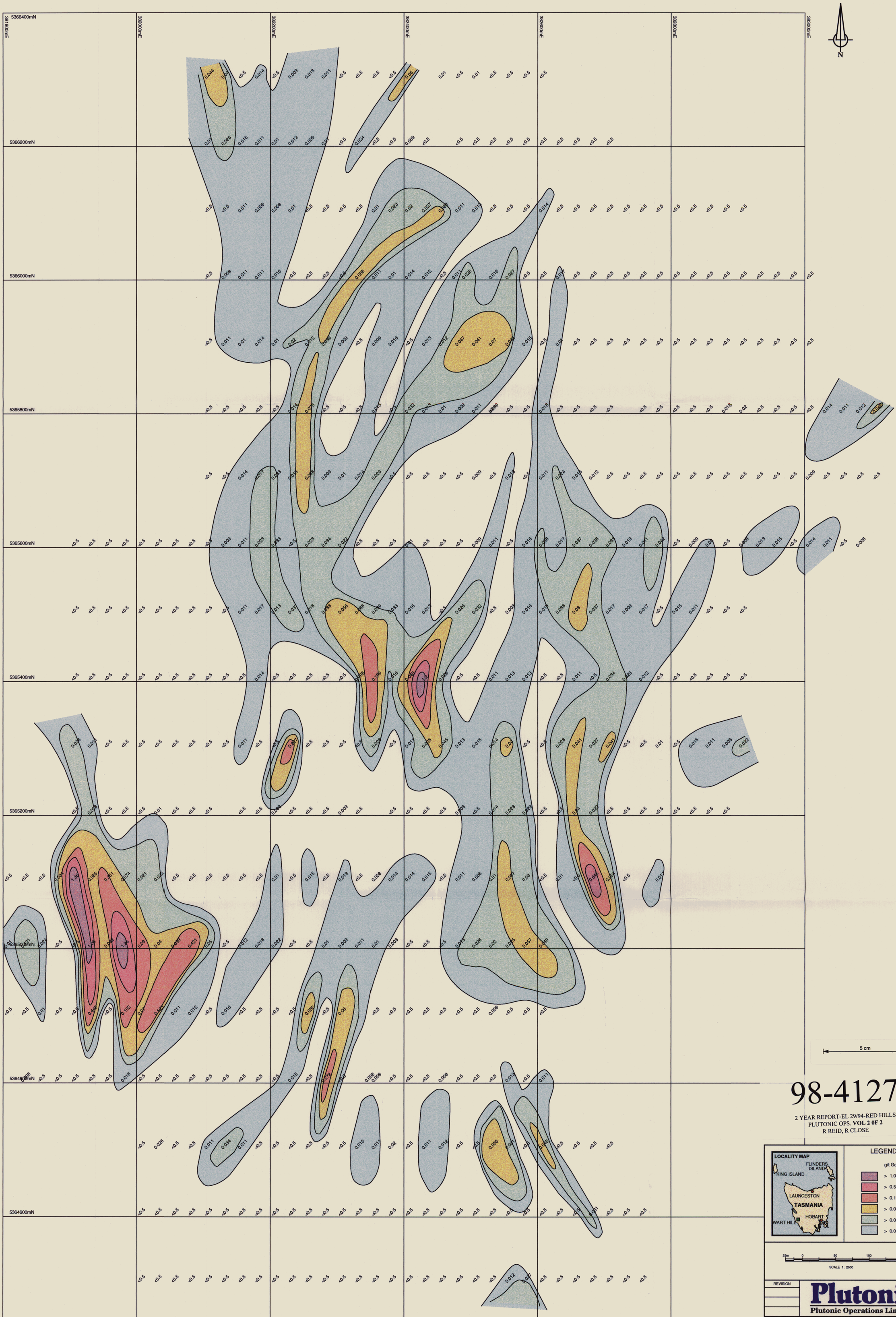
SCALE 1 : 1000

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. **VOL 2 OF 2**
R REID, R CLOSE

REVISION	PLUTONIC OPERATIONS LIMITED	
Technical Report No.	PROJECT: 709 - RED HILLS	
CHECKED BY:	EL 29/94 CROSS SECTION 5363400mN RHS18,19 AND GN2	
DATE: JUN 1997 SCALE: 1 : 1000	FILE: d:\tasmania\redhills\rh400n.dgn DATE: 05-Mar-98 13:12	DWG. NO.: 426242

PLATE 13



98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. **VOL 2 0F 2**
R REID, R CLOSE

LOCALITY MAP

LEGEND

g/t Gold (Au)

- > 1.00
- > 0.50
- > 0.10
- > 0.04
- > 0.02
- > 0.01

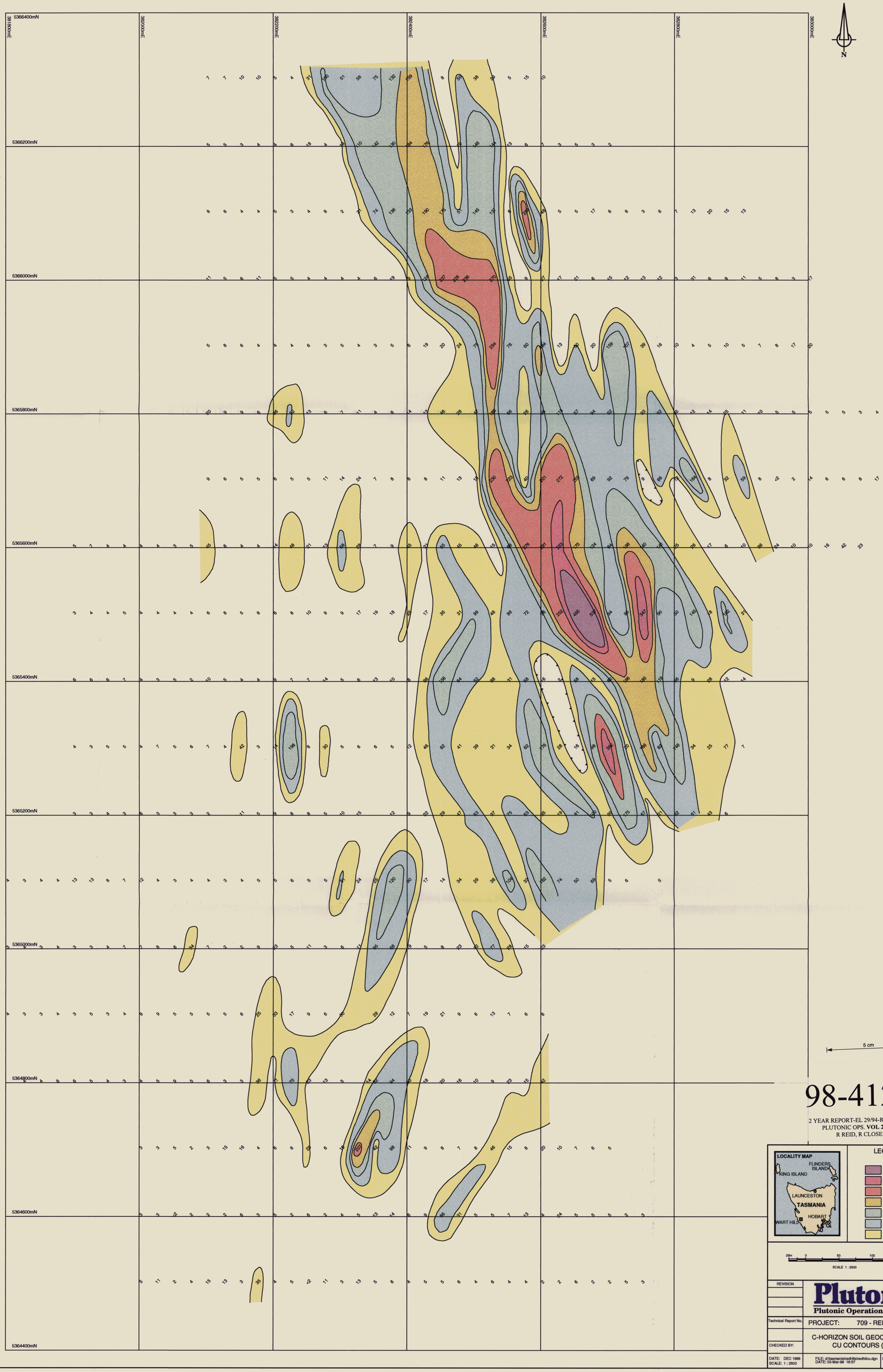
25m 0 50 100 150m

SCALE 1 : 2500

REVISION	**Plutonic** Plutonic Operations Limited
Technical Report No.	PROJECT: 709 - RED HILLS
CHECKED BY:	C - HORIZON SOIL GEOCHEMISTRY AU CONTOURS (ppm)
DATE: DEC 1996 SCALE: 1 : 2500	FILE: d:\tasmania\redhills\redhilau.dgn DATE: 03-Mar-98 16:10 / DWG. NO.:

PLATE 14

426243



98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. **VOL 2 0F 2**
R REID, R CLOSE

LOCALITY MAP

LEGEND

Ppm Cu

- > 400
- > 300
- > 200
- > 150
- > 100
- > 50
- > 25

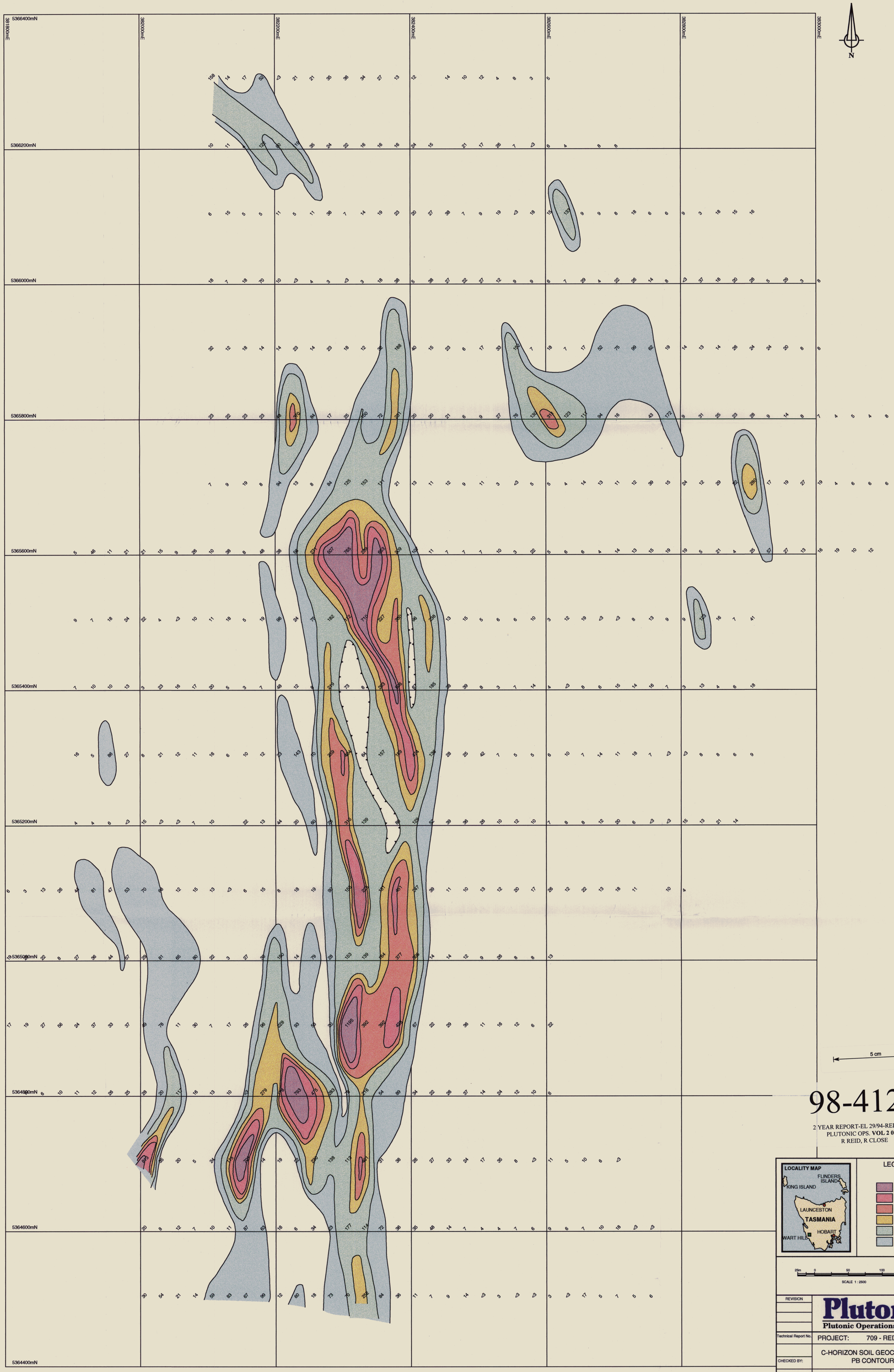
25m 0 50 100 150m

SCALE 1 : 2500

REVISION	Plutonic Plutonic Operations Limited
Technical Report No.	PROJECT: 709 - RED HILLS
CHECKED BY:	C-HORIZON SOIL GEOCHEMISTRY CU CONTOURS (ppm)
DATE: DEC 1996 SCALE: 1 : 2500	FILE: d:\tasmania\redhills\redhilcu.dgn DATE: 03-Mar-98 16:57
	DWG. NO.:

PLATE 15

426244



98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. **VOL 2 0F 2**
R REID, R CLOSE

LOCALITY MAP

LEGEND

Ppm Pb

- > 500
- > 400
- > 300
- > 200
- > 100
- > 50

25m 0 50 100 150m

SCALE 1 : 2500

REVISION		
Technical Report No.	PROJECT: 709 - RED HILLS	
	C-HORIZON SOIL GEOCHEMISTRY PB CONTOURS	
CHECKED BY:		
DATE: DEC 1996 SCALE: 1 : 2500	FILE: d:\tasmania\redhills\vehhilpb.dgn DATE: 05-Mar-98 15:14	DWG. NO.:

Plutonic
Plutonic Operations Limited

PLATE 16

426245

381800mE
382000mE
382200mE
382400mE
382600mE
382800mE
383000mE
5366400mN
5366200mN
5366000mN
5365800mN
5365600mN
5365400mN
5365200mN
5365000mN
5364800mN
5364600mN
5364400mN
N
5 cm

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. **VOL 2 0F 2**
R REID, R CLOSE

LOCALITY MAP
FLINDERS ISLAND
KING ISLAND
LAUNCESTON
TASMANIA
HOBART
WART HILL

LEGEND
Ppm Zn
> 500
> 400
> 200
> 100
> 50

25m 0 50 100 150m
SCALE 1 : 2500

REVISION	**Plutonic** Plutonic Operations Limited
Technical Report No.	PROJECT: 709 - RED HILLS
CHECKED BY:	C-HORIZON SOIL GEOCHEMISTRY ZN CONTOURS 23/3/96
DATE: DEC 1996 SCALE: 1 : 2500	REF : FILE: c:\REDHILPB.dgn DATE: 6-Dec-96 10:38 / DWG. NO.:

PLATE 17

426246

381800mE 382000mE 382200mE 382400mE 382600mE 382800mE 383000mE

5366400mN

5366200mN

5366000mN

5365800mN

5365600mN

5365400mN

5365200mN

5365000mN

5364800mN

5364600mN

5364400mN

N

5 cm

98-4127

2 YEAR REPORT-EL 29/94-RED HILLS
PLUTONIC OPS. **VOL 2 0F 2**
R REID, R CLOSE

LOCALITY MAP

FLINDERS ISLAND
KING ISLAND
LAUNCESTON
TASMANIA
HOBART
WART HILL

LEGEND

Ppm As

- > 200
- > 150
- > 100
- > 75
- > 50
- > 25
- > 10

25m 0 50 100 150m

SCALE 1 : 2500

REVISION	**Plutonic** Plutonic Operations Limited
Technical Report No.	PROJECT: 709 - RED HILLS
CHECKED BY:	C-HORIZON SOIL GEOCHEMISTRY AS CONTOURS
DATE: DEC 1996 SCALE: 1 : 2500	FILE: d:\tasmania\redhills\redhilas.dgn DATE: 05-Mar-98 11:23 / DWG. NO.:

PLATE 18

426247