MINERS RIDGE PROPERTY
EXPLORATION LICENCE 19/99
TASMANIA AUSTRALIA

GEOLOGICAL REVIEW AND RECOMMENDATIONS FOR FURTHER EXPLORATION

Prepared for
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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Maiden Meadows Pastoral Pty Ltd holds the Miners Ridge property, in Western Tasmania, as EL 19/99

The 46Km^2 property is located 260Kms west of the state capital of Hobart and centred upon the town of Queenstown. Queenstown is the service centre for the West Coast mining district with mines operating on a continuous basis since 1893. All weather access bitumen roads from Hobart and from the port city of Burnie service the mining field, which is located 175Km south of Burnie. A dedicated freight only rail line transports mineral concentrates from the West Coast mining operations to the port complex, which is an interstate and international seaport.

The exploration licence is underlain by the prospective Cambrian rocks of the Mount Reid volcanics (MRV's), which elsewhere in the belt hosts a number of world class and major massive sulphide ore bodies. The most prospective unit within the MRV's is the Central Volcanic Complex. This unit, which hosts the Roseberry, Merales and Mt Lyell deposits, forms a sinuous North-South trending belt of the felsic pyroclastics and felspar phyric lavas that form the eastern perimeter of the lease. Within the EL, small seafloor exhalative horizons are noted. These units are geochemical correlates of the volcanic rocks that host the que River and Hellyer massive sulphide deposits.

Further potential mineralisation exists within the EL with the delineation of Tyndall Groups lithology's that host the significant, small but non-Henty Gold deposit. (1.874Mt@12.93g/tAu)

The exploration licence is a 'Brownfields' project within a mature mining field, however, a conclusive The author has identified regional stream sediment and airborne EM anomalies that remain unresolved and warrant follow up investigation.

Until the discovery of the Henty Au deposit in the late 1980's, exploration has focused determination as to the prospectivity or otherwise of the lease remains. primarily on polymetallic seafloor base metal deposits within the MRV's. Since that time gold exploration as a stand alone commodity continues within the belt. However, , scope exists for the development of a net genetic model for the Au in Western Tasmania with the Victorian gold deposits of Bendigo and Ballarat as an analogy. Exploration could now be directed away from the MRV's and into the quartz vein systems associated with the Eldon Group and the synchronous Devonian Teberreberan deformation. Recent data acquisitioned be Mineral Resources Tasmania including radiometers, aero magnetics and airborne EM in conjunction with a major reassessment of the stratigraphy of the MRV's will be made available in the near future. The author recommends utilisation of these valuable resources.

1 INTRODUCTION

This report documents a literature search completed by the authors on the Miners Ridge exploration property - EL 19/99 – Tasmania, Australia. The work was performed on behalf of Maiden Meadows Pastoral Pty Ltd at their request, to appraise the mineral potential of the Miners Ridge property on the West Coast of Tasmania. The literature review was of data held in the Mineral Resources Tasmania library, and comprised of both government and industry reports dating from the 19th century to Maiden Meadows recent work programme undertaken in 2001

2 SITE DETAILS

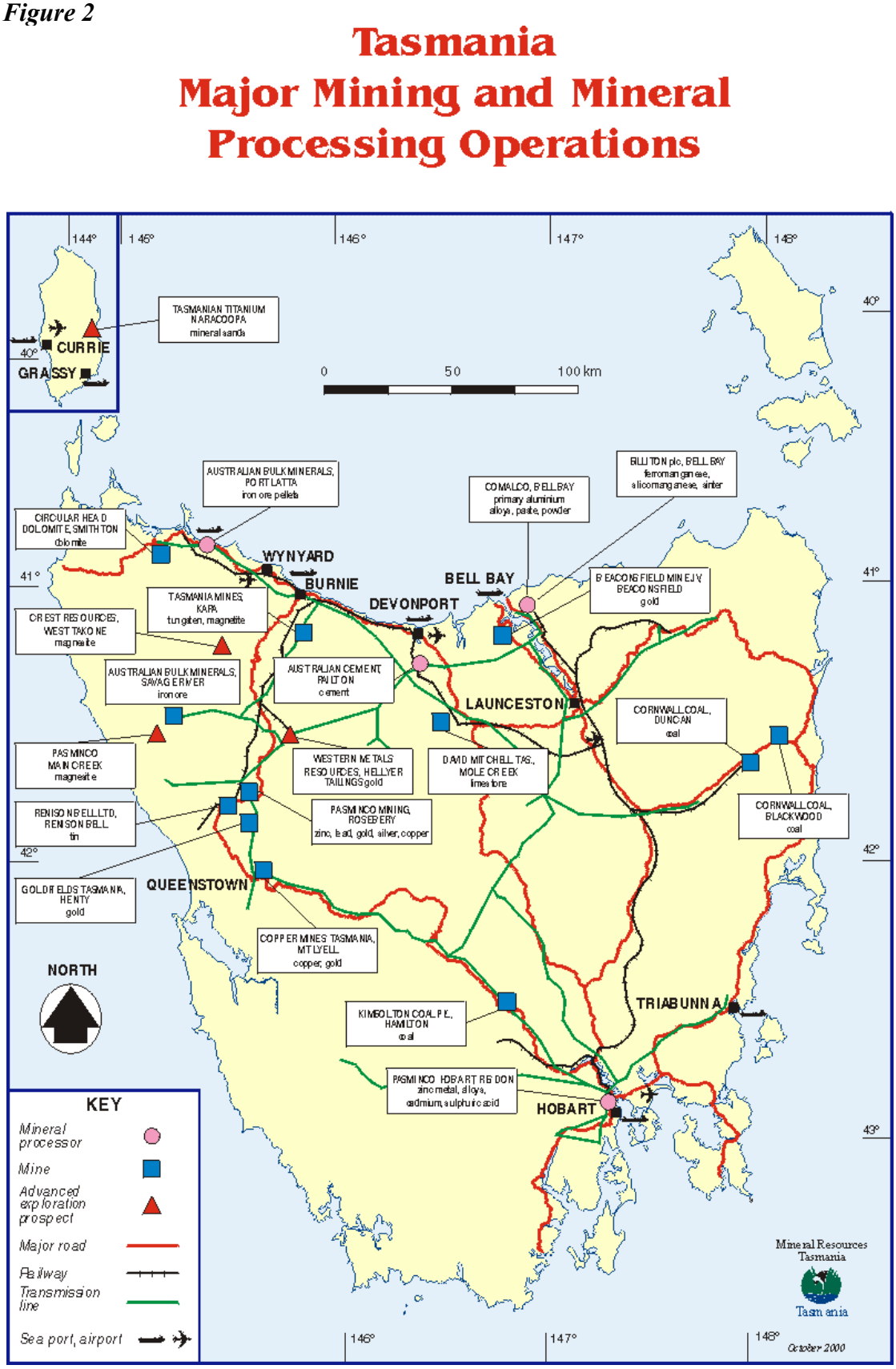
2.1 Location and Access

The Miners Ridge property is located on the island of Tasmania. Tasmania itself being the southern most state of Australia and situated 240 kilometres south of the Australian continent. The property lies between latitudes 42 04'S to 42 11'S and longitude 145 27'E to 145 35'E and is centred upon AMG Zone 55 co-ordinates 03 79 000E / 53 37 000N. See Figure 1.

Figure 1

The property embraces the mining township of Queenstown. Queenstown is located 260-road kilometres or 3 hours drive west of the state capital – Hobart. See Figure 2.

Figure 2


Tasmania
Major Mining and Mineral
Processing Operations
144°
145°
146°
147°
148°
40°
41°
42°
43°
0
50
100 km
CURRIE
GRASSY
TASMANIAN TITANIUM NARACOOPA mineral sands
AUSTRALIAN BULK MINERALS, PORT LATTA iron ore pellets
CIRCULAR HEAD DOLOMITE, SMITHTON dolomite
WYNYARD
BURNIE
DEVONPORT
BELL BAY
COMALCO, BELL BAY primary aluminium alloys, paste, powder
BILLITON plc, BELL BAY ferromanganese, silicomanganese, sinter
BEACONSFIELD MINE JV BEACONSFIELD gold
TASMANIA MINES, KARA tungsten, magnetite
CREST RESOURCES, WEST TAKONE magnesite
AUSTRALIAN BULK MINERALS, SAVAGE RIVER iron ore
AUSTRALIAN CEMENT, RAILTON cement
LAUNCESTON
CORNWALL COAL, DUNCAN coal
PASMINCO MAIN CREEK magnesite
WESTERN METALS RESOURCES, HELLYER TAILINGS gold
DAVID MITCHELL TAS., MOLE CREEK limestone
RENISON BELL LTD, RENISON BELL tin
PASMINCO MINING, ROSEBERY zinc, lead, gold, silver, copper
CORNWALL COAL, BLACKWOOD coal
QUEENSTOWN
GOLDFIELDS TASMANIA, HENTY gold
COPPER MINES TASMANIA, MT LYELL copper, gold
NORTH
KIMBOLTON COAL PL, HAMILTON coal
TRIABUNNA
PASMINCO HOBART REGION zinc metal, alloys, cadmium, sulphuric acid
HOBART
KEY
Mineral processor
Mine
Advanced exploration prospect
Major road
Railway
Transmission line
Sea port, airport
Mineral Resources Tasmania
Tasmania
October 2000

2.2 Infrastructure

Queenstown is the service centre for the west coast mining district. Mining has been continuous in the region since the opening of the Mt Lyell mine in Queenstown in 1893. All weather access bitumen roads from Hobart and from the port city of Burnie service the mining field, which is located 175 kilometres south of Burnie. There are currently three producing operations that utilise this transport network, especially a dedicated freight only rail line from Melba Flats just north of Queenstown. This rail system is used primarily to transport mineral concentrate to the Burnie port complex, which is a deep-water seaport that operates interstate and international cargo services. Interstate passenger and freight flights from nearby Wynyard airport also service Burnie. A state wide hydro electricity grid that is geared towards industrial consumption on the west coast supplies a power network. There exists on the west coast an experienced mining workforce (MRT 2001).

2.3 Topography and Land Use

The southern portion of the lease is characterised by the deeply incised valley of the King River. From the confluence of the Queen and King Rivers at 40mASL the relief ranges up to 750m ASL on the western flanks of Proprietary Peak and Mt Jukes, which are part of North-South trending West Coast Range. The central portion of the lease is characterised by undulating hills in the upper drainage basin of the Queen River. The northern segment of the lease is part of the physiographic unit known as the Henty Surface, which is a widespread post Eocene erosional surface (Baillie.1985).

Prospecting has been undertaken in the district since the 1860's. Since the 1880's the development of a plethora of mining and smelting operations has seen the steady de-forestation of the Queen River Valley. In historical times small-scale selective logging operations have sought out highly prized native pines such as Huon Pine and King Billy Pine; these operations continue today.

2.4 Climate and Vegetation

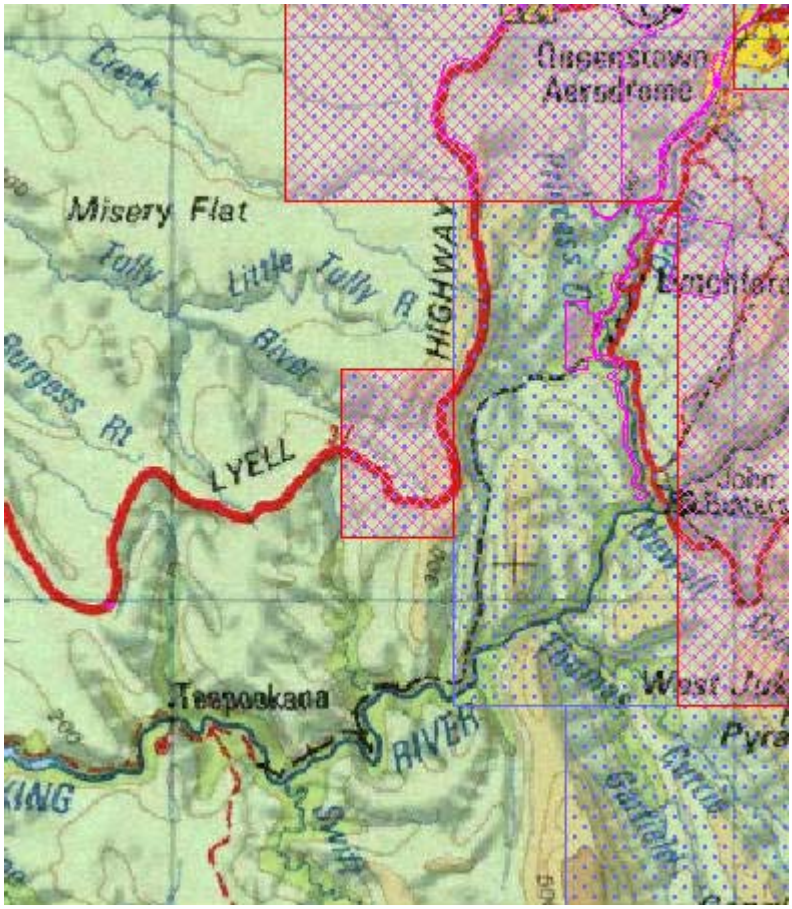
Tasmania in general has a cool temperate maritime climate. The west coast region has a severely wet climate with Queenstown recording an average annual rainfall of 3200mm and average minimum/maximum temperatures in the range of 3-18 C. This is due to the circulating frontal systems that sweep around the Southern Ocean unhindered until rain is finally precipitated on the western flanks of the West Coast Ranges. As a result the West Coast of Tasmania is characterised by a dense coverage of rainforest, mixed eucalypt forests, button grass plains and coastal heathlands. Specifically, EL 19/99 has one third of its area in the vicinity of the King River valley, clothed by dense forest with the balance of the lease either being de-forested or covered by button grass.

3 PROPERTY DESCRIPTION AND TITLE AND NATIVE TITLE STATUS

SCHEDULE:
LAND DISTRICT OF MONTAGU & FRANKLIN
VICINITY OF QUEENSTOWN
MUNICIPALITY OF WEST COAST
EXPLORATION LICENCE 19/1999 46SKM
MAIDEN MEADOWS PASTORAL PTY. LTD.

Part 1 Commencing at the north west corner at grid coordinates 372 000mE 5 341 000mN thence grid east to 380 000mE grid south to 5 339 000mN again grid east to 382 000mE again grid south to 5 336 000mN grid west to 381 000mN again grid south to 5 328 000mN again grid west to 379 000mE grid north to 5 337 000mN again grid west to 372 000mE aforesaid thence again grid north to the point of commencement.

Part 2 Commencing at the north west corner at grid coordinates 373 000mE 5 334 000mN thence grid east to 375 000mE grid south to 5 331 000mN grid west to 373 000mE aforesaid thence grid north to the point of commencement.



EXCLUSIONS

(a) Any land owned or leased by the Commonwealth of Australia.

(b) Mining leases amounting to 11.3 skm (more or less), which were applied for or in force prior to the date of application for this licence.

(c) Crown reservations amounting to 3.8 skm (more or less) or other land set apart or dedicated for any public purpose such as public reserves, municipal reserves or roadways unless such areas have been brought under the provisions of the *Mineral Resources Development Act 1995*.

3.1 Land Tenure

The area comprises:

Private Property
State/Multiple Use Forest
Mount Dundas Regional Reserve
West Coast Range Regional Reserve
H.E.C. Land
Crown Land

The licence area contains areas, which are listed (including listed on an interim basis) on the Register of the National Estate kept under the *Australian Heritage Commission Act 1975*.

3.2 Native Title Status

At the date of this Report, no claims for Native Title have been made under the *Native Title Act* in respect to the above Exploration Licence 19/1999.

4 EXPLORATION HISTORY

The West Coast region of Tasmania is one of Earths most richly endowed mineral provinces.

Within a 30 kilometre wide island arc sequence of Cambrian volcanic rocks, no fewer than 3 world class deposits are found: -

- Mt Lyell: 311Mt@0.97% Cu, 0.31g/t Au.
- Rosebery: 31.7Mt@14.3% Zn, 4.4% Pb, 0.58% Cu, 171g/t Ag, 2.3g/t Au
- Hellyer: 16.5Mt@13.9% Zn, 7.2% Pb, 0.38% Cu, 169g/t Ag, 2.55g/t Au

A lithostratigraphic unit termed the Mount Read Volcanic Belt hosts these massive sulphide ore bodies. Other significant deposits within this belt include the Hercules, Hellyer Que River and Henty/Mount Julia mines. Genetic models of mineralisation associated with the Mount Read Volcanics include porphyry style Cu-Au, VHMS Pb/Zn deposits with substantial gold credits (2-4g/t) and high grade gold only deposits that are transitional between VHMS and epithermal deposits (MRT 2001).

Gold was first discovered in 1863 as coarse-grained alluvial gold in the King River. Subsequent prospecting led to the discovery in the early 1880's of a 50kg quartz sample containing approximately 120kg/t Au. This was found in the Lynch Creek area, which is ground held by Maiden Meadows Pastoral Pty Ltd as EL 19/99. The result of further prospecting was the discovery of the Mount Lyell ore body in 1883 and the development of Western Tasmania as a world-class mineral province.

The following is adapted from Denwer & Gregory 1997 and provides a summary of modern exploration specific to the areal extent of EL 19/99:-

- **Pickands Mather International 1966-67**

The detection of a drainage anomaly in the Lynch Creek area was followed by griding and soil geochemistry, which highlighted Pb and Cu anomalism. These anomalies failed

to respond to both ground magnetics and an EM survey. High background levels within basic volcanics were offered as an explanation for the anomalism observed.

- **Cyprus Mining Corporation 1971-72**

A new grid was cut in the Lynch Creek – King River Mine area with soil geochemistry, geological mapping, ground magnetics and IP undertaken. No drilling targets were delineated.

- **Renison Goldfields Consolidated 1980-82**

A stream sediment programme was conducted on ground to the north of the King River with unsatisfactory results. Two lines of IP were surveyed over the surface trace off the King River Mine and a DIGHEM survey was undertaken, which provided subtle and inconclusive anomalies that were not followed up.

- **CRA 1986-93**

This period of time is comprised of two joint venture agreements between CRA and Pasminco (1986-89), and CRA and Aberfoyle (1990-93). A review of all data resulted in the follow up of all previously identified stream sediment, DIGHEM and EM anomalies. Further griding and soil geochemistry was undertaken over the Specimen Creek area in response to stream sediments values of 3700 & 3400 ppt Au. A solitary diamond drill hole (LF001) tested anomalous soil geochemistry and alteration at the top of the Lynch Creek basalt in the Specimen Creek area. The hole was abandoned without reaching its target. With the construction of the Jukes Road, access was available to the southern portion of the lease where a bulk-cyanide leach stream sediment survey was conducted in the Newell Creek and Thomas Currie Rivulet areas. A substantial anomaly was identified and remains to be investigated.

The Hydro Electricity Commission (HEC) commenced construction of the King River Power development during this period. CRA obtained the logs for 29 DDH's drilled by the HEC during their geotechnical evaluation process. The drill logs noted intervals that contained sulphide mineralisation but upon inspection it was considered that assaying was not warranted. In many cases where mineralisation was noted in the logs, no evidence was observed in the drill core (Funnell 1988). Due to this spurious reporting, CRA conducted an initial grab sampling programme through the 7 kilometre long King River tunnel, which provided an opportunity to sample prospective horizons of the Central Volcanic Complex within the Mount Read Volcanics lithostratigraphic unit. The Tunnel geology comprises a broad sequence of variably altered rhyolitic lavas and lesser volcaniclastics with a narrow horizon/lens of intensely white quartz veined black shale (Noonan 1990). This work yielded zones of weakly elevated zinc in the 100-250ppm range with isolated spikes of lead and associated silver. Follow up channel sampling failed to increase the tenor of these values and the lead/silver spikes were attributed to Devonian vein style mineralisation. Interest in the HEC tunnel was initiated by a grab sample provided by a HEC engineer, which returned a value of 18.3g/t Au. This failed to repeat upon re-assay. The highest Au values obtained from the channel sampling program included 1.97g/t from a quartz vein and 180ppb associated with a zone of pyritic alteration.

- **Renison Goldfields Consolidated 1994-1998**

A comprehensive exploration programme was undertaken by RGC that developed genetic modelling of targets and utilised REE and stable isotope studies plus detailed structural analysis as an adjunct to traditional geochemical and geophysical prospecting techniques. Two prospects were subject to rigorous investigation.

1. Miners Ridge

Previous work by RGC south of the King River had delineated the Garfield copper prospect on the basis of its magnetic signature being similar to the Price Lyell deposit signature. By applying the knowledge gained from the Garfield prospect on a regional basis, a similar magnetic signature was delineated along a line of andesites that are geochemically analogous to the host andesite units found at the Que River-Hellyer VHMS deposits. Additional griding, soil geochemistry and ground magnetics were completed prior to the drilling of two drill holes-LF 002 & 005. The magnetic anomaly drilled encountered minor epigenetic base metals and significant quantities of magnetic pyrrhotite.

2. Queen River/Lynch Creek/Specimen Creek

A second body of work was conducted in the Lynchford area, which targeted a jasper-breccia unit at the base of the Tyndall group and thought to be exhalative in origin. This prospective horizon - The Lynchford Tuff - is a regionally recognised favourable horizon that hosts massive sulphide gold mineralisation at Henty. (Herrmann 1994) This prospect was subject to a solitary diamond drill hole by the CRA/Aberfoyle joint venture. Subsequent DHEM and UTEM surveys failed to define a follow up target.

RGC's work included an expansion of the geochemical grid, extended mapping, a heli mag survey, the relogging of LF001 and the drilling of two diamond drill holes-LF 003&004. DDH LF-004 intersected significant alteration between 150-177m. This strongly silicified and albitised interval appears similar to alteration observed at Henty (Stockwell 1998). To date no DHEM survey has been undertaken on this drill hole.

REE analysis, especially in europium, indicated that the jasper was precipitated from seawater and not hydrothermal in origin.

- **Maiden Meadows 1999 –Present**

Maiden Meadows have undertaken work south of the King River in the vicinity of the Harris Reward mine.

A limited soil-sampling programme was carried out utilising existing tracks associated with the King River Power development. The company completed two diamond drill holes in the Harris Reward area. DDH MR1 targeted a kink in the flanks of an existing aeromagnetic anomaly. No anomalous values were returned, however, it was noted that sericite alteration intensity increased down the hole from 211m through to the end of the hole. DDH MR2 targeted a proposed strike extension of mineralisation observed in the nearby HEC surge tunnel. Results were unfavourable.

5 GEOLOGY

The Cambrian to early Ordivician rocks of western Tasmania have been divided into two major tectono-stratigraphic associations:

- Ultramafic-mafic blocks and associated volcanic-sedimentary sequences, allocthonous in nature and thrust into place during a major collision with a Middle Cambrian island arc complex.

- Post collision sequences of Late Middle Cambrian submarine felsic volcanics and volcano-sedimentary rocks (Mt Read Volcanics and Lower Dundas groups respectively), as well as a Late Cambrian to early Ordivician shallow marine sedimentary succession termed the Wurawina Supergroup (Bottrill et al 1998). See Figure 4.

The Mount Read Volcanic belt is host to a number of world class and major massive sulphide ore bodies as noted above in Section 4. The Mount Read Volcanics are comprised of submarine lavas, predominantly rhyolitic to dacitic in composition with locally abundant andesites and minor but significant basalts. Extensive mass flow volcaniclastic breccia units are a feature of the belt. Rock type determination is often best achieved utilising field relationships as pervasive alteration and cleavage is widespread.

The Mount Read Volcanic belt, including its contained mineral deposits, has been intensively studied with Corbett (1992), who is acknowledged as the foremost author. Corbett has subdivided the Mount Read Volcanics into six major litho stratigraphic associations: -

i. Sticht Range Formation.
ii. Eastern quartz-phyric sequence.
iii. Central Volcanic Complex - Host to the Rosebery, Hercules and Mt Lyell deposits.
iv. Western volcano-sedimentary sequence.
v. Andesite-Basalt sequences. These are spatially restricted units, which occur close to the top of the Central Volcanic Complex and near the base of the overlying Tyndall group. Their geochemical signature suggests a prospective relationship with the andesites and basalts that host the Que River and Hellyer VHMS deposits
vi. Tyndall Group. The sequence of volcaniclastics and minor felsic lavas that host the Henty deposit. See Figure 3.

The Miners Ridge property, EL 19/99 is comprised of two blocks. On the Queenstown-Strahan road, the Lyell Highway bisects a 6 sq km block that is underlain by Silurian-early Devonian fine grained clastics of the Eldon group. This group is comprised of shallow marine arenites (Florence Fm) and a shelf facies shale unit (Bell Fm). The main part of EL 19/99, located south and west of Queenstown is 55 sq kilometres in area and shaped like an inverted capital ‘L’. See Figure 4

The Queen River flows southwest from the township of Queenstown, this physiographic boundary mimics the underlying geological interface with clastic sediments of the Eldon Group west of the river, and prospective Cambrian rocks of the Mount Read Volcanics east of the river. Maiden Meadows Pty Ltd holds 25 square kilometres of the most prospective units within the MRV’s.

Figure 4

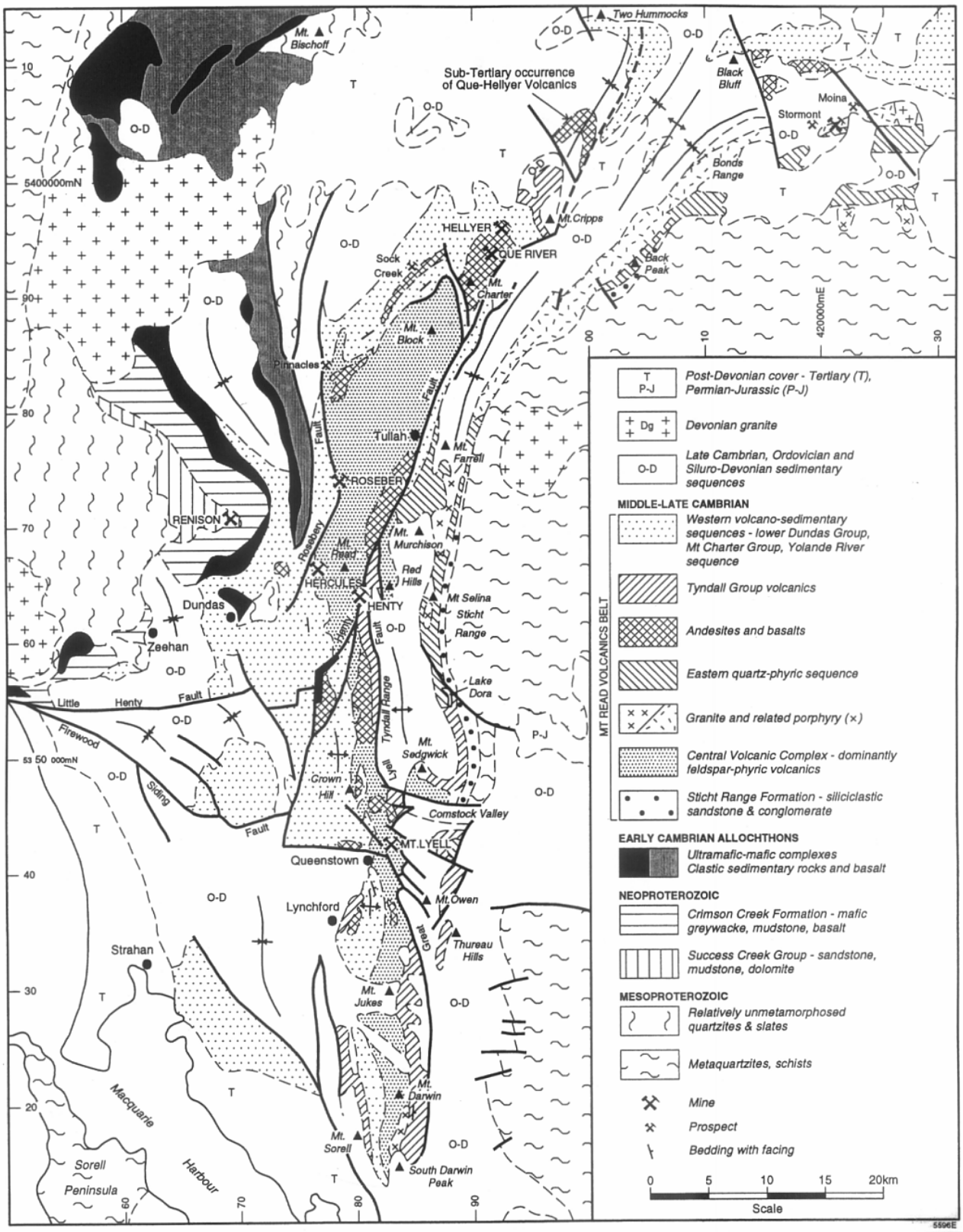


Figure 4. Geological map of the central-northern part of the Dundas Element, with main mines and prospects shown (after Bottrill 1998).

In this part of the EL, the MRV's form a sinuous, north-south trending belt with felsic pyroclastics and feldspar phyric lavas of the Central Volcanic Complex forming the eastern perimeter of the lease. The Central Volcanic Complex interfingers westward with the volcaniclastic and volcano-sedimentary Western sequence. Felsic porphyry bodies, intrusive or partly extrusive, are a feature of this Western sequence as are significant tholeiitic basalt horizons. The western boundary of the EL in the vicinity of Lynchford is characterised by Tyndall group volcaniclastics and minor lavas. In the environs of the King River gold mine, the Lynch Creek andesites and basalts form a distinctive and prospective suite as previously noted.

South of the King River, Central Volcanic Complex rocks are unconformably overlain by Late Cambrian to Middle Ordivician siliclastic rocks of the Denison Group, mainly conglomerates and sandstones. South of the King River power station, fossiliferous siltstones, sandstones and limestones of the Upper Ordivician Gordon Group mark the valley of Newell Creek. Gordon Group sediments are also found on the extreme southern perimeter of the EL.

Extensive Quaternary fan deposits, likely to be glacial in origin, are noted south of the King River.

6 DISCUSSION

6.1 Previous Production

The Queenstown 1:50,000 - metallogenic map (MRT 1986) indicates that the majority of metal occurrences are gold and located in the less prospective, fine-grained clastic rocks of the Eldon Group. These occurrences appear to be temporally related to the major Devonian Tabberabberan orogeny, whereby, wrenching and subsequent dilation provided sites and volume for auriferous fluids (Vicary 1998). These artesanal auriferous sweats are located at: -

i.	Woody Hill.	4.6kg Au from 265 tonnes at an av. of 17.6g/t.
ii.	Davie Workings	Surface values up to 14g/t
iii.	May Mine.	In 1904 - 52 tonnes of quartz mined @16g/t.
iv.	Princess Mine	Substantial development – no recorded production.
v.	Raggedy Anne	No production records. Probably alluvial
vi.	Madam Howard	No production records. (Newnham 1992)

Within the Mount Read Volcanics, the MRT metallogenic map indicates two alluvial Au occurrences at Upper Lynch Creek and Lynch Creek South. The King River Mine is historically the oldest Au working in the district. It was discovered in 1883 and commenced operation in 1887; it predates the development of the Mount Lyell copper ore bodies. The value of the total gold recovered never exceeded the cost of development. The mine continued to be worked over the ensuing decades without reward (Julen 1981).

South of the King River, the Harris Reward mine occurs adjacent to the North West trending Harris fault. Twelvetress (1901) records that the workings consists of 2 adits, 24 & 10 metres in length and 2 shafts 12 & 10 metres deep developed along quartz veins up to 120mm wide. In 1901, the only year of production records, 20 tonnes of ore were mined @33g/t Au. Minor galena was also noted.

6.2 Style and Potential Mineralisation

Modern exploration has focussed on three main genetic models of mineralisation, which are discussed below: -

1. Prince Lyell style Cu-Au

This deposit style is characterised by disseminated and veinlet chalcopyrite mineralisation within hornblende phyric andesites. A distinctive magnetic signature is also a discriminatory feature. The Garfield and Miners Ridge prospects outlined by RGC are examples of this style of exploration target. Current geological thinking is that this genetic style is related to the intrusion of Cambrian granites that have intruded the Eastern Quartz Phyric sequence and the Central Volcanic Complex but predate the Tyndall Group (Large et al 1994).

2. Volcanic Hosted Massive Sulphide Pb-Zn

These deposits are characterised by small, Zn rich massive sulphide lenses with significant Au credits (2-4g/t). The Rosebery, Hercules, Que River and Hellyer deposits represent major sea floor exhalative horizons. Within ground held by Maiden Meadows, (Dower 1991) has interpreted the Lynch Creek Basalt member to be a geochemical correlate of the Que- Hellyer Volcanics.

These andesitic-basaltic sequences are stratigraphically located close to the top of the Central Volcanic Complex and near the base of the overlying Tyndall Group. This favourable stratigraphy, which hosts the Que River, Hellyer and upper Mt Lyell ore bodies, is found within EL 19/99.

3. Henty Style Au

This style of deposit is significant as it is the only example of economic mineralisation within the Mount Read Volcanics that is hosted by the Tyndall Group. Within EL 19/99, this group is comprised of volcaniclastic sandstones, breccias and conglomerates with minor felsic lavas, which overlie the Central Volcanic Complex and the Basalt-Andesite units. The highly prospective member - the Lynchford Tuff - outcrops within EL 19/99.

7 CONCLUSION & RECOMMENDATIONS

The area contained by EL 19/99 has been subject to exploration on a continuous basis, since the discovery of gold in Lynch's Creek in 1881.

Since 1986, major mining houses utilising the most current techniques available have undertaken systematic and comprehensive exploration programmes. In this time only seven drill holes have been attempted over the entire lease area.

The author acknowledges that this EL is a 'brownfields' project within a mature mining field, however a conclusive determination as to the prospectivity or otherwise of this lease remains. Further work that could be undertaken includes:-

- The Henty style target that was tested by RGC in DDH/LF 04, delineated 27metres of strong alteration and remains unresolved. RGC concluded that the 600m-strike length between LF 01 (drilled by Aberfoyle) and LF 03&04 precluded any substantial ore deposit being present. This was on the basis that the Henty deposit occurs over a strike length of 1000m, and that DHEM in LF 01 did not detect an off hole conductive response that could be attributed to massive sulphides. The RGC drilling programme failed to utilise DHEM in holes LF 03 &

04 because REE and stable isotope studies suggested the jasper unit targeted was not exhalative in nature, yet the alteration observed remains unexplained.

- In RGC's relinquishment report, it is noted that DIGHEM anomalies defined by Aberfoyle during the 1989/90 period have yet to be investigated. Exploration at that time was impractical due to the placement of the HEC Lynchford camp for the King River power development. These anomalies (21/544 & 22/530) also exhibit strong aeromagnetic responses and are located within the Gordon Limestone. Sphalerite and galena veins were reported from excavations at anomaly 22/530. These anomalies are considered prospective for a small Irish style, Pb/Zn deposit and can be assessed quickly and cheaply.

- In 1998 a Bulk Cyanide Leach (BCL) stream sediment survey was conducted by the CRA-Aberfoyle Joint venture in the area south of the King River. Results show BCL values of 2950ppt just east of the King River power station plus values of 2300/1500/1200 in the middle reaches of Newell Creek above the Mount Jukes road. These responses are likely to be associated with old alluvial workings that were known to exist in the 1880's, including the Harris Reward mine. Within the Maiden Meadow's lease, a significant Au anomaly remains untested from this period. On the extreme southern perimeter of EL 19/99, hosted by Ordovician Gordon Group limestone, Sample No 482405 returned a 72-mesh value of 0.246g/t Au. Five hundred metres westward, Sample No 482452 returned a BCL value of 3350ppt Au (Noonan 1989). This drainage drains the flanks of West Jukes Peak, and is underlain by Denison Group sediments and the more prospective Central Volcanic Complex lithologies. It should be noted that substantial parts of both anomalous drainages are covered by Holocene glacial deposits, thus contamination may be a factor. None the less this anomaly warrants follow up investigation.

- As noted in Section 6.1, during the Devonian period the Taberraberan Orogeny resulted in localised wrenching, dilation and mineralised void filling. Localised auriferous quartz veins are a feature of the Eldon Group sediments that predominate in the NW portion of EL 19/99. The Mount Read Volcanics are the underlying mineralised basement; evidence exists at the Henty deposit for Devonian remobilisation and redeposition of Au, Pb and Zn (Taheri &Green 1991). Significant northwest/southeast trending faults cut through the Mount Read Volcanics and continue into the Eldon Group and these may provide structural conduits for Devonian aged fluids in splays adjacent to these faults.

- The Victorian gold deposits of Bendigo, Ballarat, Castlemaine and Maldon provide an exploration model to guide any future work programme. There are a substantial number of criteria from this model that can be applied by the Eldon Group sediments. A brief summary is adapted from Phillps and Hughes (1998).

  Target
  - 1.10Mt
  - Few large, many small deposits.
  - Grade 10-40g/t.
  - Major metal is Au, minor Ag.
  - Low Cu, Pb and Zn.

Mining and Treatment

- Multiple veins required for Economic size.
- Course free gold in quartz is typical and facilitates recovery.

Geological Criteria

- Greenschist facies.
- Metasedimentary (flysh) package i.e. 'slate belt'.
- Au contemporaneous with close of deformation.

Geophysical Data

- Regional aeromagnetic and radiometrics for stratigraphy and structure.
- Low sulphides in most deposits hinder EM and electrical methods.
- Ground magnetics useful where there is mineralisation and related magnetic destruction.

Mineralisation Features

- Quartz veins are mostly hosted by strive faults of moderate to steep dip.
- Goldfields and individuals deposits parallel regional structure.
- No spatial relationship to granites.
- Sphalente, Galena and Chalcopyrite only locally abundant, although slightly enriched in many ore shoots.

Genesis

- Syn-metamorphic with Au broadly synchronous with Devonian deformation and thermal anomaly.

- Recent data acquisitioned by Mineral Resources Tasmania includes radiometrics, aeromagnetics and airborne EM in conjunction with a reassessment of the stratigraphy of the Mount Read Volcanics. This data has been collected after the major work programme undertaken by RGC and should be reviewed in this light. At the University of Tasmania, the Centre for Ore Deposit and Exploration Studies (CODES) has a vast and specific knowledge of the Mount Read Volcanic belt. Specialised analysts with over 30 years experience in the Mount Read Volcanics can be accessed at this facility. It is the authors' recommendation that the new MRT geophysical data is married with the expertise that exists at CODES to finesse any future exploration programme within EL 19/99.

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Appendix A

Land Access & Tenement Administration

The following is an extract from a Mineral Resources Tasmania publication, (*Mineral Exploration Opportunities in Tasmania*) and provides an overview of the Exploration Licence process.

Some 70% of Tasmania is currently available for exploration and mining. Of this about 16% is taken up with metallic and industrial mineral exploration licences. Mining leases occupy 707Km^2 or 1% of the State.

The Tasmanian Government has taken steps over recent years to remove the perception that access is difficult, and to eliminate the threat of 'sovereign risk'. These measures have included:

- Introduction of the *Mineral Resources Development Act 1995,* which replaces the *Mining Act 1929*;
- Introduction of Strategic Prospectivity Zone legislation;
- Completion of the Tasmanian Regional Forests Agreement between the State and the Commonwealth, which guarantees land access arrangements for the mining industry for the next twenty years.

Mineral Resources Development Act 1995

Up to date legislation has established Mineral Resources Tasmania as a one-stop shop for proponents of mineral resource based ventures. Some of the key features of the Act are:

- Existing private mineral rights in Tasmania will be retained, but royalty payable to the owner of private minerals will be limited to the rate that would accrue to the State if the mine were on Crown Land. This part of the legislation has been endorsed by the Tasmanian Farmers & Graziers Association, which together with the Tasmanian Minerals Council, will be represented on an informal panel to resolve disputes in relation to private land. This will ensure a minimum of disruption in accessing private land.
- A class of special exploration licence has been introduced to encourage visionary regional exploration programs over areas of Tasmania, which have historically received little attention. These include areas over which the prospective Lower Palaeozoic and Late Proterozic rocks are hidden beneath extensive Late Palaeozoic, Mesozoic and Tertiary cover. Licence conditions are negotiable. The initial five, year tenure period may be extended for a further five years if performance is satisfactory, and the normal maximum allowable area of 250Km^2 for mineral licences may be extended.
- Title to identified sub-economic resources can be protected, as at present, by a retention licence, issued for up to five years and renewable. Reports on retention licences pass to open file at each renewal, to enable a potential bona fide third party developer access to information about the deposit.

- Mining leases may be issued over any area for any period of time. They can therefore be tailored to suit individual projects, thereby obviating the need for renewals. If a mining operation becomes uneconomic the holder of a mining lease will now be able to apply for a retention licence over the area involved.

- To maximise opportunities for development, mineral tenements may be issued on a stratum title or commodity basis. This has occurred already in an exploration area near Beaconsfield, where one company has the rights to explore the top 30metres for lateritic nickel and cobalt, while another company has the gold exploration rights over the same area.

- The obligation of the Government to store drill cores from past exploration and mining projects is formalised.

- To redress the damage done by past generations, part of royalty will be dedicated to Rehabilitation of Mining Lands Trust Fund. This has improved the profile of the industry in the general community. For holders of exploration licences, the major changes include:

  - Licences are issued for five years and are only renewed under special circumstances. However if a discovery is made late in the tenure of an EL and the Minister is satisfied that further exploration may lead to the establishment of an economic mine, then under the MRDA, the term of the EL must be extended. There is no compulsory reduction during the term of the licence.

  - Fourteen days notice is required prior to access to private land. The period may be shortened with agreement of the landowner.

  - Disputes relating to mining tenements continue to be dealt with by a specialised mining court, the Mining Tribunal, which consists of a Magistrate appointed by the Chief Magistrate. The Director of Mines is obliged to attempt to resolve disputes before forwarding them to the Mining Tribunal.

  - No annual renewals of EL's. This has eliminated the time consuming task of submitting the licence document annually for Ministerial endorsement and the renewal fee of $300 has been eliminated. However the requirements for full annual technical reporting, brief quarterly reports, annual rental and approval of work programs remain. The Minister retains the power to revoke an EL, or levy a fine against the bond in cases of unsatisfactory performance.

  - Under the MRDA, areas relinquished from a former EL or retention licence are exempted from the Act for a period of at least two months. The process of tendering and selection criteria is explained in the section 'Getting Started in Tasmania'.

  - Mineral Resources Tasmania is responsible for placing advertisements for new licences in the appropriate local newspaper. The cost of advertising has been included in the revised application fee.

  - Fees for exploration licence applications must be supplied at the time of application and not prior to granting as previously required. The application fee is non-refundable under most circumstances.

Strategic Prospectivity Legislation

This Act constitutes landmark legislation in Australia, being enacted specifically to remove, or at least minimise, and the deterrent of mineral exploration of perceived sovereign risk. The legislation establishes seven strategic prospectivity zones, which cover 25 202 KM^2 or 37% of Tasmania.

Within these zones, the status of Crown Land cannot be changed with out consideration being given to the mineral prospectivity. The approval of the Director of Mines is required for the change in status of parcels of land less than 500 ha, and both Houses of Parliament must approve the change of larger parcels.

Explorers who are prevented from completing an exploration program because of any change in status of the land can be compensated. This affectively prevents (holes) from appearing in an exploration licence, and the explorer is given an assurance that (rules) will not be changed throughout the duration of the licence.

Approvals for Exploration Activities

Exploration licences are the permits under which most exploration is done in Tasmania.

At the application stage, the explorer need only submit a rough outline of the type of work, which is proposed. This enables Mineral Resources Tasmania to set a bond, which is kept for the duration of the licence. The explorer is not expected to outline a detail work programme until after the licence is granted and evaluation has been made of the project.

Mineral Resources Tasmania acts as a 'one stop shop' for facilitating approvals for exploration work, and has set up a series of administrative procedures with other agencies to ensure that the concerns of the relevant land manager are accommodated. All significant earthworks are subject to site-specific conditions, usually formulated during a field inspection prior to work commencing.

The general principles by which exploration works are expected to be conducted are outlined in the *Mineral Exploration Code of Practice.* On receipt of a work program, Mineral Resources Tasmania checks the following:

- Land status (to ensure activity is on land included within the exploration licence and is not on a mining lease, or a reserve category, which is excluded from the licence);
- Reserve proposals;
- Vegetation type;
- Any other significant features, which have been flagged at the application stage:
    1. Archaeologically interesting areas or sites;
    2. Populations of rare plants or animals;
    3. Forestry plantations, grazing leases, forest licences, etc.

Mineral Resources Tasmania frequently produces maps showing areas of environmental concern and the proposed works. These maps are given to the explorer to enable compliance with conditions relating to the work.

An interdepartmental committee, the Mineral Exploration Working Group, assesses exploration proposals for work in sensitive areas. The committee is made up of representatives from Mineral Resources Tasmania, Forestry Tasmania, and the Department of Primary Industry, Water and Environment. This ensures such proposals are dealt with in an orderly and efficient manner. Conditions on work are imposed by the Minister for Mines, on the recommendation of the Working Group.

The Mineral Exploration Working Group has proven to be an efficient and effective means to process exploration work programs. It is also a much faster way of assessing proposed works than requiring explorer to obtain approval from individual agencies.

Exploration on private land

In Tasmania the landowner does not have an automatic right to veto exploration. The Mineral Resources Development Act 1995 requires that the owner or occupier of land be give fourteen days notice, in writing, stating that the work is to commence. Explorers are to contact the landowner and discuss plans on a personal basis before sending, or delivering, the formal notice, well in advance of the program commencement date. A bond must be posted against any damage not made good by the explorer, and public liability insurance is required. An informal dispute committee, with representatives of the Tasmanian Minerals Council and the Tasmanian Farmers and Graziers Association, is convened to attempt to resolve issues before they are referred to the Mining Tribunal.

Environment and Planning Laws

Recent Tasmanian legislation has established a streamlined framework for project approval, with strict time lines on Government approvals and direct Ministerial control if those times are not met.

The legislation provides a new integrated assessment process for projects of State significance and ensures that objection hearing and appeal rights are available only to those people with a material interest in an outcome. One expert appeal body will deal with all facets of a devolvement proposal, in place of a formerly fragmented system of appeal.

Clear rolls have been determined for State and local government in planning and development control, to avoid duplication and overlap. Each sphere of government will apply established criteria in its decision making, to achieve sustainable development of Tasmania's resources.

An advisory body, the Resource Planning and Development Commission (RPDC) is central to the modern and effective approval process.

The first major project to be evaluated under the new legislation, in February 1995, was the proposed reopening of the Mount Lyell mine. This project involved many complex issues, including the heritage of over a century of mining without modern environmental management. Despite these difficulties the mine had commenced production by December 1995.