MALACHITE RESOURCES NL

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MT RAMSAY PROJECT
EL 42/2002

THIRD ANNUAL EXPLORATION REPORT
FOR THE PERIOD 22 AUGUST 2005 TO 22 AUGUST 2006

NOTE: All data presented with the AGD-66 map datum.

Distribution

1. Malachite Resources NL
2. BHP Billiton Minerals Pty Ltd

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1 SUMMARY

This Annual Report summarises the results of exploration work carried out by the joint venture between Malachite Resources NL (“Malachite”) and TasGold Limited (“TasGold”) on the Mt Ramsay Project (EL 42/2002) during the period 22 August 2005 to 17 July 2006. TasGold have subsequently withdrawn from the joint venture agreement effective 4 March 2006.

The objective of the Mt Ramsay Project is to discover a significant economic deposit of tin, tungsten and/or base/precious metals. The main exploration target at Mt Ramsay is carbonate-replacement style tin (± tungsten/base metals) mineralisation, similar to that seen at the nearby Mt Bischoff and Renison Bell tin deposits. A series of EM conductors located on the Mt Ramsay tenement were targeted for potential tin-bearing massive sulphide mineralisation.

Exploration work completed during the current reporting period consisted of the successful completion of one diamond drill-hole (MRDD01) targeted at the southern end of the ‘northern EM conductors’.

The results of this work have highlighted a subsurface, mineralised, hydrothermal breccia vein system of significant width (greater than 50 m down-hole width). This mineralised intersection corresponds with the airborne and ground EM conductors, as reported on by Meares (2004) and Meares (2005). Elevated tin and copper values in surface rock chip samples collected in a previous field program (Meares, 2004), may represent the surface expression of this mineralised structure. MRDD01 returned broad low-grade tin intersections, with anomalous values up to 180 ppm Sn over 1m within a broader zone of 30m at 160ppm Sn.

This is the first reported intersection of a mineralised breccia-vein assemblage from this area and as such, minimal information can be obtained at this early stage. Based upon the linear array on EM conductors, it appears the breccia vein zone may extend to the north and south some distance. The body appears to be steeply easterly dipping, with an unknown true width. Its tectonic/hydrothermal/mineralisation history appears to be multi-stage and complex.

An independent petrological investigation on selected samples of drill core has indicated the presence of a high temperature mineral assemblage (diopsidic clinopyroxene-tremolite-pyrrhotite-sphalerite) which appears unsuitable (too hot) for the transportation and precipitation of cassiterite. Initial interpretations suggest the sulphidic breccia intersected in MRDD01 is too proximal to the Meredith Granite to host significant tin mineralisation. Other, previously identified airborne EM conductors located on EL 42/2002 that appear distal to the margins of the Meredith Granite now appear more prospective as a host to significant tin-bearing sulphide mineralisation.

2 INTRODUCTION

This Annual Report summarises the results of the exploration work carried out by Malachite Resources NL (“Malachite”) on the Mt Ramsay Project during the period 22 August 2005 to 17 July 2006. The results of the previous exploration work carried out at Mt Ramsay are documented in Meares (2004) and Meares (2005).

EL 42/2002 was originally granted to BHP Billiton Minerals Pty Ltd (“BHP Billiton”) in August 2003. In June 2004, BHP Billiton farmed out an interest in EL 42/2002 in equal portions to

Malachite and TasGold Limited ("TasGold"), with Malachite appointed as the Manager of the Mt Ramsay Joint Venture ("MRJV"). TasGold have subsequently withdrawn from the MRJV effective 4 March 2006.

The immediate exploration targets on the tenement are two linear groups of electromagnetic ("EM") anomalies (with co-incident strong magnetic anomalies) in geological settings analogous to those of the nearby Renison Bell and Mt Bischoff carbonate replacement tin deposits.

Exploration conducted during this progress report period was focussed on drill testing the northern-most of two groups of EM conductors.

The Geodetic Datum used in this report is AGD66.

3 LOCATION AND TENURE

The Mt Ramsay Project is centred approximately 23 km north of the Renison Bell tin mine in western Tasmania (**Figure 1**). Access to the project area is from the Waratah-Savage River road, turning off this road approximately 7 km SW of Waratah and driving a further 1 km south to Wombat Flat. From here an abandoned 4WD track extends approximately 10km from north to south through the Mt Ramsay tenement. Access along this 4WD track is limited, with permission required from National Parks and Wildlife who have placed a locked gate across the track at Wombat Flat to prevent public access. Furthermore, access is constrained to all terrain vehicles due to the roughness of the track.

The project is located on uncommitted Crown land within the Meredith Range Regional Reserve (No. 2000/241), which was declared under the Tasmanian National Parks and Reserves Management Act (2002). Regional reserves were established over Crown land set aside for multiple-purpose use, and importantly one of the primary purposes of regional reserves is the utilization of any mineral resources they may contain.

EL 42/2002 is located in the Ramsay River catchment, immediately east of Mt Ramsay (855m), the major topographic feature in the region. The terrain is generally steep with myrtle (*Nothofagus cunninghamii*) as the dominant cool temperate rainforest species, accompanied by sassafras (*Atherosperma moschatum*). Although the understorey is relatively open with tree ferns (*Dicksonia antarctica*) and native laurel (*Anopterus glandulosus*) predominating, horizontal scrub (*Anodopetalum biglandulosum*) is common on the flatter areas immediately east of the abandoned 4WD track and is also common in creek gullies.

The tenement covers an area of 24 sq km and was granted on 22 August 2003 for a period of five years until 22 August 2008. The minimum expenditure commitment during the first two years is $18,000. BHP Billiton currently holds a 100% interest in EL 42/2002, and has entered into a farm-out agreement with Malachite Resources NL and TasGold Limited. Due to the withdrawal of TasGold, all conditions within this farm-out agreement have now been acquired by Malachite.

4 REGIONAL GEOLOGY

A detailed review of the regional geology of the Mt Ramsay project area has been compiled in previous reports by Meares (2004) and most recently in the last annual exploration report by Meares (2005). An overview of the regional geology is shown on **Figure 1**.

The Mt Ramsay region has been mapped by Brown (1986) and the most detailed published geological map is the 1:25,000 "Regional Geology of the Dundas – Mt Lindsay – Mt Ramsay Area" which accompanies Brown's report.

The project lies within the Dundas Element (formerly the Dundas Trough), comprising Proterozoic- to Cambrian-aged sequences of western Tasmania, located east of the Arthur Lineament (Seymour and Calver, 1995, and Bottrill et al., 1998).

At Mt Ramsay, two adjoining sequences lie to the east of the Devonian Meredith Granite. The western of these sequences, which is in contact with the Meredith Granite throughout the tenement, is the Cambrian Crimson Creek Formation which regionally consists of volcanoclastic siltstone and mudstone, minor carbonate lenses, and reportedly contains up to 25% of basaltic lava flows in the Mt Ramsay area. The eastern sequence comprises locally isoclinally folded sedimentary members of the Proterozoic Oonah Formation, regionally consisting of quartz sandstone, siltstone and mudstone, but with reportedly thinly bedded calcareous siltstone dominating in the Mt Ramsay area. The contact between the Crimson Creek Formation and the Oonah Formation sequences at Mt Ramsay has been mapped by Brown as a fault.

The Meredith Granite is considered to be the source of the tin at deposits around its northern margin (eg. Mt Bischoff and Cleveland), and the presence of the Mt Ramsay skarn occurrence at the granite's eastern contact within the tenement, approximately one kilometre west of the northern group of EM conductors (**Plate 1**), is confirmation of a granite-related mineralizing system at Mt Ramsay.

5 PREVIOUS EXPLORATION

A review and summary of previous exploration in the Mt Ramsay project area has been compiled by Meares (2004) and Meares (2005). This includes accounts of work completed by Comstaff Pty Ltd. in the period 1963 – 1988. The location of some of the Comstaff work is shown on **Plate 1**. A regional airborne (heli) EM survey covering the Mt Ramsay tenement was completed by Mineral Resources Tasmania (MRT) in 2002. This survey located the EM anomalies now targeted on this tenement.

Malachite has conducted a total of three field programs on the Mt Ramsay tenement in an attempt to locate and explain the airborne EM conductors. Two groups of conductors have been identified on the tenement – a group to the north ('northern conductors') and a group to the south ('southern conductors'). For accessibility reasons, work so far has focussed on the northern conductors and has consisted of soil, stream and rock chip geochemistry, limited geological mapping and a ground EM survey. A total of 48 float and outcrop rock chip samples, 18 soils and 3 pan concentrate creek sediment samples have been collected from two, east-west, slope-corrected grid lines located toward the north ("Line 1") and the south ("Line 2") on the northern conductors (see **Plate 1**). The geochemical surveys identified localised zones of weakly anomalous tin and base metal (copper) values, suggesting the conductors have a mineralised source. Ground EM was also conducted along Lines 1 and 2, which successfully confirmed the presence and location of the airborne EM conductors. The conductors are located midway down a 40^0 slope which forms the eastern flank of Mt Ramsay, shown on **Plate 1** and **Plate 2.**

Work completed during the period 2 July to 17 July 2005 consisted of the successful completion of one diamond drill hole (MRDD01) to a terminating depth of 408m. Petrological investigations were carried out on selected samples of drill core from MRDD01 by an independent consultant, with this report attached as **Appendix 11**.

6 LOGISITICS/ACCESS

Discussions prior to all field programs at Mt Ramsay, including the drilling program, were held with Mineral Resources Tasmania (MRT), the Tasmanian Conservation Trust, and with Tiger Trails (an ecotourism group who take bushwalkers through the Mt Ramsay area) to brief each group on our activities and to seek their comments. In addition, MRT approved all three programs before they commenced.

As discussed above, the project area is accessed via an abandoned 4WD track. This track was significantly overgrown and required a substantial amount of re-clearing and repairs prior to mobilisation into the project. A 5.5t excavator (Bradshaw Excavations from Queenstown) and three experienced trackcutters were employed to re-establish access, clear the two drill sites, clear a suitable location for a camp and create two heli-pads.

Due to the remoteness of the drilling sites, a six man camp was constructed approximately 12km south of the Waratah-Savage River road. The camp consists of a series of eight garden sheds incorporating sleeping, living, cooking, storage, showering and chemical toilet facilities. The sheds were erected on bases constructed from timber flown into the site. All cooking and heating utilised gas appliances and water was pumped to a camp holding tank from Osmond Ck approximately 1.5km to the south. All toilet waste was transported off-site within sealed drums where it was collected by Collex Waste Disposal Services. The camp was located 1.6km to the north of the southern-most drill site (MRDD01). The camp was located on a side track off the main access track to reduce the visual impact to bushwalkers. Upon completion of the drilling program the sheds were left in place, along with minimal basic camp gear and food. Two helipads were established; one adjacent to the camp (‘Camp helipad’) and one approximately 1.4 km to the south of camp (‘Hilltop helipad’). The purpose of the Camp helipad was to facilitate crew changes made by helicopter and as an emergency staging and pickup point. The Hilltop helipad is closer to the drill site and was used for slinging drilling equipment to and from a staging area at Champion Heath. This pad was not used as a landing area for the helicopter, but as a laydown and storage area for drilling equipment. The location of the camp and helipads is shown on **Plate 1**.

Initial mobilisation of all drilling and camp equipment was assisted by a Seair (Wynyard) Squirrel helicopter. TasGold also supplied a rubber-tracked crawler tractor vehicle (‘crawler’) equipped with a 3 tonne crane and tipping tray. The drill rig was mobilised/demobilised from the site on the back of the crawler. A Squirrel helicopter from Tasmanian Helicopters (Latrobe) was sporadically employed for crew changes in and out of Waratah. A third Squirrel from Helicopter Resources (Cambridge) was utilised to demobilise all the drilling and the majority of the camp equipment to Champion Heath at the completion of the program. Helicopter hours totalled 20.65 hours for the drilling program.

Drilling crews operated on a nominal ‘10 days on - 4 days off’ basis, therefore necessitating crew changes in and out of the project area on a regular basis. Personnel were mobilised from a large, 2WD accessible clearing located 1 km south of the Waratah-Savage River road, known as Champion Heath. From here access to the south along the main Mt Ramsay track is restricted to all terrain vehicles. All personnel utilised quad bikes to enter and exit the camp site from Champion Heath. Quad bikes were also used for daily drilling shift changes between the camp and the drill rig. The crawler was used to bring in supplies and equipment needed throughout the program and was not used for personnel transport. A Squirrel helicopter was utilised on a number of occasions for crew changes to minimise vehicular movements along the track.

7 ENVIRONMENT

A number of environmental issues related to the winter season became apparent during the drilling program. Significant drilling delays resulted from unfavourable weather conditions including strong winds, heavy rain and snow. A number of large, water-logged, dead myrtle trees fell over during periods of both high winds and calm wind. Two of these trees fell in close proximity to the drill rig and warranted a short-term suspension of drilling activities due to safety concerns at the drill site. Following this incident, a total of eight dead trees were identified as threatening the drill site. With specific MRT approval, the eight trees were cut down by a suitably experienced person and the site deemed safe for drilling operations to continue.

During early to mid-August the heaviest snowfalls for 20 years occurred at Mt Ramsay, with over 1m of snow falling in three days. Due to the nature of the vegetation in the area, approximately 80% of young trees (maximum trunk diameters to 150mm) had either the tops broken out of them or were broken-off partway down the trunk. This caused significant blockage to the main access track resulting in it being totally impassable for a period of eight days. Trackcutters were employed for several man-days to re-establish access along the track. This involved clearing 100% of the track in several long sections, with other sections requiring variable amounts of clearing. All cut trees were left on the track to prevent erosion and track damage by vehicular movements. Trees left on the sections of track requiring the most clearing had the effect of ‘cording’ the track. During track rehabilitation works at the end of the program, the corded sections were left in place, whilst the remaining trees were cleared off to the side of the track.

All fuel and oil/hydraulic products in the Mt Ramsay project area were stored in suitable containment bunds. All items were placed off the ground where possible and oil absorbent matting positioned underneath. No spillages of fuel and/or oil products were observed throughout the program. Oil matting was placed under the drill rig as a precaution and a sediment fence was erected immediately down slope of the drill site. All drilling fluids used throughout the drilling program were biodegradable.

In order to prevent any possible spread of *Phytophthora* (“root rot” or “dieback”) into the Mt Ramsay area, prior to the departure of personnel and equipment from Champion Heath for Mt Ramsay, field boots and all field equipment and machinery were washed down with either a high pressure water spray or with *Phytoclean*, a chemical product specifically designed for this application. All personnel involved in crew changes were advised to ensure all footwear was cleaned before entering the site. A temporary washdown station with brush, basin and *Phytoclean* was established at the Champion Heath drop off area. No pre-existing *Phytophthora* infection was observed in the areas visited at Mt Ramsay.

8 SAFETY

At the start of the program, a safety meeting was held with all field personnel and a safety audit of the drilling equipment was undertaken by Malachite. Any new personnel to enter the site over the course of the program were given a safety briefing prior to conducting any operations. There were two safety incidents to report during the drilling program, both involving falling trees. A large number of very large, dead and rotten myrtle trees are located within the project area. The first incident took place during a period of high winds associated with a small storm front moving across the area. Lightning accompanied this storm, resulting in the drillers leaving the drill rig for a short period. When they returned to the drill site, a large myrtle tree had fallen across the track in front of the drill rig. All drilling operations were suspended at that time with all personnel to leave the project area until further notice. The following morning a brief drill site visit was conducted where it was observed another large myrtle tree had fallen directly beside the drill rig. All personnel left the site for six days until a suitably qualified person was employed to visit the site and cut down any remaining dangerous and/or threatening trees. To ensure a safe work environment, a total of eight trees were felled at the MRDD01 drill site, with all the trees at the proposed MRDD02 site considered non-threatening. All site works were carried out after full approval was obtained from MRT.

The second safety incident occurred along the main access track in a heavily forested area approximately 1 km north of camp. On its way toward camp, the crawler had broken down. Whilst the driller was attempting to repair the crawler, a large myrtle fell without warning and during calm wind conditions on the crawler, narrowly missing the driller. However, in attempting to avoid the tree, the driller sprained his ankle. First aid treatment was administered and the driller was back at work within two days. The crawler was later repaired and returned to camp. Safety incident reports were completed by TasGold for both these incidents.

9 DRILLING

9.1 INTRODUCTION

Due to the limited surface expression of the EM conductors, two diamond drill holes were planned to test the source and subsurface position of two conductive zones within the northern conductors. As discussed above and previously reported in Meares (2005), access to the project area had been re-established and two drill sites prepared. However, due to results from the first of the two holes (MRDD01, discussed below), the second hole was not considered to be adequately positioned to successfully intersect the conductors at the planned location and was therefore not drilled in this program.

MRDD01 is located on the western side of the northern EM conductors, as shown on **Plate 1**. It is an inclined hole drilled east toward the southern end of the northern group of airborne EM conductors. Follow-up ground EM was conducted in 2004 along the east-west Line 2 which confirmed and located the conductors, which occur halfway down a 40^0 slope on the flanks of Mt Ramsay. MRDD01 was designed to be drilled directly under Line 2. The only location to position a drill rig, without opting for a fully helicopter supported program, was on a narrow ‘plateau’ atop the slope on the western end of Line 2. The abandoned 4WD track utilises this ‘plateau’ to access this area and therefore providing the best access for this program.

Minimal structural information could be obtained from field work over the conductors due to limited outcrop and the massive nature of the hornfelsed sedimentary rock, thus reliable bedding measurements were difficult to obtain. However, previous work done by Comstaff Pty. Ltd., Brown (1986) and MRT (Pigott, 1983; Green, 1982) implied a general north-south strike and steep westerly dip of the rocks in the vicinity of the conductors. This information was assumed when designing the drill holes. Additionally, the dip of the EM conductors was indeterminable and was hoped to be to the west, possibly similar to bedding. This would allow for an intersection at a shallower hole depth. Drill-hole details from MRDD01 are presented in **Table 1**, with the location presented on **Plate 1**.

Table 1: Mt Ramsay
Summary of MRDD01 Details

Hole ID	Collar mE (AMG)	Collar mN (AMG)	Collar Az (AMG)	Collar Dip	Final Depth (m)	Depth Water (m)	Base of Oxidation (m)	Hole Start Date	Hole Finish Date
MRDD01	372437	5395125	089^0	-65^0	408.0	N/A	9.7	9-7-05	3-9-05

The drilling was contracted to TasGold Limited of Rokeby (Tasmania) using a skid-mounted, 'man-portable', modified, RB37 drill-rig with a supporting Hanix crawler tractor vehicle. Oil absorbent matting was placed under the drill-rig to contain any leaked fuel, oil, or hydraulic fluids. A series of three inline sumps were excavated to contain all the drilling fluids and to allow recirculation of clean, 'cutting-free' drilling fluids back down the hole. A "total containment" policy was employed at the drill site, with no drilling fluids escaping the site.

The position of the drill-hole collar was surveyed with a Garmin XL 12 GPS. A single-shot Eastman down-hole camera supplied by TasGold was used to survey dip and magnetic azimuth of the drill-holes at about 30 to 50m down-hole intervals. The down-hole surveys were done through the drill string for all surveys in HQ and NQ rods. However, all surveys through BQ rods resulted in erratic azimuth readings and at the end of the program it was determined that this was due to the down-hole camera barrel and housing not fitting through the BQ-2 drill bit. This resulted in the camera surveys being taken inside the magnetic core barrel. Therefore, all azimuth readings obtained in the BQ section of the hole have been disregarded. It is assumed that due to the consistent azimuth readings from previous surveys from higher in the hole and the massive nature of the rock, that the BQ section of the hole has remained straight. The drill-hole collar information and down-hole survey data are presented in **Appendix 1**.

All survey coordinate information was recorded on the Australian Mapping Grid (AMG) grid projection using the Geodetic Datum AGD66 map datum as this projection is still used as the Tasmanian "standard". The conversion of magnetic azimuth readings to AGD66 grid azimuth readings reported here is (plus) $+12^0$.

9.2 METHODS

Drilling of MRDD01 was done initially with HQ core size which was cased off at 35.9m in solid, unbroken ground where NQ drilling then progressed. A further reduction to BQ sized drilling was required at 317.6m. HQ, NQ and BQ wireline drill rods and a 3m HQ, NQ and BQ-2 core barrels were utilised. Core recovery averaged over 94% for this programme and there were no significant core recovery problems within the mineralised zones. A discrepancy of plus or minus 0.1m was encountered in recovery due to the hardness of the ground at depth resulting in problems breaking the core off the bottom of the hole when the core barrel was pulled. This resulted in occasional short lengths of core being dropped and redrilled on the next drilling run, thus adding up to 0.1m to the subsequent run length and recovery.

Diamond drilling was conducted during two 10hr shifts each 24 hour day. The drilling was relatively slow (9 to 18m per 10 hour shift) and bit wear moderate (70 to 100m bit life) due to the hard and abrasive ground. Bit wear was also dependant on individual driller methods, with less bit wear corresponding to minimal applied hydraulic pressure being used by individual drillers, especially at depth. The following operational procedure was adopted in this programme: -

- Utilisation of 14 to 15 Bit Series, face-discharging, impregnated diamond bits (e.g. Boart-Longyear, Christensen (Hobic), Asahi, and Shark). These were particularly effective under moderate rod rotation, which allowed a slow but steady rate of penetration (9 to 18m per shift), regular stripping, and uniform diamond exposure with advance of the bit. The lower rotation rate also helped to prolong the bit life (wear).

- Utilisation of biodegradable Liquid Polymer CR650 (combined with Trol) proved to be the most effective viscosifier of drilling fluids in lifting excess drill cuttings (sludge) from the bit face and out of the hole with fluid return. This helped prevent bogging of the rod-string and stabilized the walls of the hole particularly in any soft and broken zones associated with post-mineralisation faulting.

- Drilling runs were commonly 3m, although shorter controlled runs were sometimes used to maximise recovery in the more highly fractured or softer, less competent ground.

- Water/fluid return was constant up to 268.4m below where all drilling fluid return was lost for the remainder of the hole. This hole depth corresponds to the first intersection of sulphidic breccia vein material. Sludge sampling was setup, however was not conducted due to no water return.

- Water was pumped to the drill from the closest creek (Osmond Ck) some 1.6km to the north. Only enough water was pumped to the rig to fill the sumps and mud tanks, with drilling fluid then recirculated. When all fluid return was lost, a constant supply of water was needed at the rig and use of polymers increased.

- NQ drill core was oriented with a down-hole spear equipped with a Chinagraph® pencil. Spearing interval was 6m. There were very few planar features throughout the majority of the hole, with mineralised breccias consisting of erratic and irregular vein and fracture sets. Due to the hardness of the ground, particularly at depth, some problems were encountered when breaking the core off the bottom of the hole. Due to this, some short lengths of core were dropped and redrilled at the start of the next drilling run. This therefore, lead to dropped core being marked, thus giving false orientation readings. This reduced the confidence of orientation data and therefore no data is reported here.

- Drill core was slid from the inner tube and after the orientation mark-up was completed, was placed into appropriate sized plastic core trays that were individually labelled with hole-number, box-number, and start to finish down-hole depths. Drill run depths were marked on wooden blocks placed at the end of each drill-run in the trays and orientation markings clearly highlighted.

- The majority of the core was geotechnically logged on the drill site prior to transportation to the Mt Ramsay Camp by a quad bike. At Mt Ramsay Camp, the core was photographed, geologically logged, marked-up for geochemical sampling, and measured for magnetic susceptibility. Selected pieces of mineralised core were tested for connectivity of sulphide veins with a 'multi-meter' instrument.

- After halving of the core (using the core saw) for geochemical sampling (Section 8.3), the core trays were stacked on timber pallets at the camp site until the completion of the drilling program. During the demobilisation of the drilling and camp equipment, the core was flown out utilising a steel 'cage pallet' which allowed safe and secure transportation. The core was offloaded at the Champion Heath lay down area where it was subsequently loaded onto the back of a utility vehicle and transported by road to be stored in a shed in Waratah.

- Due to the preliminary nature of this drilling program at Mt Ramsay, it was decided not to conduct specific gravity ("SG") measurements on the core at the time of drilling. If required, SG measurements maybe recorded at a later date.

Logging codes and abbreviations are presented in **Appendix 2**. A computer log summary is presented in **Appendix 3**. A geological summary is presented in **Appendix 4**, with a detailed handwritten log completed and filed in the Malachite Sydney office. The magnetic susceptibility log is presented in **Appendix 5**. The geotechnical log is presented in **Appendix 6**.

9.3 GEOCHEMICAL SAMPLING, ASSAYING AND QUALITY CONTROL (QC)

Selected sections of the drill-core were sampled over continuous intervals that varied in length from about 0.5 to 1m. Samples taken within broad geological units showing uniformity in lithological, alteration and/or mineralisation character were generally sampled over selected 1m intervals. Otherwise, sample intervals were varied to match discrete lithological, structural, mineralisation and/or alteration contacts. A cutting-line drawn with a Chinagraph® pencil down the longitudinal axis of the core was used to guide the splitting of half-core. Splitting was done with an electric diamond-blade core-saw with accompanying 5kVa petrol generator. After the half-cores were split, one-half of this core was placed in calico bags labelled within a continuous number series, written on the front of each bag and on a corresponding ticket placed inside the bag. An aluminium-tag showing the corresponding sample number and sample interval was placed at the start of the sampled interval under the remaining half core in the tray. These samples were packed in series of seven inside polyweave bags for dispatch to the laboratory.

The diamond drill-core samples were separated into discrete batches and dispatched utilising field personnel crew changes to Burnie Research Laboratory in Burnie. The sample batches are identified in the dispatch register attached as **Appendix 7**. A total of 141 core samples were sent for geochemical assaying. The samples were assayed for gold by 50g Fire Assay and copper, lead, zinc, arsenic, bismuth, silver and selected chromium by the Atomic Absorption Spectrometry (AAS) method. Tin, tungsten and sulphur were assayed by X-ray fluorescence (XRF). The sample preparation and analytical methods used are described in **Table 2**. The sample ledgers and assay results are presented in **Appendix 8**. A copy of the final laboratory reports are located in **Appendix 10**.

Table 2: Mt Ramsay Project
Drill Sample Collection and Analytical Techniques

Collection Details	Sample Preparation	Analytical methods	Elements
Diamond core: 2-5 kg of half-core split & sampled with a diamond-blade core saw at <1m to 2-m intervals	Samples sorted, oven-dried & weighed Entire sample crushed to pass >70% minus-6mm Entire sample pulverised in Labtech Essa LM5 mill to pass >85% minus-75micron	Au by 50 g Fire Assay with AAS finish (**FA001**) Additional elements (except Sn, WO_3 & S) by hot mixed acid digest (HF-HNO_3-$HClO_4$) and AAS finish (**AAS01**) Sn, WO_3 & S by **XRF01**	Au Ag, As, Bi, Cr, Cu, Pb, Zn, Sn, W, S

Burnie Research Laboratory uses an internal system of QC to measure analytical variance within the sample batches. This includes the assaying of selected geochemical standards, blanks, and doing a series of checks and repeats on random samples from each batch. These results are contained in the final laboratory report. Malachite also submits its own commercially purchased geochemical standards to observe the errors and consistency in QC at the laboratory. Malachite's standards were submitted on a ratio of about one standard for every 30 geochemical samples submitted to the laboratory. A total of two gold standards and three base metal standards were included in the three sample batches from this drilling programme. QC plots of the gold and base metal assays from the standards indicate that the results are within acceptable limits of variance. These plots are presented in **Appendix 9.**

9.4 PETROLOGY

A total of 20 half-core representative samples were collected from MRDD01 for initial petrological evaluation. These samples were given to independent petrologist Dr B. J. Barron whom has conducted both macro and microscale analysis on drill core samples and thin sections. A report detailing this examination is attached as **Appendix 11**.

9.5 CORE PHOTOGRAPHY

All drill core was photographed after all logging procedures were complete, but before being halved for geochemical sampling. A laminated photo plaque was utilised in all photos which detailed project, hole number, box numbers and start/finish interval of the photo. All HQ core was photographed with three boxes per photo, with NQ and BQ photographed with two boxes per photo. A copy of the core photographs is filed at the Malachite Sydney office.

9.6 DOWN-HOLE EM SURVEY

In preparation for a proposed down-hole EM survey to locate off-collar conductors, the drill hole was cased with 40mm, Class 9 PVC pipe which was capped at the top of the hole. Each section of pipe was in 6m lengths, with two 'strings' of pipe joined together, each totalling 200m. The initial 200m was fed down the hole successfully, however after joining the second 200m, one of the pipe joins pulled apart after approximately 210m was down the hole. The pipe also broke when 370m of pipe was fed down the hole. Future endeavours to fed PVC pipe down a long drill hole should utilise a harness system attached to the drill rig to take the weight of the pipe, as it was difficult to hold the weight by hand. Additionally, if the hole holds water, a bottom cap with a large hole drilled in the centre of it would allow a constant feed once the pipe enters the water. Therefore, a down-hole EM survey remains conceivable as the hole is cased to the terminating depth, however the two breaks in the pipe may cause problems when retrieving the down-hole EM instrument.

A total of 411m of PVC pipe was fed down MRDD01 as casing, which includes 1m of stickup. This, therefore, corresponds to a total hole depth of 410m, not 408m as determined by the drilling. The reason for this corresponds to two different BQ rod lengths (3.00m and 3.05m - or 10ft) that were not individually measured but were 'assumed' by the drillers to be a constant 3m in length.

9.7 DRILL SITE REHABILITATION

MRDD01 was positioned toward the eastern side of the main Mt Ramsay access track, allowing any future vehicular movement along the track to be uninhibited. However, due to the broken nature of the rock within 10m of the surface, the HQ casing was left in the hole to protect the PVC casing and prevent hole collapse. To ensure vehicles and/or people do not come into contact with the collar, a number of large logs were placed against the collar to divert through traffic. Furthermore, a small fence with reflective tags was erected over the collar, with the collar and surrounding area spray-painted fluorescent pink.

Both drill sites were completely cleaned and re-contoured as close as possible to the original topography. The sumps were filled in with original spoil and covered over with logs and branches to create stability and prevent erosion. A 4.5t excavator was utilised for all rehabilitation earthworks.

10 RESULTS

MRDD01 was collared on the western, uphill side of the northern EM conductors and was drilled as an inclined hole at an angle slightly steeper than the 40^0 slope down to the Ramsay River. The hole was drilled to 35.9m with HQ2, to 317.6m in NQ2 and to the final depth of 408m in BQ2.

The hole intersected a +350m thick sequence of very hard, grey to dark grey-black and locally brown (biotite), siliceous-(biotite) hornfelsed, massive to diffusely bedded siltstone, mudstone and fine-grained sandstone of the Crimson Creek Formation. The siltstone and fine-grained sandstone units show local minor deformation features including vergence(?) folds and millimetre-scale displacements of laminae across fractures. Bedding appears at a moderate to high angle to core axis (30-60^0 TCA). Petrological examination reveals some sedimentary units have a minor volcanic component suggesting volcaniclastic and possibly very fine-grained primary volcanic rocks are present in this sequence. Furthermore, heavy sphene/leucoxene clouding suggests a (Ti-rich) volcanic component.

The sedimentary units are very hard due to pervasive, very fine-grained quartz-biotite-pyrite-pyrrhotite hornfelsing of the rock matrix. They also show patchy development of overprinting, fine-grained actinolite-tremolite alteration associated with irregular, wispy-discontinuous to planar continuous, <1 to 5mm wide, phyllosilicate-pyrrhotite-pyrite-minor chalcopyrite-arsenopyrite healed microfractures, veins and veinlets.

The hole intersected well-developed hydrothermal breccia vein mineralisation from 265.4 to 268.1m, 330.4 to 332.4m, 355.2 to 360.9m, and 364.6 to 394.9m down-hole. Weakly developed brecciation becoming a high density fracture-fill vein network was intersected from 394.9 to 408m down-hole. The upper and lower contacts of each breccia intersection in this hole appear diffuse and gradational. The breccia veins represent multiple fluidised events with a complex veining/brecciation/fluid-flow/mineralisation history. In general, the breccia veins comprise angular to sub-rounded, <1 to 150mm (?) diameter wall-rock clasts that are supported by a hydrothermal matrix-cement. The breccia veins show varying degrees of hardness and colour, ranging from white-dirty white to mottled white-brown-grey-black-bronze depending on the intensity of alteration (related to the development of brecciation) in the clasts and amount of pyrrhotite-actinolite-tremolite as clasts and in the matrix. Due to the intensity of alteration and the multiple-event style of brecciation, it may be difficult to establish clasts from matrix in some intervals.

Siltstone and minor sandstone of the Crimson Creek Formation are the most common clast-type in the breccia. However, clasts of early sulphidic vein(?) material comprising pyrrhotite-actinolite-tremolite-(chalcopyrite) are common. Clasts generally have diffuse, irregular boundaries often exhibiting resorption and corrosion of margins. Hydrothermal alteration of the sedimentary clasts is generally strong, commonly completely altering the fragments and imparting a white to light brown colour. Moderately altered clasts typically display a variably wide white 'rim' alteration halo on the clast margins and a remanent brown to dark grey, fresh to slightly-altered, quartz-biotite hornfels core. The alteration overprints the earlier siliceous-biotite hornfelsing.

The visually-estimated volume-percentage of sulphide in the breccia varies from 2 to 10% and is erratically distributed in re-brecciated clasts and the matrix-cement. The late-stage, planar pyrrhotite-tremolite-actinolite veins and veinlets account for an additional ~5% sulphide content where present. The main sulphides recognised in decreasing order of abundance are pyrrhotite, chalcopyrite, pyrite and marcasite. Pyrrhotite is the most dominant sulphide present in the breccia veins and occurs as irregular blebs, veins, veinlets and intergrowths with actinolite and tremolite. Chalcopyrite occurs as minor intergrowths within pyrrhotite and more rarely rimming pyrrhotite blebs. Pyrite and marcasite are rare and tend to occur as small discrete clusters and blebs. The breccia returned a best mineralised intersection of 30 m at 117 ppm Sn and 50 ppm $W0_3$ from 354m, which included a peak result of 1m at 160 ppm Sn, 40 ppm $W0_3$ and 20 ppm Cu. The peak Sn value in MRDD01 was 180 ppm Sn over 1 m from 331 m. The most significant Sn grades occur in the breccia vein intersections. Furthermore, there appears to be a rough correlation between sulphur content and Sn grade, suggesting that Sn (cassiterite?) is associated with the more pyrrhotite-rich intersections of the hole.

A significant copper intersection of 3150 ppm Cu over 1m occurred at 211m. This corresponded to an isolated zone of blebby, veinlet and refractured vein-style chalcopyrite over a 1m interval. Chalcopyrite occurs as the only sulphide mineral phase in this intersection.

The hole ended in weakly-brecciated, crudely mottled, white-dark grey-brown-black silica-biotite hornfelsed siltstone with bands of moderately developed, white breccia vein material to 0.6m width intercalated with weakly-altered siltstone. Up to 5% pyrrhotite-(chalcopyrite) content is still present, with 30% pyrrhotite observed in the final 0.1m of core recovered.

Electrical connectivity of irregular blebby and vein-style sulphide mineralisation in the breccia vein material was generally between 0.1-0.2m, however intervals of up to 0.4m (the longest stick of core) of mineralised core exhibits connectivity between apparent visually unconnected sulphide material. This testing confirmed that the pyrrhotite-rich sections of the core are strongly conductive.

Results obtained from MRDD01 indicate that the likely source of the EM conductors located down-slope of the collar location is the pyrrhotitic breccia vein assemblage intersected from 355.2m down-hole to the end of the hole. This intersection contains approximately 5-10% sulphides over 52.8m, sufficient highly-conductive, highly-magnetic sulphide mineralisation to explain the airborne and ground EM conductors at this location.

Results of petrological investigations on drill core from MRDD01 confirm the presence of *hydrothermal* breccias which are described as varying from crackle breccias through to open framework matrix-supported breccias. Furthermore, this work indicates the presence of a high temperature prograde contact metamorphic assemblage represented by abundant diopsidic clinopyroxene-tremolite and patchy K-feldspar (sanidine). This assemblage is characteristic of hornblende hornfels-grade contact metamorphism at temperatures of 500-600^{0}C, indicating a high temperature Mg-skarn possibly replacing an earlier carbonate-quartz assemblage. The abundance of diopsidic clinopyroxene indicates not only high temperatures but lack of significant hydrous fluids. Abundant tremolite is seen to reflect a more calcic, higher temperature retrograde alteration compared to other nearby tin bearing systems (eg. Mt Bischoff) that tend to be talc-bearing. Hydrothermal fluids are interpreted to be magmatic-related and have a proximal granitic source/affinity. Furthermore, no significant dolomite (as observed at Mt Bischoff) is present in the drill core samples, although the skarn assemblage confirms a Ca-Mg-rich system.

Conclusions drawn from this exercise suggest that the ground and airborne EM target drilled in MRDD01 is a sulphide-bearing hydrothermal breccia body resulting from the movement of hot (500-600^{0}C) anhydrous hydrothermal fluids originating from a proximal granitic igneous source, most likely the nearby Meredith Granite. Both the prograde and retrograde phases of alteration and mineralisation are shown to be too hot to carry significant tin mineralisation.

11 DISCUSSION

The results of exploration work completed on the Mt Ramsay project during this reporting period show the airborne and co-incident ground EM conductors located down-slope of MRDD01 collar location can be explained by a hydrothermal sulphidic breccia-vein zone hosted by a fine-grained sedimentary sequence of the Crimson Creek Formation.

The strongly-mineralised breccia-vein zone has no surface outcrop exposure, however is thought to be the source of the ground EM conductors located on “Line 2”, approximately halfway down the 40^0 slope between Mt Ramsay and the Ramsay River. Assuming the main breccia-vein intersection starting at 355m down-hole represents the first westerly expression of the breccia body at depth, a steep easterly dip of the western margin of the breccia vein zone may be inferred. The final 13m of MRDD01 encountered weakly brecciated vein material, along with zones of high-density veining and moderate to strong alteration over narrow intervals. This suggests the intensity of brecciation and alteration maybe decreasing toward the end-of-hole. However, the final 0.1m of core contains up to 30% pyrrhotite indicating the sulphide-breccia assemblage continues beyond the 408m hole termination depth.

The geometry of the breccia vein zone is largely unknown, however initial interpretation suggests the zone is steeply east dipping, discordant to bedding and north-south trending. Narrow intersections of breccia-vein material do however have bedding parallel margins suggesting some utilisation of bedding by through-moving fluids and possibly some localised replacement. The breccia vein zone may represent a structural corridor that has been exploited by fluids streaming off the nearby Meredith Granite. This structural corridor may correspond to the contact between the Crimson Creek Formation and the Oonah Formation to the east (see **Figure 1** and **Plate 1**). The breccia vein zone is a multiple-event feature and likely corresponds to multiple phases of tectonic movement and/or hydrothermal fluid flow.

The geological setting of the Mt Ramsay project area appears analogous to the Mt Bischoff carbonate-replacement tin deposit some 16 km to the north. Mt Bischoff hosts significant tin mineralisation related to the replacement of dolomitic beds within the Oonah Formation. A swarm of porphyritic dykes has intruded the sequence, which have subsequently been utilised as fluid conduits for mineralising fluids related to the de-fluidising Meredith Granite. The key comparing factor between Mt Bischoff and Mt Ramsay, at this early stage, is the similarity of alteration features, including composition and texture. Mt Bischoff has a strongly developed phyllosilicate and calc-silicate alteration assemblage resulting from significant fluid flow, with pyrrhotite as the major sulphide mineral. It appears Mt Ramsay has a similar, strongly developed phyllosilicate and calc-silicate alteration assemblage along with pyrrhotite as the major sulphide phase. However, both the prograde and retrograde hydrothermal alteration phases developed at Mt Ramsay appear to represent hydrothermal fluids that were too hot and proximal to the Meredith Granite to be carrying significant amounts of tin. The magmatic fluid is interpreted to be unmixed and anhydrous, further limiting its ability to carry significant tin. Furthermore, a highly reactive lithological trap, such as the dolomite unit at Mt Bischoff, has not been observed in MRDD01, though the skarn assemblage confirms a Ca, Mg-rich system.

Significant tin grades have yet to be discovered at Mt Ramsay, however textures observed so far indicate a large volume of potentially Sn-bearing(?) hydrothermal fluid has moved through favourable structural corridors in this area. It is likely a suitable and distal litho-chemical trap such as reactive calcareous strata located a greater distance from the Meredith Granite has yet to be identified. Other, untested EM conductors located some distance from the Meredith Granite now become highly prospective for lower temperature pyrrhotite-cassiterite mineralisation similar to Mt Bischoff, particularly if coincident dolomitic lithologies are identified. Such strata are known to exist within the Crimson Creek Formation and may be a favourable site for significant undiscovered mineralisation.

12 CONCLUSIONS AND FUTURE WORK PLANS

Based on results received during this progress reporting period, the Mt Ramsay project has the potential to discover a new Sn-bearing replacement-type deposit. Although initial Sn-W and base metal values are low, it has been demonstrated that a favourable environment for such mineralisation exists at Mt Ramsay.

Further exploration at Mt Ramsay will focus on the identified EM conductive corridor/s utilising additional ground geochemistry and geophysics. Particular focus will be on the identified EM conductors located furthest from the Meredith Granite (eg. Southern Conductors). Investigation of these EM conductors on EL 42/2002 will initially involve the collection of surface samples, particularly rock chip samples, aimed at identifying a lower temperature alteration assemblage and favourable host lithologies. No additional, followup drilling on the EM conductors targeted to date (northern conductors) is warranted due to their proximity to the Meredith Granite. Due to the inhabitable location of the majority of remaining EM conductors on this tenement, a surface program utilising helicopter support would be likely. Any future drilling program on EL 42/2002 would require a solely helicopter-supported drilling program to access this remote and difficult terrain.

13 EXPENDITURE

Expenditure for the Mt Ramsay project during the period 22 August 2005 to 17 July 2006 totals $252,435.91 as detailed below.

EL 6263

Expenditure Category	**$**
Salaries and Wages	64,454.76
Contractors and Consultants	9,235.54
Travel and Accommodation	26,469.98
Motor Vehicles	37,196.86
Assay Costs	5,416.20
Camp Food	4,466.76
RCP/Diamond Drilling	70,009.98
Earthmoving	2,520.00
Field supplies	7,018.63
Freight	40.00
Geological Services	628.03
Report Preparation	623.15
Telephone & Post	1,407.30
Administration (10%)	22,948.72
Total	**$252,435.91**

14 REFERENCES

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