



EXPLORATION LICENCE

EL 21/2007

SORELL PENINSULA REGION, WESTERN TASMANIA

ANNUAL REPORT FOR THE YEAR ENDED

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Prepared by:

John Richardson

Consulting Geologist

Macquarie Harbour Mining Limited

Submitted by:

Frank Rogers

Managing Director

Macquarie Harbour Mining Limited

Macquarie Harbour Mining Limited ABN 124 212 175 52 Channel Hwy, Kingston, Tasmania, 7050

TELEPHONE: 03 6229 9955 FACSIMILE: 03 6229 8430

EMAIL: [info@mhml.com.au](mailto:info@mhml.com.au) WEBSITE: [www.mhml.com.au](http://www.mhml.com.au)

## 1 EXECUTIVE SUMMARY

EL21/2007 is one of a number of licences held by Macquarie Harbour Mining Ltd (MHM) located south of Macquarie Harbour and forms part of the company's Western Tasmania Project. It covers a relatively unexplored area prospective for economic copper, gold and iron deposits within volcano-sedimentary sequences of Neoproterozoic age.

An extensive literature review of published documents and open-file company reports relating to previous exploration on these tenements formed the major part of the work during the first year of tenure. Two short helicopter assisted reconnaissance trips, to visit various prospects and determine requirements for future access, were made into the area in 2008.

The economic downturn in the mining industry in the latter part of 2008 was reflected in a cut in MHM's exploration budget. Although a drilling programme was planned for the 08/09 field season to target iron ore lenses in the southern part of EL21/2007 this did not eventuate. An investigation into previous geophysical surveys over all the MHM licences was carried out by Mitre Geophysics at the same time.

The main work during the current reporting period was an extensive heliborne VTEM survey flown by Geotech Airborne Ltd and managed by Geoforce Pty Ltd. Data interpretation undertaken by Geoforce has highlighted several anomalous areas within EL21/2007 which are to be followed up.

Compilation of digital geochemical data into Mapinfo from MRT databases, and a short report on recommendations for field investigations based on previous exploration immediately south of Macquarie Harbour by Consultant Geologist Luke Vanzino were also undertaken. The appointment of an Exploration Manager at the beginning of 2010 has added impetus to work on MHM's Western Tasmanian tenements and a substantial field programme is planned for the forthcoming summer months.

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Appendix 1 Geotech Airborne Ltd: Survey and Logistics Report on a Helicopter Borne Versatile Time Domain Electromagnetic (VTEM) Survey on the Sorell, Tasmania Area for Macquarie Harbour Mining Ltd. April 2010

Appendix 2 VTEM Survey Data Files, Blocks 1 and 2. ***(digital copy of report only)***

Appendix 3 Geoforce Pty Ltd: Report to Macquarie Harbour Mining Ltd on Interpretation of VTEM Survey, Sorell Peninsula and Macquarie Harbour Western Tasmania. May 2010

Appendix 4 Vanzino L: Memorandum to Macquarie Harbour Mining on EL's 21/2007 and 22/2007 – Literature Review, Recommendations and Logistics. December 2009

***Note: Appendix D as listed in the Geoforce Report is Appendix 1 in this Annual Report***

## 2 INTRODUCTION

This is the third annual report on EL21/2007 (235 sq km) which is held in the name of Goldstock Mining Pty Ltd, a wholly owned subsidiary of Macquarie Harbour Mining Ltd (“MHM”). The earlier two reports were combined with contiguous tenements EL22/2007 and EL23/2007 which will be reported on separately for this period. All three licences lie west and south west of Macquarie Harbour (see Figure 1) with Birches Inlet and the South West National Park forming the eastern boundary and EL23/2007 extending as far south as the Wanderer River. All fall within the South West Conservation Area and any exploration requires continual consultation with the relevant government authorities, particularly Mineral Resources Tasmania and Parks and Wildlife Services.

### 3 REGIONAL GEOLOGY

The tenement covers a prospective section of Neoproterozoic rocks striking SW across the Sorell Peninsula. Its location in the Macquarie Harbour area is shown in Figure 1. Detailed geology of the ground covered by this licence, known as the Double Cove Belt, is presented in Figure 2.

Along the north-western boundary of the tenement and extending to the northwest of the Double Cove Belt are Proterozoic rocks of the Rocky Cape Group consisting of metamorphosed quartzite, mudstone/siltstone, and conglomerate. These rocks have been thrust over the top of the Neoproterozoic rocks to the southeast and lie on an almost level thrust plane. Proterozoic rocks previously covered the rocks now outcropping within the tenement but have since been largely eroded. Some inliers of thrust Proterozoic rocks can be found as remnants on higher ground within the licence.

Within the licence a number of major faults strike NE-SW, dividing the succession into a number of strips. The Double Cove rocks are considered to be correlates of the Crimson Creek Formation and the Success Creek Group which are hosts to a number of deposits southwest of Zeehan. In general the succession is sedimentary and youngs from the SE to the NW, with the correlates of the Success Creek Group mainly in the central and southeast. This group comprises metamorphosed mudstones, siltstones, and sandstones, which are often calcareous or dolomitic. The correlates of the Crimson Creek Formation are mainly in the northwest where they are referred to as the Albina Creek Belt and contain basaltic lavas and breccias. Some gabbro dykes of Cambrian age are present at the bottom of the succession. Lenticular haematite (+ or – magnetite/pyrite) bodies of Cambrian age have been emplaced along some sections of the NE-SW faults in the middle of the succession. These are considered to be of economic importance, particularly in the light of strong demand for iron ore from China.

#### 4 REVIEW OF WORK BY PREVIOUS EXPLORERS

Modern exploration commenced south of Macquarie Harbour in the mid-1950's and has been carried out intermittently since then, led by a relatively small number of companies which have expended considerable time and effort in an area with no existing infrastructure and a climate which limits concerted field programmes to the warmer months. For the larger companies the area covered by EL21/2007 was only part of more extensive regional projects.

In 1902 Assistant Government Geologist G.A. Waller visited Birthday Bay and reported on a number of occurrences of low grade chalcopyrite mineralization. These were mostly located along the shore line. Three deposits that were prospected by the Birthday Copper Syndicate are currently identified by Mineral Resources Tasmania near the shore at Birthday Bay. High grade small patches of secondary copper minerals were present on the rock surfaces in places and the prospectors knocked these off, hand dressed them, and shipped out a couple of tons of concentrate. A fourth deposit was prospected by the Strahan Copper Co.NL. near the mouth of the Nielson River. This mineralization is present in a strongly sheared graphitic slate about 6m wide.

From 1956 to 1962 a JV between The Electrolytic Zinc Company of Australasia Limited and Mt Lyell Mining and Railway Co Ltd (Lyell – EZ Explorations or the LEE JV) was formed to explore the Mt Read Volcanics in the southwest of Tasmania. The first programmes were mainly airborne geophysical surveys and aerial photography followed by photo geological interpretation and ground geophysical surveys (magnetometer, gravimeter and I.P.). This work was carried out on two Special Prospectors Licences but in 1959 these were replaced with EL3/1959 (the Gordon Concession). In 1957 three Special Prospectors Licences were granted and these were replaced with EL1/1959 (the Arthur Concession). These two licences were allowed to expire in 1961 and 1962.

LEE discovered a sulphide zone containing copper on the beach of Pelias Cove which led to a considerable amount of work on the prospect. Two lines of soil samples were taken 50 -70 m inland from the occurrence with encouraging results of up to 5000 ppm Cu. Geological mapping and two EM traverses were followed by a 5 hole diamond drilling programme. Two of these were angled holes drilled to the south of the Pelias sulphide zone but did not intersect a landward extension of the mineralisation, while the remaining three were vertical holes drilled into the gossan on the beach. The results were inconclusive (core recovery was extremely poor) but 1.5 m of 2.5% Cu was intersected from surface in the hematite-pyrite gossan.

In March 1959 the LEE JV mounted an investigation of Airborne Geophysical Anomaly 10/8 (also known as Anomaly 129 or Deep Creek) which lies on the north bank of Iron Creek about 1.6km east from the coast. Anomalous magnetic and electromagnetic responses were obtained in the airborne and follow up ground surveys. Assaying of a sample indicated that the exposure was almost entirely hematite. The outcrop was gridded IN 1960 and the hematite/magnetite vein was found to extend over a strike length of 450m and was up to 52m wide. Scott estimated a tonnage of 5Mt to a depth of 100m but points out that sulphides may become significant at depth. The mineralization is considered to be Cambrian in age.

From 1965 to 1972 The Broken Hill Propriety Company Limited explored EL13/1965. The part of the Double Cove Belt within this licence is covered by EL21/2007. Initially airborne radiometrics was flown to fill in some areas that had not been covered by previous work and a new helicopter aeromagnetic survey was flown. Aerial photographs and photo mosaics were produced at a scale of 1:23,760. Geology was mapped using coastal outcrops and stream sections. Systematic stream sediment sampling was undertaken at 400m intervals. Anomalous copper, zinc, and nickel values were obtained in the Lucas Creek area. The country rocks in this area are andesitic and basaltic lavas and breccias which BHP termed the Lucas Creek Volcanics. The anomalous geochemical values were not considered to be due to the presence of mineralization but an indication of the high natural metal content of the rocks.

A limited diamond drilling programme was commenced at Deep Creek (Anomaly 129) in 1968. At this locality the country rocks strike NNE, dip vertically, and are typically isoclinally folded. The hematite/magnetite body has been emplaced along a fault striking N 15° E and was traced over 480m with a maximum width of 120m and an average width of 45m. Pyrite was observed throughout the central and northern portions of the body and was estimated at up to 5%. A diamond core hole was

drilled at an azimuth of 305° and declined 50° but had to be abandoned at 101m. This hole intersected massive pyrite (70%) and hematite (30%) over 0.9m from 96.6m to 97.5m. A second hole was recommended but not drilled. More work was recommended on cupriferous hematite/sulphide zone at Pelias Cove but not undertaken. The various recommendations for additional work were later revised and no more work was done on the Double Cove Belt.

In 1983 three exploration licences (EL35, 36, & 37/1983) were granted to Placer Developments Ltd. A 50:50 joint venture was agreed between Amoco Minerals Australia Co. and Poseidon Ltd to fund exploration of the ground with Amoco as manager and Placer to earn 5% net profit.

Amoco 1984-1986 (later Cyprus Gold Australia Corp.) was mainly seeking volcanic hosted massive sulphide deposits of the Rosebery or Que River/Hellyer style. Initially the company carried out an airborne EM survey covering selected areas. This consisted of 659 line km with 150m line spacing at a bird height of 35m and was reported on by Dighem. A new aeromagnetic survey covering all the tenements was then flown by Austirex International Ltd employing a Nomad aircraft flying at 70m on a line spacing of 150m for 4,204 line kilometres. These data sets were processed by Pitt Research Pty Ltd and analysed by Mitre Geophysics. EM anomalies identified by this work were then followed up in the field and the new data reviewed and compared with that obtained by BHP. The ground follow up included geology, the collection and assaying of stream and soil samples, and ground magnetics. Amoco investigated the magnetic anomaly in the Albina Creek area which was identified by LEE but not vigorously followed up. Soil, rock chip, and stream sediment, sampling produced anomalous background values of gold with associated barium and a separate copper anomaly which it concluded was due to trace amounts of chalcopyrite in shales and siltstones.

In 1998 Pacific Nevada Mining Pty. Ltd. conducted regional scale exploration on the Sorell Peninsula. The area's prospectivity was assessed by geological mapping and collection of 248 rock chip samples, 122 panned concentrates, 27 bulk samples and 116 minus 80 mesh stream sediment samples. This work was primarily focused upon structurally controlled magnetite-hematite bodies and an alluvial gold bearing drainage located in and south of the Double Cove area. Panned concentrate samples ranged up to 1,800 ppb Au. Rock chip analyses include 1.14% Cu from known outcropping sulphides at Pelias Cove and 477 ppb Au from pyrite veined graphitic schists at the North Butler Prospect.

Alluvial gold, silicified rocks, and outcropping sulphides in the Pelias Cove area, were followed up with 15,000m of gridding and collection of 410 C-horizon soil samples. Gold geochemistry returned a peak analysis of 285 ppb Au from Pelias Cove. Elsewhere, gold forms coherent, although weak anomalies with values ranging from 2 to 14 ppb. Gold anomalies are coincident with elevated Cu geochemistry, which ranged up to 716 ppm Cu. Extensive outcrops bearing disseminated pyrite and accompanied by significant alluvial gold were located in the "North Butler Creek" area. An access track and a limited grid, totalling 3,000m, were cut in this area. Soil samples returned up to 564 ppb Au, whereas rock chip samples returned up to 477 ppb Au and 1,060 ppm Cu. This work identified two prospects for follow up – North Butler Creek and Pelias Cove. In 1999 the Pelias Cove targets were drilled with three diamond holes. North Butler Creek was drilled in January 2000.

The drilling at Pelias Cove totalled 761 m and although no gold or base metals were encountered extensive silica flooding and some silica-talc alteration was noted. The six diamond holes (1955 m) at North Butler Creek intersected a volcanic and intrusive complex with underlying carbonaceous black shales and siltstones grading into sandstone, quartzite and debris flow units. Only minor gold and base metal mineralisation was identified in the drilling, principally in semi-massive pyritic intervals in the black shale - siltstone section. Best intersections were from 0.10 - 0.14 ppm Au (with >10% pyrite) over 4 - 6 m in three holes. Carbonate-silica-pyrite-sericite alteration was pervasive, particularly in the sedimentary sections.

## 5 PREVIOUS WORK BY MHM (2007-2009)

Two helicopter supported reconnaissance visits were made to the area between April and July 2008.

A three day trip, based in Strahan, provided the company's Managing Director, Chief Geologist and Consulting Geologist with an overview of the whole tenement package with respect to existing tracks, vegetation and terrain limitations. Landings were made on the coast at Birthday Bay and near the iron ore lenses at the southern end of the Double Cove Belt.

Interest in the economic potential of the three iron ore lenses located inland from Birthday Bay (EL21/2007) prompted a five day trip to this area by Geologists Joe Booth and Galen Pettigrew to undertake geological mapping, sampling and NITON analysis of the hematite/magnetite outcrops investigated by the LEE joint venture and BHP in the 1950's and 1960's.

Due to extremely thick scrub (progress on foot was at times a little as 300m/hour) and poor surface outcrop and the fact that clear magnetic signatures outline their near surface extent only minimal time was spent delineating the lenses. Instead focus was placed on examining exposure in creek beds, taking samples for laboratory analysis and taking readings with the Niton XRF analyser.

All three lenses showed similar grades of between 59%-69% Fe according to the Niton, with minimal (typically <5%) visible sulphides (mainly pyrite). This represents ore that could potentially be "direct shippable" with no need for refining/concentrating. Rough field calculations from this field trip also suggest that previous estimates (LEE & BHP) may be somewhat conservative and potential for a total of up to 20 million tonnes of ore exists within the three lenses.

A work programme was approved by MRT for diamond drilling on the Birthday Bay Iron Ore Project but due to the need to reduce the company's exploration budget during the existing economic climate this did not proceed.

A report summarising regional geophysical surveys by previous explorers over EL 21/2007, EL 22/2007 and EL 23/2007 was provided by Mitre Geophysics at the request of MHM. This is included as an attachment in the previous annual report. Recommendations arising from this study included focussing further exploration attention on Pelias Cove (Cu, Au), and North Butler (Au).

## 6 EXPLORATION COMPLETED DURING THE REPORT PERIOD

Activities in the third year of tenure have focussed on two prospective zones within EL21/2007. The first of these zones lies in the SE of the tenement ( Area 1 or Block 1) and the second within 5 km of the south coast of Macquarie Harbour (Area 2 or Block 2). Blocks 1 and 2 were surveyed using a helicopter borne electromagnetic system known as VTEM by Geotech Airborne Limited in March 2010 and this survey, together with the interpretation of data by Geoforce represents the main bulk of work performed on the tenement during the past year. Other activities include ongoing compilation of publically available digital geochemical data into Mapinfo and a report by Consultant Geologist Luke Vanzino with recommendations for follow up on the area covered by Block 2. This report was completed prior to the commencement of the airborne geophysics.

### **VTEM survey – data acquisition and interpretation of results:**

Geotech Airborne Ltd acquired time-domain helicopter electromagnetic and magnetic data over selected blocks within four MHM tenements in the Macquarie Harbour area from 1-16 March 2010. A total of 1437 line km was flown with flight line spacings ranged from 100-200m. The Survey and Logistics Report of this work, together with Data Files for Blocks 1 and 2 are included in this report (Appendix 1 and Appendix 2).

Following receipt of the final VTEM data from Geotech interpretation by Geoforce Pty Ltd resulted in a prioritisation of anomalies based according to the strength of the EM response and the likelihood of the anomaly being due to a localised bedrock conductor (as opposed to an extensive “stratigraphic” conductor) with anomalies ranked from 3 (best) to 1 (worst). The locations of these anomalies are shown in Figure 3. A full report from Geoforce, which includes a description of the methodology used and a detailed section on interpretation is attached as Appendix 3.

Two major high ranked (Level 3) anomaly clusters were delineated by Geoforce in EL21/2007, one in each of the two blocks. Although these areas are within a dominantly sedimentary package there is an association with mafic igneous rocks in both cases. One of the areas is very close to the North Butler Creek prospect discovered by Pacific Nevada, and the other is 2.5 -3.5km inland from Birthday Bay. Although about 10km apart both these prospective zones lie roughly within the same position along the regional strike and may be related to the same NNE stratigraphic trend where it intersects (later?) NW structures. If this is the case then there are similarities here with the structural location of ore deposits within the Mount Read Volcanics.

Other anomalies of significance can be seen in Pelias Cove and Lucas Creek areas.

### **North Butler Creek Area – Comment on Geological Setting and Past Exploration**

Significant alluvial gold in regional stream sediment sampling by Pacific-Nevada Mining Pty Ltd in 1999 led to values of 564ppb Au in soil and 477ppb Au in rock chips adjacent to a major regional fault structure. Copper up to 1060ppm in rock was also noted. Detailed follow-up programmes indicated a sequence of structurally deformed basic volcanic/gabbro and sediments which were strongly altered (carbonate- silica-pyrite-sericite) in places. Highly pyritic and graphitic black shale units were noted and these were found to correspond with responses from earlier airborne EM surveys. Six diamond holes were drilled with low gold results; the best values (100-140ppb) were obtained from semi-massive pyrite intervals in the black shale horizons. Luke Vanzino states that the sampling at North Butler was “systematic and appropriate” and personally resampled the anomalous soil sample localities. In all cases the earlier gold values were replicated.

Pacific Nevada considered that although some of the pyrite appears syngenetic the majority was epigenetic and although gold values in drilling were disappointing the programme did succeed in defining a sulphide rich system along a structural zone favourable to fluid pathways and consequent mineralization. It was recommended by Luke that further work continue incrementally along strike to the southwest.

The VTEM anomalies lie about 1km WSW of the North Butler Creek drilling and roughly along strike. Of note is that although soil sampling of the grid at North Butler did not extend this far west, stream geochemistry in the headwaters of the next drainage to the west (part of a regional programme by Pacific Nevada) in the vicinity of the anomaly cluster included a pan concentrate sample which assayed at 1800 micrograms of gold, the highest value for the entire survey of 122 samples. Taken in isolation this may not be significant but it does imply that the surface gold anomalism at North Butler is also present further along strike to the west.

#### Birthday Bay – Comment on Geological Setting and Past Exploration

Approximately 3km NE of Birthday Bay an allochthonous Mesoproterozoic inlier overlies the younger Neoproterozoic. A number of Level 3 anomalies fall within this unit which is surprising considering it consists of orthoquartzite and siltstone/mudstone (i.e. no evidence of stratigraphic conductors like the graphitic/pyritic shales at North Butler Creek). An explanation is that the anomalies are derived from Neoproterozoic at relatively shallow depths (Kate Godber says that VTEM anomalies may reflect conductors to at least 200m below surface).

Previous ground exploration along the regional strike to the southwest of this inlier was undertaken by Amoco in the 1984-85 field season as a means of investigating the tin potential of two magnetic anomalies in the vicinity of known carbonate rocks. Two reconnaissance lines, 1250m and 500m long, were completed over the anomalies with soil samples taken every 50m and infilled to 25m over the magnetic centres. Minor rock chips and stream samples were also taken. No significant gold or base metal geochemistry was obtained although a number of samples indicated minor elevated copper and zinc values. A dyke rock described in the field as a syenite was petrographically identified as highly altered dolerite. This appears to coincide with a small stock or dyke of Devonian lamprophyre shown on the more recent 1:25,000 Albina geological map. MRT undertook trace element analysis on this rock which revealed low level gold.

#### Literature Review, Recommendations and Logistics

In December 2009 Consultant Geologist Luke Vanzino, who has had past experience working with Pacific Nevada in the northern part of EL21/2007 and further to the east in EL22/2007, was contracted by MHM to prepare a short report on previous exploration work in a zone close to the south coast of Macquarie Harbour and to make recommendations as to what targets should be followed up. This report (see Appendix 4) recommended that further investigation should be carried out along strike to the south west of the North Butler prospect.

#### Planned Exploration

Follow up work for this tenement in the fourth year of tenure will include at least one field trip to the North Butler area and one to the Birthday Bay area to follow on the high level VTEM anomalies to investigate any outcropping rocks and collect samples for analysis.

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## 8 EXPENDITURE

Total annual expenditure for EL21/2007

<b>Geoscientific Costs</b>	
Geology	<b>\$17,981</b>
Geochemistry	
Geophysics	<b>\$47,673</b>
Remote sensing	
<b>Drilling &amp; Gridding Costs</b>	
Gridding	
Drilling	
Earthmoving	
Land Access Costs	
Rehabilitation Costs	
Feasibility Costs	
<b>Other Costs</b>	<b>\$6,942</b>
Rental fees	
Vehicular track Construction	
Surveying, contract drafting etc	
Capital equipment purchase	
Administration Costs	
(note: not to exceed 10% of annual expend)	
Legal	
Office & Admin	
<b>Total</b>	<b>\$72,596</b>

## 9 APPENDICES

Appendix 1 Geotech Airborne Ltd: Survey and Logistics Report on a Helicopter Borne Versatile Time Domain Electromagnetic (VTEM) Survey on the Sorell, Tasmania Area for Macquarie Harbour Mining Ltd. April 2010

Appendix 2 VTEM Survey Data Files, Blocks 1 and 2. (*digital copy only*)

Appendix 3 Geoforce Pty Ltd: Report to Macquarie Harbour Mining Ltd on Interpretation of VTEM Survey, Sorell Peninsula and Macquarie Harbour Western Tasmania. May 2010

Appendix 4 Vanzino L: Memorandum to Macquarie Harbour Mining on EL's 21/2007 and 22/2007 – Literature Review, Recommendations and Logistics. December 2009

***Note: Appendix D as listed in the Geoforce Report is Appendix 1 in this Annual Report***