



**MITHRIL**  
**RESOURCES LTD**

**EL28175 – HARRY CREEK**  
**EL28271 – BALD HILL**  
**EL28340 – BUSHY PARK**

## **YAMBAH PROJECT**

### **YEAR 2 ANNUAL REPORT**

**For the Period**

**1 October 2011 to 30 September 2012**

**Compiled by**

**Damien Mizow (Project Geologist)**

MAP REFERENCE: Alice Springs 250K - Sheet SG53-14

Report submitted 29th November 2012

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## **SUMMARY**

This report presents the work completed during the second year of tenure on Harry Creek (EL28175), Bald Hill (EL28271), and Bushy Park (EL28340) tenements, collectively known as the Yambah Project.

Work completed during the reporting period includes, field mapping, geochemical sampling, ground electromagnetic surveys, ground magnetic surveys and viewing historic drillcore.

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## APPENDICES

- Appendix 1:** Geochemical Sampling  
Digital file: Yambah\_2012\_A\_01\_Geochemical Sampling.txt
- Appendix 2:** Historic Downhole Magnetic Susceptibility Data  
Digital File: Yambah\_2012\_A\_02\_HistoricDownholeMagSus.txt
- Appendix 3:** Ground Magnetic Data  
Digital file: Yambah\_2012\_A\_03\_Ground Magnetic Data.zip
- Appendix 4:** Ground Electromagnetic Data  
Digital File: Yambah\_2012\_A\_04\_Ground EM Data.zip

## 1.0 Introduction

This is the second report for work completed on Mithril's Yambah Project, combining the Harry Creek (EL28175), Bald Hill (EL28271), and Bushy Park (EL28340) tenements, for the period ending 29 September 2012. The tenements are located to the north and north east of Alice Springs, as shown in Figure 1. They cover parts of five pastoral stations, namely Yambah, Bushy Park, The Garden, Bond Springs and Aileron.

Access to the tenements is via the Stuart and Plenty Highways, the Arltunga Tourist Drive and good station-tracks. The terrain varies from grassy and scrubby flats and plains to rugged hills rising some 300m above the surrounding plains, most of which cannot be traversed by vehicle.

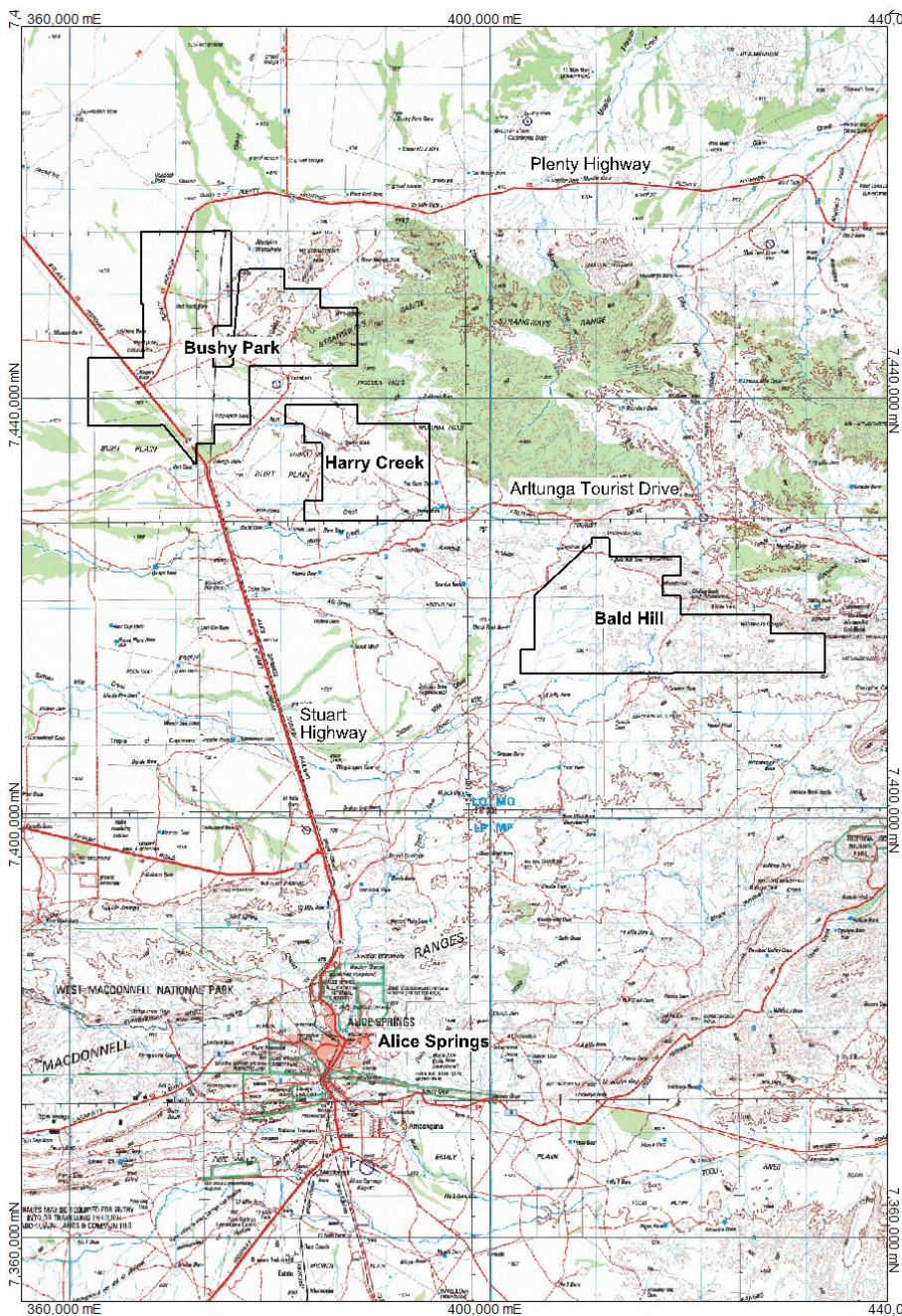


Figure 1: Location of Yambah Project.

## 2.0 TENURE

Tenure of the Yambah Project is summarised in Table 1.

Name	EL Number	Title Holder	Grant Blocks	Grant area (km <sup>2</sup> )	Grant Date
Harry Creek	28175	Mithril Resources Ltd	36	114	9/2/2011
Bald Hill	28271	Mithril Resources Ltd	75	219	6/4/2011
Bushy Park	28340	Mithril Resources Ltd	96	290	4/7/2011

Table 1: Summary of Yambah tenure.

## 3.0 GEOLOGY

The Yambah Project lies within the Aileron Province of the Arunta Region. Outcropping and interpreted basement geology is comprised of the Palaeoproterozoic (1.8–1.7 Ga) Strangways Metamorphic Complex (SMC) and mafic intrusives. The SMC consists of felsic and mafic granulites, orthogneiss, paragneiss, minor calcilicates, iron formations, and granitoids. Retrograde schists and mylonites are found in high-strain zones formed during the Palaeozoic Alice Springs Orogeny. Quaternary aeolian sands, alluvium, and calcrete generally cover low-lying areas and plains.

Known base-metal occurrences (Cu-Zn-Pb±Ag±Au) are stratabound and have largely experienced the same metamorphic history as their host rocks of the SMC. The protoliths to the host rocks are mostly considered to have been volcanics and there is evidence that the mineralisation was syngenetic (Hussey *et al.*, 2006). Details of the known mineralisation can be found in Hussey *et al.* (2006).

Surface expressions of mineralisation vary from localised copper-carbonate coatings on joint surfaces (e.g., Tom Brauns, Harry Creek) to lode-horizons (±alteration) 1-20m thick with a strike length of a kilometre or more (e.g., Rankins, Coles Hill). Mineralisation intersected in drill holes at Harry Creek and Coles Hill occurs as sulphides in veins and disseminations (Hussey *et al.*, 2006).

## 4.0 PREVIOUS EXPLORATION

Numerous companies and individuals have explored in the general area covered by the Yambah Project. Previous exploration has been undertaken for metamorphosed polymetallic (Cu-Pb-Zn-Ag-Au) massive sulfide deposits, while more recently, the potential for iron oxide copper gold (IOCG) mineralisation in the area has been recognised.

#### **4.1 Bushy Park EL28340**

- Mid 1960s: Northern Territory Mines Branch drilled three diamond holes into the Coles Hill Prospect. Disseminated Zn-Pb-Cu mineralisation was intersected.
- Mid 1970s: Planet Mining NL targeted the Coles Hill Prospect with geo-chemical surveys, costeaning, a ground magnetic survey and an Induced Polarisation survey.
- 1988: Macmahon Construction completed a ground electromagnetic survey of the Coles Hill Prospect. Weak anomalies were defined. Some were tested with costeaning only.
- 1995-1997: Roebuck Resources and Pasminco Exploration completed lag/ soil (MMI)/ stream sediment sampling and RAB drilling. 28 drill holes were drilled into the Coles Hill Prospect, including 2 diamond holes. Sub-economic Zn-Pb-Ag mineralisation was intersected over 1km of strike.
- 2002: Teck/ BHP conducted a single line of Ground EM over a discrete magnetic anomaly north of the Coles Hill Prospect. A potential basement conductor was detected at the southern margin of this magnetic anomaly.

#### **4.2 Harry Creek EL28175**

- 1950s: Baldissera sank a 2m deep pit into malachite stained gneiss at the Harry Creek Prospect.
- 1950s: Zinc Corporation collected grab samples at Harry Creek, with up to 22% Cu assayed.
- 1965: BMR conducted a low level aeromagnetic survey over the Strangeways Metamorphic Complex, which defined a zone of magnetic rocks coincident with malachite staining (Harry Creek Prospect).
- 1966: Northern Territory Mines Department drilled a 98m hole under Baldissera's Pit: 4.3m of cummingtonite gneiss was intersected, averaging 0.21% Cu, 0.27% Pb and 2.1% Zinc.
- 1975: Planet Mining NL tested the Harry Creek Prospect with a soil sampling program, a ground magnetic survey and an induced polarisation (IP) survey. Chargeable zones were detected but were not drill tested.
- 1989: Macmahon Construction conducted three fixed loops of Ground EM over the Harry Creek Prospect. Three key conductors were identified and drill tested. No significant mineralisation was intersected. Conductors were not explained.

### **4.3 Bald Hill EL28271**

#### Rankins Cu-Au Prospect:

This prospect covers two separate base metal areas, separated by 300m. The local host sequence consists of quartz-magnetite rock, chlorite schist and calc-silicates.

#### Timeline of Previous Exploration:

- 1969-73: Central Pacific Minerals pitted for secondary copper mineralisation and tested Rankins with an IP survey. Chargeable anomalies were detected, some coinciding with outcropping mineralised iron formations. The southern area was drilled with two holes but weak mineralisation was encountered only. The northern occurrence was tested with one percussion hole: 1.9m @ 2.5% Pb, 1.2% Zn with up to 20% magnetite+pyrite+galena+sphalerite
- 1985: Aurotech assayed a suite of samples from Rankins with up to 0.4ppm Au in quartz-hematite rock
- 2007: Maximus completed a HoisTEM survey and defined early to mid time anomalies. These were followed up with three lines of GEM by Minotaur Exploration. Minotaur also completed a gravity survey over the tenement package, which included Rankins

#### Gecko Prospect

Gossans are associated with chert-hematite-carbonate horizons within amphibolitic schists, which are bounded by quartz-feldspar gneisses. Mineralisation is stratabound.

#### Timeline of Previous Exploration:

- 1971: Central Pacific Minerals drilled five percussion holes into the prospect and intersected low grade zinc and disseminated pyrite. Drill logs are not available
- 2003: Tanami Gold completed a measured geological section and a ground magnetic survey. The ground magnetic survey showed mineralisation is related to magnetisation
- 2007: Maximus completed a HoisTEM survey that identified a number of early to mid time anomalies.

#### Regional Exploration

- 1980s: BHP conducted a large stream sediment survey over the tenement. Little follow up of anomalous areas was conducted

## **5.0 WORK COMPLETED DURING REPORTING PERIOD**

### **5.1 Geochemical Sampling**

Various regional grab samples have been collected across the Yambah Project and results are available in Appendix 1. More systematic sampling has been undertaken along the Harry Creek and Gecko mineralised trends. Selective grab sampling was also conducted at the Turners Prospect followed by a soil sampling campaign.

At the time of reporting, analytical results for the aforementioned prospects are not available, and as such, results will be reported in 2013.

### **5.2 Magnetic Susceptibilities of Historic Drill Holes**

Prior to the commencement of the ground magnetic surveys, magnetic susceptibilities were taken from DDH2 at the Red Rock Bore/ Coles Hill Prospect and also from DDH1 at the Harry Creek Prospect (Appendix 2). The aim of this process was to determine if magnetisation is related to mineralisation.

The Coles Hill mineralisation is not directly related to magnetisation, however, the HW contact to mineralisation occurs at a magnetic boundary (Figure 2). It was anticipated that this contact could be modelled with a ground magnetic survey.

The Harry Creek mineralisation is sporadically related to mineralisation (Figure 3), with small pockets of intense magnetite alteration observed within the mineralised interval. The FW contact to mineralisation also lies at a magnetic boundary. It was anticipated that a ground magnetic survey would be able to image the mineralised package, in addition to the FW contact.

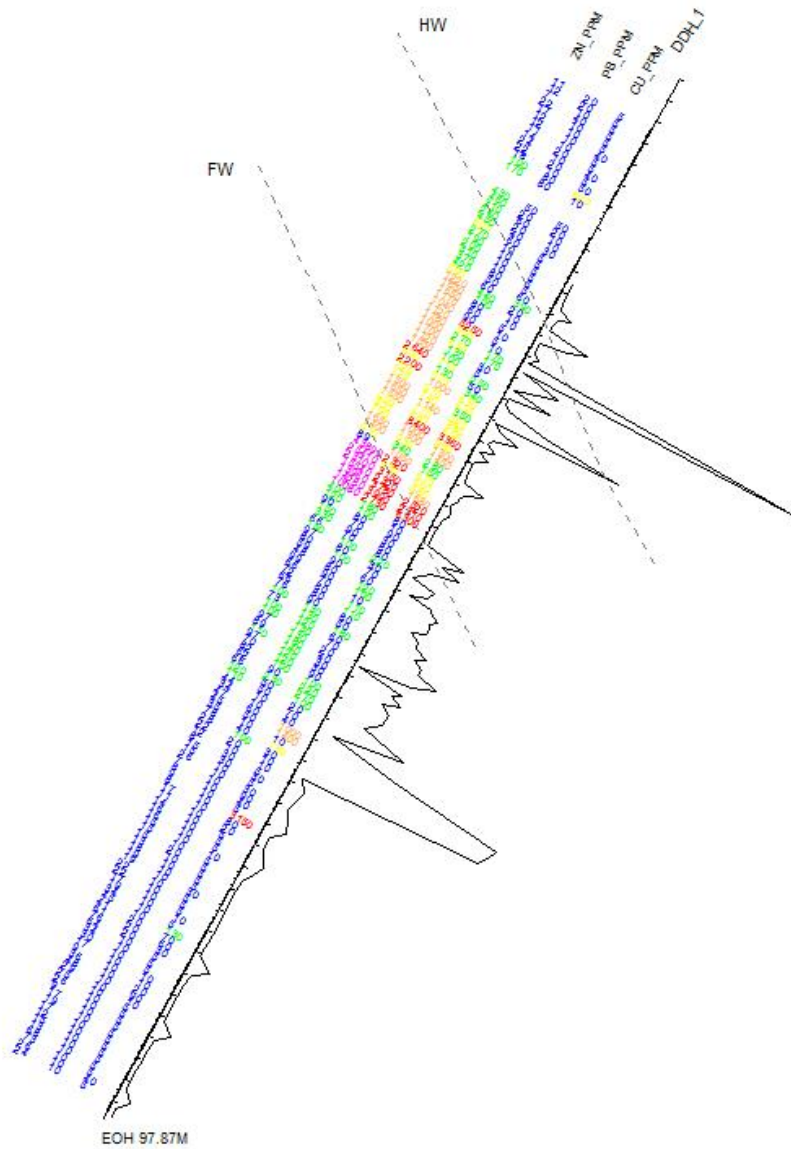


MAGNETIC SUSCEPTIBILITY PLOT  
 COLES HILL/ REDROCK BORE - DDH2  
 LOOKING WEST



Figure 2: DDH2 – Coles Hill Prospect. Plot of magnetic susceptibility with respect to mineralisation

MAGNETIC SUSCEPTIBILITY PLOT  
HARRY CREEK - DDH1  
LOOKING WEST



SCALE: 1:500

Figure 3: DDH1 – Harry Creek Prospect. Plot of magnetic susceptibility with respect to mineralisation



## 5.5 Ground EM Surveys

Red Rock Bore (Coles Hill), Harry Creek and the Coles Hill Northern Magnetic Anomaly were tested with moving-loop time-domain electromagnetic (Figure 5) surveys during July 2012. Digital data for these surveys are presented in Appendix 4

The aims of the surveys were to:

1. further investigate fixed-loop TEM anomalies interpreted from the 1988 EM37 data at Red Rock Bore and Harry Creek, and
2. to follow-up a tenuous late-time MLTEM anomaly seen in the 2002 survey over the Coles Hill Northern Magnetic Anomaly.

The surveys were carried out by GEM Geophysics using a Zonge ZT-30 transmitter and SMARTem-24 receiver. Inloop measurements were recorded with a dB/dt coil, and slingram measurements with a three-component fluxgate (B-field) magnetometer. Overall, the surveys comprised 191 stations over 8 lines, which constitute a total of 9.25 line-km of data.

The Red Rock Bore survey data show that the area is very resistive, with the inloop data badly affected by IP. There is no evidence for any bedrock conductors in the in-loop or slingram data.

The Harry Creek area is extremely resistive, and the inloop data is affected by a combination of both IP and superparamagnetism (SPM). The slingram data show no evidence for confined bed-rock conductors.

The follow-up line over Coles Hill Northern Magnetic Anomaly confirmed the original subtle late-time feature on the southern margin of the magnetic anomaly. The later data, however, shows that this is not a twin-peaked anomaly as indicated in the 2002 data and that it is most likely an SPM anomaly associated with north–south palaeodrainage. A drill hole is recommended to definitely test the subtle late-time feature.

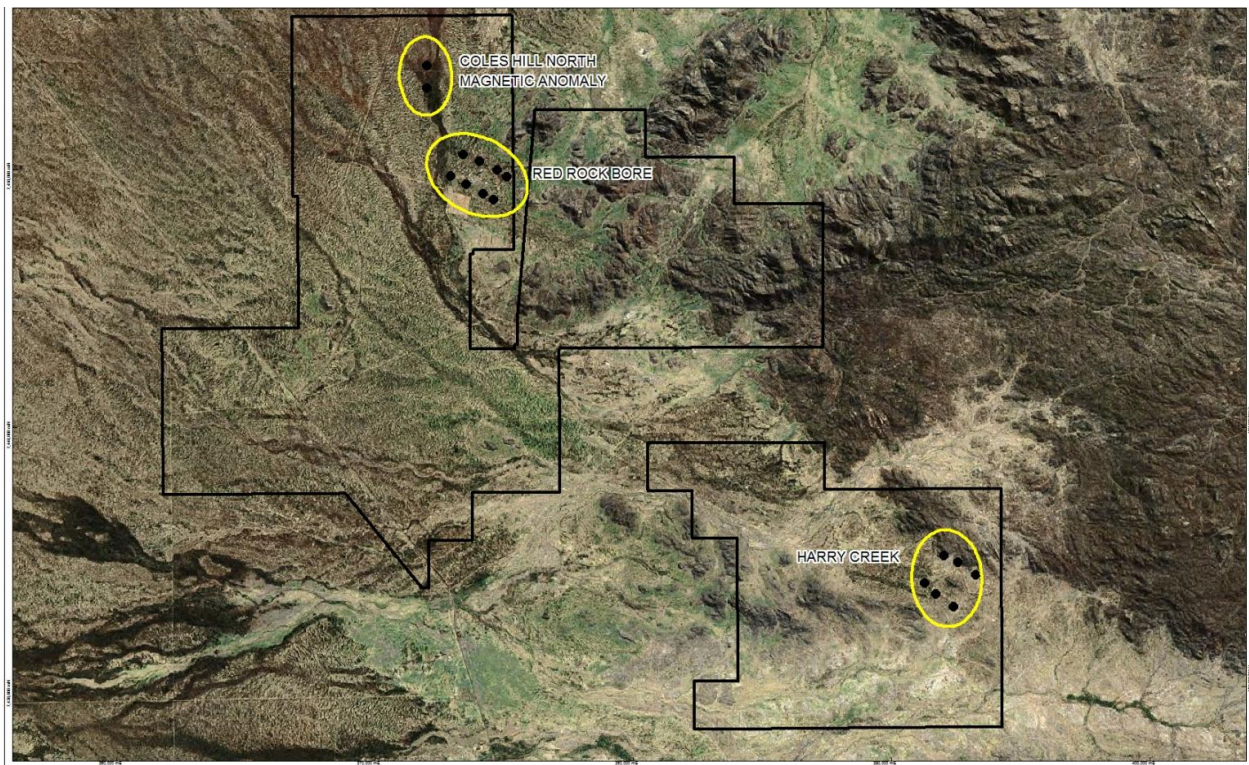


Figure 5: Location of Ground EM Surveys with respect to tenement position

## 6.0 CONCLUSIONS AND PLANNED WORK

The Yambah Project represents a balance between more advanced targets, such as the Red Rock Bore Prospect and also offers true greenfields opportunities.

Despite the limited success with generating targets from ground EM, the style of mineralisation may be more suited to Induced Polarisation (IP) techniques. The Coles Hill North anomaly will be drill tested next year and the Harry Creek trend will be tested with IP. This, in conjunction with modeling the ground magnetic data will aid in generating drill targets.

Further work is required at Gecko and Turners. The Gecko ground magnetic data will be reviewed and a detailed geological map will be constructed. Incoming assay results for Turners will determine follow up methods, suffice to say, ground magnetic data may help image the mineralisation and regional prospecting is required along strike of Turners to determine strike extent.

## REFERENCES

Hussey, K.J., Huston, D.L., and Clauoué-Long, J.C., 2006. Geology and origin of some Cu-Pb-Zn (-Au-Ag) deposits in the Strangways Metamorphic Complex, Arunta Region, Northern Territory. *Northern Territory Geological Survey, Report 17.*