

# TNG LIMITED

## ENIGMA MINING LTD

### MOUNT HARDY PROJECT SECOND ANNUAL REPORT

04/08/11 to 03/08/12

EL 27892

<b>Tenement/s</b>	EL 27892	<b>1:250 000 Sheet Name</b>	Mt Doreen (SF5212)
<b>Holder</b>	TNG Ltd	<b>1:100 000 Sheet Name</b>	Yuendumu (5253)
<b>Manager</b>	Enigma Mining Ltd	<b>Datum</b>	Doreen (5153) GDA94-52
<b>Operator</b>	Enigma Mining Ltd		
<b>Commodity</b>	Cu, Au, Mn		
<b>Elements Analysed</b>			
<b>Keywords</b>	Data review, HeliTEM, Ground EM, drill targets		
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<b>Distribution</b>	TNG Limited Department of Resources – Minerals & Energy		(1) (1)

## **Executive Summary**

TNG Ltd (TNG) purchased EL27892 from Walla Mines Pty Ltd, with the acquisition completed on 10 July 2012.

As part of the due diligence prior to acquisition of the licence TNG reviewed previous exploration across the project area to identify targets that warrant further work. Historical rock chip sampling in the Mount Hardy area by White Industries (early 1990's) and Tanami Gold NL (2002) returned numerous anomalous copper results, with peak grades of up to 19% copper, 18% lead, 1.52% zinc, 2.66 g/t gold, and 170 g/t silver.

Fugro Airborne Surveys Pty Ltd undertook a HeliTEM Survey over the Mount Hardy licence area in July. A total of 930 line kilometres were flown in a north-south direction at 200m line spacing. 527 line km were flown over EL 27892.

Five high priority Electro-Magnetic (EM) targets being identified from the survey. These represent discrete anomalies with a strike length of approximately 250m and indicate the presence of localised bedrock conductors at depths less than 100m from surface.

Ground EM surveys have been planned for each target to confirm and improve the resolution of the HELITEM anomaly for future drill testing.

Field work to date is encouraging and the exploration conducted has highlighted the potential for the delineation of economic copper mineralisation.

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# 1. INTRODUCTION

Exploration Licence 27892 (Figure 1) was granted to Bluekebble Pty Ltd on the 4 August 2010. On 26 June 2012 the licence was transferred to Walla Mines Pty Ltd (Walla) as part of an Option Deed between the two parties. TNG Ltd (TNG) purchased the licence from Walla, with the acquisition completed on 10 July 2012.

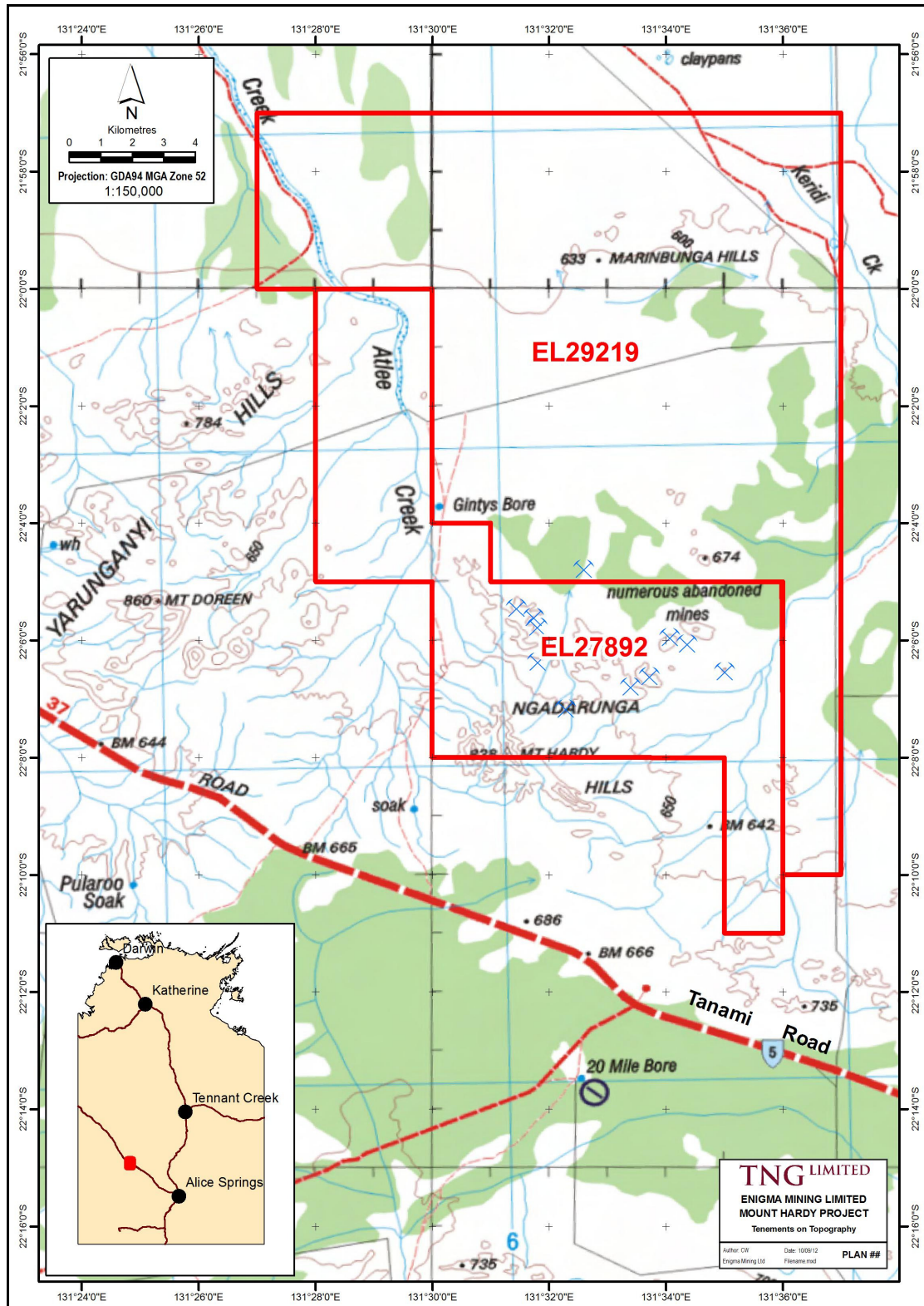


Figure 1: Location of Mount Hardy project area.

As part of the due diligence prior to acquisition of the licence TNG reviewed previous exploration across the project area to identify targets that warrant further work. Historical prospects were reviewed to determine the effectiveness of previous exploration and evaluate remaining potential within the project area.

In late July 2012 undertook a HeliTEM survey over the Mount Hardy Copper Field, where the Lander Rock Formation is host to copper-bearing quartz reefs and pegmatite veins.

## 2. LOCATION AND ACCESS

The Mount Hardy project is located approximately 300km north-west of Alice Springs in Northern Territory (Figure 1). The project comprises two exploration licences covering a total area of 317.74 km<sup>2</sup>. The project area is accessed via the Tanami Road and is situated on the Mount Doreen pastoral lease (NT Portion 1947 under Perpetual Pastoral Lease 1035).

The Mount Hardy area consists of low ridges and some areas of high relief separated by extensive flats. The drainage is generally northwards. East Point Ridge, on which Mount Hardy Mines is located, strikes east-northeast for about 304 metres and has its highest point about 21 metres above the extensive lowlands drained by Keridi Creek. To the west, a series of low ridges join East Point to the Gap Range. This range, with a relief of several hundred feet, is broken at the Gap, was of Brown's Mine, by a drainage system trending north from Mount Hardy, and is separated from the Mount Hardy Range by an area of low relief. The Mount Hardy Range rises to 840 metres and extends eastwards for several hundred kilometres as a discontinuous line of ridges. Mount Hardy is the highest point in the area.

## 3. TENURE

Exploration Licence 27892 is part of the Mount Hardy Project Area along with the recently granted EL 29219. The licence covers an area of 101.76km<sup>2</sup> and is 100% held by TNG Ltd.

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Tenure details for EL 27892 are summarised in Table 1.

**Table 1: EL 27892 tenement details.**

TITLE	PROJECT	AREA (blocks)	GRANT DATE	EXPIRY DATE
EL 27892	Mt Hardy	32	04/08/2019	3/08/2016

## 4. GEOLOGY

The Mount Hardy Project area lies within the Aileron Province of the northern Arunta region. The oldest rocks in the area are metamorphosed Palaeoproterozoic siliciclastic sediments of the c.1840 Ma Lander Group (Rohde, 2005). These sediments were multiply deformed and variably metamorphosed during the c.1810 Ma Stafford Event and numerous subsequent events. The previously reported magmatic age of 1880 Ma for the Ngadarunga Granite and consequent older age for the Lander Group and proposed Yuendumu Tectonic Event (Young et al., 1995) has been re-evaluated and is now interpreted to be much younger (Jon Claoué-Long, personal comment; Rohde, 2005).

The Lander Group is interpreted to be stratigraphically equivalent to the Tanami Group, which hosts significant gold mineralisation at The Granites, Dead Bullock Soak and Coyote. As such, the Lander Group metasediments are considered prospective for gold mineralisation. Rare amphibolite and metagabbro occurs within the Lander Group and are interpreted to be metamorphosed dolerite sills. Volcanic units have not been identified in the Lander Group. There are other Palaeoproterozoic volcanosedimentary successions in the Mount Doreen area, including the ~1770-1790 Ma Reynolds Range Group, Patmungala and Nicker beds, but these are relatively insignificant (Rohde, 2005).

There have been two main periods of granite intrusion in the Mount Doreen area; the c.1780 Ma Carrington Suite and the c.1580 Ma Southwark Suite. The Southwark Suite has geochemical affinities with granite associated with Proterozoic Au-Cu mineralisation elsewhere in Australia (Wyborn, 1998). Correlatives of the 1820-1790 Ma granites in the Tanami region (Frederick and Grimwade Suites) are unknown in the Mount Hardy area and may have implications for mineralisation models (Rohde, 2005).

Neoproterozoic to Palaeozoic sedimentary rocks of the Ngalia Basin overlie the Palaeoproterozoic to Mesoproterozoic Arunta basement in the central part of the Mount Doreen 1:250,000 sheet (Rohde, 2005).

#### **4.1 Local Geology and Mineralisation**

The geomorphology at Mount Hardy is dominated by the rugged ranges of the Ngadarunga Hills, which comprise high quartzite ridges of the Reynolds Range Group, and lower rounded hills formed by schists and gneisses of Lander Group metasediments (Rohde, 2005). Regolith is dominated by colluvial gravels and skeletal soils overlaying relatively fresh bedrock on ridge-tops and hillsides, giving way downslope to deeper valley filling colluvial fans and fluvial gravels. To the north of the ranges are low flat grass plains with thick stands of mulga and occasional low ridges and hills of bedrock schist. The plains have a shallow transported cover of 1-5 m alluvial sand, gravel and clay overlying weather bedrock (Rohde, 2005).

The Mount Hardy copper workings are hosted within the Lander Group and are dominated by psammite and lesser pelite, which have been metamorphosed to amphibolite-facies mica schist and andalusite(?) porphyroblastic schist. Complex mesoscopic-scale folding of schistosity/bedding is observable. Greenschist facies Lander Group schists and Reynolds Range Group quartzites lie to the south of the workings separated from the higher grade schists by a major east-west fault. Dolerite and pegmatite stocks and dykes are common in the area, the pegmatites most likely related to granite plutons of the Southwark and Carrington suites lying to the west and south of the Ngadarunga Hills (Rohde, 2005).

The copper workings display strong structural controls, being hosted within quartz veined shear zones. Surficial mineralization comprises copper carbonates and gossans within sheared mica-schist wallrocks and boudinaged and brecciated quartz veins. Quartz veins range for tabular and consistently strike over 10 to 100's of metres to complexly fractured and folded plunging rocks (Rohde, 2005).

Two main structural trends are evident from the distribution of the workings and lineations observable in Landsat imagery and aeromagnetics: NW to WNW (parallel to trans-Tanami regional scale structures in the region), and ENE-WSW (Rohde, 2005).

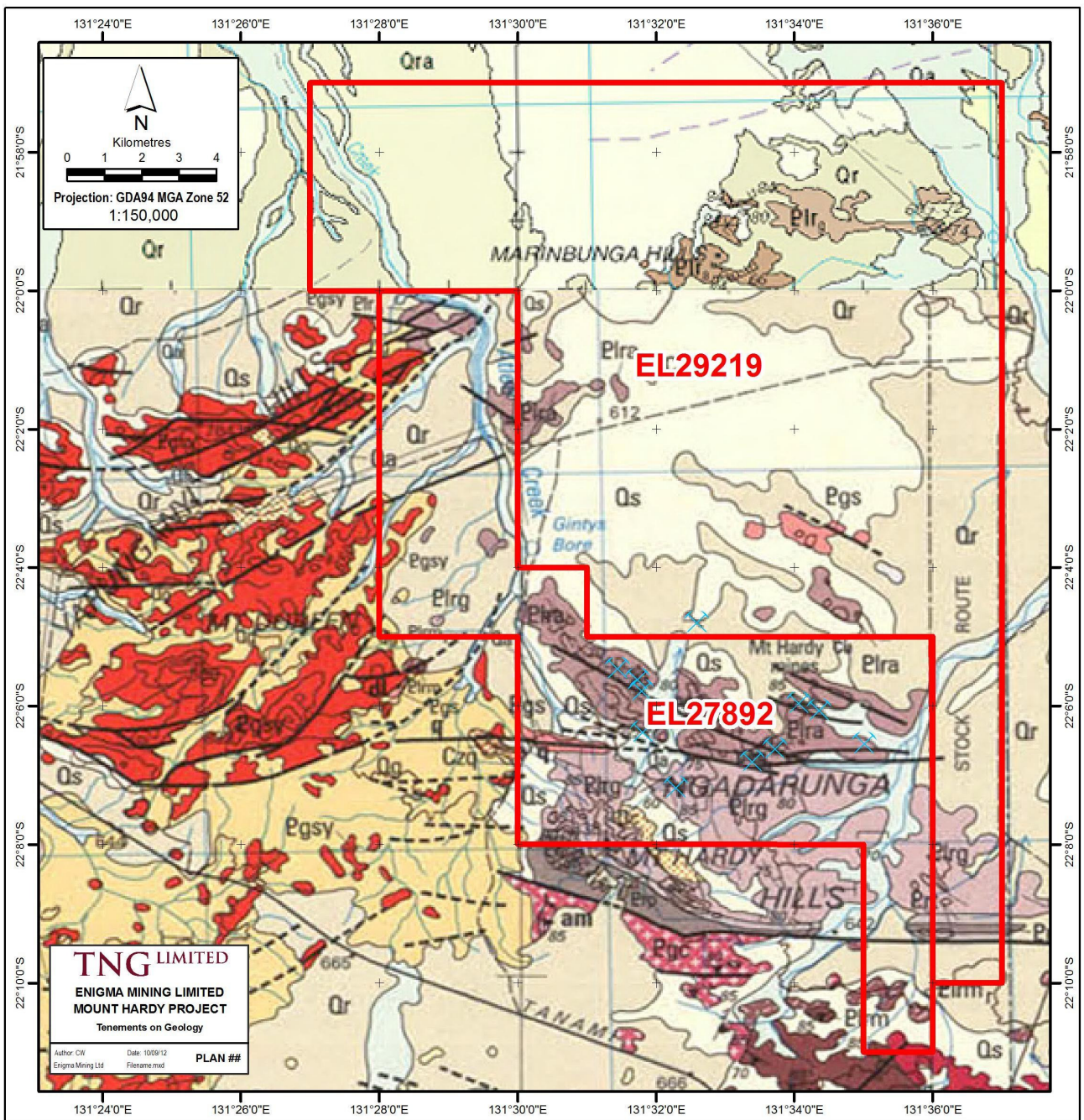


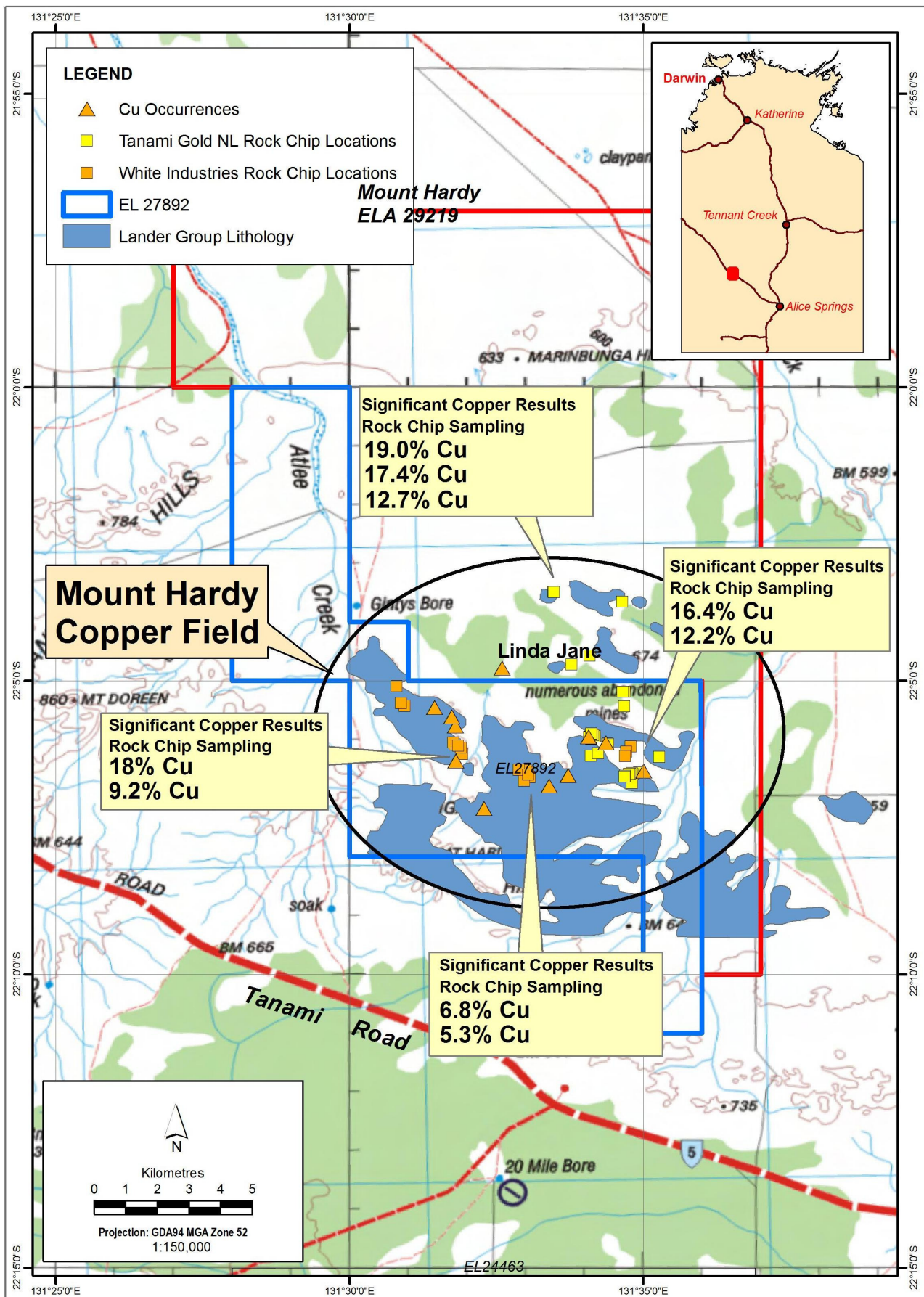
Figure 2: Geological setting of EL 27892.

## 5. PREVIOUS EXPLORATION

The following exploration has been carried out on the Mount Doreen mapsheet and around the Mount Hardy area:

- Mount Hardy copper prospects were discovered by W.W. Braitling in 1935.
- Uranium Development and Prospecting N.L. carried out diamond drilling in the area in 1956.
- Bureau of Mineral Resources (BMR) conducted aeromagnetic, radiometric and gravity surveys in the 1960s.
- Central Pacific Minerals held AP1722 in the Mount Hardy area from 1967-69
- NTGS assessed the economic feasibility of the Mount Hardy and Clarke copper deposits from 1968 to 1972.
- NT Geological Survey and BMR completed 2nd edition mapping of Mount Doreen sheet in the 1990s.
- White Industries conducted exploration on EL 5688 from 1988-90. Rock chip and stream sediment sampling was carried out from Wolfram Hill through to Mount Hardy.
- Bruce and Mules' explored the Silver King area for gold and base metals from 1988-1991.
- MIM/Roebuck Resources Joint Venture targeted magnetic highs in the early 1990s and explored the silver King deposit.
- Yuendumu Mining Company/Posgold explored the western parts of the Mount Doreen area from 1992 to 1996, particularly Terry's Find, other targets were 'Buger' and 'Grasshopper'.
- BMR completed airborne magnetic and radiometric surveys in 1993.
- BHP tested the northern Mount Doreen and southern Mount Theo mapsheets for Cu-Au in the late 1990s, but concluded that no major deposits were likely.
- Tanami Gold NL explored for Tanami-style gold mineralization and Tennant Creek-style copper mineralization in the Mount Doreen area from 2001 to 2005. The main target areas were the Terry's Find, Mount Hardy and Pyramid Hill Prospects. 7 Rock chip samples returned copper assays of 7032 ppm to 217972 ppm.
- Deep Yellow conducted exploration for uranium in the Mount Hardy area in 2009 and 2010. No other commodities were investigated.

A summary of exploration surrounding the Mount Hardy Copper Field has been compiled as part of TNG's initial review of historical exploration in the area and is included in Appendix 1. Figure 3 shows significant rock chip results, mineral occurrences and the extent of the Lander Rock Formation within the tenement.



**Figure 3: Significant rock chip results from the Mount Hardy Copper Field.**

## 6. WORK COMPLETED 2011-2012

TNG carried out a review of historical exploration over EL 27892 as part of the due diligence process before purchasing the licence from Walla. The full review is included in Appendix 1.

Subsequent to the purchase of the licence a HeliTEM survey was carried out over the entire licence.

### 6.1 HeliTEM Survey

Fugro Airborne Surveys Pty Ltd were commissioned to undertake a HeliTEM Survey over the Mount Hardy licence area in July 2012. Figure 4 shows the survey boundaries. A total of 930 line kilometres were flown in a north-south direction at 200m line spacing. 527 line km were flown over EL 27892. A full logistical report is contained in Appendix 2.

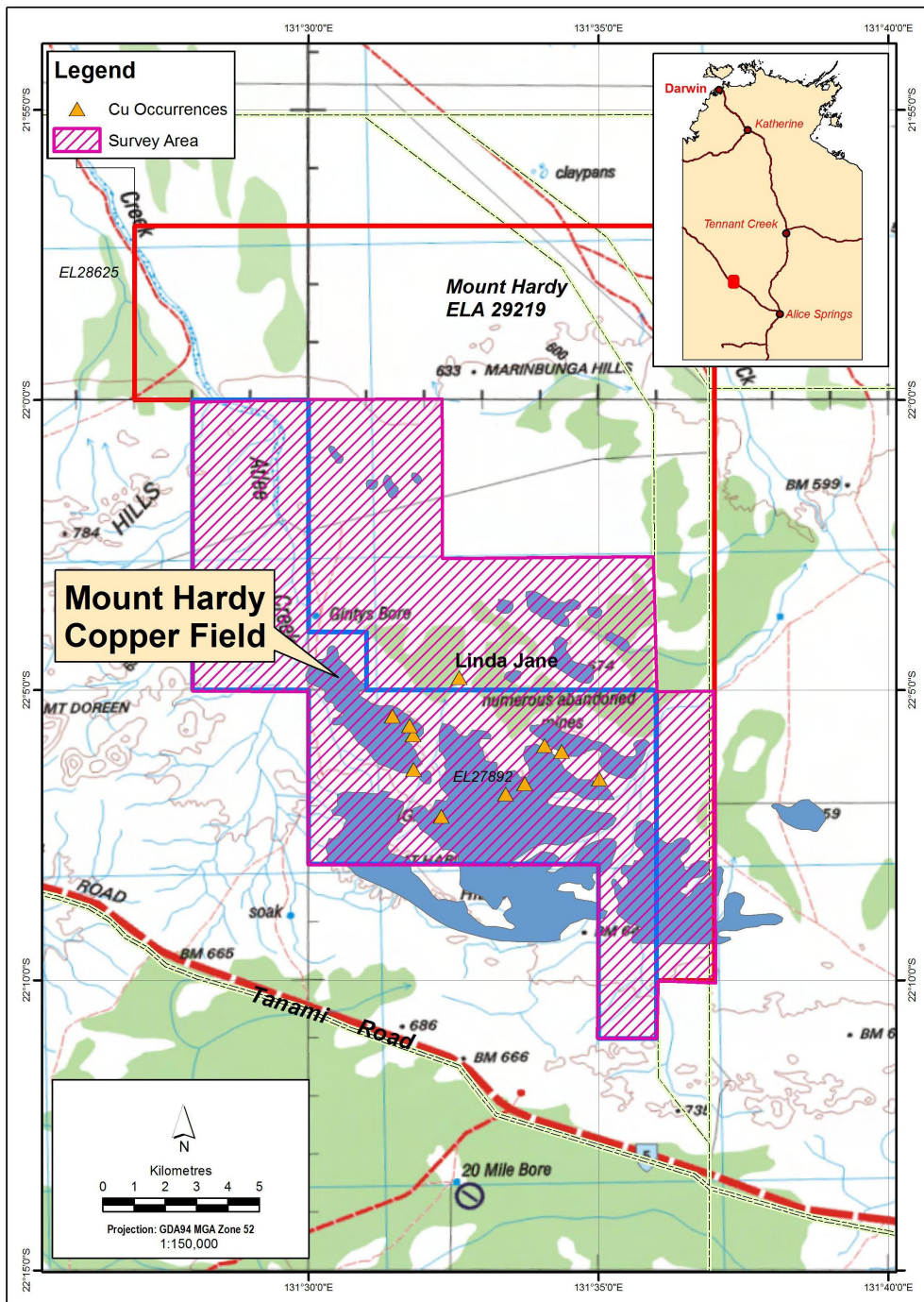


Figure 4: Location of HeliTEM survey.

Data from the HeliTEM survey was received by Precision Geophysics as it became available (final data was not received until late September, with final report currently being prepared) and initial interpretation resulted in a cluster of five high priority Electro-Magnetic (EM) targets being identified from the survey. These represent discrete anomalies with a strike length of approximately 250m and indicate the presence of localised bedrock conductors at depths less than 100m from surface. All five are located close to or above existing copper prospects (see Figure 5). Ground EM surveys have been planned for each target to confirm and improve the resolution of the HELITEM anomaly for future drill testing. The high-powered ground based system also has the potential to penetrate deeper than the HELITEM survey and detect stronger conductors below the existing anomalies.

A further eight discrete anomalies and several broader regions have been identified within the survey area. These represent medium priority targets and will be checked in future field programs.

The HELITEM survey has proven to be very successful in rapidly identifying potential copper and other base-metal targets over a relatively large area.

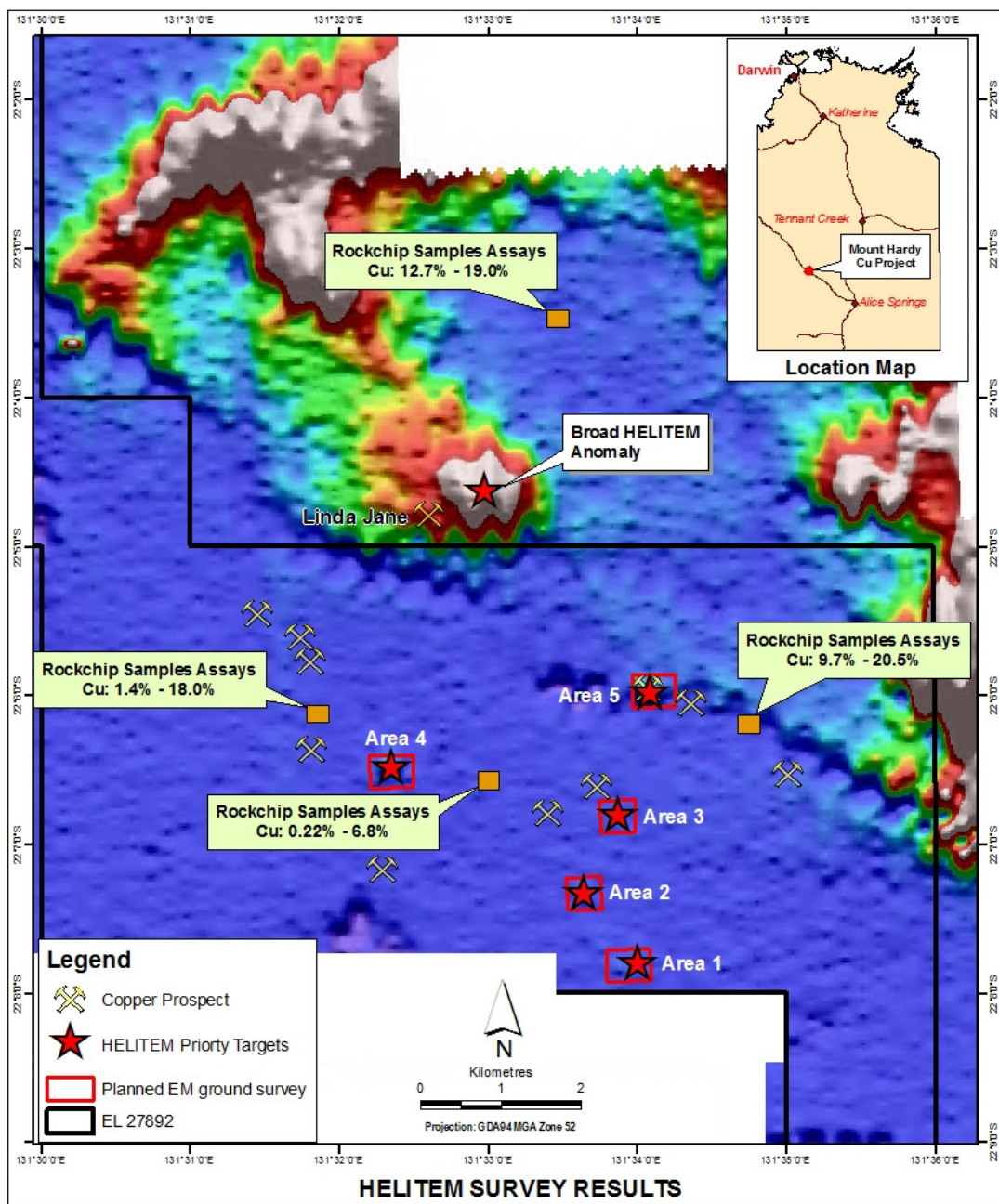


Figure 5: Priority targets identified from the HeliTEM survey.

Target #1

This is an unusual anomaly. The main conductor has a short strike length (100m x 500m at 100m deep) with relatively high conductivity. There appears to be a localised zone of higher conductivity up-dip from the main conductor.

Target #2

This is a good, well defined and discrete anomaly.

Target #3

This was a single line HELITEM anomaly identified as an weak, early-time 'spike'.

Target #4

This is a discrete anomaly but not as conductive as targets 1 & 2.

Target #5

This anomaly has been modelled with a small, relatively weak conductor overlying a broader, weaker unit.

Information to date has been received as email correspondence with a full report currently in preparation. All data received to date is included in Appendix 3 (Digital Data – Fugro Airborne Surveys) and Appendix 4 (Digital Images - Precision Geophysics).

## 7. EXPENDITURE

Expenditure for this reporting period is \$108,459 as shown in Table 2.

**Table 2: Expenditure for the period 04/08/11 - 03/08/12.**

EXPENDITURE	AMOUNT (\$)
Geophysical – HeliTEM Survey	100,378
Office Studies – Literature review, exploration planning, map production	5,056
Overheads – in house tenement administration, office admin etc	3,025
<b>TOTAL</b>	<b>\$108,459</b>

## 8. PROPOSED 2012 PROGRAM

A ground EM survey took place in August 2012 and the data is currently being processed in order to identify priority drill targets. Results will be reported in the 2012-13 Annual Report. Reconnaissance, field checking of anomalies and mapping is currently underway. Niton readings will be taken from rock and soil samples and additional grab samples will be collected for analysis. Field work to date is encouraging and the exploration conducted has highlighted the potential for the delineation of economic copper mineralisation.

### 8.1 Proposed Expenditure

The proposed expenditure for 2012-13 is shown in Table 3.

**Table 3: Proposed Expenditure.**

EXPENDITURE	AMOUNT(\$)
Geological reconnaissance, mapping and sampling	10,000
Assaying	5,000

Ground EM and data interpretation	25,000
RC drilling	40,000
Reporting, target generation, drafting, data review	12,500
Office admin, tenement management, travel, field camp costs etc	7,500
<b>TOTAL</b>	<b>\$100,000</b>

## REFERENCES

Rohde, C., 2005. Partial Relinquishment Report, EL's 10063, 10064, 10407 22771, Final Report on EL 10169, Mount Doreen Project, Tanami Exploration N.L., N.T. Minerals Division (CR2005-0501).

Wyborn, L.A.I., Bastrakova, I.V. and Budd, A.R., 1998. Australian Proterozoic Granites – characteristics, sources and possible mechanisms for derivation and emplacement. In: Abstracts for the Bruce Chappell Symposium: Granites, Island Arcs, The Mantle and Ore Deposits. Australian Geological Survey Organisation, Canberra.