



**MITHRIL**  
**RESOURCES LTD**

**EL25643 – MT ISABEL**

**REDUCTION REPORT**

**For the Period**

**26<sup>th</sup> July 2007 to 25<sup>th</sup> July 2014**

**Compiled By**

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MAP REFERENCE: Illogwa Creek 250K - Sheet SG53/15

Report submitted on: 16<sup>th</sup> September 2014

All data provided is of GDA94 Datum, Zone 53.

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## **SUMMARY**

This report summarises work completed on the surrendered portion of EL25643 for the period 26<sup>th</sup> July 2007 – 21<sup>th</sup> July 2014

The project area is located approximately 160 km east of Alice Springs, south of the Plenty Highway and on the Illogwa Creek 250,000-scale map sheet.

Work conducted over the reduced area includes:

- VTEM survey
- 30 grab samples
- 118 soil samples
- Heli-Magnetic/ Radiometric Survey
- Ground Gravity Survey

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Appendix I : A\_05\_Gravity Data

### 1.0 INTRODUCTION

Mithril Resources Ltd entered into a *Heads-of-Agreement* with Sammy Resources Pty Ltd to farm-in to EL25643 and EL25653. The agreement covers all minerals and Mithril may earn an 80% interest in the tenements by completing expenditure of AUD\$2M within 5 years of the commencement date. Prior to reaching this agreement Sammy Resources held the tenement in their own right. In July 2012 Mithril served notice to Sammy outlining that Mithril had spent the \$2M and the project is now subject to a 80:20 Mithril: Sammy Joint Venture, where parties fund pro rata.

Mithril Resources Ltd and Sammy Resources Pty Ltd reduced the existing EL25643 from 218 blocks to 158 blocks in 2013. The tenement has been further reduced by 61 blocks to 97 blocks (Figure 1).

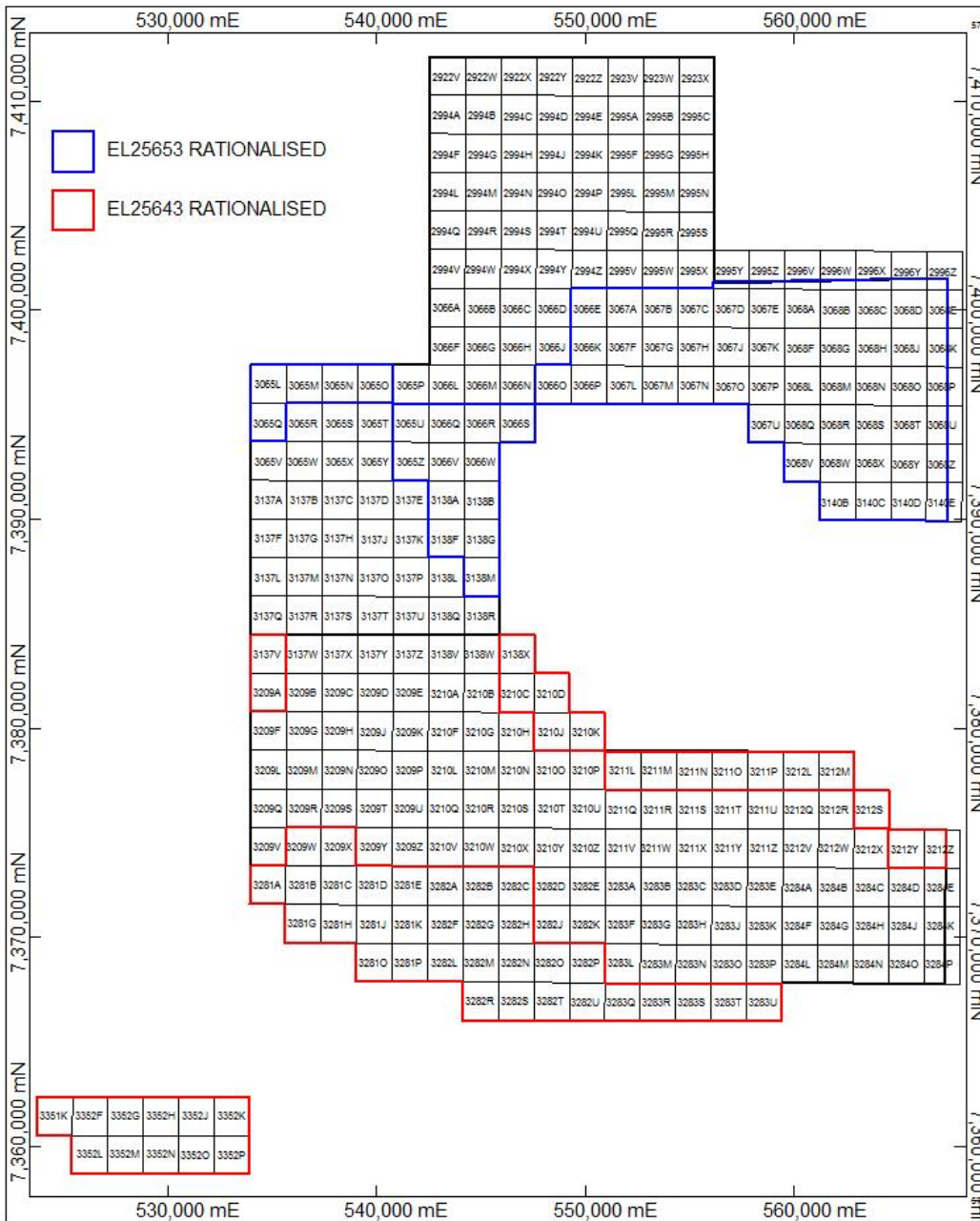


Figure 1: Surrendered blocks for EL25643 shown in red

## 2.0 PROJECT LOCATION

EL25643 lies approximately 180km east of Alice Springs (Figure 2). Access to the area is via the sealed Ross River Highway, the Numery Road and station tracks.

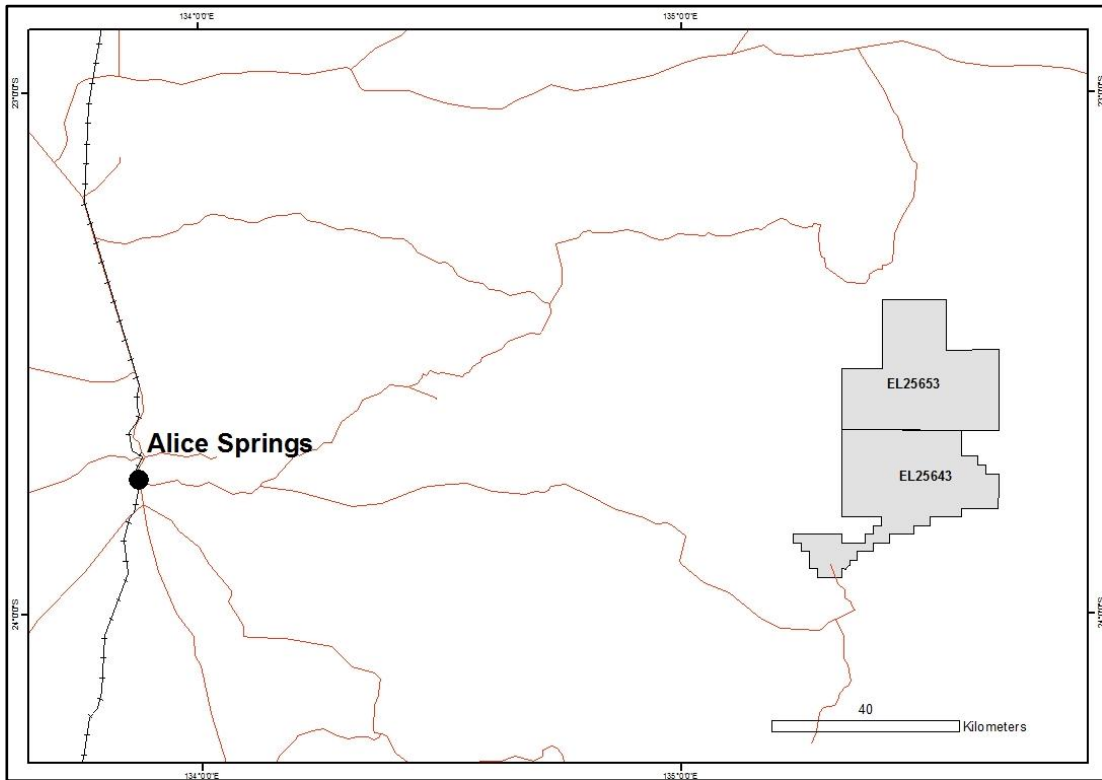


Figure 2: Location of EL25643 prior to reduction. Also shown is EL25653.

## 3.0 TENURE

Summary of the tenement status and reduction amount is presented in Table 1.

Tenement	Grant date	Size (blocks)	Reduction Date	Reduction Amount (blocks)	Size after Reduction (blocks)
EL25643	25/07/2007	438	20/07/2009	220	218
		218	19/07/2013	60	158
		97	21/07/2014	61	97

Table 1: EL25643 Tenement Tenure

## 4.0 GEOLOGY

### 4.1 Regional Geology

The Project lies within Illogwa Creek 250K Sheet. The Project area is located along the north eastern margin of the Amadeus Basin in a zone of complex deformation and interaction between basement structures and the sedimentary sequence.

The Amadeus Basin sediments overlie the metamorphic rocks of the Arunta Block in the south and postdate the intrusion of the Harts Range pegmatites and dolerites inferred to

be part of the Stewart Dyke Swarm. The stratigraphy and geological evolution of the basin is well document in Korsch and Kennard (1991).

The Amadeus Basin in the Illogwa Creek area has a number of important geological differences to the northern margin of the Amadeus Basin south and west of Alice Springs:

- It is characterized by a thin-skinned tectonic style (thrusts and nappes) with intense folding and thrusting that contrasts with a thick-skinned tectonic style further to the west.
- Only the lower stratigraphic section is preserved (up to the Arumbera Sandstone) and lithological facies are markedly different to those further east.
- There is a wide zone of interaction between the sedimentary sequence and basement structures that verge to the south and southwest.
- Alice Springs age shear zones deforming the basin sequence are associated with widespread greenschist facies retrogression or alteration and these zones are similar to those associated with gold mineralisation at Winnecke and Arltunga (Mackie, 1986; Dirks and Wilson, 1991).

The margin of the basin is structurally complex. In the Oolera Fault Zone, the Heavitree Quartzite, Gillen Member of the Bitter Springs Formation and rocks of the underlying Arunta block are inter-sliced in numerous thrust blocks. Basement cored folds may represent the cores of thrust nappes. A second major zone of overthrusting coincides with the Illogwa Schist Zone and is inferred to represent the lowest thrust-nappe of the Arltunga Nappe Complex (Shaw and Freeman, 1985; Mackie, 1986). Slivers of Heavitree Quartzite have been overridden by retrogressed schists in this zone and the alteration (retrogression) and deformation is similar to that spatially associated with mineralisation at Arltunga (Mackie, 1986; Dirks and Wilson, 1991) and is coeval with that at the base of the White Range Nappe on the Alice Springs 1:250K sheet. Quartz veins with associated sulphides are common in these zones and a single gold bearing copper occurrence in quartz veins in the basement is reported in the vicinity of the Hale River (Shaw and Freeman, 1985). Associated deformation in the cover sequence is complex and appears to be thin skinned in character.

The Arunta Province has been subjected to several regional orogenic events. Significant gold mineralization occurs in extensively deformed zones of faulting, shearing and greenschist metamorphism marking the boundary between the Arunta Province and Amadeus Basin.

## **4.2 Project Geology**

The Sammy Project area is predominantly covered by a veneer of aeolian and colluvial sand and gravel. Strongly weathered biotite, garnet-biotite and quartzofeldspathic gneiss, calcsilicate rocks and amphibolite are sporadically exposed, particularly in the northern portions of the project area. In addition Mithril has located a number of Ni-Cu-PGE rich mafic intrusions in this northern area which have been the focus of exploration to the end of 2011. There are numerous ferricrete, calcrete and silcrete rises, some of which may be indicative of the targeted mafic and ultramafic rocks. No detailed mapping has been undertaken in the area with the best regional maps compiled prior to detailed aeromagnetics and the current understanding of the geological history.

The area is considered prospective for Ni-Cu-PGE mineralisation associated with mafic and ultramafic intrusions.

More recently extensive haematite – silica altered granites were identified during remapping of the Limbla 100K sheet and altered granites were located on EL25643 in 2011. This alteration, as well as significant outcropping copper (and gold) mineralisation, was found in a number of areas during the current reporting period confirming the presence of a significant IOCG mineralising system at play. Both secondary (malachite) and primary sulphides (chalcopyrite) was located at surface at a number of previously unrecorded areas late in 2011 and in 2012.

## **5.0 EXPLORATION WORK COMPLETED**

There have been several explorers in the region previously, exploring a range of commodities including gold, uranium, base metals and diamonds. Some of the more significant exploration efforts are summarised below. Gutnick Resources took a total of 27 stream sediment samples in the main regional program covering EL10269 which partially overlaps EL25653. Only the top 5 cm of sand from across the active stream channel was sampled. A sample density of 1 sample per 5sqkm was used. The best result was 0.25 ppb Au. Rio Tinto explored the Casey Bore area in 1998 covering the eastern Amadeus Basin, an intracratonic basin which began to form about 900 Ma, and the Palaeoproterozoic Arunta Block. The contact between the Arunta Block and the Amadeus Basin in the north of the tenement area is marked by a series of east-west trending thrust zones. The southern end of the Woolangi Lineament, a northwest - southeast trending structural zone, marked in the area by a basement high, the Casey Inlier, also occurs within the tenement area. Rio conducted detailed geophysical surveys, stream sediment sampling, RAB and RC drilling. Anomalous Cu, Pb, Zn was returned from several phases of drilling.

### **5.1 Mithril and Sammy Resources Work Completed on EL25643**

Multiple phases of work have been conducted on EL25643 during the life of the EL to date. This work has included airborne magnetics, VTEM surveying, IP surveying, rockchip sampling, aircore, RC and diamond drilling, soil sampling and resulted in the discovery of multiple copper occurrences at surface with strong IOCG affinity (Figure 3).



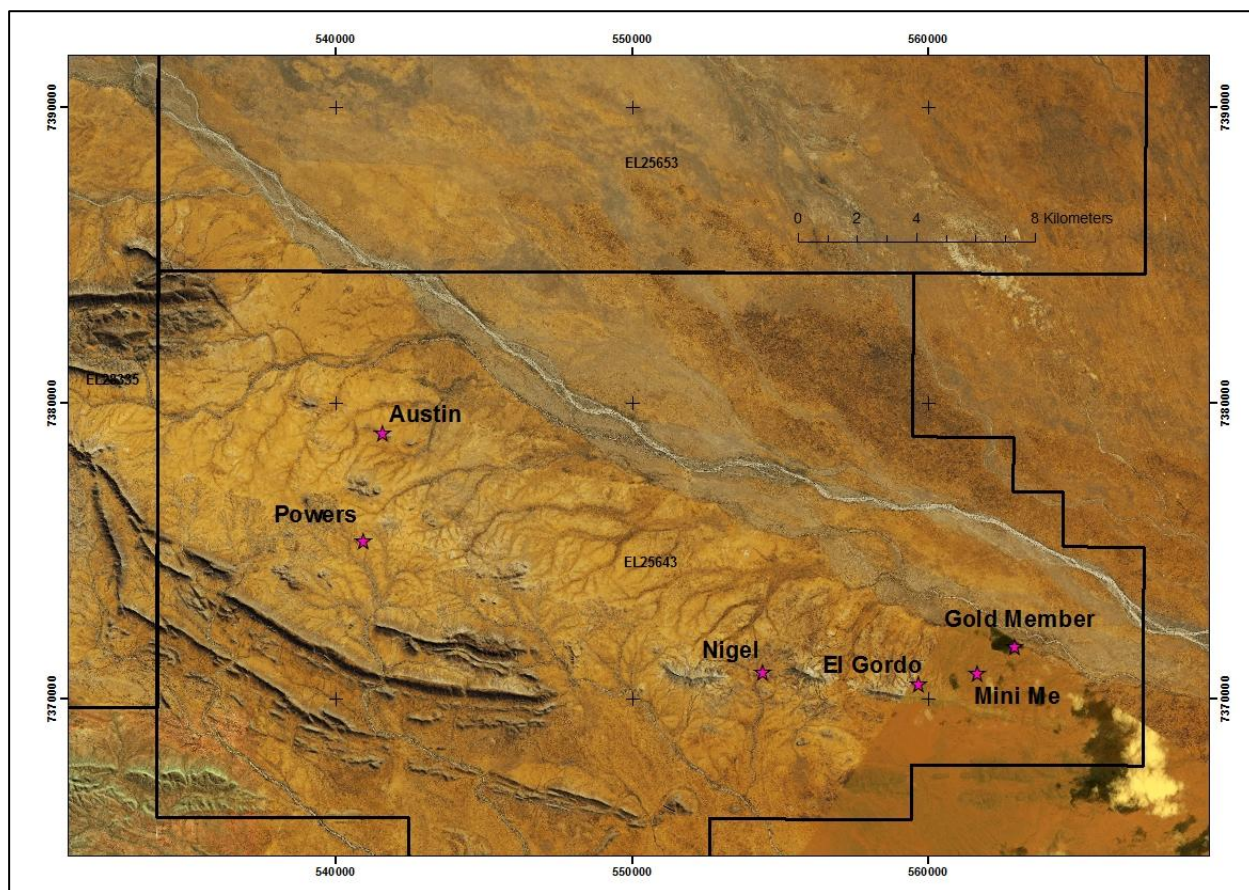


Figure 3: Discovered and named prospect areas on airphoto image

## 5.2 Work completed on relinquished ground EL25643

- VTEM survey was conducted over the broader Illogwa project area with sections of this survey overlapping with the surrendered area (Figure 4). No anomalies were detected across the surrendered portions.
- 30 grab samples taken. Refer to Appendix 1 and Figure 4
- 118 soil samples taken. Refer to Appendix 2 and Figure 4
- A 100 m spaced airborne magnetic survey (Figure 5) covered the entire interpreted basement and overlapped with the area relinquished. The survey identified significant demagnetised E-W and ESE-WNW structures which were found to host copper and or gold mineralisation as well as significant alteration such as hematite, silica and fluorite. Radiometrics were also collected as part of this survey. Refer to Appendix 3 for the raw data.
- 1032 gravity stations were read on EL25643 and a small portion of this overlaps with the surrendered area (Figure 6). The dominant gravity high that overlaps with the surrendered blocks is after gabbroic rocktypes. Refer to Appendix 4 for the raw data.



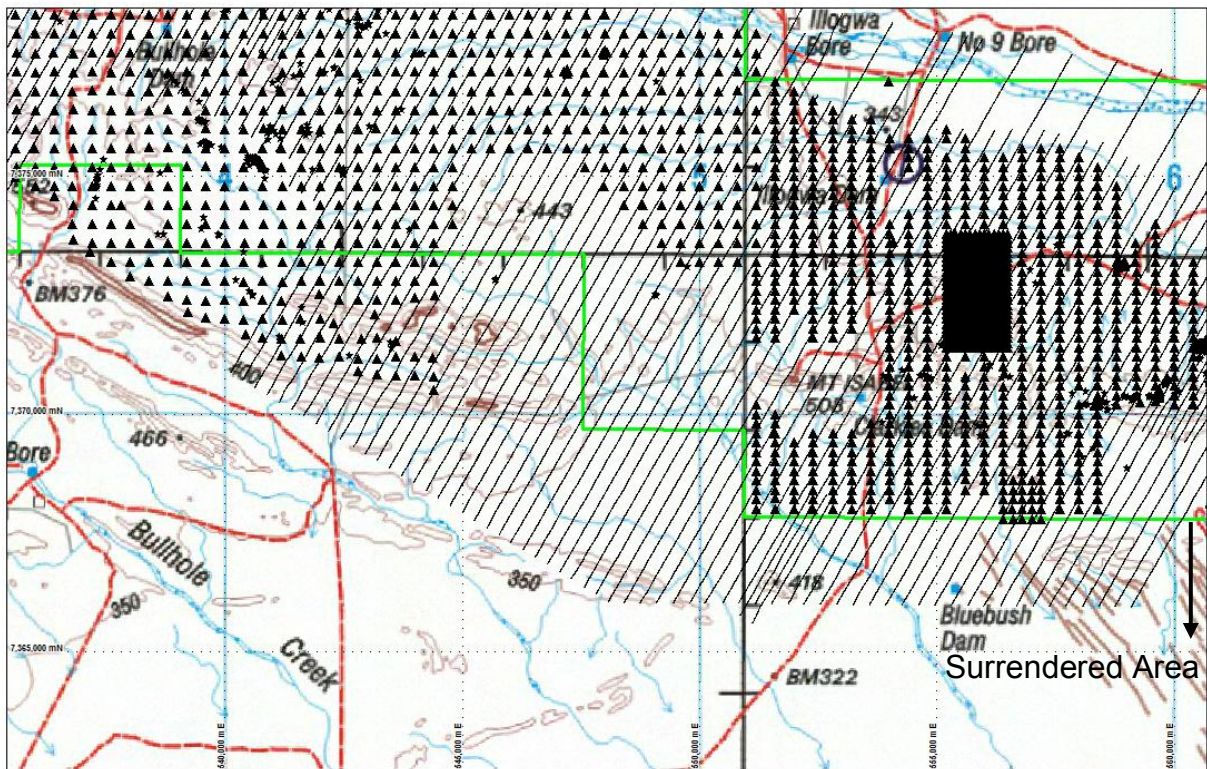


Figure 4: Showing location of rock samples (stars), soil samples (triangles) and VTEM survey flight lines taken over surrendered area.

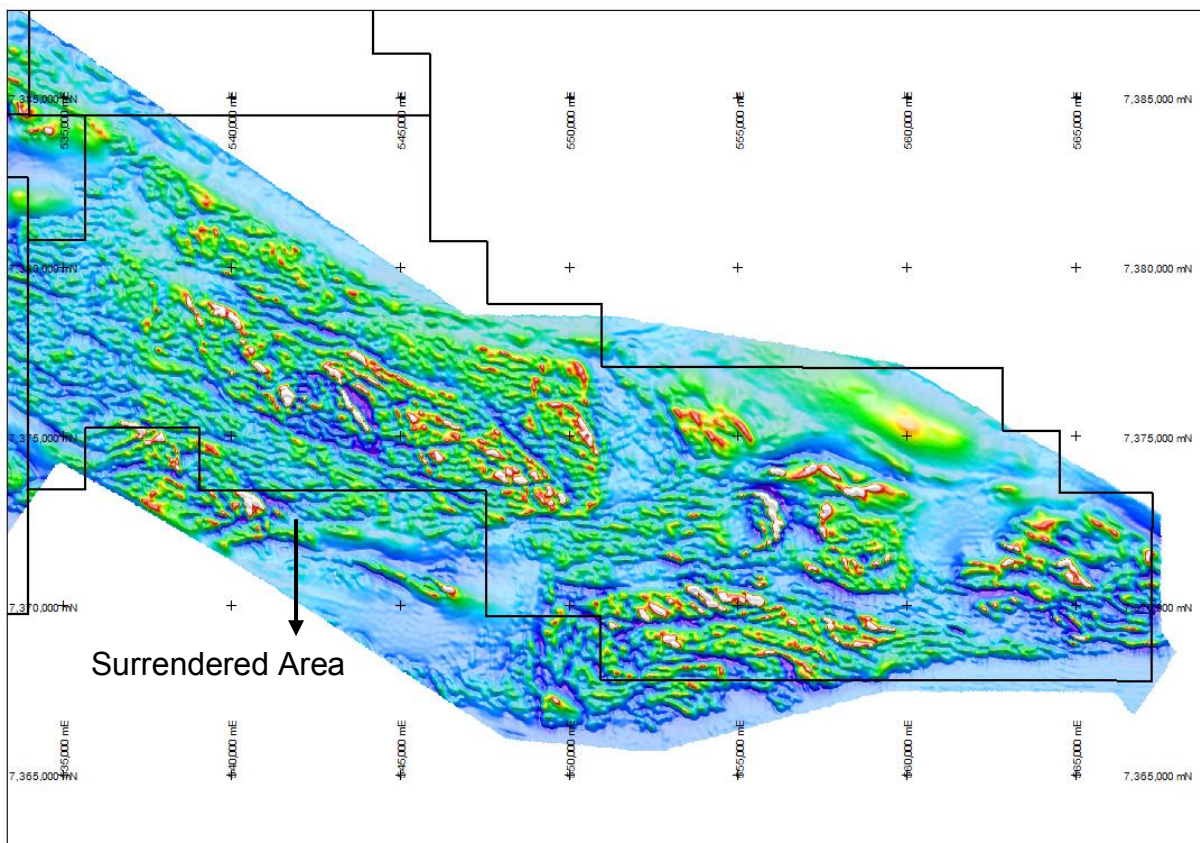


Figure 5: RTP image from Heli-mag survey with new EL25643 tenement boundary shown

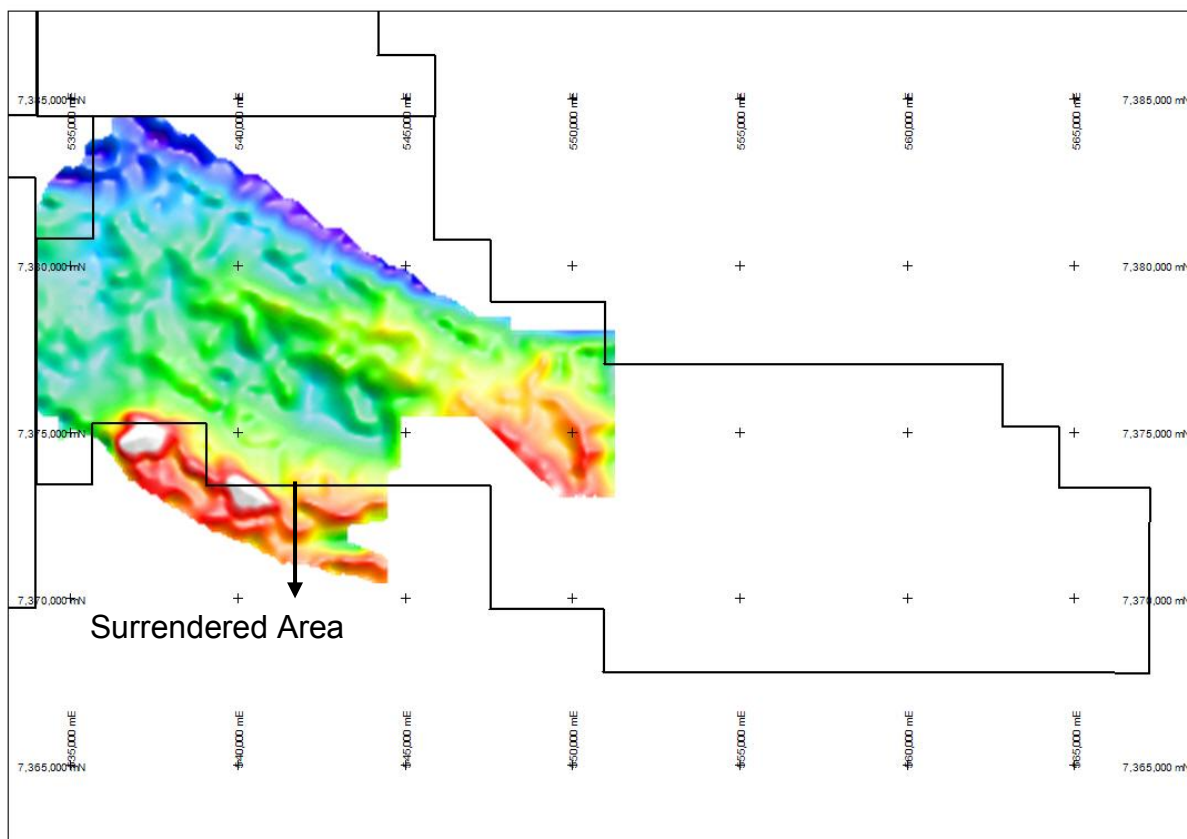


Figure 6: Gravity image from the 2011 gravity survey

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

The surrendered portion of the tenement overlaps with the Amadeus Basin Stratigraphy and is not considered prospective for IOCG style mineralisation.

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