EL31251 NUMERY

Annual Technical Report

23 11 2016 to 22 11 2017

GEMPART(NT)P/L

66 SMITH ST.

ALICE SPRINGS

NT 0870

ILLOGWA CREEK

COMMODITIES:Cu,Pb,Zn,Ag,Au,P,REE,U,Th,Ni,Co,Cr,Ti,V,PGE,Sn,W,Ta,Li,Fe

AW MACKIE

January 2018

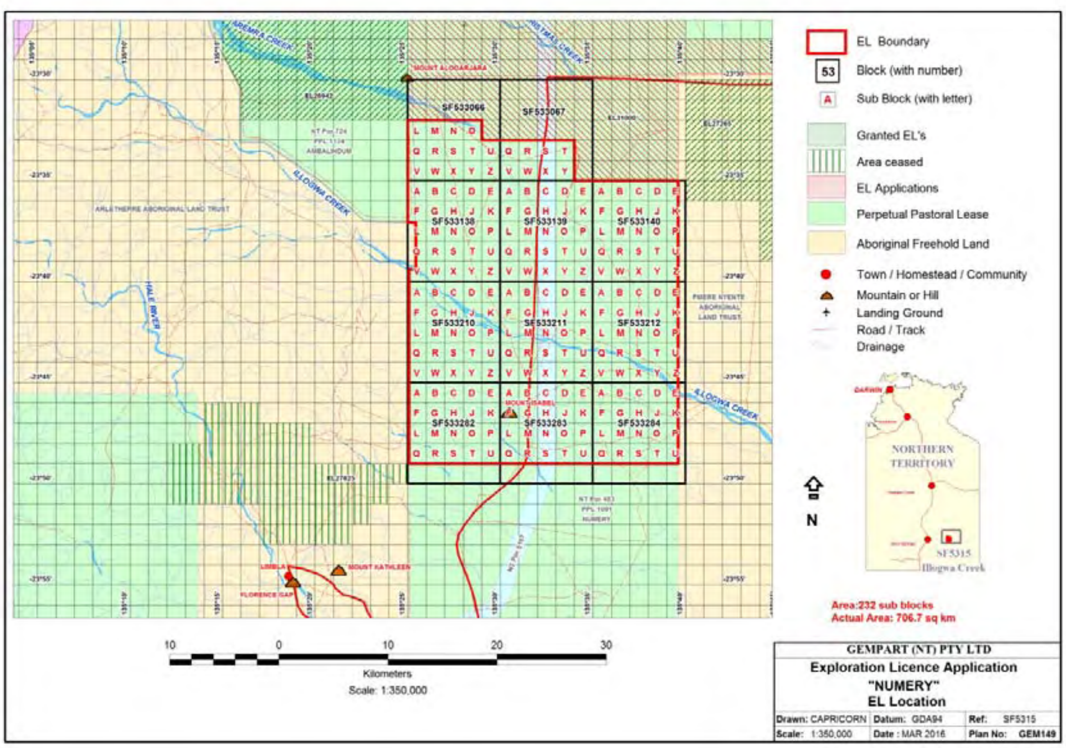
CONTENTS

FIGURES

FIGURES continued

SUMMARY

EL31251 covers the eastern end of the ILLOGWA IOCG belt first recognised by NTGS in 2010 and comprehensively worked by MTH until 2014 discovering numerous cropping out copper prospects often associated with zones of regional hematite-magnetite-fluorite-silicic quartz vein –hosted alteration trending east south east over a strike length of 50km within a belt over 5km wide.Main copper prospects from north west to south east are Bigglesworth-Dixie-Powers-Austin-Nigel-EL Gordo-Mini Me West-Mini Me-Goldmember most of which were drill tested by MTH for mainly disappointing results?The southeastern copper prospect cluster namely Nigel-EL Gordo-Ivana-Mini Me West-Mini Me-Goldmember are all located within EL31251 cropping out over a 6km x 4km area and coincidently a regional scale Cu In soil geochemical foot print ranging from 24ppm to 773ppm which to date, even though it was tested by 27 RC (2277m),40 Aircore and MMDDH001(294m) remains unresolved?Comprehensive geophysical surveying data sets exist over the project area namely ILLOGWA 100m line space AMAG and Radiometrics and ILLOGWA 300m(MMW closed up to 150m) line space VTEM, in addition 24 line km of IP over Austin and Mini Me West prospects.The conumdrum is why 9 RC drill holes collared in 2013 failed to intersect any copper mineralisation testing a 10 x background chargeability anomaly over Mini Me West prospect where several large high to very high Cu in soil anomalies exist? There would appear to be a disconnect between regional Cu in soil geochemical anomalism and several types of coincident geophysically anomalous features consequently expenditure is set at $40000.00 for the forth coming licence year to resolve above conumdrum ie where to drill next?



2.INTRODUCTION

EL31251 covers the south eastern extension of the locally known ILLOGWA IOCG belt some 200km by road east south east of Alice Springs.The licence area is mainly flat-lying covered by a thin veneer of aeolian sand with klippens of Heavitree Quartzite rising up to 150m above the sandy plain.

3.LOCATION AND ACCESS

Access from Alice Springs is east via Ross River highway for 25km until the turnoff to Ringwood is reached then east south east for 90km on a well formed beef road to Ringwood from there its south east for 36km to Brigadier Hill then east for 21km to Numery Station turnoff.From there its north on a Station track for 10km to No 8 Perseverence Bore continuing north for 7km to Moonlight Bore.The licence area southern boundary (23 49')is 9km north of Moonlight Bore enroute to No 9 Bore a further 12km north. No 9 Bore is 3km east of Illogwa Bore however Illogwa Bore to Atnarta Bore on the northern boundary of licence area is north for 21km (on the main track to Indiana Station).From No 9 Bore to Junction Bore is east south east for 16km(3km beyond the eastern licencearea boundary.Most of the licence area is accessible via Station tracks which are generally well maintained.

4.TENURE

EL31251 comprising 232 sub blocks (707sqkm) was granted to GEMPART(NT)P/L for 6 years 16th November 2016.

5.PREVIOUS EXPLORATION. Figure 2,2k,Appendix 1.

(for a comprehensive summary of all exploration see Appendix 1)

2009-2015 MTH Tenure

The only drilling prior to MTH 2012 program within the licence area was firstly AGIP NUCLEARE in the late 70s drilling for sedimentary uranium deposits hosted within unconsolidated sediments of Aremra Basin north of Illogwa Creek followed by Lindsay Johannsen in 1987 who drilled a 69m percussion drill hole adjacent to what is now referred to as Mini Me prospect.Lastly RIOTINTO in the mid 90s seeking sediment hosted copper deposits in the Limbla Syncline.

Also worthy of a mention prior to MTHs involvement was a trip by a GEOPEKO geologist to a copper occurrence hosted by quartz-hematite veins on a lease '4 miles south of Albarta Dam'ieBigglesworth.

He described 'strong epidote alteration ,boxworks with silica and hematite,disseminated chalcopyrite and quartzose bodies 30-60m wide striking northwest'ie fault controlled alteration and mineralisation.

At Illogwa style of alteration ,mineral assemblages and structural setting consistent with known shear-hosted IOCG deposits such as ELOISE Cloncurry and Hillside Ardrossan SA.

Five NQ DDHs were drilled in November 2012 testing vein systems at Austin(3),Mini Me (1) and Bigglesworth (2)interestingly mapped veins at Austin were intersected at predicted depths while

At Mini Me and Bigglesworth they did not persist down dip ie MMDDH001 intersected thin zones of disseminated chalcopyrite within broader zones of altered (red rock ,hematite-chlorite-sericite alteration)granite and metasediments.

RC drilling during September Quarter of 2012 intersected copper mineralisation at all prospects.Best result was ELGORDO MIRC008: 14m@0.34%Cu,0.05g/t,Au.from18m including one metre averaging 1.83%Cu,0.36g/t,Au. While at NIGEL MIRC012: 10m@0.34%,0.01g/t,Au.from 10m.

The Illogwa AMAG/RADS 100m l.s.(6500 line km) geophysical survey was flown by D.Daish during March 2012 while the ILLOGWA 300m l.s.VTEM AEM geophysical survey was flown October 2012 covering 500 sqkm of ILLOGWA IOCG area delineating multiple conductive features 5 of which are immediately along strike from cropping out Cu mineralisation?

During December Quarter 2012 an IP geophysical survey was conducted over 4 low to hi priority VTEM conductors namely FO1,FO2,FO3a and F03b at Mini Me lying within a large structural zone interpreted to control Mini Me mineralisation?

Mini Me West comprises 800m long coincident AEM and IP anomaly partially overlain by cropping out Cu mineralisation assaying up to 1.9%Cu.Modelling of geophysical anomalies suggests two parallel steeply north east –dipping massive sulphide bodies?Prospectivity enhanced by cropping out quartz – hematite alteration and Cu (malachite)mineralisation directly overlying IP anomaly.Mini Me in its entirety comprises sporadically cropping out Cu mineralisation /alteration over a strike length of 2000m ,2 to 50m wide with veinlets of primary chalcopyrite up to 150mm wide ,rockchips returning values of 0.13 – 7.8%Cu and 0.01-1.4g/t,Au.

At EL Gordo located 1km south south west of Mini Me Cu mineralisation/alteration sporadically crop out over a strike length of 800m x 2-10m wide.Rockchips returned values ranging from 0.7 to 12.6% Cu,0.1 to 1.0g/t,Au and 1.6 to 12.5g/t,Ag.A surface composite 7x1m continuous sample returned 7m averaging 0.94%Cu,2.8g/t,Ag and 0.05g/t,Au collected north to south across mineralisation.

At Nigel located 5km west of EL Gordo Cu mineralisation is associated with intense silica alteration returning rockchip values up to 1.7% Cu interestingly MM-ELGordo-Nigel are located along strike from each other within the same E-W trending structural zone which raises the possibility of the ILLOGWA area hosting a large structurally controlled IOCG mineralising system?

During 2012 MTH implemented a regional 400m x 200m soil sampling program (-5mm+1.6mm fraction)covering the entire southern third of EL31251 collecting 333 samples on Mt Isabel West 400m x 400m grid (which also included a ground gravity reading) and 1113 samples (including 284 infill samples at Ivana)on a 400m x 200m spaced grid.

During August 2012 a 13 RCDH program for 658m was completed over MINI ME: MIRC001-006(308m),ELGORDO:MIRC007-009(140m),GOLDMEMBER: MIRC010,011(97m) and NIGEL:MIRC012,0I3(113m) within the licence area.

MIRC008(63m):EL Gordo West,14m@0.34%Cu,1.26g/t,Ag,0.04g/t,Au from 18m mainly within quartz-veined granite coinciding with mineralisation.

MIRC007(50m) and MIRC009(27m) ie EL GORDO discovery outcrop.Scissor drill holes testing eastern extension of EL Gordo mineralisation,weak hematite/limonite alteration from 15-38m roughly coincident with down dip projection of surface mineralisation.

MIRC001-0005(30,34,60,25,95m respectively):5 drill holes testing Mini Me Cu mineralised lodes,intersecting several steeply dipping (70 degrees versus 50 degrees on surface) <2m Cu-quartz veins(0.03g/t,Au) +sheared ‘red rock ‘altered granite+carbonate and amphibolite.

MIRC006(64m):Mini Me discovery outcrop,drill hole collared directly under main Mini Me horizon comprising 2 x lodes of strong Cu mineralisation separated by 2m wide carbonate vein.Two thin quartz veins were intersected at predicted depth?Base of oxidation 24m.

MIRC010(60m):Goldmember 2m wide ironstone horizon intersected at 8m averaging 0.23%Cu,0.18g/t,Au.Chlorite alteration halo around ironstone horizon persisting to 22m,sheared granite-mafic pods-magnetic granite +/-pyrite over final 7m of drill hole.

MIRC011(37m):4m wide ironstone intersected ,trace Cu,Au .Sheared granitc gneiss.

MIRC012(37m):Nigel,10m averaging 0.34%Cu from 10m.

MIRC013(76m):Nigel,35m step-out designed to intersect above mineralised horizon below base of oxidation,no mineralisation intersected instead sheared granite-granitic gneisses+/-epidote-amphibolite pods-norite+/-cubic pyrite over final 7m.

As mentioned previously a gradient array and dipole-dipole IP/resistivity survey was conducted over WEST AUSTIN and MINI ME (24 line km)prospects during November 2012.At Mini Me,IP follow up of a string of fault style VTEM anomalies near structurally hosted ,mapped Cu mineralisation.ie test for chargeable responses coincident with VTEM anomalies and/or mapped mineralised trends.Interestingly IP showed strong chargeable responses in the gradient array up to 10 x back ground coincident with structurally controlled mapped surface mineralisation at Mini Me West.A dipole-dipole IP line over area of strongest response confirmed a strongly chargeable body at depth?

A 14RC drill hole for 1619m program was completed during September 2013 testing geophysical /geological targets at Mini Me West(1221m),EL Gordo(260m),Ivana(138m).

Mini Me West MIRC018-021(121m,199m,151m205m respectively):4 x scissor RC dhs testing 10 x chargeability anomaly and modelled EM plate along dipole-dipole IP line intersecting.disseminated pyrite averaging between 0.1-10% in mylonitic,chlorite granite.The subtle mid-time response AEM feature possibly fault/contact related or the amphibolite intersected near EoH in MIRC020 proximal to AEM plate?

Mini Me West MIRC024-025,031(109m,109m,43m respectively):2 x scissor RC dhs testing 10 x chargeability anomaly and cropping out quartz-hematite-Cu mineralisation plus complementary vertical RC dh MIRC031.MIRC031 and 025 intersected several zones of disseminated pyrite >1% ie 36-43m:4%,54-58m:5%,90-94m:3% with a best result of 0.39%Cu(41-42m)and 0.38%Cu(90-91m)in MIRC025.

MIRC022(127m)and MIRC023(157m):testing north west end of 10 x chargeability anomaly intersecting several zones of >1% pyrite within chloritic amphibolite and porphyroblastic mylonite.

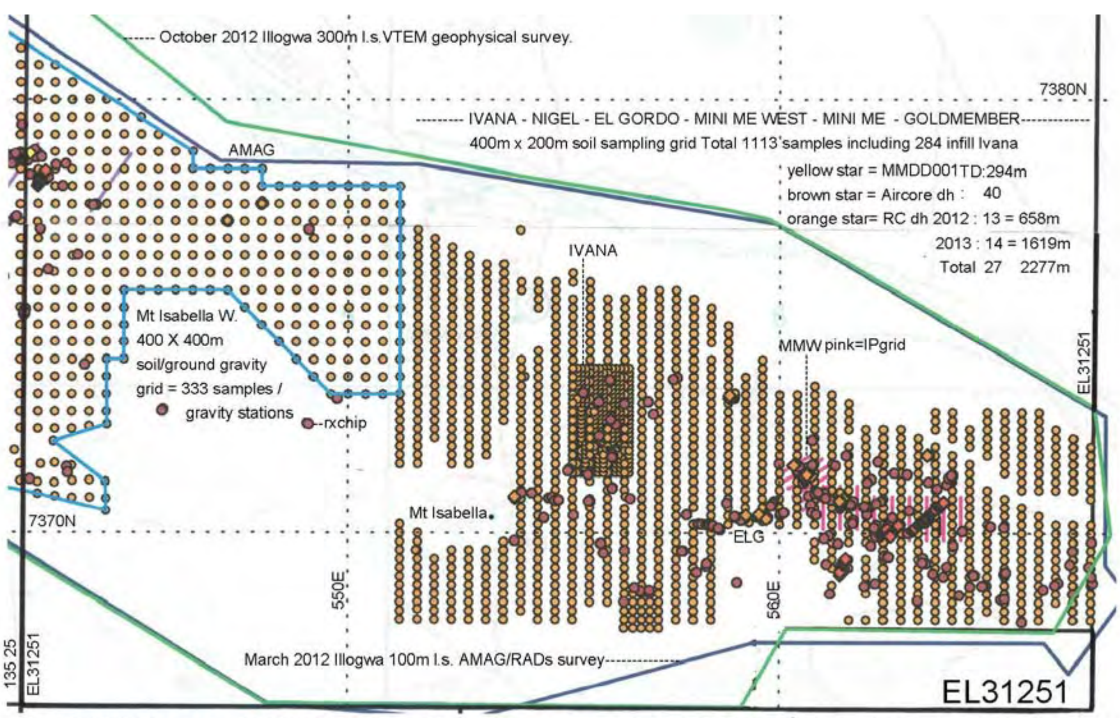
EL GORDO

MIRC026(145m):designed to test down dip extension of mineralised intersection (14m@0.34%Cu)in MIRC008.The down dip projection of minerlised quartz vein was intersected at 97m returning 3m averaging 0.29%Cu,0.97g/t,Ag,o.o2g/t,Au before terminating in barren quartz deemed to be down dip extension of large surface east-west trending quartz ridge?

MIRC027(115M):testing western extent of EL Gordo mineralised trend intersecting barren quartz veining at predicted down hole depthinterpreted as down dip extension of surface Cu mineralisation.

IVANA:240ppm Cu in soil anomaly (10 x back ground)

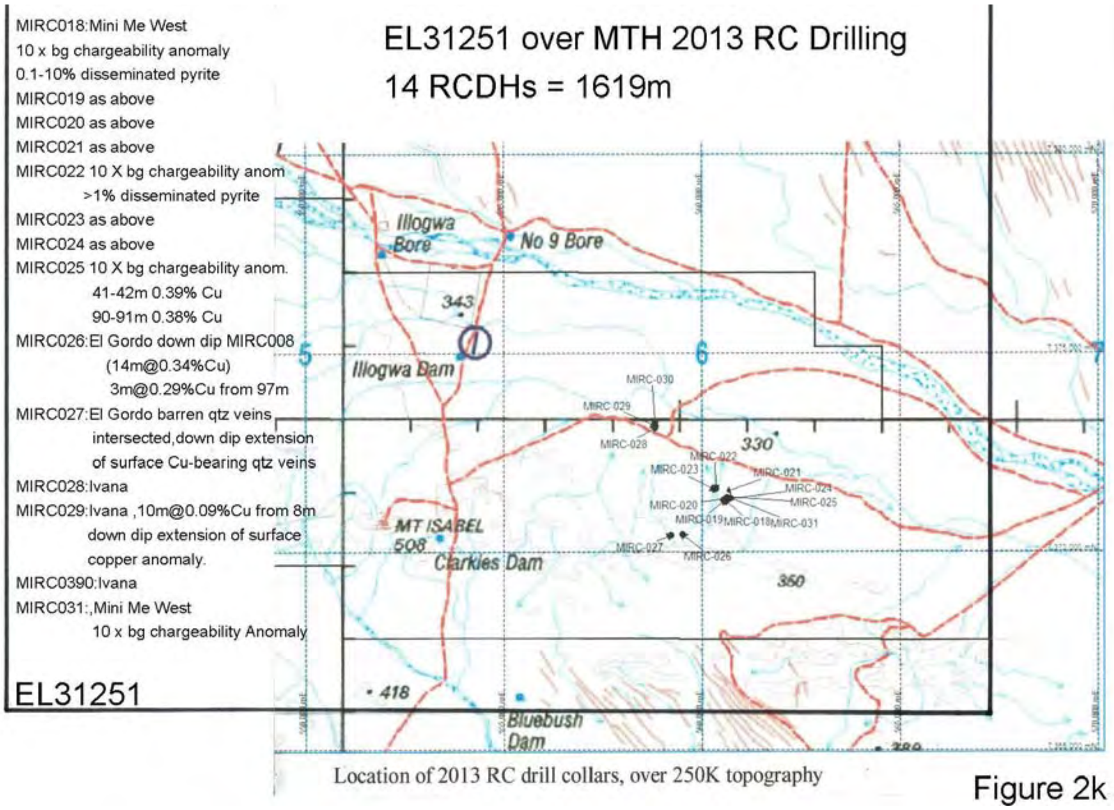
MIRC028(40m),029(43m),030(55m): sectional traverse 3 x short inclined stab holes.Best result MIRC029 where 10m averaging 0.09%Cu from 8m were intersected within granite and amphibolite coinciding with surface Cu in soil anomaly albeit directly above the water table.Pyritic amphibolites were intersected further down the RC dh assaying up to 431ppm Cu.Interestingly Ivana sits on a major deemed fertile WNW-ESE trending structure thus upgrading its perceived prospectivity.



EL31251 over MTH Exploration Summary EL25643 2009 - 2014

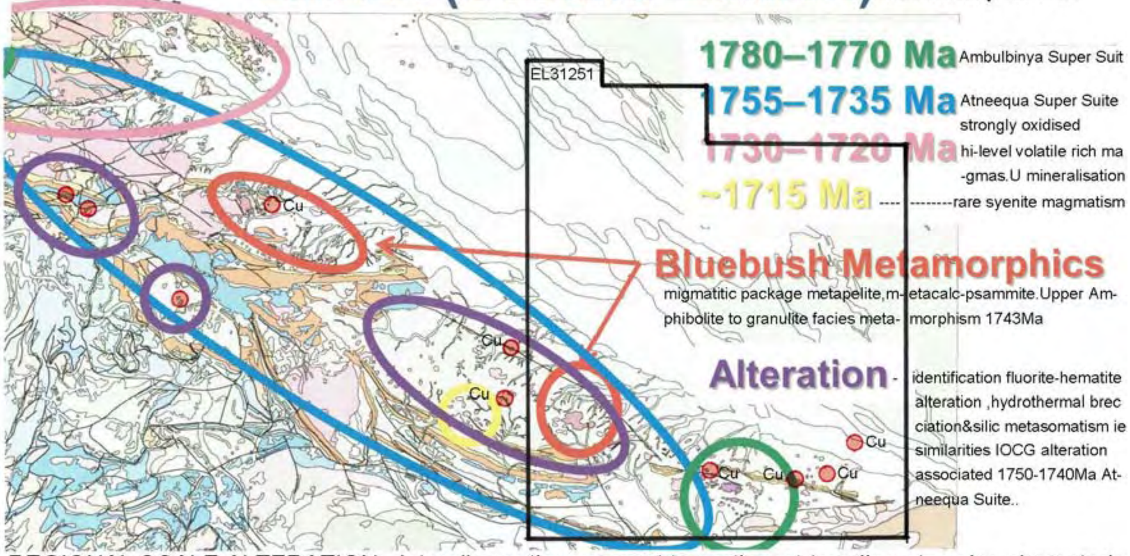
Figure 2.

Figure 2k MTH 2013 RC Drill Hole Location



6.GEOLOGY Figures 3a,3c

EL31251 ATR- Regional Geology,Alteration and Mineralisation of ILLOGWA IOCG Area over **LIMBLA (Second Edition)** 100k Map Sheet



REGIONAL SCALE ALTERATION - laterally continuous west to northwest-trending qtz veins characteris -tic hematite-fluorite hydrothermal brecciation,silicic metasomatism within 1750Ma granite ie hematite-pyrite-chalcopyrite-covellite mineralisation.Note:1750-1735Ma felsic intrusives enriched in F cf 1780-177-0Ma suites a powerful metal transport ligand characteristic of giant IOCG deposits.

Figure 3a

Qs;Quaternary sand
Qa;Quaternary alluvial deposits
Czc;Cenozoic cover

Pug;Bitter Springs Fm Neoproterozoic - Gillen Member limestone,dolomite
Puh;Heavitree Quartzite Neoproterozoic-basal Fm Amadeus Basin cover

Pgq;Atneequa Granitic Complex 1755-1740 Ma - strong FeO,fluorine,silica(Cu-Au) alteration
pCa;Albarta Mm 1774 Ma-qtzofeldspathic gn,biot/musc schist,mass/layered amphib.,band mag qtzite,granitic gn,hnbld gn ,porphroblastic f/s gn minor cs

Figure 3c

The licence area is neatly bisected from north west to south east by the ephemeral gun barrel straight ILLOGWA CREEK reflecting the surface position of a major fault, forming a structurally controlled northern boundary of mooted ILLOGWA IOCG area.Two thirds of licence area,more or less north of Illogwa Creek is flat-lying ,sand-covered flood-out country while south of Illogwa Creek Palaeoproterozoic Aileron Province metasediments namely Bluebush Metamorphics (migmatitic metapelite and calcareous metapsammite metamorphosed to upper amphibolite facies 1743Ma) and 1780Ma Moonlight Gneiss dominate, intruded by oxidised ,hematite-magnetite-fluorite-silicic-potassically altered hydrothermally brecciated 1750 - 1740Ma Atneequa Suite granite.

Interestingly copper-gold mineral occurrences ubiquitously occur seemingly along strike of basal Amadeus Basin stratigraphy ie attenuated often curvilinear strike ridges of thrusted Heavitree Quartzite rising some 100m above the sandy plain,resting unconformably(maximum depositional age 1213Ma) on Atneequa Suite oxidised/altered granitic 1750-1740Ma basement.Zircon geochronology has determined hematite alteration +Cu mineralisation (hematite-pyrite-chalcopyrite-covellite assemblage) postdates deposition of Puh:Heavitree Quartzite thus remobilisation of metals from basement ie 1755-1735Ma suites strongly oxidised and volatile rich liberating metals from 1780-1770Ma suites during emplacement of younger magmas thus promoting a regional fluid flow (associated with emplacement of high K,high Ca,1750 granites and high temperature low pressure metamorphism)followed by transport and subsequent deposition of ore-forming Cu-Au+hematite-magnetite-flourite-silicic mineralising fluids along north west structures during the latest Mesoproterzoic ?There may also have been another regional fluid event during the Carboniferous Alice Springs Orogeny the last deformation to affect the area characterised by regional thrust faulting accompanied by pervasive greenschist facies metamorphism as indicated by cropping out widespread late stage epidote alteration?

7.EXPLORATION PROGRAM Figures 4a-4d,5a-5h,Appendix 1.

A comprehensive compilation of all previous exploration conducted over LIMBLA 100k map sheet area was prepared by Heika Ostreich Contract Geologist Darwin ie Appendix 1.

ILLOGWA March 2012 100m l.s. AMAG and Radiometric and ILLOGWA October 2012 300m l.s. VTEM AEM located digital data was acquired,imaged processed,modelled interpreted by Consultant Geophysicist including Cu in soil geochemistry contour drapes over various AMAG and VTEM images with particular emphasis on Mini Me West and Nigel prospects 150m l.s VTEM/Helimag infill.

8.EXPENDITURE

1.Contract Geologist review of all LIMBLA map sheet area previous exploration………………$15000.00

2.Consultant Geophysicist acquisition,image processing,inversion modelling

Interpretation of(1)ILLOGWA 2012 100m l.s.AMAG/RADS and(2)ILLOGWA 2012

300ml.s.VTEM AEM located digital data+soil geochemistry plots……………………………………$18000.00

3.Review results /Reporting……………………………………………………………………………………………$ 5300.00

4.Administration………$ 6700.09

TOTAL………$45000.00

9.CONCLUSIONS AND RECOMMENDATIONS

The southern third of the licence area is dominated by oxidised,intensely altered 1750ma Atneequa suite granite hosting extensive exposures of structurally controlled Cu-Au mineralisation trending west to east from Nigel prospect to Goldmember prospect a strike length of some 8 km which interestingly enough coincides with an intense copper in soil geochemical 'footprint'which to date after 27 RCdhs,40 Aircore and 1DDH remains unexplained.

Currently there is a disconnect between surface geochemistry anomalism and subsurface geophysical ie AMAG-AEM-IP survey delineated anomalous features which may well prove to be the end of the Illogwa IOCG belt story however in the meantime expenditure is set at $40000.00 for the forthcoming licence year to hopefully generate a new round of RAB/RC drill targets based more on copper in soil geochemistry (backed up by existing geophysical data and possibly ground gravity surveying of the Nigel-Goldmember Cu mineralised trend?).

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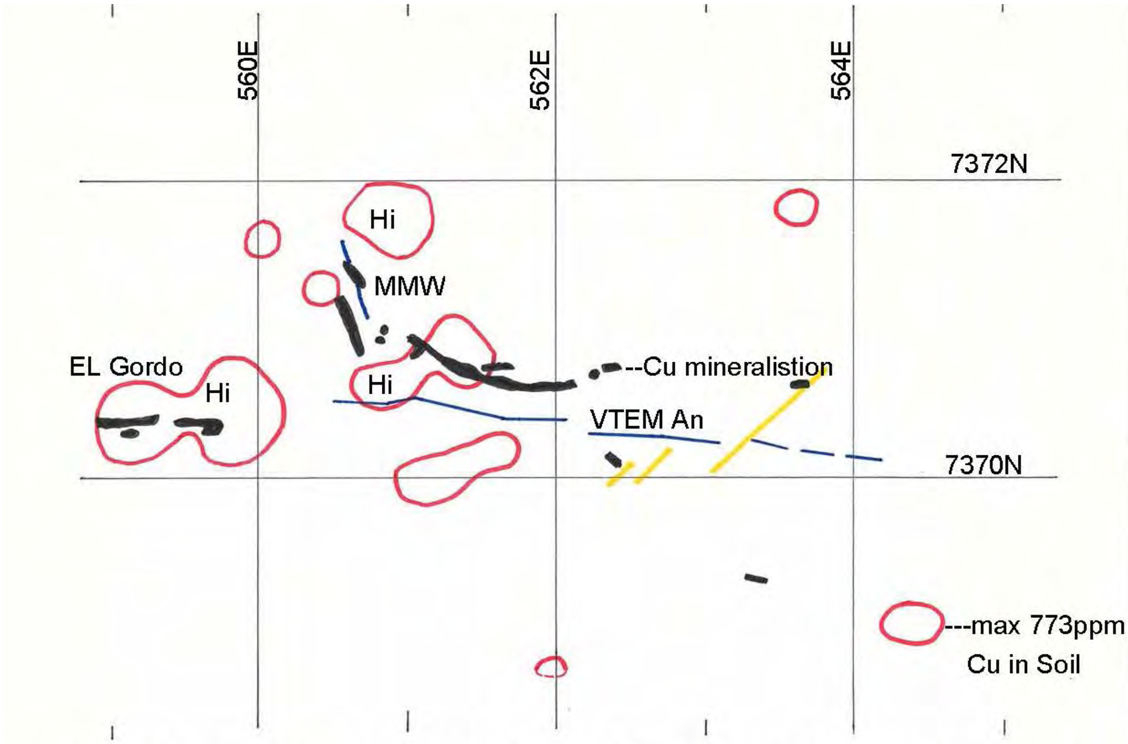
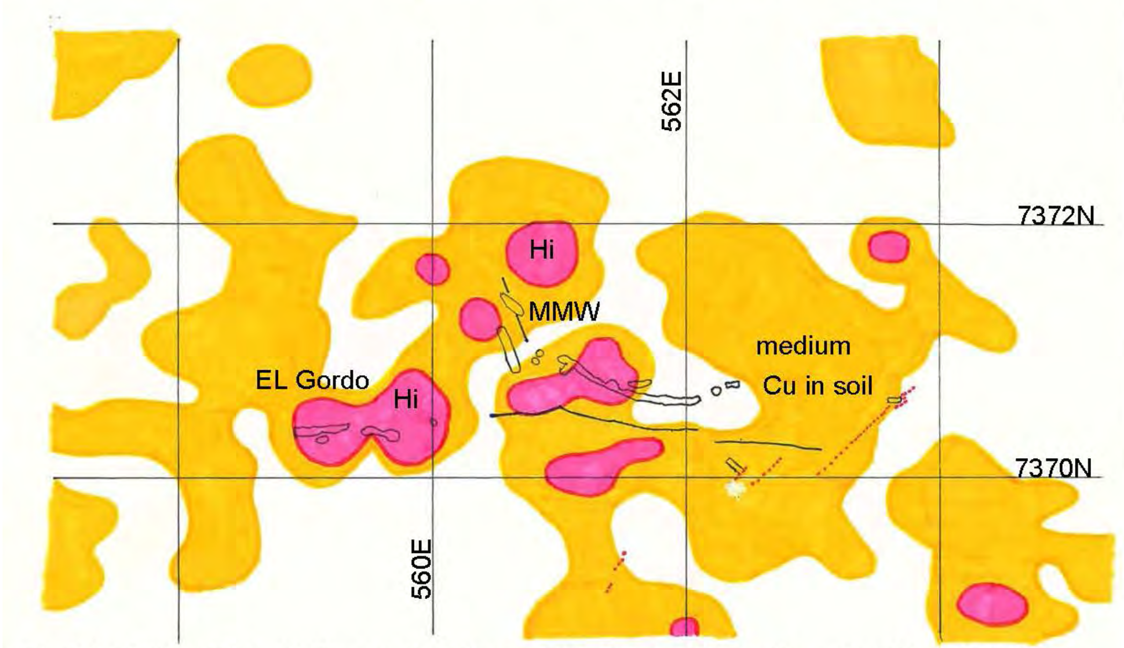
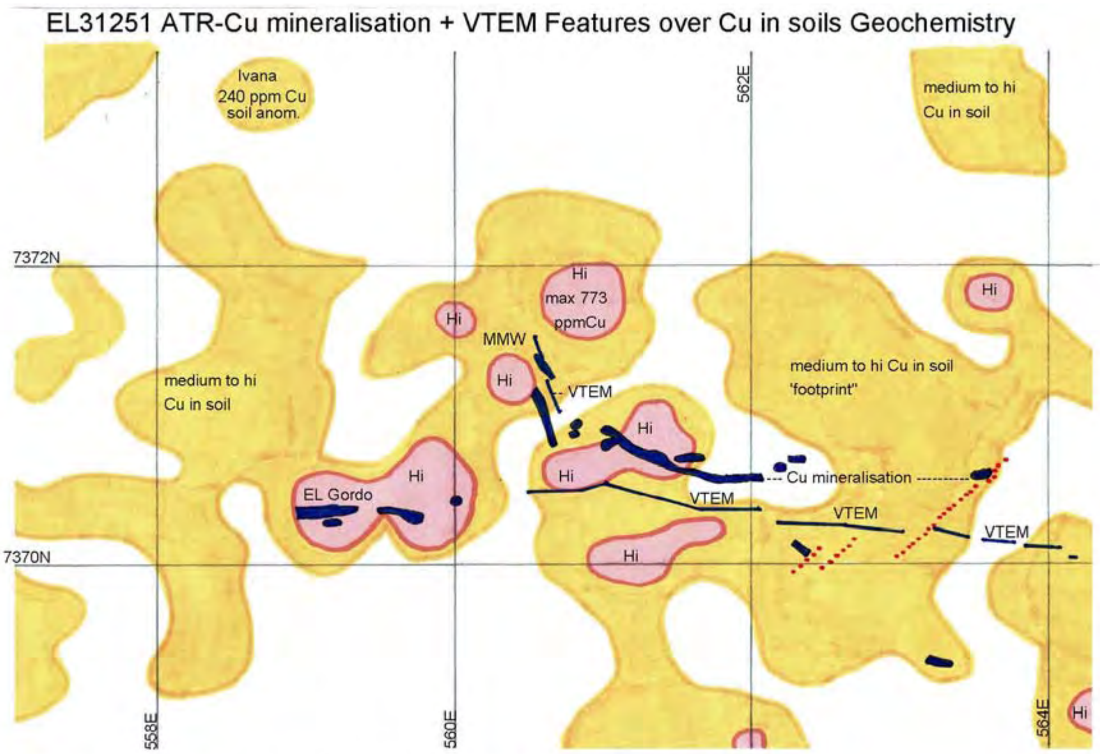


EL31251 ATR-Cu mineralisation+>600ppm Cu in soil+VTEM An.



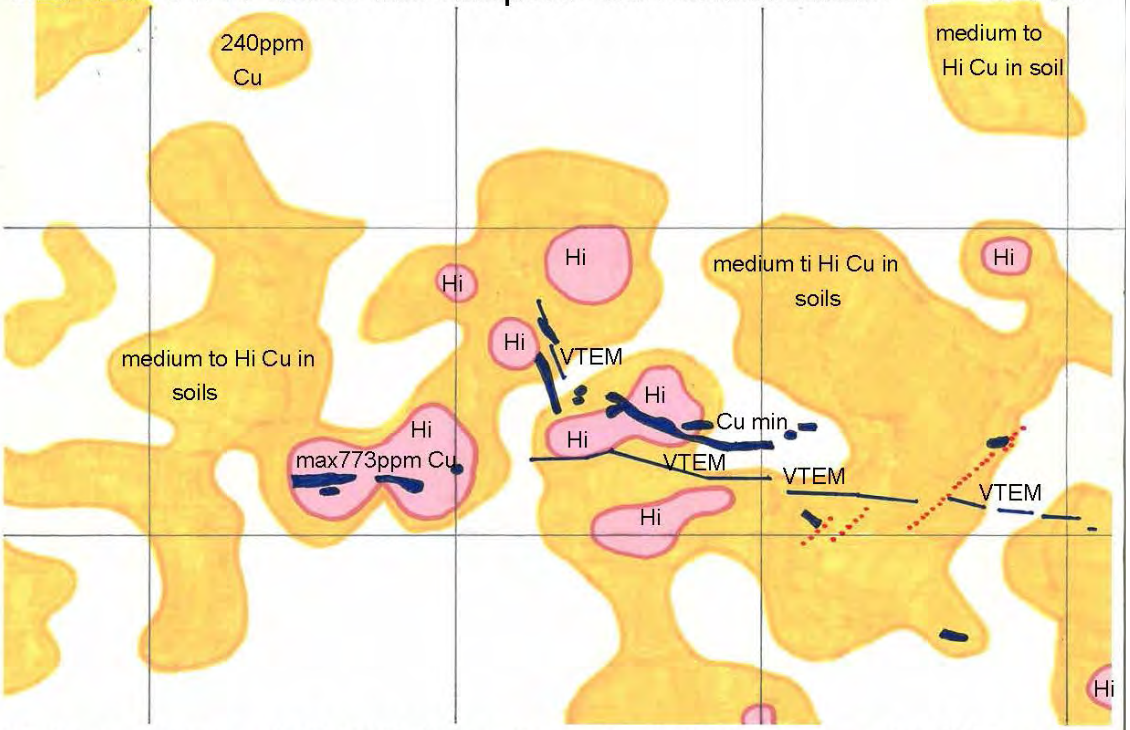
EL31251 ATR- Hi(max 773ppm Cu) and Medium(yellow) Cu in Soils 'footprint' EL Gordo,Mini Me West ,Mini Me Prospect areas.

Figure 4a



Cu in soil geochemistry Ivana - ELGordo-MMW-MM prospect area Figure 4b.

EL31251 ATR- Cu in soil footprint+Cu mineralisation+VTEM An.



Hi Cu soils over MTH IP lines+Cu min+VTEM An on Ch 25 Image

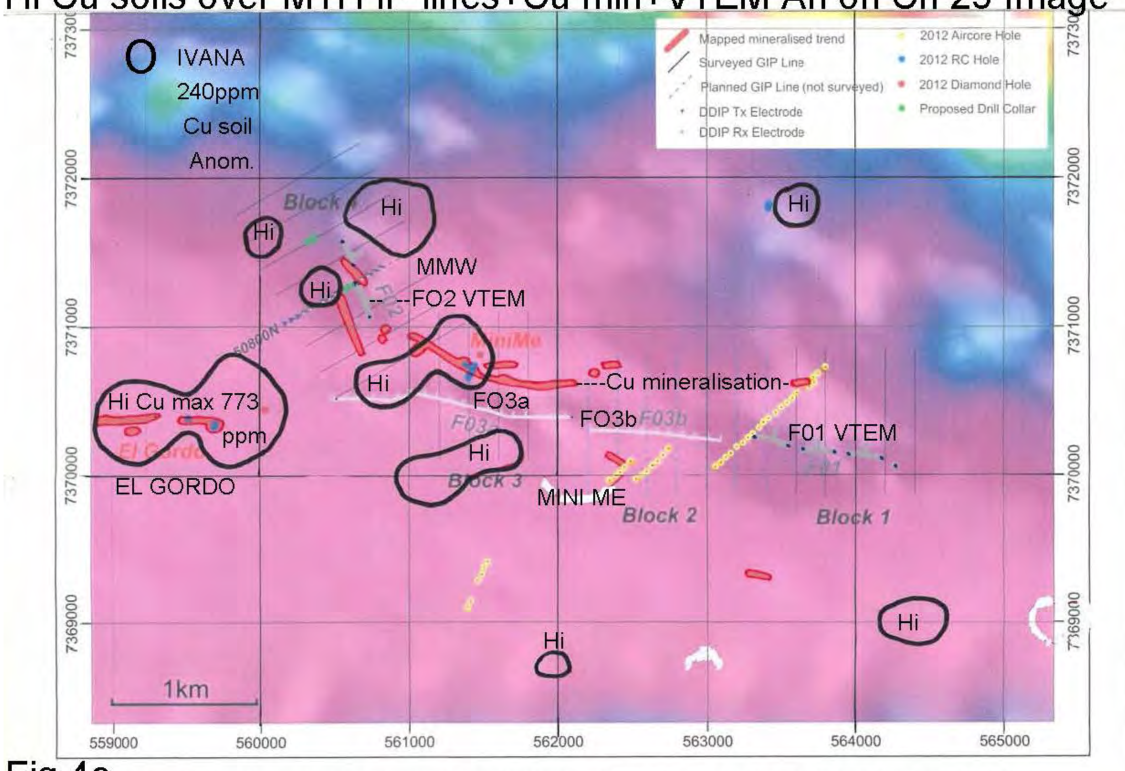
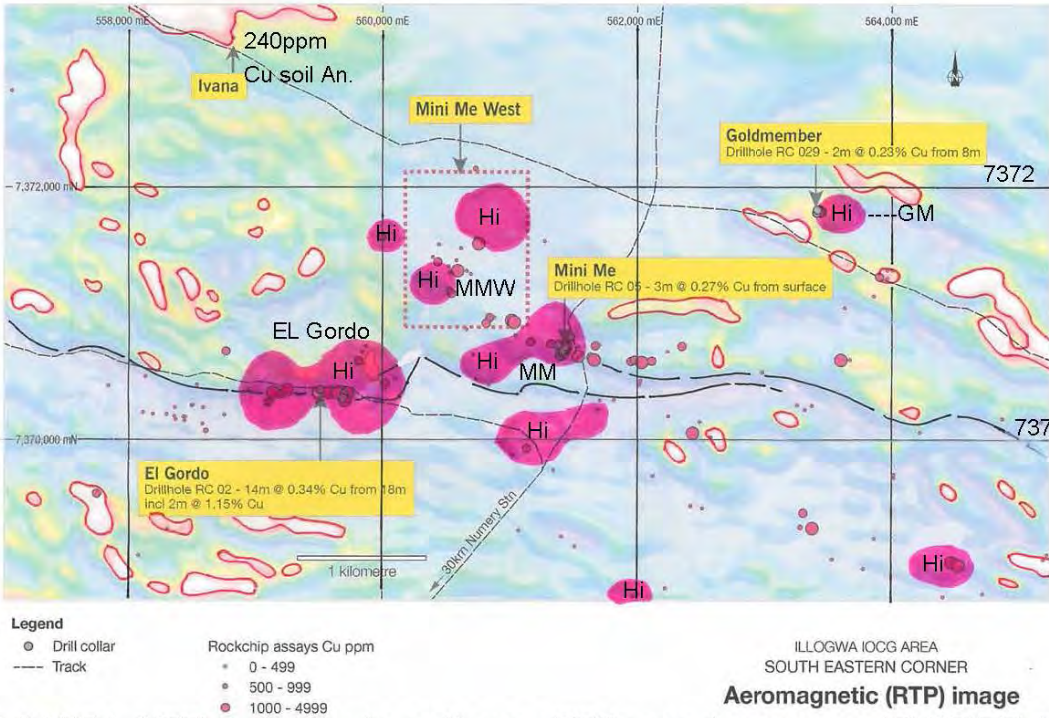
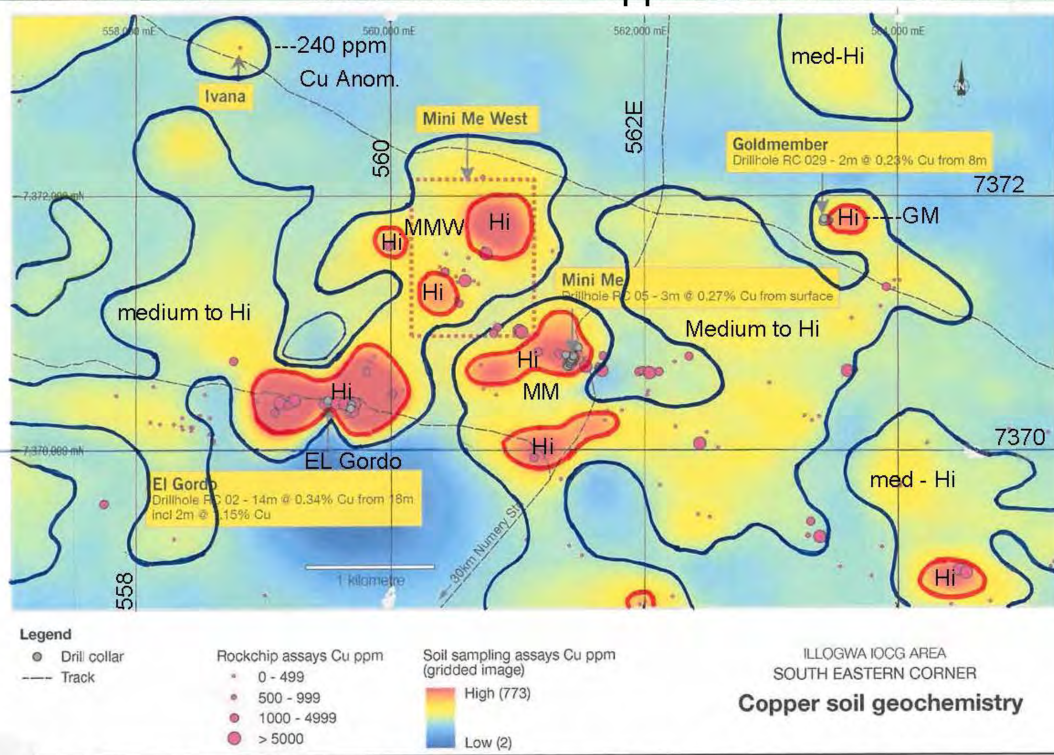


Fig.4c

Mini Me IP survey location plan showing outcropping copper mineralisation (red), VTEM



EL31251 ATR- Cu in soil max 773ppm Anoms on TMIRTP Im.



EL31251 ATR-Cu in soil(1)medium to hi &(2) Hi(max 773 ppm)
Contour Plan ELGordo-MMW-MM area. Figure 4d

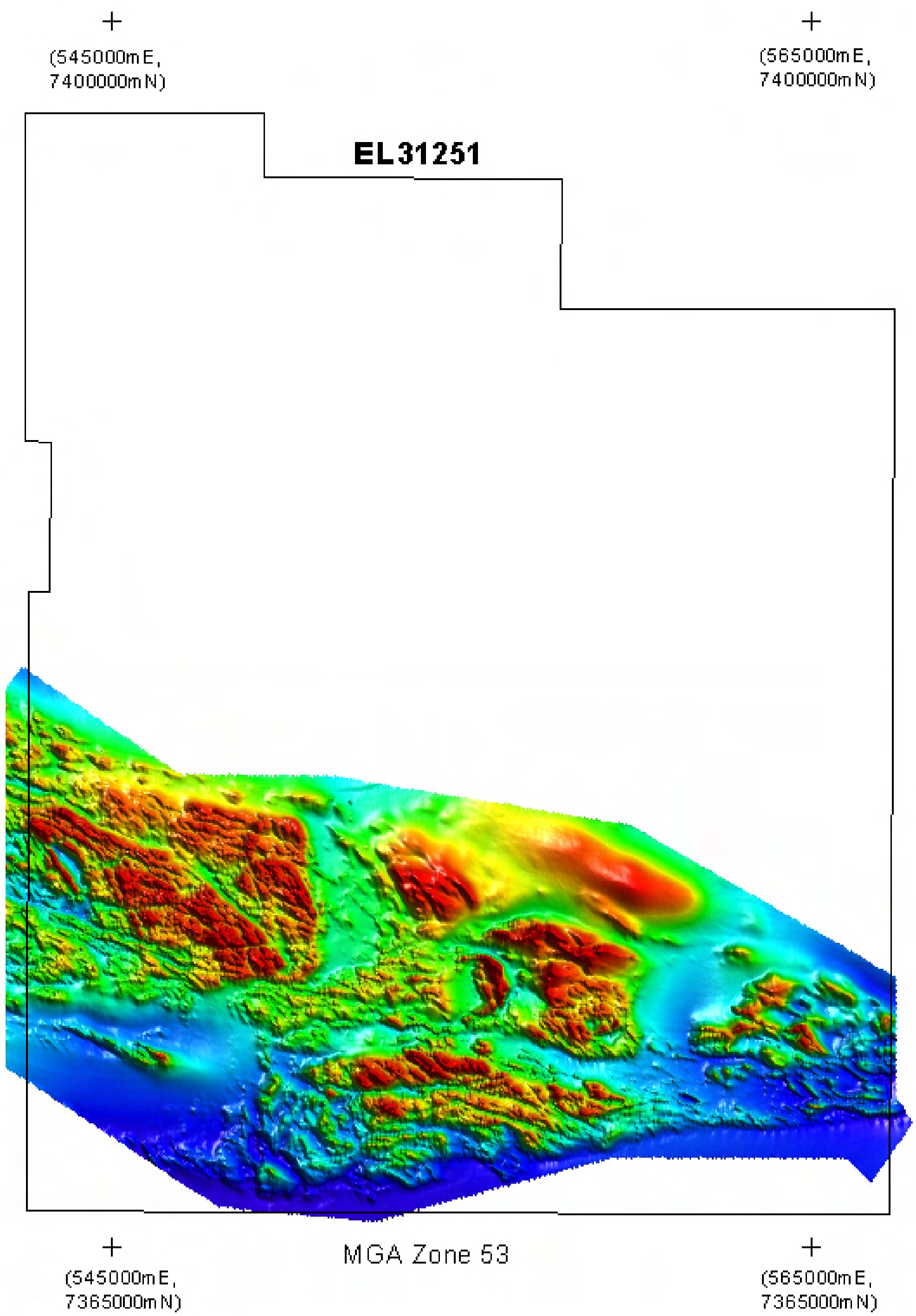


Figure 5a EL31251 Re-processed heli-magnetic survey using 100 meter line spacing flown in 2012. Reduced to the pole magnetics.

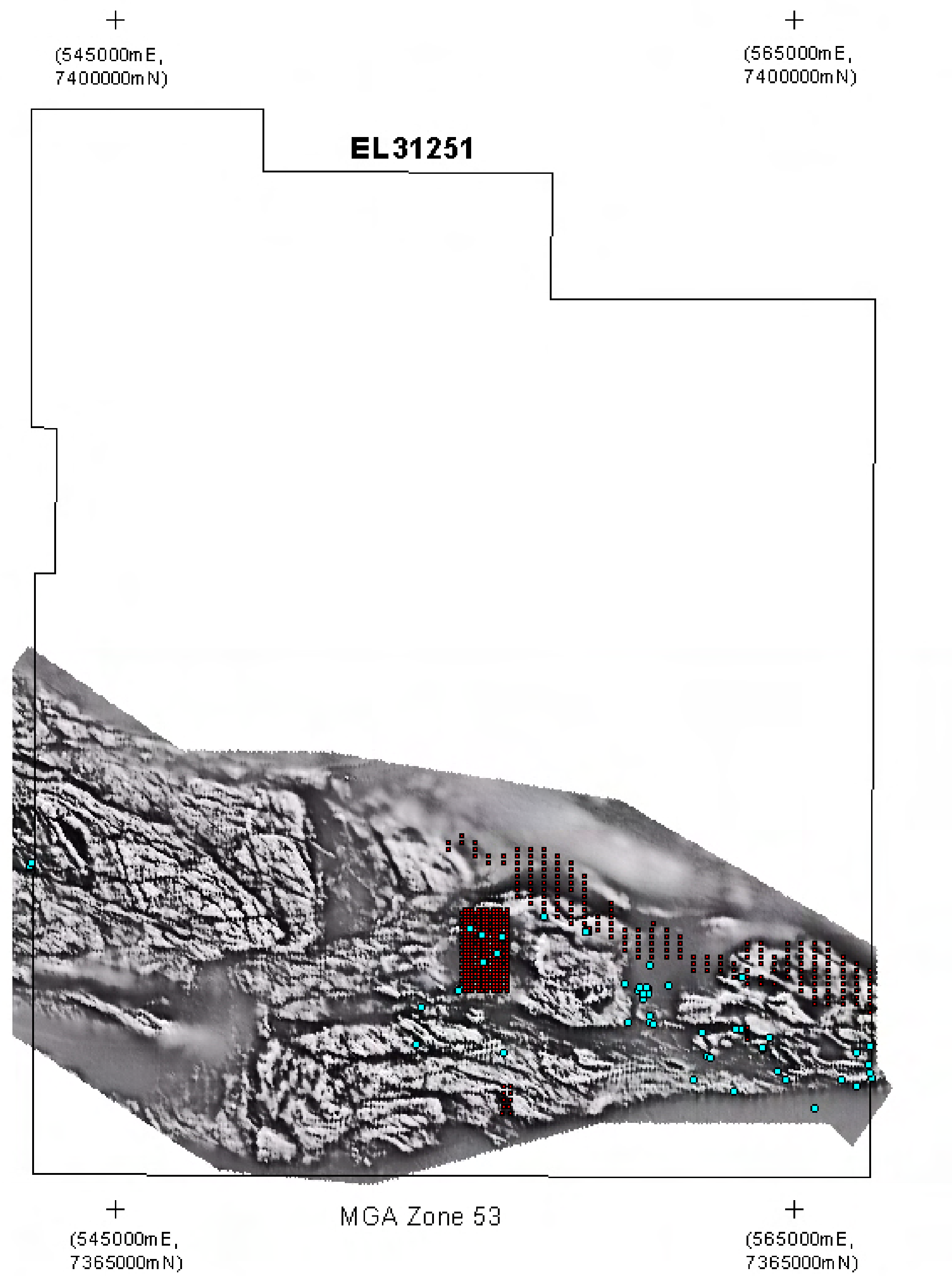


Figure 5b EL31251 Reduced to the pole vertical derivative magnetics. Historical soil sampling (red markers) and rock surface sampling (blue markers) locations from 13/9/12 – 2/7/13 and 3/8/12 – 30/6/13 respectively.

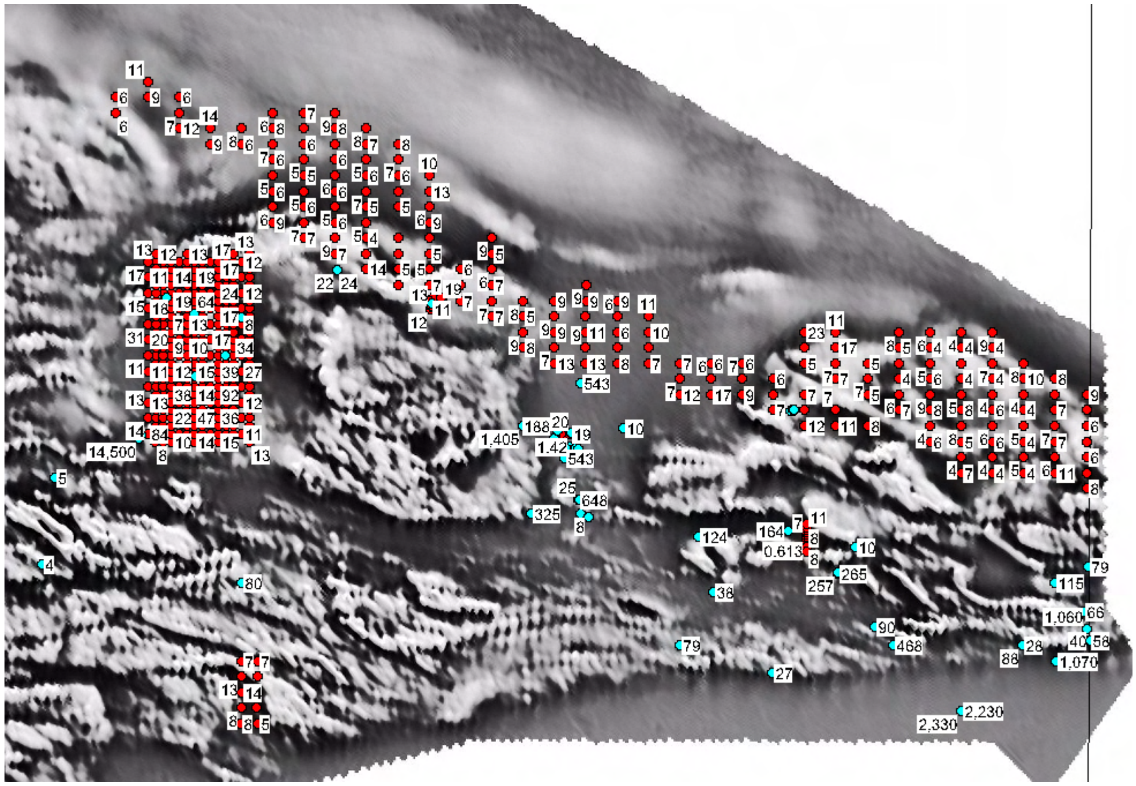


Figure 5c EL31251 Reduced to the pole vertical derivative magnetics. Display of various historical assay results of Cu (%) soil (red markers) and rock sampling (blue markers) from 2012/2013.

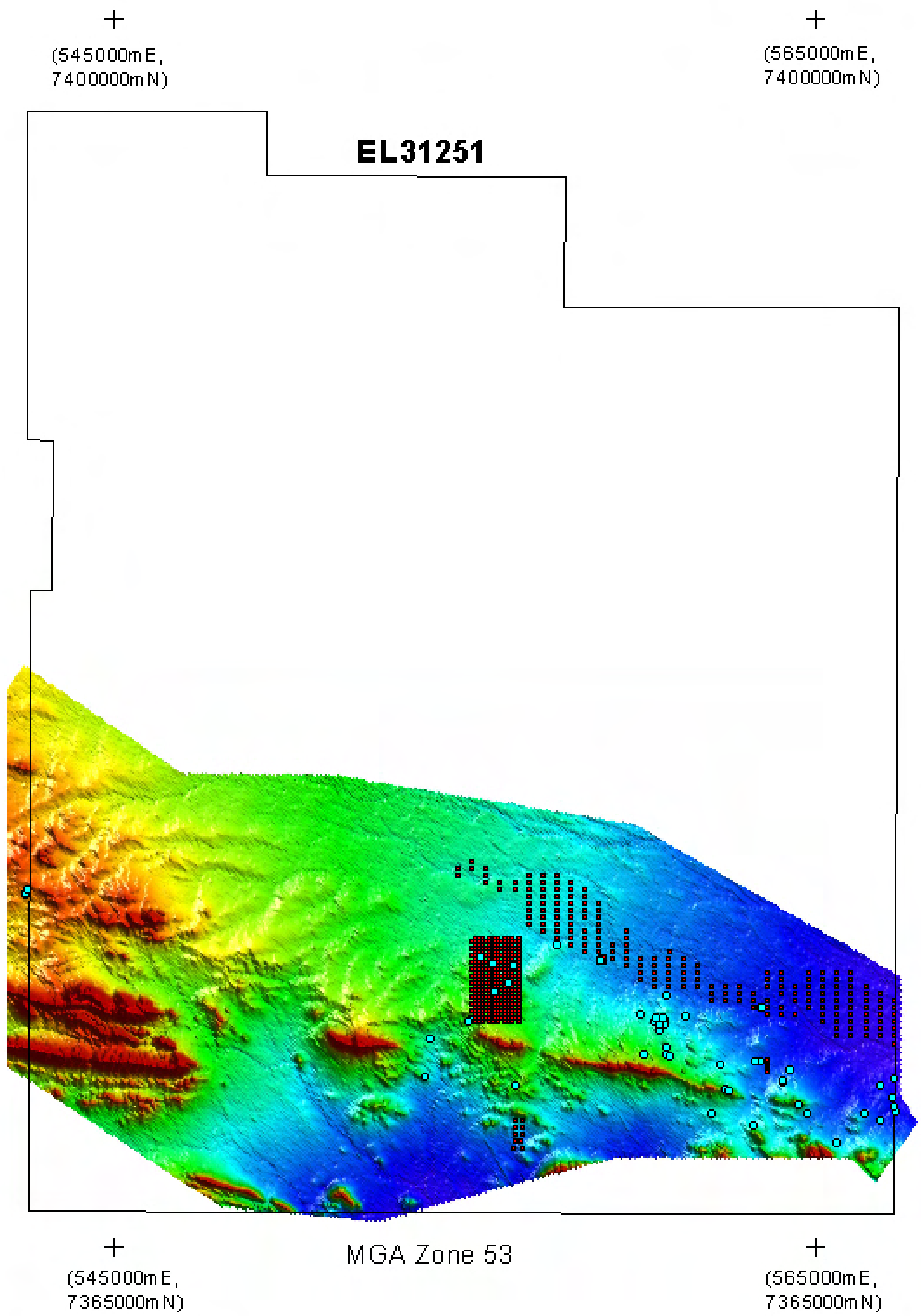


Figure 5d EL31251 Reprocessed Digital Terrain Model data. Geochemistry locations from 2012/2013 annotated.

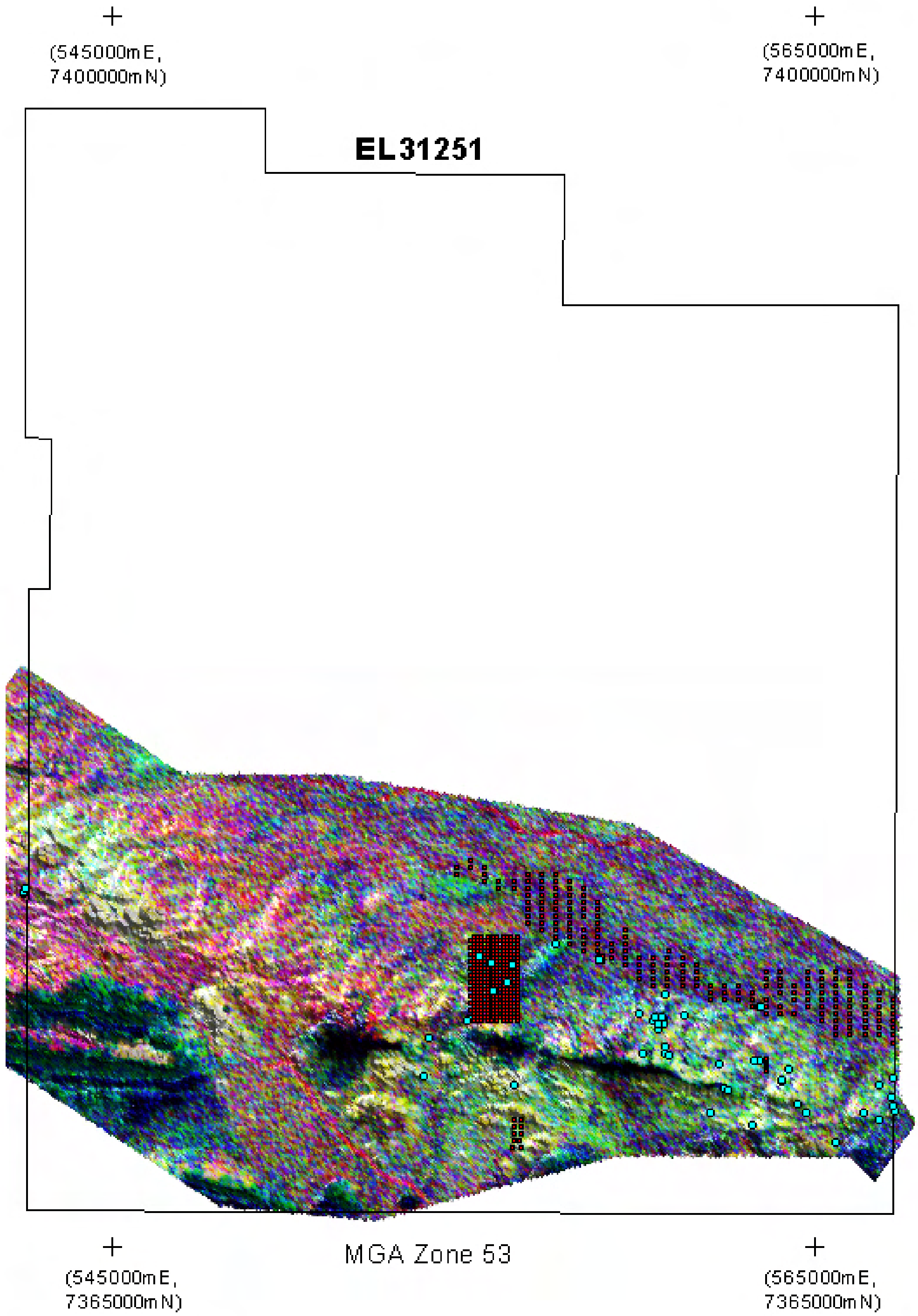


Figure 5e EL31251 Potassium-Uranium-Thorium data composite with digital terrain model data. Geochemistry locations from 2012/2013 annotated.

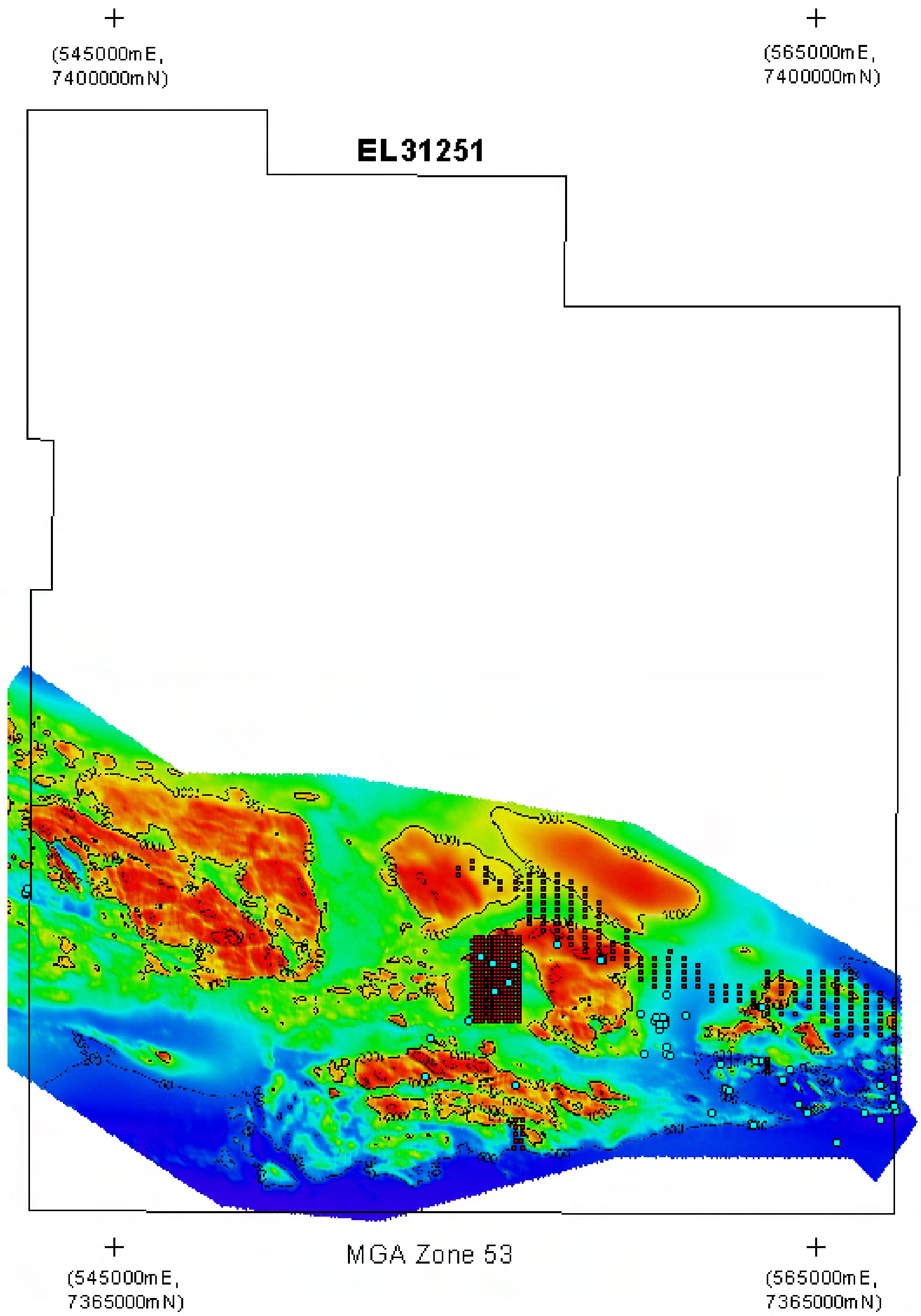


Figure 5f EL31251 Reduced to the pole magnetics with 500nT and 1000nT contours annotated. Geochemistry locations from 2012/2013 shown.

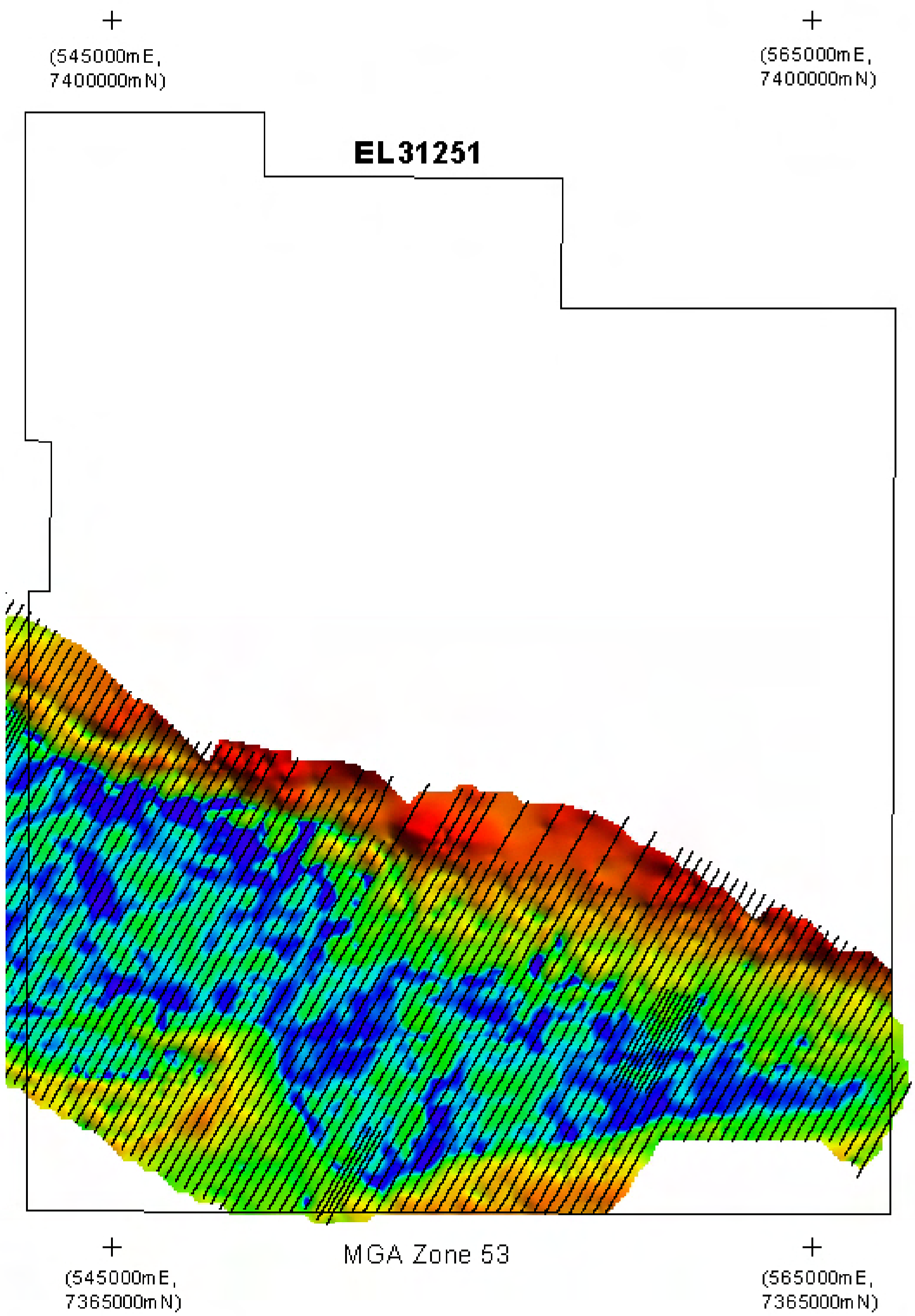


Figure 5g EL31251 Results of AEM depth transformations carried out showing conductivity at 200 meters depth below surface and survey flight lines. (data source for this image dB/dt)

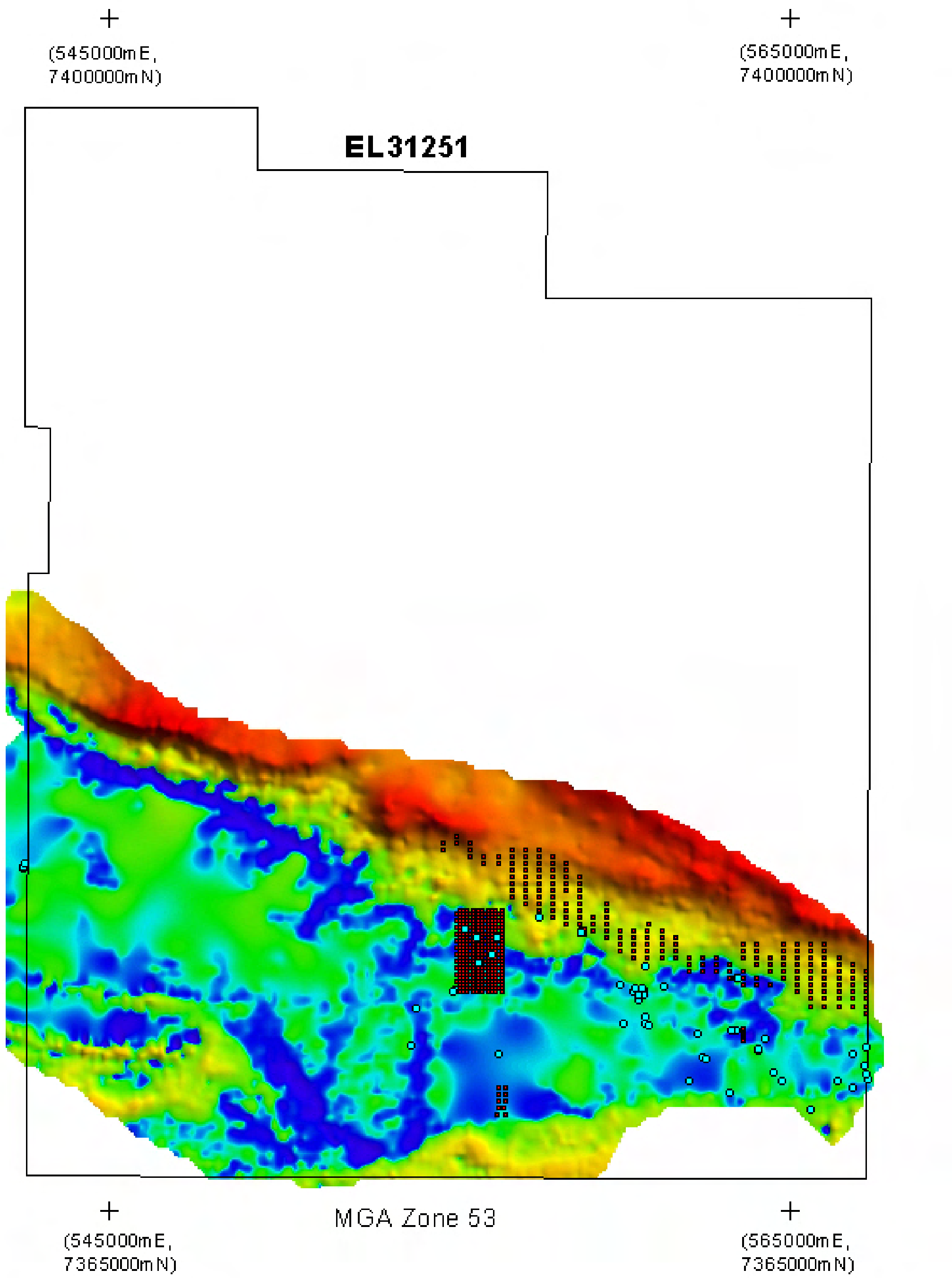
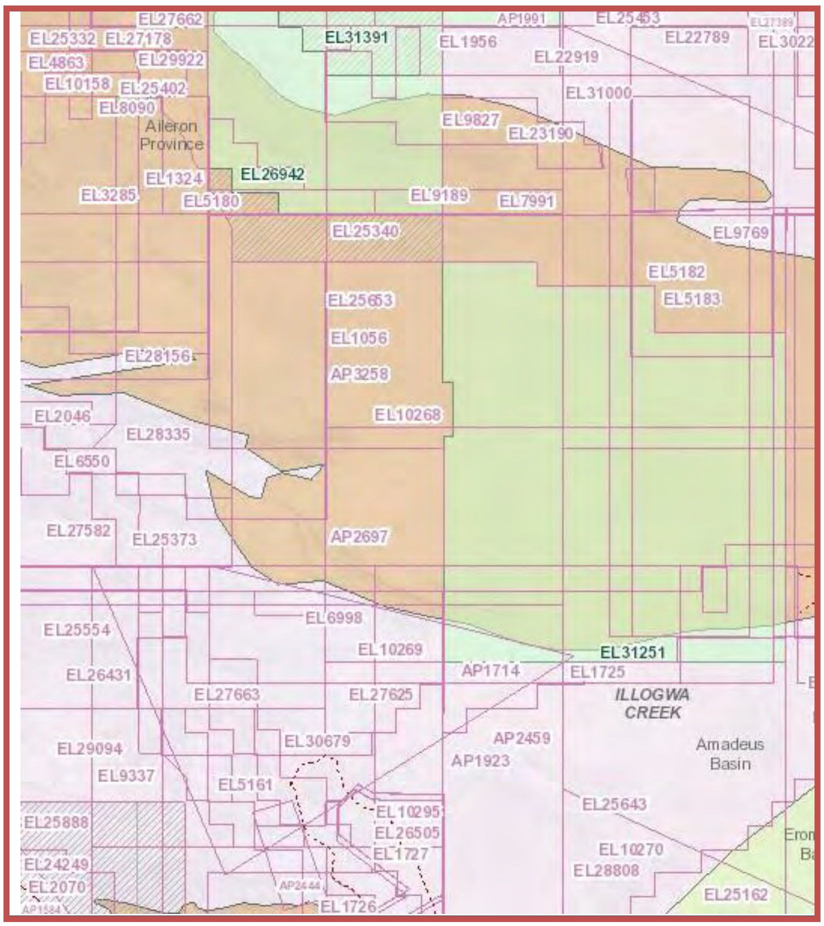


Figure 5h EL31251 Conductivity calculations at 100 meters depth below surface. Geochemistry locations from 2012/2013 shown.

APPENDICIES

Appendix 1



September 2017

A compilation of the work conducted over EL31251 for Gempart (NT) Pty Ltd

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FIGURES

TABLES

APPENDICIES

1 INTRODUCTION

This report is to compile all available information about and over the Arunta region and Exploration Licence 31251, recently granted to Gempart (NT) Ltd Pty. The report has been divided into a description of Iron Oxide Copper Gold deposits, the investigations conducted by the Northern Territory Geological Survey and Geoscience Australia over the area, the exploration completed previously over EL31251 and the exploration activities conducted by Mithril Resources Ltd.

2 IRON OXIDE COPPER GOLD ORE DEPOSITS

Iron Oxide Copper Gold ore deposits or IOCG deposits can have very valuable concentrations of coper, gold and uranium within an iron oxide rich rock assemblage. These deposits tend to accumulate within faults distal to the intrusion source, as opposed to porphyry deposits which are much more proximal to the intrusive body.

Williams et al (2005) have given an empirical definition, which is taken mostly from geochemical features that do not specify tectonic setting, geologic environment, or sources of ore-forming fluid, metals, or other ore components. IOCG deposits have (1) Cu, with or without Au, as economic metals; (2) hydrothermal ore styles and strong structural controls; (3) abundant magnetite and/or hematite; (4) Fe oxides with Fe/Ti greater those in most igneous rocks and bulk crust; and (5) no clear spatial associations with igneous intrusions.

A comparison of larger and well-described IOCG deposits illustrates the geologic diversity of the class as a whole. They occur in a wide range of different host rocks, among which plutonic granitoids, andesitic (meta) volcanic rocks, and (meta)siliclastic-metabasic rock associations are particularly prominent. Host rocks may be broadly similar in age to the ore (e.g., Olympic Dam,) but in other cases significantly predate mineralisation such that ore formation relates to a quite separate geologic event (e.g. Ernest Henry). Mineralisation is interpreted to have occurred over a wide depth range, from around 10km (e.g., several deposits in the Cloncurry district) to close to the surface (e.g., Olympic Dam); where systems have been tilted and exposed in cross section (such as at Raúl-Condestable in Peru), they can display strongly zoned mineral parageneses. Structural and/or stratigraphic controls are pronounced, with deposits characterically localised on fault bends and intersections, shear zones, rock contacts, or breccia bodies, or as lithology-controlled replacements. (Williams et al, 2005).

Host rocks in the vicinity of orebodies display intense hydrothermal alteration. In the immediate vicinity of the ore, the variable pressure-temperature conditions of alteration and mineralisation are reflected in a spectrum of deposits ranging from those in which the dominant Fe oxide is magnetite and alteration is characterized by minerals such as biotite, K-feldspar, and amphibole though to hematite-dominated systems in which the main silicate alteration phases are sericite and chlorite. Where present, Na and Na-Ca alteration tends to be developed deeper or more distal from ore, is more extensive, and commonly predates K-Fe alteration and mineralisation. Carbonates are commonly abundant, particularly in association with, or postdating, Cu-bearing sulphides that tend to be paragenetically late and postdate high-temperature silicate alteration in the deeper-seated deposits. (Williams et al, 2005).

A distinctive feature of IOCG deposits is the presence of two distinct fluids during deposit formation: (1) a highly oxidised fluid (e.g., meteoric/ground waters), and (2) deep-sourced high-temperature brines (magmatic-hydrothermal fluids and/or fluids reacted with metamorphic rocks). (Hitzman et al, 2010).

The implication of these findings is that hematite-rich alteration zones in IOCG systems are more favourable for higher grade Cu-Au-U mineralisation in comparison to magnetite-rich zones. The hematite may occur above the magnetite (e.g., Olympic Dam) or laterally adjacent to the magnetite (e.g., Prominent Hill, Belperio et al., 2007). The U mineralisation may occur in overlapping and/or separate zones relative to Cu-Au mineralisation. The occurrence of the REE in IOCG systems is less clear but in the Olympic Dam deposit, the barren hematite core is in fact significantly enriched in the light REEs (Reeve et al., 1990; Ehrig et al., 2013). Elevated light REE concentrations also occur throughout the Cu-Au mineralised zones. (Hitzman et al, 2010).

When exploring for IOCG deposits, using magnetics is a beneficial start as IOCG systems nearly always have a magnetic signature due to the abundant magnetite. The concentration of sulphides means that IOCG deposits are usually denser than the host rock. The presence of massive sulphides means that electromagnetic surveys could be used to detect a deposit. If a deposit occurs at the surface and is uranium rich, airborne or ground radiometrics can be used to detect the radiation given off by the uranium and any potassic alteration. A deposits which outcrops, can be detected by soil and rock geochemistry samples to define the mineralisation in 2D. (Jackson, A. 2015).

In a presentation given by James Austin and Clive Foss in 2014, they discuss how to use geophysical methods to find IOCG deposits and the IOCG potential of the Arunta Block and the Illogwa area.

They suggest the following geophysical criteria be applied when exploring for IOCGs:
1. Gravity anomalies are an indication of Fe-oxide ± Fe-sulphide (e.g., Olympic Dam)
2. Magnetic anomalies indicate substantial magnetite (e.g. Osborne)
3. Proximity to crustal-scale geophysical lineaments (crustal-scale faults that act as pathways mineralising fluids)

IOCG deposits usually occur in, hematite dominated breccias, magnetite breccia pipes or ironstone hosted deposits. In geophysical terms, hematite dominated breccias tend to have, huge gravity anomalies (20 mGal), subtle magnetic anomalies and can be modelled as zones of brecciation sitting at the intersection of faults. There magnetic and gravity anomalies are; broadly coincident at surface and may occur at different depths, e.g., Olympic Dam. Magnetite breccia pipes; have a bullseye magnetic anomaly, have coincident gravity anomalies, can be modelled as pipes at the intersect of faults or within fault jogs like Ernest Henry, the magnetite and sulphides may be concentrically zoned and the sulphides are both syngenetic with magnetite precipitation and overprint oxides. Ironstone hosted deposits usually; cause narrow elongate anomalies, are modelled as a sub-vertical sheets or elongate elliptical prisms, have high density and are laterally zoned with magnetite ± sulphides in the core and the hematite distal.

The magnetic anomalies of “IOCG” deposits are widely variable. The depth and orientation will always affect the amplitude and wavelength of any given anomaly. Several specific variables control the different geophysical signatures of IOCGs. These variables are; abundances of magnetite, pyrrhotite, hematite and other Fe±Cu sulphides, the degree to which these minerals coincide spatially (i.e., zonation), structural controls on precipitation of Fe-oxides and Fe±Cu sulphides and the mechanisms & controls on Fe-Oxide/Sulphide destructive alteration.

The indications of IOCG mineralisation are copper ± gold anomalism, ± Fe veining ± fluorite alteration, associated with altered granite, they sit on fault zones, adjacent to a major crustal structure, there is significant Mt-alteration associated with the major structures and there are a number of bullseye targets in the area, many of which sit proximal to observed Cu-anomalism.

The Arunta Block represents a relatively new IOCG exploration frontier, containing a number of promising prospects. Some prospects show evidence of copper, associated with Fe-oxide veining, like in the Illogwa area. Historically, surface copper has been found at Bullhole Bore and Albarta, which were described as sediment hosted copper. More recently, Mithril Resources have been exploring for IOCG style mineralisation in the Illogwa area.

3 GEOLOGY OF ARUNTA REGION

The Arunta Region forms part of the southern portion of the North Australia Craton and has been divided into three provinces with distinct protolith ages and histories: the 1860–1700 Ma Aileron Province, the 1690–1600 Ma Warumpi Province, and the Neoproterozoic to Cambrian Irindina Province (Scrimgeour 2003).

The eastern Arunta Region has been variably affected by a number of tectonothermal events (Scrimgeour 2003, in press b), including: the 1780 – 1770 Ma Yambah Event, 1735 – 1690 Ma Strangways Event, 480 – 460 Ma Larapinta Event and the 450–300 Ma Alice Springs Orogeny.

Recent mapping of the eastern Arunta Region by Whelan et al, 2011 has identified that there are three packages of previously unmapped metasedimentary rocks, that there are large variations in composition and age between suites of intrusive rocks and that there is evidence for widespread alteration by fluorite-rich fluid, associated with hematite, pyrite ± copper sulphides.

Three previously unmapped metasedimentary packages have been identified. The first is a package of sillimanitecordierite-biotite diatexite, informally named the 'Bluebush metamorphics', exposed approximately 2 km northeast of Atneequa Spring, with rare outcrops extending to the southeast. The second metasedimentary package is a garnetcordierite ± sillimanite gneiss, interlayered with porphyroblastic granitic orthogneiss, that outcrops in the vicinity of Atniempa Waterhole in the northwestern corner of the map area. The third metasedimentary package is a magnetiterich, cordierite-biotite pelitic migmatite, which occurs as rafts in ca 1750 Ma porphyritic granite in the vicinity of Mount Isabel (Whelan et al, 2011).

On the map scale, there is evidence for widespread fluorite rich fluid flow associated with hematite, pyrite and copper sulphides (Whelan et al, 2011). The extreme brecciation of the 1750 Ma granite has led to deformation infiltration by fluorite bearing fluids producing fine-grained micaceous hematite. There is a broad association between Cu-Au mineralisation and geochemically and temporally similar suites in an east– west belt across the Arunta Region (e.g., Johnnies Reward and Jervois; Close and Scrimgeour 2008, Whelan et al 2009).

Recent fieldwork has identified a number of east–west to northwest–southeast-trending, laterally continuous quartz veins, which contain appreciable amounts of hematite ± pyrite ± chalcopyrite and secondary copper minerals. Assay results indicate that these veins contain up to 1900 ppm Cu and anomalous Au values (up to 52 ppb).

4 WORK CONDUCTED BY NORTHERN TERRITORY GEOLOGICAL SURVEY AND GEOSCIENCE AUSTRALIA

In 2009, Geoscience Australia and the Northern Territory Geological Survey or NTGS contracted a deep seismic reflection survey over the Georgina – Arunta region, referred to as 09GA-GA1. This survey runs in a north – south line directly through EL31251.

Since then, the NTGS and Geoscience Australia turned their attentions to the Arunta Region, conducting geophysical surveys of the area, remapped some of the map sheets and more recently, conducted investigations into its mineral potential.

The seismic data provide an image of the entire crust through this region. The survey consisted of a 373 km line that ran south, magnetotelluric (MT) data and gravity readings were also collected. The MT survey results in a two-dimensional image of electrical resistivity structure of the crust and upper mantle. The geophysical datasets provide valuable information about the nature of the major crustal blocks and basins in this area (Nakamura et al, 2011).

Korsch et al, 2011, have investigated the data received from the seismic line 09GA-GA1 and made some geological interpretations. 09GA-GA1, referred to as the Georgina–Arunta seismic line, extends from the northeastern Amadeus Basin, across the Casey Inlier, the Irindina and Aileron provinces of the Arunta Region, and the Georgina Basin to the southernmost Davenport Province (**Figures 1**, **2**, **3**).

The north–south orientation of the seismic line is essentially perpendicular to the major geological basins, provinces and structures in the region (**Figures 1**, **2**, **3**), and provides crustal geometries that can be compared with existing geological interpretations. Much of the seismic traverse was over shallow basement, largely concealed by younger basins and Cenozoic sediment (**Figure 1**). The geology, determined by very limited outcrop, projected along strike onto the seismic line. Overall, the crust in the vicinity of the seismic section has variable reflectivity, with some parts of the section containing strong reflections, and other areas having very low reflectivity. In general, the lower crust tends to be only weakly reflective (Korsch et al, 2011).

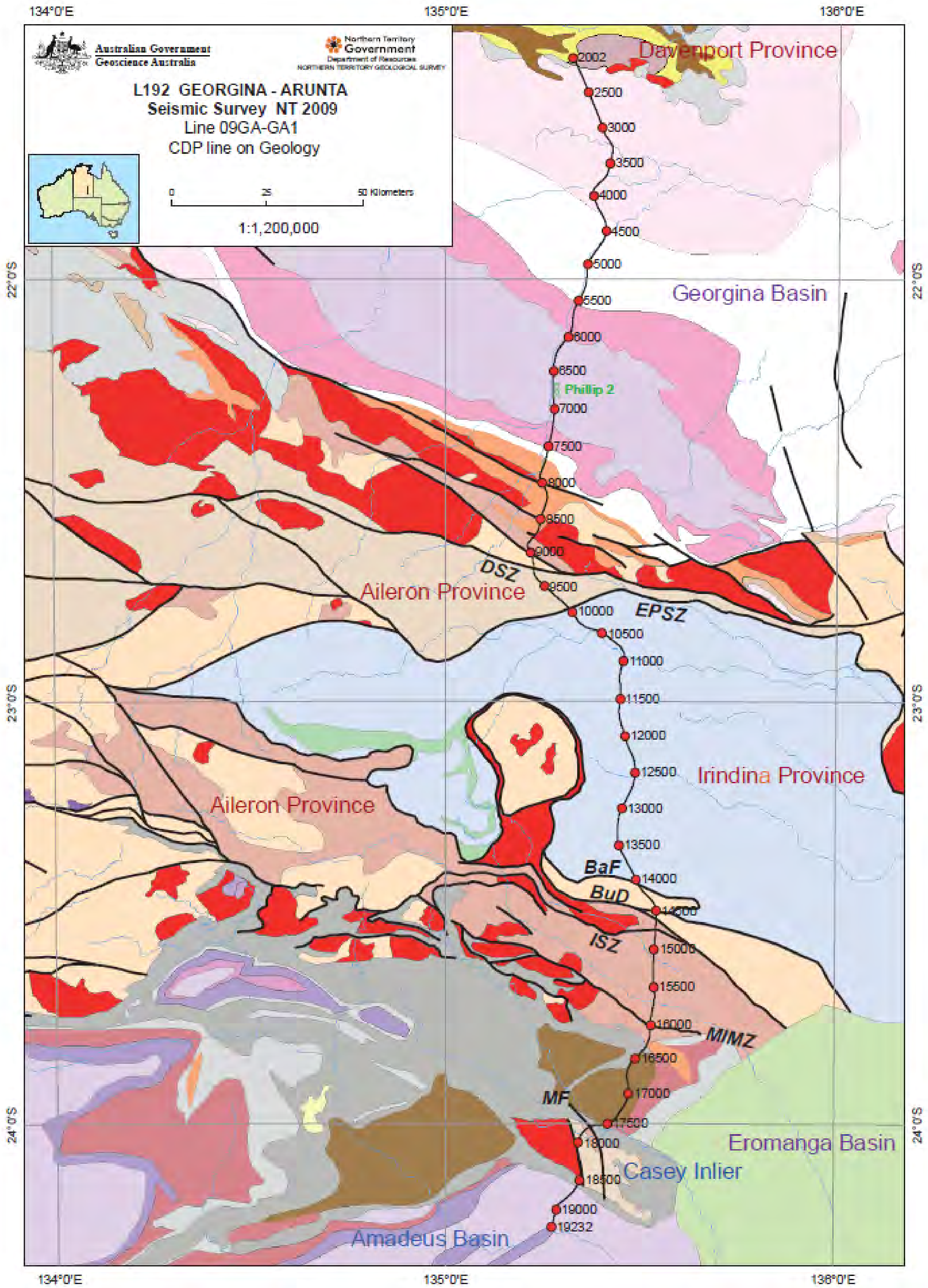


Figure 1. Map showing geology (from Ahmad and Scrimgeour 2006, which also contains legend) of region covered by seismic line 09GA-GA1 from northeastern Amadeus Basin to southernmost Davenport Province. Seismic line has CDP stations labelled. MF – Milly Fault; MIMZ – Mount Isobel Mylonite Zone; ISZ – Illogwa Shear Zone; BuD – Bruna Detachment; BaF – Basil Fault; EPSZ – Entire Point Shear Zone; DSZ – Delny Shear Zone.

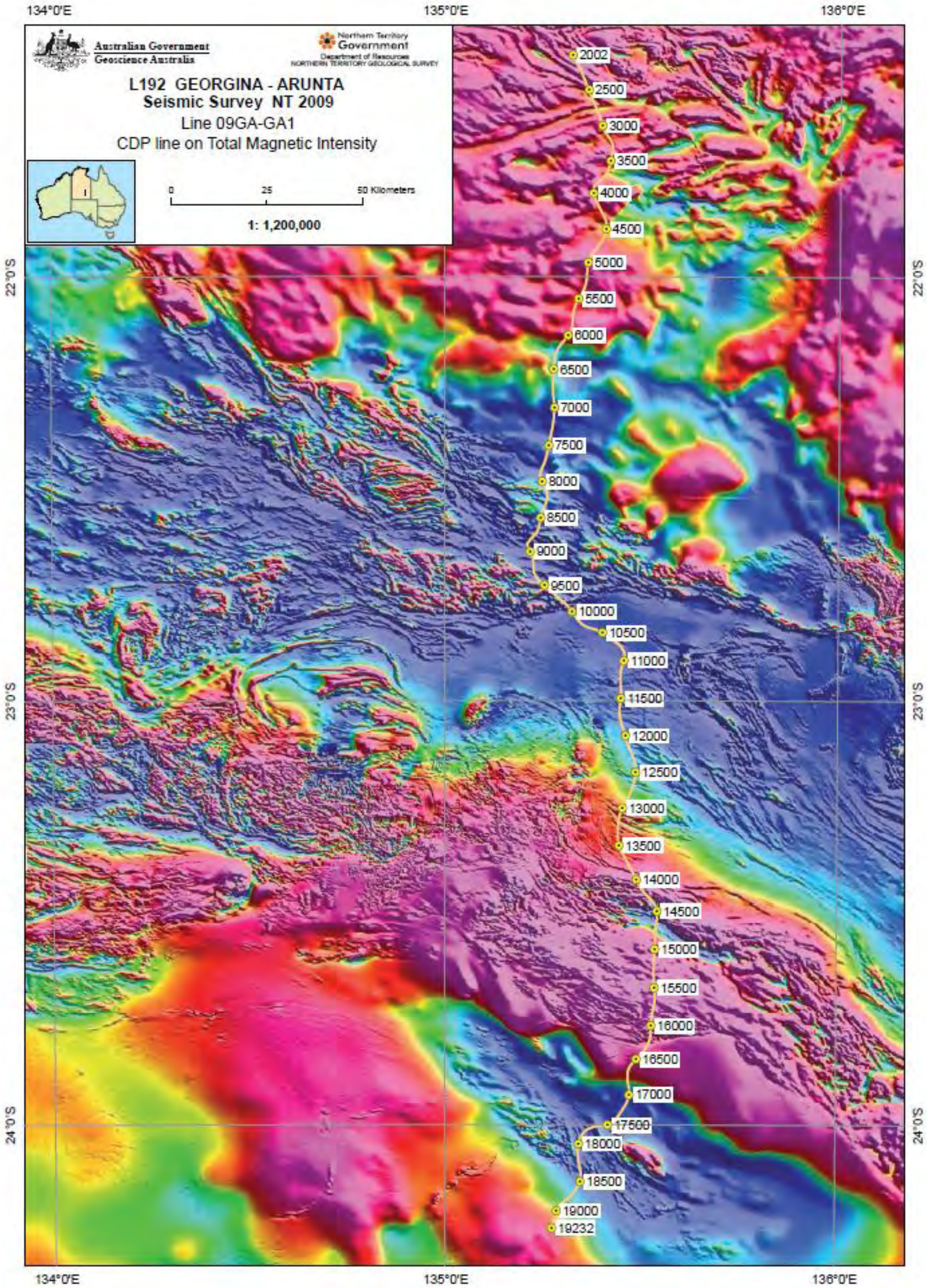


Figure 2. Map showing regional total magnetic intensity data for region covered by seismic line 09GA-GA1 from northeastern Amadeus Basin to the southernmost Davenport Province. Warm colours are high magnetic intensities; cool colours are low magnetic intensities. The seismic line has CDP stations labelled.

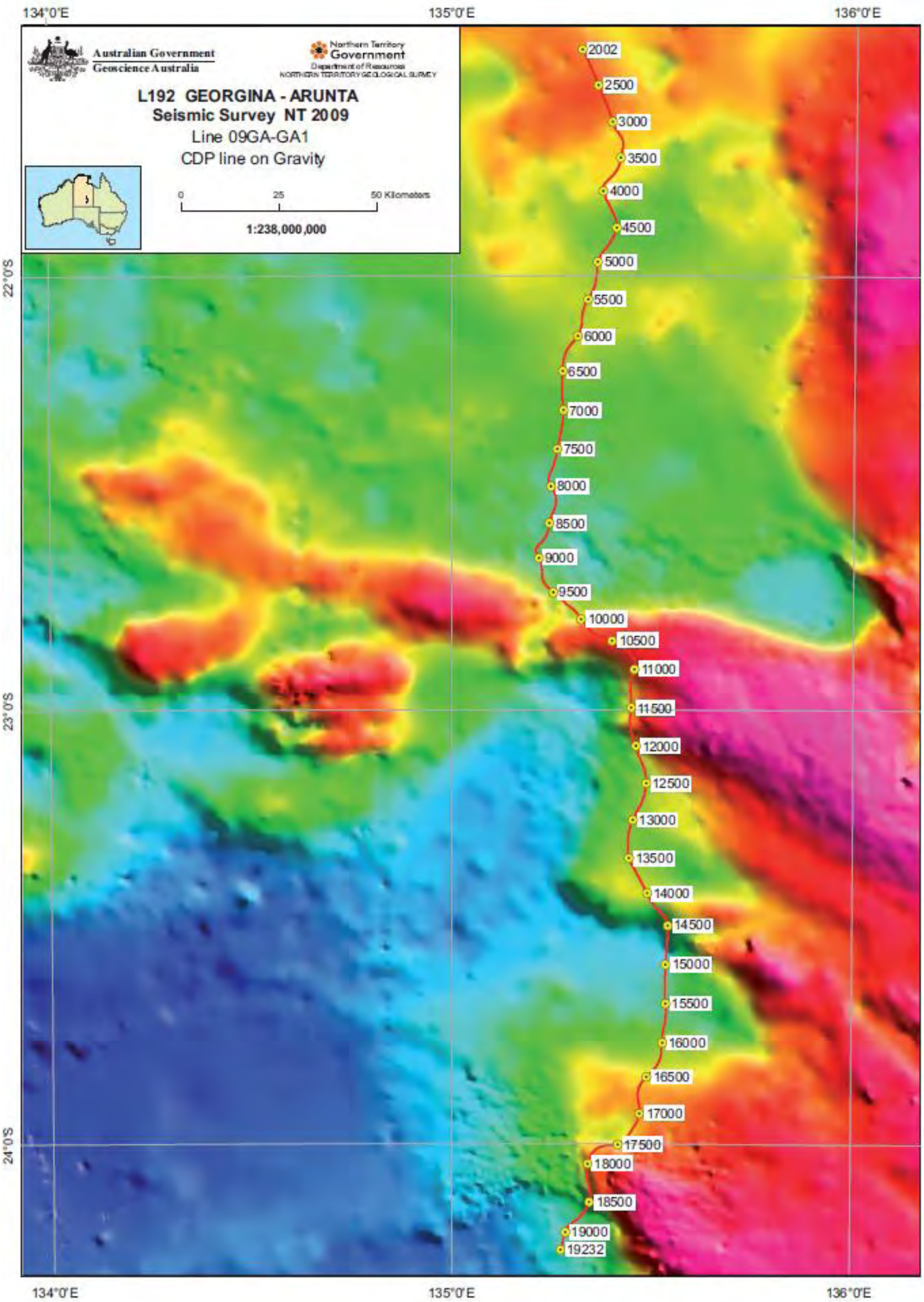


Figure 3. Map showing a regional gravity image for the region covered by seismic line 09GA-GA1 from the northeastern Amadeus Basin to southernmost Davenport Province. Warm colours are gravity highs, cool colours are gravity lows. Seismic line has CDP stations labelled.

In the seismic section, the Irindina Province separates two parts of the Aileron Province. In the south, the Albarta Metamorphics occur to the south of the Illogwa Shear Zone (CDP ca 14700), have a maximum depositional age of ca 1770 Ma, and are intruded by granites of only slightly younger age (Worden *et al* 2008, Carson *et al* 2009). In general, the Aileron Province is only weakly reflective, with the middle crust tending to be more reflective than the upper and lower crust (Korsch et al, 2011).

In the seismic section, Figure 4, the Illogwa Shear Zone is interpreted as a gentle, north dipping fault, which becomes subhorizontal farther to the north, linking with the Bruna Detachment Zone at depth, at about CDP 13200 (Korsch et al, 2011).

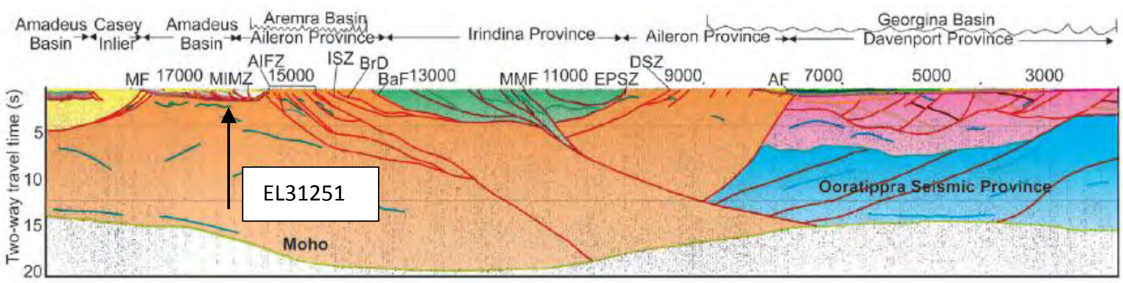


Figure 4. Migrated seismic section for Georgina–Arunta seismic line 09GA-GA1 showing interpretation and key provinces. Fault abbreviations: MF – Milly Fault; MIMZ – Mount Isobel Mylonite Zone; AIFZ – Atnarta Imbricate Fault Zone; ISZ – Illogwa Shear Zone; BrD – Bruna Detachment; BaF – Basil Fault; MMF – Mount Mary Fault; EPSZ – Entire Point Shear Zone; DSZ – Delny Shear Zone; AF – Atuckera Fault. Display shows vertical scale equal to horizontal scale (assuming crustal velocity of 6000 ms-1).

To conclude the Georgina – Arunta deep seismic reflection line (09GA-GA1) has provided an image of the crust in this part of central Australia. At a first approximation, beneath the Neoproterozoic – Early Palaeozoic sedimentary basins, the crust can be divided into five distinct regions, namely, the Casey Inlier, Aileron, Irindina and Davenport provinces, and the Ooratippra Seismic Province. Each of these regions is separated from one another by major, crustal-scale faults (Korsch et al, 2011).

A summary of the geology revealed by the seismic line 09GA-GA1 is that two parts of the Amadeus Basin separated by the basement Casey Inlier were imaged. South of the Casey inlier, there is a near-complete succession of almost flat-lying Neoproterozoic to Devonian sedimentary rocks. To the northeast of the Casey Inlier, the seismic line imaged the Amadeus Basin to its northeastern margin. There, the basin is relatively thick, with the Neoproterozoic succession being over 3000 m thick. The 450 – 300 Ma Alice Spring Orogeny shortened the basin, forming several thrust sheets, as part of a classic, thin-skinned, foreland fold-thrust belt. The northernmost part of the fold-thrust belt is a basement-cored nappe, now sitting above the lowermost part of the Amadeus Basin succession (Korsch et al, 2011).

Scrimgeour and Close, 2011, conducted an overview of the geology and tectonics along Georgina–Arunta seismic traverse (09GA-GA1). The geology along the Georgina–Arunta seismic traverse is dominated by Palaeoproterozoic basement of the southern North Australian Craton, overlain by Neoproterozoic to Palaeozoic basins of the Centralian Superbasin. The traverse also provides the first insight into the subsurface architecture of the Irindina Province, which is an enigmatic highly metamorphosed Neoproterozoic to Cambrian basin within the Arunta Region.

The outcropping Palaeoproterozoic geology along the seismic traverse consists of two main geological elements: the Davenport Province in the north, which forms part of the Region; and the Aileron Province, which comprises most of the Palaeoproterozoic geology of the Arunta Region (Scrimgeour and Close, 2011).

Metamorphic grade in the Aileron Province is highly variable, but it tends to increase to the southeast, with widespread amphibolite- and granulite-facies metamorphism in the eastern and southern parts of the province. The sedimentary and igneous precursors to the Irindina Province have been deposited or emplaced in an east- to southeast-trending latest Neoproterozoic to Cambrian rift. The sedimentary rocks have been exhumed through basin inversion during the Alice Springs Orogeny. The Irindina Province contains a number of nickel-copper, copper cobalt, rare earths and uranium prospects (Scrimgeour and Close, 2011).

Huston et al, 2012, have described the implications of the Georgina – Arunta seismic survey to mineral systems of the region. The Palaeoproterozoic Aileron Province is known to contain small volcanic-hosted massive sulphide deposits (e.g., Edwards Creek and Oonagalabi, **Figure 5b**), probable iron-oxide copper-gold (e.g., Johnnies Reward, **Figure 5b**). The Amadeus and Georgina basins host copper prospects (e.g., Blueys, **Figure 5b**) in the lower parts of their successions.

The discovery of the Manuel and Basil Cu-Co deposits indicates potential for the Harts Range Metamorphic Complex, particularly the Riddock Amphibolite, for mafic-hosted massive sulphide deposits. The Riddock Amphibolite consists of variably deformed and metamorphosed tholeiitic metagabbro and metadolerite (now amphibolite). The Cu-Co deposits appear to be structurally controlled, as they lie along structural trends within the Riddock Amphibolite, which are parallel with not only the regional fabric, but also with the Basil Fault (Huston et al, 2012).

In 2012 and 2013, the NTGS have made a number of copper – gold mineralisation discoveries in the eastern Arunta region. These discoveries are closely associated with fluorite-haematite breccia, potassic alteration, and in places, silicic alteration, hosted in the ca 1743 Ma Atneequa Granite (Whelan et al, 2012).

Fluorine is known as a powerful ligand for metal transport (e.g. McPhie *et al* 2011), as it is the most reactive and electronegative of all elements. However, there are few geological settings where sufficient F is available to hydrothermal fluids. Recent studies (e.g. Agangi et al 2010, McPhie et al 2011) have focused on the correlation between fluorine-rich felsic magmas and large hydrothermal ore deposits, in particular the silicic large igneous province (SLIP) that hosts the supergiant IOCG Olympic Dam deposit. Like the felsic magmas that host this deposit, the ca 1743 Ma

Atneequa Granite, which hosts Fe-oxide Cu-Au mineralisation in Limbla, is unusually enriched in F (between 1000–2000 ppm in unaltered granite and up to ca 20.9 wt.% in altered granite) compared to Yambah-aged felsic intrusive rocks (ca 1770 Ma; <1000 ppm) in the eastern Arunta Region.

A number of Cu-Au and IOCG-style prospects have been recognised in the Aileron Province (**Figure 5b**). These show a broad spatial correlation with an east–west-trending belt of Yambah-aged (ca 1770–1760 Ma) intrusive rocks (Whelan et al, 2012).

In the eastern Arunta Region (as defined in **Figure 5b**), it appears that the ca 1750–1740 Ma felsic plutons are characterised by elevated F and, at least in Limbla, are spatially associated with fluorite-haematite hydrothermal breccia and potassic and silicic alteration, consistent with an IOCG-style system. Recent Cu-Au discoveries in Limbla highlight the mineral potential of felsic intrusions of this age in the eastern Arunta Region (Whelan et al, 2012).

The identification of regional-scale alteration systems that are similar to those associated with iron-oxide copper gold (IOCG) mineralisation (Whelan et al 2011a, 2012, Beyer et al 2012) during NTGS mapping programs has stimulated exploration in areas previously underexplored for Cu, particularly in the south eastern Arunta Region. Furthermore, the acquisition of deep-crustal seismic data (Georgina–Arunta seismic traverse GA09-GA1; Korsch et al 2011) and associated prospectivity studies, undertaken by Geoscience Australia in conjunction with NTGS, have also shown the potential for the Arunta Region to host U-rich IOCG systems (Huston et al 2012).

The Aileron Province is prospective for a number of styles of copper mineralisation, including the prospects shown in **Figure 5b** and briefly described in **Table 1**: Intrusion-related mineralisation (IOCG-style), such as *Johnnies Reward* and *Gumtree* in the Strangways Metamorphic Complex (**Figure 5a**, Hussey *et al* 2006); base metals-Au deposits of the *Jervois* district that are hosted in the Bonya Schist (Lennartz 2012); and *Austin, Powers, Bigglesworth, Mini-Me* and *El Gordo* of the *Illogwa IOCG* belt (Lyons *et al* 2013), which are spatially associated with the ca 1750 Ma oxidised Atneequa Suite (Whelan *et al* 2012a).

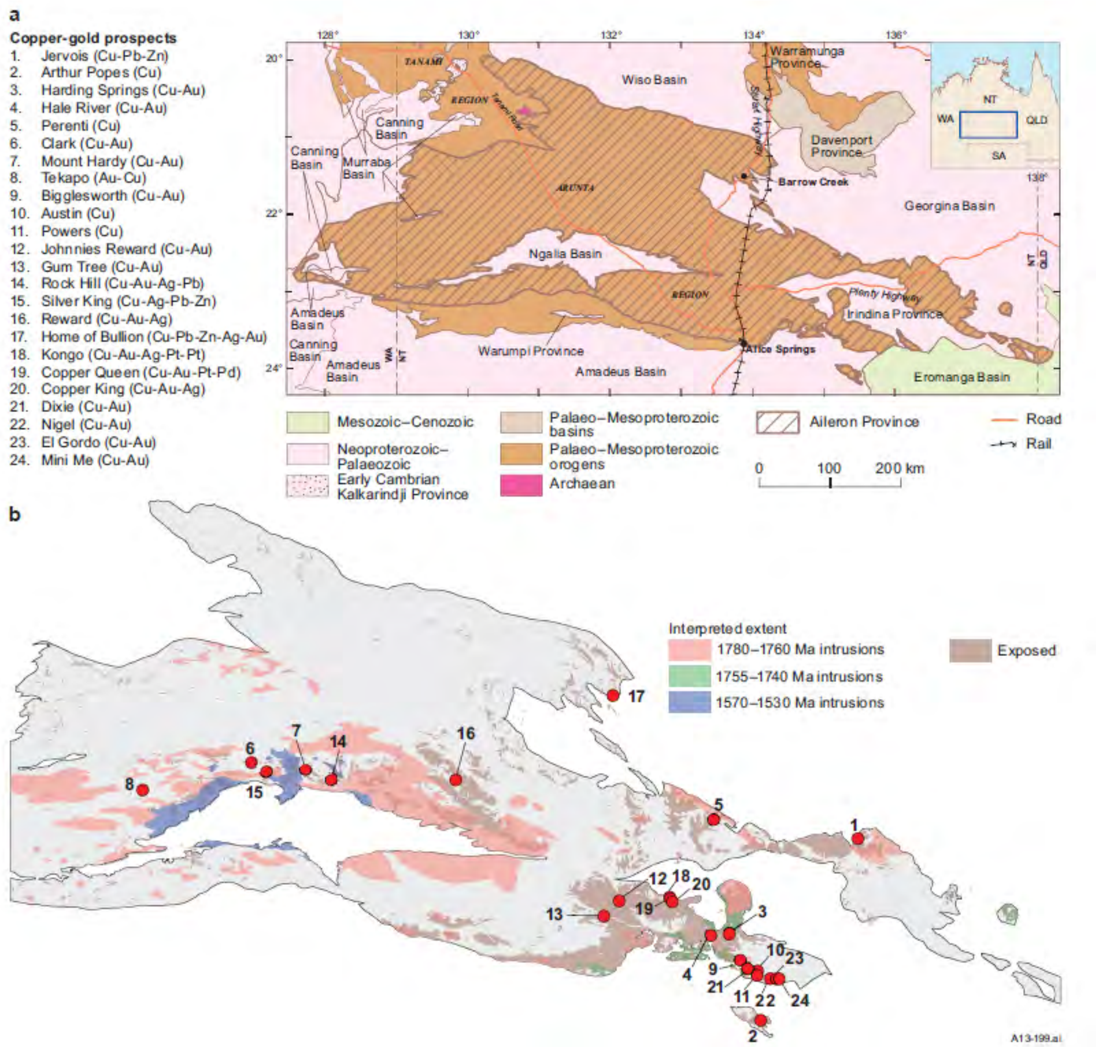


Figure 5. (**a**) Schematic regional geological map of Arunta Region, showing division of provinces. (**b**) Schematic regional geological map of Aileron Province showing locations of Cu-Au occurrences and distribution of ca 1770, 1750 and 1567 Ma intrusive rocks.

Style	Deposit [commodity]	Description	References
Aileron Province			
Intrusion-related IOCG (?)	*Johnnies Reward* [Cu-Au(-Pb-Zn-Ag)]	Cu-stained massive ironstone with quartz-garnet-biotite gneiss hosted in Strangways Metamorphic Complex	Hussey *et al* (2005), Scrimgeour (2013)
	Gumtree [Cu-Au]	Cu-stained massive ironstone with quartz-garnet-biotite gneiss, hosted in Strangways Metamorphic Complex	Hussey *et al* (2005)
	Jervois District (*Bellbird, Reward, Marshall*) [Cu-Au-Ag(-Pb-Zn)]	Stratabound, subvertical sulfide-rich deposits hosted in lenses of calc-silicate rock, garnet-chlorite-magnetite rock and garnet-magnetite quartzite within Bonya Schist.	Lennartz (2012), Scrimgeour (2013)
	Illogwa IOCG Belt (eg *Austin, Powers, Bigglesworth, Mini Me, El Gordo*) [Cu-Au]	Chalcopyrite, pyrite and copper carbonate in quartz-haematite-fluorite veins cutting brecciated ca 1750 Ma Atneequa Suite biotite granite, which is characterised by extensive potassic, hydrolitic and haematitic alteration. Known outcropping occurrences are distributed throughout a 50 km-long, 5 km-wide strike length.	Whelan *et al* (2011, 2012), McKinnon-Matthews (2011), Lyons *et al* (2013), Scrimgeour (2013)
	Perenti [Cu-Au]	Chalcopyrite, pyrite and haematite in quartz-fluorite-haematite-chlorite veins cross-cutting sheared, locally brecciated and red rock-chlorite-altered biotite granite.	Ivanac (1970), this study
	Mount Hardy [Cu(-Au-Ag-Pb-Zn)]	Pyrite and chalcopyrite with minor galena in quartz veins and pegmatite within Lander Rock Formation, spatially associated with ca 1567 Ma Southwark Suite.	Scrimgeour (2013)
	Rock Hill [Cu-Au (-Ag-Pb)]	Pyrite and chalcopyrite with minor galena in quartz veins and pegmatite within Lander Rock Formation, spatially associated with ca 1567 Ma Southwark Suite	Fruzetti (1971), Scrimgeour (in press a)
	Clark [Cu-Au-Ag]	Malachite, azurite, chalcopyrite, pyrite, bornite in quartz veins and pegmatite spatially associated with ca 1567 Ma Southwark Suite granite.	Scrimgeour (in press a), and references therein
	Silver King [Cu-Ag-Pb-Zn]	Quartz-rich greisen and leached porphyry veins spatially associated with Yaloogarrie Granite which may be part of Southwark Suite.	Warren (1974), Young (1995a)
	Tekapo [Cu-Au]	Gossanous ironstone spatially associated with ca 1770 Ma Carrington Suite intrusions. Red-rock alteration.	Tanami Gold NL, ASX Announcement 27/09/2006, Scrimgeour (in press a)
	Reward [Cu-Au-Ag]	Malachite, azurite and chalcocite in brecciated shear zone spatially associated with ca 1805 Ma Anmatjira Orthogneiss.	ABM Resources, ASX Announcement, 13/5/2010, Scrimgeour (in press a)
	Harding Springs [Cu-Au]	Chalcopyrite, djurleite, malachite and Fe-oxides hosted in oblique shear zones and quartz veins cutting oxidised, I-type, ca 1770 Ma Aremra Granodiorite.	Whelan *et al* (2009a, b, in prep)
Vein-hosted	*Arthur Popes* [Cu]	Malachite and azurite hosted in REE-anomalous veins overprinted by east-northeast-trending retrograde shear zone.	Close *et al* (2007), Mithril Resources, ASX Announcement, 6/8/2007, Scrimgeour (in press a)
	Hale River [Cu-Au]	Malachite, azurite and chalcopyrite in quartz veins cross-cutting ca 1795 Ma Salthole Gneiss and overprinted Palaeozoic shears in Illogwa Shear Zone.	Shaw *et al* (1982), Whelan *et al* (2009a, b, in prep)
	Pinnacles copper district [Cu (-Au-Ag-Bi)]	Chalcopyrite, malachite, chalcocite and bornite in shallowly dipping, quartz-siderite veins concordant with bedding in host marble of Cadney Metamorphics. Veins are interpreted to have formed during ca 450–300 Ma Alice Springs Orogeny	Warren (1974), Huston *et al* (2006), Scrimgeour (in press a)
Shear zone-hosted	*Home of Bullion* [Cu-Pb-Zn-Ag-Au]	Four shear zone-hosted, massive sulfide lenses within Bullion Schist. Models for formation include VMS or an epigenetic origin.	Ferenczi (2005), Scrimgeour (in press a), and references therein, Scrimgeour (2013)
Hydro-thermal	*Kongo, Copper Queen, Copper King* [Cu-Au(-Ag-Pt-Pd)]	Mineralised quartz-carbonate-tourmaline veins associated with chlorite-haematite altered mafic amphibolite.	Scrimgeour (in press a), and references therein
Warumpi Province			
Intrusion-related IOCG (?)	*Haasts Bluff* [Cu±Au]	Malachite, azurite and chalcopyrite mineralisation associated with quartz, carbonate, Fe-oxides within altered calc-silicate rock and mafic amphibolite of Iwupataka Metamorphic Complex.	Barraclough (1975), Scrimgeour *et al* (2005a), Frater (in prep)
	Mount Larrie (?) [Cu]	Malachite stained garnet-feldspar-quartz rock, thought to be hydrothermal or magmatic in origin, hosted in Alkipi Metamorphics.	Clark (1975), Scrimgeour *et al* (2005a), Scrimgeour (in press b)
Irindina Province			
Intrusion-related	*Blackadder, Baldrick* [Ni-Cu±PGE]	Orthomagmatic deposit hosted in ca 410 Ma Lloyd Gabbronorite.	McKinnon-Matthews (2009, 2010), Whelan *et al* (2009a, b, in prep b)
Metamor-phosed VMS (?)	*Basil, Poly, Manuel* [Cu-Co]	Massive and stringer sulfides comprising pyrrhotite, pyrite and chalcopyrite, associated with garnet-quartz-hornblende rock, interpreted to be metamorphosed VMS system hosted in shear zones parallel to major crustal structures (eg Basil Shear Zone) in early Cambrian Riddock Amphibolite.	McKinnon-Matthews (2010, Whelan *et al* (2010), Sharrad (2012), Scrimgeour (2013)
	Selins, Virginia [Cu-Zn]	Hosted in early Cambrian Riddock Amphibolite, associated with garnet-quartz-hornblende rock. Similar stratigraphic locations as *Basil*.	Shaw *et al* (1984), Scrimgeour (in press c)

Table 1. Summary of Cu ± Au occurrences in Aileron, Warumpi and Irindina provinces. (Whelan et al, 2013).

A number of mineralisation styles for Cu (±Au, ±base metals) is apparent for each of the provinces in the Arunta Region, as discussed above. Recent investigations by NTGS has highlighted the potential for IOCG-style mineralisation in the Aileron Province and the remainder of this abstract will focus on the potential of the Aileron Province for such systems, including regional-scale alteration styles and structural controls, and potential sources for metals (Whelan et al, 2013).

To the southeast, in ILLOGWA CREEK, large areas of ca 1750–1740 Ma Atneequa Suite intrusions have been intensely altered by fluorite-haematite-silica-bearing fluids, associated with hydrothermal brecciation of the granite. The alteration assemblage is characterised by fluorite-silica-haematite-magnetite and potassic assemblages and is described in detail by Lyons *et al* (2013).

The Illogwa IOCG Belt trends west-northwest and is situated about 5 km south and parallel to the Illogwa Creek. The belt, as currently identified, extends from the edge of the Simpson Desert in the east, to an area about 6 km south of Albarta Dam in the west. Nearly half of the belt is exposed. The vein sets generally dip about 60° to slightly east of north and are up to 200 m wide. Alteration haloes can be 500–600 m from the midline of the vein sets. In places, the host rocks are mylonite related to mantle-tapping structures of the Atnarta Imbricate Thrust Zone (Huston *et al* 2011), suggesting that the mineral system is correspondingly large.

In summary of the work in the Arunta Region of central Australia by Geoscience Australia, the Northern Territory Geological Survey and the minerals industry (e.g., Huston et al., 2012; Whelan et al. 2012) suggests that this too has potential for hosting IOCG deposits. The identification of regional and local-scale alteration systems at various locations in the Arunta Region, particularly in the eastern Aileron Province, combined with new discoveries of outcropping Cu ± Au mineralisation, indicate the potential for this underexplored Palaeoproterozoic province.

Iron oxide-copper-gold-style mineralisation in the Arunta Region shares a similar geological setting to other IOCG-hosting provinces, and occurs in a number of places along the length of the Central Australian Suture (Figure 6) (Schofield, A, Huston, D.L, Gallagher, R and Kemp, C, 2015).

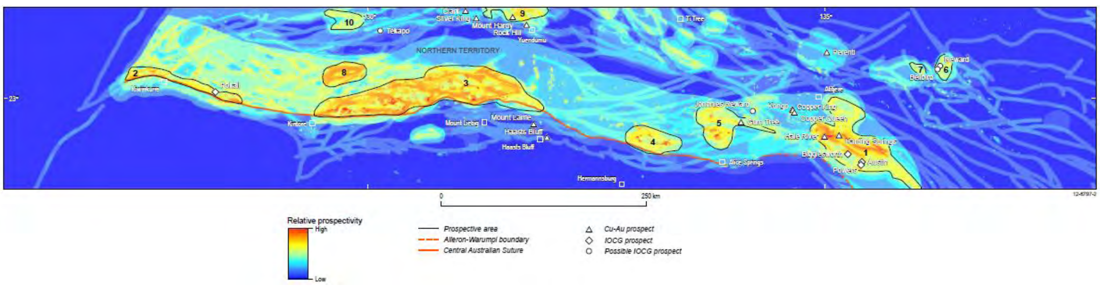


Figure 6: Map showing the modelled potential for IOCG mineral systems in the southern Arunta Region. Based on the assessment, ten zones of elevated or high IOCG potential have been identified and are ranked in approximate order of potential. Zone 1 contains a number of recently identified IOCG prospects, and appears to be associated with the Atneequa Granitic Complex. Similarly, Zone 2 is associated with IOCG-style mineralisation in the Mount Webb area of Western Australia and is associated with the Mount Webb Granite. Zone 3, in the central Aileron Province, is largely controlled by the distribution of the Andrew Young Igneous Complex and is not associated with known copper-gold mineralisation. Zone 4 lies close to the Aileron–Warumpi Province boundary and is centred around the Mount Hay Granulite. It includes a number of interpreted hematite-bearing zones. Zone 5 includes the Gum Tree copper-gold prospect and includes a number of interpreted magnetite and hematite zones. Zone 6 marks a region of moderate potential that includes prospects in the Jervois district that have been interpreted as IOCG-style mineralisation. An area of similar potential, labelled Zone 7 occurs just west of this area. Zone 8 includes the Taupo gold prospect (not shown) and occurs near interpreted mafic igneous rocks. However, no iron oxide alteration was interpreted in this area from magnetic and gravity data. In the north of the study area, Zone 9 contains the Mount Hardy Cu-Au prospect. It has overall moderate potential. Zone 10 exhibits some potential associated with interpreted faults.

An analysis has been undertaken of the potential for additional IOCG mineralisation in the southern Arunta Region in the vicinity of the Central Australian Suture using a mineral systems approach. The formation of a mineral deposit occurs as a result of a coincidence of favourable geological processes, operating on a range of scales, which together constitute a mineral system (Wyborn et al., 1994). This mineral systems approach to understanding ore deposits has been used to assess the potential for IOCG systems in the southern Arunta Region (Schofield, A, Huston, D.L, Gallagher, R and Kemp, C, 2015).

The mineral systems approach allows for the identification of a much larger footprint than a deposit itself, and can be applied in greenfield and/or undercover areas. Since it seeks to map the key components of a mineral system, the final map highlights areas where an IOCG system may have operated, rather than identifying specific locations where an orebody may be found.

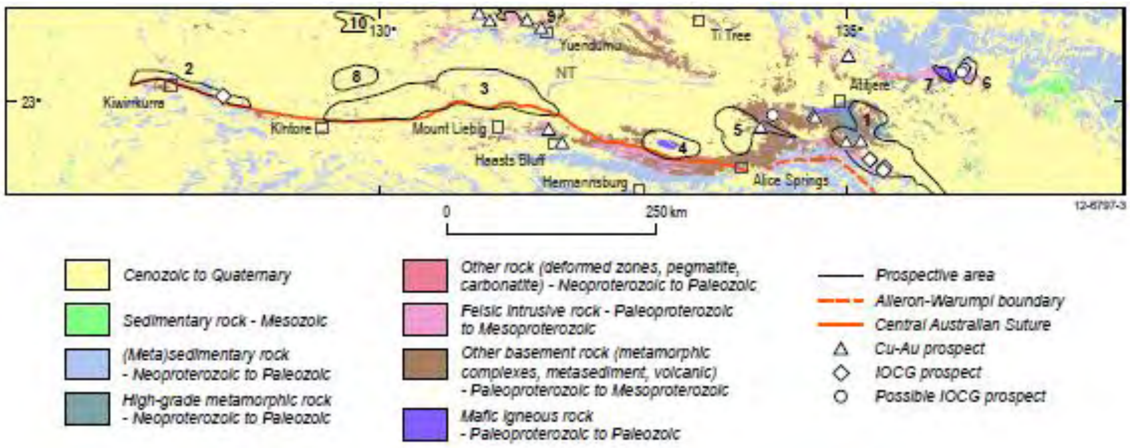


Figure 7: Map of the zones of modelled prospectivity from Figure 2 plotted over the regional surface geology (Liu et al., 2012). Many of the areas highlighted occur in regions with significant amounts of recent sedimentary cover. These areas present potential greenfield opportunities.

5 PREVIOUS EXPLORATION OVER EL31251

The region has had limited and sporadic previous exploration. The commodities explored for include uranium, base metals, platinum group elements, gold, copper and lead, heavy mineral sands and rubies/diamonds.

The table below shows the previous tenements that have been held over the current exploration licence 31251, the commodities looked for and the available reports held at the NTGS.

Tenement type	Tenement Number	Reports	Commodity
EL	1956	CR1983-0130 CR1981- 0060 CR1981 – 0064 CR1980- 0158	Ruby, Corundum, Garnet, Gemstones Uranium
EL	22919	CR2005 – 0484 CR2005 – 0051 CR2004 - 0152 CR2004 – 0667 CR2004 - 0556	Platinum group metals, Copper Gold Base metals
EL	22789	CR2002 - 0338	Cu-Pb-Zn-Ag-Au
EL	9827	No reports	
EL	23190	CR2004 – 0238 CR2004 - 0152	Gold, Copper, Platinum group elements and Base metals
EL	31000	CR2017 - 0152	Base metals, Copper and Nickel
EL	9189	CR1997 – 0235 CR1996 - 0748	Base metals
EL	7991	CR1996 – 0286 CR1996 – 0285 CR1995 – 0525 CR1995 – 0298 CR1994 - 0325	Uranium
EL	9769	CR2006 – 0456 CR2005 - 0332 CR2004 – 0478 CR2004 – 0143 CR2003 - 0310 CR2002 – 0182	Iron Gold
EL	25340	CR2008 – 0775	Uranium

		CR2008 - 0041	
EL	25653	CR2015 – 0414 CR2014 - 0759 CR2014 – 0757 CR2013 - 0795 CR2013 - 0793 CR2012 – 1235 CR2012 – 0747 CR2011 – 0546 CR2010 – 0530 CR2009 – 0558 CR2008 - 0706	IOCG Nickel Copper Gold
EL	5182	CR1988 - 0326	Platinum group metals, Gold
EL	5183	CR1988 - 0326	Platinum group metals, Gold
EL	1056	CR1979 – 0063 CR1978 – 0102 CR1977 - 0082	Uranium
AP	3258	CR1971 - 0127	
EL	10268	CR2004 – 0166 CR2002 - 0128	Base metals Gold
EL	10271	No reports	Base metals Gold
EL	1324	CR1979 - 0210 CR1979 – 0029 CR1978 - 0028	Uranium Base metals
AP	2697	CR1971 - 0066	Base metals
EL	2181	CR1981 - 0094	Uranium
EL	6998	CR1994 – 0136 CR1993 - 0784 CR1993 – 0121 CR1993 – 0015 CR1992 – 0007	Base metals
EL	10269	CR2003 – 0121 CR2004 - 0166	Base metals Gold
AP	1714	CR1967 - 0004	Base metals
EL	1725	CR1979 - 0070	Uranium
EL	27625	CR2016 – 0163 CR2015 – 0573 CR2014 – 0680 CR2013 – 0756 CR2012 – 0649 CR2011 - 0515	Base metals

A compilation of the work conducted over EL31251 for Gempart (NT) Pty Ltd

CEASED	**TENEMENTS BELOW**	**EL31251**	
AP	2459	CR1970 - 0058	Base metals
AP	1923	CR1968 - 0062	Cooper
EL	25643	CR2015 – 0414 CR2014 – 0758 CR2014 – 0757 CR2013 – 0677 CR2013 – 0793 CR2012 – 1235 CR2012 – 0747 CR2011 – 0546 CR2010 – 0530 CR2009 – 0729 CR2009 – 0558 CR2008 - 0704	IOCG Nickel Copper Gold
EL	26155	CR2011 – 0844	wrong report attached
EL	10270	CR2004 – 0166 CR2002 - 0128	Base metals Gold
EL	28808	CR2014 – 0213 CR2013 - 0082	Metals Industrial Minerals
CEASED	**TENEMENTS COVERING**	**EL25643**	
EL	5161	CR1988 - 0180	Gold
EL	6550	CR1990 – 0180 CR1991 – 0367	Heavy mineral sands
EL	6997	CR1995 – 0067 CR1994 – 0220 CR1993 - 0784 CR1993 – 0121 CR1993 – 0015 CR1992 - 0007	Base metals
EL	9332	CR1998 - 0565 CR1997 – 0431	Base metals
EL	9335	CR1998 - 0565 CR1997 – 0431	Base metals
EL	9340	CR1998 – 565 CR1997 - 0543	Base metals
CEASED	**TENEMENTS COVERING**	**EL25653**	
AP	2444	CR1971 - 0066	Base metals
EL	8093	CR1996 – 0921 CR1995 – 0558 CR1995 - 0557	Gold

		CR1994 – 0469	
CEASED	**TENEMENTS COVERING**	**EL28335**	
EL	2046	CR1981 – 0006 CR1980 - 0224	Uranium
EL	5180	CR1988 - 0326	Platinum group metals, Gold
EL	25373	CR2009 - 1115 CR2009 – 0232 CR2008 - 0054	Uranium Base metals
EL	25554	CR2009 – 1154 CR2009 – 0807 CR2008 - 0054	Uranium Base metals

Table 2 lists the previous exploration tenements that cover EL31251.

The earliest recorded exploration was in late 1966 in the Limbla Syncline, with Australian Geophysical Pty Ltd seeking copper through IP surveys and rock chip sampling, stream sediment sampling, geological mapping, and limited percussion drilling (CR1967-0004) (Lyons, 2013).

A number of companies have conducted uranium exploration, mainly by AGIP Australia and Esso Australia. The work that Esso Australia was quite extensive in the late 1970's. They took rock chip samples, completed geological mapping, geophysical surveys and drilled 14 percussion drill holes for 724m. These holes were designed to test at depth the surface indications of vein-type uranium mineralisation and to clarify the structural and lithological controls for this mineralisation. AGIP Australia thought that most potential occurred in the south because of anomalous zone and thicker Cainozoic strata. Uranium to Th ratios also tend to increase in this direction. The Cainozoic sediments were main target but no anomalous radioactivity discovered during current programme.

Base metals have been explored intermittently since the 1970's, primarily by CRA Exploration and Normandy Exploration. CRA Exploration took rock chip samples that returned elevated base metal assays and stream sediment samples pf Kay Creek that returned anomalous results. Samples taken over EL10268 and 10269 returned elevated levels (copper 1000ppm). Normandy Exploration could not find any targets to follow up after initial encouraging results. A copper prospect was located east of Ringwood Homestead.

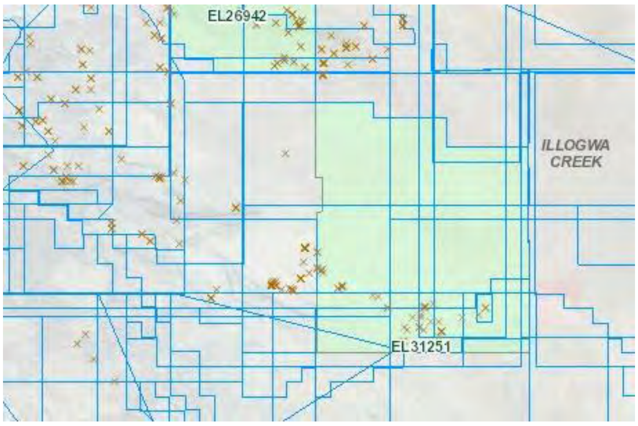
CRA Exploration conducted high resolution airborne magnetics – radiometric survey over their exploration licence 9332, in an effort to find strata bound copper mineralisation. The drilling results showed low order anomalies, the best rest was 19m@1240ppm copper.

A compilation of the work conducted over EL31251 for Gempart (NT) Pty Ltd

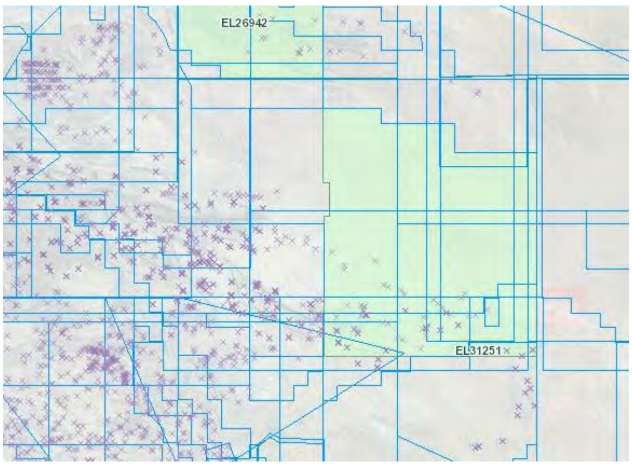
Gutnick Resources have explored gold over the Amadeus Basin. Sampling returned very low gold values. Their open file data search found that the previous gold exploration is limited. Samples returned only ppb values and anomalous results in the Illogwa Creek area. Exploration over EL5161 consisted of rock chip samples over a number of quartz vein outcrops; the best result was 0.4g/t. L. Johannsen explored for gold and platinum group metals. He found some low level anomalies mainly around Allans Bore.

The details of all other exploration can been found in Appendix 1, which will be an attached to the main report.

Below is a map of the whole rock samples taken in the region of EL31251. This was taken from the NT Governments' Department of Primary Industry and Resources STRIKE website by highlighting the granted exploration licences and the whole rock box under geochemistry. The brown x's show the whole rock samples taken.

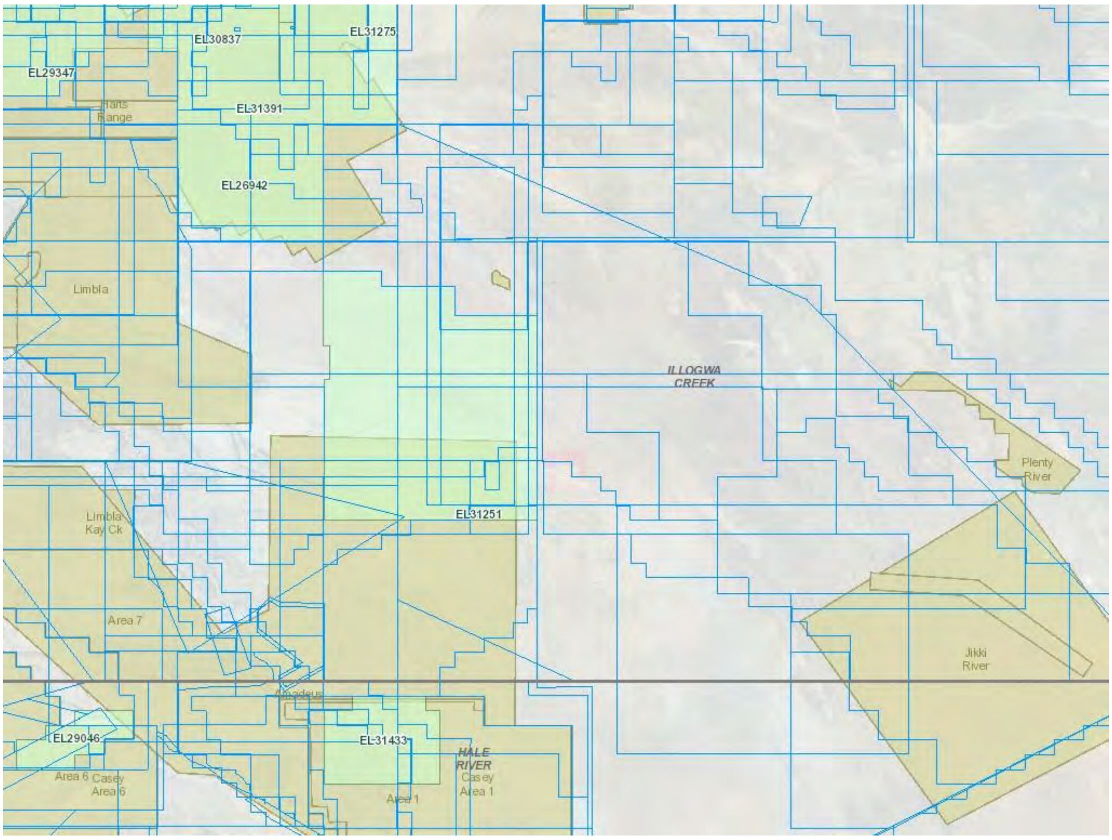


The map below shows the stream sediment samples taken in the vicinity of EL31251. The purple crosses show the location of stream sediment samples taken.

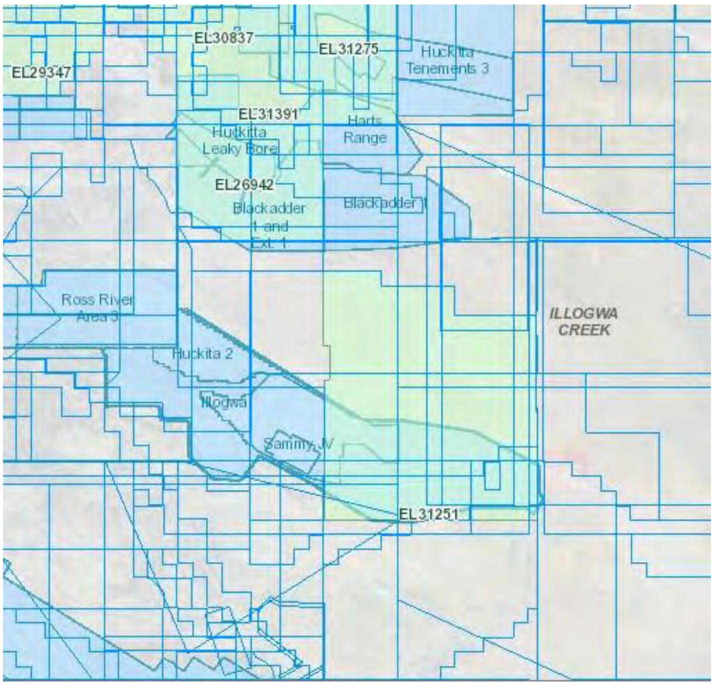


A compilation of the work conducted over EL31251 for Gempart (NT) Pty Ltd

The map below shows the geophysical surveys that have been taken, that are on open file with the NTGS.

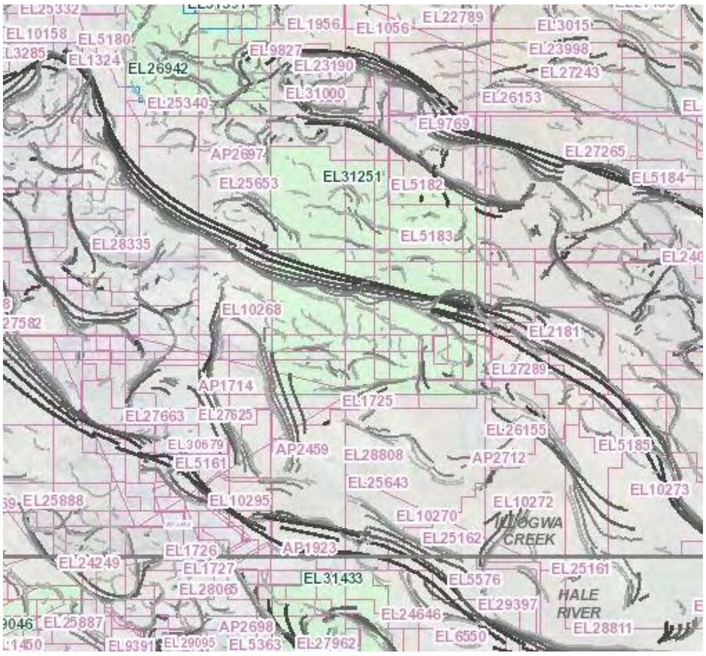


The map below shows the geophysical surveys taken, that have been conducted for companies and the products of which are in various company reports held at the NTGS.

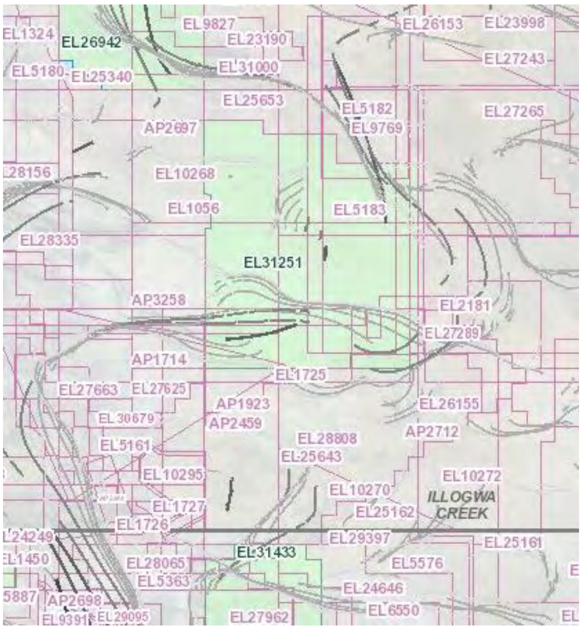


A compilation of the work conducted over EL31251 for Gempart (NT) Pty Ltd

The map below shows the magnetic survey lines that have been conducted over the area.

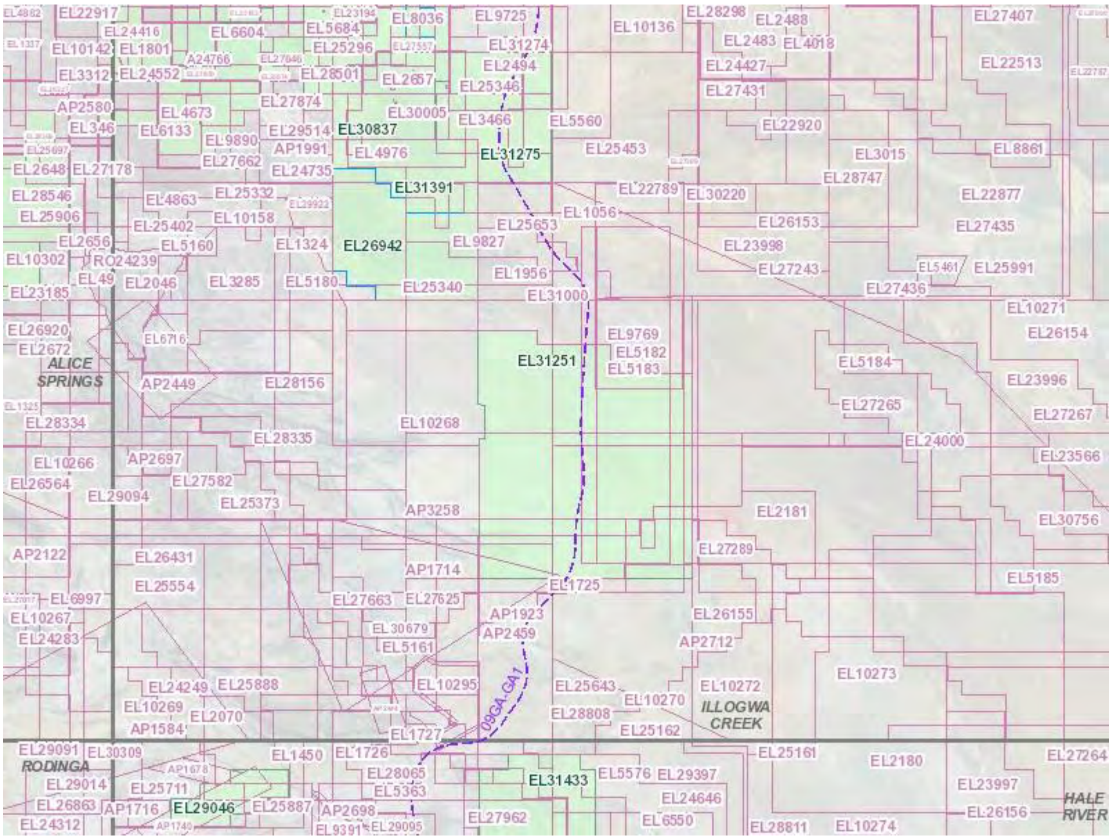


The map below shows the gravity surveys conducted over the area.

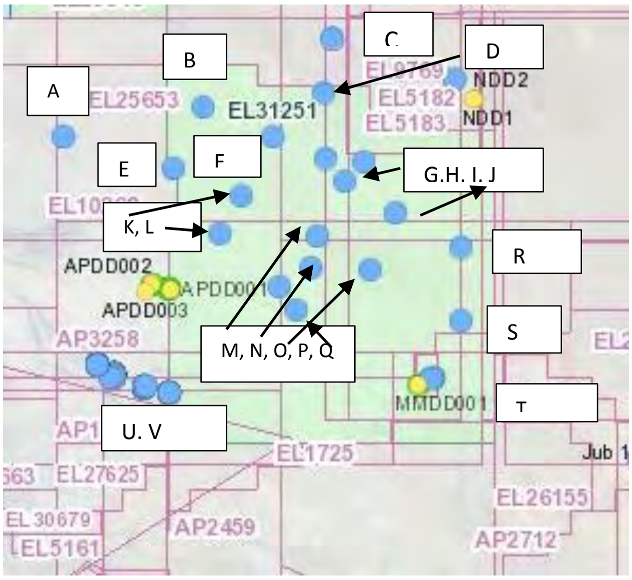


A compilation of the work conducted over EL31251 for Gempart (NT) Pty Ltd

This map below, shows the seismic line 09GA-GA1 that Geoscience Australia and the Northern Territory Geological Survey (NTGS) contracted to go from the Georgina to the Arunta region, which runs through EL31251, which has been discussed previously and its relevance.



Below is a map showing the drilling conducted over EL31251from the Strike NTGS website. Below the map is the details of the drilling.



A – Drillhole ID 302856, Percussion drillhole IR13, Total depth 28.75m, on EL1056 in CR1979-0063,

B - Drillhole ID 302920, Percussion drillhole IR9, Total depth 152m, on EL1056 in CR1979-0063,

C - Drillhole ID 302908, Percussion drillhole IR6, Total depth 76m, on EL1056 in CR1979-0063,

D - Drillhole ID 302904, Percussion drillhole IR5, Total depth 102m, on EL1056 in CR1979-0063,
NDD1 – No information
NDD2 - Drillhole ID 302920, Percussion drillhole IR9, Total depth 152m, on EL1056 in CR1979-0063,
E - Drillhole ID 302916, Percussion drillhole IR8, Total depth 98m, on EL1056 in CR1979-0063,
F - Drillhole ID 302860, Percussion drillhole IR14, Total depth 154.45m, on EL1056 in CR1979-0063,
G - Drillhole ID 302884, Percussion drillhole IR2, Total depth 196m, on EL1056 in CR1979-0063,
H - Drillhole ID 302896, Percussion drillhole IR3, Total depth 174m, on EL1056 in CR1979-0063,
I - Drillhole ID 302876, Percussion drillhole IR18, Total depth 230.7m, on EL1056 in CR1979-0063,
J - Drillhole ID 302872, Percussion drillhole IR17, Total depth 253.55m, on EL1056 in CR1979-0063,
K – Drillhole ID 302844, Percussion drillhole IR10, Total depth 171.5, on EL1056 in CR1979-0063,
L – Drillhole ID 302852, Percussion drillhole IR12, Total depth 138m, on EL1056 in CR1979-0063,
M – Drillhole ID 302840, Percussion drillhole IR1, Total depth 140m, on EL1056 in CR1979-0063,
N – Drillhole ID 302892, Percussion drillhole IR21, Total depth 165.5m, on EL1056 in CR1979-0063,
O - Drillhole ID 302888, Percussion drillhole IR20, Total depth 122.5m, on EL1056 in CR1979-0063,
APDD001 - Drillhole ID 8445291, Diamond drillhole APDD001, Total depth 112.2m, on EL25643 in CR2012-1235,
APDD002 - Drillhole ID 8445287, Diamond drillhole APDD002, Total depth 159.6m, on EL25643 in CR2012-1235,
APDD003 – Drillhole ID 8445295, Diamond drillhole APDD003, Total depth 225.6m, on EL25643 in CR2012-1235,
P – Drillhole ID 3028848, Percussion drillhole IR11, Total depth 98m, on EL1056 in CR1979-0063,
Q – Drillhole ID 302880, Percussion drillhole IR19, Total depth 56m, on EL1056 in CR1979-0063,
R – Drillhole ID 302868, Percussion drillhole IR16, Total depth 201.5m, on EL1056 in CR1979-0063,
S - Drillhole ID 302864, Percussion drillhole IR15, Total depth 178.9m, on EL1056 in CR1979-0063,
MMDD001 - Drillhole ID 8445279, Diamond drillhole MMDD001, Total depth 294.1m, on EL25643 in CR2012-1235,
T – Drillhole ID 1697839, Percussion drillhole IC3, Total depth 15m, on EL5154 in CR1988-0296,

- Drillhole ID 1697843, Percussion drillhole IC4, Total depth 15m, on EL5154 in CR1988-0296,
- Drillhole ID 1697831, Percussion drillhole IC1, Total depth 24m, on EL5154 in CR1988-0296,
- Drillhole ID 1697835, Percussion drillhole IC2, Total depth 15m, on EL5154 in CR1988-0296,

U – Drillhole ID 771331, RAB drillhole RA97LV82, Total depth 13m, on EL9332 in CR1998-0565

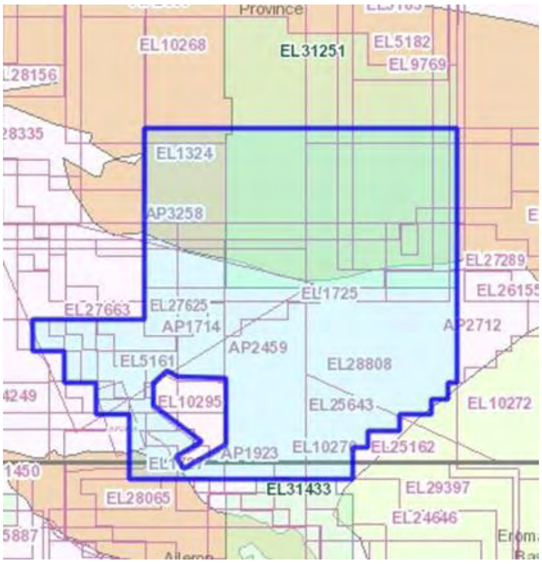
- Drillhole ID 771327, RAB drillhole RA97LV81, Total depth 12m, on EL9332 in CR1998-0565
- Drillhole ID 771315, RAB drillhole RA97LV79, Total depth 12m, on EL9332 in CR1998-0565
- Drillhole ID 771307, RAB drillhole RA97LV77, Total depth 6m, on EL9332 in CR1998-0565
- Drillhole ID 771311, RAB drillhole RA97LV78, Total depth 9m, on EL9332 in CR1998-0565
- Drillhole ID 771323, RAB drillhole RA97LV80, Total depth 9m, on EL9332 in CR1998-0565

V - Drillhole ID 771295, RAB drillhole RA97LV74, Total depth 18m, on EL9332 in CR1998-0565

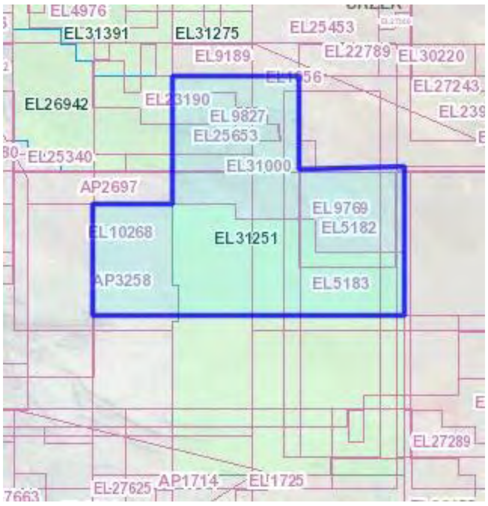
- Drillhole ID 771291, RAB drillhole RA97LV73, Total depth 9m, on EL9332 in CR1998-0565
- Drillhole ID 965088, RAB drillhole RA97LV072, Total depth 12m, on EL9332 in CR1998-0565
- Drillhole ID 771303, RAB drillhole RA97LV76, Total depth 9m, on EL9332 in CR1998-0565
- Drillhole ID 771299, RAB drillhole RA97LV75, Total depth 9m, on EL9332 in CR1998-0565

6 EXPLORATION BY MITHRIL RESOURCES LTD

In July and August 2007, Mithril Resources were granted ELs 25643 and 25653 for 6 years. These exploration licences cover the current EL31251, see the maps below, as to their position over EL31251. Initially, the company were looking for and found magmatic nickel, copper, platinum group element sulphides in mafic intrusions. They also found potential IOCG style mineralisation within the Proterozoic basement in EL 25653.



This is a map showing the location of EL25643 in comparison to the current EL31251.



This is a map showing the location of EL256453 in comparison to the current EL31251.

ELs 25643 and 25653 lie within the Illogwa Creek 250K sheet, along the northern eastern margin of the Amadeus Basin in a zone of complex deformation and interaction between basement structures and the sedimentary sequence.

The Arunta Province has been subjected to several regional orogenic events. Significant gold mineralisation occurs in the extensively deformed zones of faulting, shearing and greenschist metamorphism, which indicates the boundary between the Arunta Province and the Amadeus Basin. Quartz veins with associated sulphides are common in these zones.

Locally the geology is mostly Aeolian and colluvial sand and gravel. There is sparse outcrops of very weathered biotite, garnet-biotite and quartzofeldspathic gneiss, calcsilicate rocks and amphibolite. Mithril also located a number of Ni-Cu-PGE rich mafic intrusions in EL25653.

The remapping of the Limbla 1:100 000 map sheet identified extensive hematite – silica altered granites and other altered granites in EL25643. This alteration along with significant outcropping copper and gold mineralisation was thought to verify the presence of a substantial IOCG mineralised system. In addition to this, malachite and primary sulphides like chalcopyrite were found at the surface.

Between 2008 and 2015, Mithril conducted a review of historic work conducted on the area, reconnaissance geological mapping, heritage surveys, rock chip, soil and stream sediment sampling, geophysical Versatile Time-domain Electromagnetic (VTEM) survey, a ground electromagnetic survey, a ground gravity survey, an IP survey and aircore, RC and diamond drilling.

Once the exploration licences were granted, a review of historic work was conducted. The previous exploration they found to be 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 one sample per 5 sqkm 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 that 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 copper, lead, zinc was returned from several phases of drilling.

Lyons, 2013 found that the only historical drilling within the Mithril lease areas was done in the search for uranium in the Aremra Basin, by Agip NuCleare Australia Pty Ltd in the late 1970s (CR1977-0082, CR1978-0102); Rio Tinto Exploration Pty Ltd investigating sediment-hosted copper in the Limbla Syncline (Amadeus Basin) in the late 1990s (CR1998-0565); and a 69-metre percussion program undertaken by Mr L. A. Johannsen in 1987, looking for vein-hosted gold (CR88-0296). Locations of historical drill holes are shown in Figure 8.

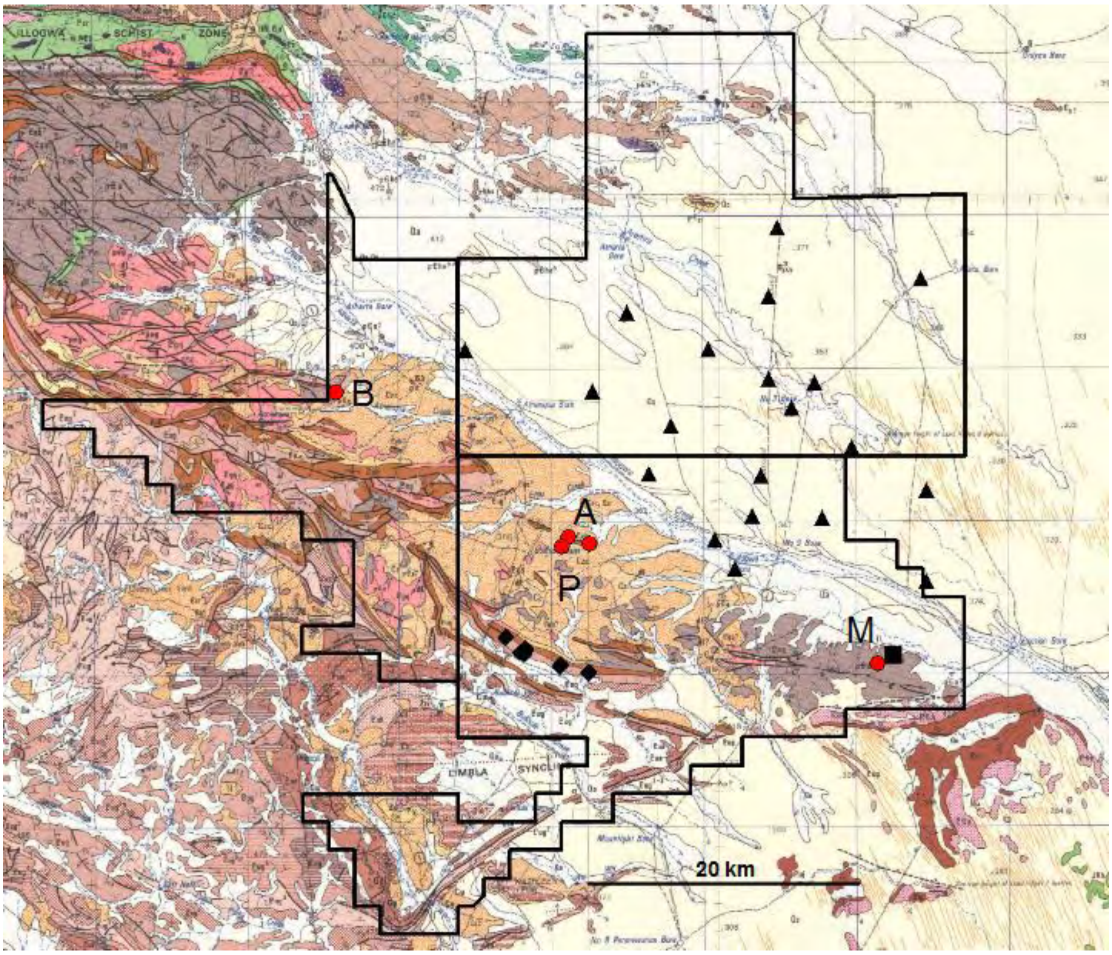


Figure 8. Geological map showing locations of historical drilling. Triangles, AGIP NuCleare. Diamonds, Rio Tinto. Square, Johannsen. Locations of Mithril's diamond drilling described in this report shown by red circles. (Lyons, 2013).

A single instance of exploration pertaining to the currently identified IOCG mineralisation was conducted in 1970 (albeit before recognition of IOCG as a distinct type of mineralisation). A geologist from Geopeko Ltd inspected some copper occurrences in quartz-hematite veins on a prospector's lease (CR1971-0066). He noted the presence of strong and widespread epidote alteration, boxworks with silica and hematite, disseminated chalcopyrite, "quartzose bodies" some 30 m to 60 m wide, striking northwest, and fault-controlled alteration and mineralisation. The reported location ("4 miles south of Albarta Dam") is consistent with this being at, or near, the Bigglesworth prospect (Lyons, 2013).

Geologically mapping was carried out throughout the lease tenure. Initially, the mapping was to check the mafic units previously identified by the NTGS and identify any unrecorded mafic outcrops. In the year to 2011, the geological mapping was conducted on EL25643 and identified extensive hematite – silica altered granites with copper assays up to 500 ppm. After continuing to conduct geological mapping and rock chip sampling in the year to 2012, a number of areas were discovered with primary and secondary copper mineralisation. These areas were named Austin, El

Gordo, Nigel and Mini Me prospect areas, as shown in Figure 20. A description of the prospect area will follow. The mineralisation is associated with intense silica +- hematite+-chlorite+-fluorite alteration, which is consistent with there being an IOCG system. Geological mapping and sampling was continued at the Mini Me West Prospect. This mapping is shown on Figure 9. A series of thin copper bearing quartz veins were mapped in a package of granitic and amphibolite rock types. A 20 x 20 m zone of intense silica hematite + secondary copper mineralisation is coincident with the peak chargeable feature.

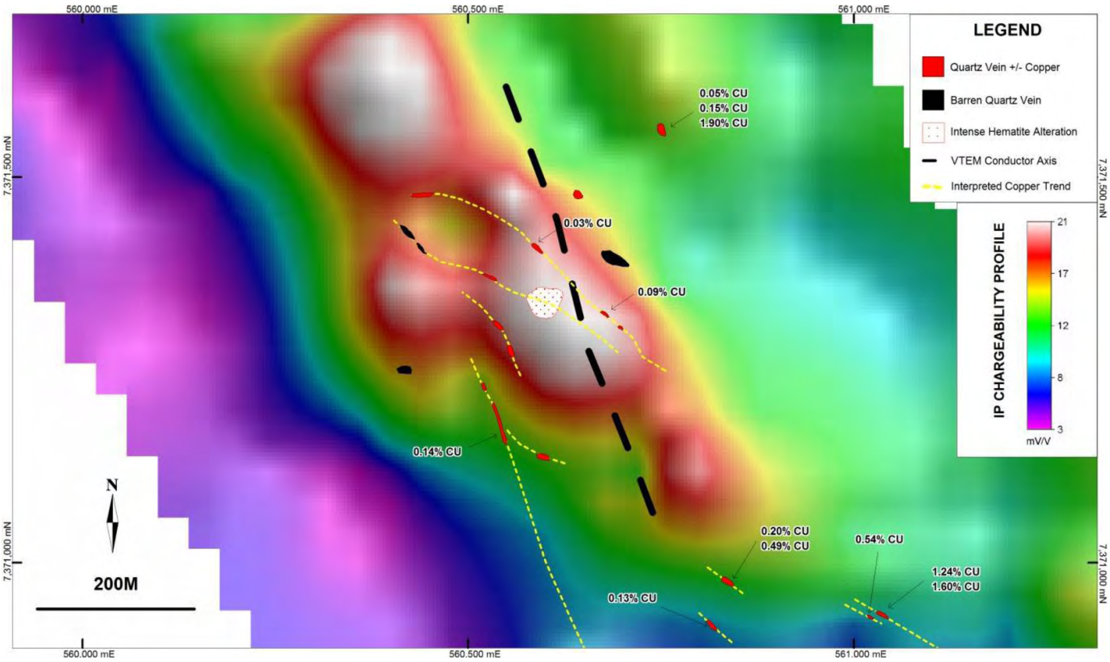


Figure 9: Chargeability anomaly with geological mapping.

Over the exploration tenure, 585 rock chip samples were taken. During 2008 to 2009, 61 rock chip samples collected, the results of which provided encouraging nickel, copper and cobalt assays**.** Seven rock chip samples were taken over the year to 2010. 133 rock chip samples were collected between 2010 and 2011, concentrating around identified areas of hematite-altered granites. Elevated nickel, copper, gold results were returned, the locations are in Figure 10.

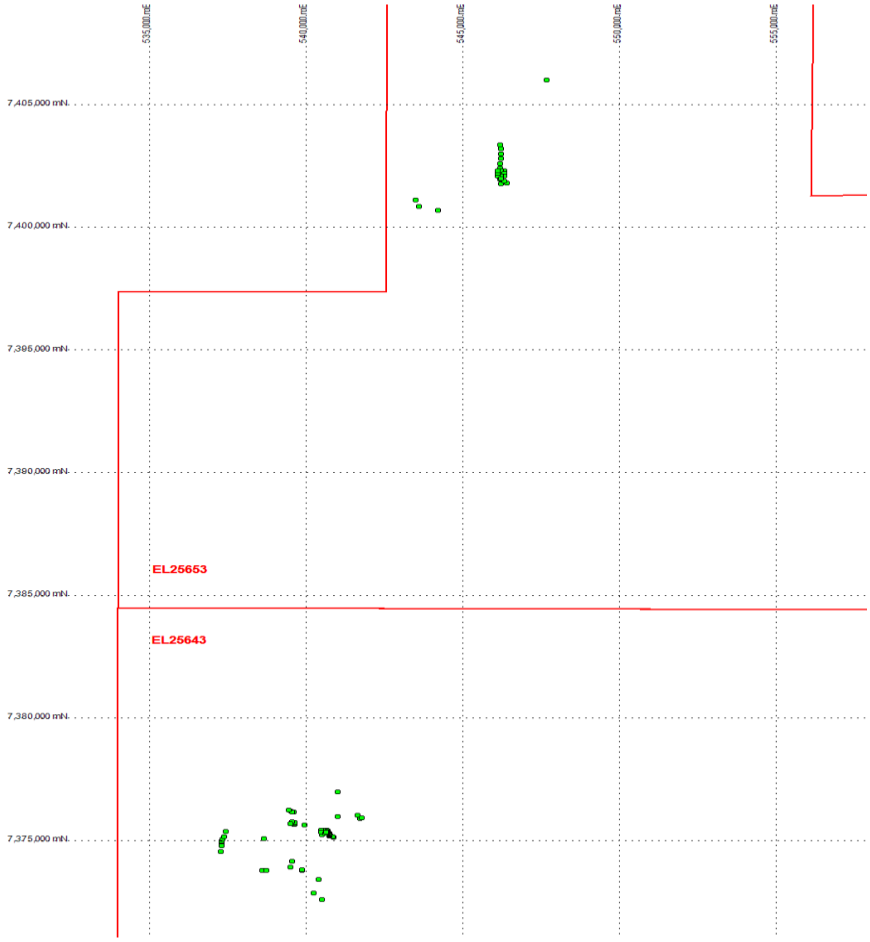


Figure 10. Location of rock chip samples. (Taken from Annual Technical report 2011, CR2011- 0546).

Work completed between 2011 and 2012 included 308 rock chip samples. The recognition of multiple outcropping occurrences of copper – gold mineralisation and alteration over a broad area at Illogwa reinforces the potential of the area to host a large structurally controlled iron-oxide-copper-gold mineral system. During the year 2012 to 2013, geological mapping and sampling was conducted at the Mini Me West Prospect. This mapping overlapped with the 10x backround chargeability features detected in the IP survey (Figure 9). A series of thin copper bearing quartz veins were mapped in a package of granitic and amphibolite rock types. A 20 x 20 m zone of intense silica hematite + secondary copper mineralisation is coincident with the peak chargeable feature.

During 2008 – 2009, four soil samples and five stream sediment samples were collected, the results less encouraging. The soil sampling was conducted at the same time as the gravity survey in 2011. A number of weak copper and gold anomalies were found, the highest values were 127ppm Copper and 8ppb gold. The sample locations are in Figure 11 below.

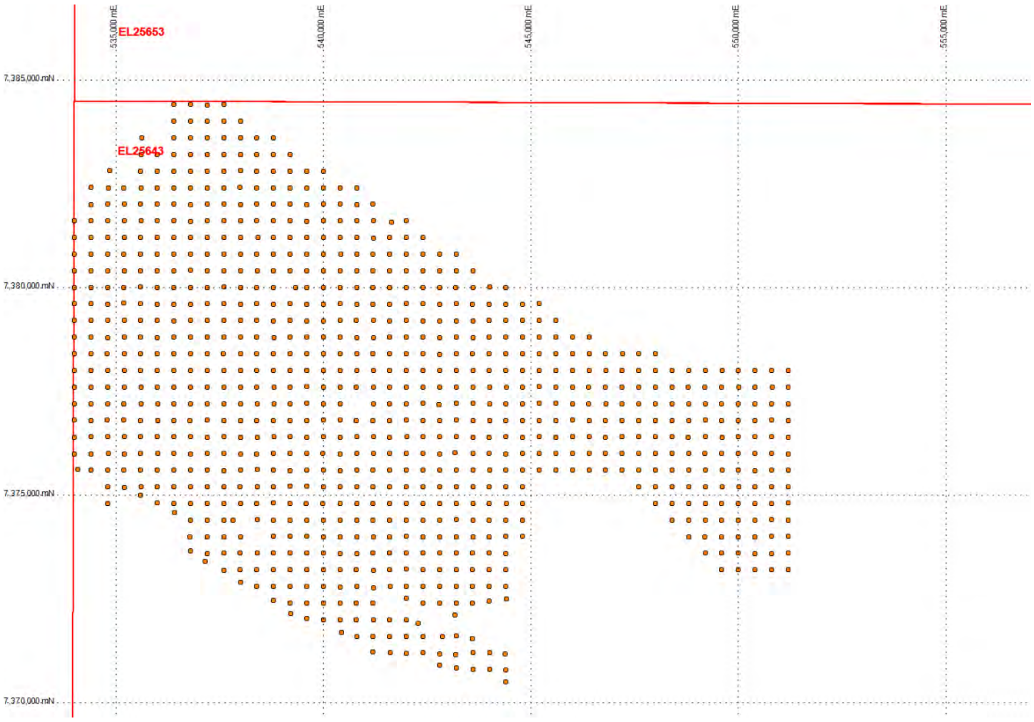


Figure 11. Soil sample locations. (Taken from Annual Technical report 2011, CR2011- 0546).

Soil sampling was completed over areas of outcrop and subcrop in EL25643. The samples were taken at a depth of about 20 cm below surface. The Austin Prospect was discovered this way. Figure 12 shows all the soil and rock chip samples taken.

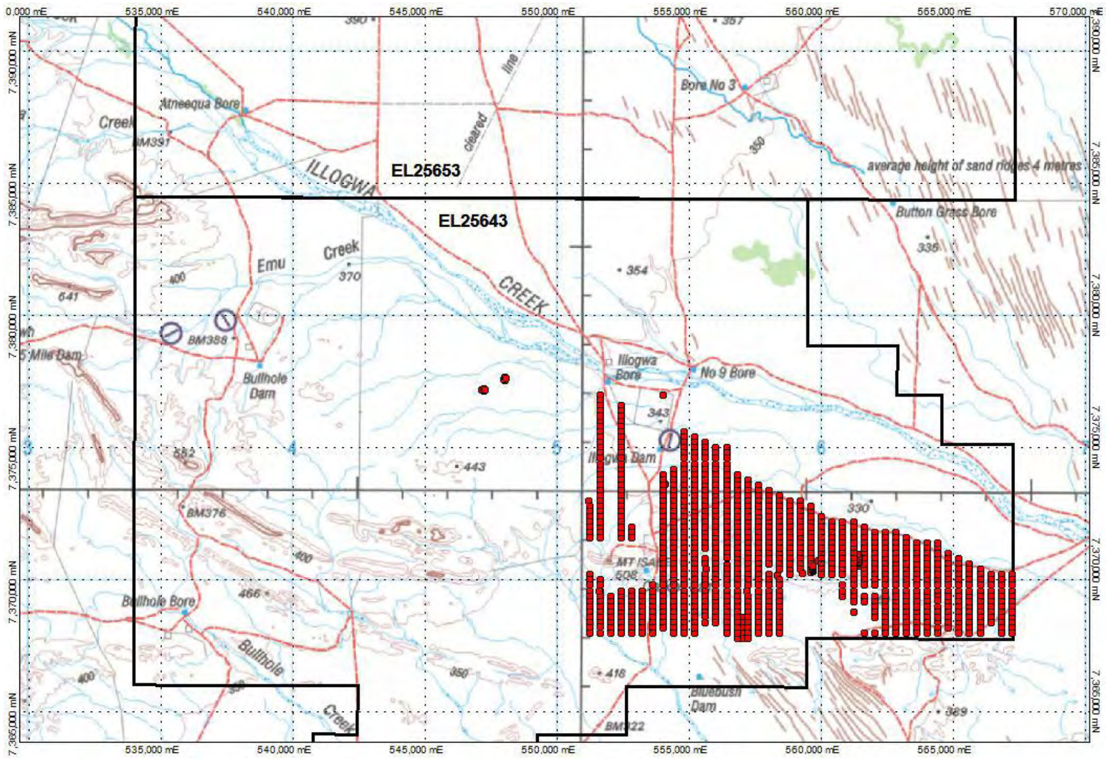


Figure 12: 2012 soil sample locations on EL 25643 and EL 25653. (Lockhead A and McKinnon-Matthews J, 2012).

An additional 612 soil samples were taken over the eastern portion of EL 25643 (Figure 13) between 2012 and 2013. The majority of these samples were infill samples over areas of interest. A new prospect called Ivana was discovered after following up a 240ppm Cu anomaly. Ivana sits on a major ESE-WNW trending structure, parallel to the Mini Me Structure and consists of chert and hematite alteration in granite, on a small sub-cropping rise.

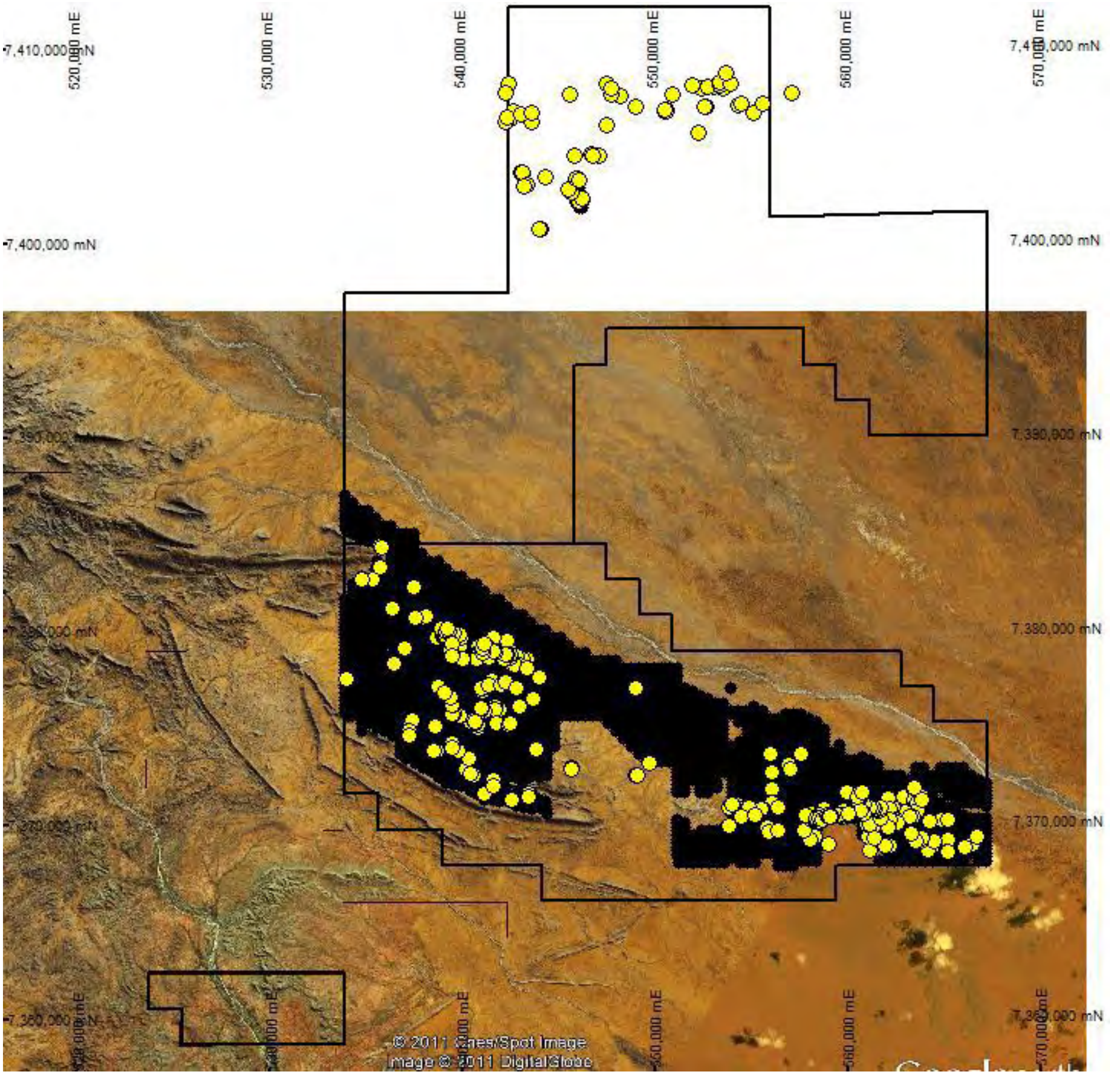


Figure 13: Combined surface sample assay data (yellow dots) and soil samples (black dots), 2013. (Lockhead A and McKinnon-Matthews J, 2015).

Soil sampling proved to be an important tool in locating prospective areas.

During 2008 – 2009, an airborne geophysical Versatile Time-domain Electromagnetic (VTEM) survey was carried out as it can detect significant accumulations of metal rich sulphide mineralisation at shallow depths. It was used to identify potential sampling and drilling targets. Then over the year to 2010, another VTEM was conducted covering another 24km^2. This survey identified a number of gabbroic intrusions, which contained nickel copper sulphides. The other targets identified by the VTEM had ground electromagnetic surveys over them, which showed as significant basement conductors. These were drill tested. In the 2011 exploration year a third VTEM survey was flown for 110 line km of data and weak conductors were identified as seen in figure 14.

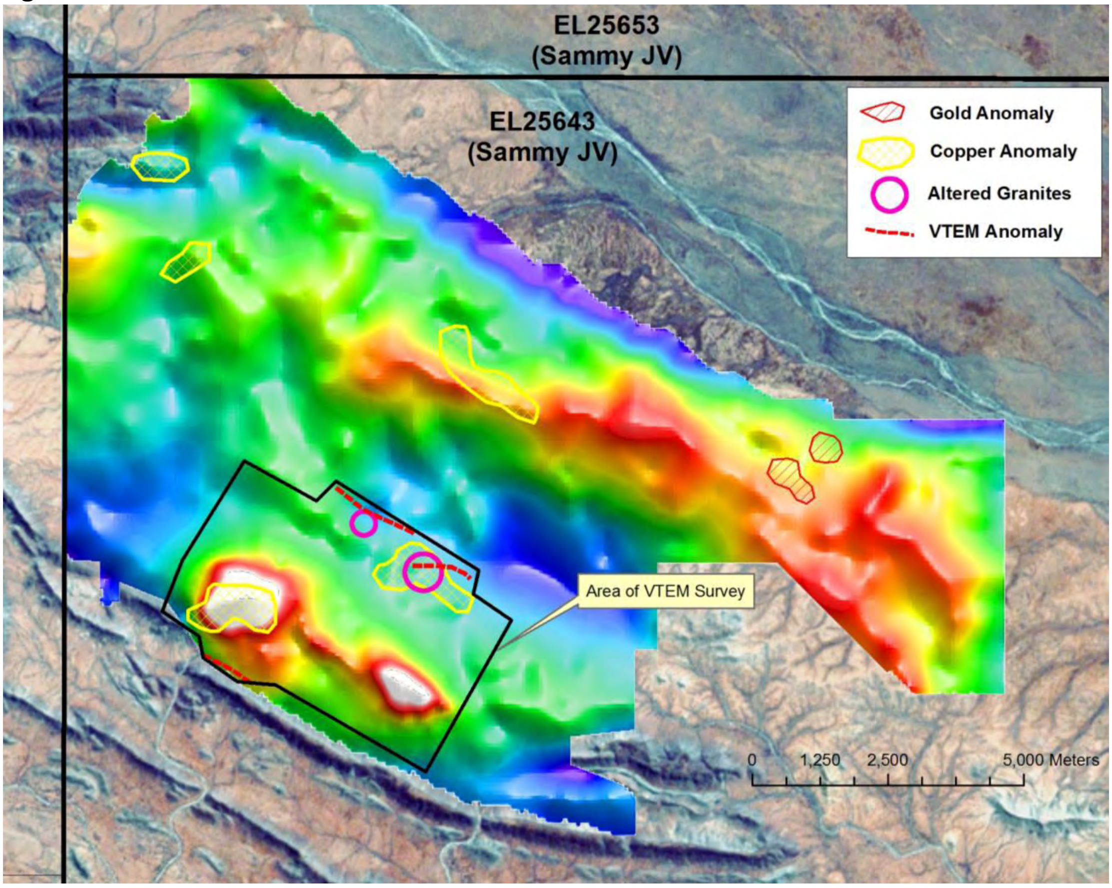


Figure 14. Location of VTEM survey area on Gravity and LANDSAT image. (Taken from Annual Technical report 2011, CR2011- 0546).

During October 2012 a (VTEM) survey was flown over the Illogwa IOCG corridor as seen in Figure 15. Flight lines were spaced at 300 m with infill 150 m spaced lines over selected prospect areas. The interpretation of the survey is that the northern region of the survey is dominated by a large palaeochannel / conductive regolith response. The central part of the survey area is a dominantly resistive corridor that contains the known mineralisation and the most prospective VTEM targets. The southern part of the survey area is dominated by broad, weak, large-strike length anomalies and determined to be of no particular exploration interest. They generally show asymmetry and thus a dip direction, but are not defined well enough to accurately map the lateral position of the top of the source. In many cases the profiles are complex, with the responses of two or more closely spaced conductors blending together at mid-times, so these can only be mapped based on their early-time peaks.

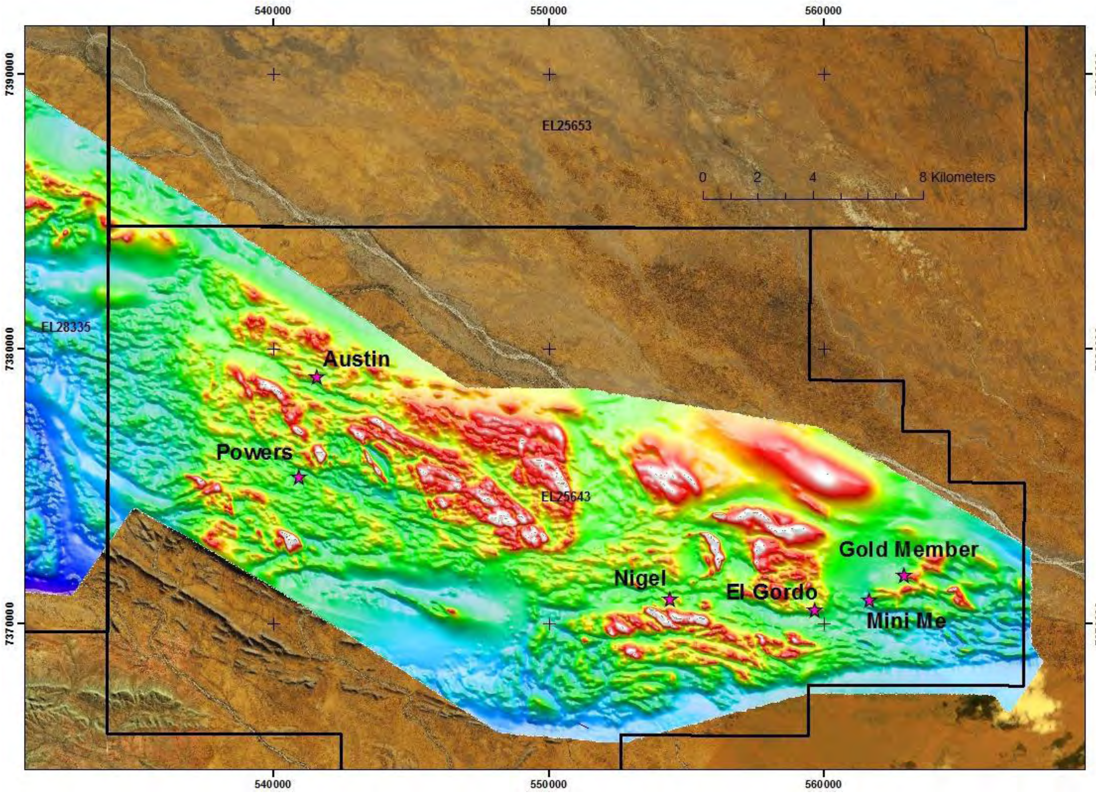


Figure 15 : VTEM image showing Prospects on major structural features. (Lockhead A and McKinnon-Matthews J, 2015).

In the year to 2011, a gravity and soil sampling identified coincident gravity and copper anomalies. The ground gravity survey was conducted over EL25643 and located several anomalies, which were to be followed up. The soil sampling was conducted at the same time as the gravity survey. A number of weak copper and gold anomalies were found, the highest values were 127ppm Copper and 8ppb gold.

The IP survey was commissioned after the discovery of the Austin Copper Prospect, to examine its prospective structures. An IP anomaly was located at Austin (Figure16), which coincided with an outcrop of copper mineralisation. Significant IP anomalies were located at Austin with one coincident with outcropping copper mineralisation.

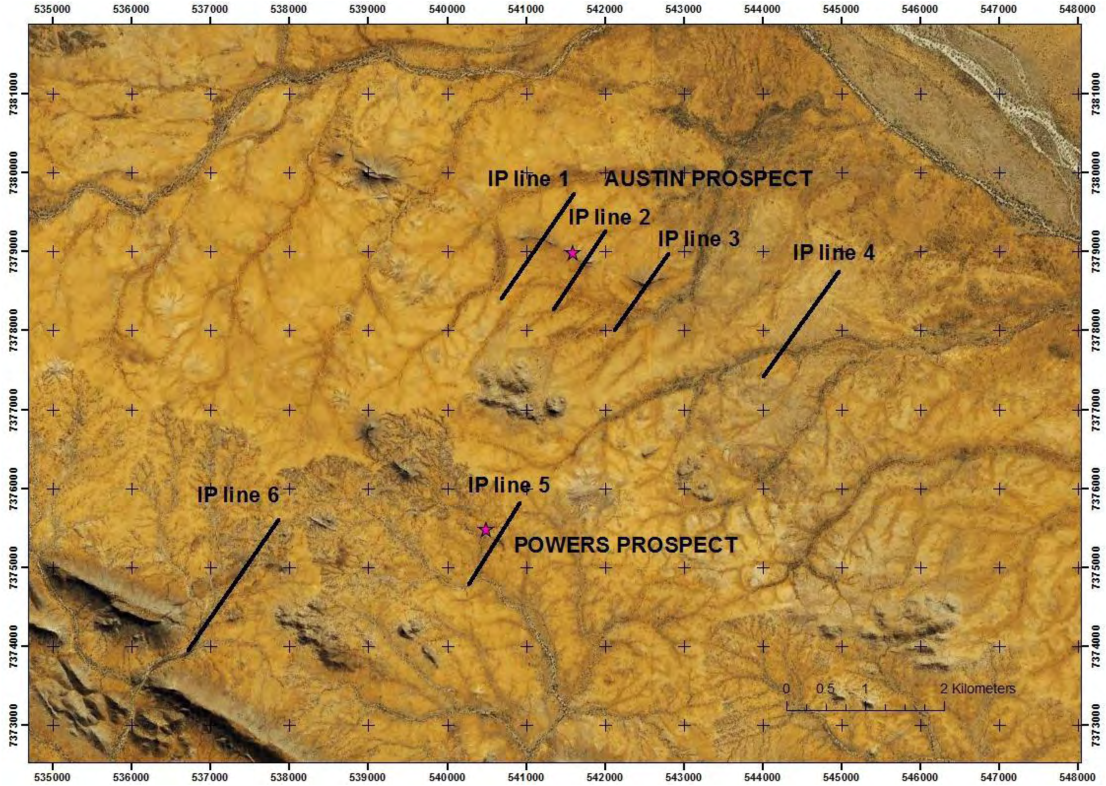


Figure 16: Location of Dipole – Dipole IP lines on airphoto image. (Lockhead A and McKinnon-Matthews J, 2011).

The drilling over the exploration licences consisted of aircore, RC and diamond drilling. In total, there were 226 Aircore holes for 3334.5 m (AC03_001 to AC03_005, AC04_001 to AC04_007, AC05_001 to AC05_021, AC07_001 to AC07_007, AC10_001 to AC10_013, AC11_001 to AC11_009, 2011_AC series). There were 36 RC holes for 3,230 m (2011_RC_006, 2011_RC_007, MIRC_010 to MIRC_013, SARC-001, SARC-002, SARC-003, SARC-004, SARC-005, MIRC_001 to MIRC_011, and MIRC-018 to MIRC-031) and 4 Diamond holes for 790.3 m (APDD001, APDD002, APDD003, MMDD001).

The aircore drilling program during 2011 was to follow up on regional geophysical and geochemical targets previously identified on EL25653 and detected a number of weak base metal and gold anomalies.

The aircore drilling program was follow up on regional geophysical and geochemical targets previously identified on EL25653 and detected a number of weak base metal and gold anomalies. The RC drillholes provided no significant results, leaving the conductors unexplained. Drillhole locations are shown in Figure 17.

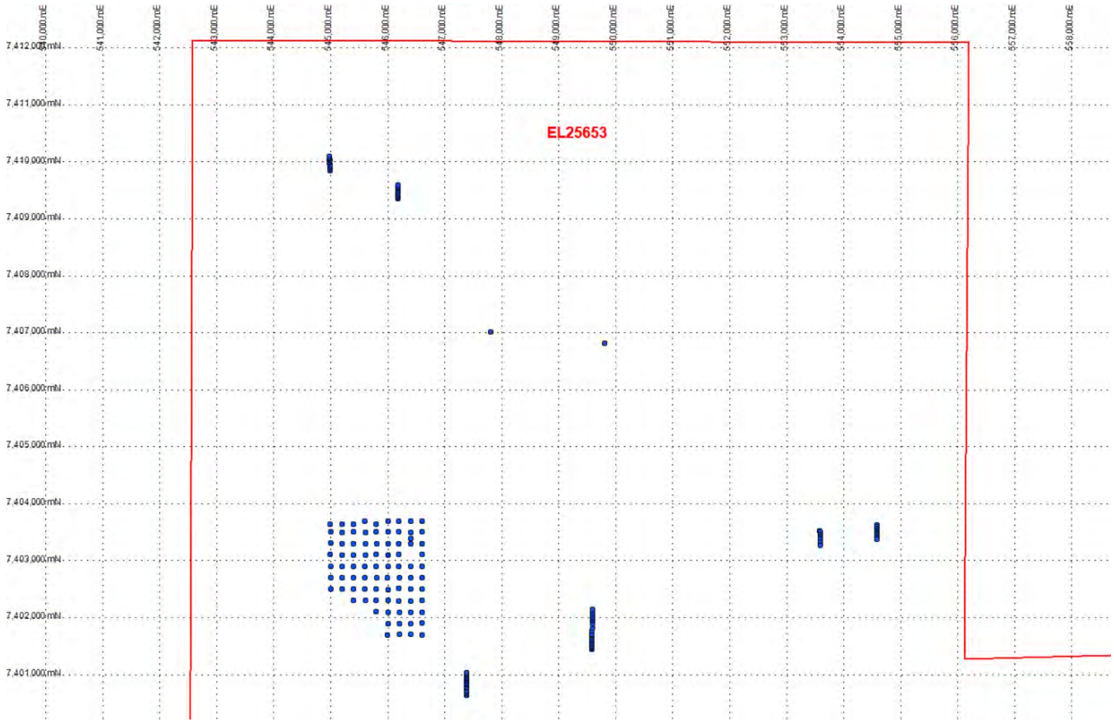


Figure 17. Drillhole locations. (Taken from Annual Technical report 2011, CR2011- 0546).

Over the year to 2010, five RC drill holes for a total of 536m. Two of the RC drillhole into conductors intersected weakly nickel, copper, PGE mineralised gabbros. The two RC percussion drillholes were also completed during 2010 – 2011 targeting offhole conductors at the Kevin Darling Prospect. No significant results were returned from these drillholes and the conductors are still unexplained.

The RC and aircore drilling programme in the 2011 – 2012 was designed to follow up on regional geophysical and geochemical targets from previous surveys. From the 73 drillholes, a number of weak base metal and gold anomalies were detected, which will be followed up later. Figure 18 shows all the drillhole locations.

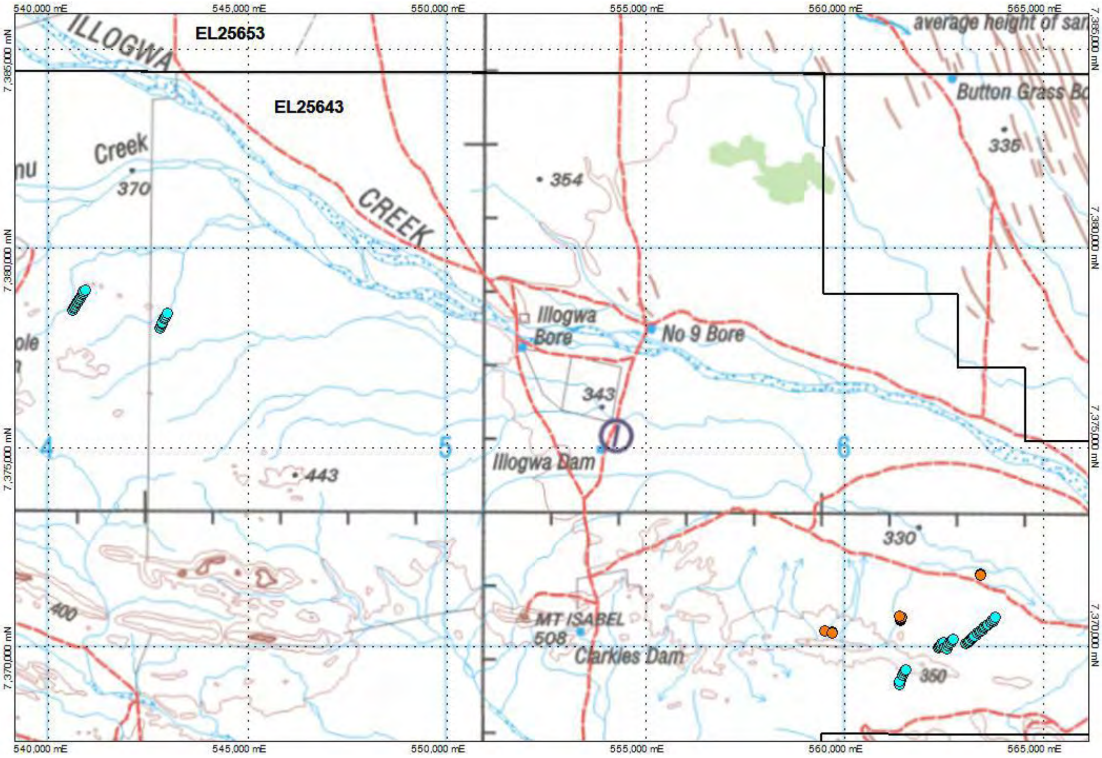


Figure 18: Reverse circulation (orange) and aircore (light blue) drillhole locations. (Lockhead A and McKinnon-Matthews J, 2015).

14 RC drill holes were completed in the eastern sector of the Illogwa IOCG Belt during 2013 and 2014 for a total of 1619 m (Figure 19). No significant base metal anomalism detected in any of the drillholes.

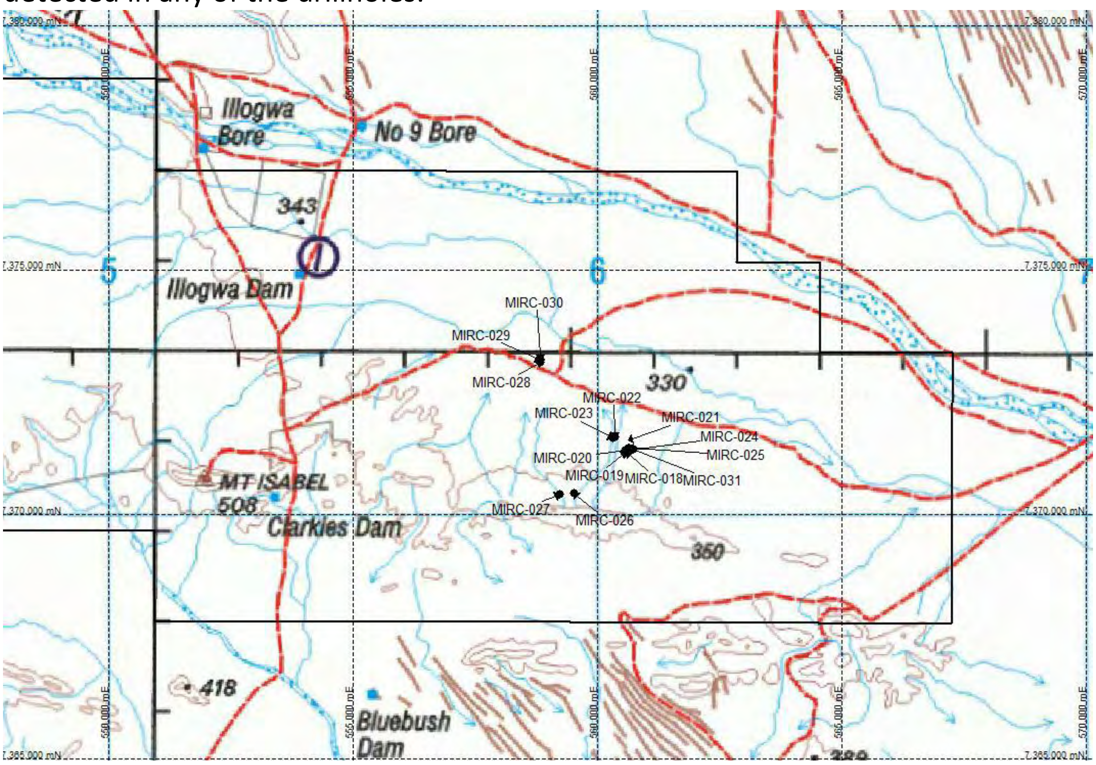


Figure 19: Location of 2013 RC drill collars, over 250K topography and tenement (black border). (Lockhead A and McKinnon-Matthews J, 2015).

Four diamond drillholes for 790.5 m were drilled, during 2012 to 2013. The target of APDD001 was an IP anomaly and surface quartz hematite pyrite alteration at Austin. There were large sections with quartz, hematite and magnetite veins with barren pyrite mineralisation. The pyrite mineralisation was beneath the interpreted chargeability anomaly. The IP anomaly was not determined.
APDD002 targeted an IP anomaly beneath surface copper mineralisation in an intensely hematite-quartz-carbonate altered shear zone at Austin. There were two intersections of significant Cu mineralisation, these being 12 m @ 1726ppm Cu from 56 m, with a maximum value of 6470ppm Cu (65-66 m) and 5 m @ 1706ppm Cu from 15 m, with a maximum value of 5720ppm Cu (18-18.7 m) respectively. The intersection correlates with a spike in MAG sus values, suggesting a possible magnetic response to mineralisation.
APDD003 also targeted an IP anomaly at Austin. No significant mineralisation was intersected and the IP anomaly was unexplained. The IP anomaly is proximal to a fence line and is assumed cultural.
The target of MMDD001 was a down dip extension of copper bearing veins at the Mini Me Prospect. No significant mineralisation was interested at depth. The best intercepts being 0.6 m @ 814ppm Cu from 59.2 m and 4 m @ 801ppm Cu from 21 m.

After continuing to conduct geological mapping and rock chip sampling, a number of areas were discovered with primary and secondary copper mineralisation. These areas were named Austin, El Gordo, Nigel and Mini Me prospect areas, as shown in Figure 20. The mineralisation is associated with intense silica +-hematite+-chlorite+-fluorite alteration, which is consistent with there being an IOCG system.

At **Austin** intense hematite and silica alteration has been mapped at surface for over 2km of strike and secondary copper mineralisation has been identified at a number of locations. Discovery was made by following up anomalous soil samples. It contains carbonate veining and the copper mineralisation is in intensely hematite-altered granite. Rock chip samples taken over IP anomalies have given copper values up to 0.85%.

At **Mini Me,** geological mapping has located outcropping mineralisation and alteration sporadically over 2,000 metres strike length with widths ranging from 2 to 50 metres. Significantly, veinlets (up to 15 centimetres wide) of primary copper sulphide mineralisation (chalcopyrite) has been observed at a number of locations with rock chip sampling of the mineralisation returning values ranging from 0.13% to **7.8% copper** and 0.01 g/t to **1.4 g/t gold**.

Mini Me West is 800m long and sits over a greater than 10x background IP chargeability anomaly. Rock chip samples returned values of up to 1.9% copper.

At **El Gordo**, was rediscovered by tracking gossanous fragments upstream. There is evidence of old unrecorded workings. Its outcropping mineralisation and alteration has been previously identified sporadically over 800 metres strike length with widths ranging from 2 to 10 metres. Rock chip sampling of mineralised surface outcrops has returned values ranging from 0.7% to 12.6% copper, 0.1g/t to 1.0g/t gold and 1.6g/t to 12.5g/t silver.

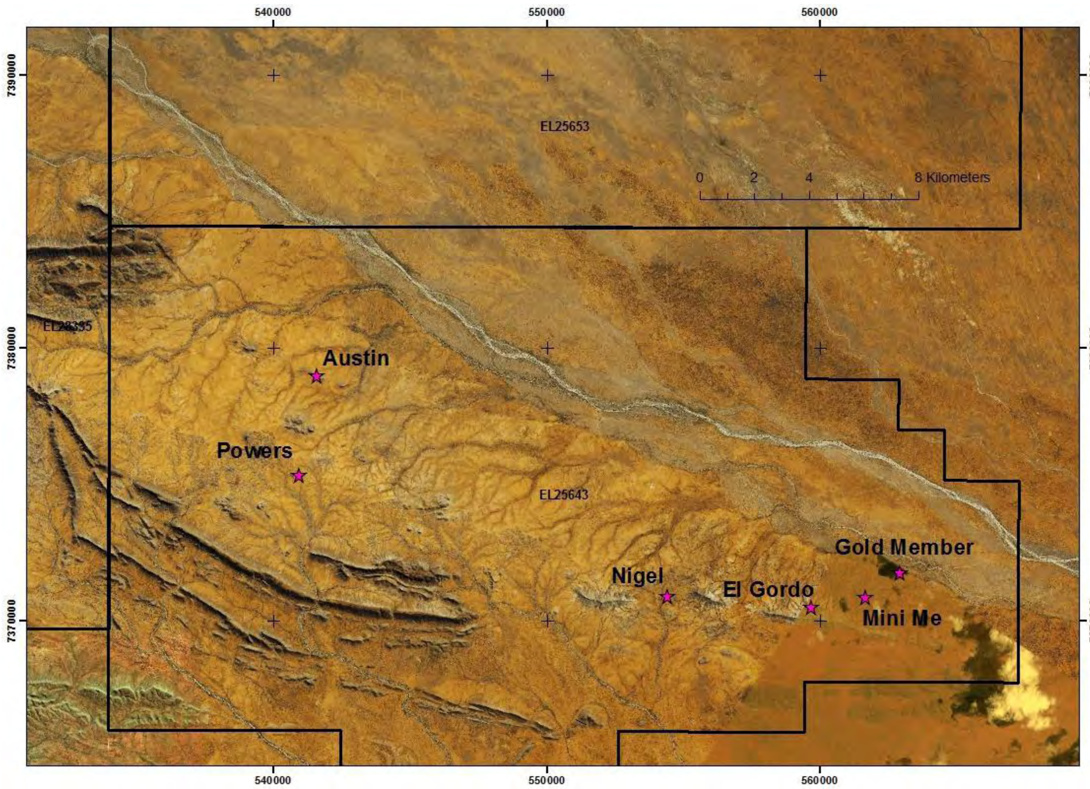


Figure 20. Prospect areas over an aerial photo. (Lockhead A and McKinnon-Matthews J, 2012).

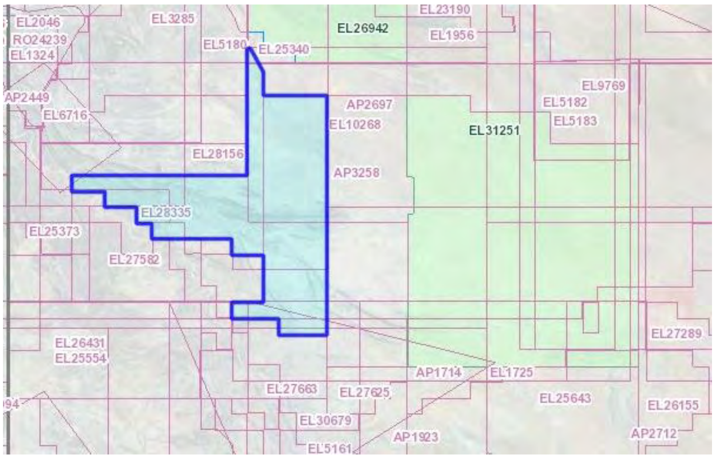
At **Nigel**, outcropping copper mineralisation primarily associated with intense silica alteration has returned values of 1.7% copper from grab samples.

At **Powers** although no copper mineralisation has been identified (Max Cu in rockchips ~500ppm) there is significant hematite altered granites in the area mapped sporadically over 1km of strike. There is also fluorite evident here. The recognition of multiple outcropping occurrences of copper – gold mineralisation and alteration over a broad area at Illogwa reinforces the potential of the area to host a large structurally controlled iron-oxide-copper-gold mineral system.

All Rehabilitation was finalised on the project during September 2014.

No other field work was completed over the project and following a complete review of the extensive data collected over the project by Mithril, they conclude that no significant ready to drill targets could be identified. It was decided to relinquish the tenements in full.

EL28335



This is a map showing the location of EL28335 in comparison to the current EL31251.

EL28335 is sits on the western edge of ELs 25643 and 25653. EL 28335 forms part of the broader Illogwa Project whereby Iron-Oxide-Cooper-Gold style mineralisation has been mapped over 40 km in strike, covering both EL 28335 and the adjoining EL 25643 tenement.

Mithril Resources Limited was granted exploration license EL 28335 for a six year period due to expire 3 July 2017.

The tenement area contains approximately 50% outcrop/subcrop and 50% Cainozoic cover from colluvial sand and gravel (Figure 21). The area has been subjected to intense deformation and metamorphism and is considered prospective for; Ni-Cu-PGE mineralisation in layered mafic and ultramafic intrusions, "Basil type" Cu-Co semi-massive sulphides, Vein-style REE-Th mineralisation and IOCG style mineralisation.

After being granted in July 2011, exploration was conducted for 2 years before Mithril conducted their review and walked away from this area.

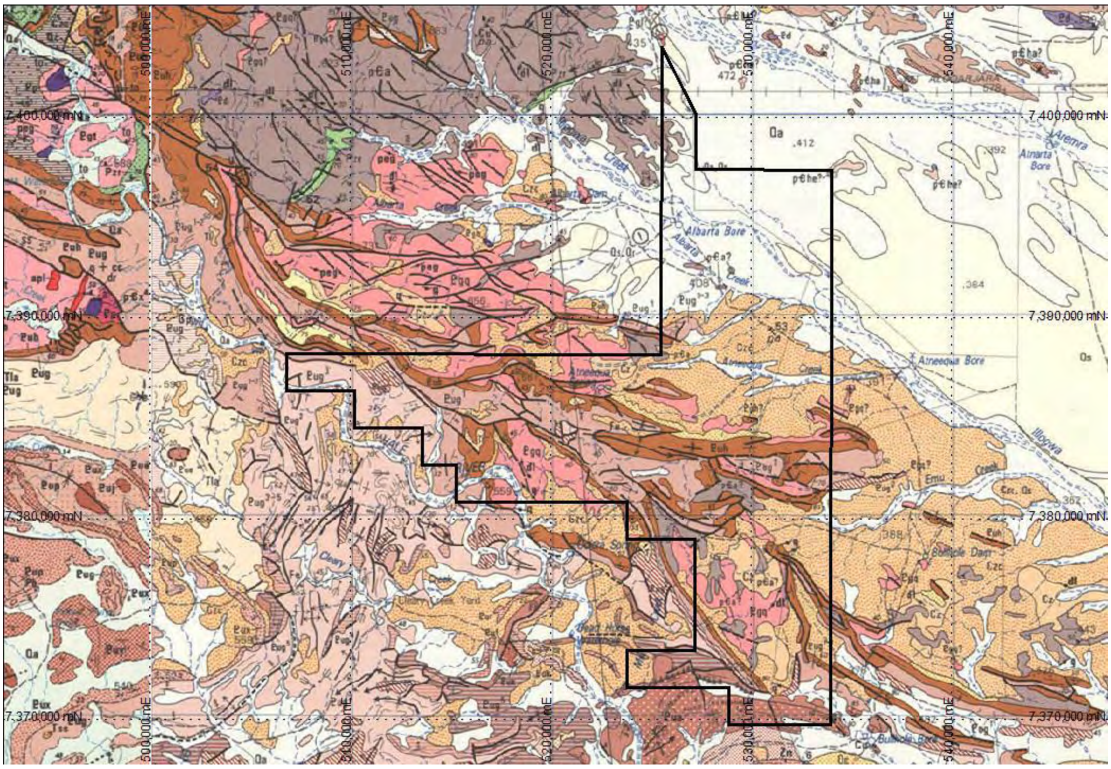


Figure 21: Geology of EL 28335 (from published 250k geology map sheet) (Lockheed and McKinnon-Matthews, 2015).

During the year to 2012, the work consisted of a previous work compilation, 140 rock chip samples, 416 soil samples, a ground gravity survey, an airborne magnetic survey. From the geophysical surveys anomalies were detected that will require further mapping and sampling.

During mapping and sampling campaigns conducted in late 2011 and early 2012, 140 surface samples (rock chips) were collected (Figure 22). All location and assay data are included in Appendices 1 and 2. Elevated copper (>1%Cu) and gold (to 0.2g/tAu) were found outcropping in intensely hematite and silica altered outcrops at a number of locations.

Work completed during the year to 2012 identified significant geochemical and geophysical anomalies from both the gravity and magnetic surveys, which need to be followed up with geological field mapping and sampling.

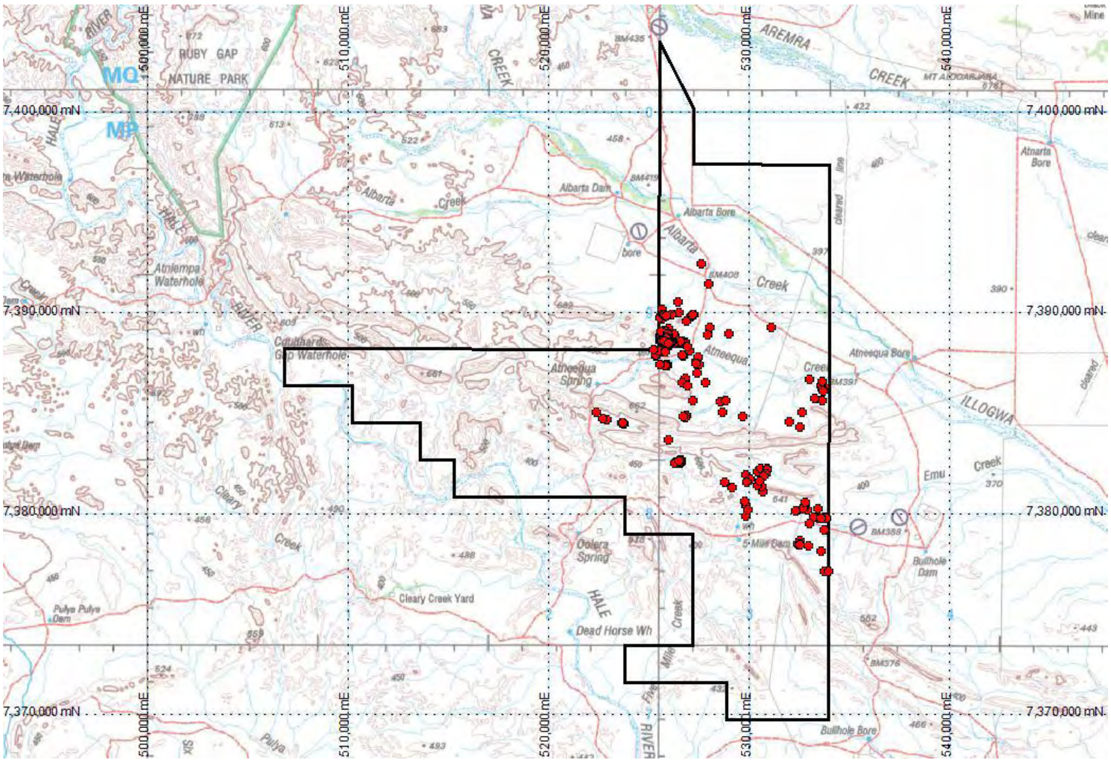


Figure 22: Surface sample locations for 2012. (Lockheed, 2012).

A ground gravity survey was completed where soil samples were collected at each gravity station. Locations of gravity stations/soil samples are shown in Figure 23.

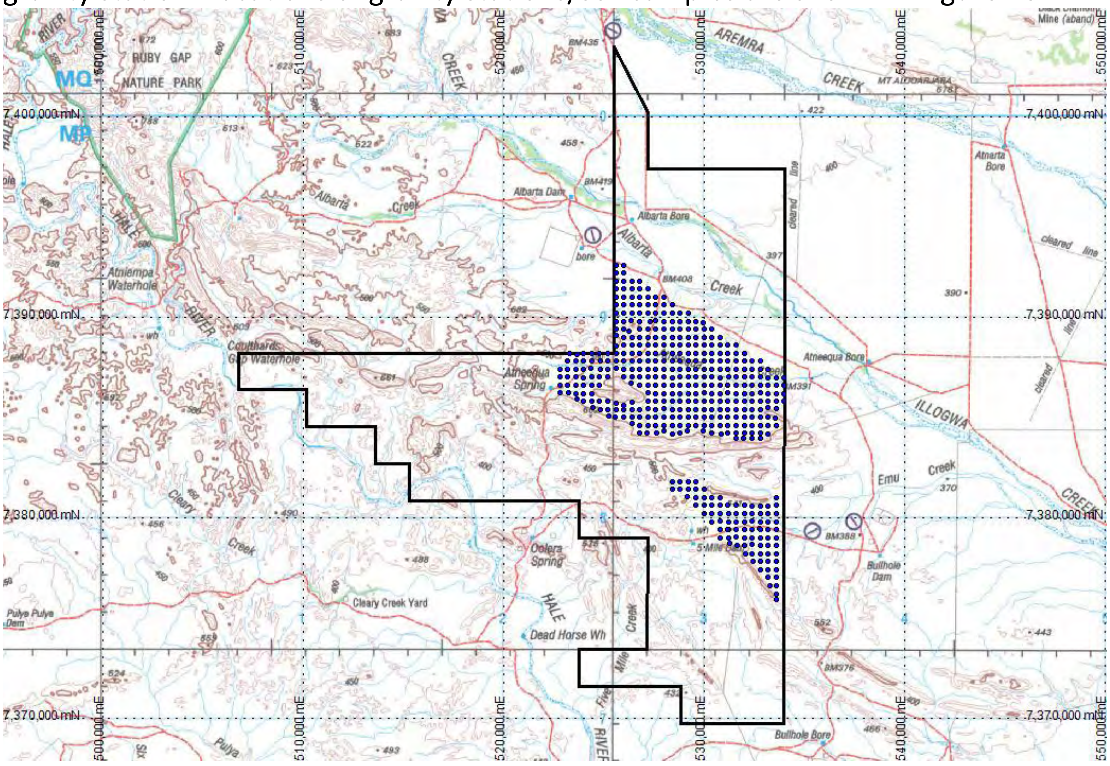


Figure 23: Soil sample locations for the year to 2012 (Lockheed, 2012).

An airborne magnetic survey was undertaken during the year to 2012. An area of approximately 205 km2 of data was acquired from flight lines spaced 100 m. The survey identified a significant conductive body, striking northwest-southeast and is coincident with the anomaly observed from the gravity survey (Figure 24).

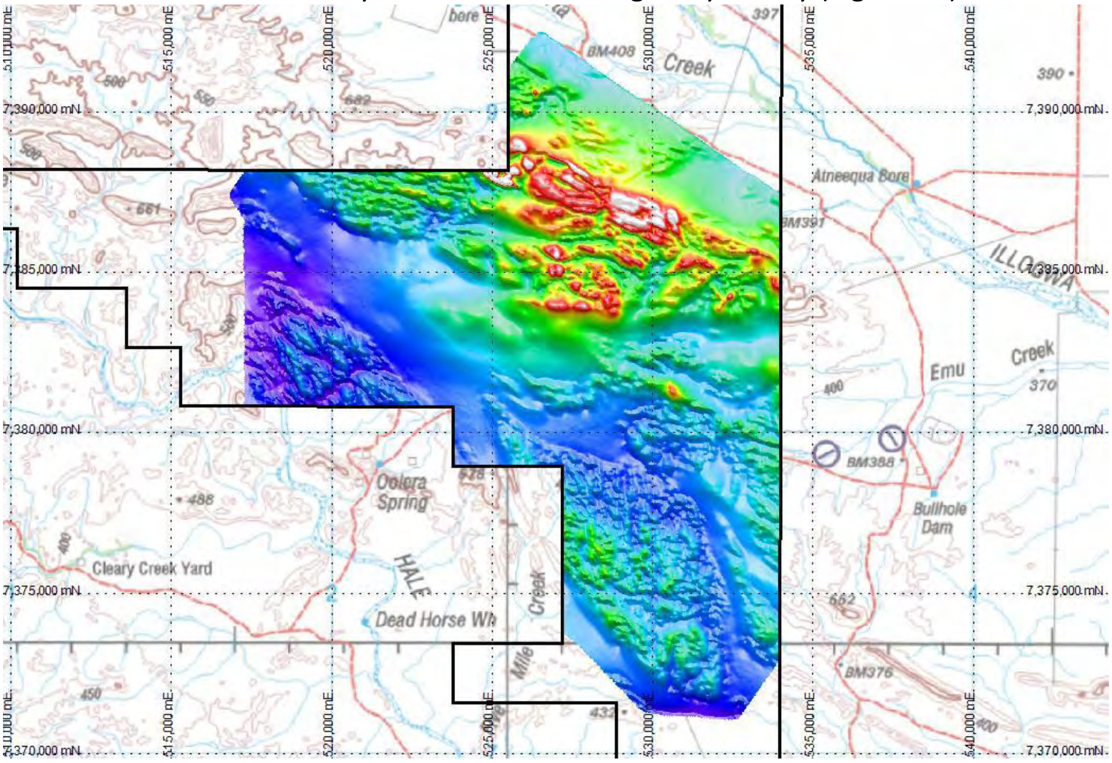


Figure 24: Airborne magnetic image (Lockheed, 2012).

During the year 2012 to 2013, exploration consisted of reconnaissance mapping and rock chip sampling, RC drilling, hand auger holes and a VTEM survey. The RC drilling produced no significant results. The hand auguring covered the main outcropping area of the Dixie prospect. The hole intersected barren granite or hematite altered granite but no significant results were returned. The VTEM survey formed part of a larger survey over EL25643 and detected no late-time conductors. The survey area was dominated by a broad palaeochannel/conductive regolith response.

Only rehabilitation occurred between 2013 and 2014.

During the 2014 to 2015 year, a review was conducted of all results obtained on the tenement over its life. As a result of this no significant walk up drill targets were identified and EL 28335 was relinquished in full on 22 June 2015, along with ELs 25643 and 25653.

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