Final Report

Exploration Permit for Minerals

EPM 18303 Emu Creek

Tenure Holder:	**Red Metal Limited**
Manager:	**Chinova Resources Cloncurry Mines Pty Ltd**
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Date:	**February 2017**

SUMMARY

Keywords

Reverse circulation (RC) drilling, diamond drilling, induced polarisation (IP) surveys, ground magnetic survey, ground gravity survey, downhole electromagnetic (DHEM) survey, downhole induced polarisation (DHIP) survey

Aim of Project

Exploration Permit for Minerals EPM 18303 Emu Creek was obtained to cover an area of anomalous magnetics identified in a review of regional airborne magnetic data over the Mount Isa Inlier. The magnetic features are interpreted to have potential for both iron-oxide-copper-gold (IOCG) mineralisation and sediment hosted Pb-Ag-Zn mineralisation. Deposit type examples include Osborne IOCG and Cannington (sediment hosted).

Object of Report

This final report documents the results of exploration on surrendered EPM 18303 conducted from 23 December 2010 to 22 December 2016.

Location

EPM 18303 is located approximately 136 km southeast of Cloncurry.

Tenure

EPM 18303 consists of two sub-blocks and was granted to Red Metal Limited on 23 December 2010.

Datum

Data are presented in GDA94 Map Grid of Australia Zone 54 datum.

Summary of Work

The work programs conducted on EPM 18303 are listed below.

- Ground magnetic survey in 2013 along 50 m spaced east-west lines
- Ground gravity survey in 2013 on a grid spacing of 100 x 100 m
- 3D induced polarisation (IP) survey in 2014 covering an area of 4 km^2
- 2D IP survey in 2014 on one 2.6 km long line
- Downhole electromagnetic and IP surveys in ECD0001
- One RC-diamond hole (ECD0001) in October to November 2014
- Two RC holes (ECR0002 and ECR0003) in September 2015

Conclusions

Drilling has identified significant iron (magnetite) and sodic- calcic (albite and actinolite - pyroxene) altered mafic and granitic intrusive units that explain the large magnetic and gravity responses evident in the regional data sets. The alteration and apparent size of the alteration system observed at Emu Creek is encouraging for IOCG mineralisation, however there is a significant lack of copper and other metals generally associated with IOCG mineralisation. The assay results from ECD0001 and ECR0003 indicate

significant copper depletion of the host mafic protolith which suggests copper and other metals have been transported out of the magnetic alteration system.

The magnetite matrix breccia intersected in AND79 and ERC0002 could be a good host for mineralisation. However this unit is also relatively poor in copper. The system appears to have been short-lived with only one significant phase of fluid (magnetite) identified in the breccia matrix. Although the magnetic anomaly represents a significant iron oxide alteration system, there appears to be limited scope for iron oxide copper-gold mineralisation.

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1. INTRODUCTION

This final report documents the results of exploration on expired EPM 18303 conducted from the grant date of 23 December 2010 until 22 December 2016 when the tenement was allowed to expire.

On 27 September 2013 Chinova Resources Osborne Pty Ltd (CRO), formerly Inova (Osborne) Pty Ltd entered into a Farm-In Agreement with Red Metal Limited (Red Metal) for a number of tenements in the Osborne area including EPM 18303. CRO is the manager of the tenement and is a 100% owned subsidiary of Chinova Resources Pty Ltd.

2. LOCATION AND ACCESS

EPM 18303 is located approximately 136 km southeast of Cloncurry (EPM 18303 contained two sub-blocks within two blocks and was granted to Red Metal Limited on 23 December 2010 (Figure 2).

BIM	Block	Sub-blocks
Clon	1620	e
Clon	1621	a

Total = 2 sub-blocks

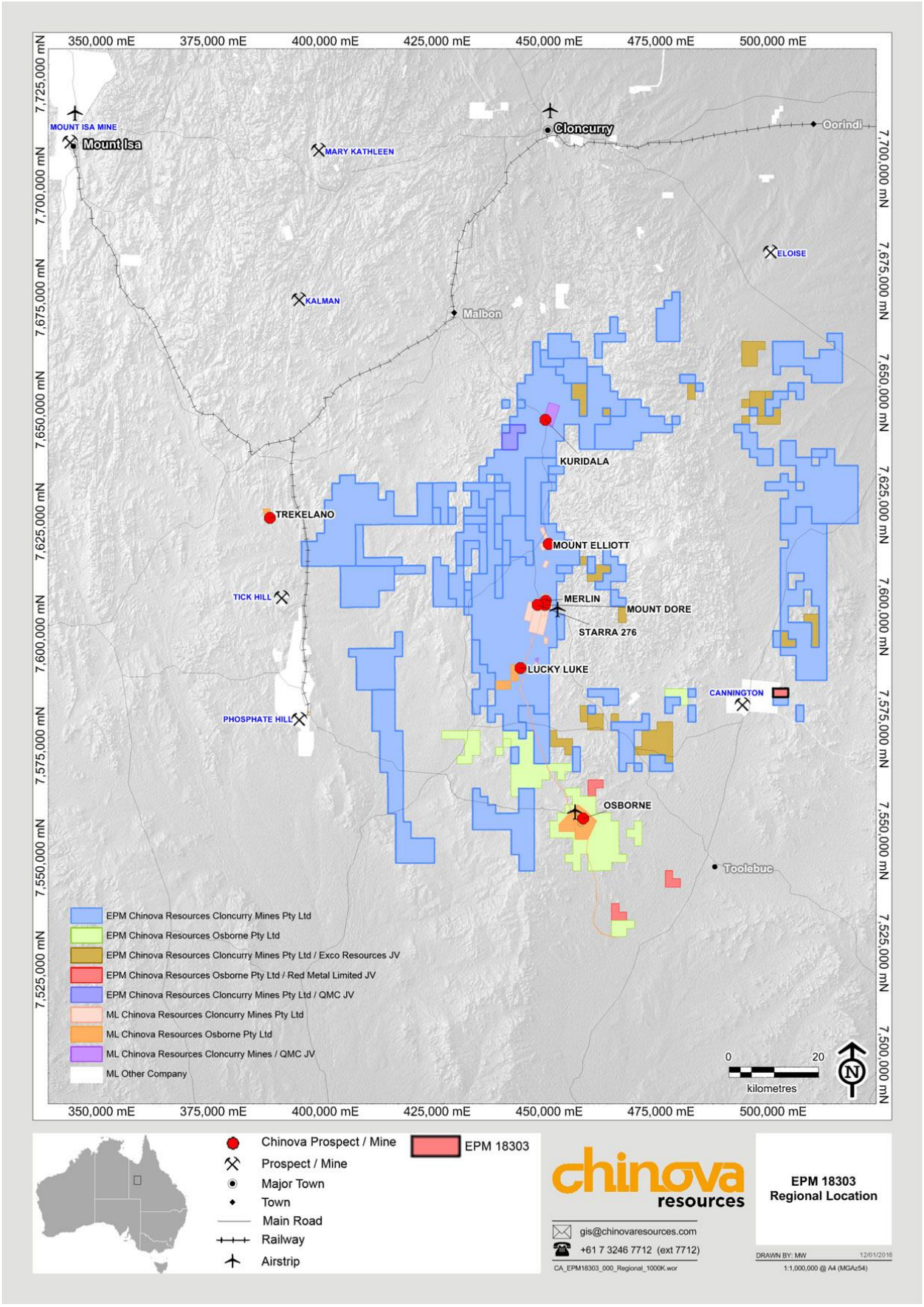
350,000 mE
375,000 mE
400,000 mE
425,000 mE
450,000 mE
475,000 mE
500,000 mE
7,725,000 mN
7,700,000 mN
7,675,000 mN
7,650,000 mN
7,625,000 mN
7,600,000 mN
7,575,000 mN
7,550,000 mN
7,525,000 mN
7,500,000 mN
MOUNT ISA MINE
Mount Isa
MARY KATHLEEN
Cloncurry
Oorindi
ELOISE
KALMAN
Malbon
KURIDALA
TREKELANO
MOUNT ELLIOTT
TICK HILL
MERLIN
MOUNT DORE
STARRA 276
LUCKY LUKE
CANNINGTON
PHOSPHATE HILL
OSBORNE
Toolebuc
EPM Chinova Resources Cloncurry Mines Pty Ltd
EPM Chinova Resources Osborne Pty Ltd
EPM Chinova Resources Cloncurry Mines Pty Ltd / Exco Resources JV
EPM Chinova Resources Osborne Pty Ltd / Red Metal Limited JV
EPM Chinova Resources Cloncurry Mines Pty Ltd / QMC JV
ML Chinova Resources Cloncurry Mines Pty Ltd
ML Chinova Resources Osborne Pty Ltd
ML Chinova Resources Cloncurry Mines / QMC JV
ML Other Company
0
20
kilometres
N
Chinova Prospect / Mine
Prospect / Mine
Major Town
Town
Main Road
Railway
Airstrip
EPM 18303
chinova resources
gis@chinovaresources.com
+61 7 3246 7712 (ext 7712)
CA_EPM18303_000_Regional_1000K.wor
EPM 18303
Regional Location
DRAWN BY: MW
12/01/2016
1:1,000,000 @ A4 (MGAz54)

Figure 1).

The tenement area is characterised by gently undulating to flat black soil plain incised by intermittent ephemeral creeks. The sub-blocks of EPM 18303 lie within the Trepell and El Rita Pastoral Leases.

Most of the western sub-block of EPM 18303 is overlapped by BHP Billiton's Cannington Mining Lease (Figure 2). This leaves only approximately 0.46 km² out of a total of 3.18 km², or 14% of the sub-block available for exploration.

Vehicle access to the tenement is by the sealed road from Cloncurry to McKinlay then via Toolebuc-McKinlay Rd to Cannington. EPM 18303 can be accessed using station tracks from the Cannington mine area. Road access is good from March to December with intermittent closure due to flooding and heavy rains possible from January to March. Existing tracks can be used by four wheel drive vehicles for access within the tenement.

A Conduct and Compensation Agreement with the landholder was finalised in October 2014.

3. TENURE

EPM 18303 contained two sub-blocks within two blocks and was granted to Red Metal Limited on 23 December 2010 (Figure 2).

BIM	Block	Sub-blocks
Clon	1620	e
Clon	1621	a

Total = 2 sub-blocks

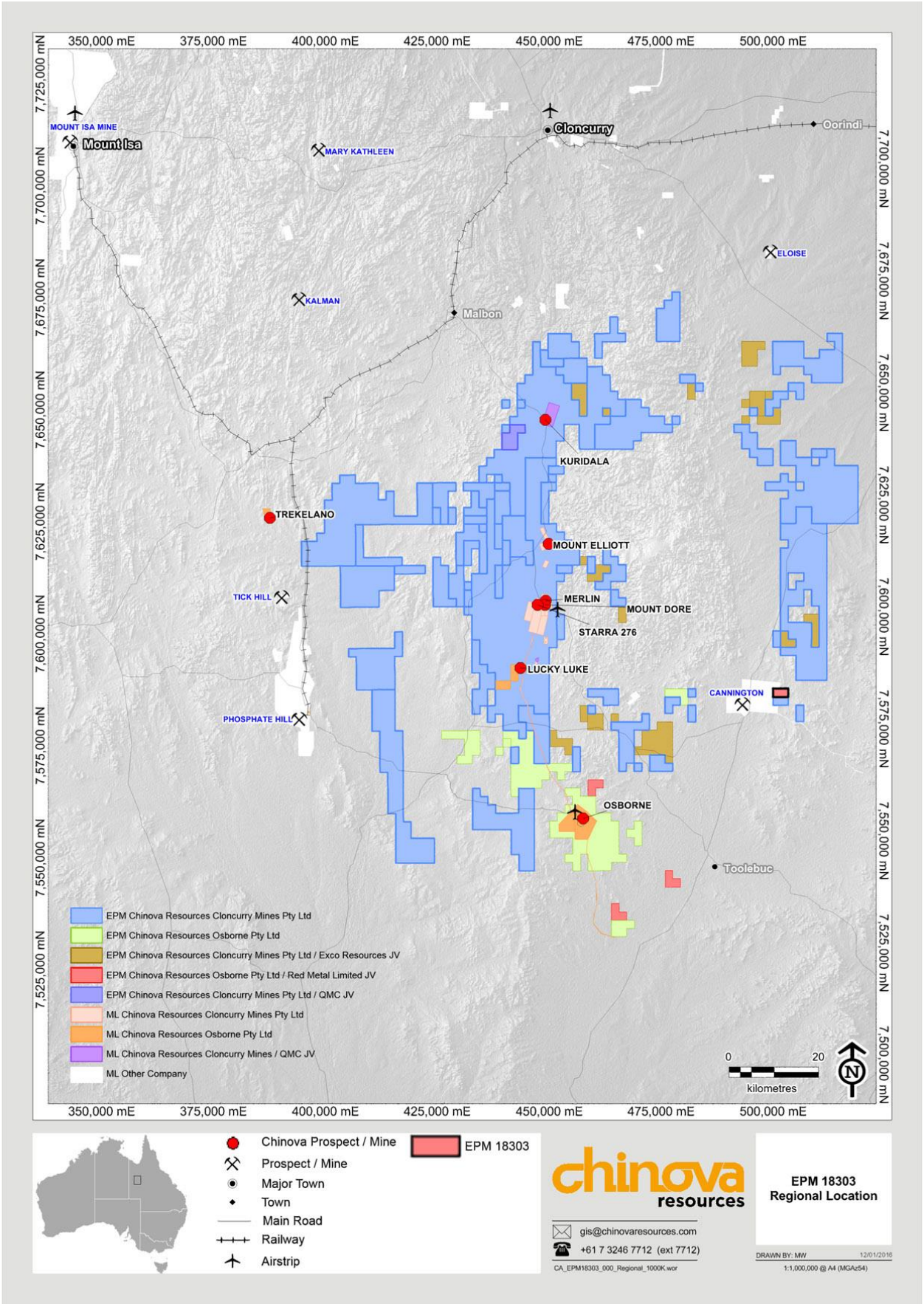

Figure 1: EPM 18303 regional location

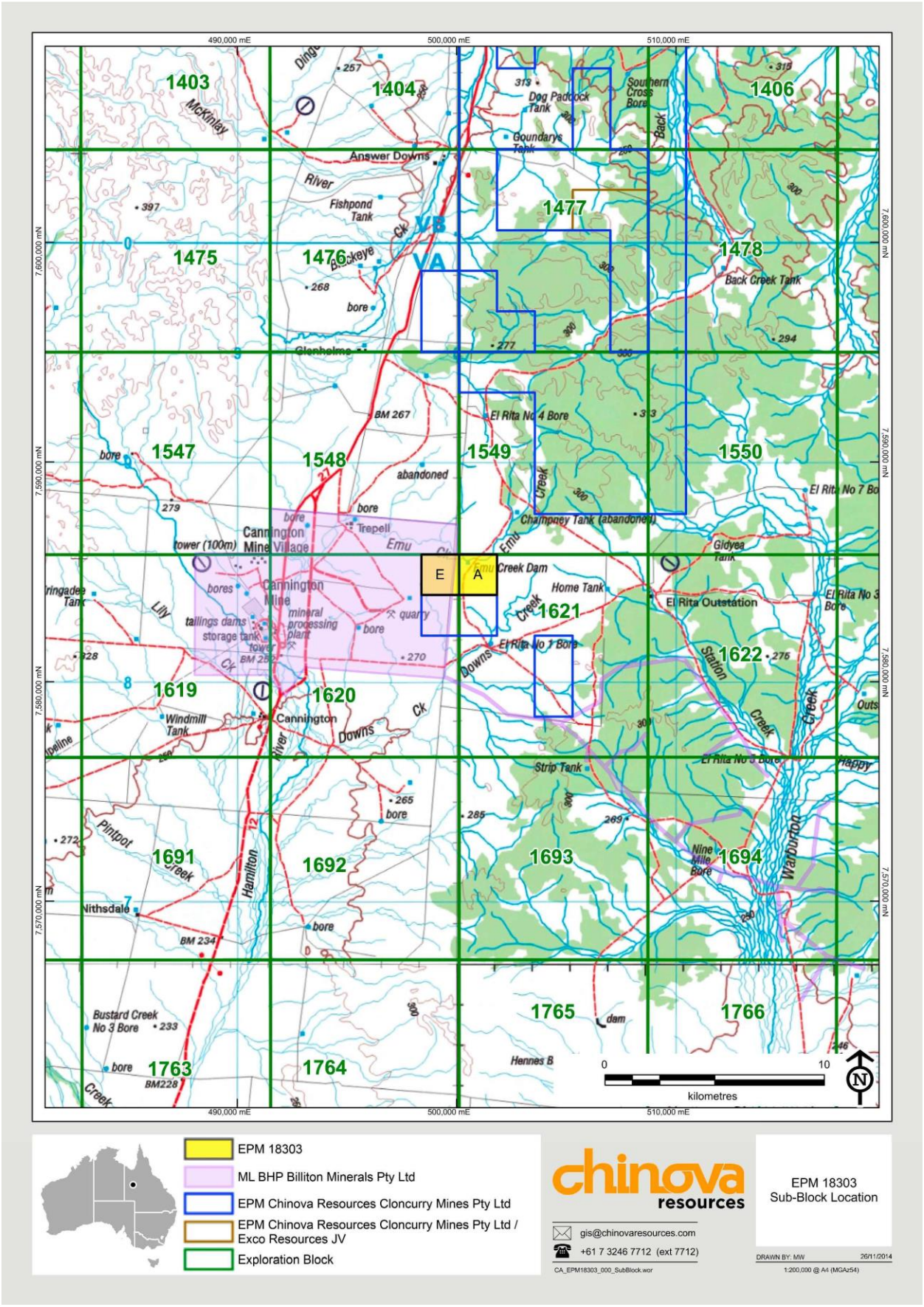

Figure 2: EPM 18303 sub-block location

4. GEOLOGY

EPM 18303 is located approximately 9 km east of the Cannington and is distinguished by a large magnetic anomaly which is overlain by a 100 m to 140 m thick sequence of Mesozoic sediments belonging to the western margins of the Eromanga Basin. The magnetic anomaly is one of the most intense in the Eastern Fold Belt and occurs in proximity to the regionally significant Cloncurry Fault. The prospective basement geology in the area comprises buried Cover Sequence 3 Soldiers Cap Group which is the host to Pb-Zn-Ag mineralisation at Cannington. The magnetic data show numerous circular and irregular shaped bodies disrupting stratigraphy which are interpreted to be granitic and mafic rocks of the Williams Supersuite, and the Maramungee and Cowie Suites.

The magnetic target has a 2 km strike length and has the potential to host large scale IOCG mineralisation.

5. WORK DONE

5.1 Previous Work Other Companies

EPM 18303 is less than 10 km east of the Cannington mine and although extensive exploration has been undertaken in the region, minimal work appears to have been completed over the Emu Creek magnetic target. Previous exploration conducted by BHP includes five holes drilled over two phases. Initially four holes were drilled between 1990 and 1994 on EPM 6788, one of which failed in the cover sequence. A diamond hole, AND79 was drilled in 2006 on EPM 14598. The drill hole collars are shown in Figure 3 and the details summarised in Table 1.

AND79, testing the central Emu Creek magnetic anomaly intersected clast supported magnetite matrix breccia within granite host rock from 180 m to end of hole (470.6 m). Copper values were low with some weak copper anomalism generally associated with blebby pyrite. The magnetite breccia matrix appears to represent a single phase of fluid input with no significant overprinting of the matrix or chemical weathering of the angular granitic clast.

CAD250 also targeting the central Emu Creek magnetic anomaly intersected encouraging alteration comprising red feldspar-amphibole-magnetite-quartz-calcite-epidote, although only 13 m of basement were drilled. There was no significant copper-gold mineralisation.

BHP interpreted the magnetic/gravity response to be caused by the occurrence of abundant magnetite and pyroxene/amphibole within the host sequence.

Table 1: BHP drilling within EPM 18303

Hole Id	East MGA94	North MGA94	Azi	Dip	Depth (m)	Type	Basement Depth (m)	Year	EPM	QDEX Report
ANP04	500538	7584974	0	-90	142	PERC	>142	1990	6788	CR22817
ANP05	499876	7584978	0	-90	120	PERC	105	1990	6788	CR22817
ANP382	500433	7585286	0	-90	174	PERC	140	1993	6788	CR34360
CAD250	500411	7584487	0	-90	161	Diamond	148	1994	6788	CR34360
AND79	500199	7584267	60	-55	470.6	Diamond	180	2006	14598	CR57256

5.2 Red Metal

Literature research indicated the Emu Creek stratigraphy is prospective for the development of Cannington style Pb-Zn-Ag mineralisation within the upper units of Soldiers Cap 2 associated with BIF horizons (McKay, 2013).

5.3 CRO

5.3.1 Geophysical Surveys

CRO has targeted the Emu Creek magnetic anomaly for large tonnage IOCG style copper-gold mineralisation since October 2013.

Ground magnetic and gravity surveys were undertaken in 2013 that covered all of EPM 18303 outside the Cannington mining lease (Figure 3). The data from the surveys were provided in Stokes et al. (2013). The magnetic survey was conducted along 50 m spaced east-west lines and the gravity stations were on a 100 x 100 m grid.

In 2014 two ground IP surveys were completed: 3D induced polarisation (IP) covering an area of 4 km^2 and 2D IP on one 2.6 km long line. The locations of the surveys are shown in Figure 3 and the data were provided in Jungmann and Lee (2015).

Downhole electromagnetic (DHEM) and downhole IP (DHIP) surveys were carried out in ECD0001. Data were provided in Jungmann (2016).

5.3.2 2014 RC-Diamond Hole

A 3D IP inversion anomaly coincident with both magnetic and gravity anomalies was drilled as an RC-diamond hole (ECD0001) to a depth of 372.4 m in October and November 2014. The collar location is shown in Figure 3. The drill hole data were provided in Jungmann and Lee (2015).

ECD0001 intersected a basement sequence of highly altered dolerite consisting of actinolite-pyroxene, red feldspar (albite), disseminated magnetite and a late overprint of chlorite and carbonate magnetite veining ± epidote. The abundant disseminated magnetite alteration explains the magnetic anomaly with the host mafic protolith explaining the source of the gravity anomaly. There was no significant copper sulphide mineralisation intersected in the hole. On the contrary the low level of copper anomalism (average 64 ppm Cu) in the assays indicates copper depletion of the host mafic protolith (Jungmann and Lee, 2015).

No significant EM conductive targets in the vicinity of the hole were identified from the DHEM. The DHIP responses do not account for the 3D IP chargeability anomaly targeted by ECD0001 (Jungmann, 2016).

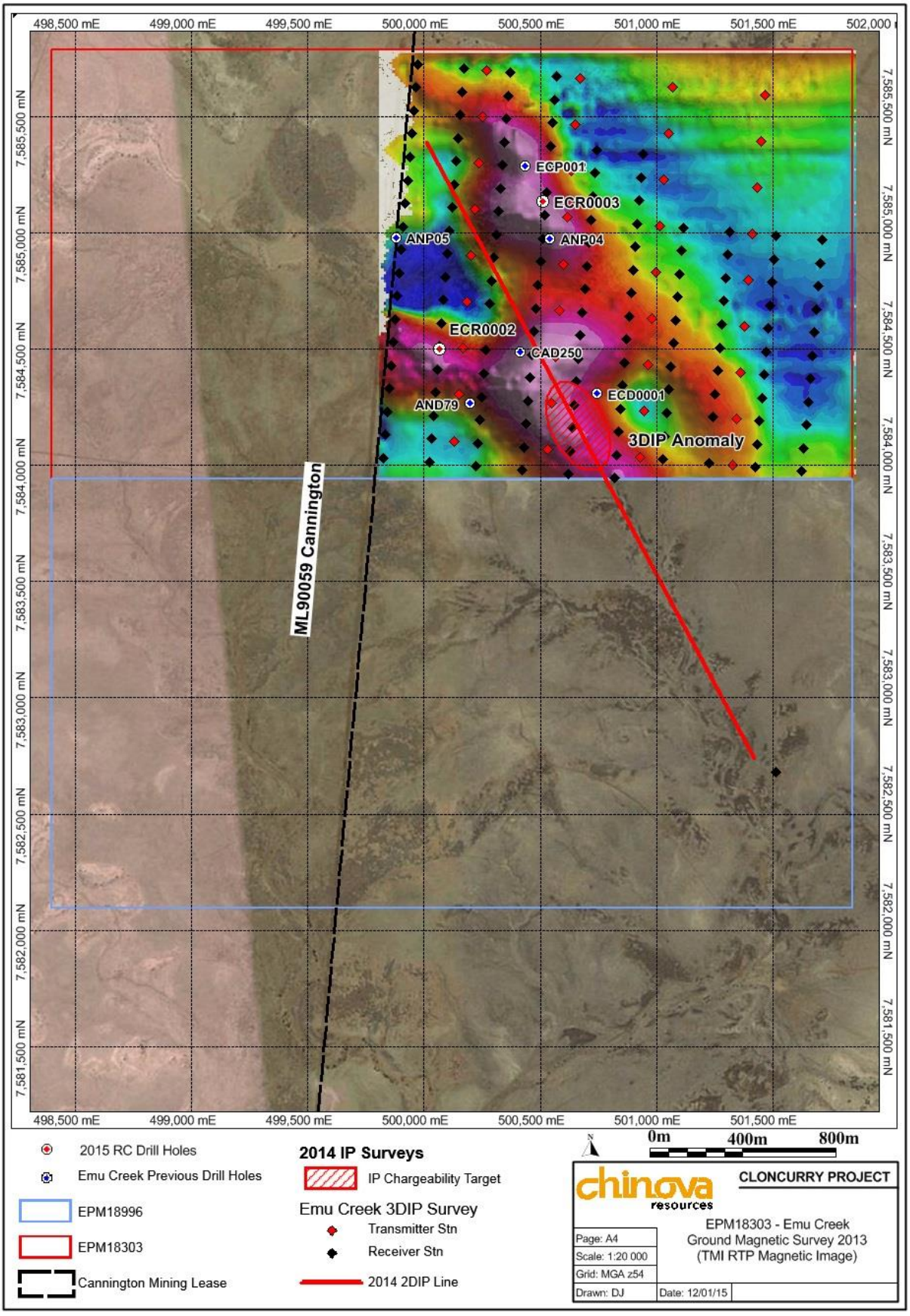

Figure 3: **EPM 18303 drill hole and IP survey locations on ground magnetic image**

5.3.3 2015 RC Drill Holes

Two RC holes (335 m) were drilled in September 2015 to test additional magnetic and gravity targets defined from the 2013 ground geophysical surveys. The collar locations are shown in Figure 3 and the drilling data were provided in Jungmann (2016). Blade drilling was nominally utilised through the cover sequence, and / or to blade refusal. The drilling method was converted to RC when in basement and the holes were completed with a 4 ¾" hammer bit. Drill collar information for the three holes drilled in EPM 18303 is given in Table 2.

Table 2: EPM 18303 Drill collars

Hole ID	Easting MGA54	Northing MGA54	RL m	Depth m	Start Date	End Date
ECD0001	500744	7584309	270	372.4	31/10/14	06/11/14
ECR0002	500065	7584500	273	162	19/09/15	19/09/15
ECR0003	500510	7585135	266	173	19/09/15	20/09/15

ECR0002 tested a magnetic anomaly interpreted to be associated with granite hosted magnetite matrix breccia located east of the breccia intersected by BHP's AND79. ECR0002 intersected basement from 122 m comprising magnetic pink/red granite, abundant coarse magnetite and amphibole veining/infill. Negligible sulphide was seen in the hole with only minor blebby chalcopyrite noted. Copper was slightly elevated within the unit to a few hundred ppm with a best interval of 4 m @ 0.1% Cu from 146 m. The magnetite matrix breccia targeted in the hole was intersected however sulphide mineralisation was no better than that previously intersected in AND79.

ECR0003 tested a coincident peak magnetic and gravity anomaly in the northern part of the prospect area (Figure 4). ECR0003 intersected basement from 142 m comprising magnetite-altered feldspar-rich metagabbro. No significant sulphide mineralisation was reported in the hole. Copper values were very low with most assayed intervals being below 10 ppm Cu, with a maximum of 60 ppm Cu. The low copper values reported for the hole suggest copper depletion in the host mafic protolith.

ECR0003 was cased with 50 mm PVC for downhole surveys. Unfortunately the PVC was blocked at 100 m and the surveys were abandoned.

6. CONCLUSIONS

The 2014 and 2015 drilling identified significant iron (magnetite) and sodic- calcic (albite and actinolite - pyroxene) altered mafic and granitic intrusive units that explain the large magnetic and gravity responses evident in the regional data sets. The alteration and apparent size of the alteration system observed at Emu Creek is encouraging for IOCG mineralisation, however the significant lack of copper and other metals generally associated with IOCG mineralisation is discouraging. The assay results reported in ECD0001 and ECR0003 indicate significant copper depletion of the host mafic protolith which suggests copper and other metals have been transported out of the magnetic alteration system.

The magnetite matrix breccia intersected in AND79 and ERC0002 is an encouraging host for mineralisation. However this unit is also relatively poor in copper. The system appears to have been short-lived with only one significant phase of fluid (magnetite) identified in the breccia matrix. Although the magnetic anomaly represents a significant iron oxide alteration system, there appears to be limited scope for iron oxide copper-gold mineralisation.

Based on the negative results from the 2014 and 2015 drilling no additional work was recommended for the Emu Creek magnetic anomaly and the tenement was surrendered.

7. REFERENCES

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Stokes B, Whitehead M, Jungmann D, Couston G, McKay G (2013) Exploration Permit for Minerals EPM 18303 Emu Creek Annual Report for period 23 December 2012 to 22 December 2013. Chinova Resources Cloncurry Mines Pty Ltd, December 2013

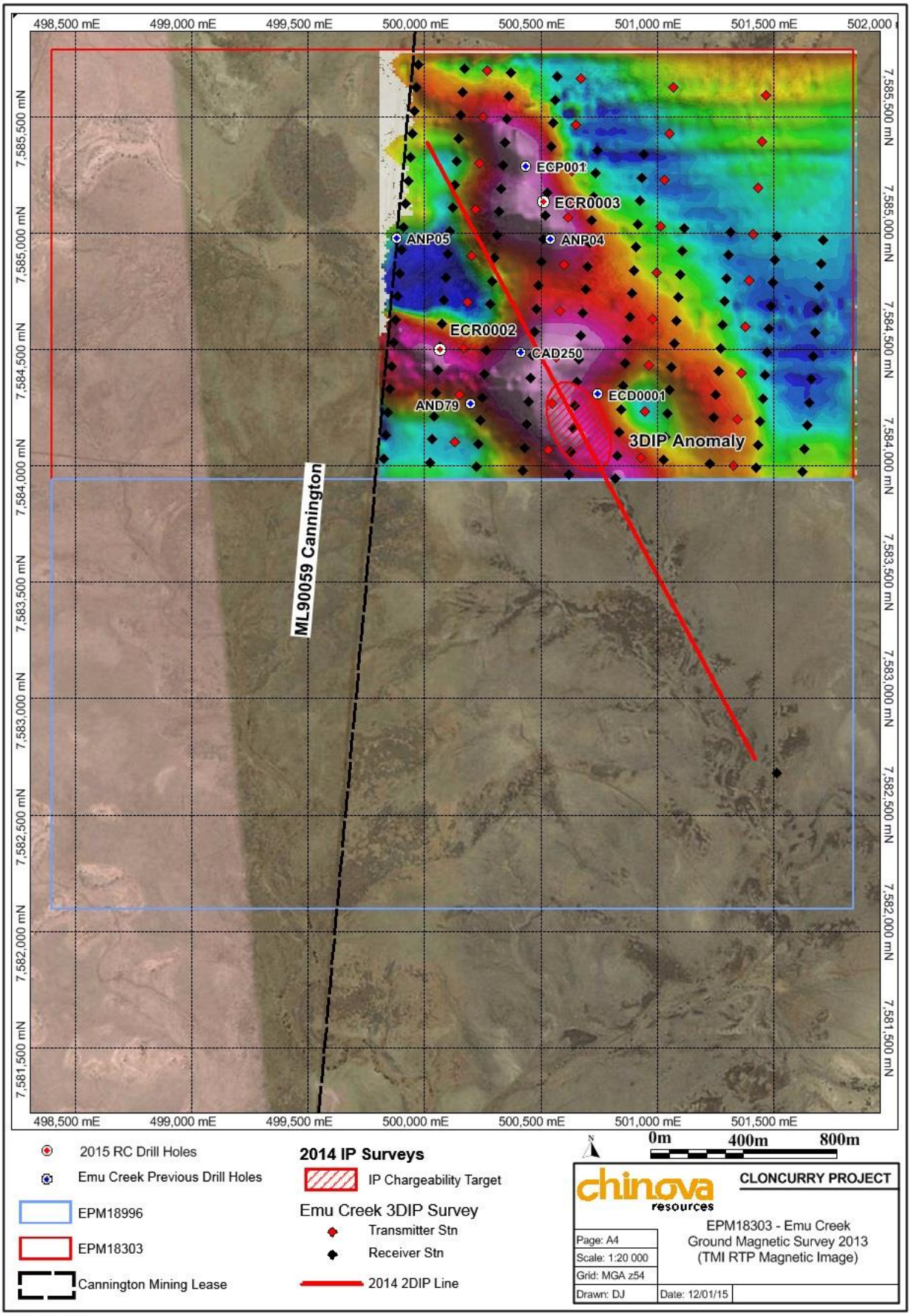

Figure 4: EPM 18303 drill hole locations on ground magnetic image