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PHOENIX COPPER LIMITED

2015 Joplin Electromagnetic Survey

Northern Territory, GDA94 MGA Zone 52

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EXECUTIVE SUMMARY

High quality surface electromagnetic data has been acquired over the Joplin prospect in the Hayes Creek Project, Northern Territory. Despite quite resistive host lithologies, the survey effectiveness was limited by the close proximity of the highly conductive Koolpin Formation.

There was no observed response corresponding to the Joplin airborne electromagnetic anomaly.

It is recommended that modelling of the airborne electromagnetic and magnetic data over the Joplin prospect be undertaken, with results compared to existing drillhole information, and subsequent drill testing of any untested targets.

Every effort should be made to reduce the effects of the Koolpin Formation in any future electrical surveys in the Hayes Creek area.

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1. INTRODUCTION

In May of 2015 an electromagnetic (EM) survey was undertaken by Gap Geophysics of South Brisbane over Phoenix Copper's Joplin prospect. The Joplin prospect is located within the Hayes Creek project, approximately 180km south of Darwin within the Pine Creek region of the Northern Territory, Figure 1. The survey was a fixed loop EM (FLEM) designed to with the aim of follow up an airborne EM and magnetic target (Beinke 2014), Figures 2 and 3.

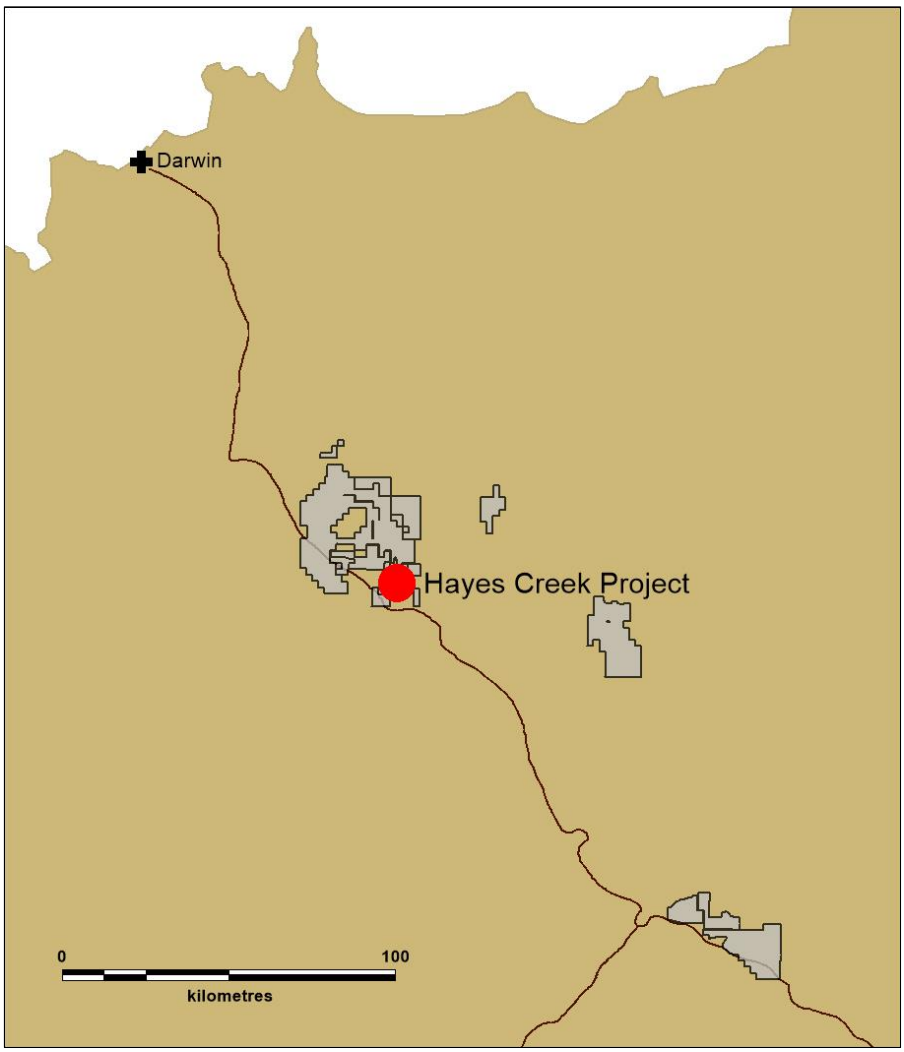

Figure 1. Hayes Creek project location.

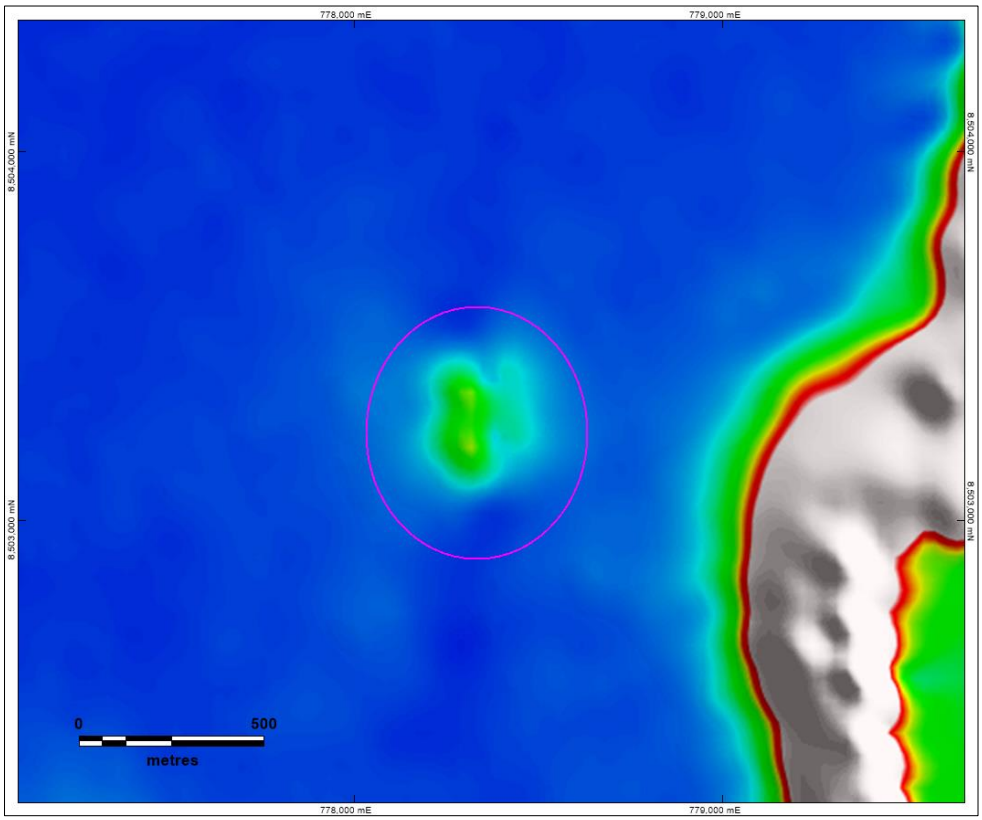

Figure 2. Joplin prospect (circled in pink) shown over VTEM 3521µsec time channel.

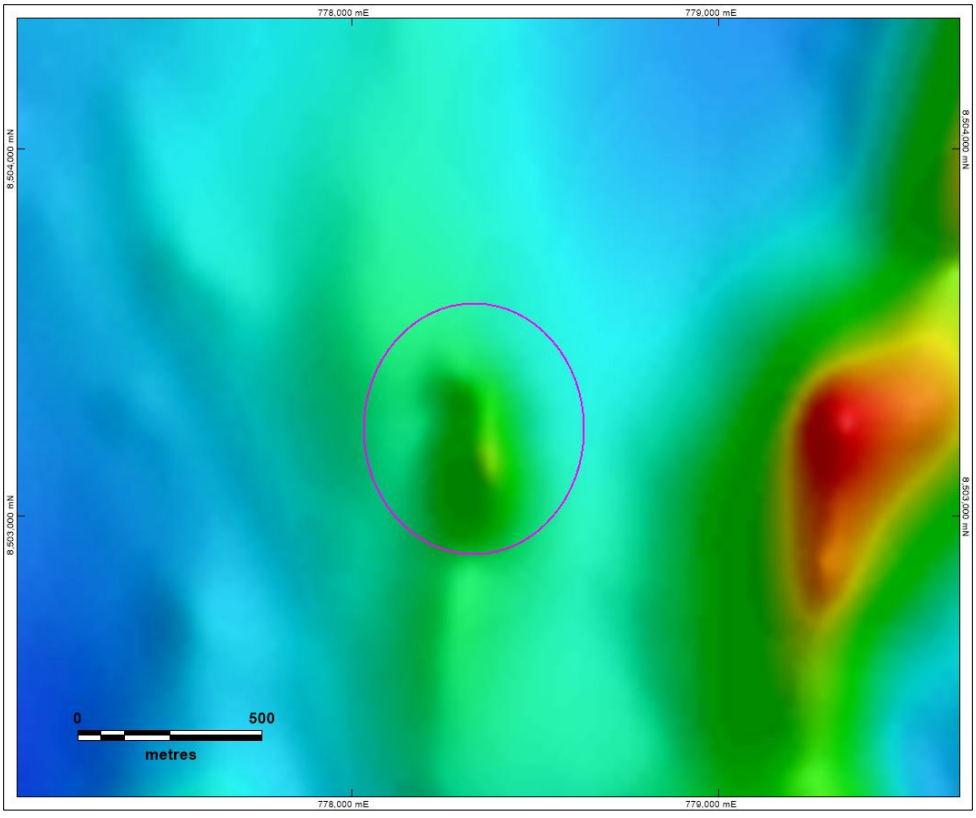

Figure 3. Joplin prospect (circled in pink) shown over reduced to pole magnetics.

2. SURVEY SPECIFICATIONS

A total of 3.75 linekms over 3 east-west lines were read from a single fixed loop, Figure 4. Survey specifications are outlined in Table 1.

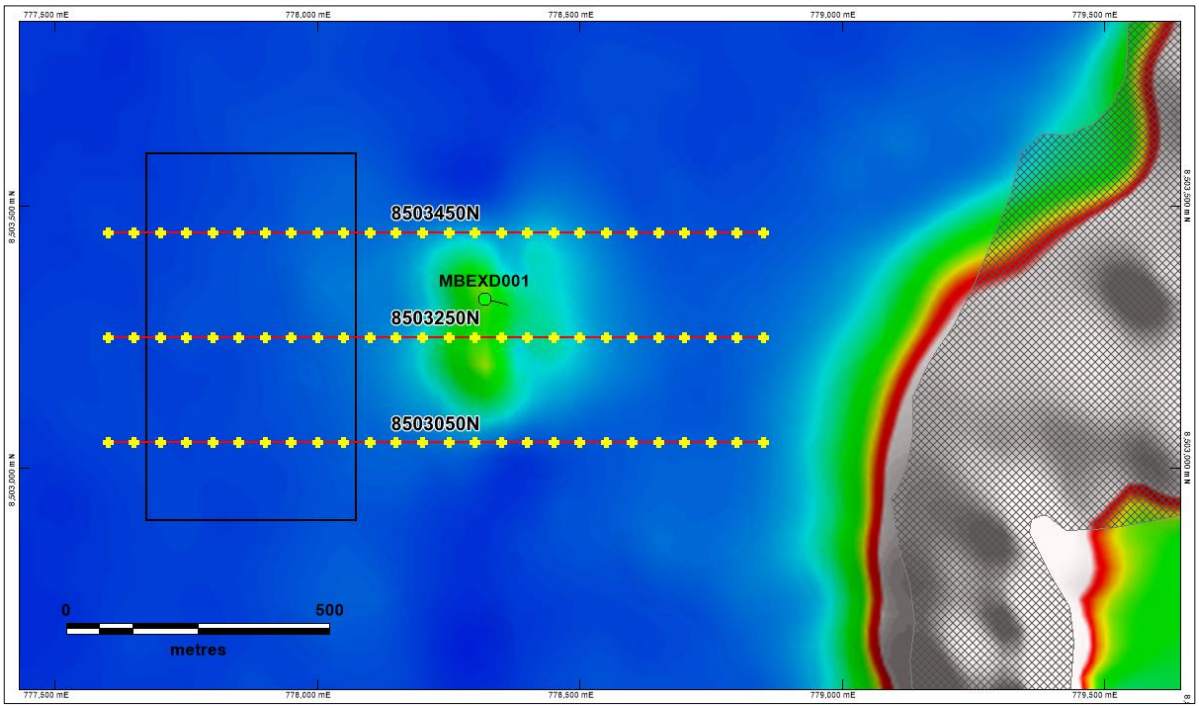

Figure 4. Location of Joplin FLEM lines (red), stations (yellow), loops (black), collars (green) and Koolpin Formation (grey hash). Background image is EM 3521µsec time channel.

Survey type	fixed loop EM
Line spacing	200m
Line orientation	090-270°
Station spacing	50m
Base frequency	0.125Hz
Receiver	EMIT SMARTem 24
Sensor	EMIT 3C Smart Fluxgate
Transmitter	Gap GeoPak
Tx loop size	400*700m

Table1. Joplin FLEM survey specifications.

3 DATA

The FLEM data was high quality with low noise levels. As at Mt Bonnie, there is a large response from the highly conductive Koolpin Formation to the east of the survey area, Figure 4. This effectively masked any response from conductors of interest, despite otherwise resistive host lithologies, Figure 5. Modelling confirmed that the Koolpin Formation was the source of the anomaly. A magnetic high was observed over the Joplin prospect, Figure 4, corresponding to the airborne magnetic high.

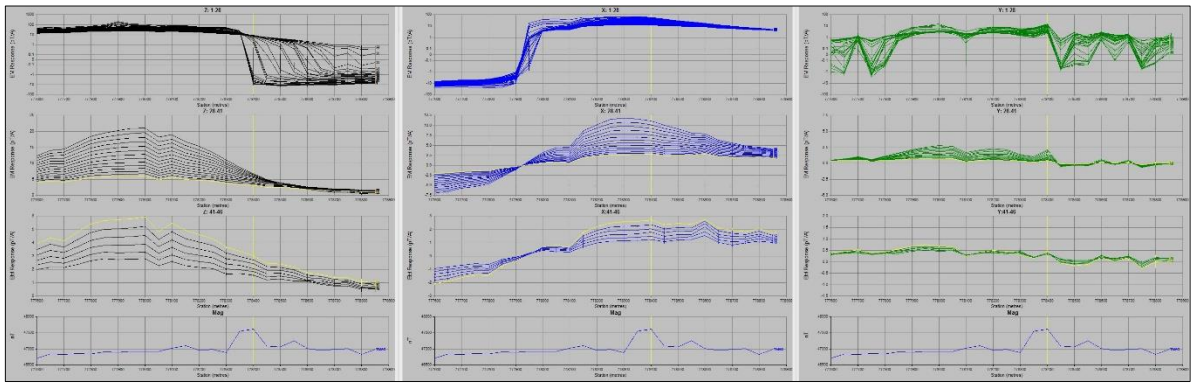

Figure 5. Joplin FLEM line 8503250N profile showing the large response from the Koolpin Formation. Z component (black), X component (blue) and Y component (green). The location of the Joplin prospect is shown by the magnetic high (bottom panel)

4. CONCLUSIONS

High quality surface EM data was collected over the Joplin prospect. However, due to local geology, the survey did not assist in refining the airborne EM anomaly seen at Joplin. A magnetic high was observed over the Joplin prospect.

The host lithologies in the survey area are quite resistive with the exception of the Koolpin Formation, which is highly conductive.

5. RECOMMENDATIONS

It is recommended that modelling of the airborne EM and magnetic data over Joplin be undertaken. The results should be compared to drillhole information, with subsequent drill testing of any untested targets, see Beinke (2015).

The impact of the Koolpin Formation on all future surveys must be reduced as much as possible. This can be done by using surface geology and airborne EM to map the location of the Koolpin Formation and then planning transmitter loops to minimise coupling with it. Moving loop EM should be undertaken in preference to FLEM if at all possible.

REFERENCES

Beinke, Lynelle. 2014. Hayes Creek Project – VTEM Targeting. Terra_Resources_Phoenix_HayesCkTargeting_V1.pdf

Beinke, Lynelle. 2015. Joplin Review. BMX-PNX-1506-01_Joplin_Review.pdf