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XtemA1_2sum.docx

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CC:

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DATE: January 17, 2012

SUBJECT: Areas 1 & 2 XTEM survey Evaluation - Summary

This note summarises the features of interest from the XTEM Survey flown over the Batchelor Target Area in the Northern Territory. To undertake this summary the dB/dt profile "Z" component data and models derived through 1D transforms (EMflow & EmaxAir) have been reviewed. The survey completed in late 2010 consisted of 4 separate survey areas. This note only references the interpretation of Areas 1 and 2 (figure 1).

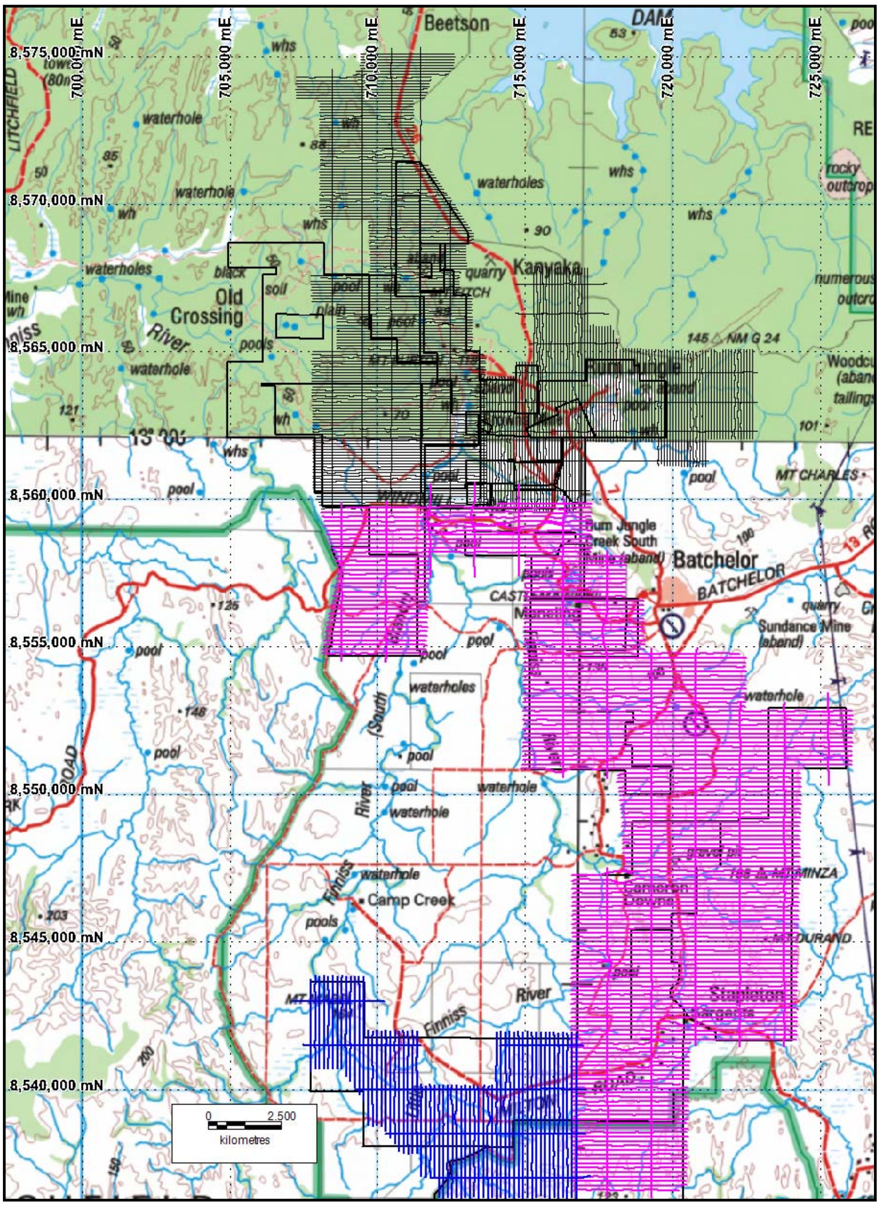

Figure 1: Location of XTEM survey lines, the Blue traverses are Area1 with the magenta traverses being those from Area2.

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The XTEM survey is an inloop (concentric) Time Domain Heli-borne Electro-Magnetic system with a base frequency of 25 Hz, the duration of each pulse is approximately 5 milliseconds followed by an off time where no primary field is present. During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

The XTEM data models were compared with models from the Geoscience Australia's (GA) modelling of the recently completed regional Tempest data (fixed wing Airborne Electromagnetic data system). The general correlation is very good; hence providing confidence in the XTEM data and modelling to detect/delineate conductors within the survey area. The models demonstrate that the XTEM data has greater resolution in the shallower part of the model, but is depth limited to approximately 150m. The Tempest data seems to resolve features up to approximately 350m depth.

Sixteen Priority 1 (P1 basement conductors) were identified in the XTEM data for Areas 1 & 2 (figure 2a and table 1). Figures 3a to 3o display the data profiles and resultant models for the lines covering each the anomaly (Attached PDFs). Most of the P1 conductor anomalies occur over multiple flight traverses giving them good strike continuity. Some correlate very well with the previously defined regional structure and also along the mapped geological contact margins (figure 2b). A total of 78 P1, P2 and P3 anomalies were identified in the data . Most of the P3 anomalies are believed to be attributable to cultural features, with the P2 anomalies generally believed to be lithological responses (i.e. conducting sediments).

Index	priority	Comment
19	1	twin peak broad strong shallow
20	1	twin peak broad
21	1	broad complex
22	1	single peak very late times
26	1	complex high amplitude noise?
27	1	strong single peak
42	1	complex late time high
52	1	single good late time cultural?
55	1	sharp twin peak anomaly
58	1	single peak culture
101	1	broad late time anomaly under cover
103	1	nice broad late time anomaly off line
105	1	broadish time anomaly
106	1	broadish late time anomaly early time response above
113	1	broadish late time single peak
114	1	broadish late time single peak

Table 1: List of the priority 1 anomalies identified in Areas 1 and 2.

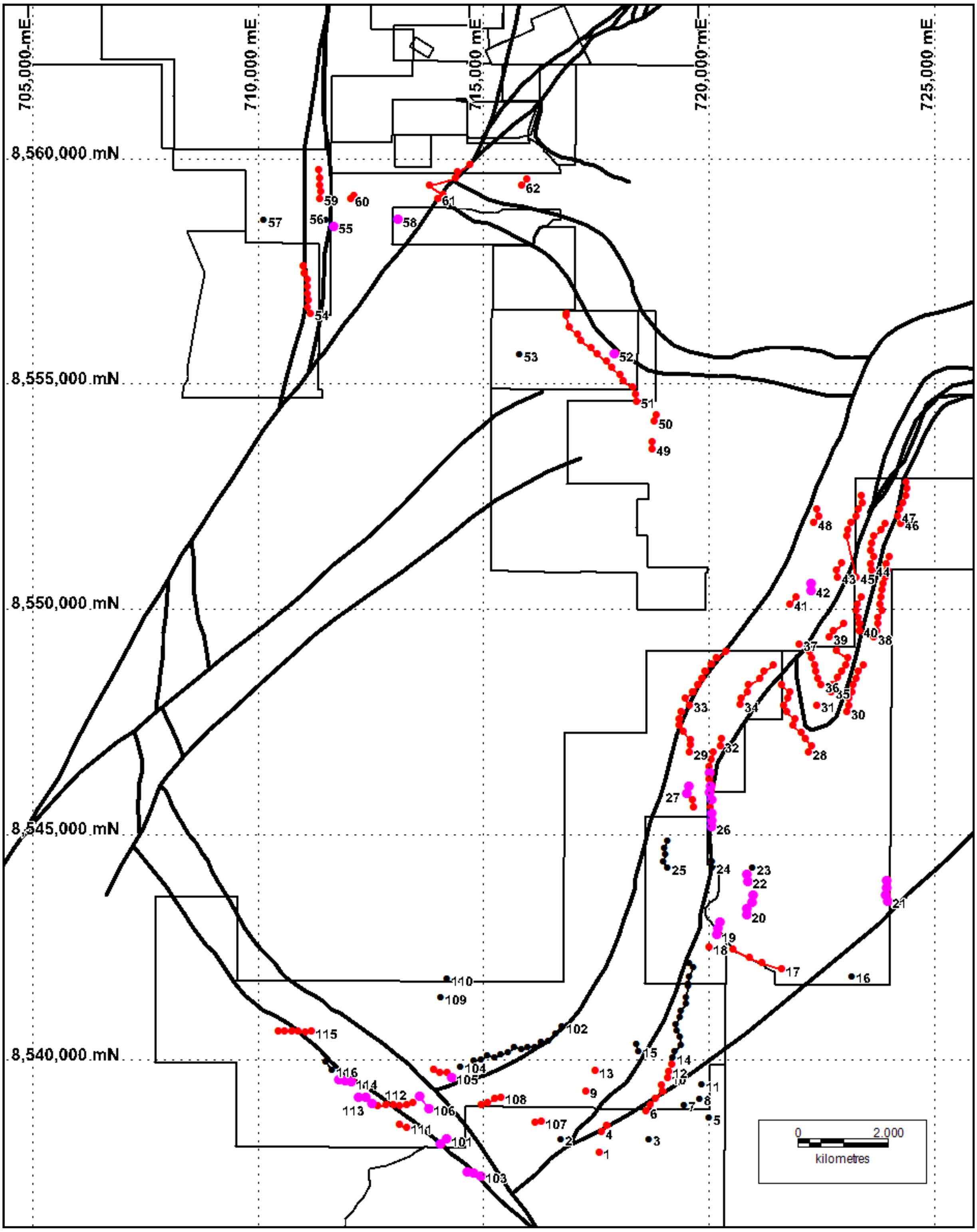

Figure 2: The identified anomalies overlain on the regional structure interpretation and with the Exploration Leases. The anomalies are labelled with their unique index number and coloured by priority; magenta = P1, red =P2 and black =P3.

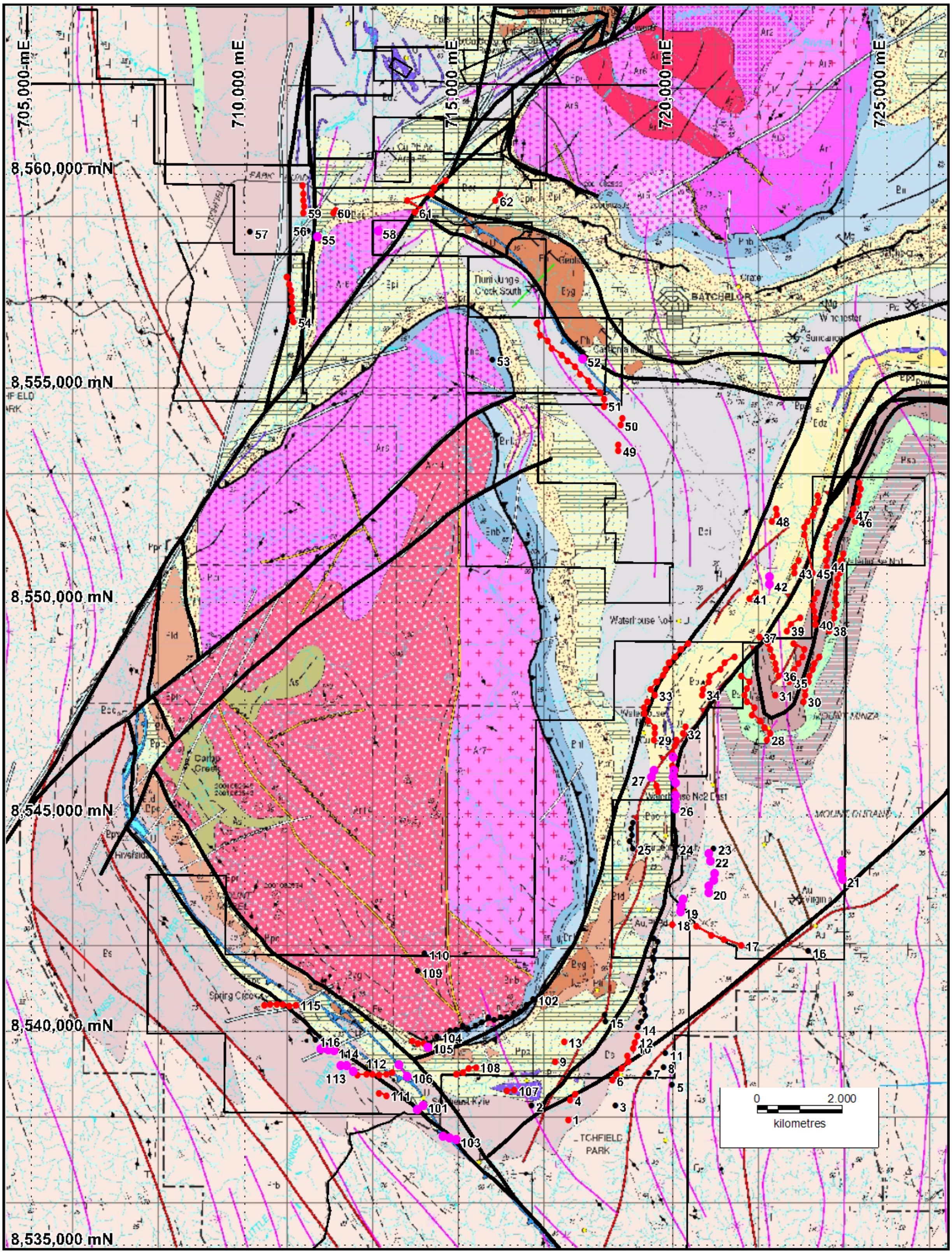

Figure 2b: The identified anomalies overlain on the regional structure interpretation and geology. The anomalies are labelled with their unique index number and coloured by priority; magenta = P1, red =P2 and black =P3. Note how some of the conductors follow the structure or the geological contacts.

The modelling of the data indicates that the depth of investigation for the survey in the area is approximately 150m (this limited depth penetration is a function of the reasonably conductive environment encountered in the survey area). The model stacks and depth slices demonstrate how the various conductors develop at depth and also how the conductivity/thickness of the cover sequence varies (figures 4a & 4b as well as attached PDFs).

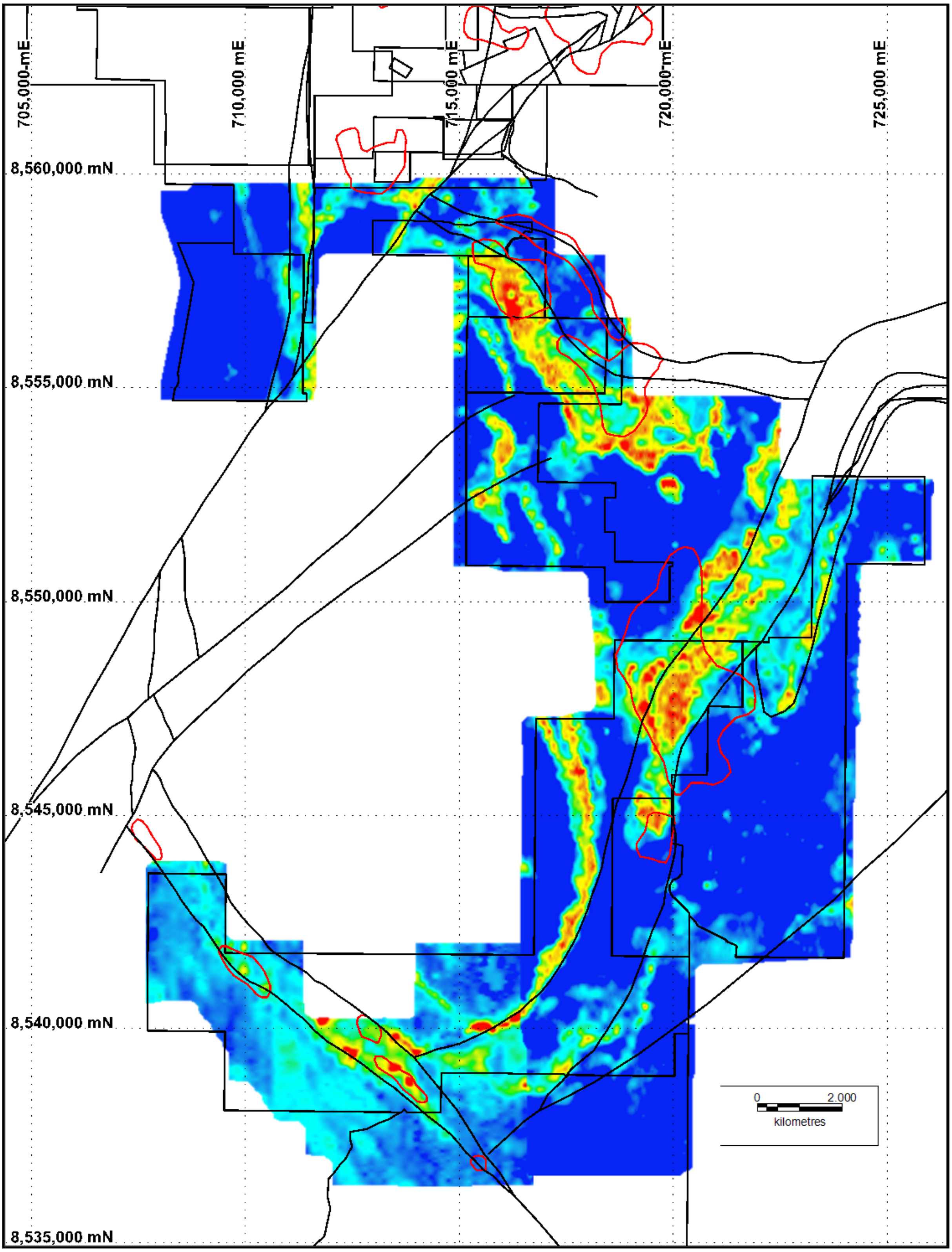

Figure 4a: 0-25m (i.e. "surface") Depth Slice for the Area1 and 2 models. Note the correlation of some of the shallow conductors and the structures. Also note how some of these "surface" conductors correlate with the previously identified Uranium target areas (red outlines).

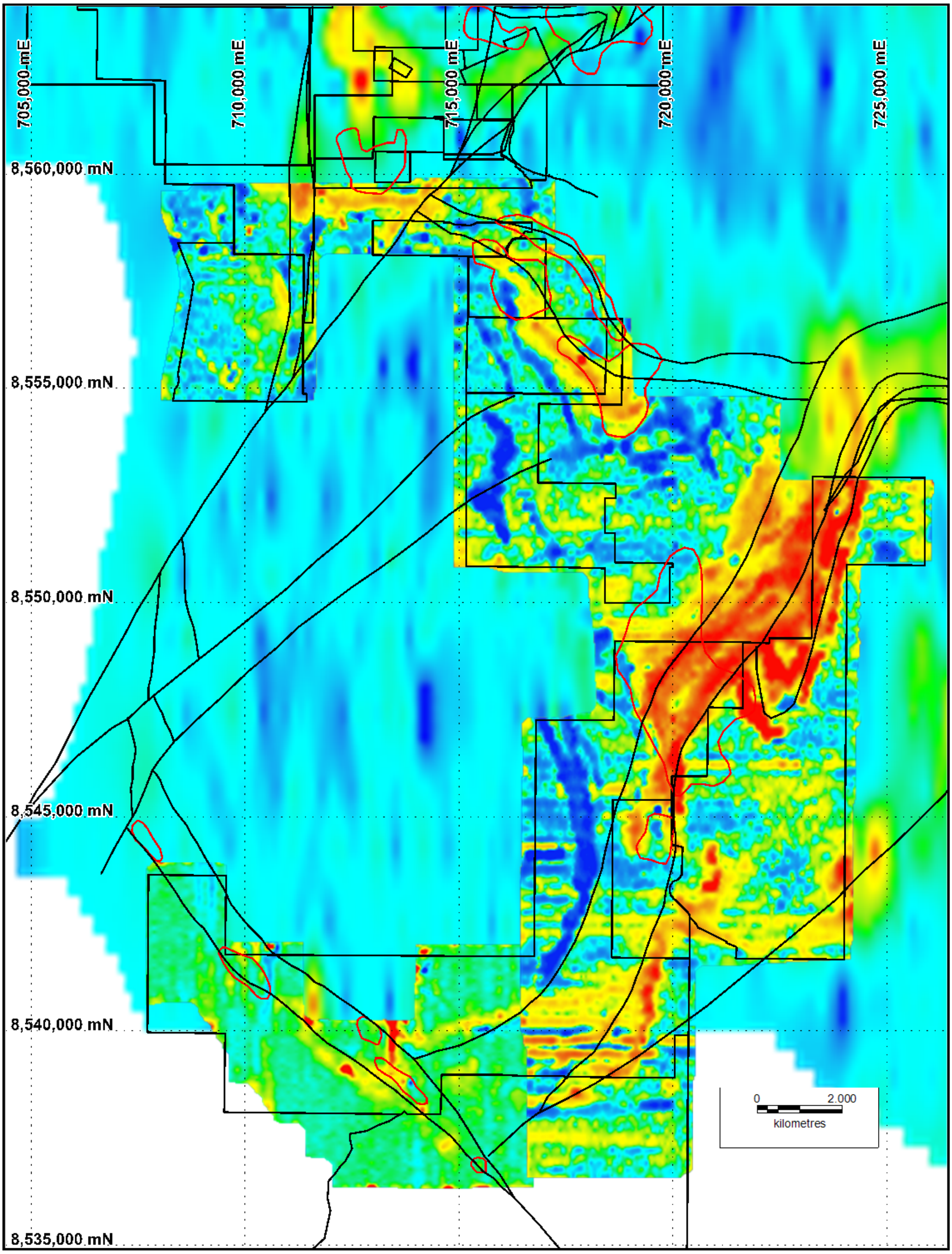

Figure 4b: The 100-125m Model Depth Slice for Area 1 & 2 underlain with the equivalent depth slice from the GA regional data models. The image highlights the highly conductive region on the western side of the survey area. In this area, due to the complexity of the EM data it is hard to prioritise the observed anomalies. Also note how the areas of conductivity have change in regards to the "surface" conductivity depth slice (figure 3a).