

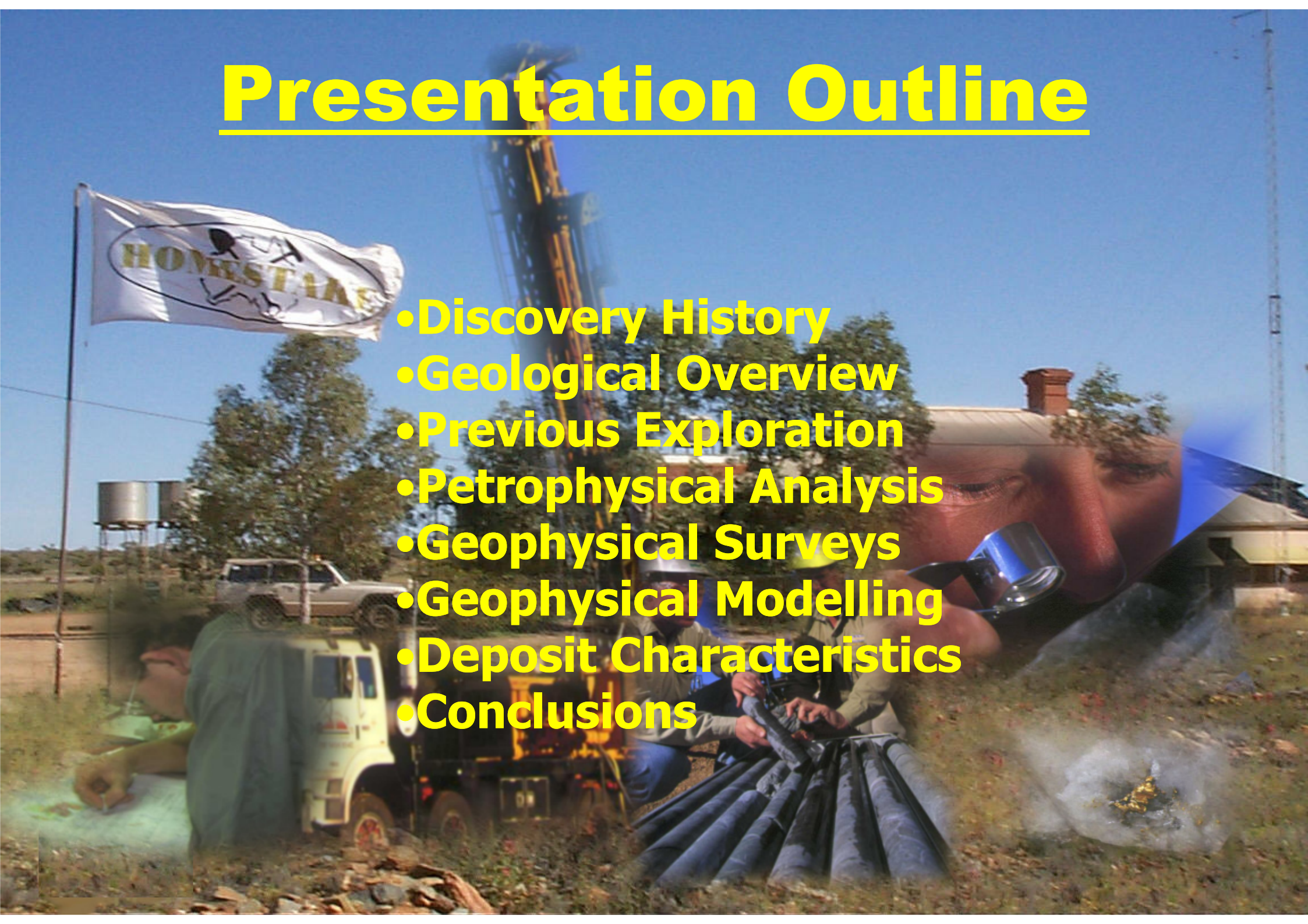
A large, stylized map of Australia is the central element. It is filled with a light blue color and has a black outline. Various mining-related images are placed within the map's outline. In the top left, there is a photo of a yellow crane and a white truck in a desert landscape. In the top center, two workers in hard hats and safety gear are working on a large pipe. In the top right, there is a photo of a green field with a yellow crane. In the middle left, a white truck is parked next to a large pipe. In the middle right, a person is climbing a rocky cliff. In the bottom left, a white truck is parked next to a large pipe. In the bottom right, a white truck is parked next to a large pipe. The title text is overlaid on the map in a large, bold, yellow, sans-serif font.

The Geophysical Characteristics of the Trilogy Massive Sulphide Deposit, Ravensthorpe, Western Australia

*Presented by Lee Sampson
Co-Author: Barry Bourne*

Presentation Outline

- Discovery History
- Geological Overview
- Previous Exploration
- Petrophysical Analysis
- Geophysical Surveys
- Geophysical Modelling
- Deposit Characteristics
- Conclusions





Discovery History

- Historically, the exploration focus in the Ravensthorpe region has been for gold and copper mineralisation, and more recently for nickel within the greenstones.
- In 1997 HGAL discovered massive sulphide mineralisation in the Proterozoic metasedimentary Mount Barren Group, namely the Trilogy Deposit.
- Discovered during drilling of gold soil geochemical anomalism thought to be derived from greenstones in the underlying Archaean basement.



Discovery History - Cont'd

- Discovery spawned an Exploration revival in the Ravensthorpe region.
- Being the first deposit of this type discovered in the region, very little was known about its geophysical characteristics.



Port Hedland

*Western
Australia*

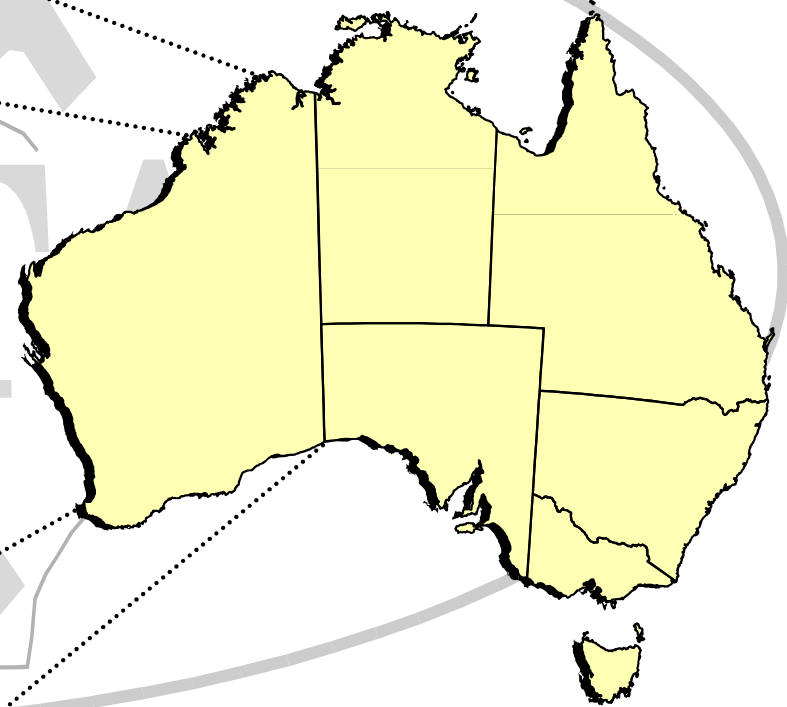
Leonora

Laverton

Kalgoorlie

Perth

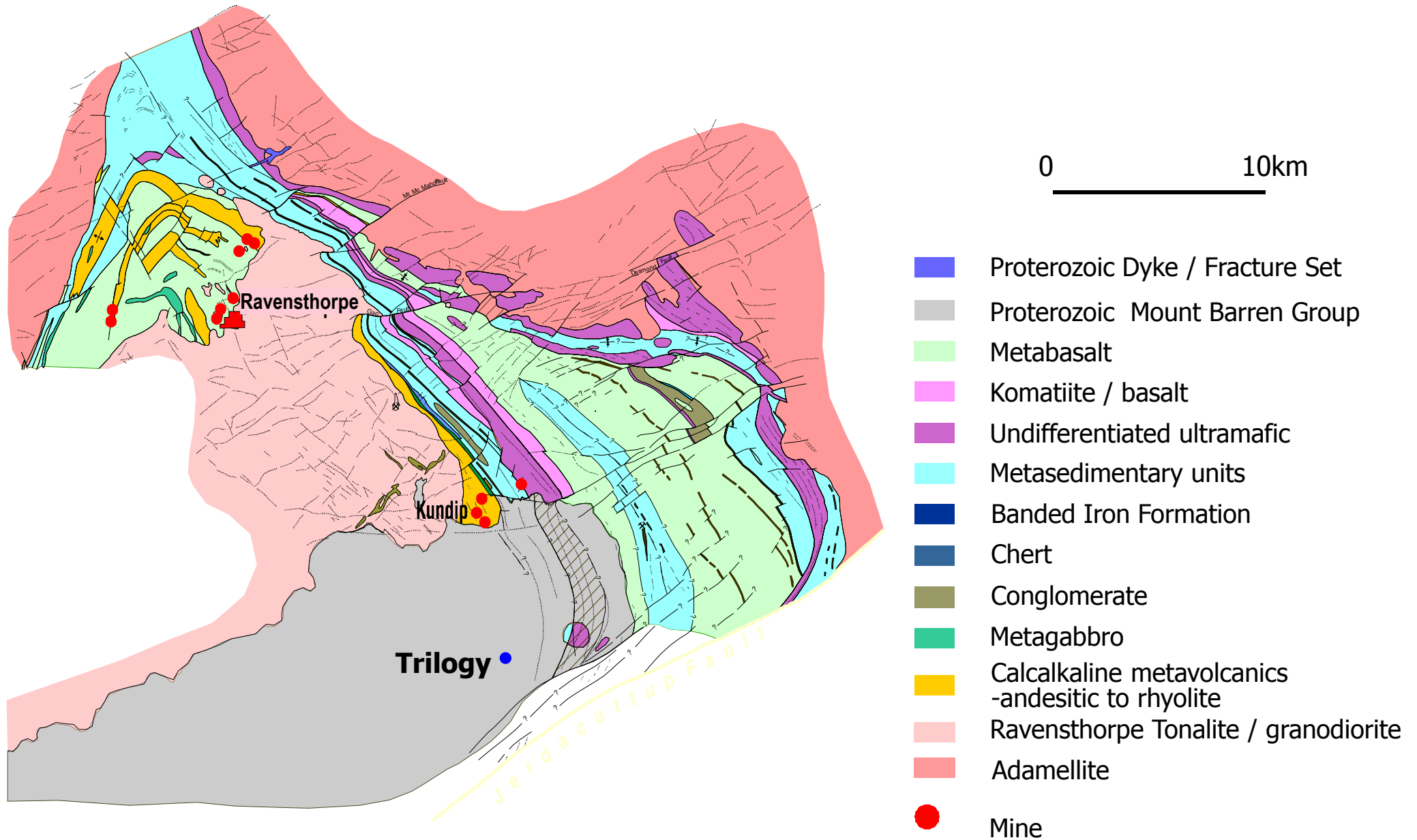
Trilogy



**Location of the
Trilogy Deposit,
Kundip,
Ravensthorpe**

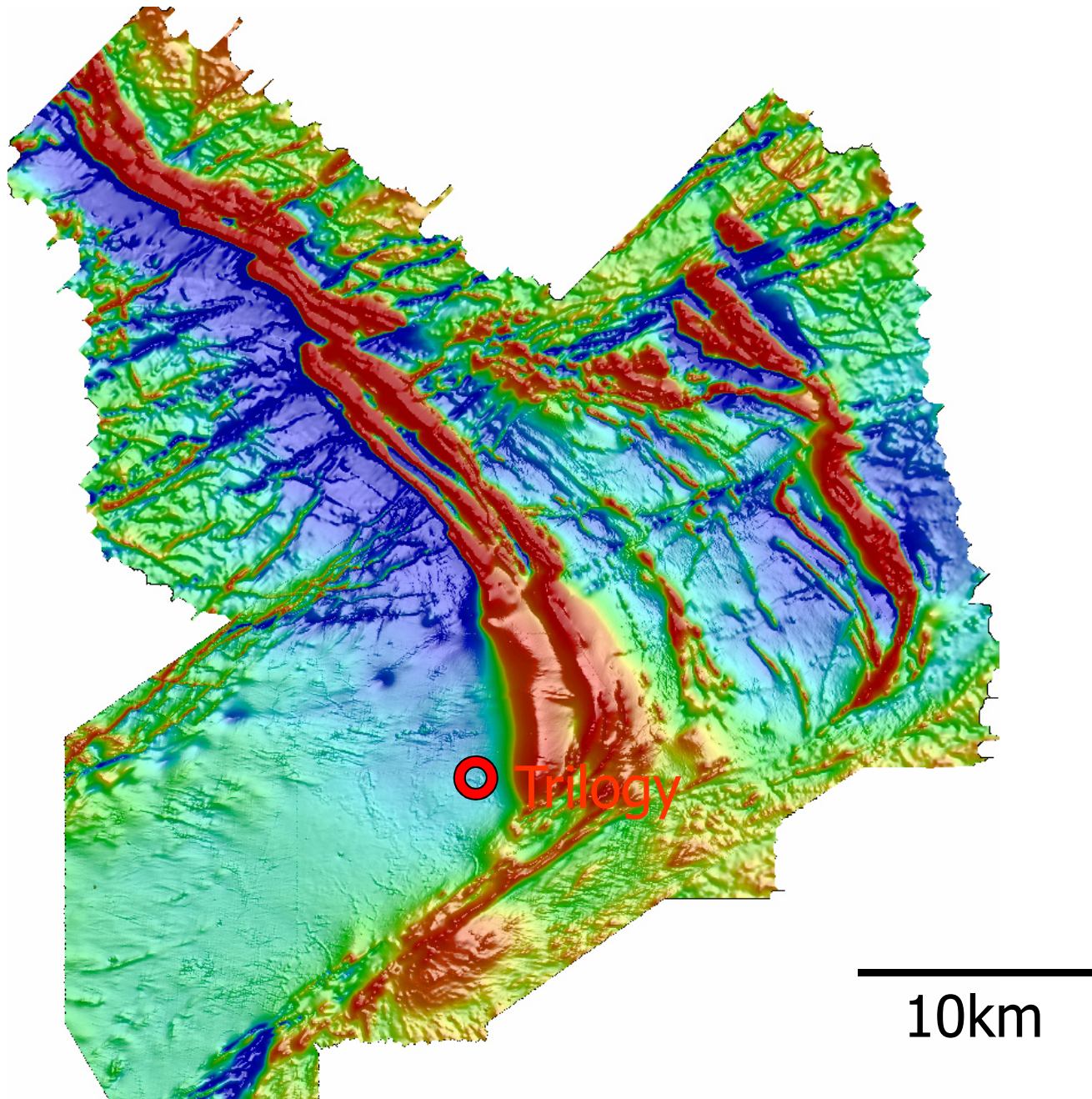


Regional Geology





Aeromagnetic Overview

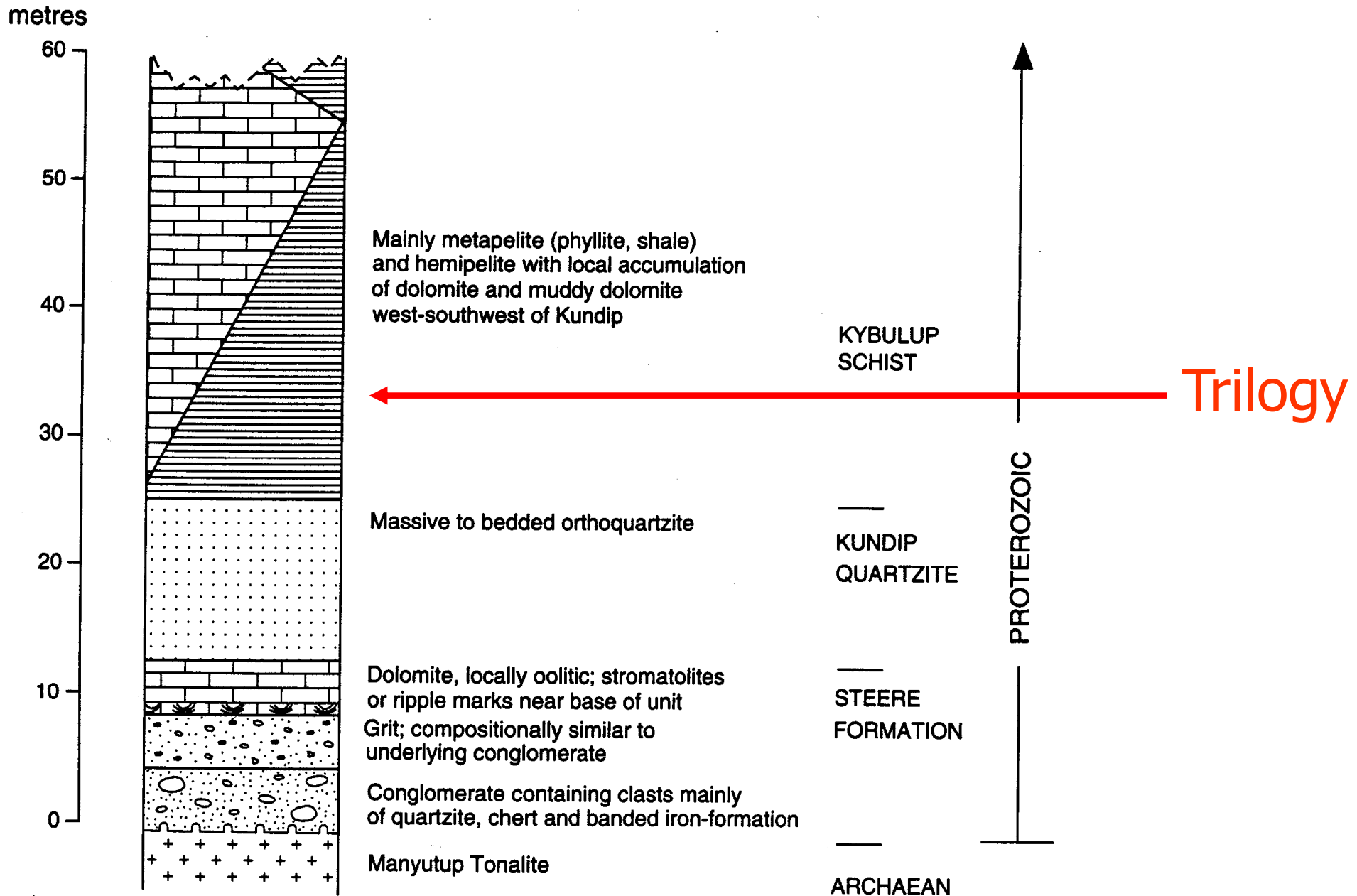




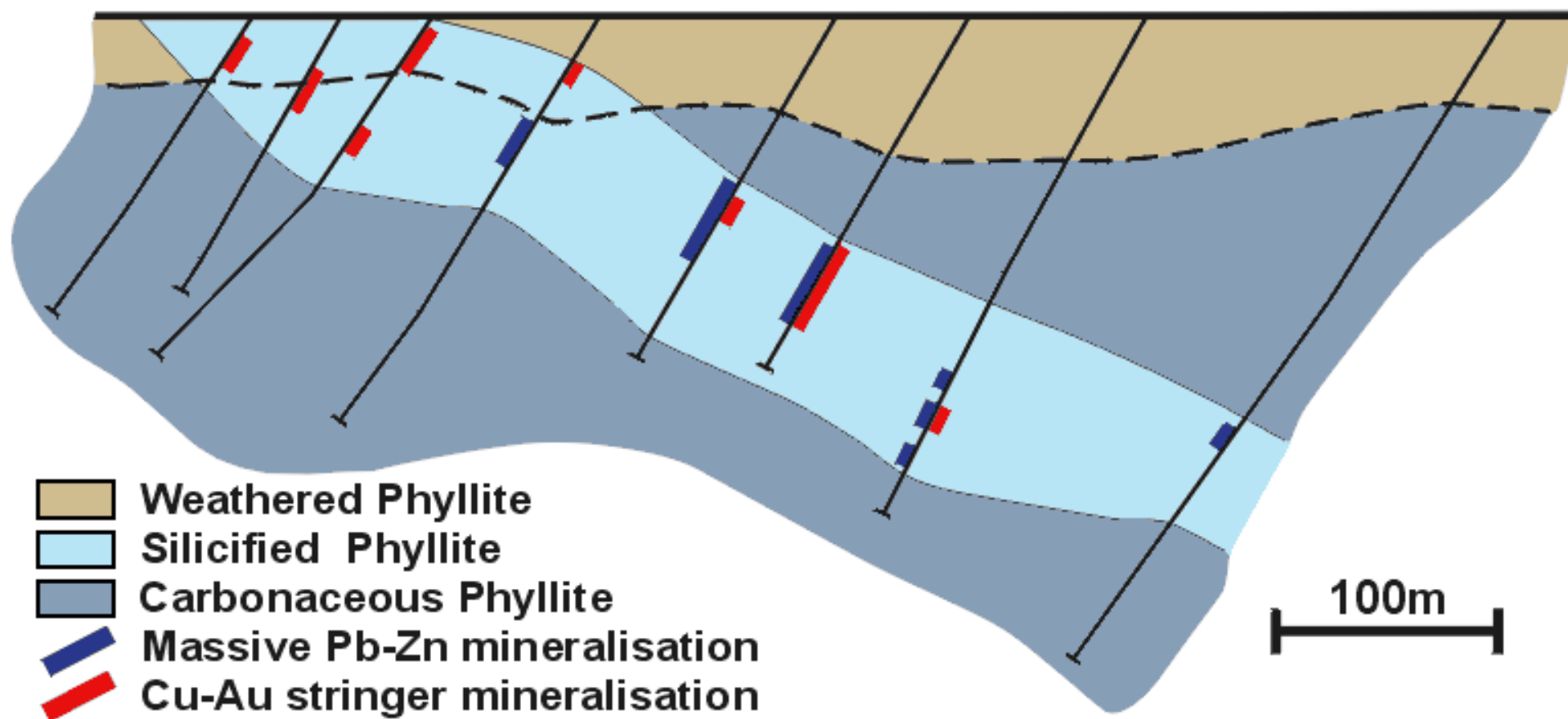
Regolith / Radiometrics



Stratigraphic Profile



Trilogy Cross Section





Resource Estimate

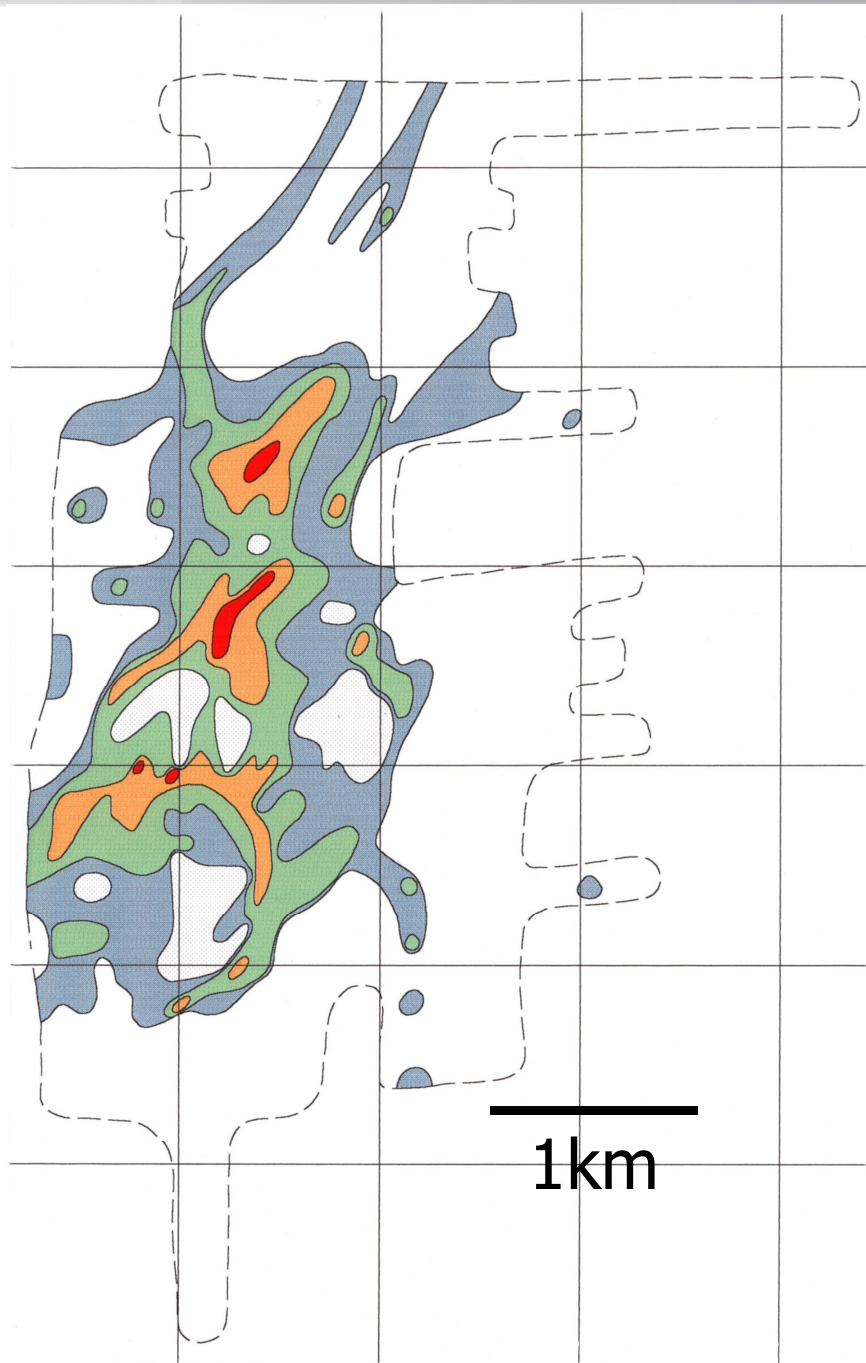
4.30 Mt of ore containing

- 52,500 t Cu
- 149,000 oz Au
- 7.76 Moz Ag
- 76,400 t Pb
- 51,500 t Zn

(King, 2001)



Previous Exploration



MMI Gold Soil Geochemistry

- Responsible for the discovery of the Trilogy Deposit
- Three Au highs defined, all related to the Trilogy mineralisation
- Au anomalism 20 times that of background
- Conventional soils would have identified the dispersion halo around Trilogy

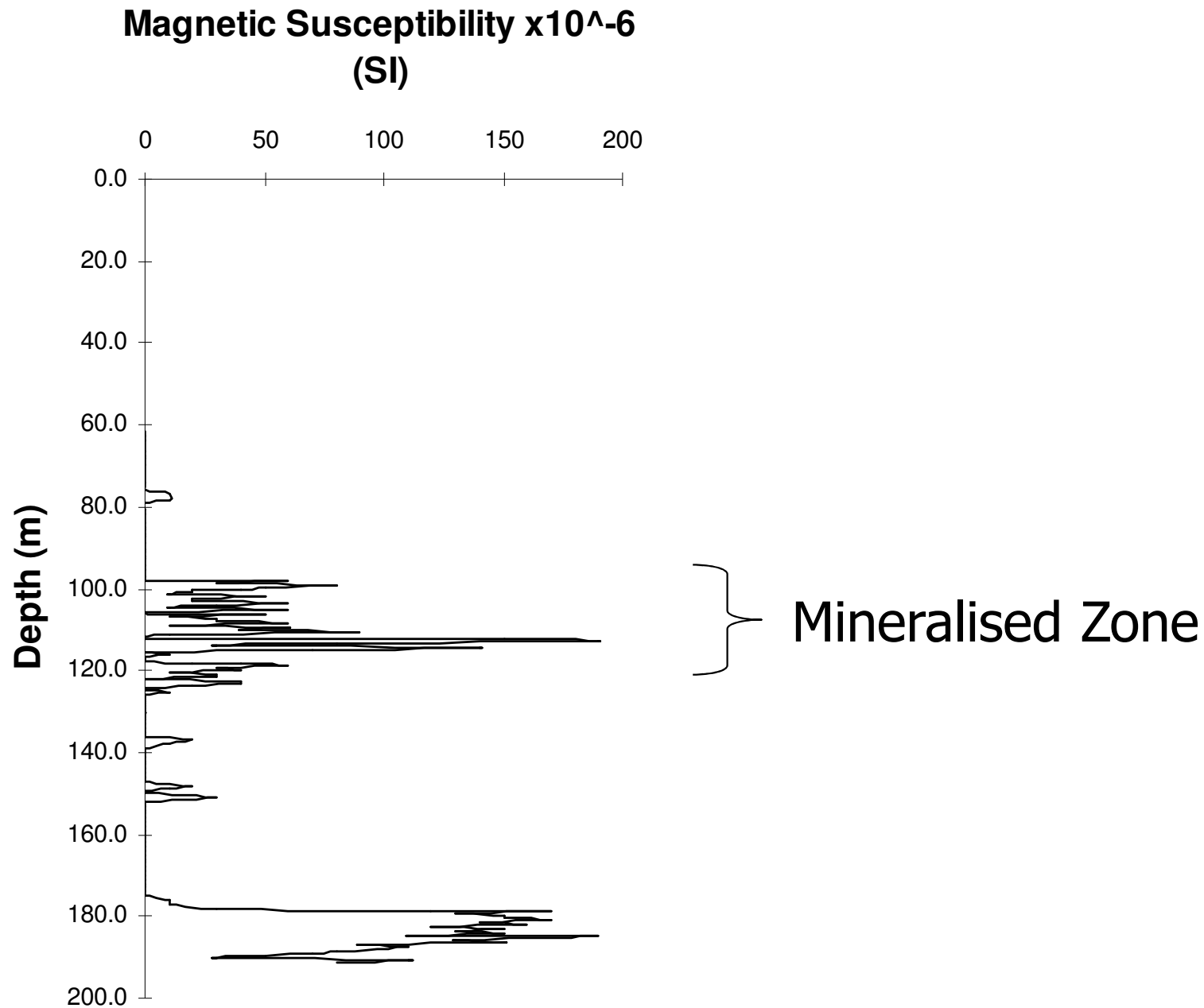


Specific Gravity

<i>Rock Type</i>	<i>Specific Gravity (g/cc)</i>
Kundip Quartzite	2.67
Mount Barren Serecite Schist	2.7
Graphitic Phyllite/Siltstone	2.67-2.72
Silicified Graphitic Phyllite/Shale/Sandstone	2.66-2.85
Massive Cu-Pb-Zn mineralisation	3.75
Magnetite/Pyrrhotite/Pyrite Breccia	3.17



Magnetic Susceptibility





Galvanic Resistivity

<i>Rock Type</i>	<i>Log Avg Resistivity (ohm.m)</i>
Kundip Quartzite	20000
Mount Barren Serecite Schist	n/a
Graphitic Phyllite/Siltstone	10-800
Silicified Graphitic Phyllite/Shale/Sandstone	35000-75000
Massive Cu-Pb-Zn mineralisation	0.01
Magnetite/Pyrrhotite/Pyrite Breccia	n/a



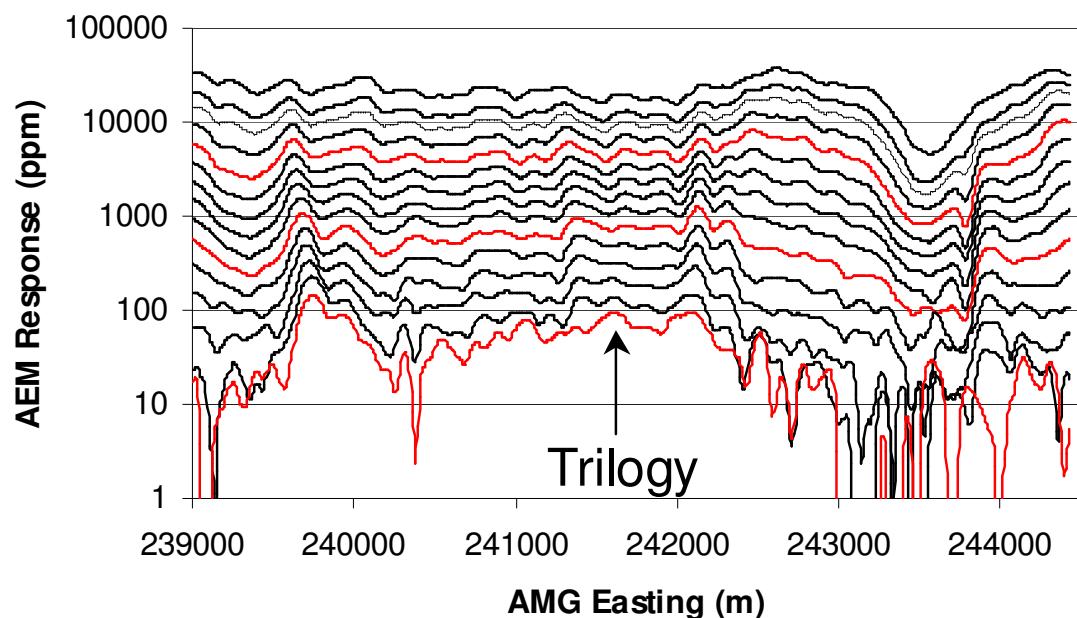
Airborne EM Specifications

AEM System:	Questem 450
Line Spacing:	200m
Line Direction:	135/315 degrees
Survey Height:	120m
Base Frequency:	25Hz

All other specifications are as standard for the Questem 450.

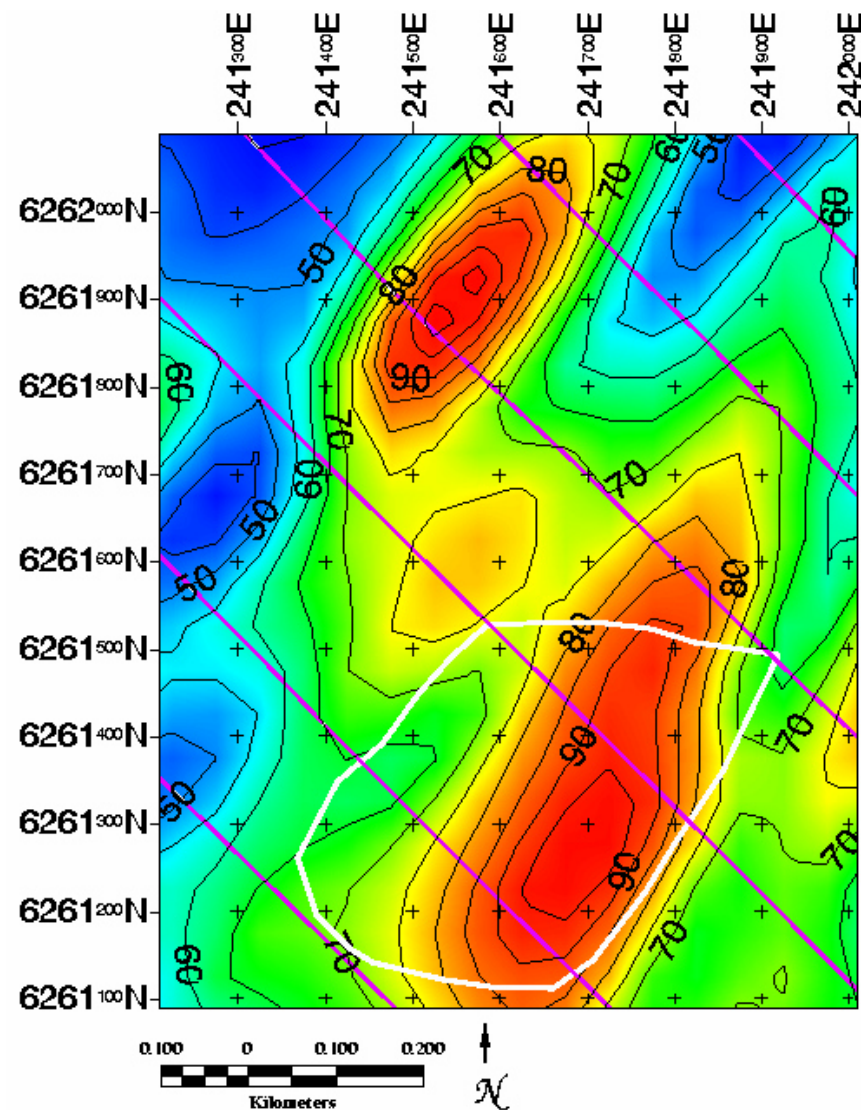


Airborne EM Results



Log-Linear AEM Profile over the Trilogy mineralisation

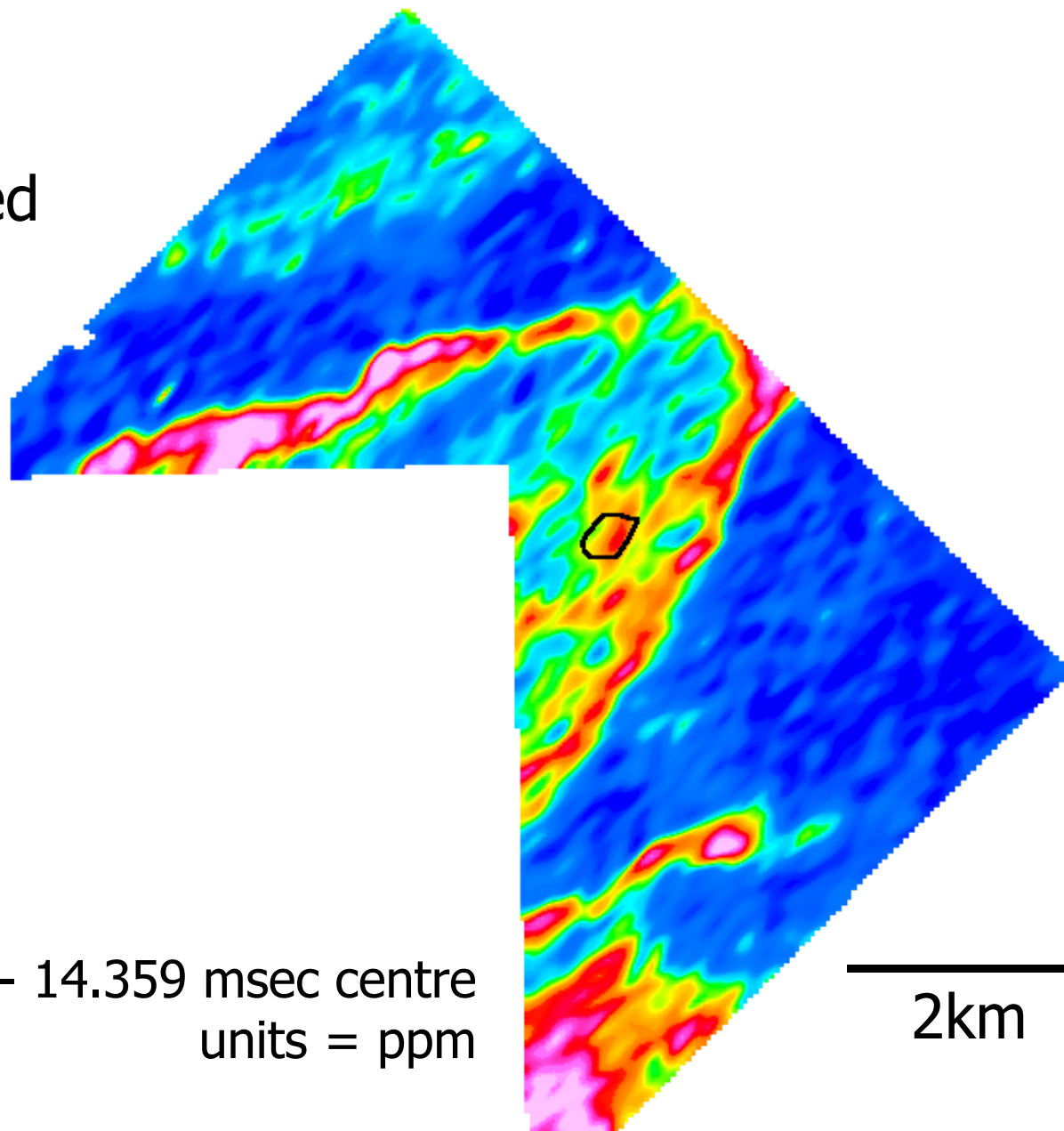
Channel 15 - 14.359 msec centre
units = ppm





Regional overview of Airborne EM

Trilogy is not the most conductive anomaly defined from the AEM survey.



Channel 15 - 14.359 msec centre
units = ppm



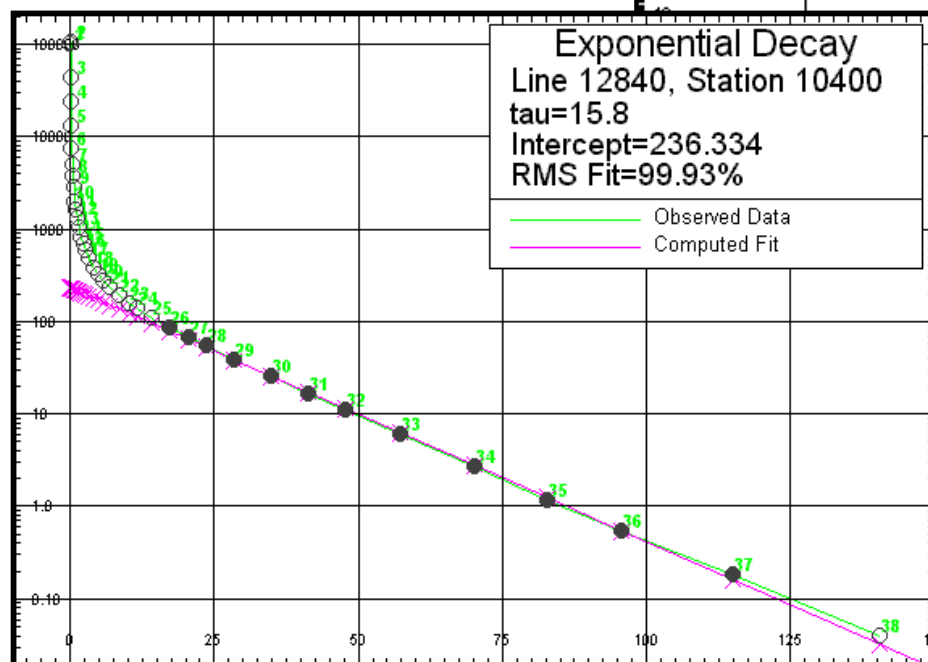
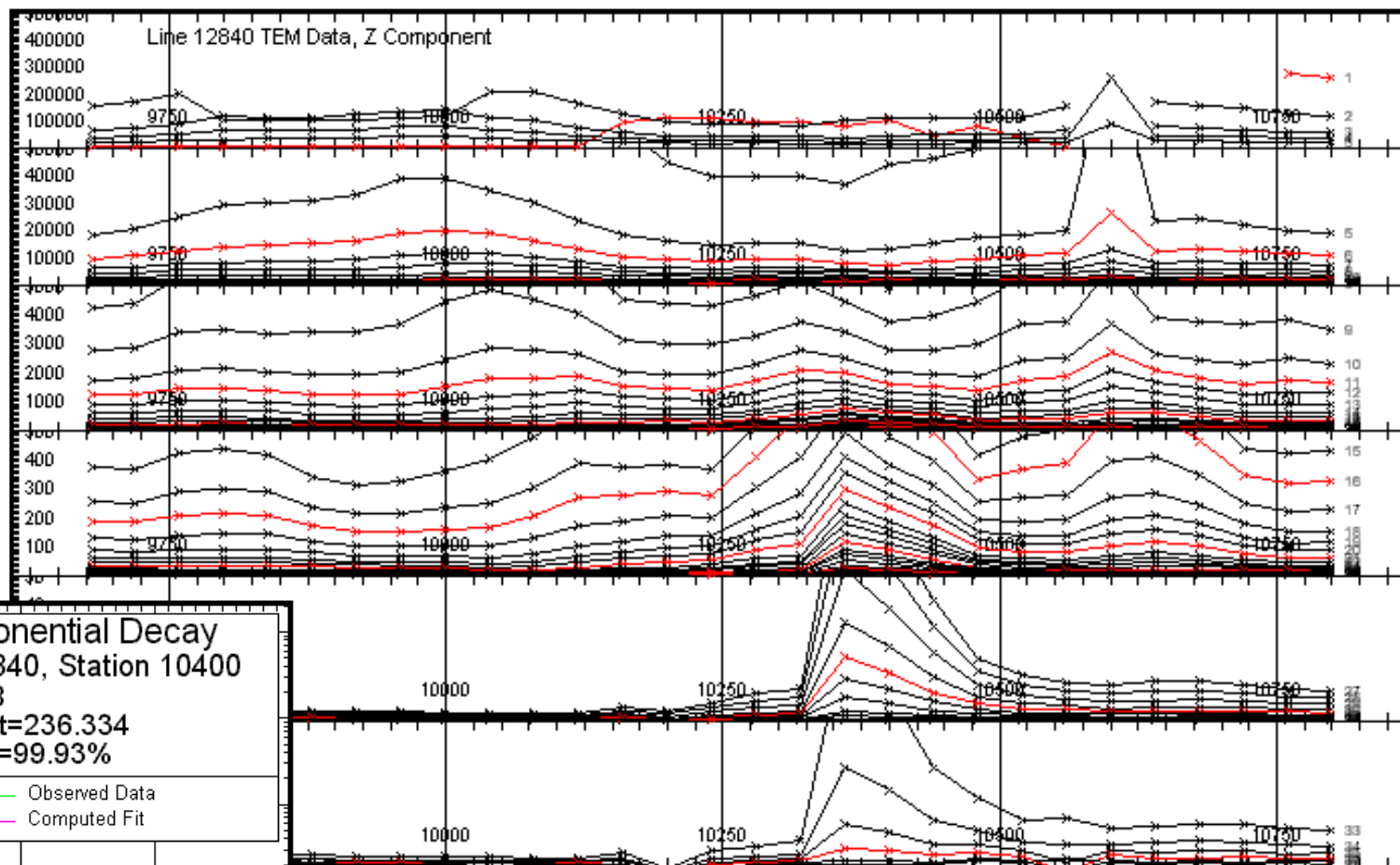
Ground EM Specifications

Receiver Instrument:	SIROTEM MkIII
Receiver Coil:	RVR-2E
Receiver Frequency:	Composite times
Components recorded:	Z
Transmitter:	SATX medium power tx
Transmitter Area:	12800 sq m (80x80m loop, 2 turns)
Station Spacing:	40m and 80m
Line Spacing:	80m



Ground EM Results

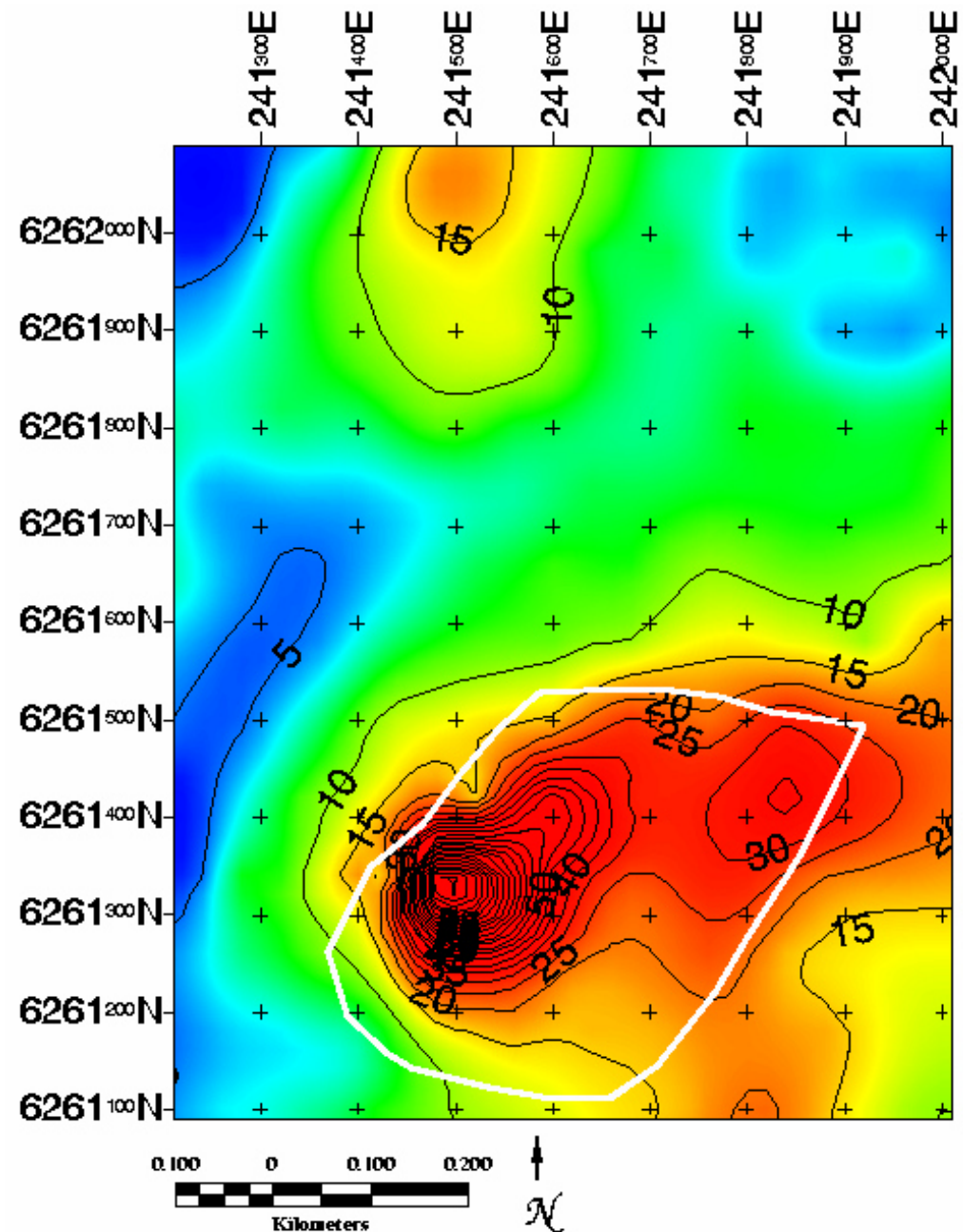
Linear-Linear profile
over the Trilogy
Mineralisation





Ground EM Results - cont'd

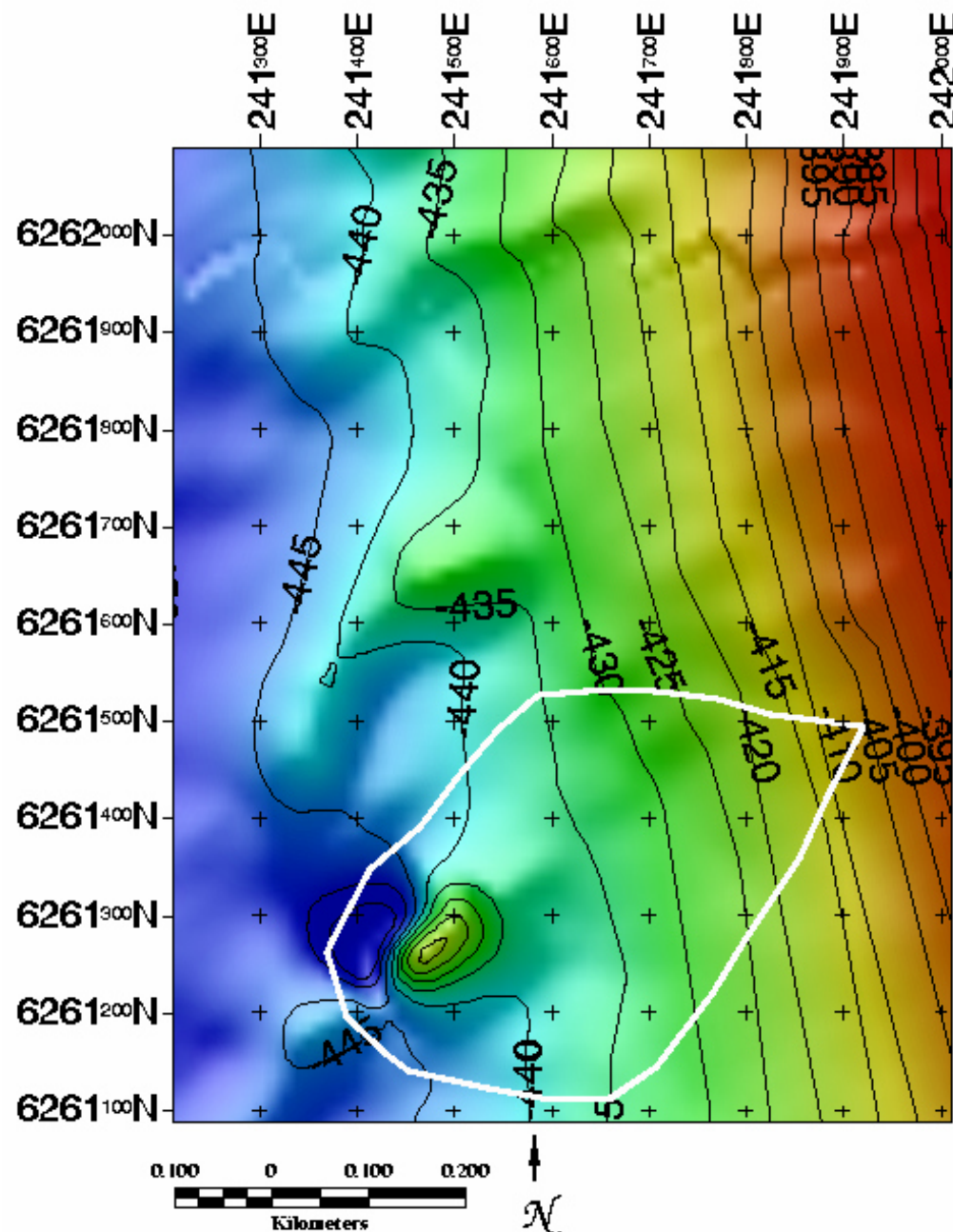
Channel 25 - 14.225 msec centre
units = $\mu\text{V}/\text{A}$





Ultra-Detailed Aeromagnetics

Airborne Total Magnetic Intensity
Low level fixed wing
units = nT

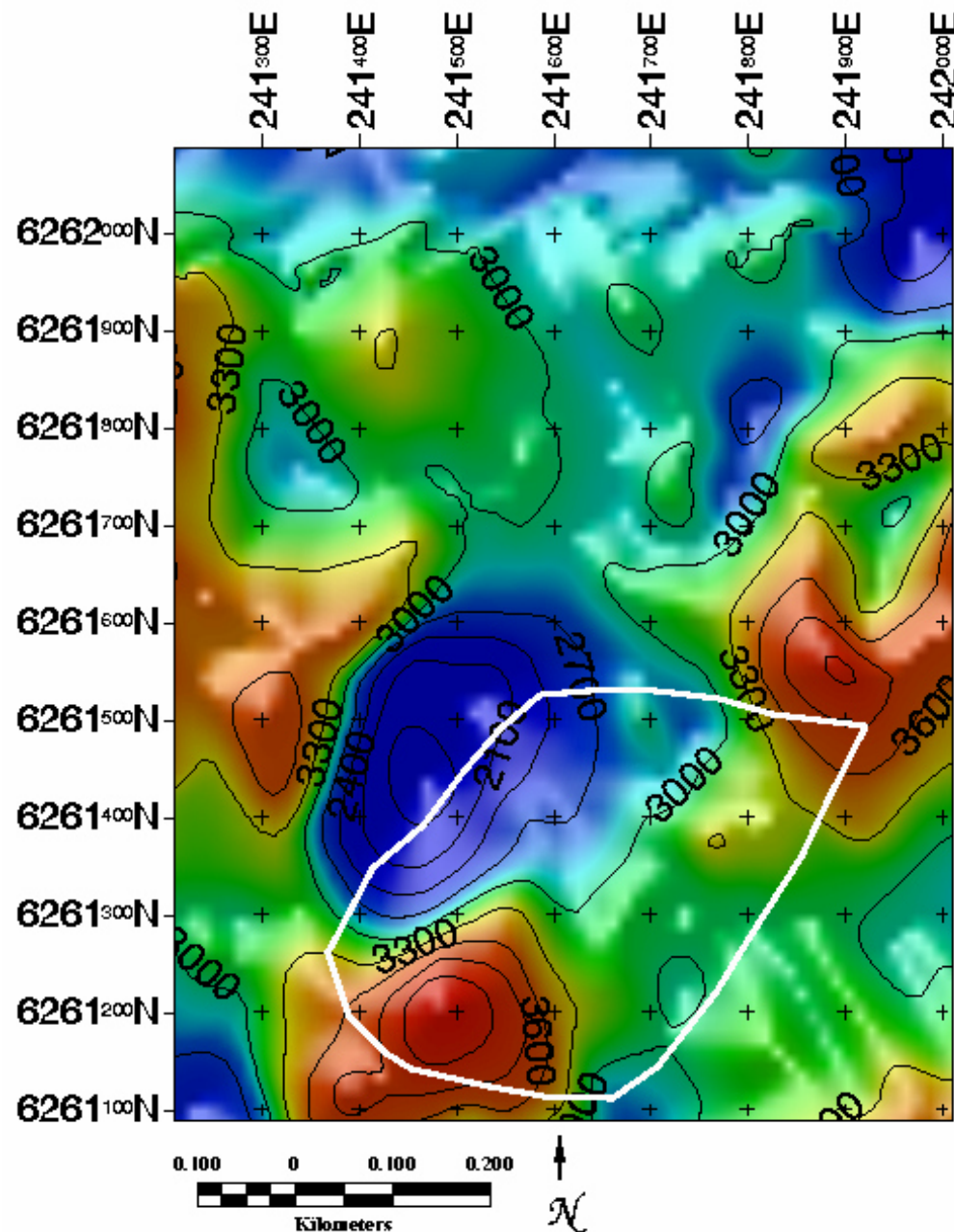




Ultra-Detailed Radiometrics

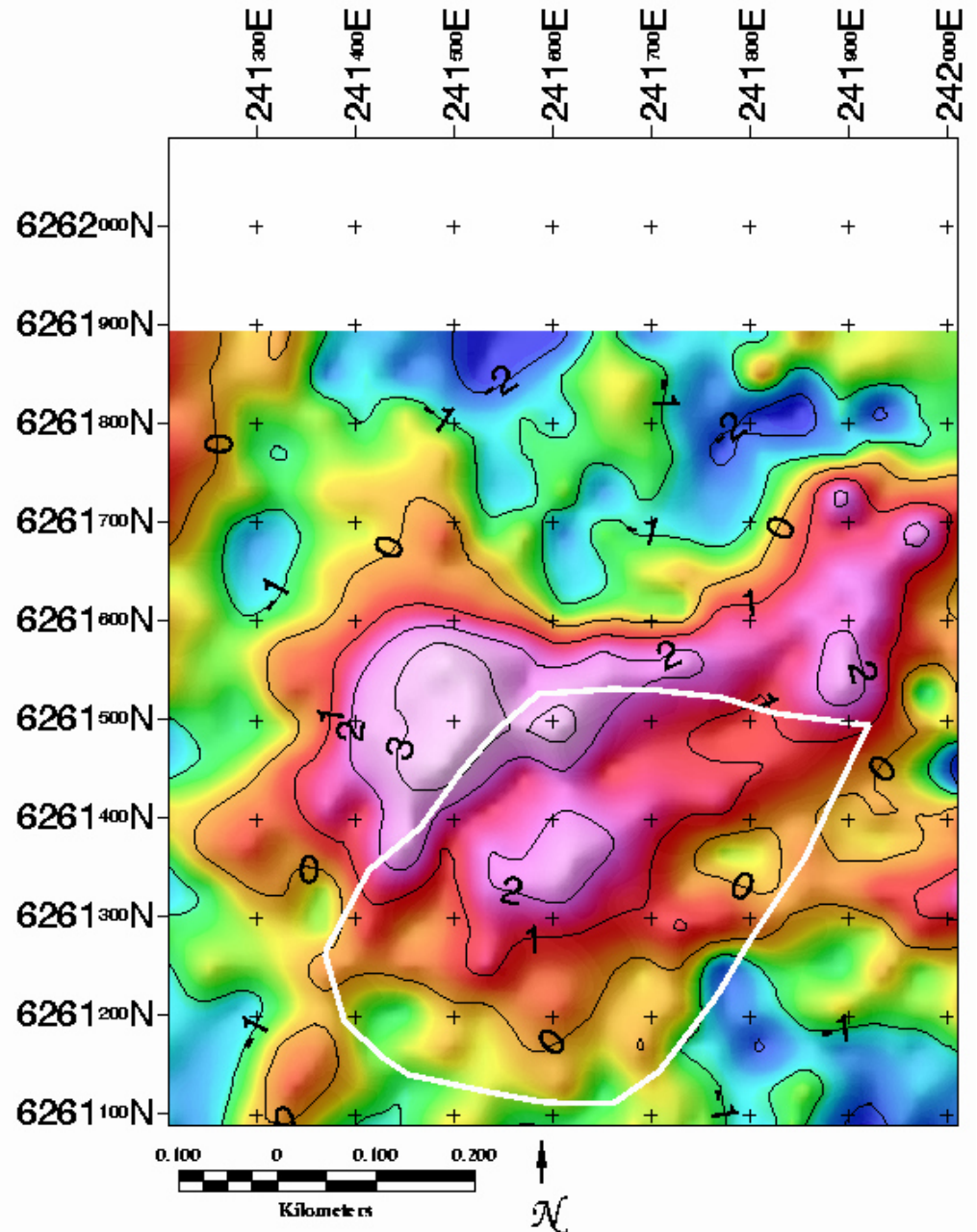
Airborne Radiometric Total Count

Low level fixed wing
Crystal Volume: 33.6l
units = counts/sec



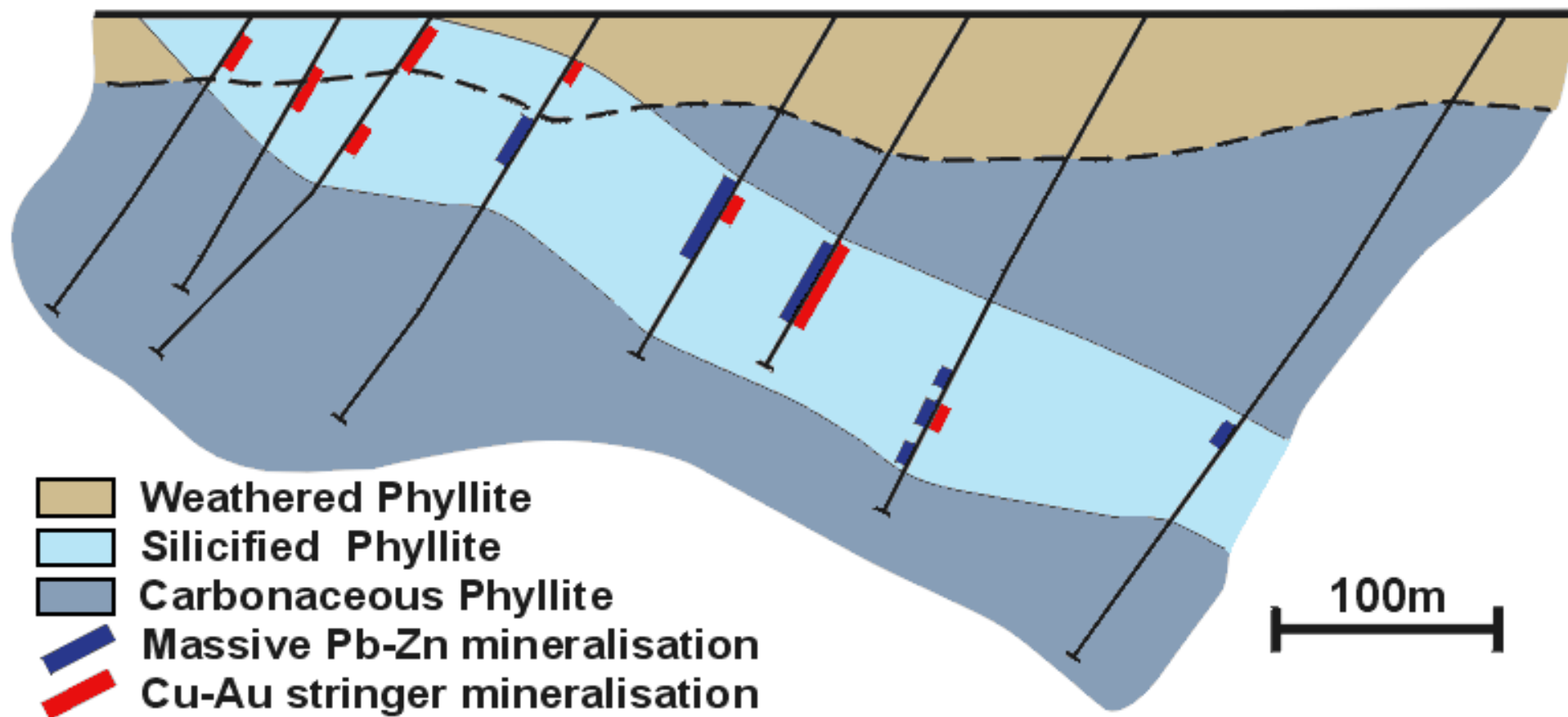
Detailed Gravity

Residual Gravity
1st order polynomial defined regional
units = gu

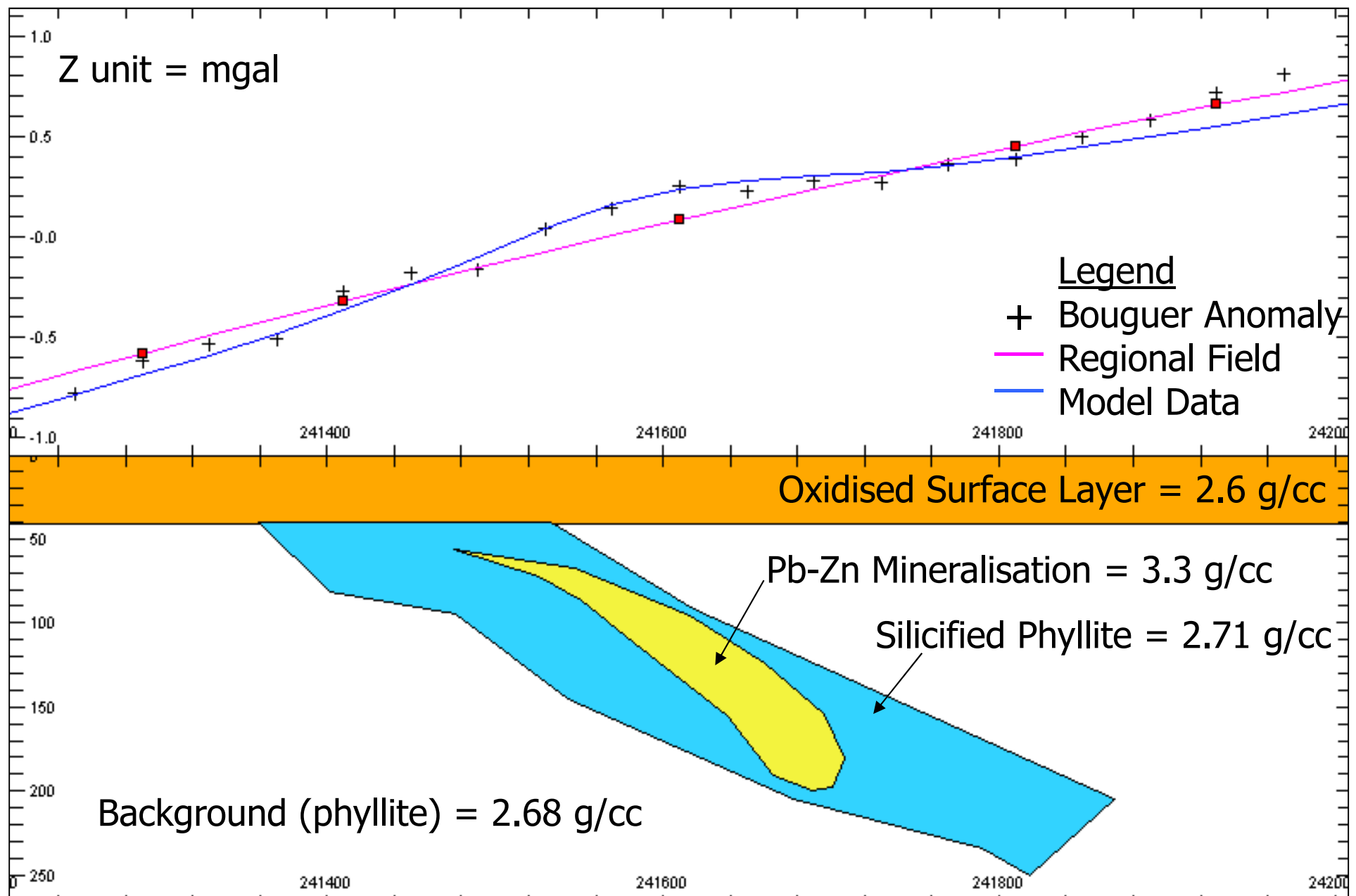




Trilogy Cross Section

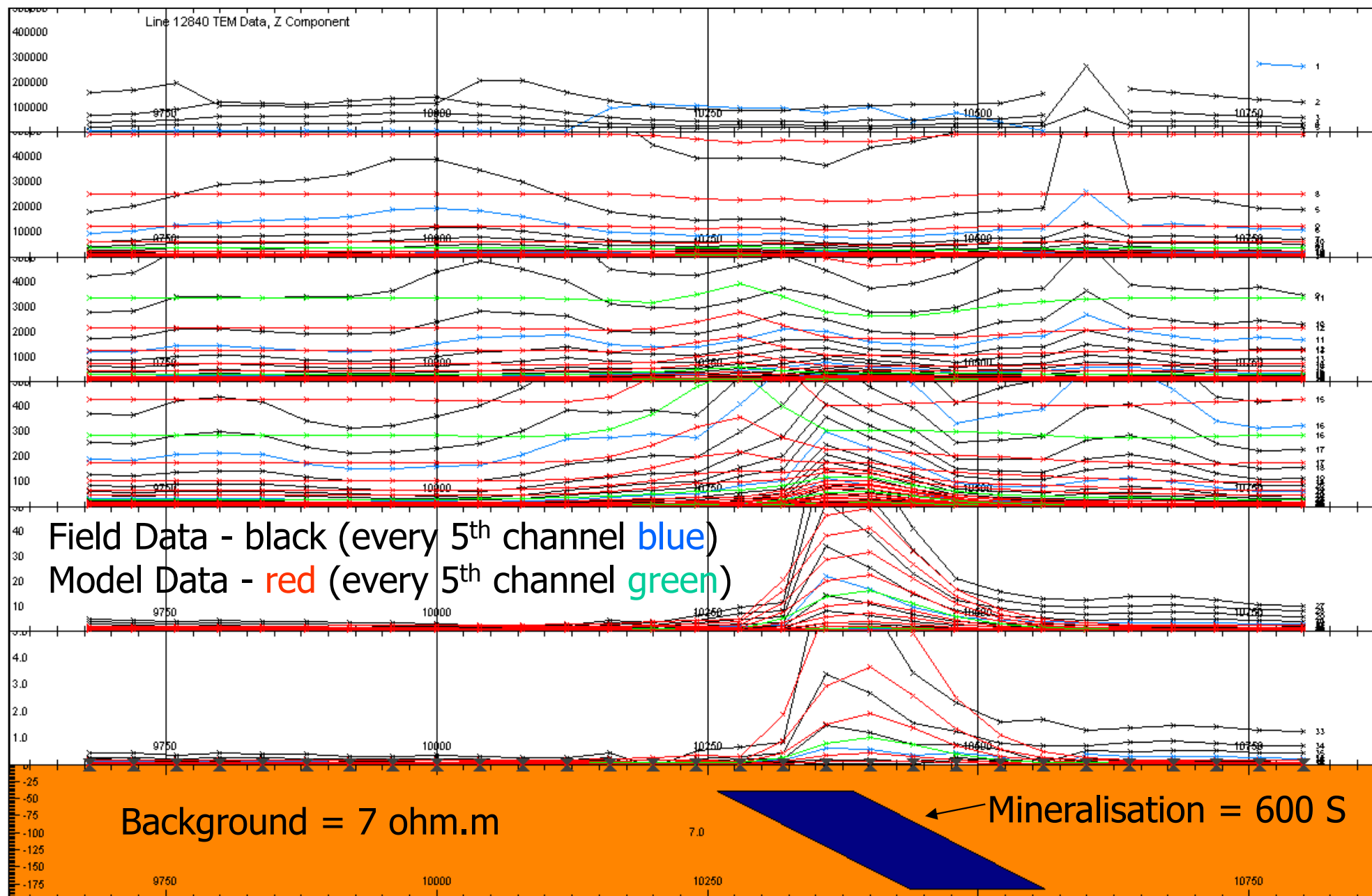


Gravity Modelling



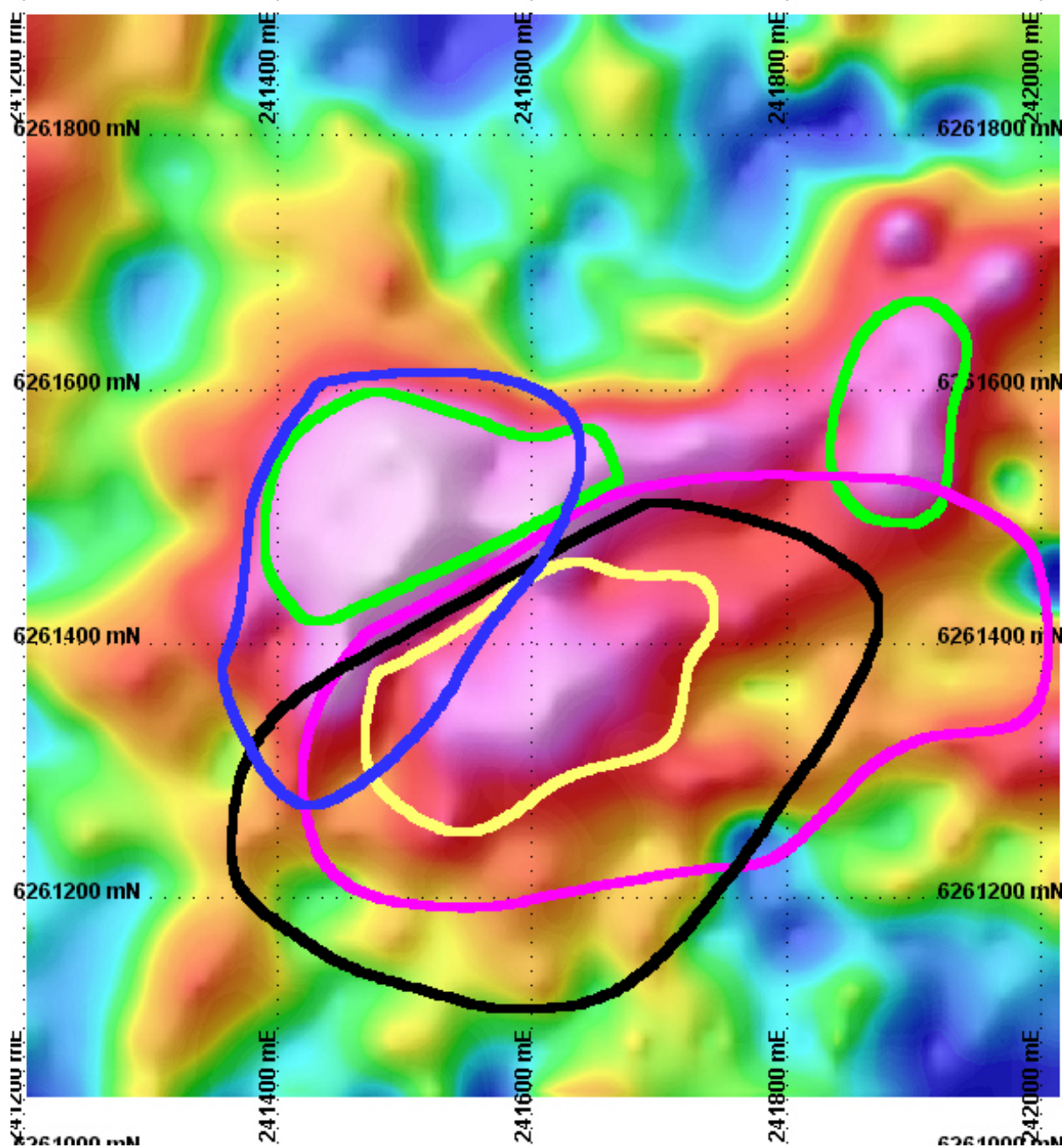


Ground EM Modelling





Summary Interpretation



Legend

- Mineralisation Outline
 - Gravity Anomaly
 - EM Anomaly
 - Total Count Anomaly
 - Regolith Related
- } Trilogy Mineralisation

200m



Conclusions/Exploration Strategy

- The Trilogy deposit represents a challenging regional exploration target due to the relatively small size of the mineralised system and the conductive nature of the phyllite host material.
- A combination of airborne EM with followup detailed gravity and ground EM have proven to be the most effective geophysical methods in locating Trilogy style mineralisation in the Mount Barren Basin.



Acknowledgments

- Contributions of all personnel involved in the discovery and subsequent delineation of Trilogy
- Homestake Gold and Paul Wilkes in collaboration with the CRCAMET for financial support
- Tectonic Resources for allowing us to present this paper