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Combined Partial Relinquishment Report

For EL 9521, 9523, and 9524

Part of the Andrew Young JV

Northern Territory

Mount Rennie and Mount Liebig 1:250,000 Sheets

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Distribution: Department of Business Industry and Resource Development
Central Land Council
Southern Tanami Exploration Pty Ltd
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1. INTRODUCTION

This partial relinquishment report summarises the exploration work carried out on the surrendered portions of Exploration Licences 9521, 9523, and 9524, Andrew Young JV Project Northern Territory from the grant date (18 July 2003) to the partial surrender date (15th July 2005). The Project forms part of a joint venture between BHP Billiton Minerals Pty Ltd (BHPB) and Southern Tanami Exploration Pty Ltd (STE).

The Andrew Young JV Project is located approximately 400 km west of Alice Springs in the south-western part of the Northern Territory. The tenement holding of 3 contiguous ELs straddles the boundary between the Mt Liebig and Mt Rennie 1:250,000 sheets (see **Figure 1**). Access to the area is from Alice Springs via the graded Tanami and Kintore roads. The Aboriginal community of Walungurru (Kintore) is located approximately 30 km SW of the joint venture area and a well-used track connects Walungurru with the Nyrripi community to the northeast. The latter track was used to access various parts of the area.

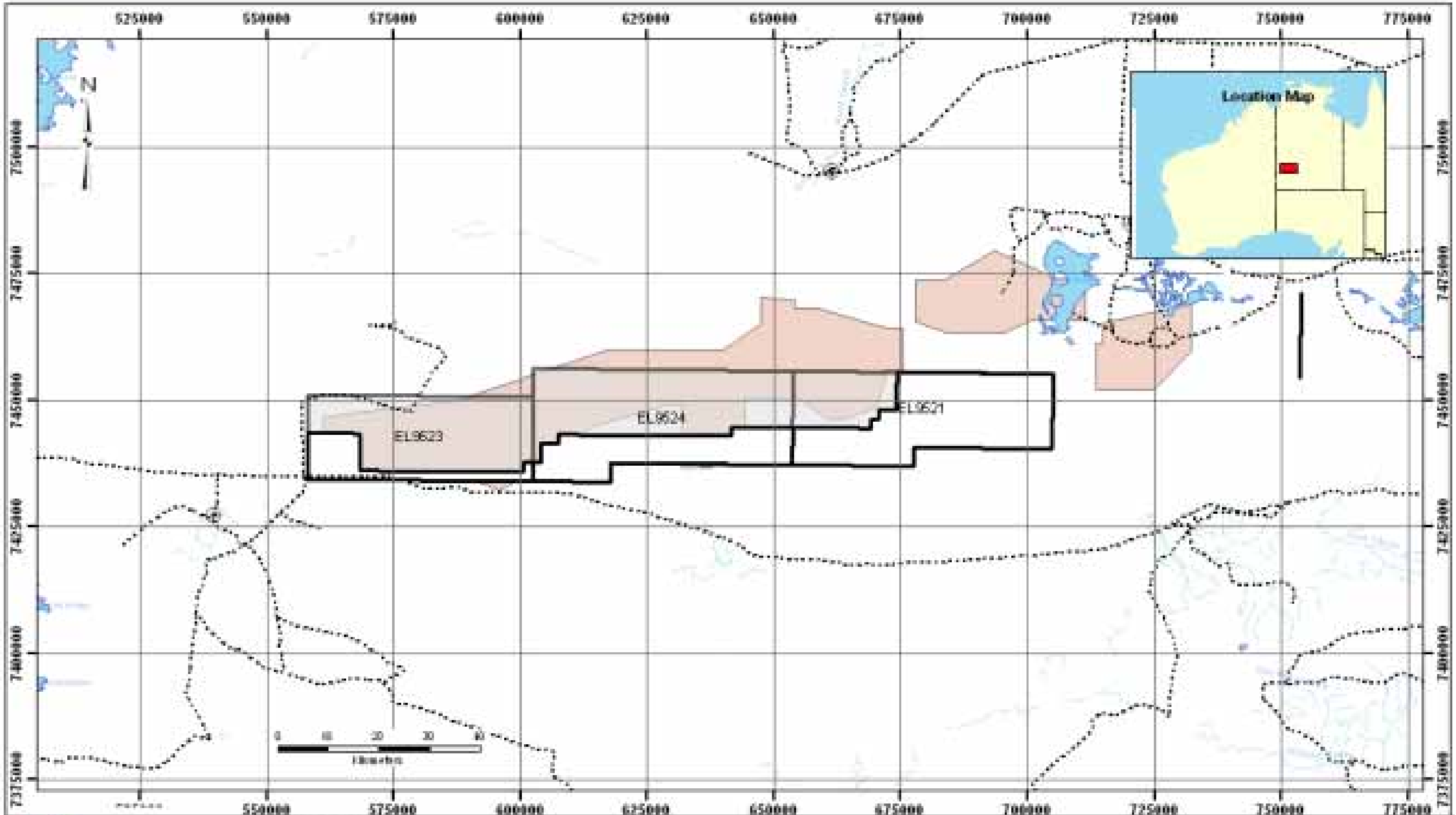
Through regional assessment in 1996, BHPB identified the poorly exposed Andrew Young Igneous Complex (AYIC) as having potential for Cu-Ni mineralisation. Exploration work on the Andrew Young JV Project area is aimed at discovering magmatic Copper-Nickel deposits associated with mafic intrusives.

Interpretation of the 'Mackay' aeromagnetic data flown in 1998 by the Northern Territory Geological Survey showed that the AYIC was more extensive than indicated from the outcropping area. BHPB subsequently targeted what it considered to be prospective ground with a GEOTEM 25Hz survey in 1999. Interpretation of the geophysical datasets defined conductive anomalies that were considered to have potential for Cu-Ni mineralisation. This led to a joint venture with Southern Tanami Exploration who held some of the prospective ground.

Ground follow-up of the anomalies was not possible until August 2003 as site access depended on a successful conclusion to a Conjunctive Agreement with the Central Land Council (CLC), granting of the tenements and a cultural survey over the target areas.

2. TENURE

The Andrew Young JV Project comprises 3 contiguous ELs held by Southern Tanami Exploration Pty Ltd. Tenement details are shown in **Table 1**.



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Australia & South Asia Region

Author: B Richardson
Date: January 2008
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Map ID: Andrew_YoungJV.mxd

Andrew Young JV (BHP Billiton/Southern Tanami Exploration)
Partial Relinquishment-Portions of
EL 9521, 9523, and 9524

Legend
- Relinquished_area
- Retained_area
- Geochem_survey_area

Table 1: Tenement Details

EL	Name	Grant Size	Retained Area	Grant Date	Partial Surrender Date
9521	Kuta Kuta	268	201	18-Jul-03	17-Jul-05
9523	Willie	234	51	18-Jul-03	17-Jul-05
9524	Ehrenberg	318	110	18-Jul-03	17-Jul-05

The Project area is Aboriginal freehold land within the Lake Mackay Aboriginal Land Trust, Yunkanjini Aboriginal Land Trust and Haasts Bluff Aboriginal Land Trust. Under the Aboriginal Land Rights (NT) Act 1976, in order to gain access to Aboriginal freehold land, an agreement must be reached with the Aboriginal group(s) concerned. In the present situation, a Conjunctive Agreement was negotiated with the Traditional Owners. Southern Tanami Exploration Pty Ltd (STE) commenced negotiations with the Central Land Council (CLC) in 1996 and BHPB took over negotiations in 1998.

An agreement was successfully concluded in early 2003 leading to the grant of the joint venture tenements. The remainder of the JV tenements were specifically excluded from this agreement as the CLC had earlier advised that these were known to contain sites of important cultural significance. The retained areas for each of the tenements is outlined in **Table 1**.

3. REGIONAL GEOLOGY AND SETTING

The Andrew Young JV area has recently been remapped and the following review of the regional geology is largely taken from Scrimgeour (*et. al.* 2003). The JV tenements cover outcropping and interpreted extensions of the Western Arunta Region. The Arunta Region has a complex stratigraphic, structural and metamorphic history extending from the Paleoproterozoic to the Palaeozoic and can be divided into three provinces with distinct protolith ages. The Aileron Province, which comprises most of the Aruntas, has depositional and intrusive ages of 1880-1710 Ma, similar to the adjacent Tennant Creek Inlier and Tanami Region (Collins & Shaw, 1995). However, two discrete younger terranes exist within the Arunta Region: the Warumpi Province, which has precursor ages of 1700-1600 Ma; and the Irindina Province in the eastern Arunta, where high grade metamorphic rocks have late Neoproterozoic to Cambrian precursors (Buick *et. al.*, 2001).

The boundary between the Aileron Province in the north and the Warumpi Province is a reworked structure known as the Central Australian Shear Zone (CAS). It can be traced in the regional aeromagnetic data from the Alice Springs 1:250,000 sheet in the east to the Wilson 1:250,000 sheet in the west. Its length (> 800 km) and linear nature indicate that this is a long-lived, fundamental structure, which has been reactivated during the Early Palaeozoic Alice Springs Orogen.

The CAS is thought to reflect the docking of the Warumpi Province with the North Australian Craton around 1640 Ma (Scrimgeour et. al. 2003). This marked a major mafic-ultramafic intrusive event, which included the target Andrew Young Igneous Complex (AYIC) of predominantly gabbronorite to mafic tonalite composition. Hoatson (2001) used incompatible-element discrimination diagrams to show that the Arunta intrusions fall into two major geochemical groups that highlight geographical differences in mineral prospectivity. The Andrew Young Hills in the east of the Project area fall into Hoatson's sulphur-rich group (~300 to 1200 ppm S) of the western and central Arunta.

3.1 Project Area Geology

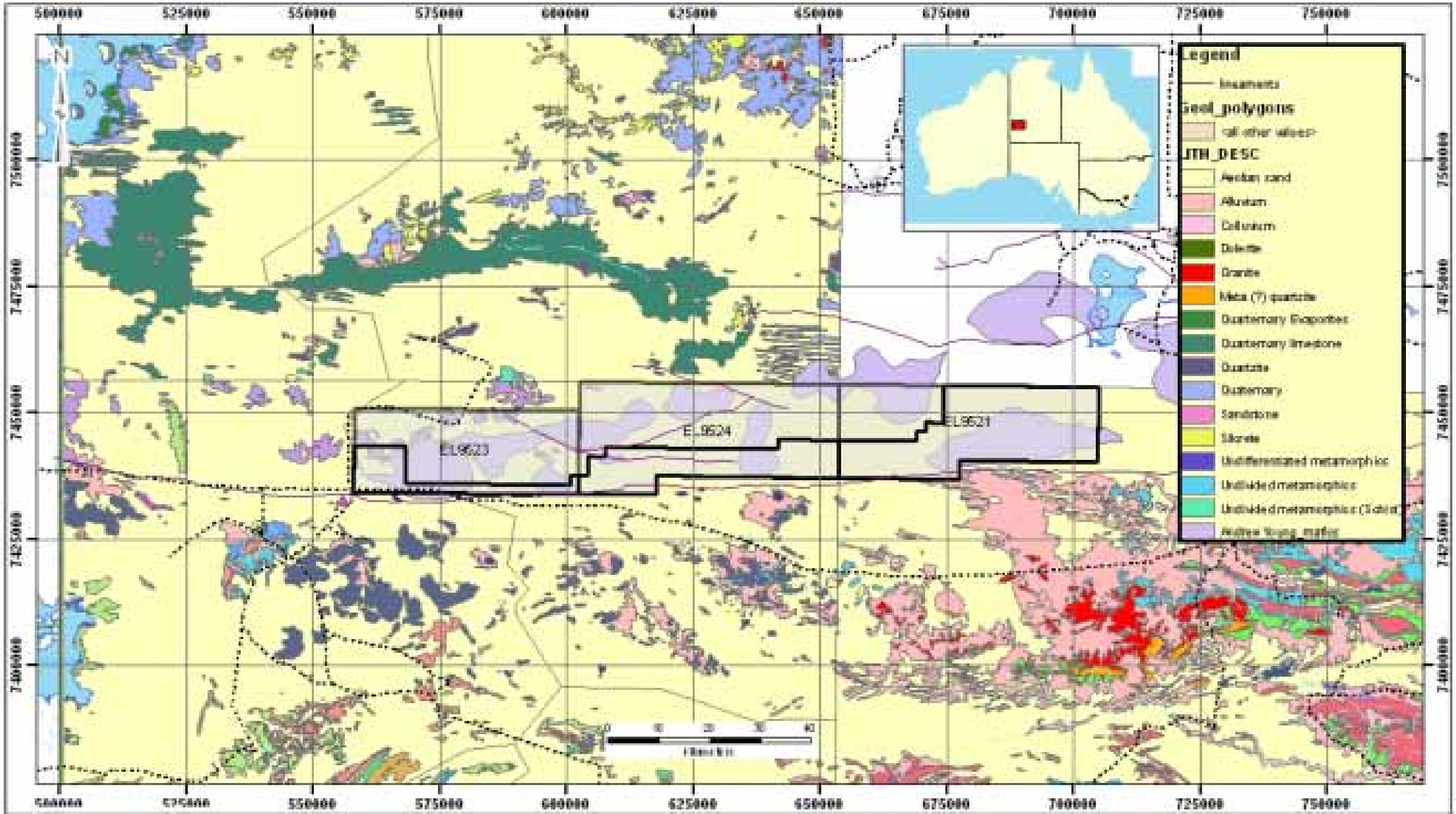
The Andrew Young Project straddles the boundary between the Mt Liebig, and Mt Rennie 1:250,000 sheets. Varying thicknesses (generally <50 m) of aeolian sand and recent calcreted chemical sediments cover much of the Project area (**Figure 2**). Sparse outcrop comprises aluminous meta-sedimentary rocks and minor volcanics of the Lander Rock Beds, which are metamorphosed to upper greenschist – lower amphibolite facies.
Exposed mafic lithologies range from massive gabbro to norite with rare olivine gabbro and pyroxenite. Most of the mafic rocks are generally non-magnetic which contrasts with the high magnetic susceptibilities of the exposed Andrew Young Hills to the east. Most of the magnetic stratigraphy in the Project area is recessive.

Quartz-sericite schists of the Paleoproterozoic Lander Rock Beds outcrop in the north of the Project area. These include associated amphibolite sills (Dufaur Suite) and are cut by numerous coarse-grained pegmatite and quartz veins. Garnetiferous quartz-feldspar±sillimanite gneiss outcrops in the south and southeast of the project area and (undeformed) granite is exposed in interdune areas to the southeast.

Outcrop and drill intersection of metadolerite/gabbro in the far north of the tenement area appears to be related to older mafic intrusions attributed to the Dufaur Mafic Suite, rather than to the Andrew Young Mafic Complex.

4. EXPLORATION WORK COMPLETED

A staged exploration program was undertaken culminating in the drilling of selected targets. All work was carried out on targets on the Mt Rennie 1:250 000 sheet. A search of previous exploration data in the region showed that no previous exploration had been carried out over the joint venture areas, probably due to the cover and the lack of good aeromagnetic data until 1998.



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Australia & South Asia Region

Author: S Richardson
Date: January 2006
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Andrew Young JV (BHP Billiton/Southern Tanami Exploration)
Regional Geology
of Project Area

The work program involved:

- Interpretation of previous GEOTEM survey and target selection of highest priority EM targets.
- Conjunctive Land Access Agreement with various Aboriginal groups comprising the Lake Mackay Aboriginal Land Trust, Yunkanjini Land Trust and Haasts Bluff Land Trust.
- Site clearances by the CLC with Traditional Owners.
- Ground TEM (Moving Loop EM).
- Surface geochemical sampling (magnetic lag sampling) over the priority targets as well as sampling of outcrops.
- Drilling of 5 holes for a total of 682 m (one hole abandoned-shanked bit)
- Ground Fixed Loop TEM and down-hole TEM to reconcile some of the targets.
- Petrological studies on selected drill chips.
- Rehabilitation of drill sites and access tracks.

4.1 Airborne 25Hz GEOTEM Survey

In May and June 1999, BHPB flew a 25 Hz GEOTEM survey over the Andrew Young Project. The aim of the survey was to highlight strong conductors that may reflect Ni-Cu mineralisation.

The GEOTEM dataset complemented the Mackay aeromagnetic survey, which had been flown for the Northern Territory Geological Survey (NTGS) in 1998.

The survey specifications for the GEOTEM survey were as follows:

Survey Type:	Time Domain Electromagnetic Survey (TEM)
Contractor:	GeoTerrex-Dighem
Date Flown:	May-June 1999
Base Frequency:	25 Hz
Pulse Width:	4 ms
Line Spacing:	500 m
Line Direction:	000^0 – 180^0

Survey Height: 105 m

Data Collected: 20 channels X, Y, Z component TEM, Magnetic Data

The GEOTEM survey consisted of three individual blocks covering what was considered to be the most prospective sites within the Andrew Young Igneous Complex. Block 1 covered most of the JV tenements, whilst Blocks 2 and 3 covered BHPB held tenements to the east of the JV area **(Figure 1).**

4.2 Aboriginal Land Access Agreement and Site Clearances

The Project area is Aboriginal freehold land within the Lake Mackay Aboriginal Land Trust, Yunkanjini Aboriginal Land Trust and Haasts Bluff Aboriginal Land Trust. Under the Aboriginal Land Rights (NT) Act 1976, in order to gain access to Aboriginal freehold land a Conjunctive Agreement was negotiated with the Traditional Owners. Southern Tanami (STE) commenced negotiations with the Central Land Council (CLC) in 1996 and BHPB took over negotiations in 1998.

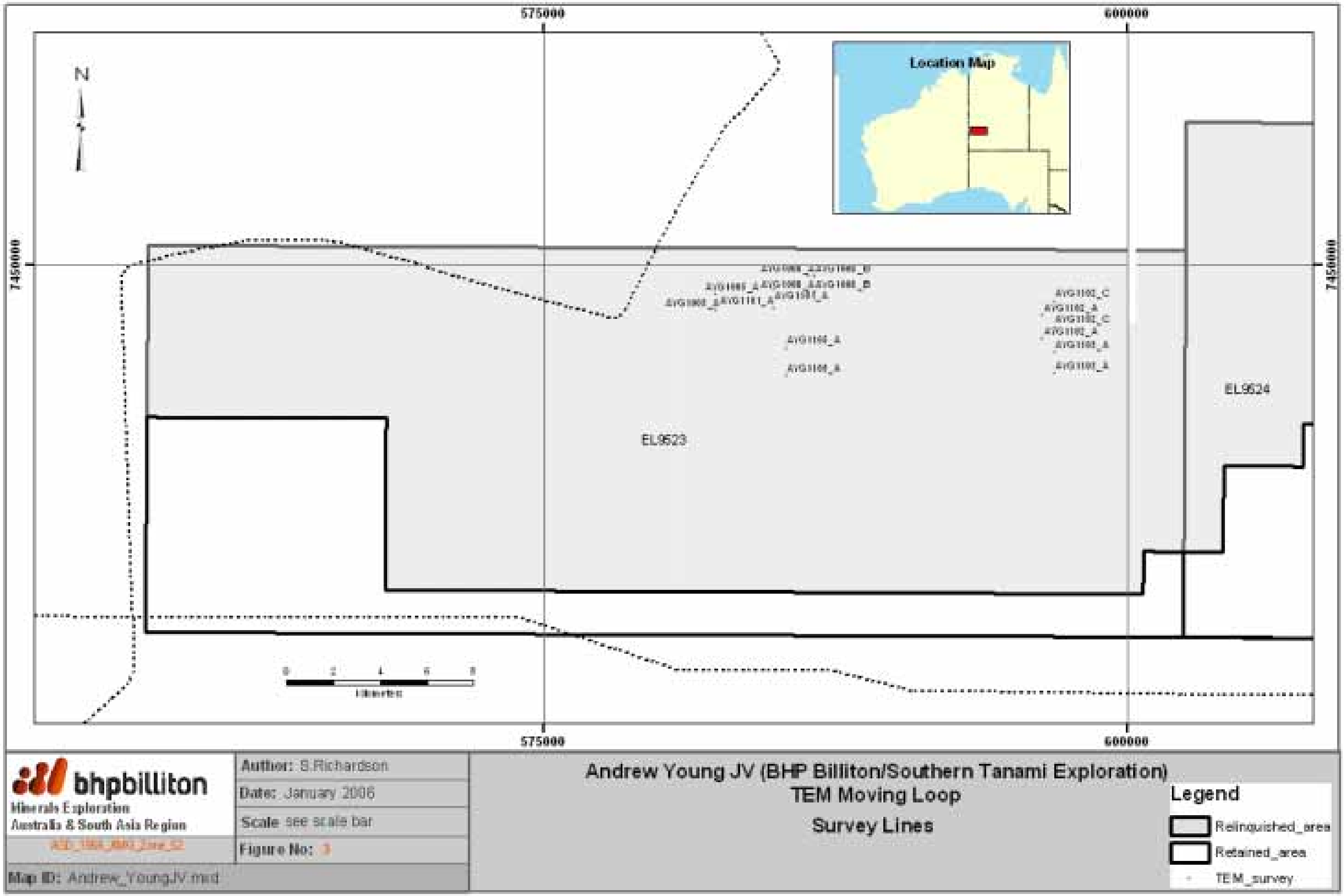
An agreement was successfully concluded in early 2003 leading to the grant of five of the proposed JV tenements. The remainder of the JV tenements were specifically excluded from this agreement as the CLC had earlier advised that these were known to contain sites of important cultural significance.

A work program was forwarded to the Central Land Council in May 2003 proposing follow-up of 28 anomalies identified from airborne geophysics. Each of the anomalies was visited by a helicopter-borne survey team assembled by the CLC, which ‘cleared’ an area for exploration measuring 4 km north-south, and 400 m east-west centred on the target areas as well as nominal access routes.

4.3 Moving Loop TEM over Target Areas

Interpretation of the airborne geophysics highlighted 29 discrete targets in the JV area. Modelling of the GEOTEM and aeromagnetic data indicates that the targets are at shallow depth. The radiometric data also highlight trends that are parallel to or coincident with magnetic trends, which suggest that Proterozoic rocks are only thinly covered.

First-pass prioritisation of these anomalies based on the profiles, intensity, relationship to the magnetics and structural position led to 8 of these being selected for ground TEM follow-up (see **Figure 3**). Adelaide-based Solo Geophysics collected moving loop TEM over 8 high priority targets for a total of 10 line kilometres. The digital TEM data from this first pass ground geophysics is given in **Appendix 1**. The results of the program can be summarised as: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Location Map
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Australia & South Asia Region
Author: S.Richardson
Date: January 2006
Scale: see scale bar
Figure No: 3
Map ID: Andrew_YoungJV.mxd
Andrew Young JV (BHP Billiton/Southern Tanami Exploration)
TEM Moving Loop
Survey Lines
Legend
Relinquished_area
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TEM_survey

- **3 traverses** (AYG1005A, AYG1008A and AYG1008B) indicate the presence of conductive, steeply dipping structures. The traverses delineated 2 high-priority geophysical targets (AYG1005 and AYG1008) for follow-up.

- **2 traverses** (AYG1101A and AYG1102C) suggest the presence of deeper (~200 m-300 m) conductive structures. These targets are not recommended for follow-up.

- **3 traverses** (AYG1102A, AYG1103, and AYG1105A) did not indicate bedrock conductors, but suggested that the associated GEOTEM anomalies are due to variations in the conductive overburden.

4.4 Surface Geochemical Sampling

4.4.1 Introduction

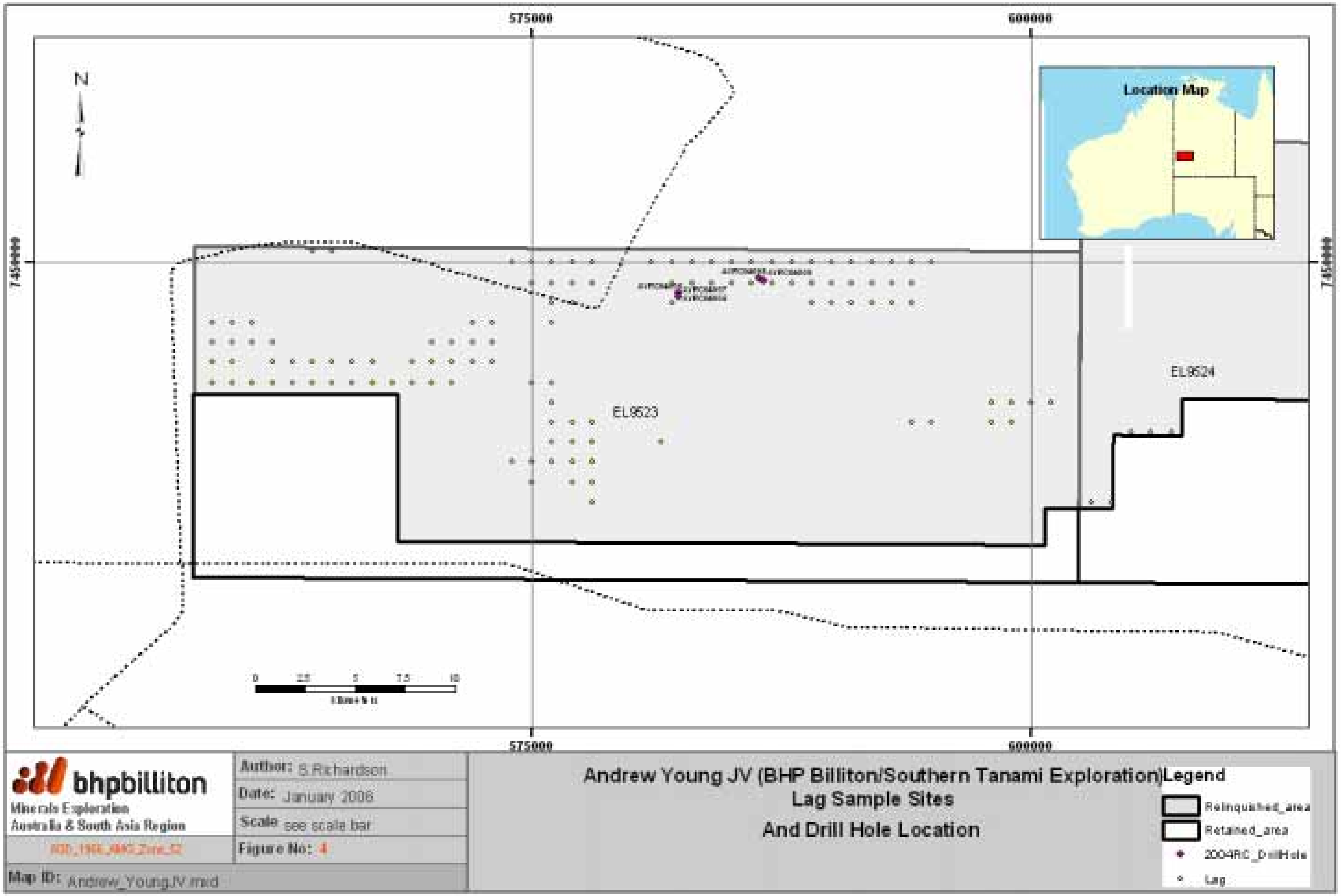
In an attempt to screen the priority conductors, a trial geochemical program was completed on four lines coincident with ground TEM lines 1005A, 1008A, 1008B and 1102C. Two kilogram samples were collected at 200 m spacing and sieved in the field for the –2 mm lag fraction. A total of 34 rock samples and 61 soil samples were collected **(Figure 4).** In the soil samples**,** the magnetic fraction was extracted by dragging a ferrite block sealed in plastic over the sieved sample extracting between 20 and 100 g of magnetic material.

The magnetic fraction was analysed at ALS Chemex Laboratories, Brisbane for Au, Pt and Pd by fire assay and Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, La, Li, Mg, Mn, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn and Zr by ICPAES after a mixed acid digest. Two duplicates and two standards were inserted. The remaining bulk 2 kg of –2 mm sample was retained for check analysis if required. Full details of the analyses are contained in **Appendix 2**.

The lag survey was designed to pick mechanically dispersed lag (ideally duricrust or hardcap material) with a remnant signature reflecting original basement geochemistry. Sieving the lag fraction and the magnetic separation was intended to remove much of the regolith effect and the effects of non-magnetic material in particular dilution by aeolian material.

4.4.2 Results and Discussion

The 'soils' in the area are skeletal with little, if any profile development. In order to facilitate interpretation the samples were crudely separated into residual, aeolian and colluvial material. Residual soils typically comprise thin aeolian cover with lithic fragments weathering directly on bedrock/subcrop.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Australia & South Asia Region
Author: S.Richardson
Date: January 2006
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Map ID: Andrew_YoungJV.mxd
Andrew Young JV (BHP Billiton/Southern Tanami Exploration)
Lag Sample Sites
And Drill Hole Location
Legend
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2004RC_DrillHole
Lag

The geochemical data suggests that the magnetic lag technique has been effective, although colluvial material has a higher background in some of the major elements like K and lower Fe which may reflect that these samples were collected nearer outcrop with some dilution occurring from the introduction of non-lag material.

Overall, due to the low sampling density it is difficult to discriminate background from anomalous values. However, it is clear that the magnetic lag has been effective in discriminating between silicic and mafic lithologies and, although this simply confirmed what was observed in the mapping, it appears that the geochemistry is more sensitive although its effectiveness is limited where transported cover thickens.

4.4.3 Lithogeochemistry

During August 2003, 34 rock samples were collected for analysis and sent to Ultratrace Laboratories in Perth for whole rock analysis and the results are included in **Appendix 3**. No primitive lithologies were mapped or sampled and the lithogeochemistry has not upgraded the prospectivity of the project.

4.5 RC Drilling

4.5.1 Introduction

Based on the results of the field work, drilling of four targets (five holes including one redrill due to a shanked bit, AYRC04005 - 008) was undertaken in March 2004. Site preparation was minimal and limited to hand clearing of any low scrub that would interfere with the movement and positioning of the drill rig. Drill access was across country avoiding any more thickly vegetated areas and any sand dunes (Figure

Grimwood Davies Pty Ltd of Boulder W.A. was contracted for the drilling program and mobilised to site from Kalgoorlie. The drilling rig used was a Schramm T685 Reverse Circulation Drilling Rig mounted on a 8 x 8 MAN truck. This came with an onboard 1350cfm/500psi compressor and an automated rod handling system.

The rig was supported by a booster and auxiliary compressor unit delivering a minimum of 1800cfm/870psi (mounted on a 6 x 6 MAN), an 8 x 8 support truck with fuel and water capacity and a Toyota Landcruiser for crew movements (one driller and three offsiders).

Holes were drilled at 5.5 inch diameter with 6 m of PVC left in the collar of each hole. The drill collar information is included in **Appendix 4**. All drill holes were logged according to a coded system and entered onto spreadsheets. The logging codes and summary logs are also given in **Appendix 4** together with detailed logs, down-hole survey data and magnetic susceptibilities.

Down-hole surveys were conducted with an Eastman Single Shot camera at 50 m intervals and at the end of each hole to allow plotting of hole path with respect to target location magnetic susceptibilities were recorded every metre in each hole and entered into an excel spreadsheet.

Samples for analysis were collected from the plastic bags as 4 m composites using a PVC spear with one spear from each of four bags to produce a sample in a calico bag of 3-4 kg. Duplicates were collected every 20 samples and a base metal standard was added every 20 samples as an additional check on the accuracy and reproducibility of the laboratory results. All samples were sent to Ultratrace Laboratories in Perth for analysis. Methods, elements and detection limits are as follows:

Fire Assay - Au (1ppb) Pt (1ppb) Pd (1ppb)

XRF - SiO_2 (0.01%), TiO_2(0.01%), Al_2O_3 (0.01%), Fe_2O_3 (0.01%), MnO (0.01%), MgO (0.01%), CaO (0.01%), Na_2O (0.01%), K_2O (0.01%), P_2O_5 (0.001%), SO_3 (0.01%) and LOI

Mixed Acid Digest (ICPAES) - Ag (0.5ppm), As (1ppm), Ce (0.1ppm), Co (2ppm), Cu (1ppm), Cr (5ppm), Dy (0.05ppm), Er (0.05ppm), Eu (0.05ppm), Gd (0.2ppm), Ho (0.02ppm), La (0.1ppm), Lu (0.02ppm), Mo (0.5ppm), Nb (0.5ppm), Nd (0.05ppm), Ni (1ppm), Pb (1ppm), Pr (0.02ppm), Rb (0.2ppm), Sb (0.1ppm), Sm (0.05ppm), Sn (1ppm), Sr (0.5ppm), Tb (0.02ppm), Th (0.1ppm), Tm (0.02ppm), U (0.1ppm), W (0.5ppm), Y (0.1ppm), Yb (0.05ppm), Zn (1ppm), Zr (1ppm).

Table 1. Summary Drill Hole Collars and Targets

Hole	AMG East	AMG North	Zone AGD66	Depth (m)	Basement (m)	Dip	Az mag	Target (prefix AYG)
AYRC04005	582350	7448280	52	160	0.5	60	176	1005A
AYRC04006	582350	7448450	52	160	0.5	65	176	1005B
AYRC04007	582353	7448294	52	130	0.5	65	356	1005C
AYRC04008	586350	7449190	52	90	0	60	176	1008A
AYRC04008A	586350	7449186	52	142	0	60	176	1008A

Hole AYRC04005 was drilled to test the southern target, AYG1005A. This was modelled as a thin, steeply north dipping conductor (decay constant 23ms) at approximately 125m depth. The hole collared in metadolerite of the Dufaur Mafic Suite and this probable sill extended to 46m, with the rest of the hole to 160m final depth in micaceous quartz arenite and schist of the Lander Rock Beds. Two clayey fault zones which could account for the EM anomaly were encountered at 122-140m and 150-154m. No mineralisation was observed in the dolerite or metasediments.

Hole AYRC04006 was drilled to test the northern target, AYG1005B. This was modelled as a thin steeply north dipping conductor (19ms) at approximately 125m depth. The hole intersected meta-arkose to 27m, then pyritic metadolerite (2-5%) of the Dufaur Mafic Suite to52.5m, followed by schists and quartz arenites of the Lander Rock Beds to 134m, a possible feldspar porphyry dyke to 140m and then micaceous quartz arenite and schist to the end of the hole at 160m. Clayey fault zones in the intervals 109-134m, 147-151m and 151-157m may account for the EM anomaly.

Hole AYRC04007 was drilled to test the central target, AYG1005C. This was modelled as a thin steeply south dipping conductor at approximately 125m depth. The hole intersected schists and micaceous quartz arenites to 82m with moderate veining of pyrite-pyrrhotite 75-82m, followed by a 2m zone of massive to semi-massive pyrite (82-84m), silicified pyrite-pyrrhotite veined metasediment to 94m, further pyritic metadolerite 94-103m with adjacent silicified pyritic metasediment carrying variable quantities of pyrite-pyrrhotite veinlets to the end of the hole at 130m. The EM anomaly can be explained by semi-massive to massive pyrite

Hole AYRC04008 was drilled to test GEOTEM anomaly AYG1008A. This was modelled as a thin, steeply south dipping conductor (decay constant 15 ms) at approximately 100m depth. The hole was abandoned at 90m due to the broken shank of the bit lost in the hole. It was redrilled as hole **AYRC04008A.** This hole intersected schists and meta-arenites of the Lander Rock Beds to 98m, then a metadolerite sill of the Dufaur Mafic Suite to 102m, schists and clayey schists to 139m followed by a further metadolerite sill to the end of the hole at 142m. No sulphide zones were intersected. A clayey fault zone 126-129m and a second strong clayey fault zone 132-134m may explain the GEOTEM anomaly.

4.5.2 Drill Hole Geochemistry

The results of the analysis of four metre composite samples are shown in **Appendix 4** while the elements Cu, Ni, Pt, Co, Fe_2O_3, MgO and SO_3 are plotted with geology on strip logs in **Appendix 4**. The MgO, Ni, Co and Pt best define the mafic/ultramafic intrusives, though Cu and Fe can also be definitive. No significant mineralisation was intersected.

4.5.3 Drill Hole Petrology

Twenty-one samples of drill chips from holes AYRC04001, 002, 003, 004, 006, 007, 009 were submitted to Pontifex and Associates for petrology. The petrology report is included in **Appendix 5**.

The petrology showed that many of the intrusive rocks were mafic (meta-gabbroic/doleritic), rather than ultramafic, though pyroxenites were intersected in several holes. Strong phlogopite alteration with associated actinolite-tremolite has occurred in several small mafic bodies and these were not discriminated from metasediments in the original logging.

The metasediments of the Lander Rock Beds vary from pelite to quartzofeldspathic and even quartz-rich sandstones. Metasomatised zones were noted. Some prominent tourmaline in hole AYRC04007 is associated with a zone of shearing, quartz veining and pyrite, pyrrhotite and minor chalcopyrite. This is suggested to be from a post-tectonic source (probably granitic) rather than from the mafic sills.

While some minor exsolution pentlandite flames in pyrrhotite of probable magmatic origin were observed in the gabbro in hole AYRC04009 (redrill of AYRC04001), Ni and Cu bearing minerals are rare. Pyrrhotite is most abundant in the amphibolites, but rare/trace chalcopyrite can occur there.

4.5.4 Drill site Rehabilitation

All samples and plastic bags were removed from each drill site. Any rubbish was also removed. A scarifying plough obtained from the South Australian Department of Primary Industries and Resources was used to level wheel ruts in tracks and on drill sites to allow the natural vegetation to re-establish itself. Any cleared scrub was dragged back onto the drill sites so natural seeding could occur. All drill collars were cut off below ground level, capped and cemented. Photos showing aspects of the rehabilitation are given in **Appendix 6**.

5. CONCLUSIONS

The work program has effectively tested the best EM targets available from the original 25 Hz GEOTEM survey with disappointing results. No significant sulphide conductors were identified, apart from the pyrite-pyrrhotite zone within metasediments in hole AYRC04007. This was related to the Dufaur Mafic Suite to the north of the northern limit of the Andrew Young Complex The tourmaline association here suggests the sulphides were probably derived from granitic fluids rather than from fluids associated with the mafic intrusions.

From these results and further interpretative work the partial relinquishment of the leases outlined in Table 1 is required.

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