

## MEMORANDUM

**TO:** Hatsu Miyada, Rick Valenta                      **DATE:** 30<sup>th</sup> JUNE 2009  
**FROM:** Dave Esser  
**CC:** Saeko Nojiri

### **SUBJECT: GROUND FOLLOW-UP OF AIRBORNE TARGETS**

A ground reconnaissance survey was conducted from May to June 2009 in order to inspect nineteen interpreted geophysical targets, identified from the preliminary airborne magnetic and radiometric survey flown in March to May 2009. The targets were selected based on the following criteria:

- Favourable lithology (e.g - oxidised Westmoreland conglomerate or carbonaceous Murphy inlier sediments).
- Proximity to interpreted unconformity (Westmoreland conglomerate – Murphy Inlier)
- Proximity to NW or NE trending faults
- Reduced sediments along a fault (low magnetic response)
- Proximity to high gravity gradient
- Proximity to interpreted granitic body (gravity low).

Each target was ranked on the basis of the presence or absence of the above criteria For a list of the targets, including location, rank, criteria, and field observations refer to **Table 1** and **Figure 1**.

#### **MAY TO JUNE FIELD PROGRAM:**

The purpose of the reconnaissance was to check access, local cultural / topographic features (water bores, farm infrastructure, creeks, etc-) and surface geology. The program commenced in May and was completed in June. The results of the ground checking indicated that access to targets CB2, CB4 to CB12, CB14, JC05, JC02 and JC04 is relatively good, whilst the other three targets the access was poor to moderate (no tracks).

All the targets are on flat to slightly undulating country, with 13 targets being on black soil plain, and targets CB7, CB10 to CB14 are located in country which is transitional between elevated, residual laterite ridges and black soil plains.

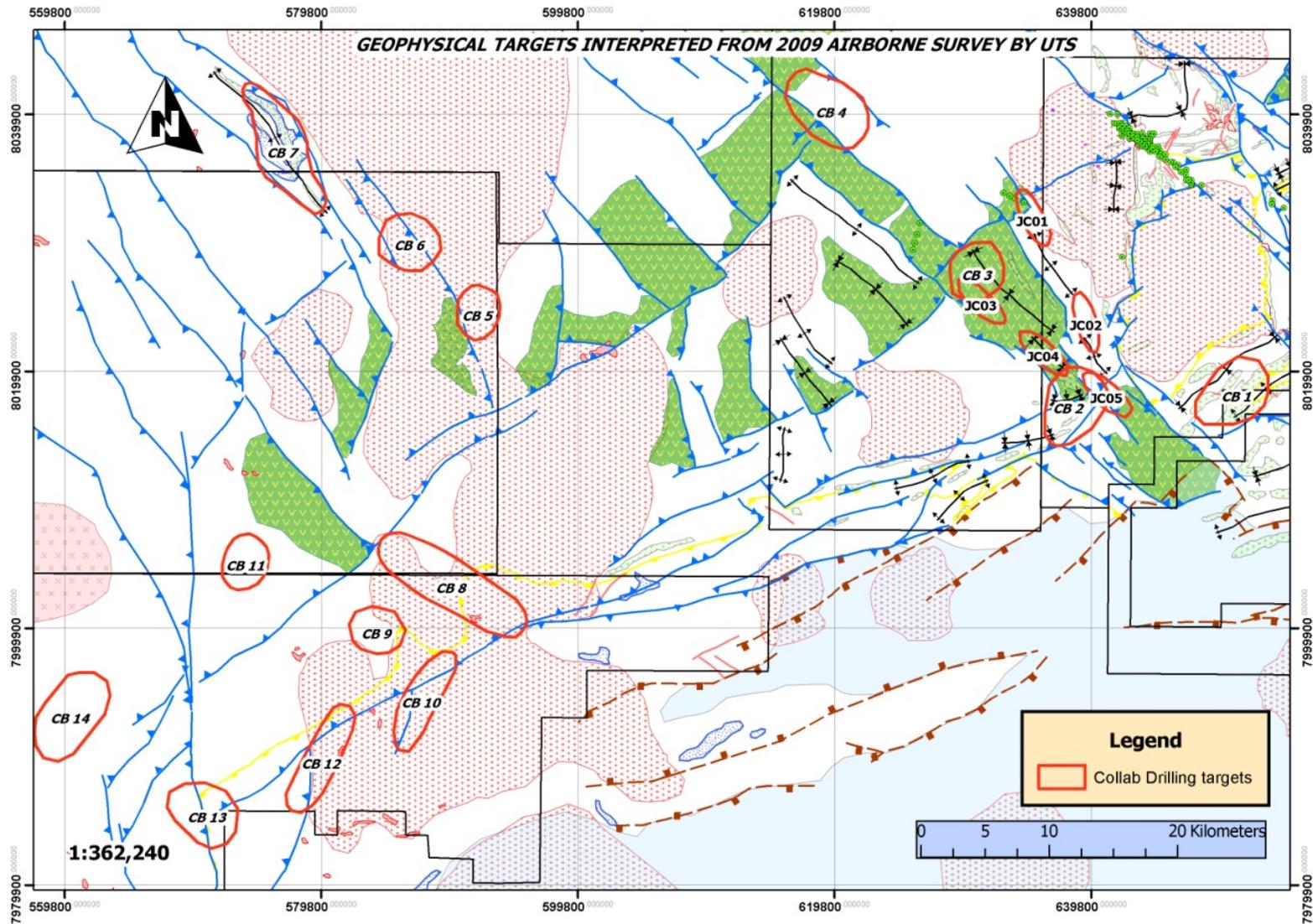
No Proterozoic outcrop was located during the reconnaissance, although Cenozoic, variably lateritised sediments were found at CB7, CB10 to CB14 and minor Cambrian limestone was found near CB9.

None of the targets are associated with any pastoral infrastructure such as yards, gates, grids or bores.

#### **CONCLUSION:**

The access to most of the targets is good. All of the areas are relatively flat, with all but six targets located on 'tree-less' black soil plain. Those six targets are partly covered with low scrub and low lying laterite ridges. No Proterozoic outcrop was encountered during the field inspection, although Tertiary, Cenozoic and minor Cambrian cover sequences are exposed on targets to the west and south west of the project area.

**Figure 1:** Location of Geophysical targets interpreted from the 2009 Airborne magnetic and radiometric survey.



**Table 1:** Geophysical targets identified from the 2009 UTS airborne magnetic and radiometric survey

| TARGET | RANK | EASTING | NORTHING  | CRITERIA   | FIELD INSPECTION   |
|--------|------|---------|-----------|--|--|
| CB1    | 7    | 650,810 | 8,018,330 | <ul style="list-style-type: none"> <li>• Base Westmoreland sandstone</li> <li>• Major NE fault</li> <li>• Adjacent to NW fault</li> </ul>  | Flat, coolabah trees, black soils. Occasional chert float<br>Interpreted to have limestone cover<br>No outcrop   |
| CB2    | 9    | 638,600 | 8,017,510 | <ul style="list-style-type: none"> <li>• Base Westmoreland sandstone</li> <li>• Major NE fault</li> <li>• Major NW fault</li> <li>• Subsidiary NW fault</li> <li>• SW edge of gravity low</li> </ul>   | Flat, coolabah trees, black soils. Mod thick to sparse vegetation. Edge of black soil plain. Occasional chert float<br>Interpreted to have limestone and basalt cover.<br>Near camp.<br>Overlaps with target JC005<br>No outcrop |
| CB3    | 4    | 630,900 | 8,027,890 | <ul style="list-style-type: none"> <li>• Base Westmoreland sandstone / Seigals contact</li> <li>• Major NE fault</li> <li>• Major NW fault</li> </ul>  | Flat, coolabah trees, acacia, thick – mod vegetation.<br>Interpreted to have limestone and basalt cover.<br>No outcrop   |
| CB4    | 5    | 618,930 | 8,040,070 | <ul style="list-style-type: none"> <li>• Base Westmoreland sandstone</li> <li>• Major NW fault</li> </ul>  | Flat, part black soil plain, part heavy scrub<br>Interpreted to have basalt cover<br>No outcrop  |
| CB5    | 4    | 592,310 | 8,024,960 | <ul style="list-style-type: none"> <li>• Westmoreland sandstone / Seigals?</li> <li>• Large NW fault</li> <li>• Near base of Seigals / WM Sst</li> </ul>   | Flat, grassy black soil plain..<br>Interpreted to have basalt cover<br>No outcrop  |
| CB6    | 5    | 586,631 | 8,029,730 | <ul style="list-style-type: none"> <li>• Westmoreland sandstone / Seigals?</li> <li>• Large NW fault</li> <li>• Major NE struc in gravity</li> </ul>   | Flat, grassy black soil plain..<br>Interpreted to have basalt cover<br>No outcrop  |
| CB7    | 8    | 576,830 | 8,037,220 | <ul style="list-style-type: none"> <li>• Westmoreland sandstone / Seigals?</li> <li>• Large NW fault</li> <li>• Strong bullseye mag high</li> <li>• Nth Edge of large gravity low (granite)</li> </ul> | Adjacent to Tableland Hwy (2km east)<br>Mainly on flat black soil plain with sparse eucalypts, rising up to low laterite ridges to the west<br>No outcrop, but laterite / chert subcrop.   |
| CB8    | 7    | 589,540 | 8,003,267 | <ul style="list-style-type: none"> <li>• Westmoreland sandstone / Murphy Inlier?</li> <li>• NW trending structure</li> <li>• NE trending structure</li> </ul>  | Straddles Cresswell Ck, within black soil plain<br>Cenozoic gravels outcropping on side of Ck<br>Cambrian Dolomitic limestone outcrop nearby   |

| TARGET | RANK | EASTING | NORTHING  | CRITERIA  | FIELD INSPECTION  |
|--------|------|---------|-----------|---|---|
| CB9    | 5    | 584,570 | 7,999,560 | <ul style="list-style-type: none"> <li>Westmoreland sandstone / Murphy Inlier?</li> <li>NNE trending structure</li> <li>Gravity low</li> </ul>  | Black soil plain  |
| CB10   | 4    | 587,910 | 7,994,630 | <ul style="list-style-type: none"> <li>Westmoreland sandstone / Murphy Inlier?</li> <li>NNE trending structure</li> <li>Gravity low</li> </ul>  | Black soil plain  |
| CB11   | 3    | 574,110 | 8,005,420 | <ul style="list-style-type: none"> <li>Westmoreland sandstone / Murphy Inlier?</li> <li>NNE trending structure</li> <li>Subtle NW structure</li> <li>Gravity low</li> </ul>                       | Black soil plain. Minor Cenozoic gravels.                                   |
| CB12   | 4    | 579,770 | 7,989,340 | <ul style="list-style-type: none"> <li>Westmoreland sandstone / Murphy Inlier?</li> <li>NNE trending structure</li> <li>Gravity low</li> </ul>  | Part black soil / part low laterite ridges.<br>Part scrub / part grasslands |
| CB13   | 5    | 570,530 | 7,985,720 | <ul style="list-style-type: none"> <li>Westmoreland sandstone / Murphy Inlier?</li> <li>N-S trending structure</li> <li>Gravity low</li> </ul>  | Mainly low scrub on laterite ridges.  |
| CB14   | 2    | 560,430 | 7,993,370 | <ul style="list-style-type: none"> <li>Suble NE &amp; N-S trending structures</li> <li>Gravity low</li> </ul>   | Part black soil / part low laterite ridges.<br>Part scrub / part grasslands |
| JC01   | 5    | 630,970 | 8,025,410 | <ul style="list-style-type: none"> <li>Westmoreland sandstone / Seigals?</li> <li>Large NE fault</li> <li>NW fault</li> <li>Near base of Seigals / WM Sst</li> <li>Possible alteration</li> </ul> | Black soil. Sparse Coolibah scrub<br>No outcrop                             |
| JC02   | 5    | 635,300 | 8,031,980 | <ul style="list-style-type: none"> <li>Westmoreland sandstone / Seigals?</li> <li>Large NE fault</li> <li>NW fault</li> <li>Near base of Seigals / WM Sst</li> <li>Possible alteration</li> </ul> | Black soil. Sparse Coolibah scrub<br>No outcrop                             |
| JC03   | 4    | 636,000 | 8,021,050 | As for CB3 above  | Black soil. Spare Coolibah scrub<br>No outcrop                              |

| TARGET | RANK | EASTING | NORTHING  | CRITERIA   | FIELD INSPECTION                                |
|--------|------|---------|-----------|--|---|
| JC04   | 5    | 639,390 | 8,023,670 | <ul style="list-style-type: none"> <li>• Base Westmoreland sandstone / Seigals contact</li> <li>• Major NW fault</li> </ul>  | Black soil.<br>No outcrop                       |
| JC05   | 6    | 641,190 | 8,018,200 | <ul style="list-style-type: none"> <li>• Base Westmoreland sandstone / Seigals contact</li> <li>• Major NW fault</li> <li>• Major NE fault</li> <li>• Westmoreland sandstone / Murphy Inlier unconformity</li> </ul> | Black soil. Sparse Coolibah scrub<br>No outcrop |