REPORT

GROUND MAGNETICS SURVEY
Long Plains, Savage River
Tasmania

POST-ACTIVITY REPORT

Gap Geophysics Australia Pty Limited
[ABN 67 116 407 580]

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The entity who commissioned this report and whis Gap Geophysics Australia Pty Limited's (GAP's) client is Australian Bulk Minerals (ABMS).

Purpose of This Report

This report was commissioned for the purpose of a sub-surface geophysical investigation to map geological features.

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Report prepared by: _____

Lucas Heape
Project Manager

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GROUND MAGNETICS SURVEYS
POST-OPERATIONS REPORT

Long Plains, Savage River, Tasmania

EXECUTIVE SUMMARY

Gap Geophysics Australia Pty Limited (GAP) was commissioned by Australian Bulk Minerals to conduct geophysical surveys using Ground Magnetics over one area at Long Plains, Savage River. The survey was carried out during the period 8th to 10th May 2008.

SCOPE AND OBJECTIVES OF THE SURVEY

The Statement of Work (SOW) specified that GAP was to utilise its Ground Magnetics technology to survey (in AMG/AGD 66 Zone 55 coordinates) one areas totalling approximately 4 line km.

The deliverables for the project were as follows:

- A brief report on field activities.
- A digital copy of the Total Magnetic Intensity data in ASCII XYZ and CSV (.XYZ) format.
- A digital copy of the Total Magnetic Intensity and data in Geosoft grid (.GRD) format.
- Colour images of the processed data as JPEG images.

PROJECT PERSONNEL

The Client representative was Michael Everitt for Australian Bulk Minerals who arranged the survey and provided on site assistance. Lucas Heape led the project for GAP, with field operations carried out by Lucas Heape, Glen Uebergang and Alyson Foster.

SURVEY PROCEDURE AND INSTRUMENTATION

A summary of the instrumentation and data processing parameters applied to the surveys is shown in Table 1.

Roving Magnetometer Acquisition System	
Magnetometer	Geophysical Technology TM-6 Magnetometer Controller - Synchronised with GPS 1PPS pulse
Sensor	Geometrics 822AS Cs Vapour
Sensor Elevation	~2.0 m
Sample Rate	1200 Hz
Sample Resolution	0.01nT
Base Station	
Magnetometer	Geometrics G856 Proton Precession
Sample Rate	0.1 Hz
Sample Resolution	0.1 nT
Navigation & Positioning	
GPS	UBlox
Differential Corrections	None applied
Software	SurvNav - Gap Geophysics Australia Pty Limited
Datum	AGD 66 / - AMG Zone 55
Sample Rate	1 Hz
Nominal Survey Direction	East West
Nominal Line Spacing	25m or where line traverses were cut
Data Processing Parameters	
TMI Sample Interval	~ 0.05m
Gridding	Minimum Curvature
Cell Size	5m
TMI Filtering	None unless specified.
Images Produced	TMI, TMI_RTP,TMI_1VD

Table 1 Instrumentation and data processing parameters used for the survey.

SURVEY RESULTS

The data were processed as described in Appendix B. Colour images of the data were produced and are provided on the accompanying CD as JPEG images.

Images were produced of the following:

- Survey Map - This map shows survey area with line paths and numbers coloured black.
- Colour Image of Total Magnetic Intensity (TMI).
- Colour Image of Total Magnetic Intensity – Reduced to Pole (TMI_RTP).
- Colour Image of Total Magnetic Intensity – First Vertical Derivative (TMI_1VD).

Reduced scale copies of the images have been included in Appendix A for reference.

DIGITAL DATA PRODUCTS

The following files are supplied on the accompanying CD for each of the survey grids:

Files	Description
Grid Name.xyz	TMI in Geosoft XYZ Format
Grid Name.gdb	TMI in Geosoft Database Format
Grid Name TMI.grd	TMI grid file in Geosoft Format
Grid Name TMI RTP.grd	TMI Reduced to Pole grid file in Geosoft Format
Grid Name TMI .jpg	Colour Image of TMI in JPEG Format

Key:

- TMI – Total Magnetic Intensity
- RTP – Reduced To Pole
- 1VD – First Vertical Derivative

Also included on the CD is a copy of this report in Portable Document Format (PDF).

FINAL REMARKS

- Data collection at Long Plains was carried out along lines cut through thick scrub and forest. Lines are of irregular length and whilst the typical line spacing was 25m the southern end of the grid had some lines 50m apart.
- Due to the thick tree cover at Long Plains differential GPS (DGPS) was not utilised. An OmniSTAR DGPS was trialled but found to be less accurate than a newer high gain non DGPS unit (Ublox).
- The survey was carried out in wet, drizzly weather which led to water laden foliage in the cover above. It is likely that this contributed to the reduced satellite visibility and therefore the accuracy of the GPS.
- The poor positional information caused problems with the ABMS crew cutting lines. Some of the lines from this survey varied enough to join into other lines. Where this has occurred the GAP crew has bush bashed as much as possible to complete the required lines.
- The data from the January 2007 and from this current survey were combined to form the grids and images contained in this report. The data presented on the CD also a combination of the two data sets.

APPENDIX A – IMAGES

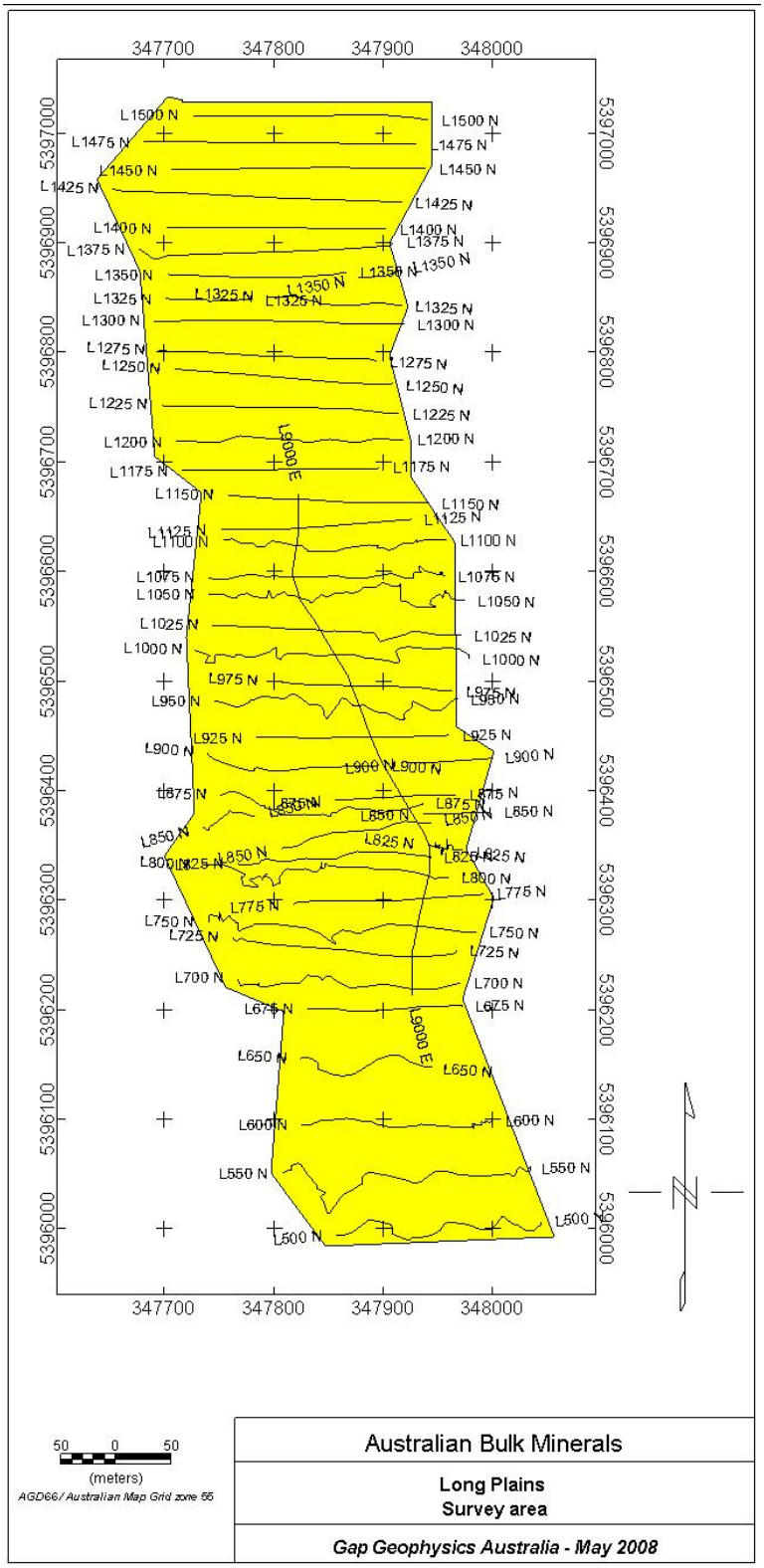

Figure 1 Long plains grid Survey Area - showing the survey line paths from both 2007 and 2008 surveys.

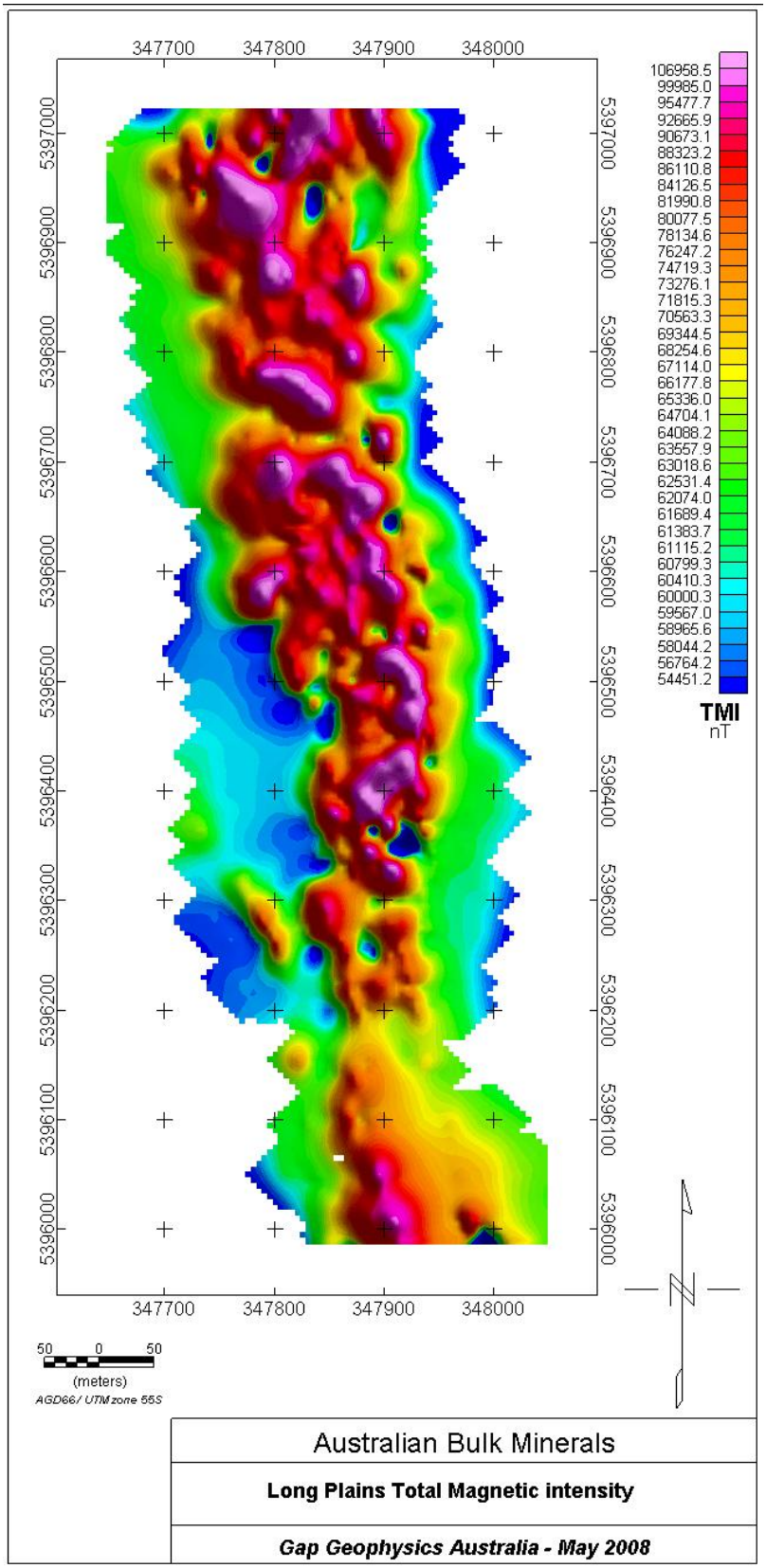

Figure 2 Long Plains Grid – colour image of Total Magnetic Intensity.

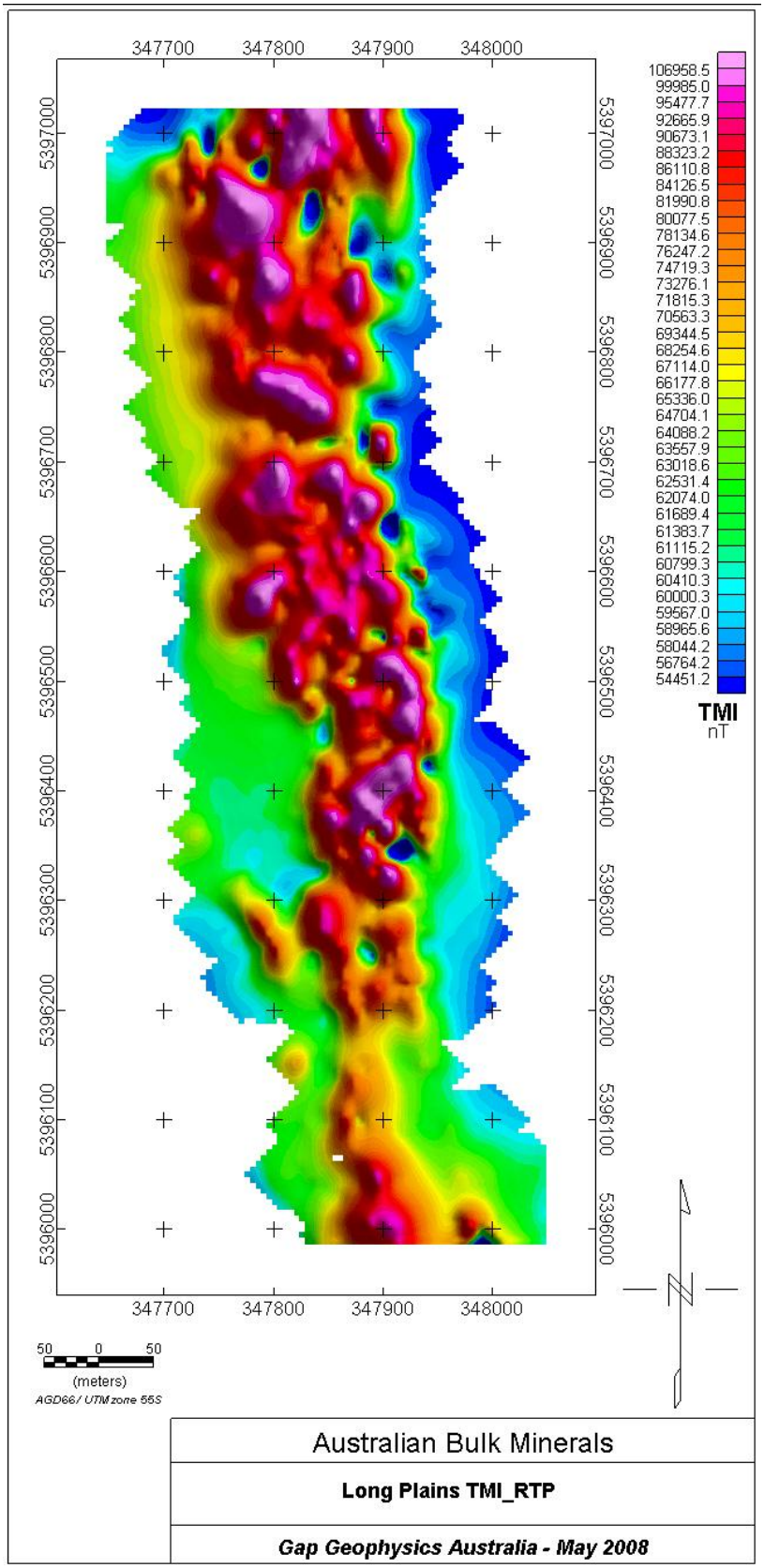

Figure 3 Long Plains Grid – colour image of TMI Reduced to Pole (RTP).

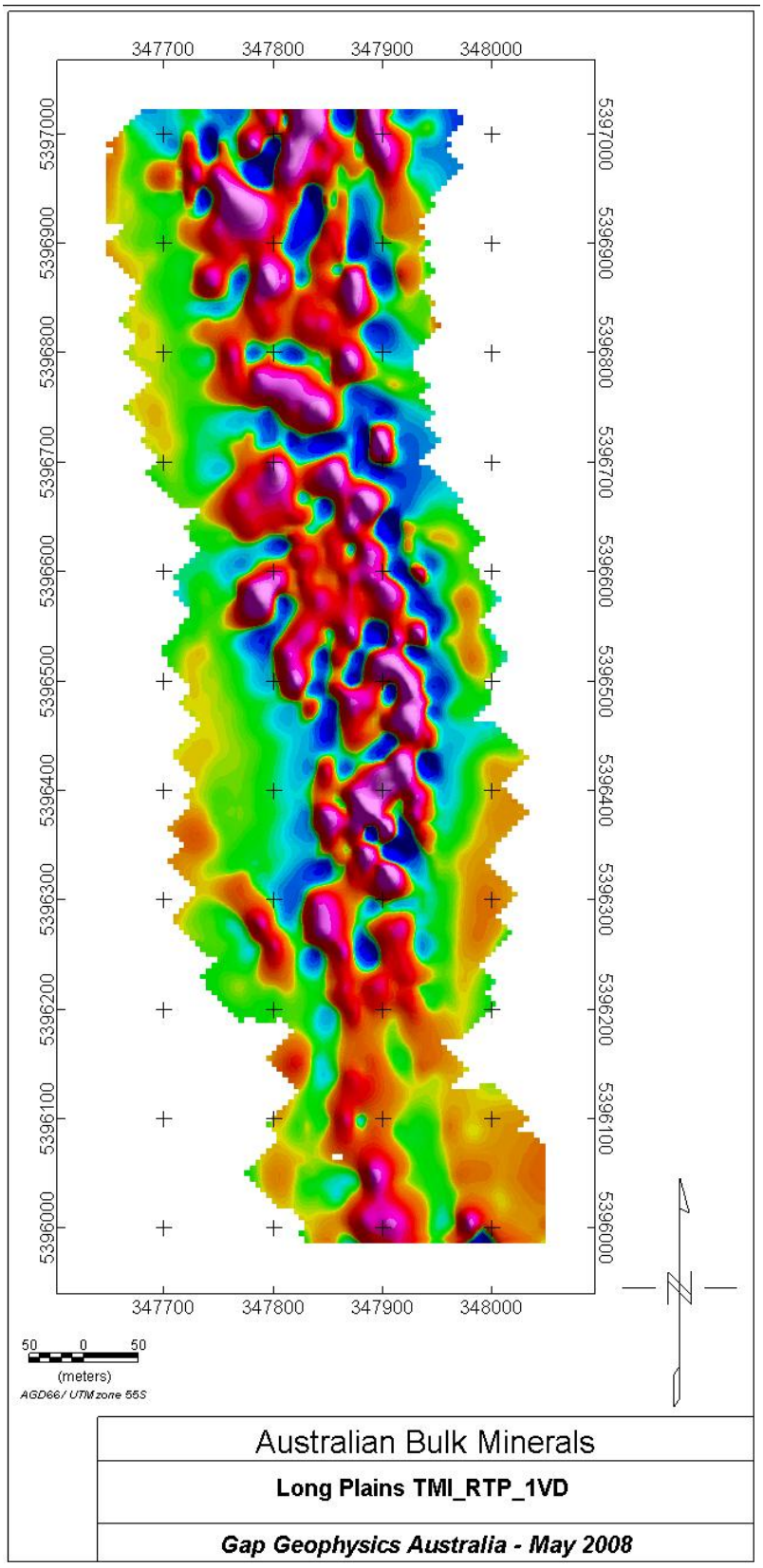

Figure 4 Long Plains Grid – colour image of TMI First vertical Derivative (1VD).

Instrumentation

The TM-6 Magnetometer

A Geophysical Technology Model TM-6 magnetometer controller was used in conjunction with a caesium-vapour magnetometer sensor for this survey. The TM-6 was programmed to record Total Magnetic Intensity (TMI) readings to a resolution of 0.01nT. Measurements were logged to the TM-6 flash memory at a rate of 1200 per second.

In hand-held magnetic survey mode, the TM-6 normally requires two operators, one of whom holds the sensor (see Figure 5). The sensor is connected to the controller by a 5m coaxial cable, which enables the sensor to be separated from the controller by sufficient distance to ensure that the sensor is free from any magnetic interference produced by the control electronics. GAP utilises differential GPS with the Ground Magnetics acquisition system to assist survey navigation and positioning. This obviates the costly requirement for the client to establish control grids in the survey areas.

The TM-6 system employs GAP's proprietary TM6-UI navigation software running on a hand-held computer and coupled with a Trimble AgGPS-132 differential GPS, using Fugro OmniStar real-time differential corrections. The accuracy of the DGPS is described as less than 1m.

In Handheld mode the TM-6 and GPS units are mounted in a backpack as shown in Figure 6. Also included in the backpack are batteries to power the units and a warning system should any of the instruments malfunction.

Figure 5 The TM-6 magnetometer system in hand-held configuration. The operators are separated by a distance of up to 5m to minimise magnetic interference from the controller.

For hand held operation the Cs vapour magnetometer sensor and GPS antenna are mounted on a second backpack, which enables variable sensor height. A typical sensor configuration is shown in Figure 7.

Accurate timing information is provided via the AgGPS-132 receiver which outputs a 1μs "strobe" pulse every second. The strobe pulses are logged by the TM-6 in between Total Magnetic Intensity readings, thus providing the GPS time-reference for magnetic field measurements.

Base-Station

A Geometrics G856 proton precession magnetometer is used to record temporal changes in the Earth's magnetic field. The magnetometer is generally set to record Total Magnetic Intensity readings to a precision of 0.1nT once every 10 seconds.

The base-station magnetometer is located at safe distances from likely sources of cultural magnetic noise during the surveys. Diurnal variation data is calculated as the base-station reading minus the approximate average value at the base-station site(s) used for these surveys.

Figure 6 Backpack showing the TM-6 magnetometer controller, Trimble Ag-132 differential GPS unit and hand held PC's, for navigation and survey controls.

Figure 7 Typical sensor configuration showing the Cs vapour sensor on the left at a survey height of 2.5m. The GPS antenna is mounted on the right side of the backpack.