Mitre Geophysics Pty Ltd
Mineral Exploration and Engineering Consultants

MEMORANDUM

TO:	Michelle Ellis, Tony Pfaff – Laramide Resources Ltd
FROM:	Rob Angus – Principal Consulting Geophysicist
DATE:	25/10/2024
SUBJECT:	**Crystal Hill GAIP and PDIP Surveys – Sep-Oct 2024**
PROJECT NUMBER :	LA10284

Dear Michelle and Tony,

Please find here my brief report on the Crystal Hill IP surveys recently completed. Also supplied is a zip file with the deliverables including raw and processed data, survey coverage files, plots of the results, geo-located images and contours of the GAIP results and the model sections for the PDIP line.

The report details the survey specifications and presents the results so that it is all documented, plus some brief discussion points on the results.

Please contact me if you have any queries.

Best Regards,

Rob Angus
Principal Consulting Geophysicist
Mitre Geophysics Pty Ltd

TABLE OF CONTENTS

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1 INTRODUCTION

Induced Polarisation (IP) surveys have been completed at Laramide Resource's Crystal Hill Prospect during September and October 2024. The Crystal Hill prospect is located close to the eastern border of the Northern Territory around 38km south-west of the Westmoreland Uranium Mine which is across the border in Qld.

This report outlines the IP survey specifications, data processing and modelling techniques, and presents the survey results.

2 SURVEY SPECIFICATIONS

The IP survey was completed by Planetary Geophysics during September and October 2024. Equipment used included a GDD TxIV 5kVA Transmitter (Tx) and a Elrec Pro 10 Channel IP Receiver (Rx). Receiving electrodes were standard non-polarising porous pots and transmitter electrodes were buried metal plates. Additional information on the survey logistics and specifications will be provided separately in an Operations Report supplied by Planetary.

The survey consisted of both Gradient Array (GAIP) and Pole-Dipole (PDIP) configurations.

The Crystal Hill GAIP survey consisted of four adjoining blocks. Each block consisted of nine survey lines spaced 200m apart. Adjacent blocks included one common survey line or several overlapping stations to enable merging of the data between blocks. Line lengths were 1400m to 1500m and the receiver dipoles were 50m in length. Transmitter dipoles lengths were either 3200m or 2900m. A local coordinate system was used to complete the survey, and all data was then transformed into GDA94/MGA53 coordinates. The survey layout is illustrated in Figure 1 and survey coverage files are supplied with all electrode and line locations.

One PDIP lines was also completed based on the results of the GAIP survey. PDIP Line 10600N was 1200m long and used 50m dipoles measured to N=10. The location of PDIP Line 10600N is also shown in Figure 1 and asurvey coverage file is supplied with the line location in GDA94/MGA53 coordinates.

The transmit frequency used during the survey was 0.125 Hz (2 seconds on-time, 2 seconds off-time). For the PDIP surveys the remote transmitter electrode was located several kilometres away from the survey lines.

A second line of PDIP over some of the historic workings was also planned, but not completed, due to the Planetary field crew having to demobilise on a specific date.

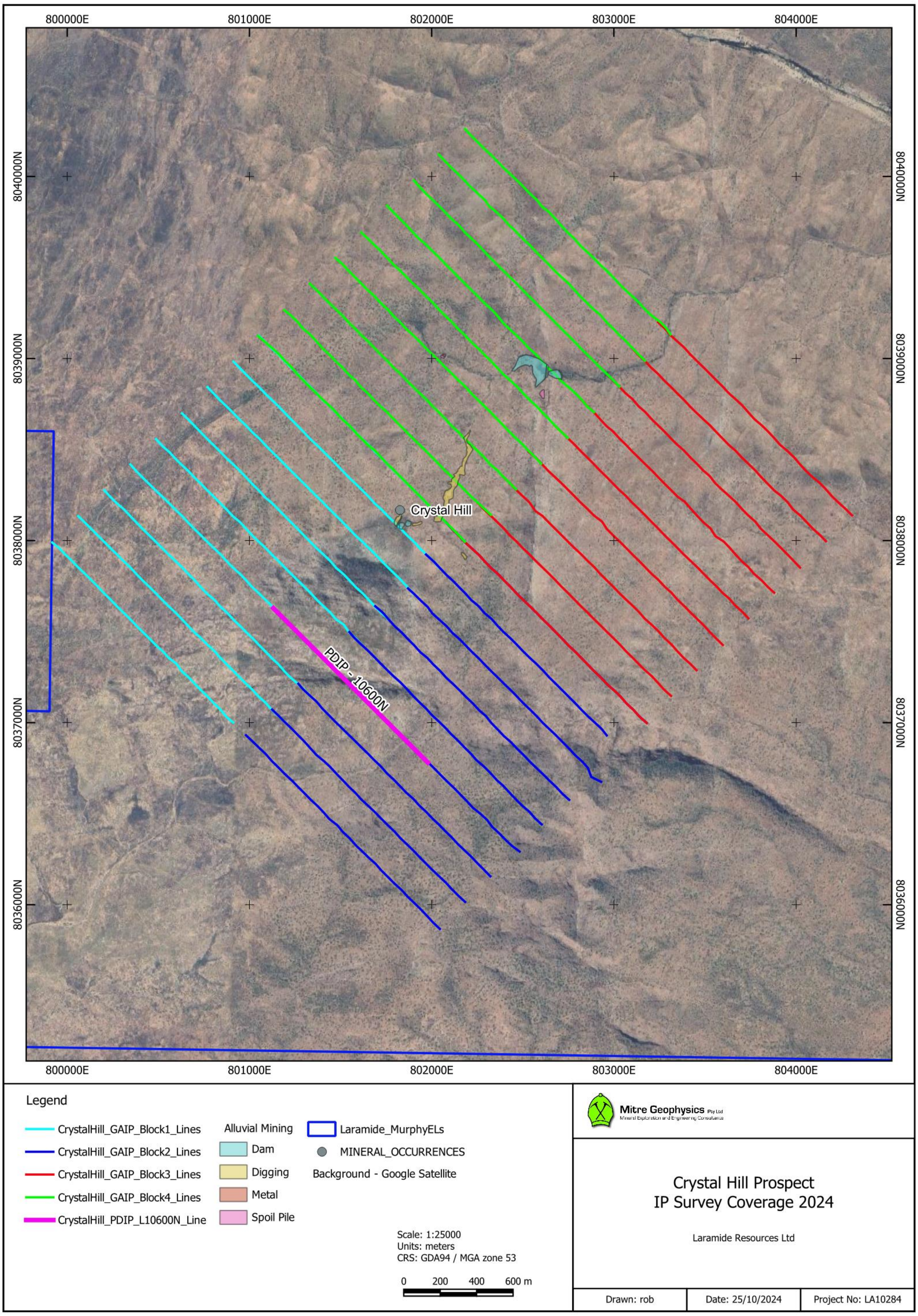

Figure 1. Crystal Hill GAIP and PDIP 2024 Survey Line Locations.

3 IP DATA PROCESSING

3.1 QUALITY CONTROL

Raw IP data supplied by Planetary was imported into TQIPdb, an IP data quality control and processing software package. Individual resistivity readings and chargeability decays from each station were inspected and any noisy decays, bad repeat readings, or readings with very low primary voltage were flagged in the database. Any readings flagged for low quality were not used at any subsequent stage of the processing.

Data quality for the Crystal Hill GAIP and PDIP survey was generally reasonable, although high contact resistances meant that input current levels were lower than anticipated. Currents for the GAIP survey were between 1 Amp and 2 Amps while for the PDIP line currents were between 0.1 Amp and 0.5 Amps which is quite low. However, received signal levels were generally reasonable resulting in clean and repeatable chargeability decays.

Topography data and GDA94/MGA53 coordinates for each electrode location supplied by Planetary was integrated into the TQIPdb databases. The final validated data was exported from TQIPdb for subsequent plotting, and inversion processing for the PDIP line. The chargeability was calculated using an integration window of 590ms to 1540ms.

3.2 PDIP INVERSION MODELLING (2D)

The Crystal Hill PDIP line has been modelled using 2D inversion techniques. The 2D inversion modelling was completed using Res2DInv produced by Aarhus Geosoftware. Res2DInv determines a 2D resistivity and chargeability model of the subsurface that satisfies the observed IP data to within an acceptable error level. This is a robust way of converting the observed pseudo-section data into resistivity and chargeability model sections which reflect the likely geometry and locations of anomaly sources, although it does assume that the response comes from a vertical plane below the survey line.

Several iterations of the 2D inversion modelling were completed with changes to various parameters such as mesh size, damping or smoothing factors, reference models, directional weighting filters, and depth weighting parameters. Analysis of the inversion convergence and how well the modelled response matched the observed data was also completed. The models presented here are considered the best result in terms of fitting the observed data, convergence, and providing a geologically reasonable model.

4 RESULTS

The Crystal Hill GAIP survey results are presented as a full resolution PDF file and in Figure 2, as well as various digital deliverables. Images of chargeability, resistivity, and conductivity (reciprocal of resistivity) are supplied. Figure 2 is compressed to fit the page, and does not include the conductivity image, so it is recommended to also view the PDF file to see the full resolution plots.

The results from PDIP Line 10600N are presented as a section plot in Figure 3 and supplied as a suite of deliverables. The section plot is also provided as full resolution PDF file and shows the observed IP pseudo-sections and the 2D inversion model sections. The 2D inversion model section images and contours presented are also supplied as geo-located digital files, along with the raw and processed data, and survey coverage files.

All digital deliverables are described at the end of this report (Section 6).

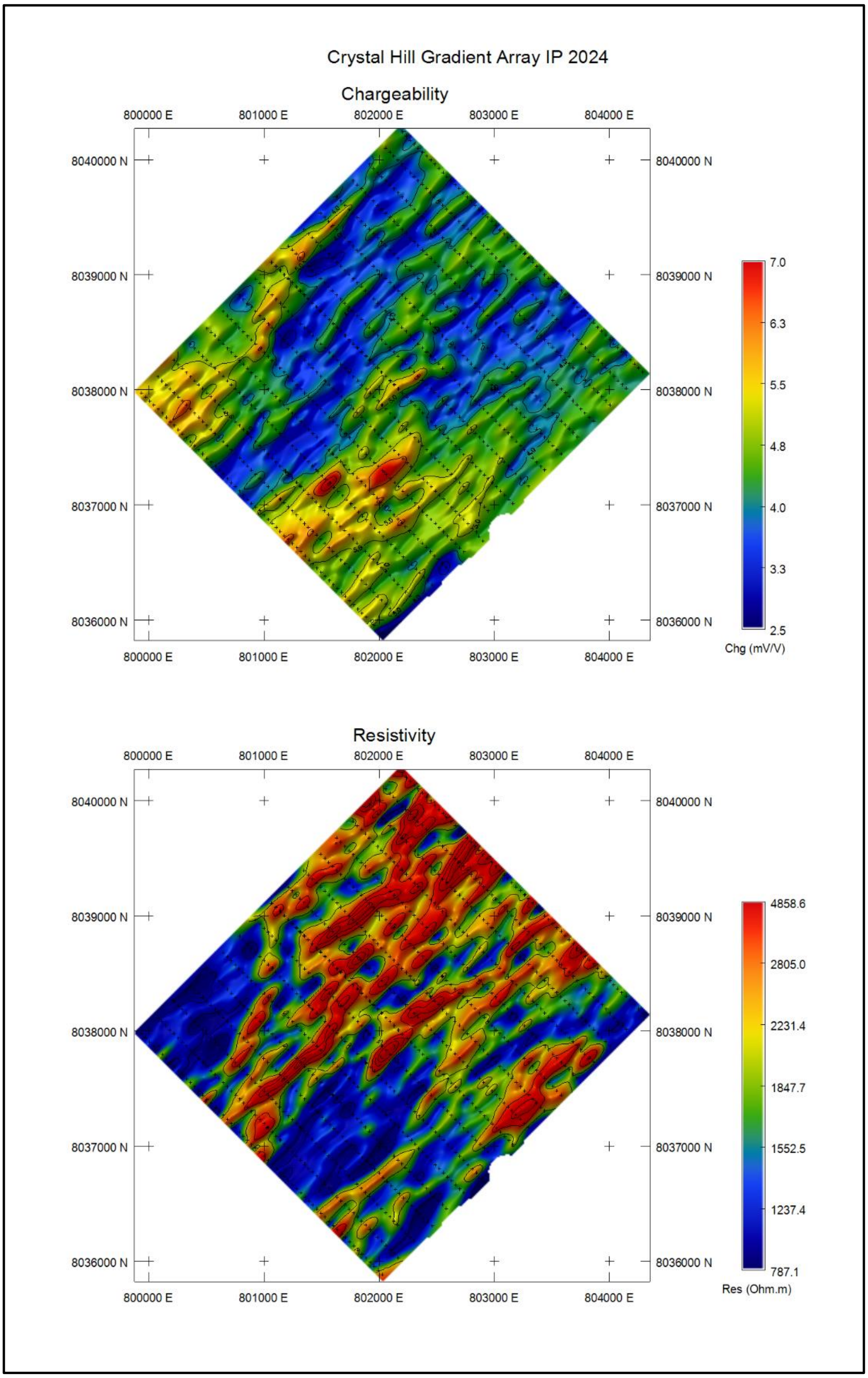

Figure 2. Crystal Hill GAIP Results. Chargeability and Resistivity sun-illuminated images. Also provided with additional images as a full resolution PDF file.

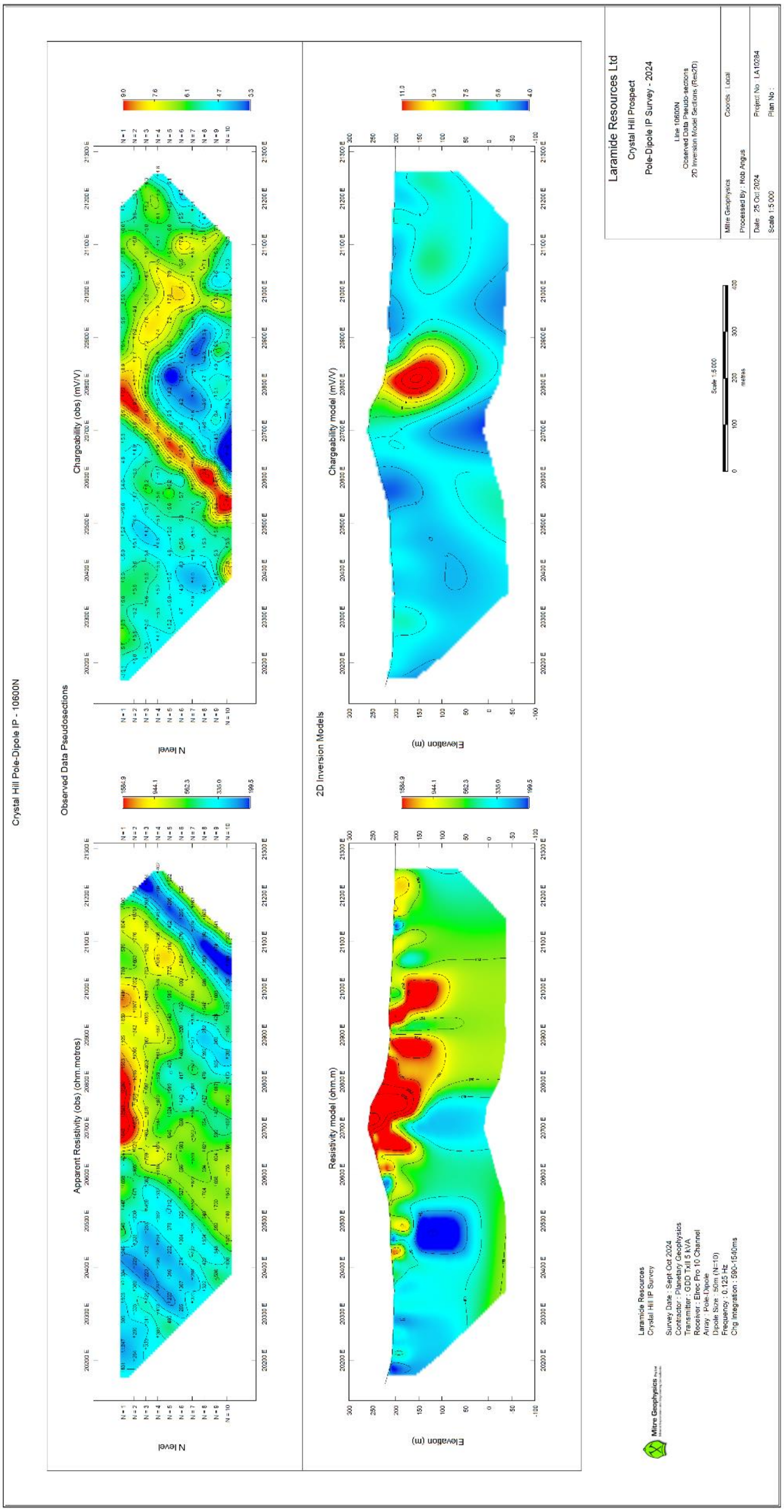

Figure 3. Crystal Hill PDIP Line 10600N Results. Observed data pseudo-sections and 2D Inversion Model Sections. This figure is also supplied as a full resolution PDF file.

5 DISCUSSION

Some introductory discussion points of the results are included here.

The GAIP Resistivity results show a dominant SW to NE grain with numerous linear zones of higher resistivity following that trend. The resistivity in general is high with the lowest values measured being in the order of only 500 Ωm. The GAIP chargeability overall is quite low with a maximum value of 8.8 mV at one location but generally it is in the 3 mV/V to 5 mV/V range. There appears to be a correlation between lower resistivity and higher chargeability that is consistent across the survey area.

There is no obvious clear signature from the areas around the known workings or mineralisation. It is important to note though that GAIP is relatively insensitive to narrow and vertical features, and also generally only responds to shallow variations.

There are two small chargeability highs in Block 2 of the GAIP survey (southern block) and one of these was chosen for follow up with PDIP Line 10600N. The results of that line clearly show that the hill that this line crosses at 20700E is electrically resistive, and that there is a discrete chargeability anomaly centred on 20800E that the 2D inversion modelling resolves into a vertical chargeable source. This corresponds with the small chargeability high in the GAIP. The chargeable zone is up to 13 mV/V in the model section which is moderately chargeable. It starts at surface and has an indicated depth extent of around 100-150m, although depth extent is generally the least well resolved parameter. Note that while the inversion model shows a broad-ish smooth zone, this is due to the inversion algorithm using smooth model assumptions, so it is more likely that the zone is narrow and sub-vertical.

The chargeability anomaly on 10600N could be related to disseminated sulphide mineralisation, most likely pyrite. It would be expected that several percent of sulphide (2%-3%) would be required to produce this chargeability anomaly. Any drill testing of this anomaly should be aimed at the centre of the zone in the model, i.e. the highest contour, and be drilled all the way through the zone.

Additional PDIP lines could be considered over the second chargeability high 500m to the east of the anomaly on 10600N, or possibly also over areas of known mineralisation to determine whether that mineralisation has a measurable response using PDIP that cannot be seen with the GAIP configuration (e.g. The second line that was planned but not completed).

6 DIGITAL DELIVERABLES

The following digital deliverables are supplied with this report in an archive zip file.

CrystalHill_GAIP-PDIPSurveys_Oct2024_LA10284_Deliverables.zip :

6.1 GAIP SURVEY

- *Coverage :*

  Final coverage files for GAIP survey – lines and individual electrodes (SHP files).
- *Data\Raw :*

  Raw IP Data (Elrec Dump Files) as supplied by Planetary Geophysics.
- *Data\Final :*

  Final processed data in Geosoft ascii format (GDA94/MGA53 Coordinates).
- *Contours :*

  Contours of GAIP resistivity and chargeability (SHP Files) GDA94/MGA53 coordinates.
- *Grids :*

  Grid files of GAIP Resistivity and Chargeability (ERMapper grid files) GDA94/MGA53 coordinates.
- *Images :*

  Georeferenced images of the GAIP Resistivity, Chargeability, and Conductivity (GeoTIFF files) GDA94/MGA53 coordinates. Colourbar legends provided in "_Legends" subdirectory.
- *PDF_Plan :*

  Full resolution PDF plan of the GAIP Chargeability, Resistivity, and Conductivity images.

6.2 PDIP SURVEY

- *Coverage :*

  Final coverage files for PDIP survey – line and individual electrodes (SHP files).
- *Data\Raw :*

  Raw IP Data (Elrec Dump Files) as supplied by Planetary Geophysics.
- *Data\Final :*

  Final processed data in Geosoft ascii format.
- *Inv2DInv_Images\Sections :*

  Section images of the 2D inversion models of resistivity and chargeability for Line 10600N (TIF files). The CSV and GRF files supplied geo-locate the section images in GDA94/MGA53 coordinates in some 3D software (eg. Micromine, Leapfrog, Geoscience Analyst). Contours provided in subdirectory in 3D SHP format. Colourbar legends provided for resistivity and chargeability inversion images in "_Legends" subdirectory.
- *Inv2DInv_Images\Flat :*

  Section images of the 2D inversion models of resistivity and chargeability for Line 10600N (TIF files) designed to be displayed as flat images in GIS software such as MapInfo and QGIS in GDAQ94/MGA53 coordinates. Contours provided in subdirectory in SHP format.
- *PDF_Plan :*

  Full resolution PDF plan of results for PDIP line 10600N.