



GeoDiscovery Group

ABN 42087256853

Minerals exploration, discovery and management

PO Box 59, Sherwood, Qld, 4075, Australia

Phone +61 7 3278 5733

Fax +61 7 3278 5744

www.geodiscovery.com.au

BOWEN ENERGY LIMITED

FINAL REPORT FOR EPM 16272 CLARA RIVER 2

Author: Peter Gregory

Date: 06.09.13

Distribution:

Client

Original

Department of Minerals and
Energy

On-line lodgment

GD Project File

1 copy

Disclaimer

The conclusions and recommendations contained in this report are based on interpretations of geoscientific data, and are provided at the request of the client. GeoDiscovery Group Pty Ltd accepts no liability resulting from any commercial decisions or actions taken by the client based on the recommendations presented in this report.

CONTENTS

	Page
EXECUTIVE SUMMARY.....	3
1 INTRODUCTION	4
2 TENURE.....	5
3 GEOLOGICAL AND GEOPHYSICAL SETTING	5
4 WORK COMPLETED.....	8
4.1 INTRODUCTION	8
4.2 OPEN FILE SEARCH	8
4.3 TARGETING	9
5 CONCLUSIONS AND RECOMMENDATIONS.....	13
6 REFERENCES	14

FIGURES

- Figure 1. Location of EPM 16272 and other tenures comprising the Croydon Project.
- Figure 2. Regional geology of EPMs 17364, 16267, 16272 and 16274 which are covered by Tertiary to Quaternary sediments (beige). To the north basement Croydon Volcanics (medium brown) are intruded by Esmeralda Granite (red) and overlain by the Blantyre Sandstone of the Jurassic Eulo Queen Group (green) and by Late Tertiary-Quaternary sediments (orange). Open file drill holes in black dots (Data from DME Interactive Maps).
- Figure 3. EPM 16272 in purple with other Croydon Project tenures in the context of the regional magnetics (data from DME Interactive Maps).
- Figure 4. Regional Bouguer gravity image showing location of the tenure area near the junction of a major north northwest gravity lineament and a northeast gravity lineament.
- Figure 5. RTP magnetic image detail on TMI magnetics showing main magnetic bodies within EPM 16272. These extend into adjacent tenures.
- Figure 6. TEM lines and magnetic profiles on TMI magnetic image. Historical drill holes CCH1 and CCH2 of Qld Metals are shown in white dots.
- Figure 7. Modeling of magnetic data for proposed hole DDH1 with historical Qld Metals holes plotted.
- Figure 8. Modeling of magnetic data for proposed holes DDH2 and DDH3 targeting the two modeled bodies.
- Figure 9. RTP magnetic image on TMI magnetics with TEM lines in green and

magnetic lines in black, historical holes, proposed drill sites and location of hole CYDD001 drilled just outside EPM 16272.

TABLES

Table 1. Details of sub-blocks EPM 16272.

APPENDICES

Appendix 1 Magnetic Inversion Modelling & TEM Survey at Croydon Project

EXECUTIVE SUMMARY

This report summarises exploration carried out by Bowen Energy Limited in EPM 16272 for the life of the tenure.

The tenure is one of four that comprise the Croydon Project approximately 125km south east of Croydon in north Queensland. Here the Company targeted strong magnetic features for possible layered intrusions that could host Cu-Ni-PGE. Work carried out involved an open file review, five ground EM lines that extend into adjacent tenures, two regional magnetic lines over the largest magnetic feature and magnetic modeling of targets. No conductors were defined from the EM work.

The southern contact of a large, broad magnetic feature in the south was shown from modeling to dip to the northeast and a drill hole to test this was proposed in the adjacent tenure. A smaller magnetic body in the northwest of the tenure was modeled as two northeast dipping plates. One target was defined on the boundary of the tenure and one in an adjacent tenure. However, no drilling was undertaken in the tenure and relinquishment was effected.

1 INTRODUCTION

EPM 16272 is one of four contiguous tenures that comprise the Croydon Project of Bowen Energy Ltd. The tenure is located approximately 125km south southeast of Croydon in North Queensland (**Figure 1**).

Access to the tenure from the north is via the Croydon – Richmond road off the Gulf Development Road and then by station tracks. From the south, access is by the Richmond-Croydon Road off the Townsville-Mt Isa road. The tenure sits between the Norman and Clara Rivers.

The tenure was taken up to explore for possible Cu-Ni-PGE mineralisation within an interpreted mafic complex visible as a broad magnetic high within a more subdued magnetic response on magnetic images (**Figure 3**).

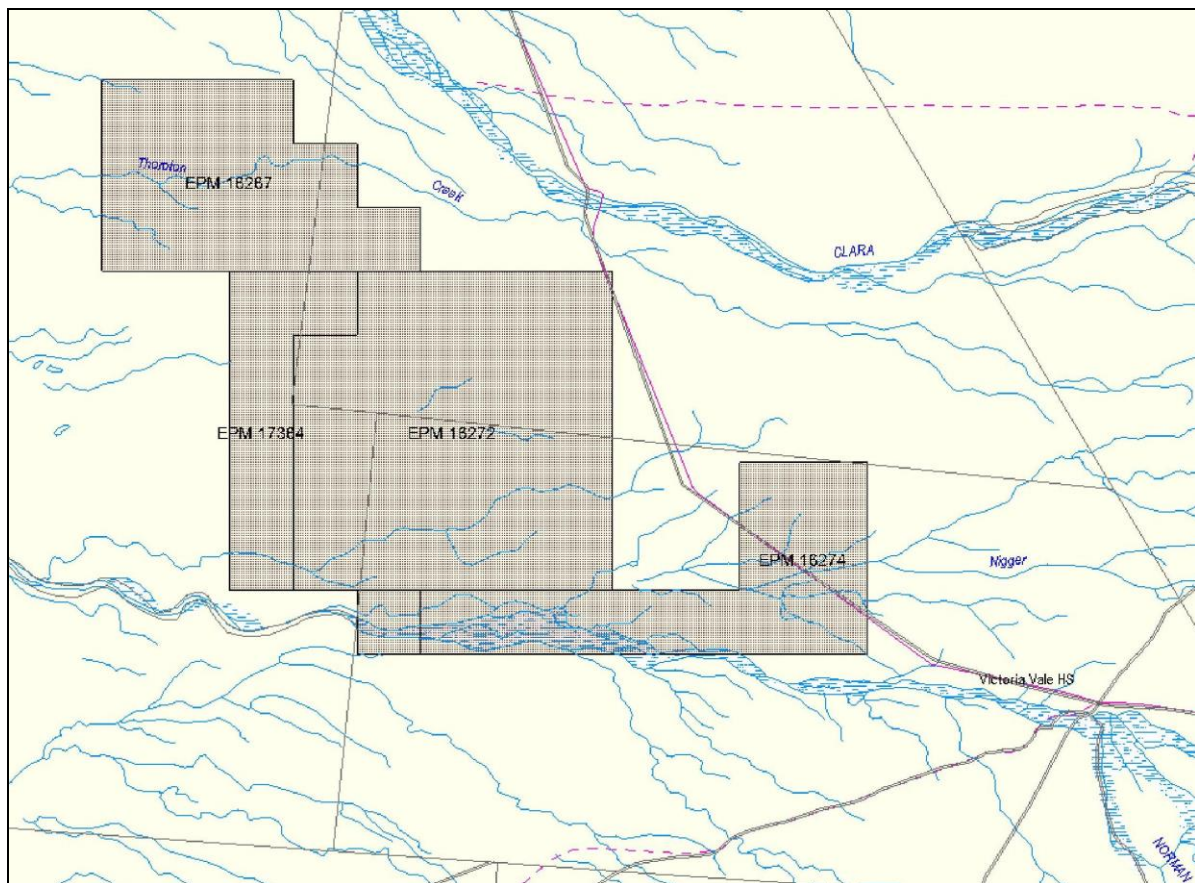


Figure 1. Location of EPM 16272 and other tenures comprising the Croydon Project.

2 TENURE

This tenure of 100 sub-blocks was granted to Bowen Energy Ltd on 20 January 2009 for a term of 3 years. It was reduced to 48 sub-blocks in December 2010. A further 24 sub-blocks were relinquished in January 2012 (from 48 sub-blocks to 24 sub-blocks). The current block and sub-block listing is given in **Table 1**.

Table 1. Details of sub-blocks EPM 16272.

BIM	BLOCK	SUB-BLOCKS
NORM	2863	E, J, K, O, P, T, U, Y, Z
NORM	2864	A, B, C, F, G, H, L, M, N, Q, R, S, V, W, X
	TOTAL	24 sub-blocks

3 GEOLOGICAL AND GEOPHYSICAL SETTING

EPM 16272 is located in an area of Tertiary and Recent cover between the Clara and Norman Rivers. Outcrop of basement lithologies of the Mesoproterozoic Croydon Volcanics intruded by Esmeralda Granite of the Esmeralda Supersuite occur well to the north of the tenure. This basement is overlain by Jurassic sediments of the Carpentaria Basin (Eulo Queen Group) and then by Tertiary to Quaternary sediments (**Figure 2**).

Aeromagnetic imagery shows a large broad magnetic high and a smaller feature in the tenure and locally extending into the other tenures (**Figure 3**). The broad magnetic high may represent a synform in metabasalt and/or mafic intrusives that predate the Croydon Volcanics or postdate them.

To the west of the tenure, the aeromagnetism suggests there is a south southeast trending dyke swarm as well as east southeast dykes that all cut across a magnetically quiet basement of probable Croydon Volcanics.

Gravity data show that the Croydon Project area of which EPM 16272 is a part lies close to the intersection of two major gravity lineaments, one trending north – northwest and the other trending northeast (**Figure 4**).

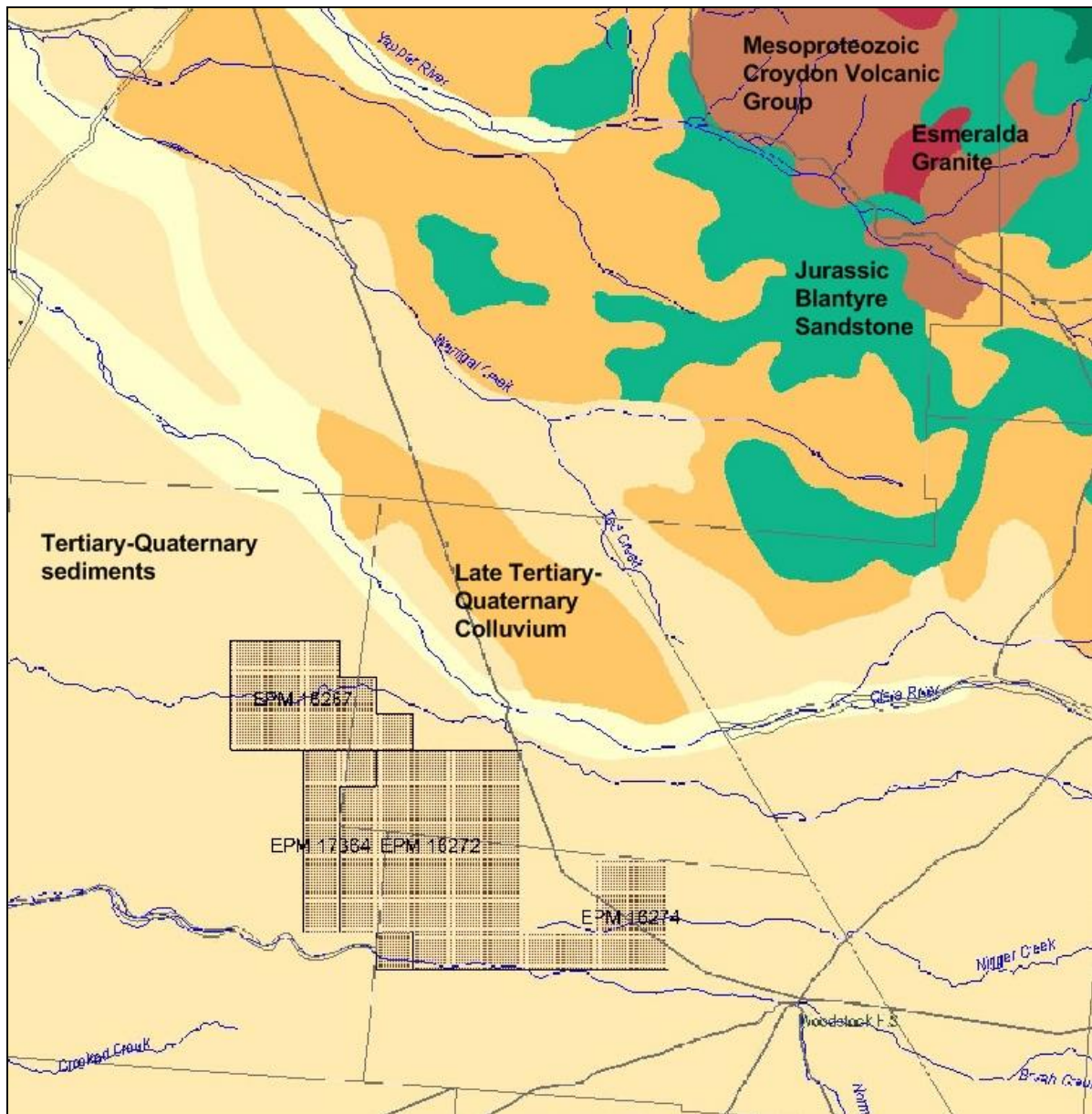


Figure 2. Regional geology of EPMs 16272, 17364, 16267 and 16274 which are covered by Tertiary to Quaternary sediments (beige). To the north basement Croydon Volcanics (medium brown) are intruded by Esmeralda Granite (red) and overlain by the Blantyre Sandstone of the Jurassic Eulo Queen Group (green) and by Late Tertiary-Quaternary sediments (orange). Open file drill holes in black dots (Data from DME Interactive Maps).

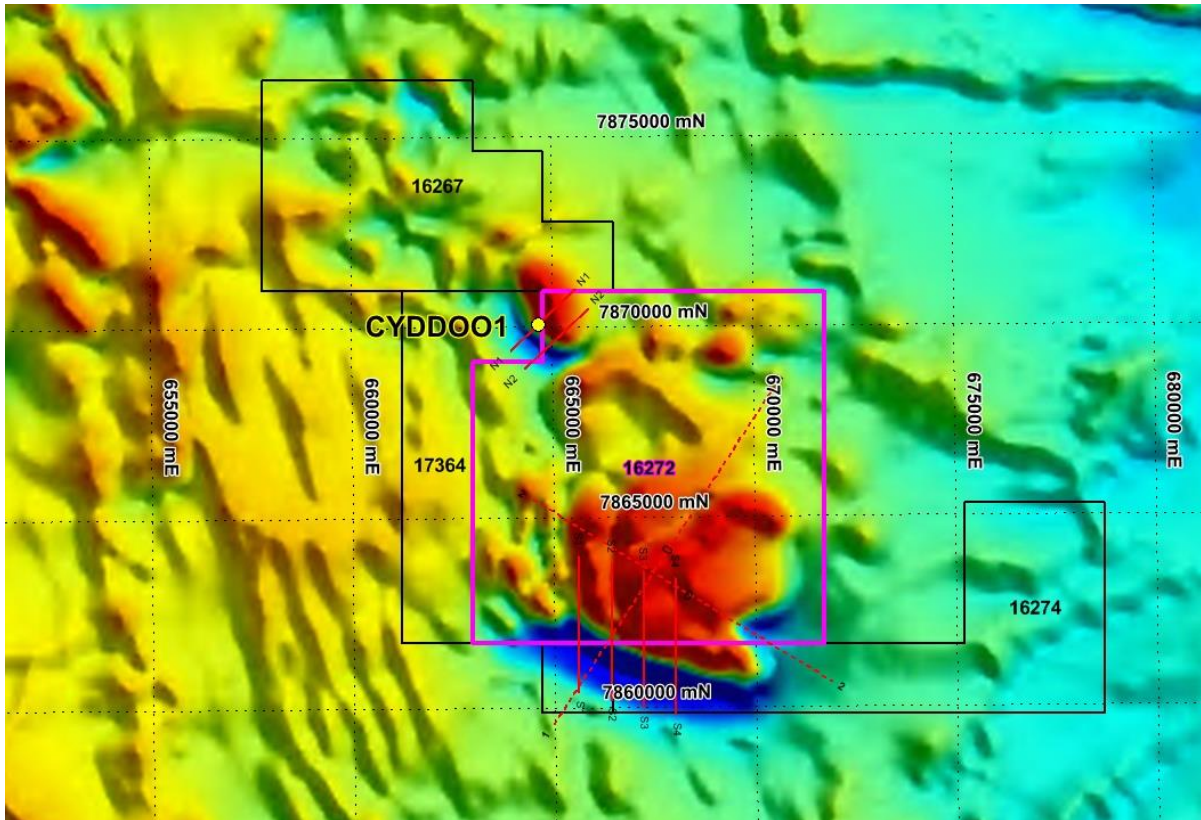


Figure 3. EPM 16272 in purple with other Croydon Project tenures in the context of the TMI regional magnetics (Geoscience Australia data).

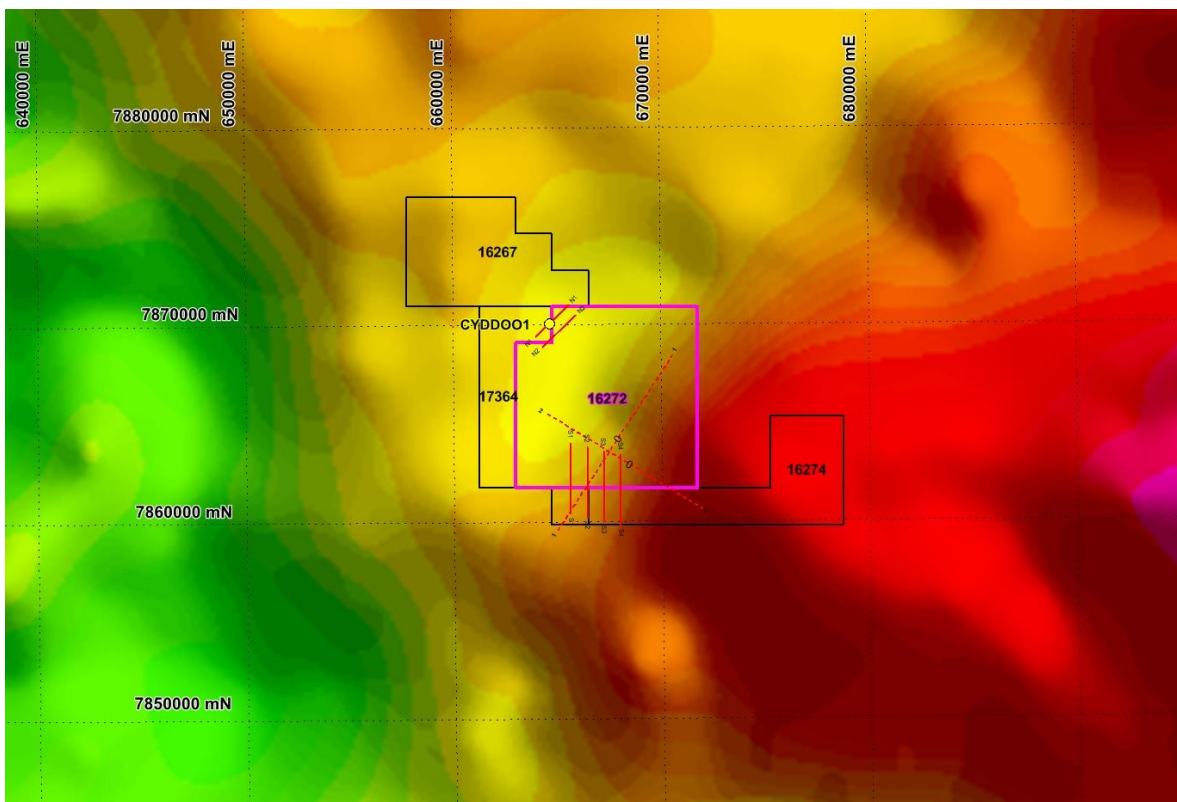


Figure 4. Regional Bouguer gravity image showing location of the tenure area near the junction of a major north northwest gravity lineament and a northeast gravity lineament.

4 WORK COMPLETED

4.1 Introduction

This has involved an open file literature search and a review of aeromagnetic and gravity data that defined targets outside of the tenure. Ground EM and several magnetic lines were carried out over two target zones in 2011 with the work detailed in **Appendix 1**. Parts of those lines occur in the tenure. Proposed drill sites from modelling were pegged, but only one is located within the present tenure with others just outside the tenure in adjacent tenures. Access to target areas through the present EPM was checked, cultural heritage surveys undertaken of the proposed drill site and existing tracks upgraded. A drill site with sumps was prepared but never drilled. This has been rehabilitated. Previous reports on the tenure are given in Gregory, 2013a, 2013b.

4.2 Open file search

Battle Mountain explored **EPMs 4635M and 4636M** in the Esmeralda Area as part of its Woolgar Project (Drzymulski, 1988). This is to the north of the present project area and in an area of sub-crop of Proterozoic units. Here Proterozoic Idalia Rhyolite of the Croydon Volcanics is intruded by the Proterozoic Esmeralda Granite and Nonda Granite.

Work carried out included interpretation of colour aerial photographs, review of open file data, geological reconnaissance, stream sediment sampling, mapping and a reverse circulation program of 696m. The latter was aimed at testing gold-bearing quartz-pyrite-arsenopyrite-galena-sphalerite veins where five veins (A-E) to 150m strike and 3.5m width were defined with rock chips to 5.48ppm in vein C. The best drill result was 1m of 2.8ppm Au in vein D. Results showed these veins were very small, Au was patchy and there was no potential for a significant resource.

Golden Plateau N.L in joint venture with Strategic Minerals Corp N.L. explored **EPM 4853M** in the Prospect Bore Project to evaluate anomalous tantalum-niobium concentrations discovered in a fractured quartzite north of Prospect Homestead in previous exploration (Archibald et al., 1988). Highly anomalous fluorine was also known in bores in the region. Targets defined from magnetics under Cainozoic cover that overlies Mesozoic sandstone and siltstone of the Gilbert River Formation. Besides tantalum-niobium and molybdenum, the tenure was suggested to have potential for gold, PGE and diamonds.

Previous work by **Ford, Bacon and Davis**, 1972, west of Prospect Bore defined a major magnetic anomaly that drilling established as an ilmenite and titanomagnetite-rich layered gabbro with 0.64% V_2O_5 and 15.15% TiO_2 over a vertical section of 98m. Landsat studies identified a major northwest trending fracture, the Borer River Fracture Zone linking bores rich in fluorine. This was supported by gravity data.

A further detailed magnetic survey in 1983 over the then EPM 3647 produced a number of magnetic anomalies that were ascribed to various possible sources. Two diamond drill holes were drilled by **GeoPeko** on EPM 2872 to further evaluate Prospect Bore area, but did not repeat the high niobium-tantalum results within quartzite overlying acid volcanics.

Golden Plateau focused on precious metals that may be associated with mafic intrusive complexes, carbonatites and kimberlites within the PreCambrian basement albeit under 10-100m of cover. Eight percussion holes drilled at aeromagnetic anomalies in 1987 found mafic intrusives, felsic schists and altered felsic intrusives. Petrography indicates that quartz

diorite, gabbro and norite are present with moderate to intense alteration often with sulphides. The best results indicated to 50ppb Au and 5-60ppb Pt.

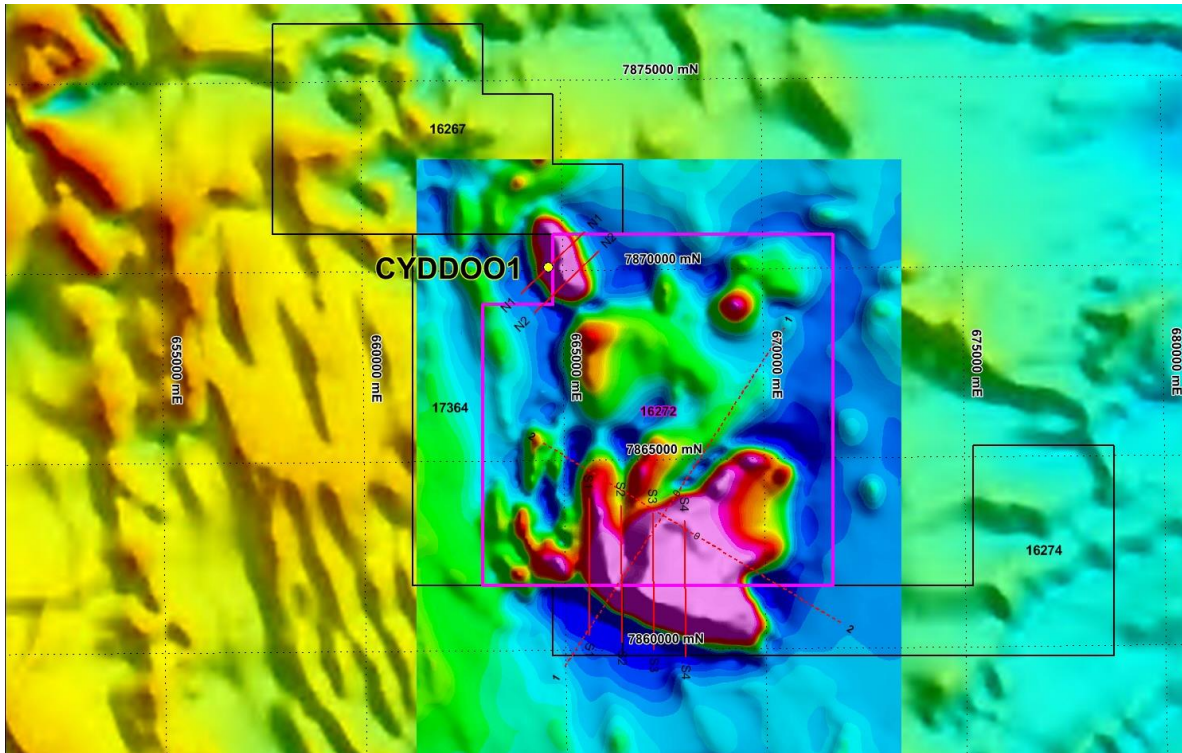
Further percussion and diamond drilling in 1988 at Prospect Bore showed a variably hydrothermal layered Ti-rich layered gabbro underlain by quartzite. Pt values range 0.01-0.04g/t, but up to 0.38g/t over 1m. Anomalous Au is associated with carbonate alteration with some epithermal quartz-carbonate veins containing up to 0.68g/t Au. Other regional holes intersected gabbros, felsic volcanics, felsic intrusives and graphite-rich breccias. The gabbros had consistent Au values 0.02-0.08g/t.

Queensland Metals acquired EPM 3689M to explore a large magnetic anomaly located 150km north northwest of Richmond. Initially a landsat study was undertaken which showed that the Crooked Creek area and the magnetic complex was located at the intersection of the northwest Norman River fault and a northeast lineament. A detailed aeromagnetic survey was followed up with ground magnetics and drilling of two targets within the magnetic anomaly. In both situations the cause of the magnetic anomalies was shown to be related to magnetite-bearing basalt and of no economic interest (Eeson, 1984). This basalt was suggested to belong to the Dead Horse Metabasalt of Palaeoproterozoic age and part of the Etheridge Group.

North Exploration-Geopeko explored the Clara River area using aeromagnetics and basement drilling to determine aquifer anomalism that might be related to mineralisation (Morris, 1994). A gravity survey was also undertaken, but did not change previous geophysical interpretations. The complexity of the magnetic data did not allow clear target definition. Drilling did not intersect gold or base metal mineralisation.

4.3 Targeting

A review of aeromagnetic and gravity data combined with results of the open file led to targets for possible mafic-hosted Cu-Ni-PGE being defined. These were associated with the main magnetic bodies where there were possibilities of layered intrusions such as had been drilled by other companies in the Prospect Bore area to the northwest. A smaller magnetic feature in the northwest of the tenure does extend into adjacent tenures (**Figure 5**).



Datum GDA 94 zone 54

Figure 5. RTP magnetic image detail on TMI magnetics showing main magnetic bodies within EPM 16272. These extend into adjacent tenures.

In 2011 four ground electromagnetic lines had been run over the southern contact zone of the main magnetic anomaly, while two shorter lines had been run over a smaller, weaker magnetic feature in the northwest of the tenure. Two lines of ground magnetics were also run over the southern anomaly (**Figure 6**). These lines extended into the adjacent tenures. No anomalies were determined from the TEM work which suggested that massive sulphides were not present, but the work did not rule out disseminated sulphides (**Appendix 1**).

Modeling of the EM and magnetic data defined a northeast dipping contact for the southern magnetic anomaly where a drill target DDH1 was defined with hole to be drilled southwest through the contact (**Appendix 1**). However this proposed site is located in the adjacent tenure EPM 17364 (**Figure 7**).

For the weaker and smaller magnetic feature, modeling showed there were two bodies present, each dipping northeast. Two sites, DDH2 and DDH3 were proposed for drilling, one within EPM 16272 (DDH3) and one outside it (**Figure 8**). A summary of the proposed drill sites is given in **Figure 5**. Site DDH2 was drilled as hole CYRCDD01 within EPM 17364 and is reported elsewhere.

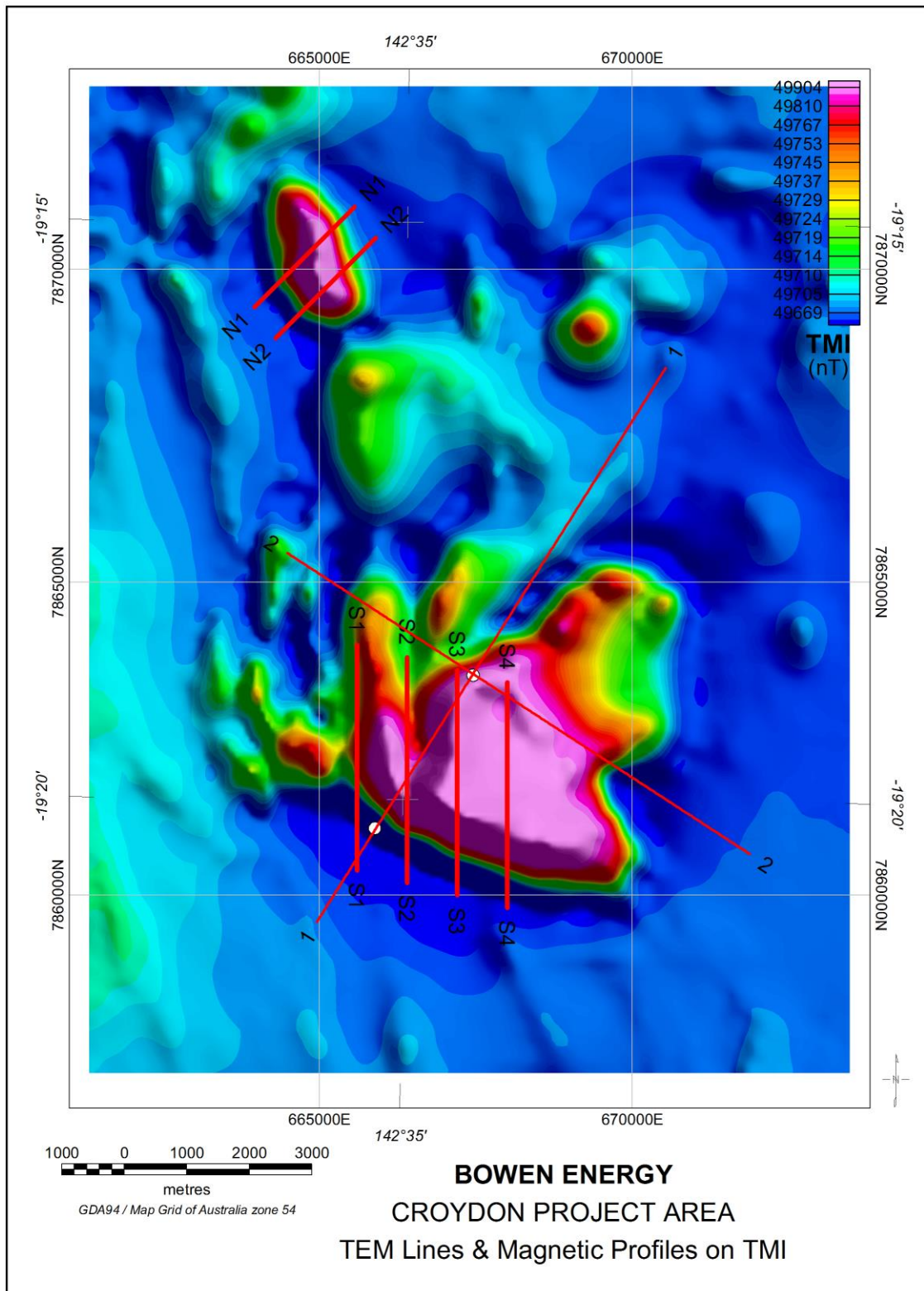


Figure 6. TEM lines and magnetic profiles on TMI magnetic image. Historical drill holes CCH1 and CCH2 of Qld Metals are shown in white dots.

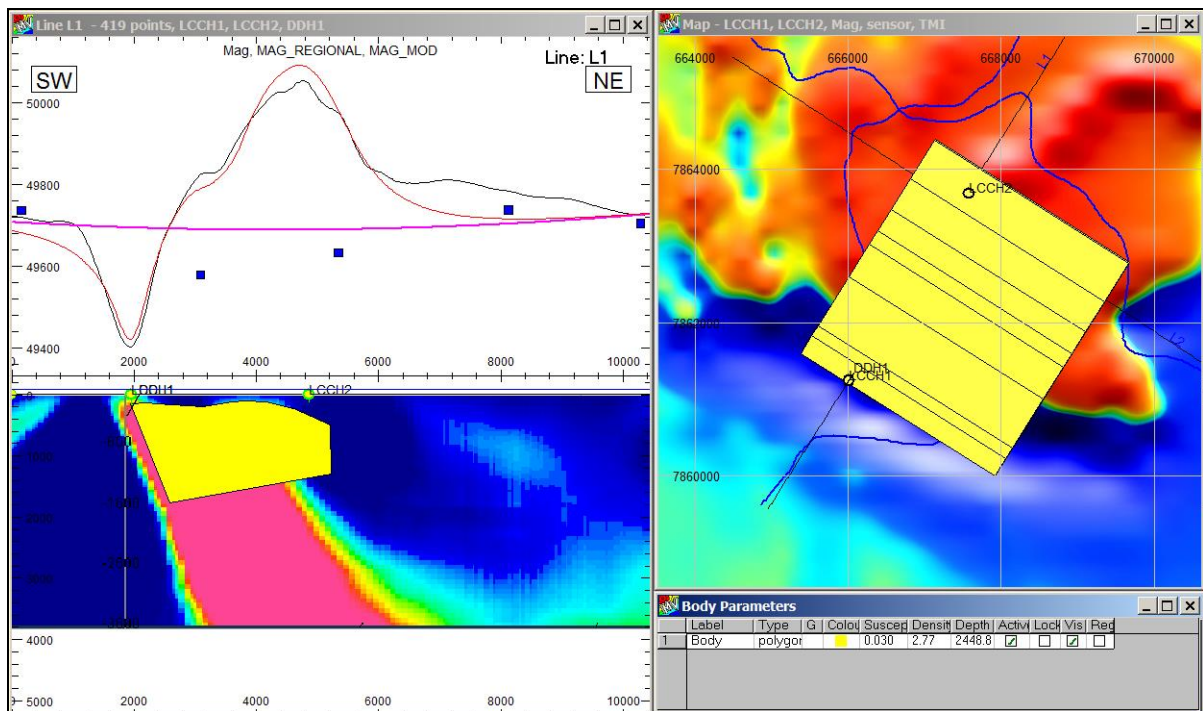


Figure 7. Modeling of magnetic data for proposed hole DDH1 with historical Qld Metals holes plotted.

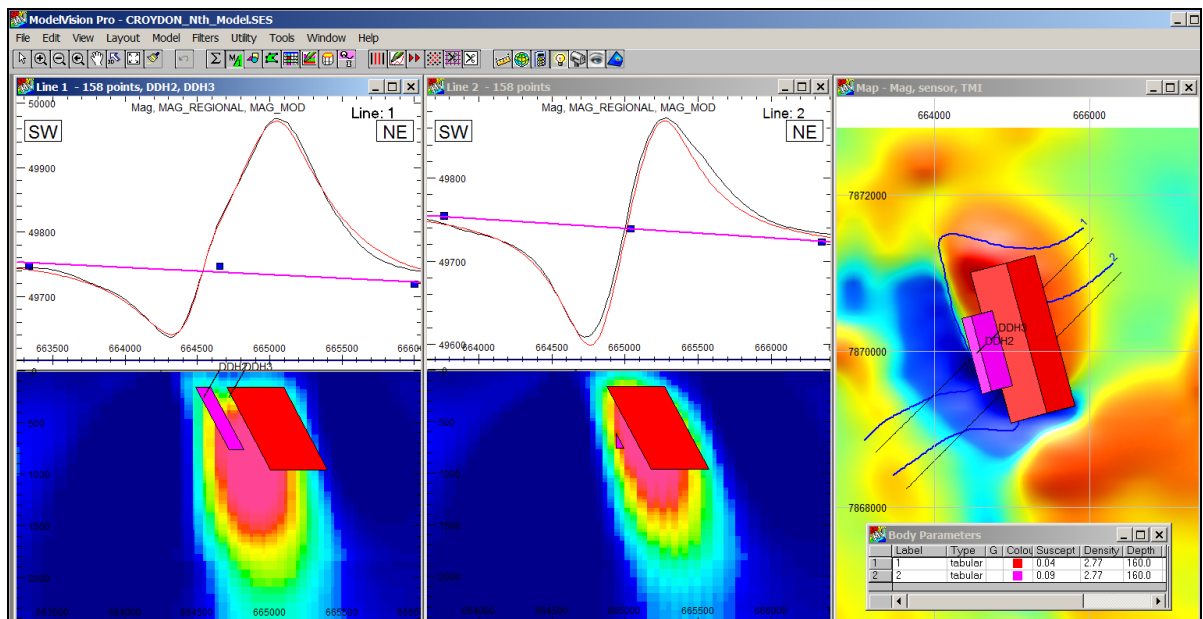


Figure 8. Modeling of magnetic data for proposed holes DDH2 and DDH3 targeting the two modeled bodies.

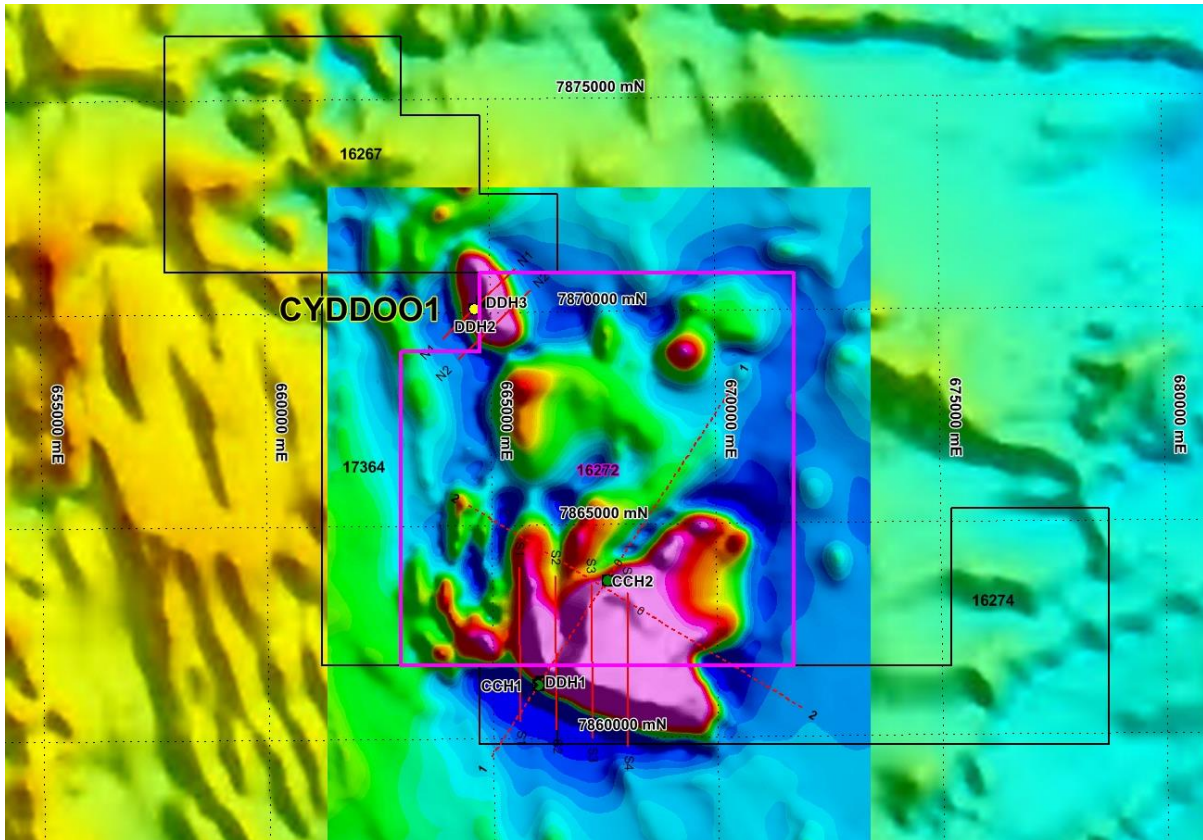


Figure 9. RTP magnetic image on TMI magnetics with TEM lines in green and magnetic lines in black, historical holes in green, proposed drill sites in black and location of hole CYDD001 drilled just outside EPM 16272.

5 CONCLUSIONS AND RECOMMENDATIONS

While targets were defined within the tenure, magnetic modelling picked one site only on the boundary of the present tenure and two outside it. Recommendation was made to drill the two sites outside the tenure and in EPM 17364.

No further work was recommended in the tenure and relinquishment was carried out.

6 REFERENCES

Archibald, N, J, Bettenay, L. F. and Hitchcox, A. J., 1988: Half yearly report on Authority to Prospect 4853M (Prospect Bore Project, Croydon, Queensland) period 6 August 1987 to 6 February 1988. Unpublished report Golden Plateau N.L, held as CR 17174 Qld Department of Minerals and Energy.

Drzymulski, J., 1988: Authorities to Prospect 4635M (Esmeralda) And 4636M (Middle Creek), Woolgar Project, Queensland, Australia, combined annual report area surrendered June 1988. Unpublished report Battle Mountain (Australia) Inc., held as CR 17655 Qld Department of Minerals and Energy.

Eeson, B, 1984: First six monthly and final report on authority to prospect 3689M Crooked Creek. Unpublished report Queensland Metals Corporation N.L., held as CR 13508 Qld Department of Minerals and Energy.

Ford, Bacon and Davis, 1972: Progress report on Authority to Prospect 940M, 952M, 953M and 954M, Croydon area, Qld. Unpublished report Ford, Bacon and Davis held as CR 3957 Qld Department of Minerals and Energy.

Gregory, P., 2013a: Annual report for EPM 16272 Clara River 2 for the period ending 19.01.2013. Unpublished report Bowen Energy Ltd.

Gregory, P., 2013b: Partial relinquishment report for EPM 16272 Clara River 2 for the period ending 19.01.2013. Unpublished report Bowen Energy Ltd.

Morris, L, 1994: EOM 8815 (Clara North), 8817 (Clara South), 8836 (Clara Central), annual and final report for period ending 21 June 1994. Unpublished report North Exploration Ltd, held as CR 26170 Qld Department of Minerals and Energy.

APPENDIX 1

Magnetic Inversion Modelling & TEM Survey at Croydon Project



GeoDiscovery Group

Minerals exploration, discovery and management

Phone +61 7 3278 5733

Fax +61 7 3278 5744

www.geodiscovery.com.au

Memo

To: Mark Sheppard

From: Graeme Mackee

CC:

Date: 16th October 2011

Re: Magnetic Inversion Modelling & TEM Survey at Croydon Project

INTRODUCTION

Bowen Energy's Croydon Project area includes two significant magnetic anomalies representing likely intrusions. The target is massive sulphide bodies within or associated with the magnetic sources.

In May 2011, Geo Discovery windowed out the relevant regional aeromagnetic data around these two anomalies and ran a UBC MAG3D inversion to confirm the setting and geometry of the magnetic sources – results of the inversion model are attached in Appendix I.

In September 2011, Quantec Geoscience were contracted to run several reconnaissance TEM lines across the two bodies to ascertain the presence of possible associated conductors – results are attached in Appendix II.

DISCUSSION

The magnetic model confirmed the relatively shallow depth-to-source of the bodies (as per two previous drill holes, cover thickness was approx 120 metres). The major southern body models as dipping moderately to the NE, while the smaller northern body is dipping steeply east to near-vertical – refer sections in Appendix I.

Four NS TEM lines were designed to traverse the shallow SW edge of the major southern magnetic body (Croydon South grid), and two SW-NE TEM lines were designed to cross the lesser northern magnetic body (North Croydon grid). Qantec Geophysics were contracted to complete the TEM surveys, using 100m in-loop geometry and 100m moves. Provision was made for 50m infill in the event of a significant conductor being detected.

The TEM data were processed in Maxwell, and EMax CDIs were constructed from the 3-component B-Field data. Both the profiles and the CDIs did not indicate the presence of any significant conductors within or adjacent to the magnetic bodies – refer to Appendix II for maps and sections.

Overall, the TEM indicate generally elevated responses (ie more conductive) over the area of the magnetic bodies (refer Fig 2 of Appendix II for plan image of B-Field Z-Ch20 response), but no discrete conductive anomalies are apparent.

CONCLUSIONS

- The magnetic modelling has defined the magnetic sources as well-defined, relatively shallow bodies dipping moderately NW and steeply East respectively for the south and north anomalies
- The TEM survey lines have not detected any significant conductors that might be associated with massive sulphides.

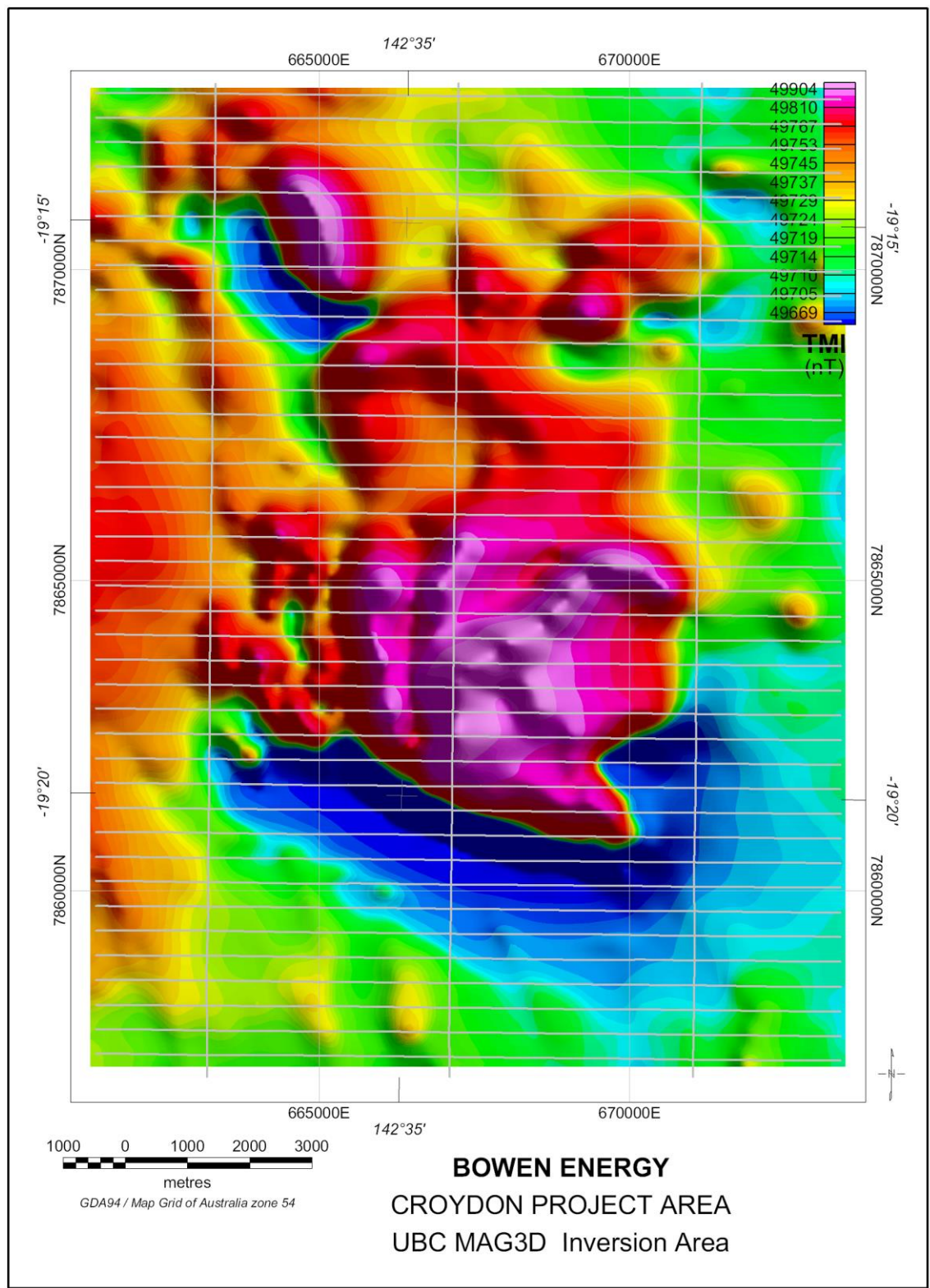
APPENDIX I

CROYDON PROJECT AREA UBC MAG3D INVERSION MODEL

Sections (NS and selected EW)

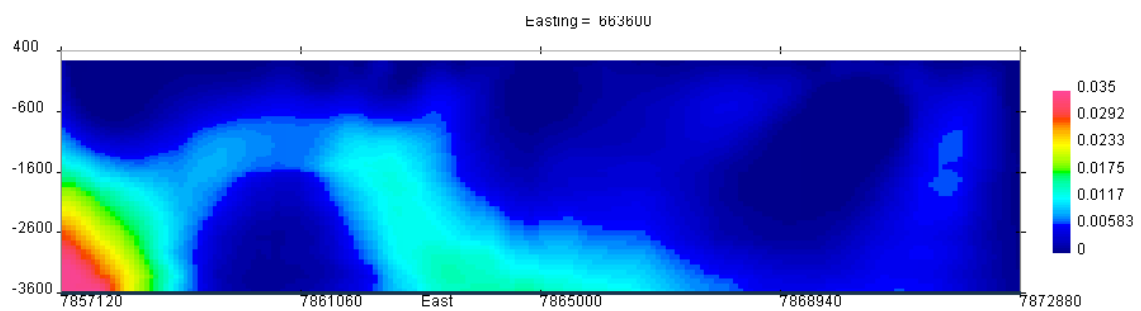
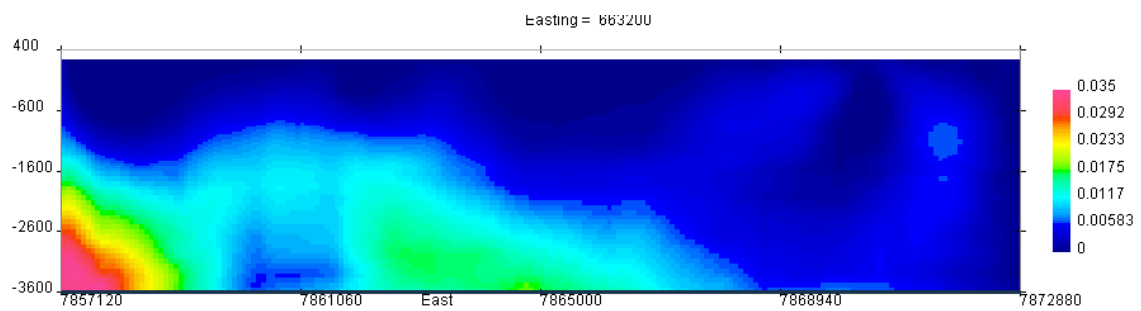
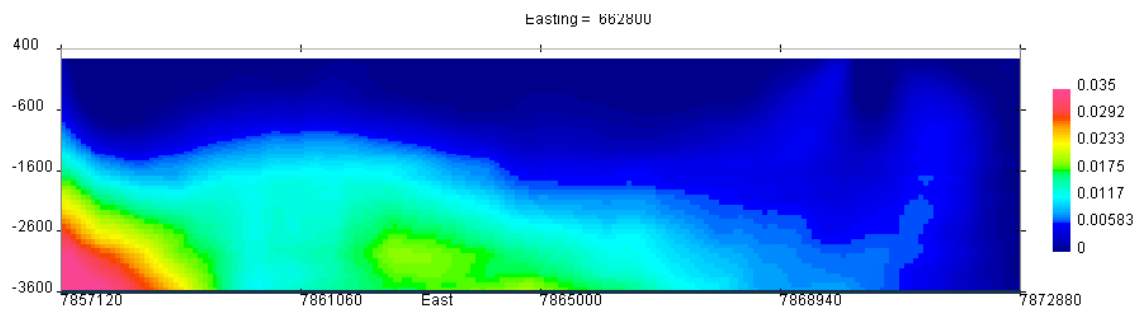
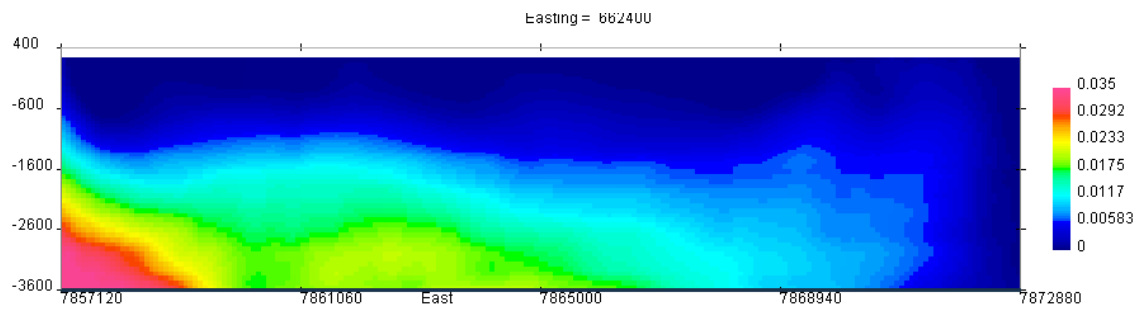
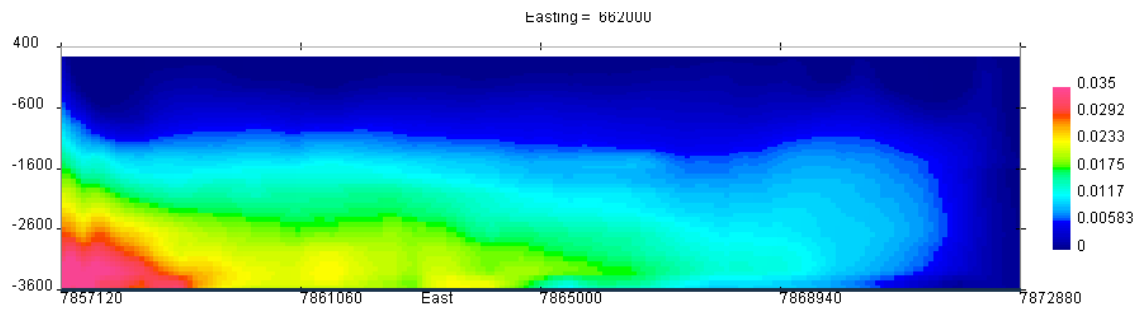
&

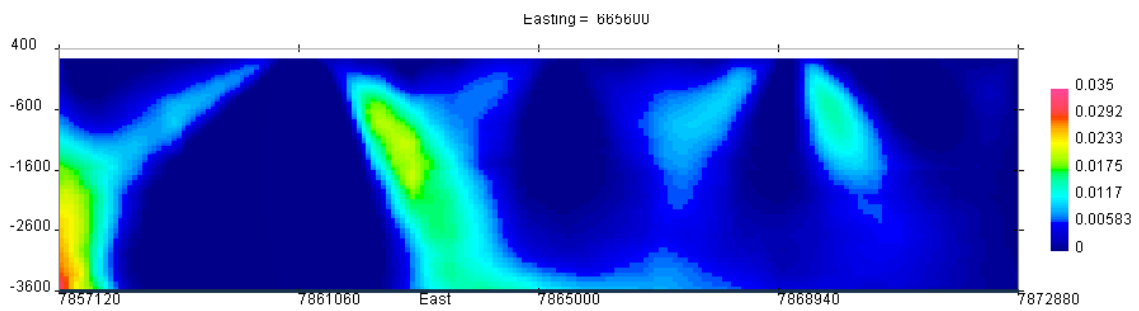
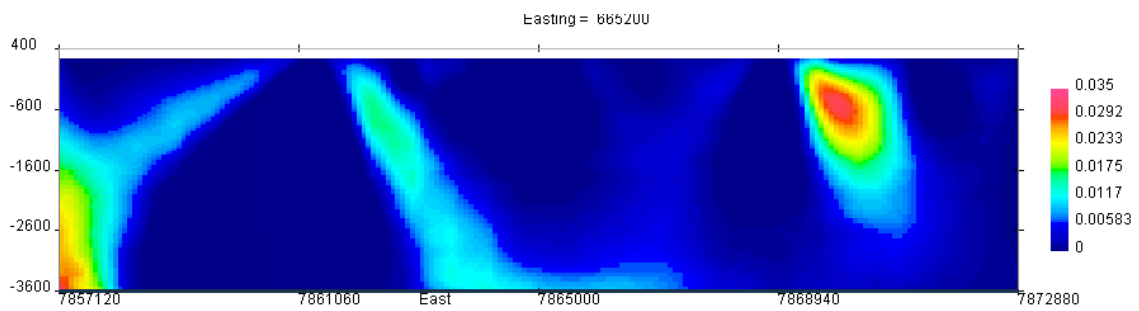
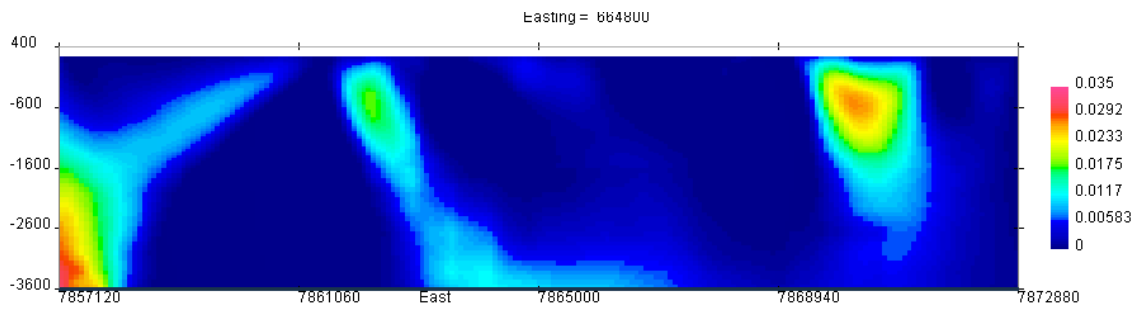
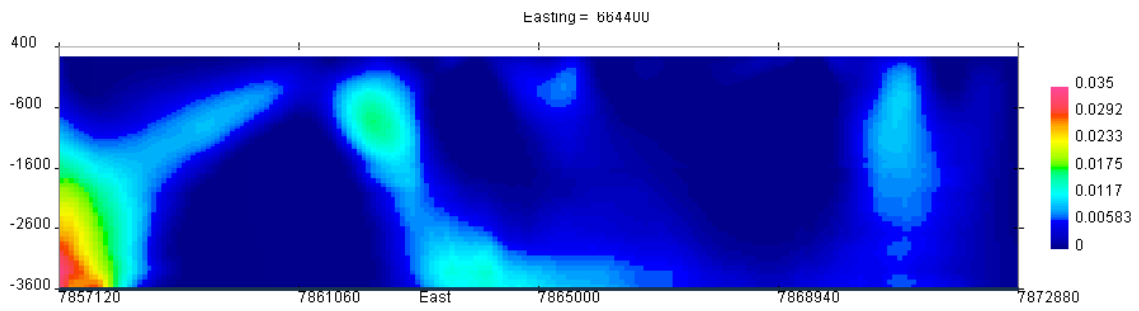
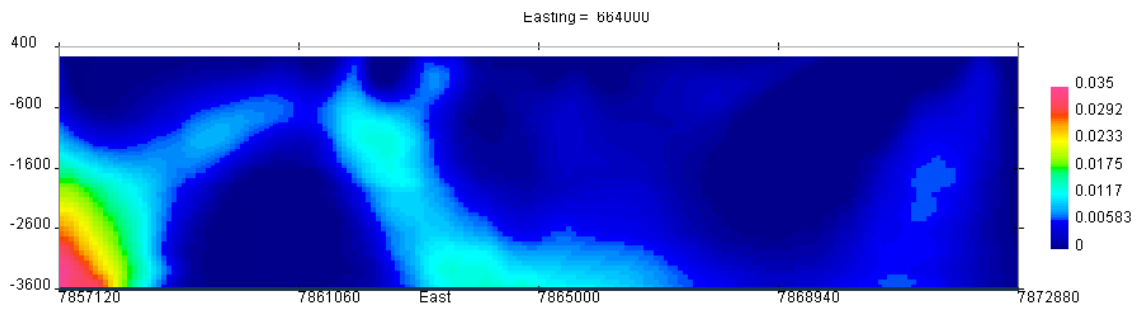
RL (Depth) Slices

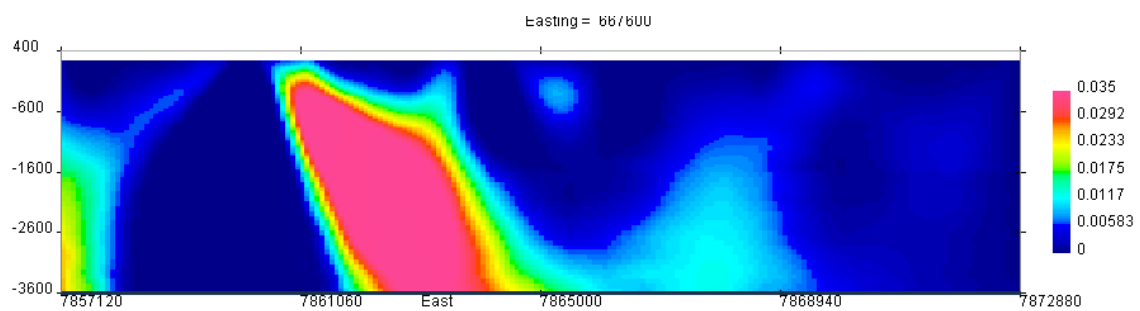
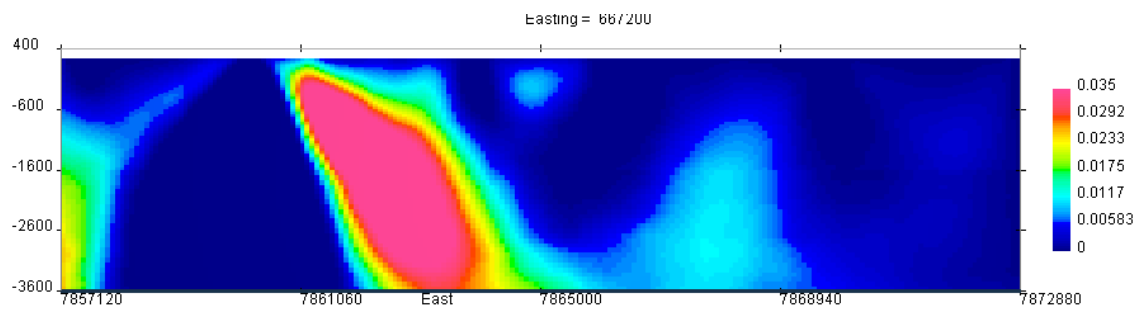
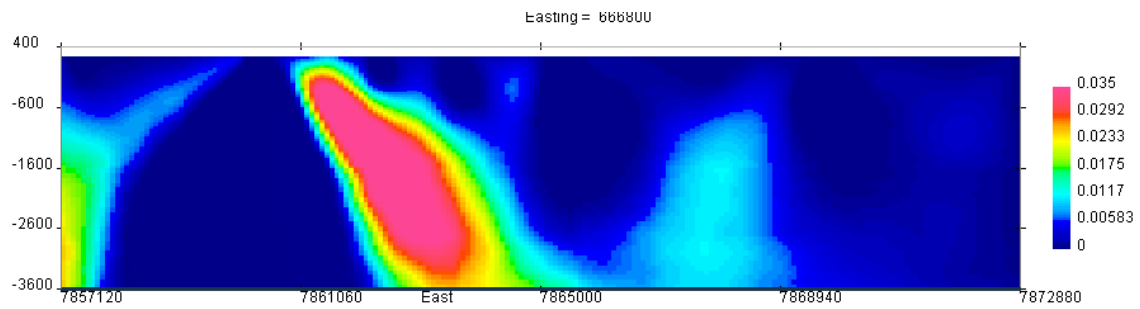
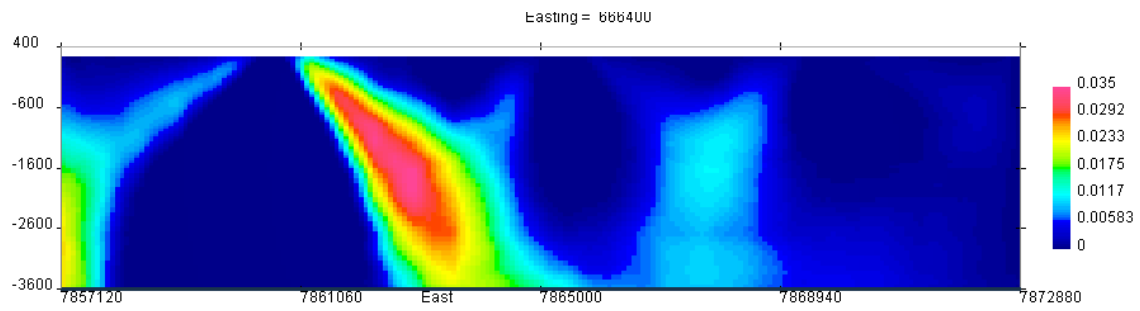
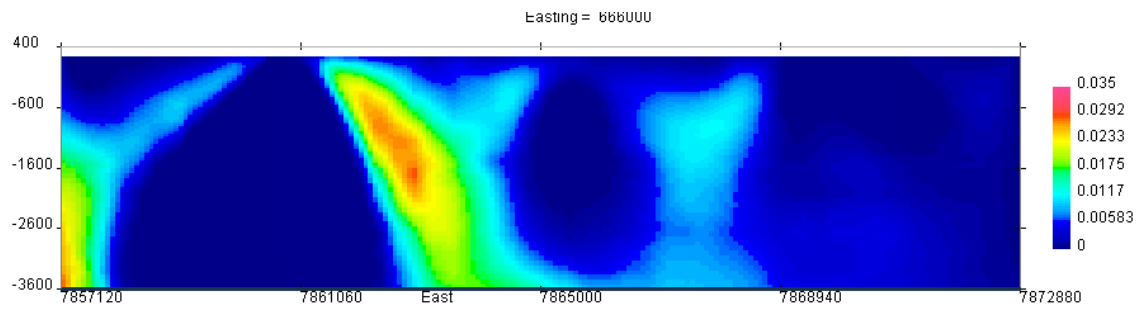


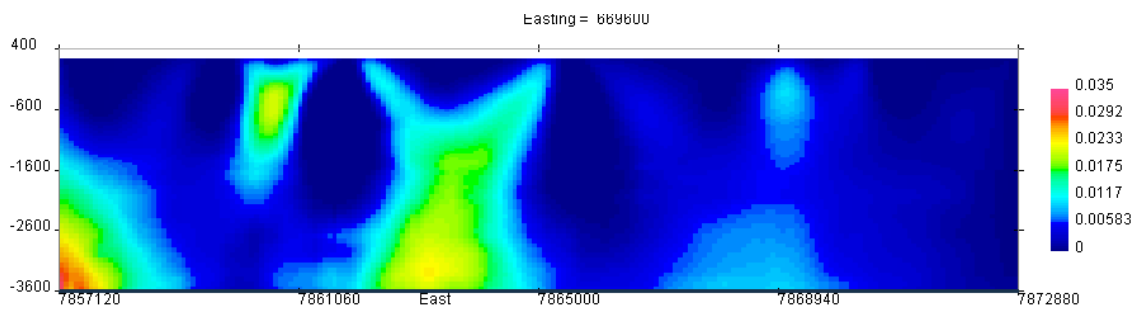
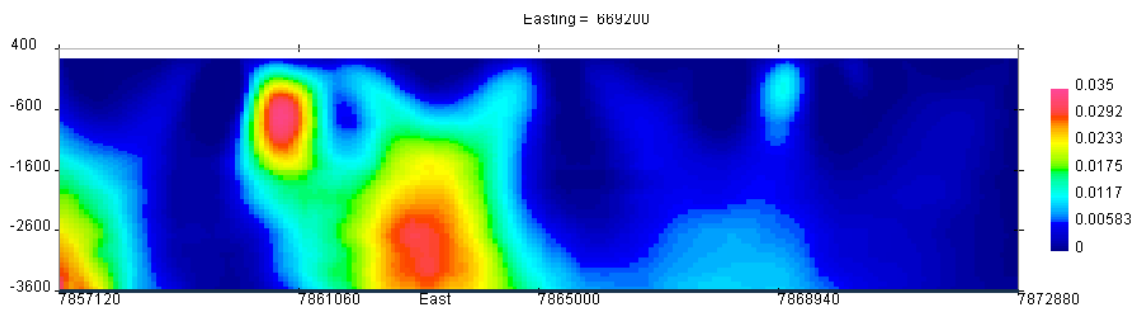
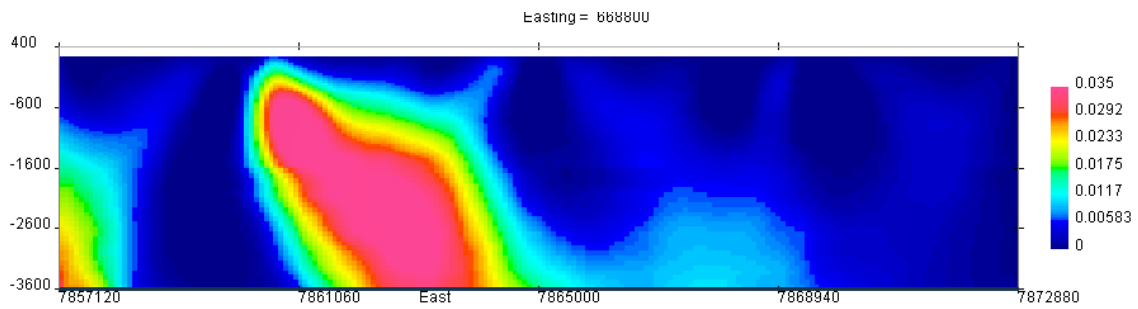
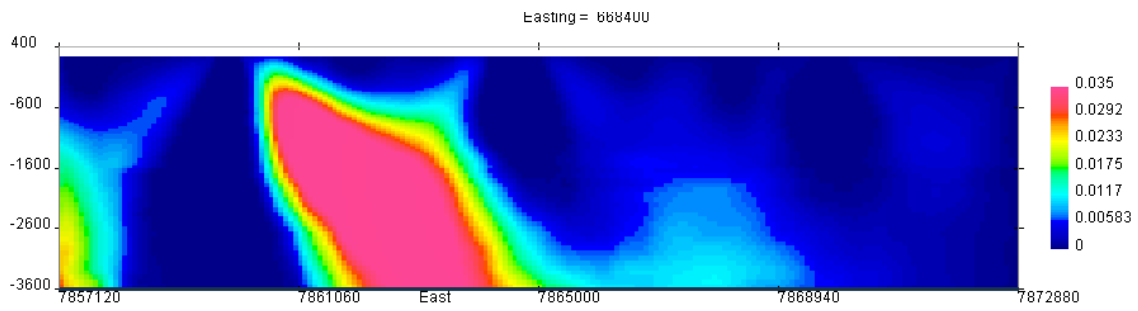
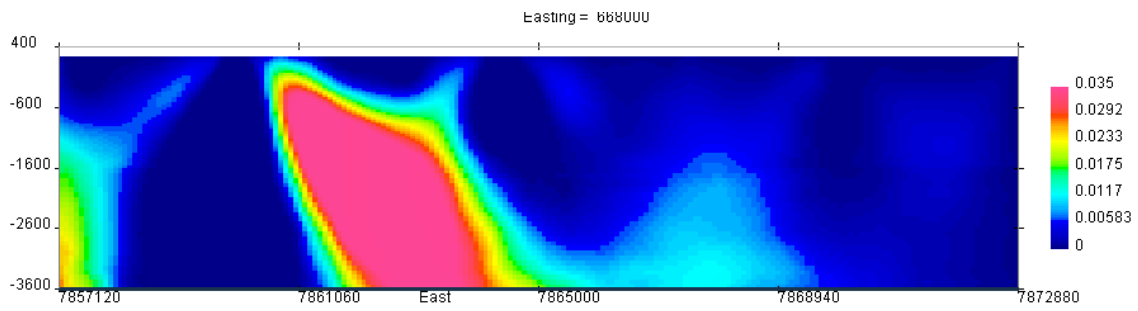
Area of UBC MAG3D inversion (TMI Image from Georgetown Area C survey, 2000)

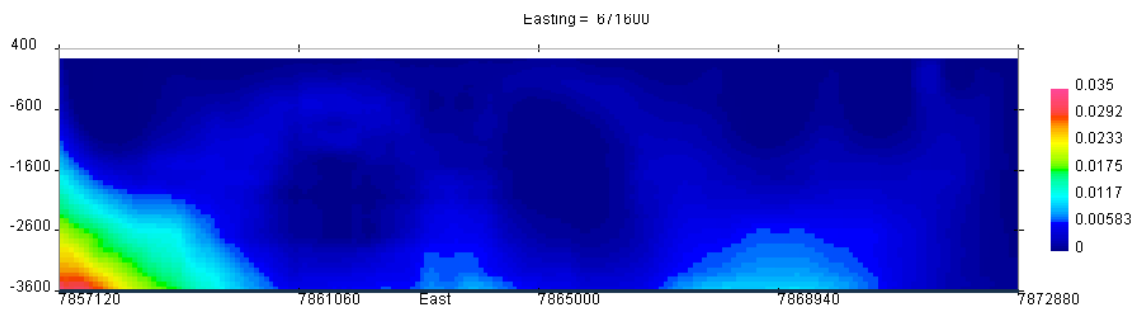
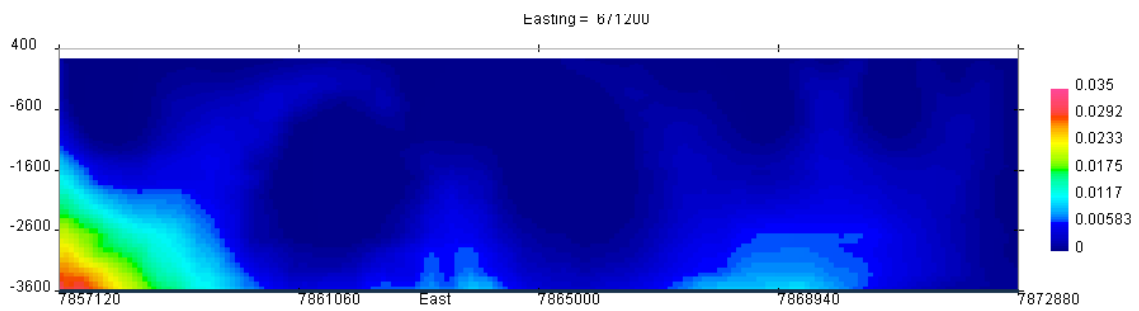
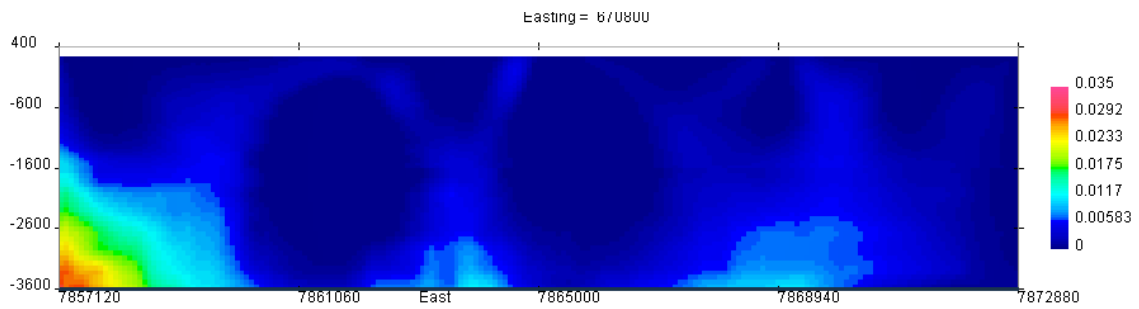
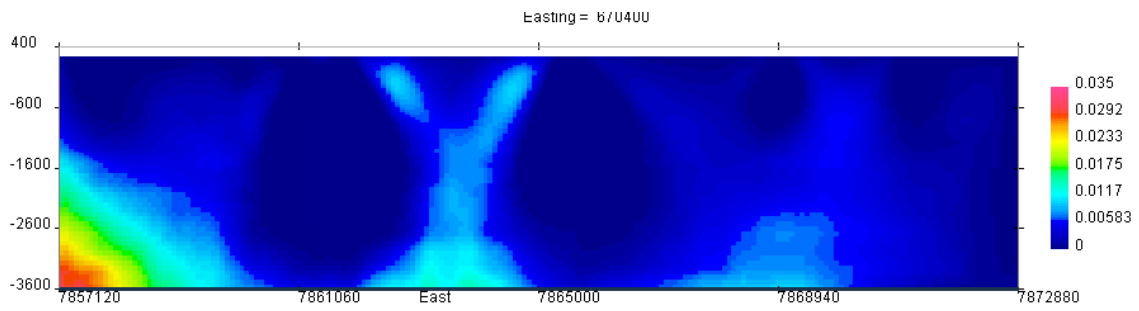
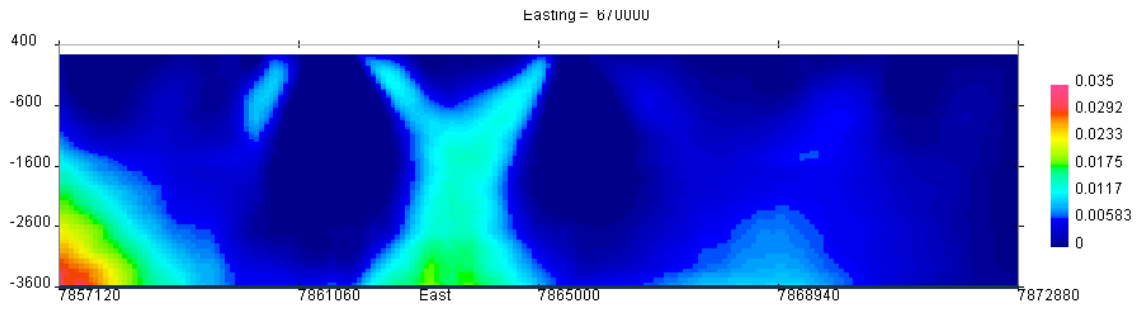
1. NS Sections:

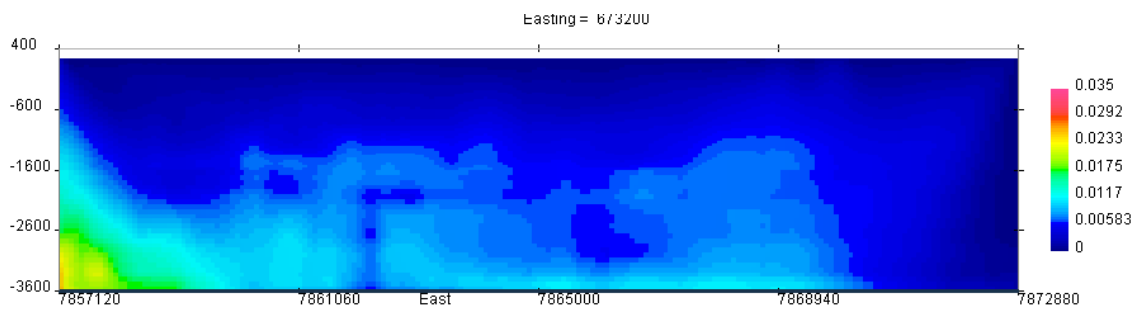
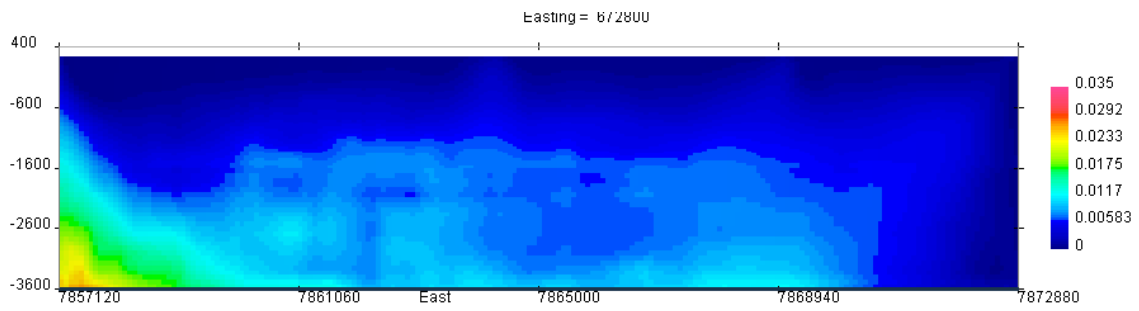
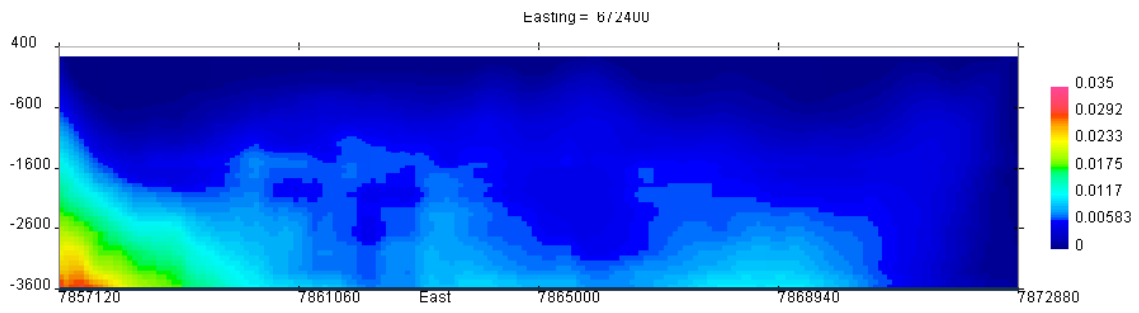
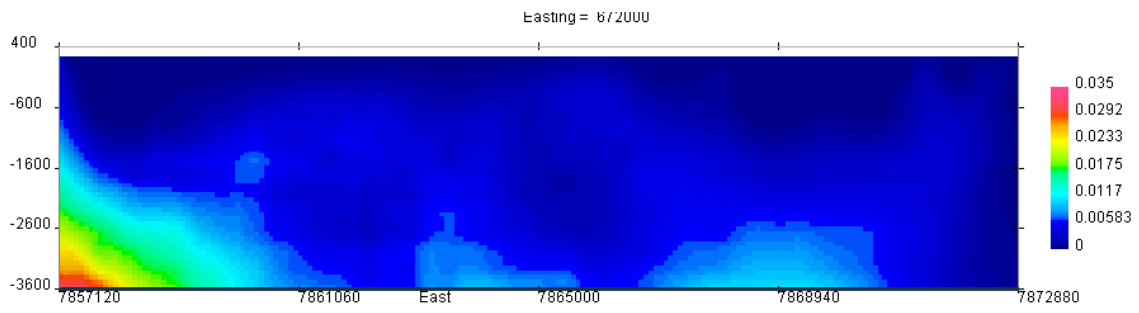




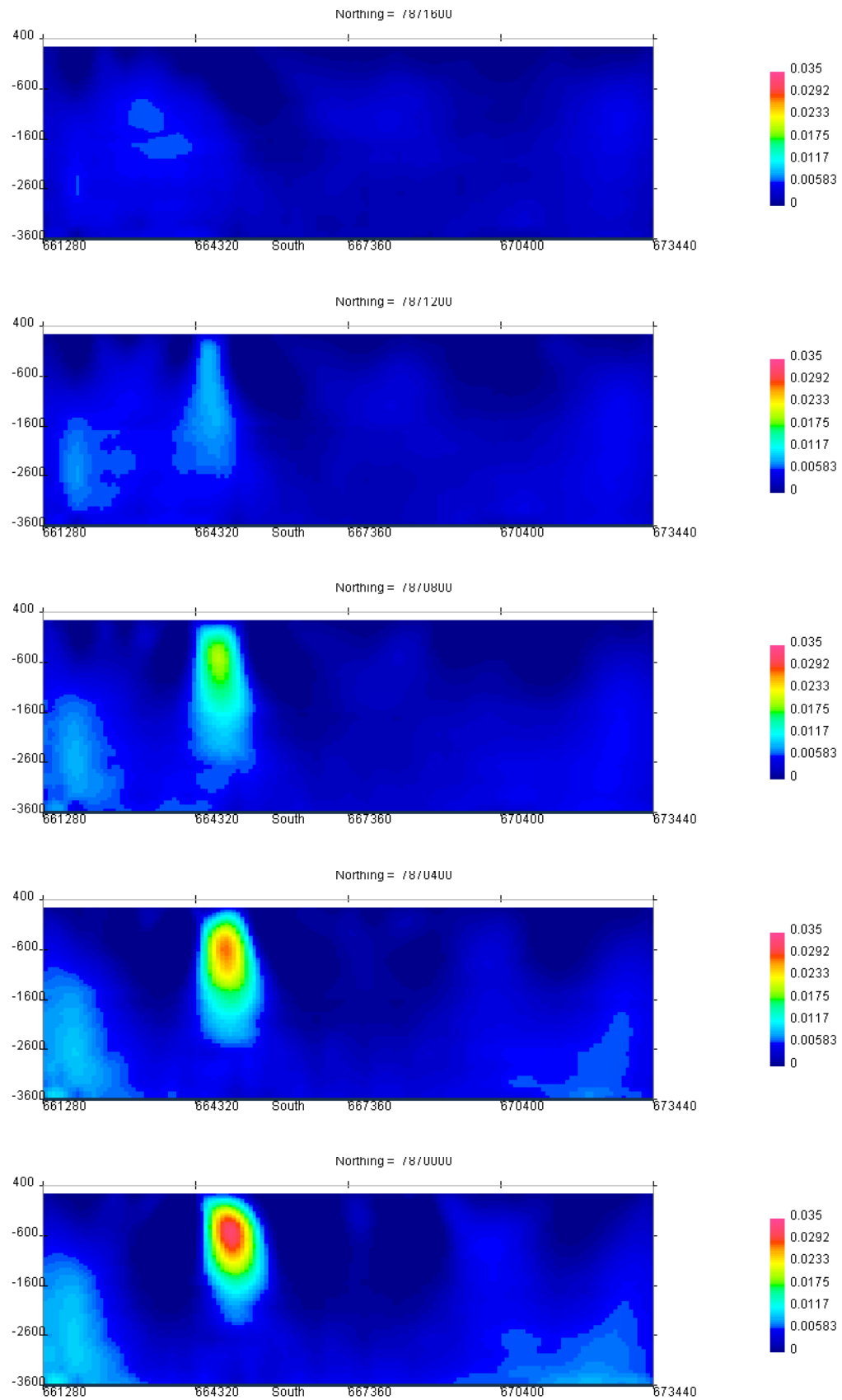


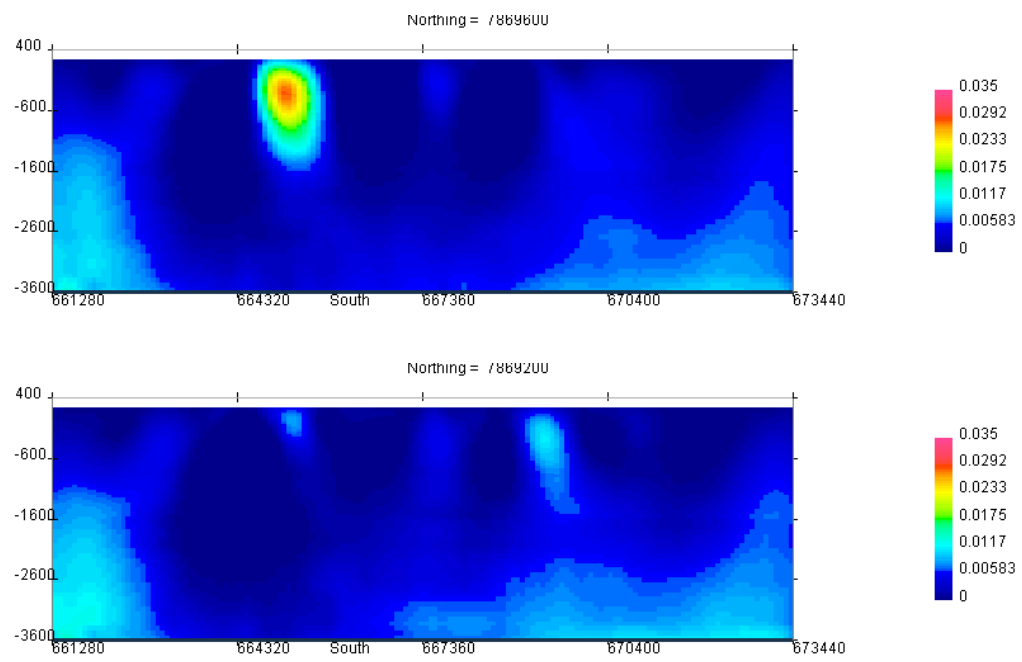




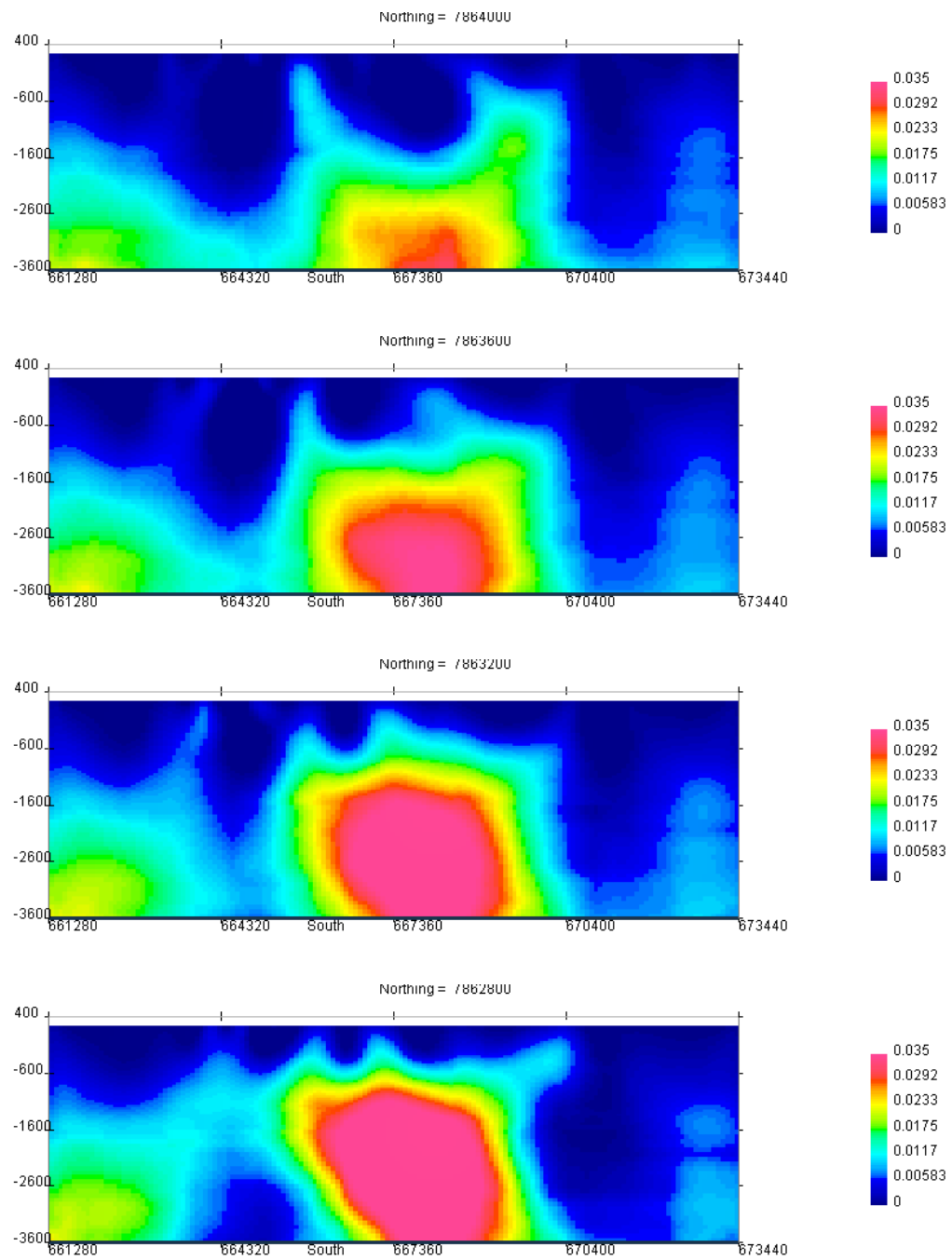


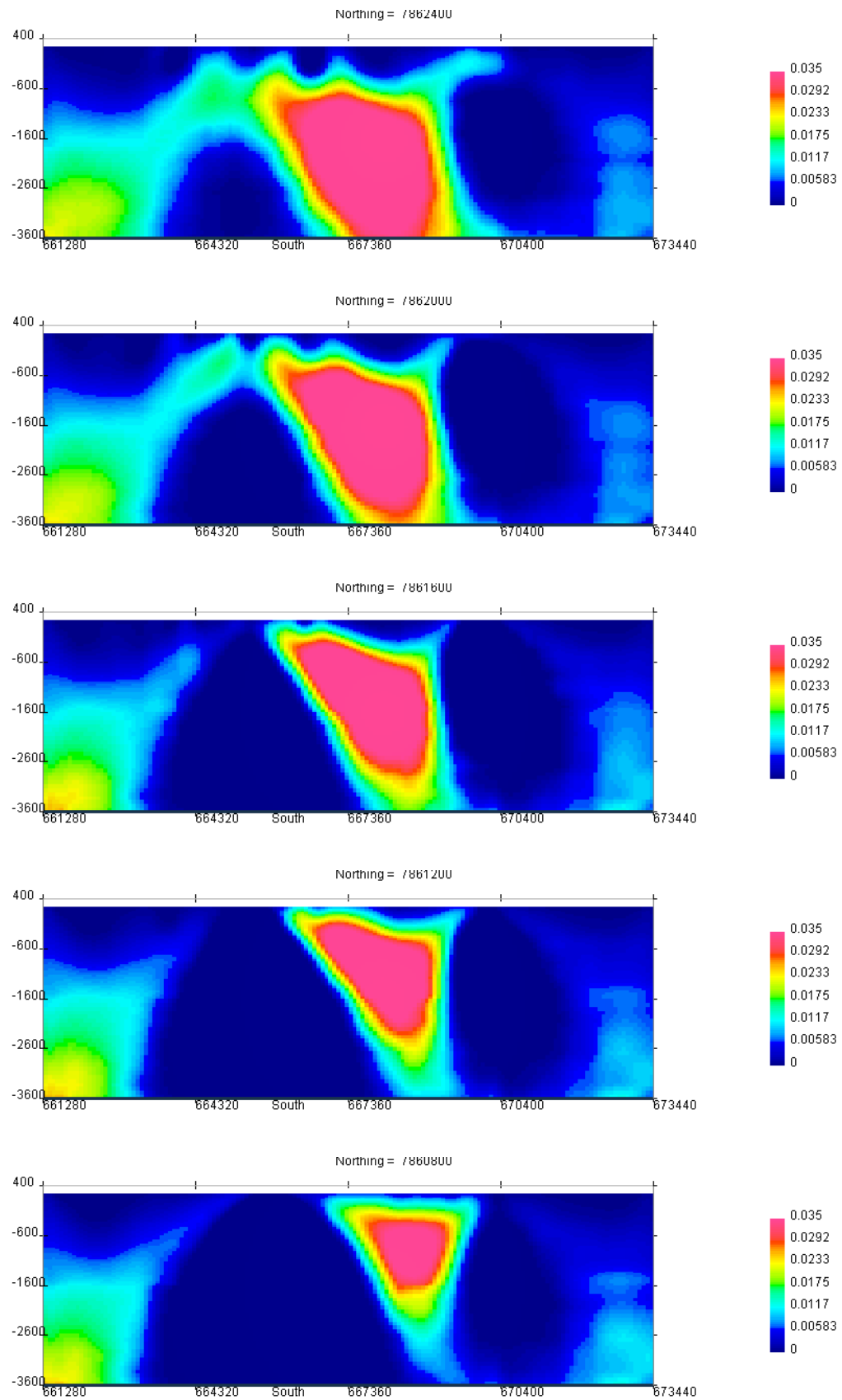
2. EW Sections (Small north-western magnetic anomaly):

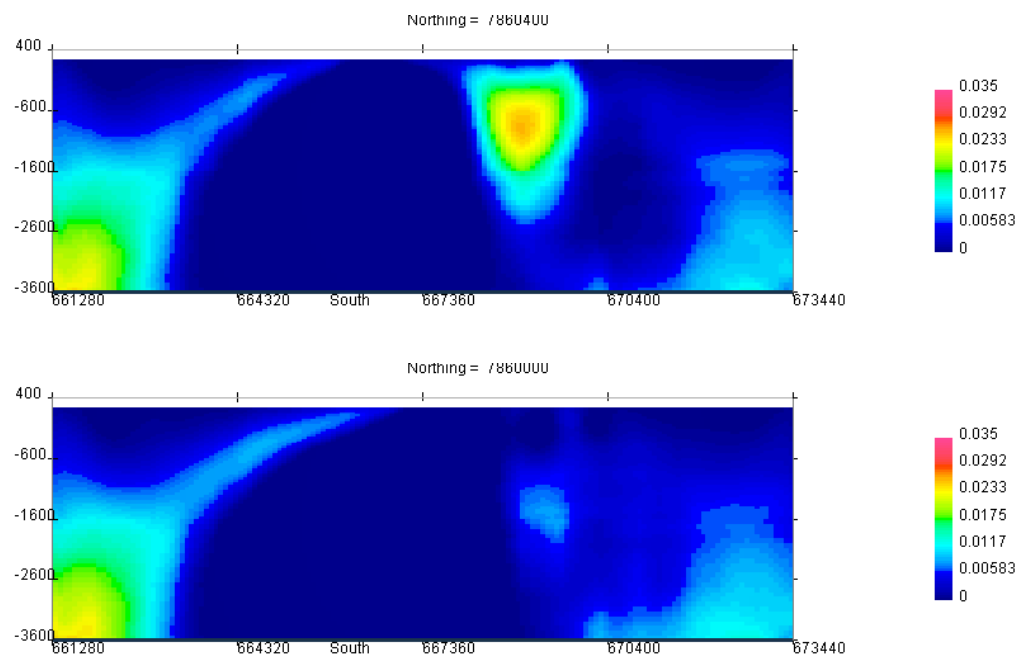




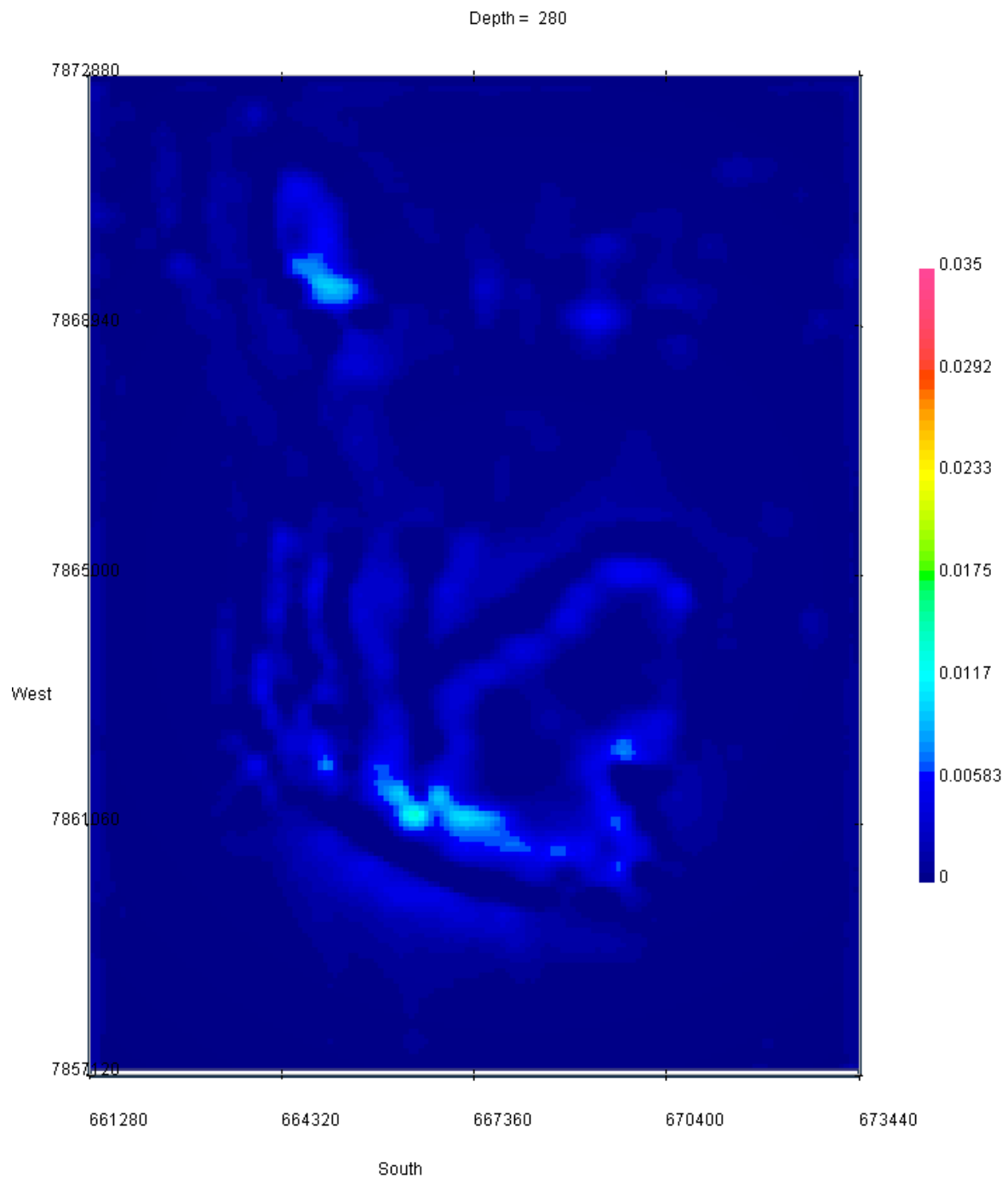
3. EW Sections (Large southern magnetic anomaly):

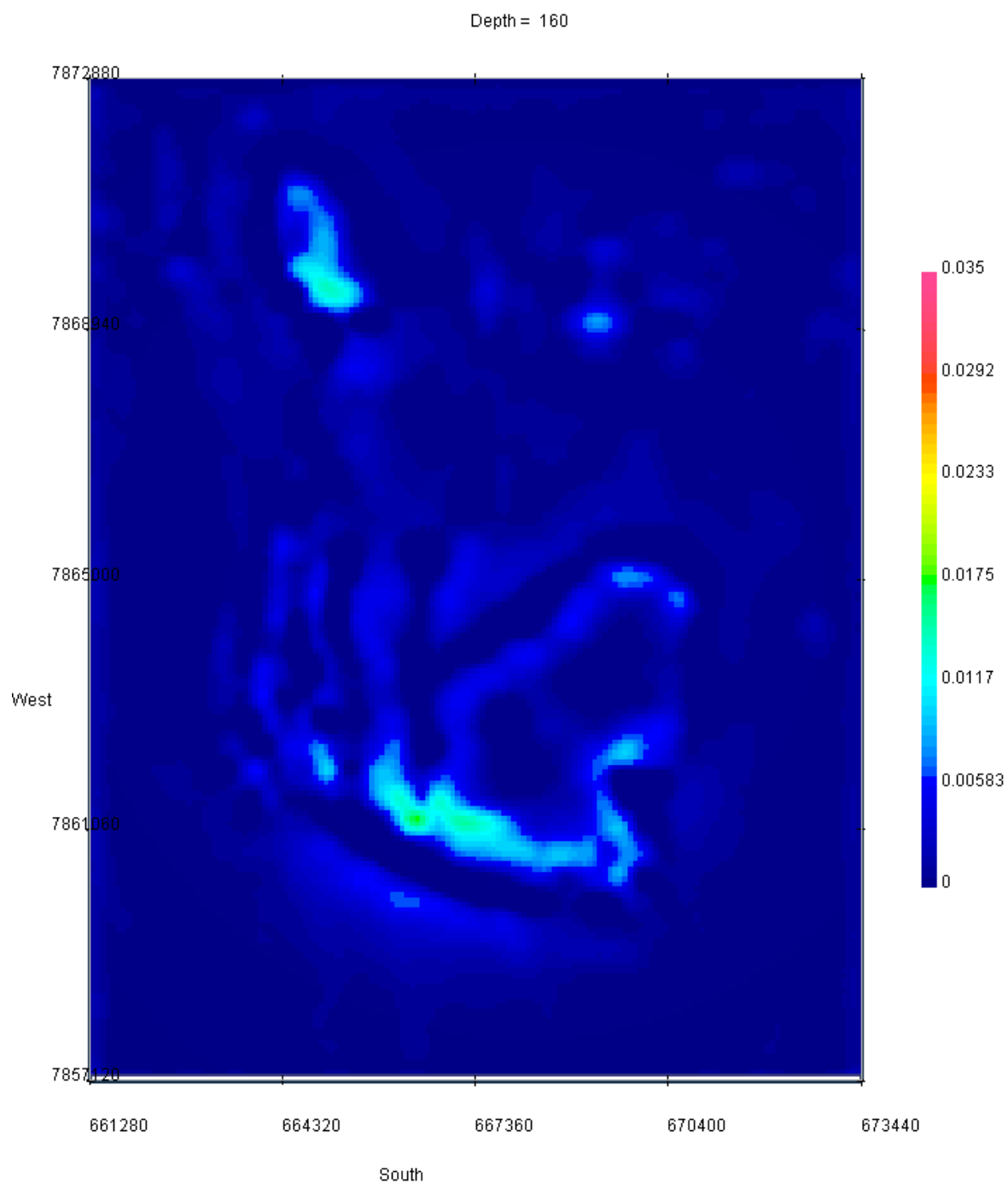


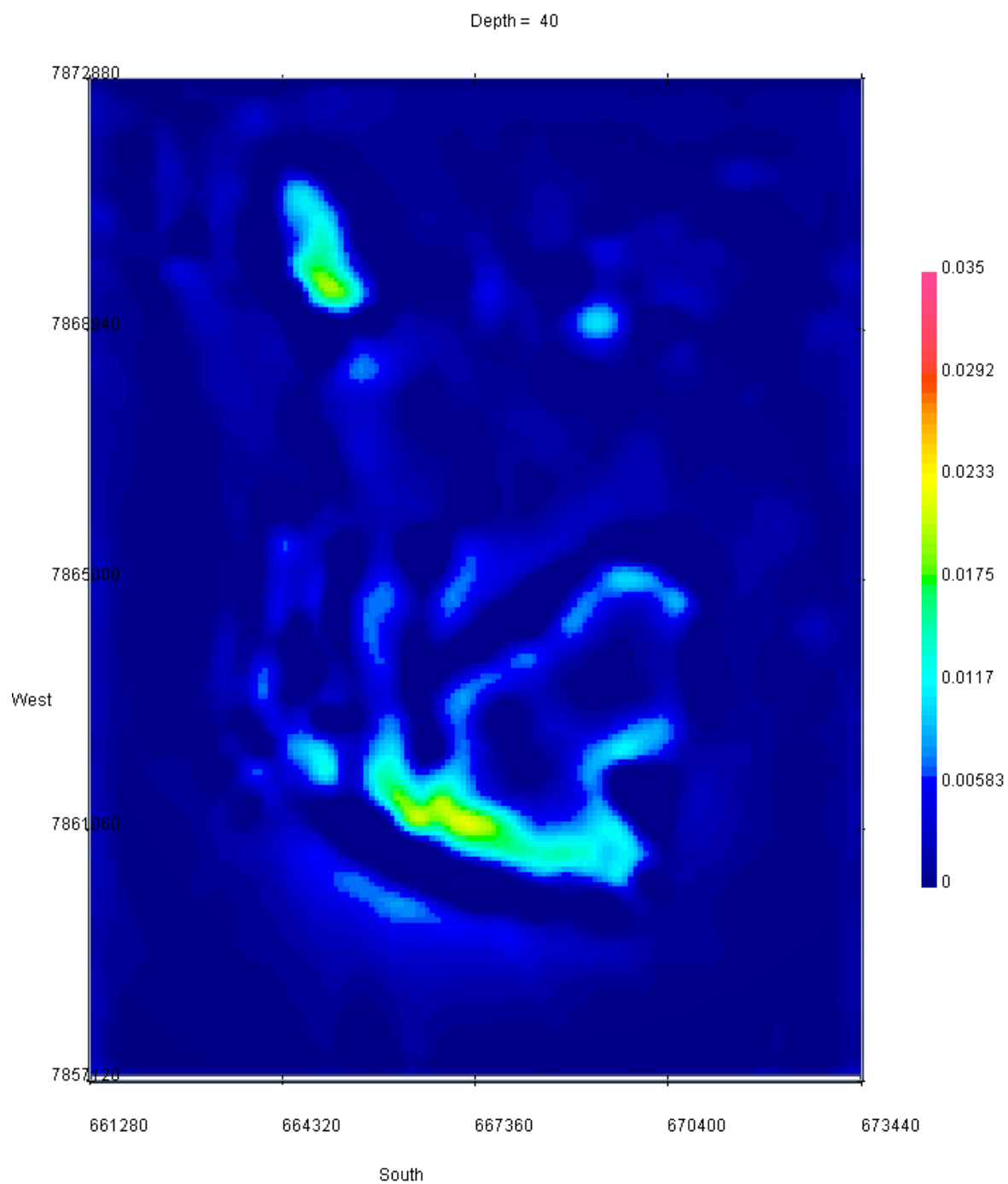


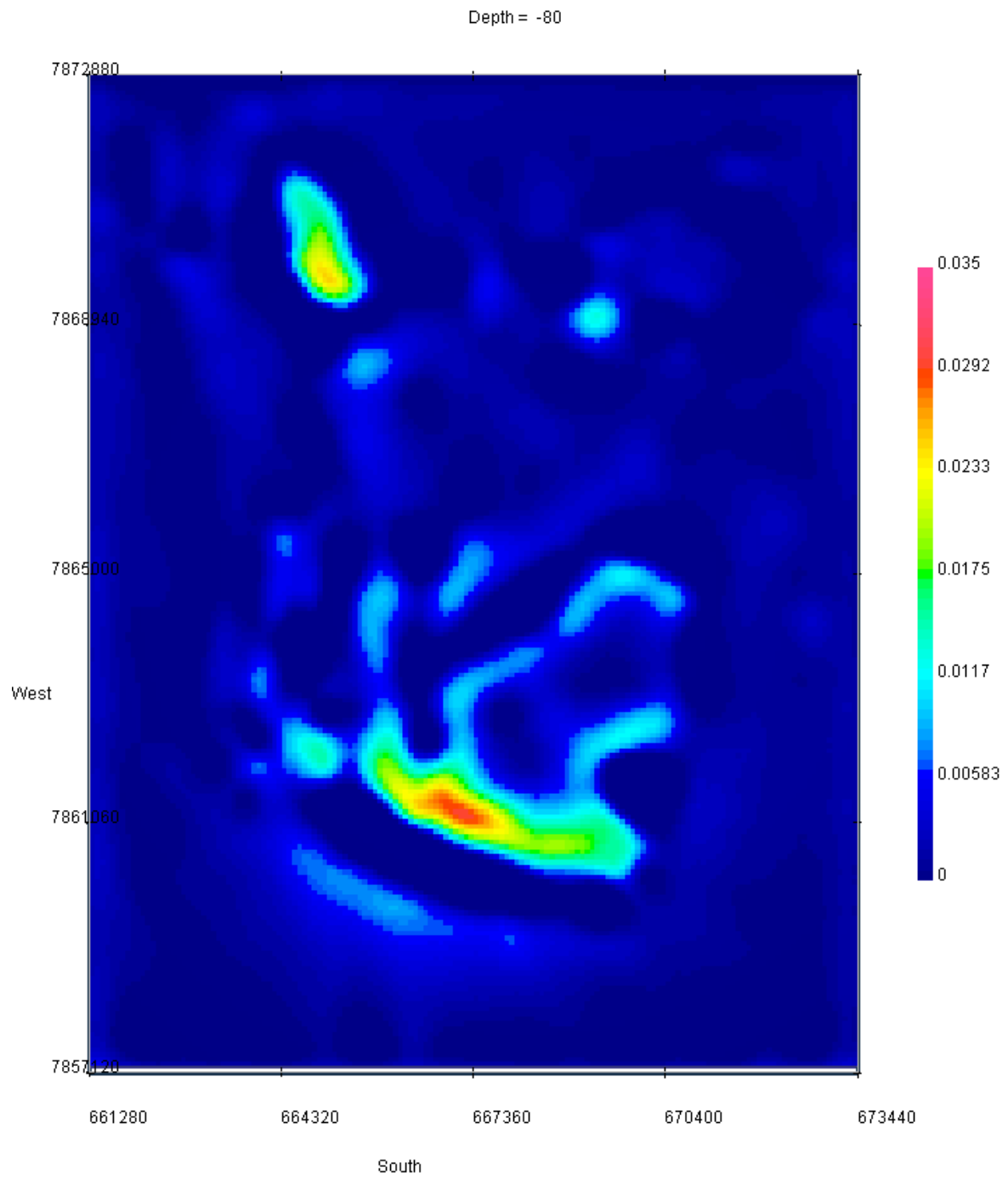


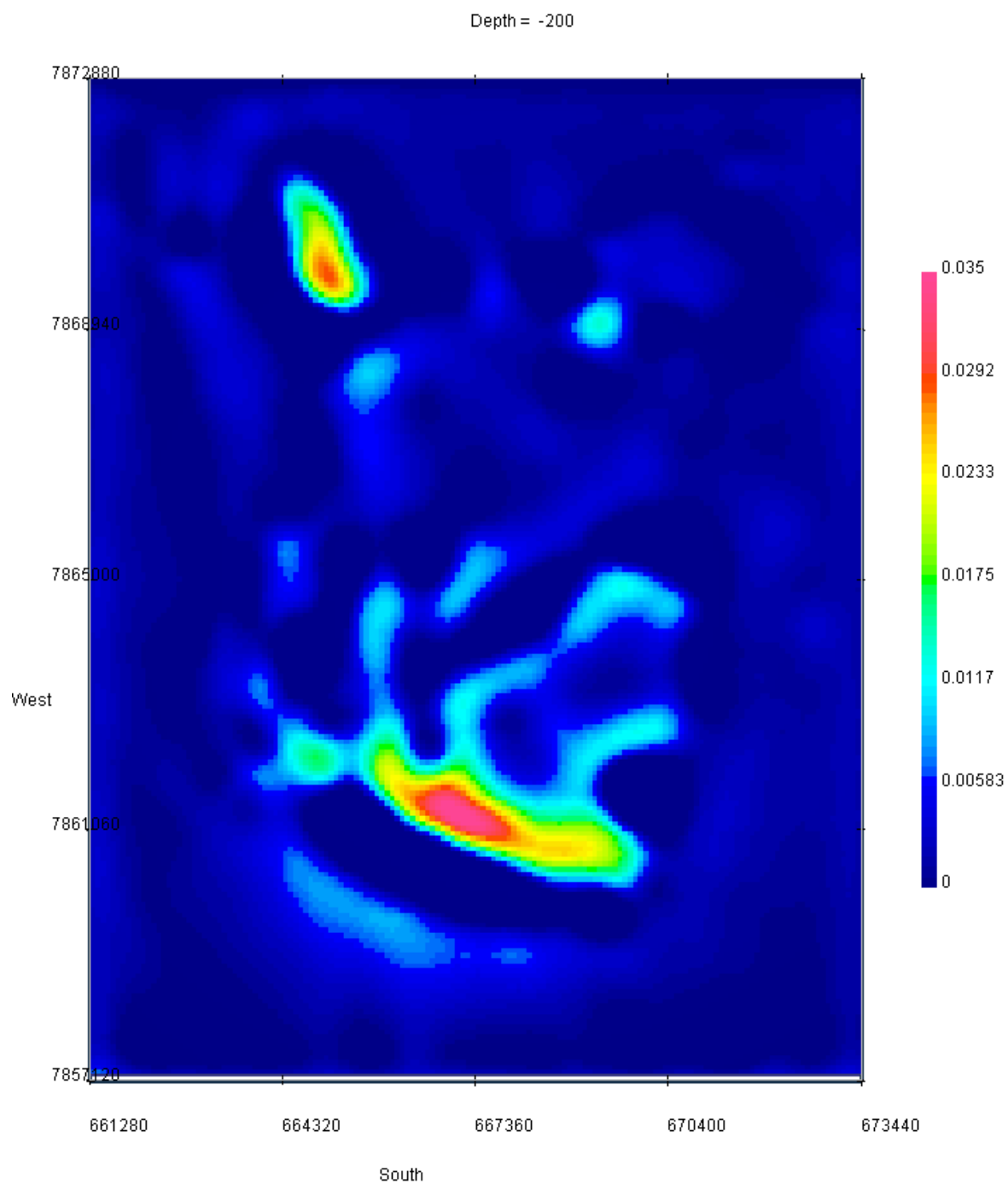
4. RL (Depth) Slices:

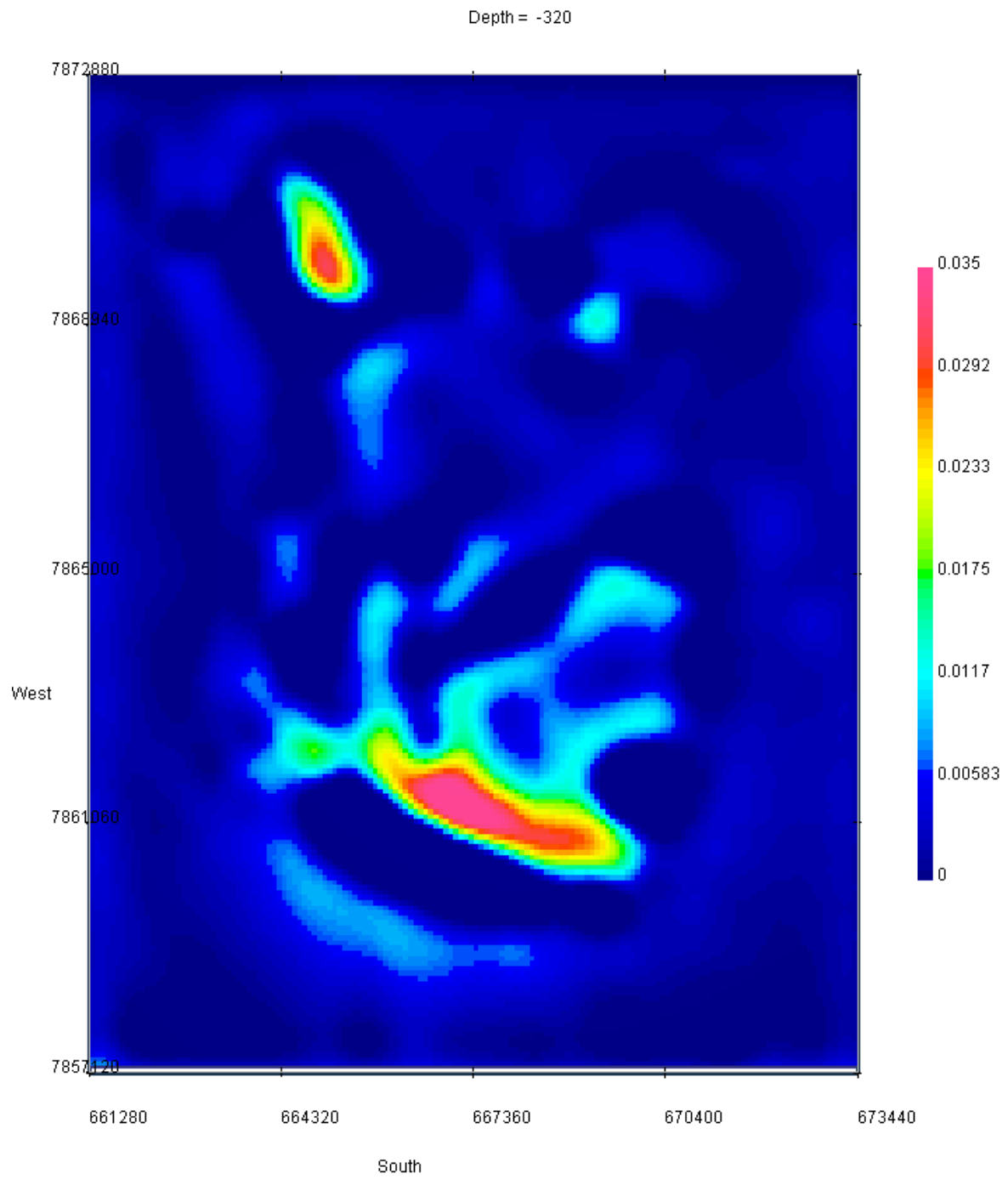


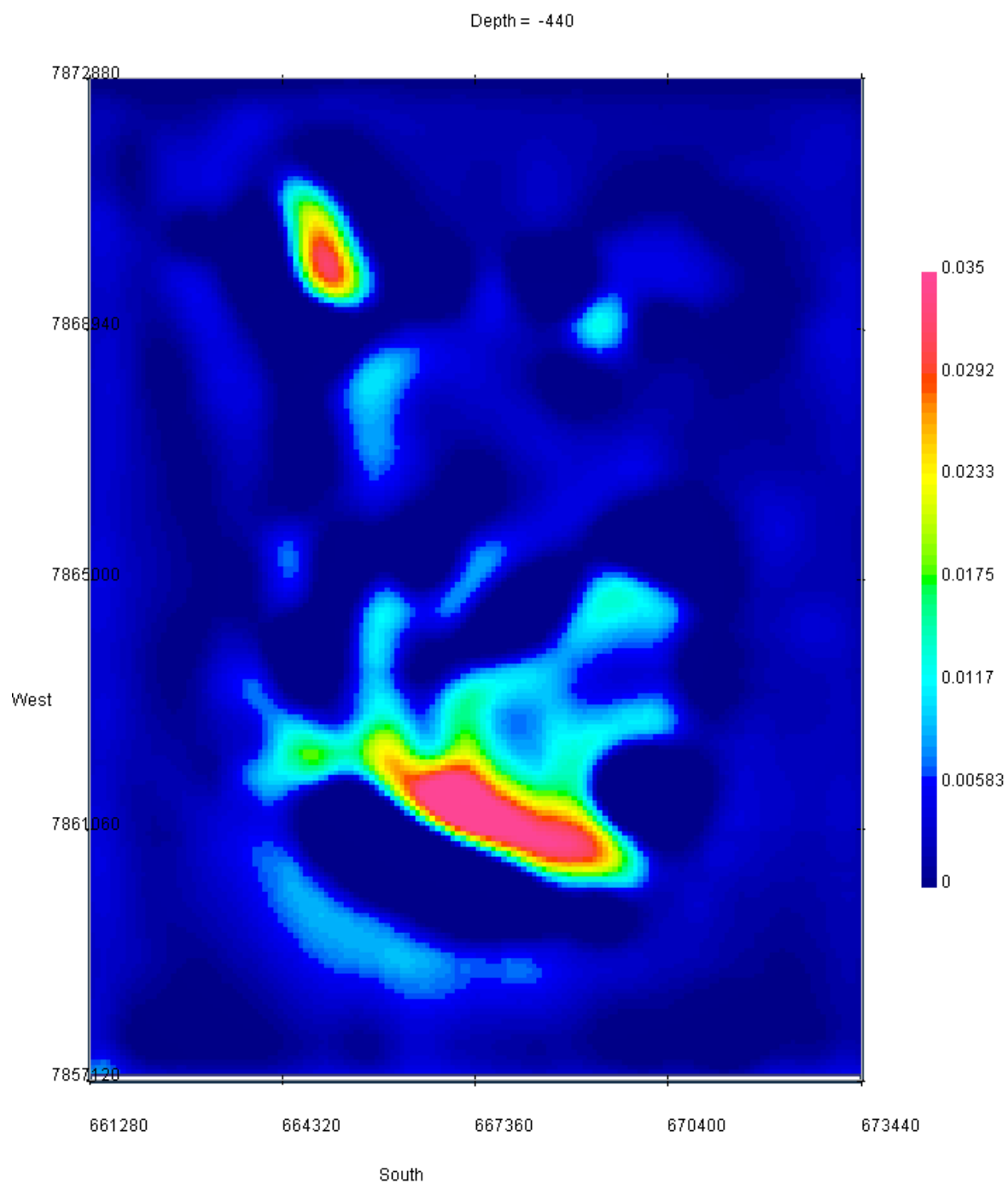


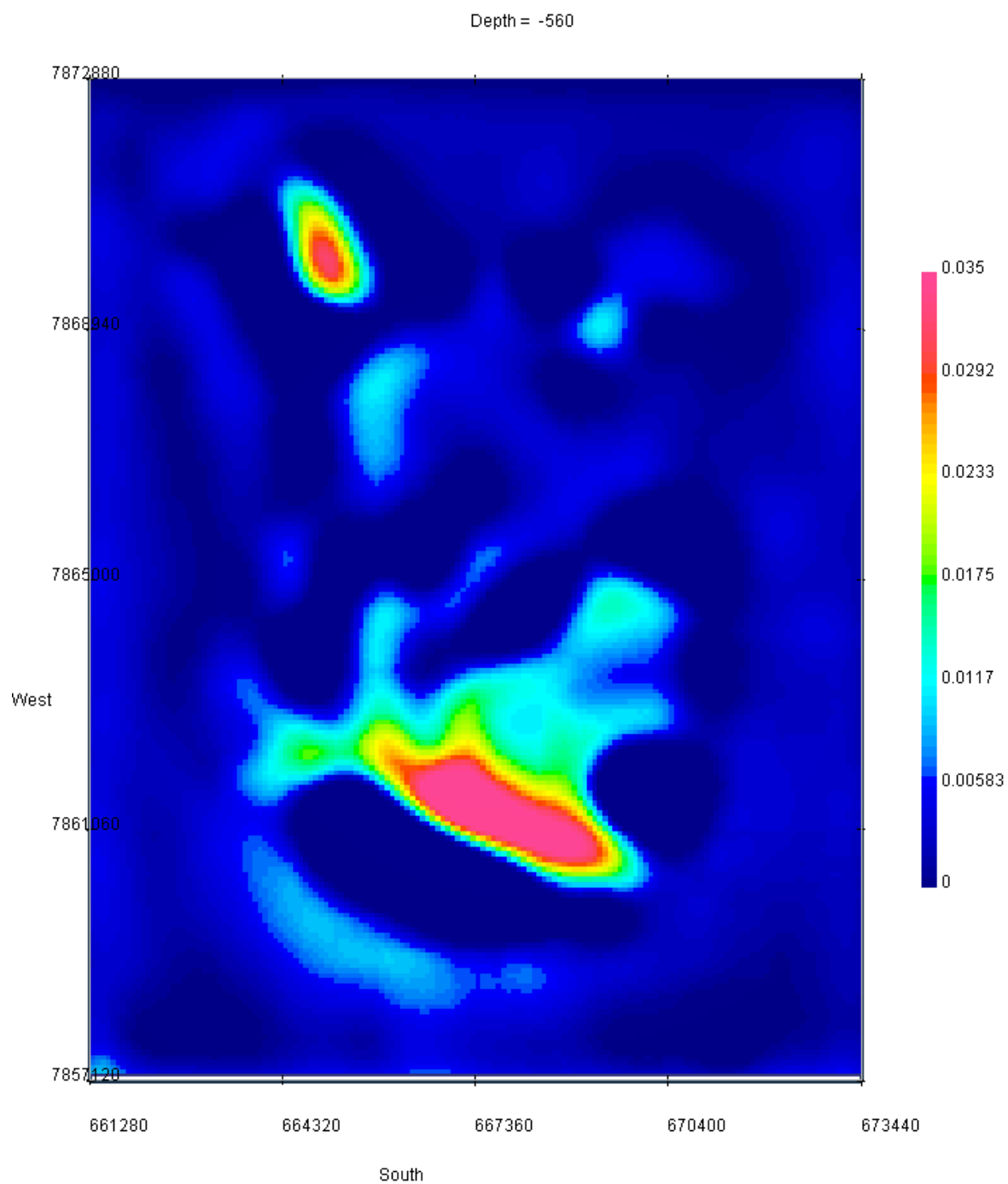


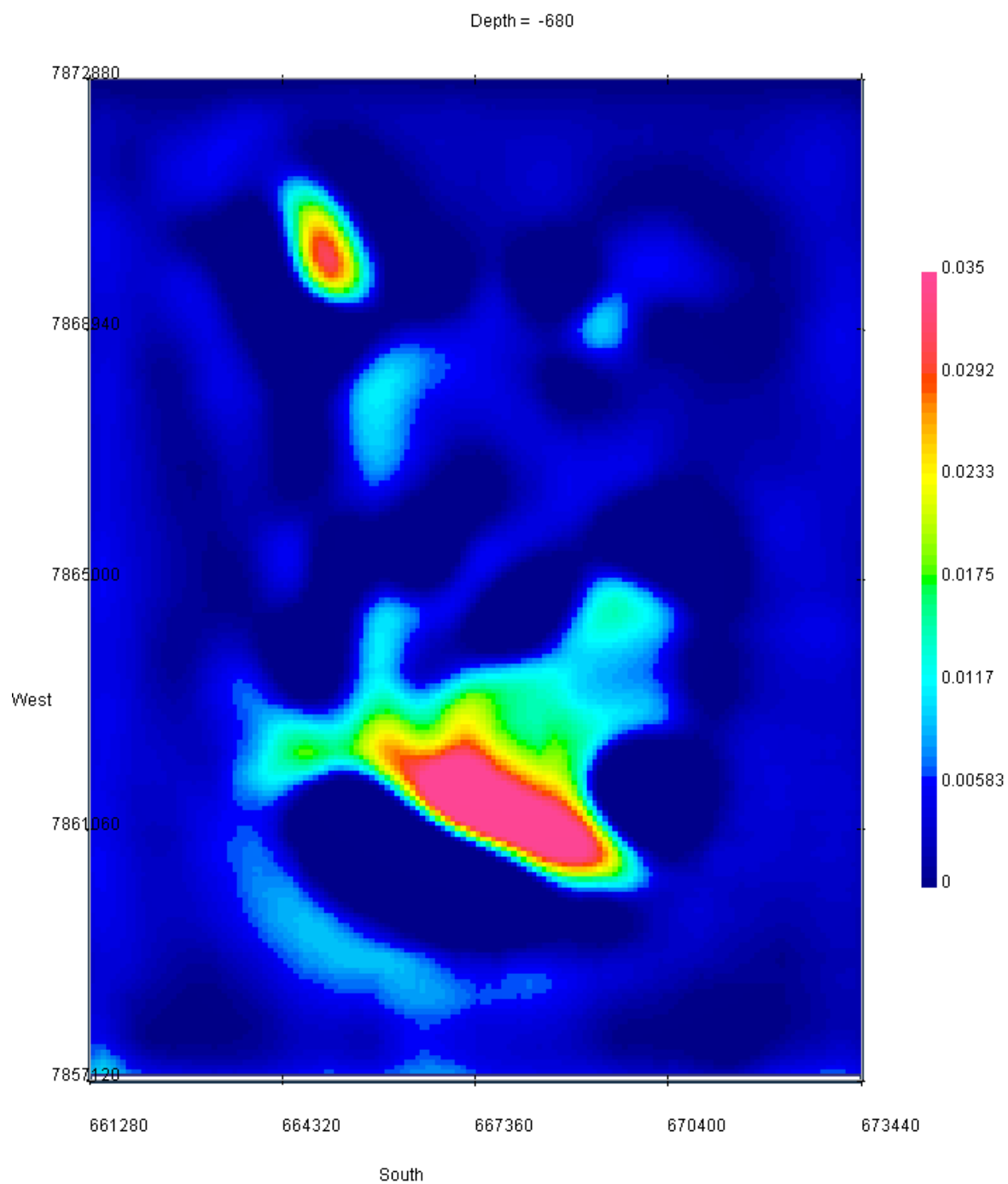


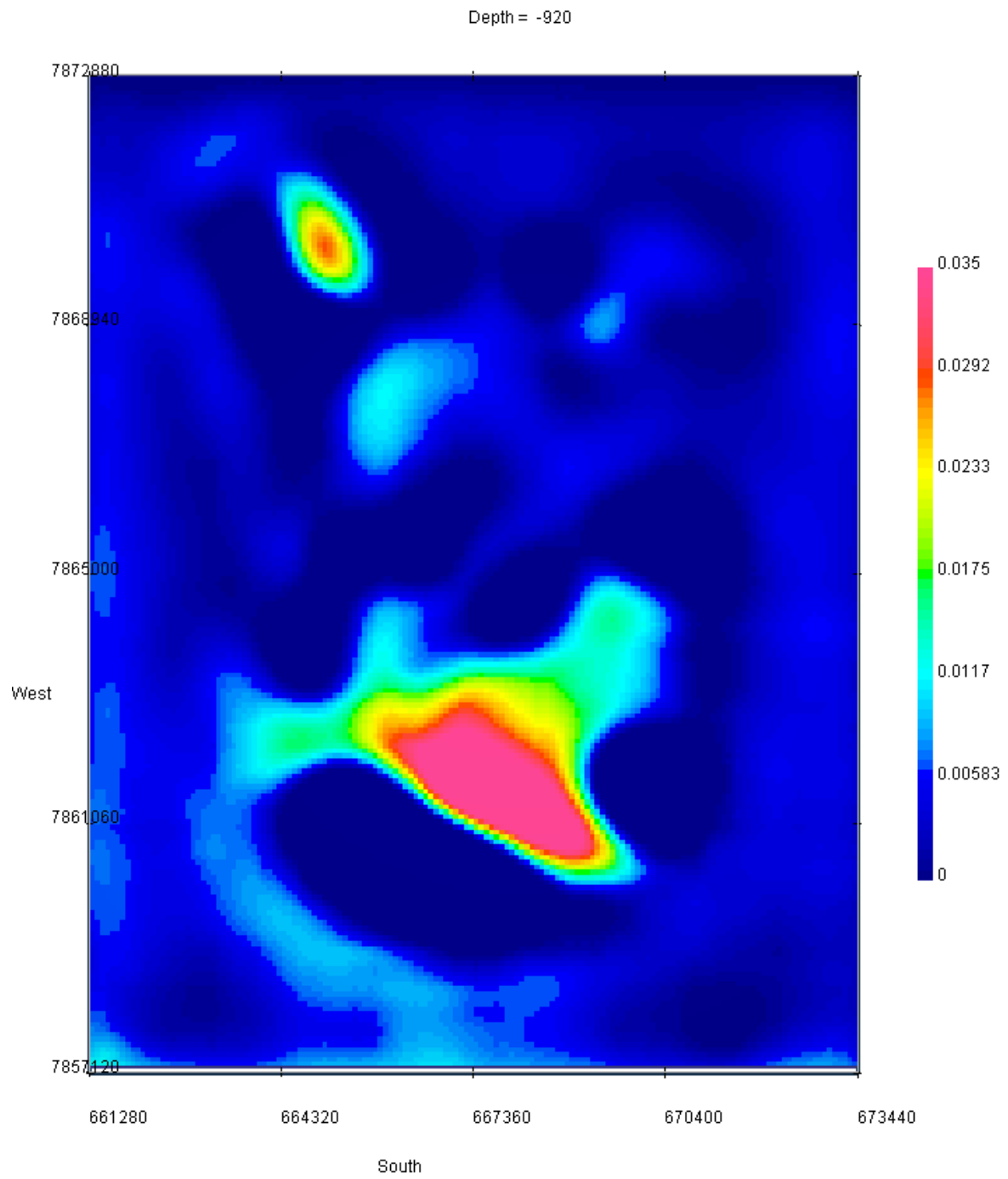


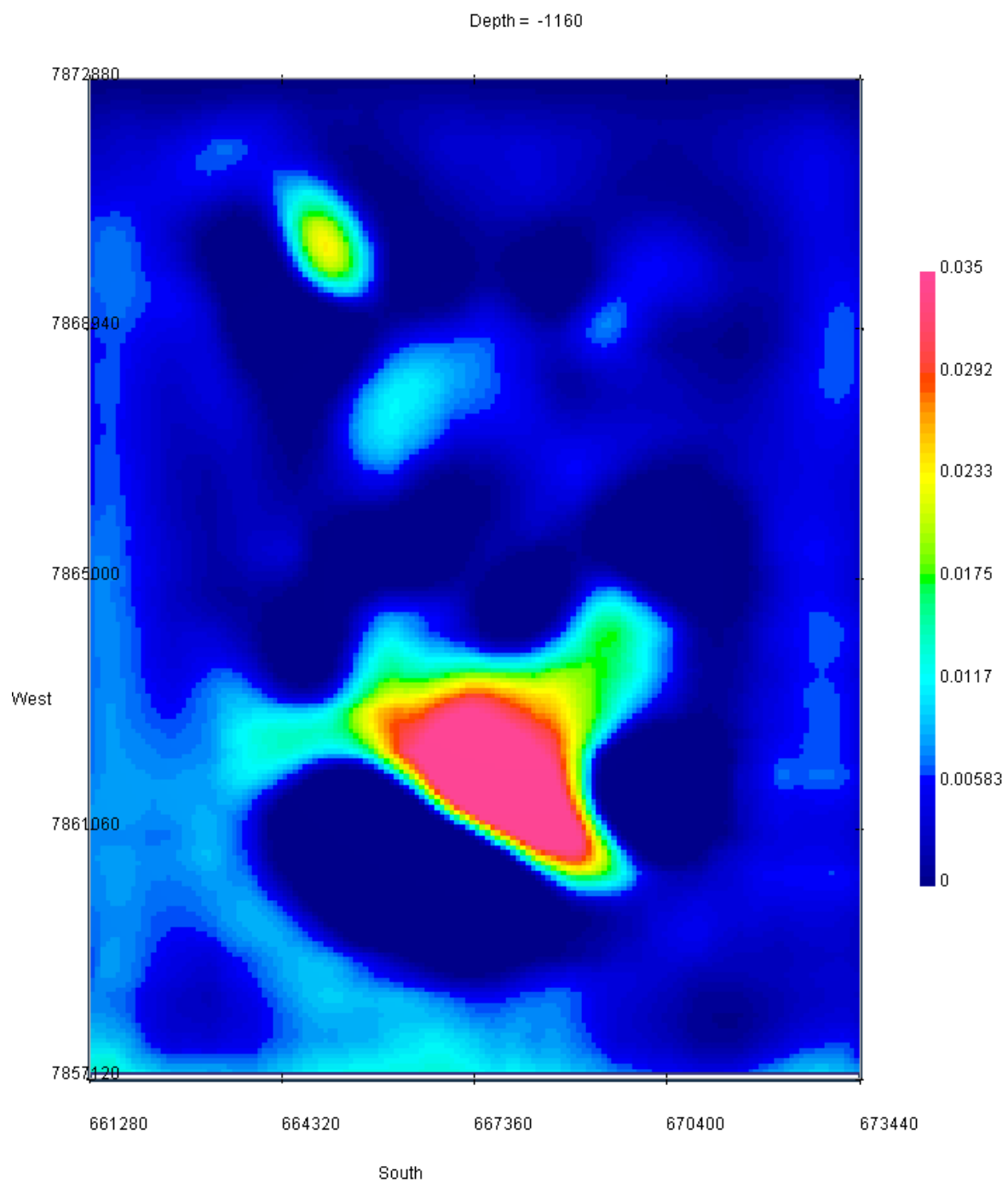


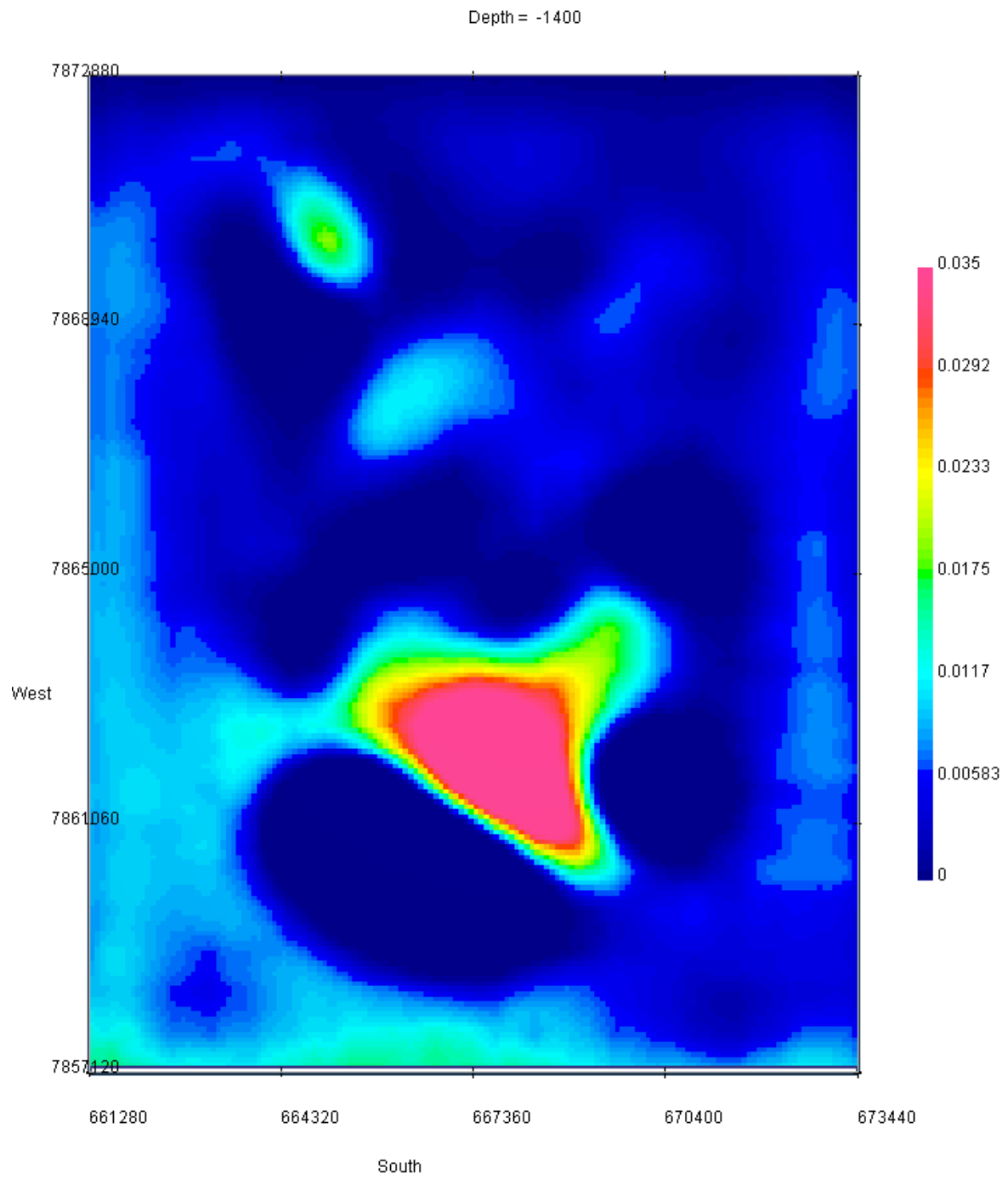


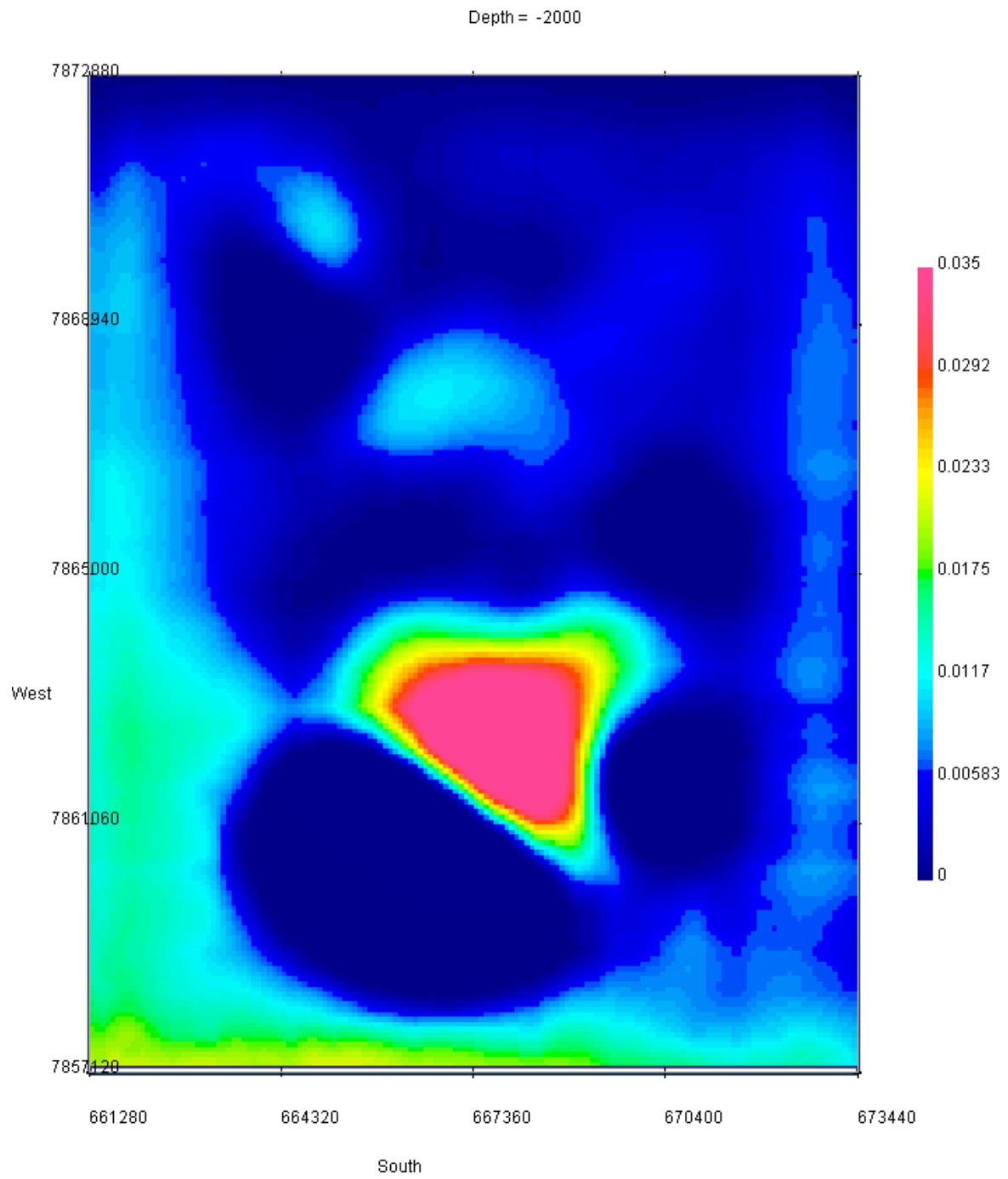












APPENDIX II

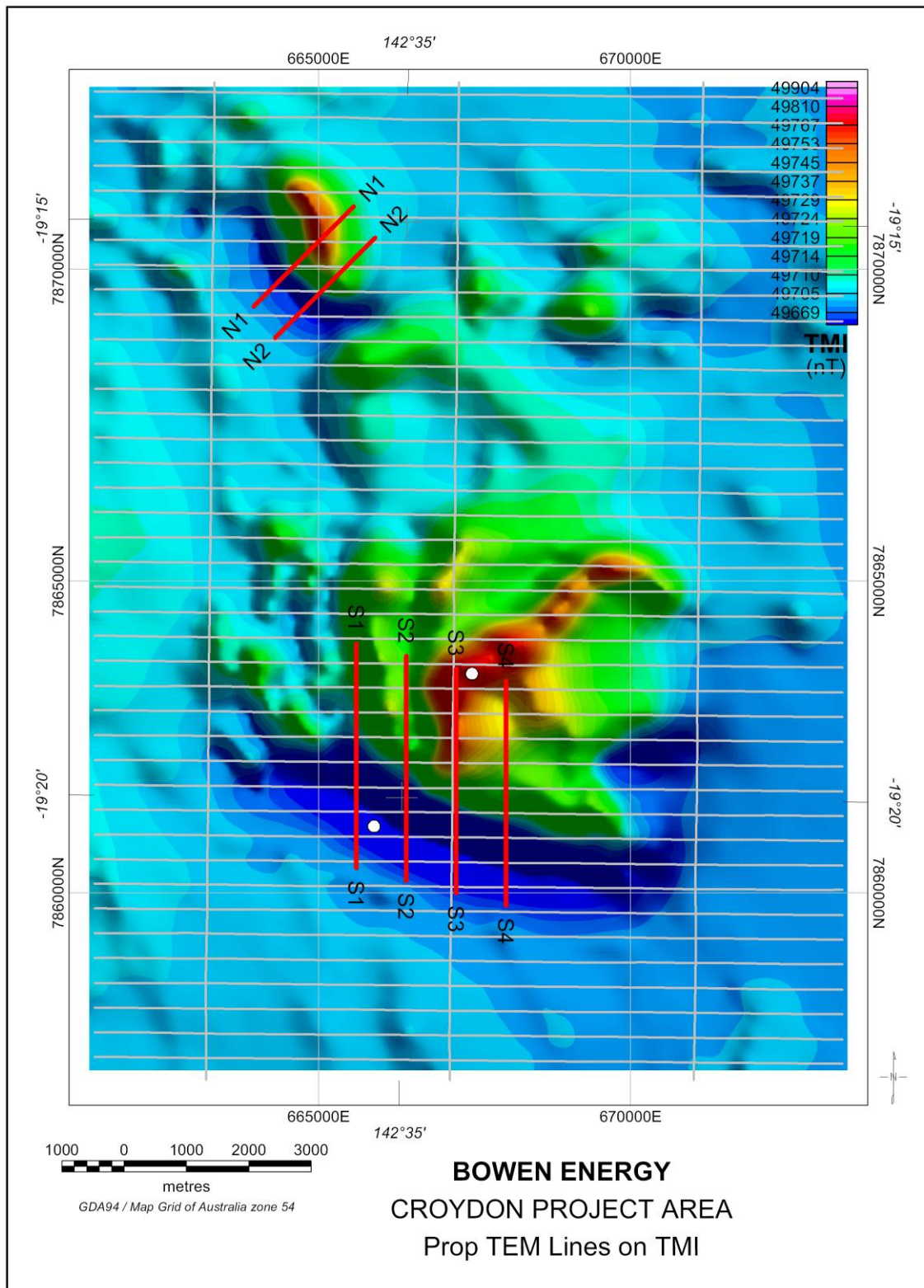
CROYDON PROJECT AREA

TEM Profiles & EMax CDIs

2011

(Croydon North & South Grids)

Graeme Mackee – Geo Discovery Group Pty Ltd



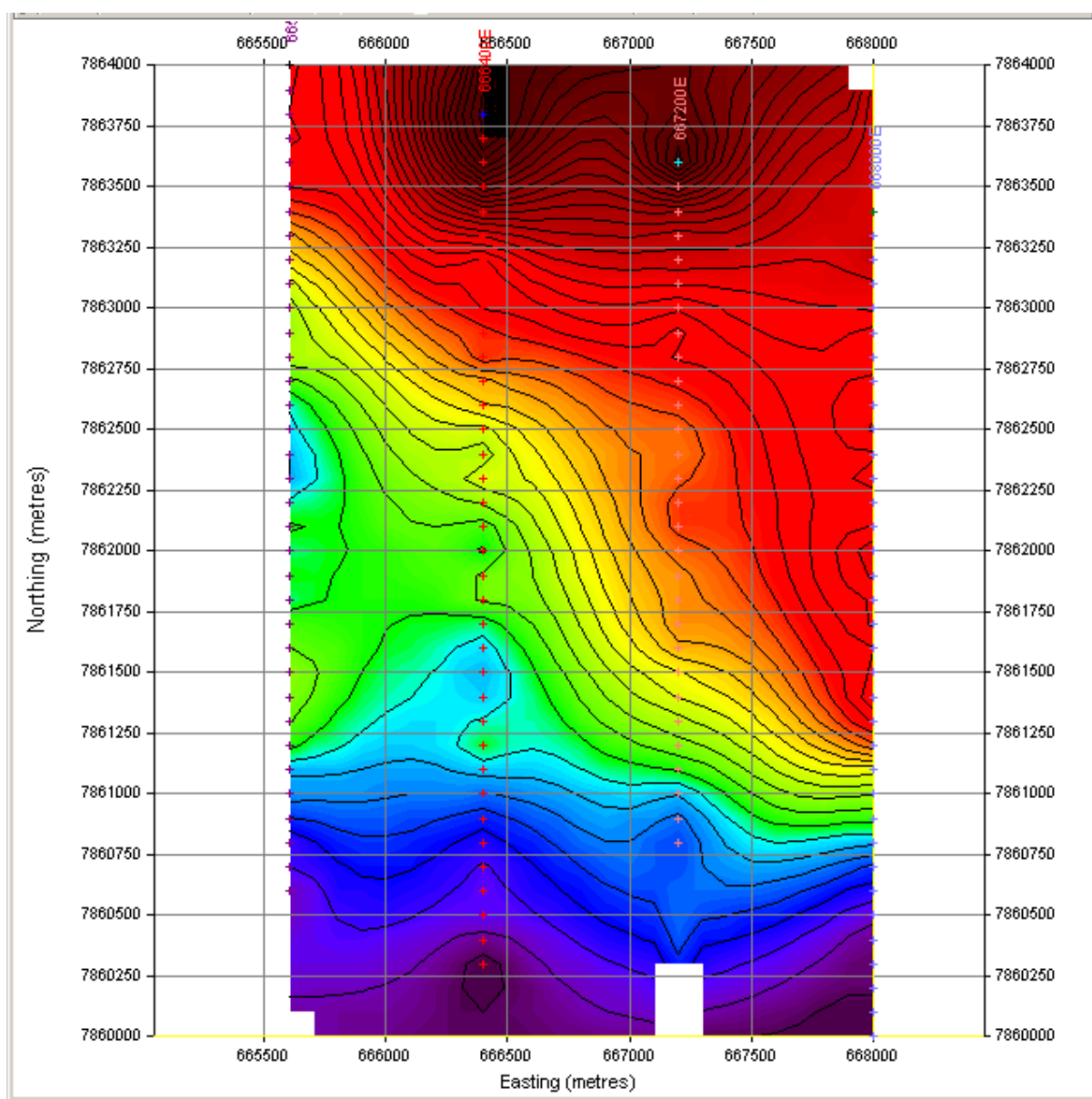


Fig 2: Croydon South Grid: B-Field TEM Ch20 image and contours

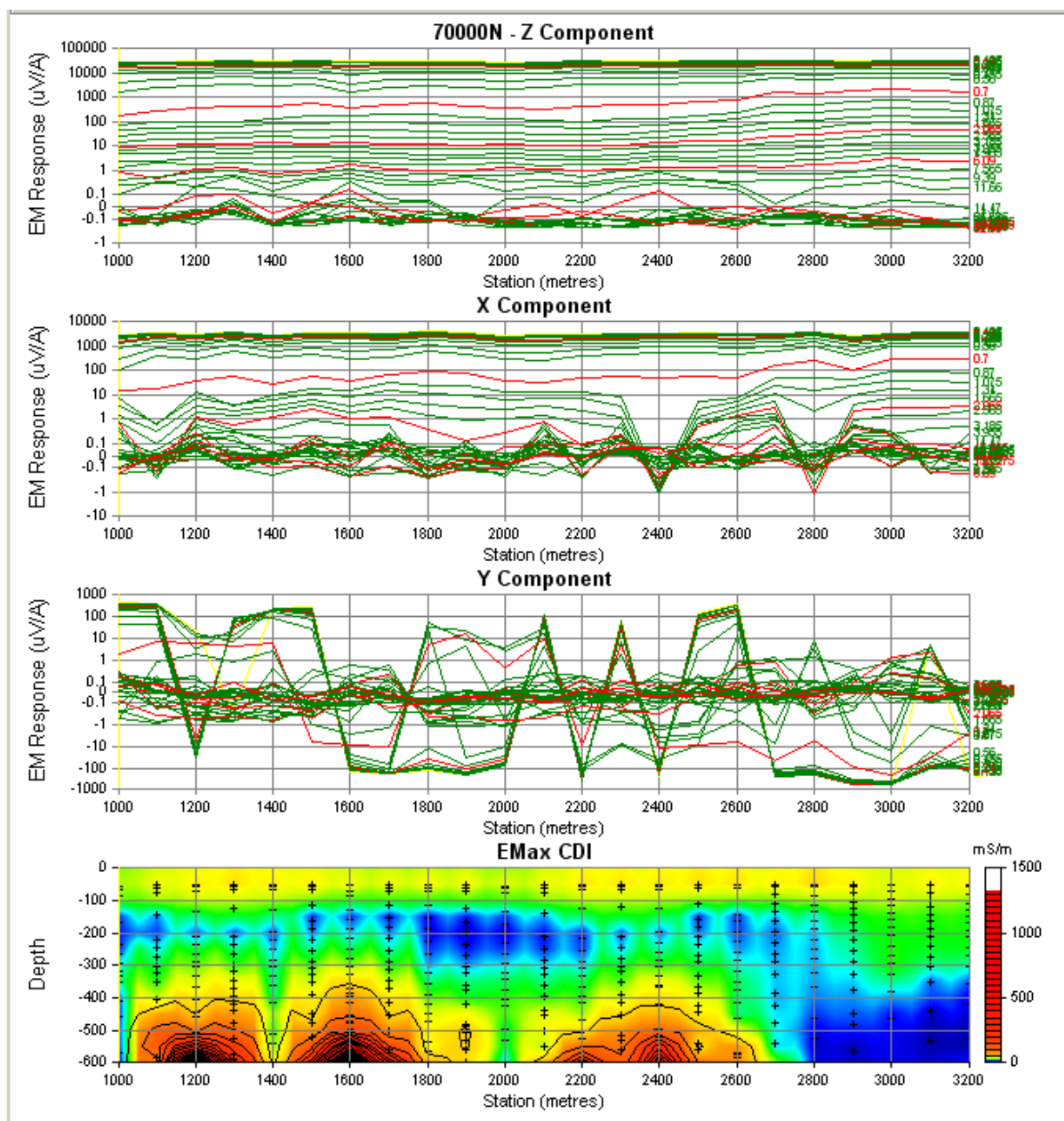


Fig 3: Croydon North Grid, Line N1 – 3-component B-Field TEM profiles and EMax CDI

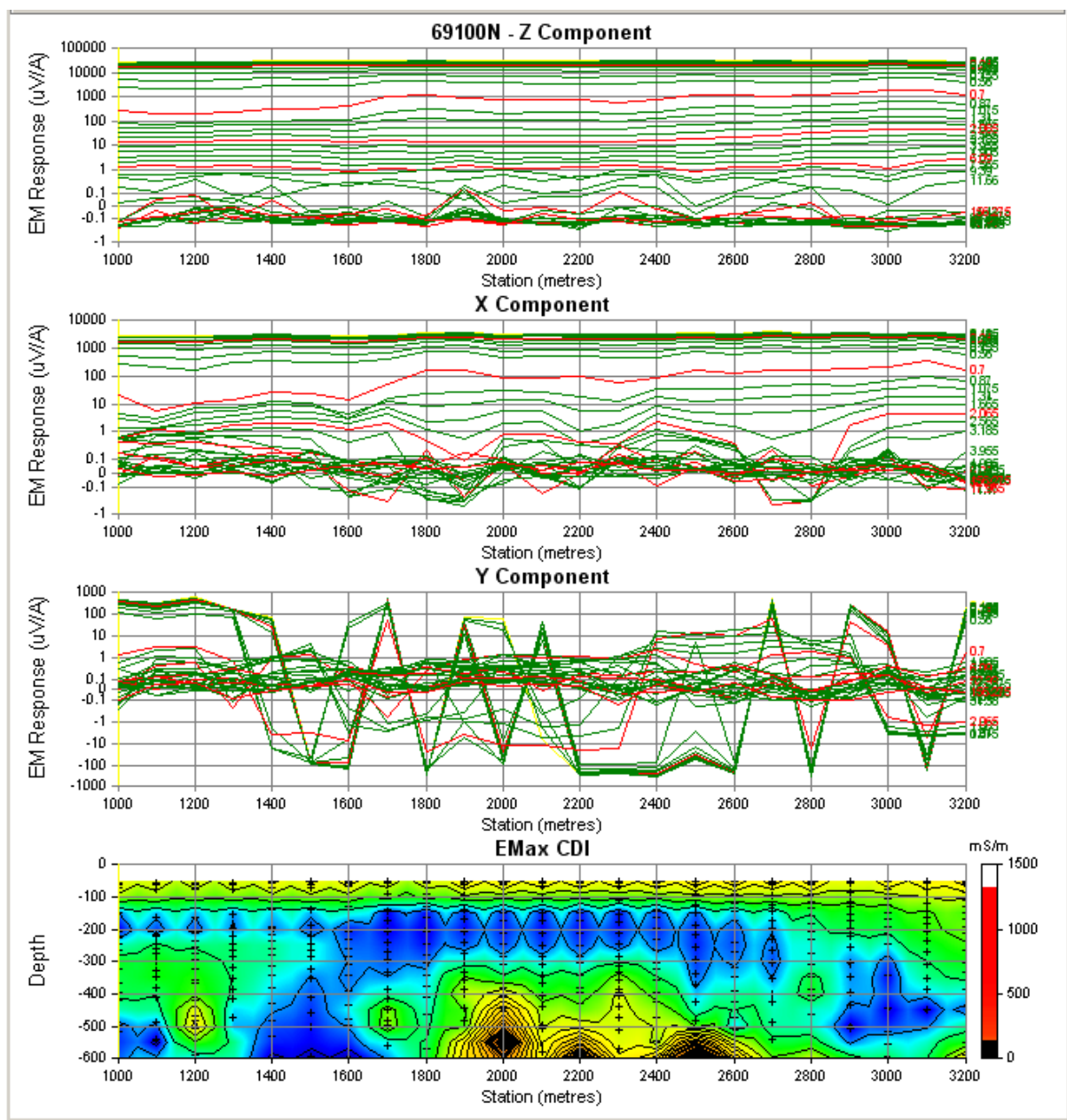


Fig 4: Croydon North Grid, Line N2 – 3-component B-Field TEM profiles and EMax CDI

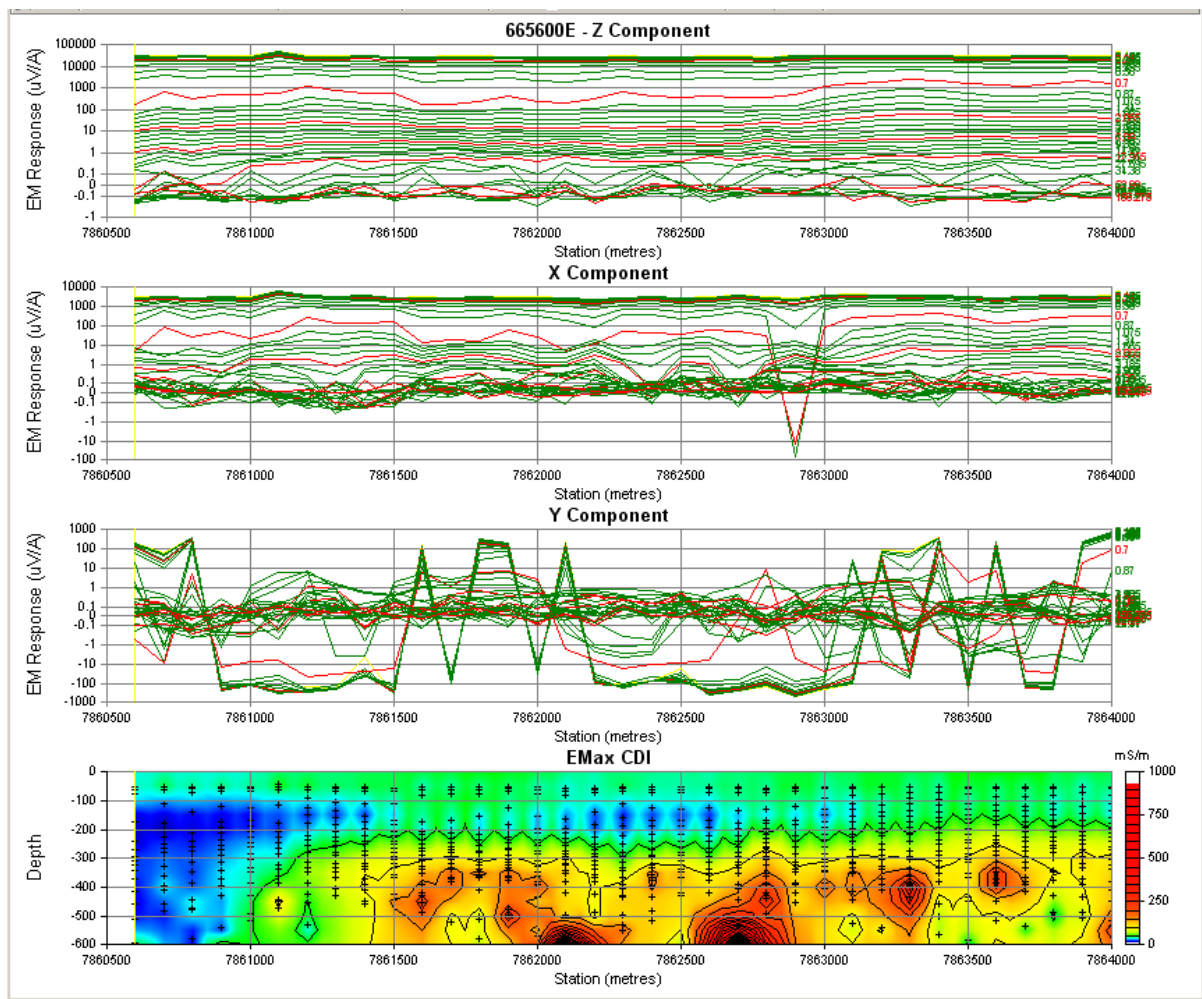


Fig 5: Croydon South Grid, Line 665600E – 3-component B-Field TEM profiles and EMax CDI

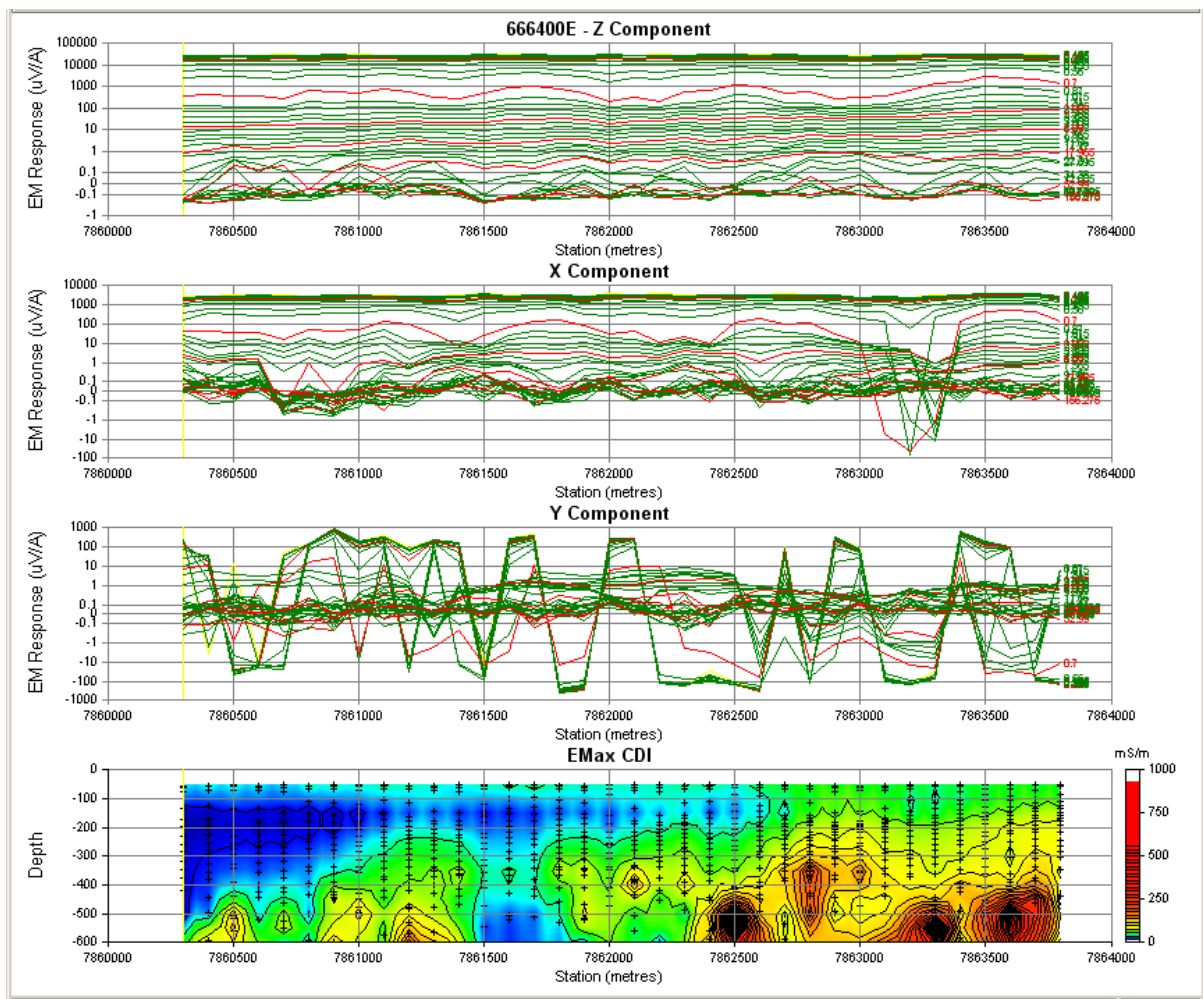


Fig 6: Croydon South Grid, Line 666400E – 3-component B-Field TEM profiles and EMax CDI

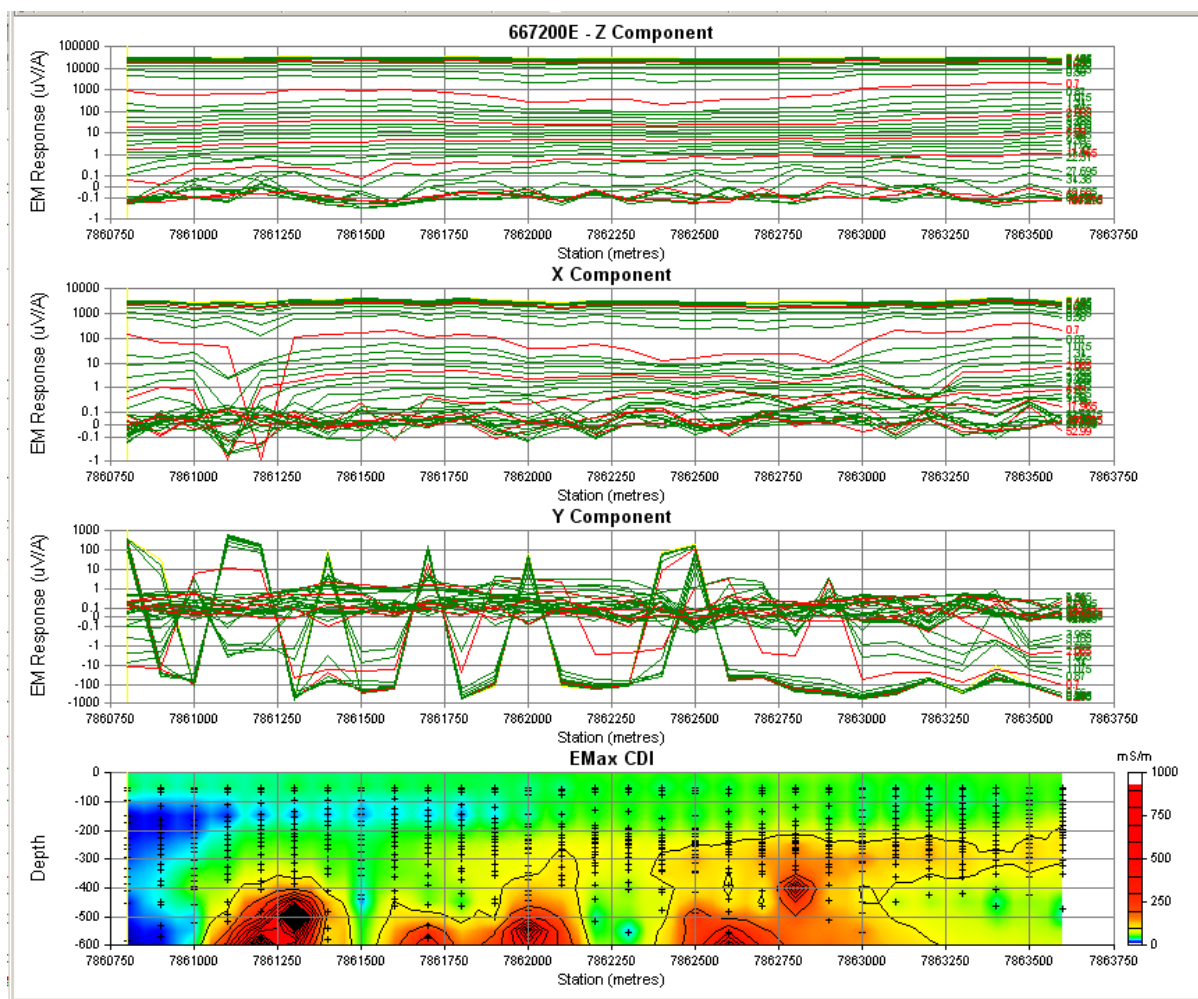


Fig 7: Croydon South Grid, Line 667200E – 3-component B-Field TEM profiles and EMax CDI

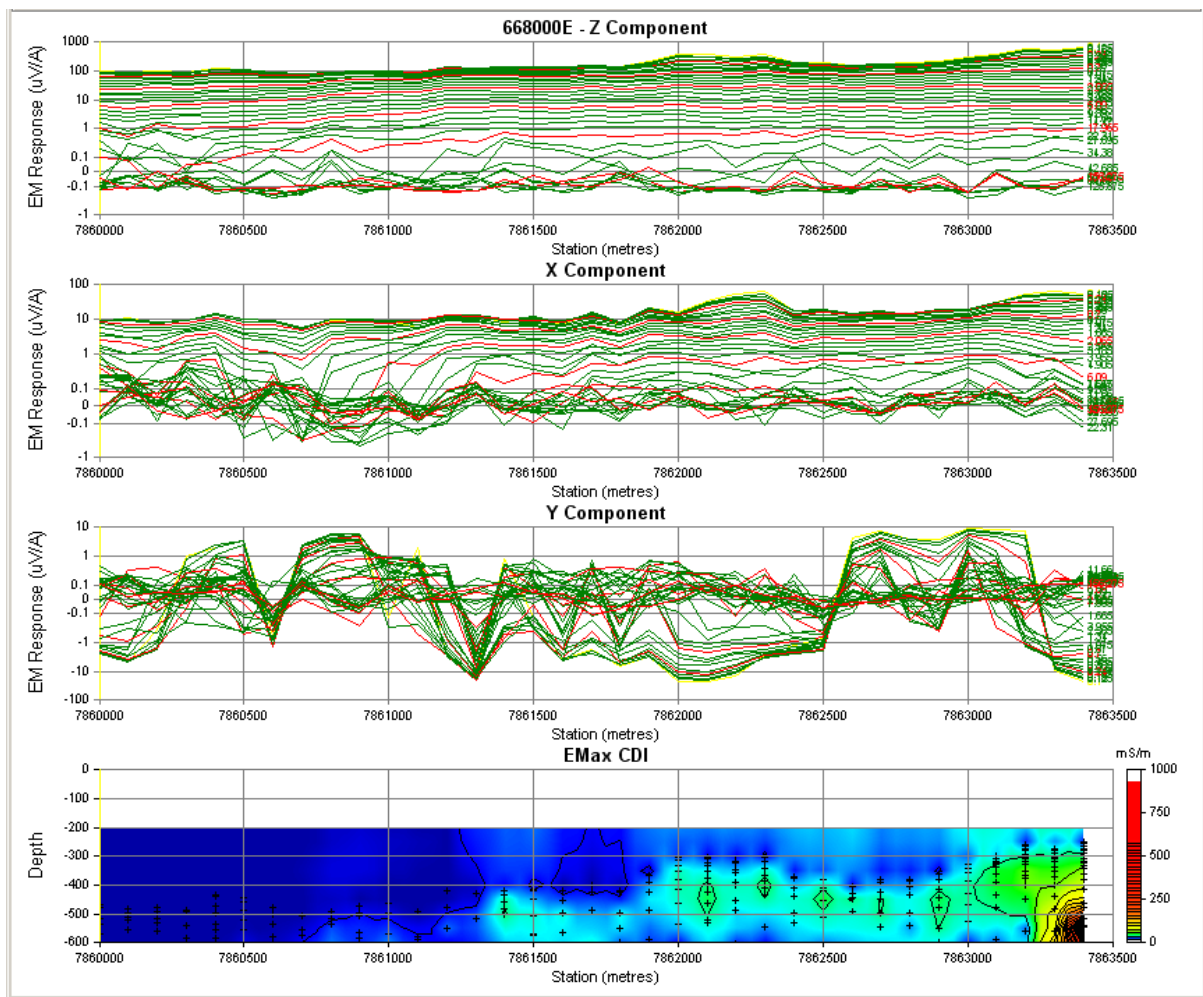


Fig 8: Croydon South Grid, Line 668000E – 3-component B-Field TEM profiles and EMax CDI