

**EL 33/2010 Wanderer River
Annual Report on Exploration Activity
March 2011 to March 2012**

Part 1 of 2

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TABLE OF CONTENTS

	Page No.
1.0 Summary	1
2.0 Introduction	2
2.1 Tenure	2
2.2 Location	2
2.3 Access	2
2.4 Topography and Vegetation	2
2.5 Land Use	2
3.0 Geology	4
4.0 Exploration Philosophy	5
5.0 Previous Exploration	6
6.0 Exploration Completed March 2011 to March 2012	7
6.1 Introduction	7
6.2 Helicopter VTEM survey	7
6.2.1 Introduction	7
6.2.2 Data collection	7
6.2.3 Processing	9
6.2.4 Interpretation	9
7.0 Proposed work March 2012 to March 2013	29
8.0 Environmental	30
9.0 Expenditure	31
10.0 References	32

Appendices

A	Report on a Helicopter-Borne VTEM and Aeromagnetic Geophysical Survey Geotech Ltd.
B1	VTEM data specific to EL 33/2010 in ASCII format – Phil Muir, SMEG
B2	VTEM Conductivity Depth Pseudo-sections – Phil Muir, SMEG
B3	VTEM Conductivity depth slices (consistent colour)– Phil Muir, SMEG
B4	VTEM Conductivity depth slices (enhanced colour) – Phil Muir, SMEG

Figures

	Page No.
Figure 2.1: EL 33/2010 "Wanderer River" location with respect to EL 20/1996 "Elliott Bay" and road-heads at Strahan and Strathgordon (more strictly Gordon River damsite)	3
Figure 6.1: EL 33/2010 "Wanderer River" and EL 20/1996 "Elliott Bay" VTEM survey flight lines on MRT 1:25,000 geology.	8
Figure 6.2: Raw field data dB/dt channel 15	12
Figure 6.3: Raw field data dB/dt channel 20	13
Figure 6.4: Raw field data dB/dt channel 25	14
Figure 6.5: Raw field data dB/dt channel 30	15
Figure 6.6: Raw field data dB/dt channel 35	16
Figure 6.7: Raw field data dB/dt channel 40	17
Figure 6.8: Raw field data dB/dt channel 45	18
Figure 6.9: Processed data conductivity depth slice 0m to 100m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	19
Figure 6.10: Processed data conductivity depth slice 100m to 200m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	20
Figure 6.11: Processed data conductivity depth slice 200m to 300m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	21
Figure 6.12: Processed data conductivity depth slice 300m to 400m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	22
Figure 6.13: Processed data conductivity depth slice 400m to 500m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	23
Figure 6.14: Processed data conductivity depth slice 500m to 600m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	24
Figure 6.15: Processed data conductivity depth slice 600m to 700m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	25
Figure 6.16: Processed data conductivity depth slice 700m to 800m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	26
Figure 6.17: Processed data conductivity depth slice 800m to 900m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	27
Figure 6.18: Processed data conductivity depth slice 900m to 1000m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.	28

1.0 Summary

Exploration of EL 33/2010 Wanderer River in the 2011/2012 reporting year focused on a new generation VTEM helicopter borne EM survey over the prospective volcanics. The survey was completed late in the licence's first year and reporting has been held over to include the results of the VTEM survey.

No first-order conductors due to conductive massive sulphides were defined by the survey though some lower tenor, broader, lithological conductors were defined.

Further more detailed processing and interpretation is justified.

2.0 Introduction

2.1 Tenure

EL 33/2010 was granted Frontier Resources Ltd (90%) and Exploration and Management Consultants Pty. Ltd. (10%) on 29th March 2011.

2.2 Location

EL 33/2010 is located very near to the remote southwestern coast of Tasmania (see Figure 1) around 40 kilometres west of Strathgordon and 80 kilometres south of Strahan.

2.3 Access

Access to the area is difficult with no continuous road access to the rest of the state. The only vehicular track to the area, a rough 4WD track known as the Low Rocky Point Track commences at the southern end of Birch's Inlet off the southeastern corner of Macquarie Harbour and thus requires boat transport.

This track crosses a bridge over the Wanderer River which has been decommissioned restricting access to the southern part of the licence. Access to the northern D'Aguilar Range/Thirkell Hill window is possible via a branch track off the Low Rocky Point track however there are significant washouts to the track near the licence boundary.

Access is most commonly made by helicopter either from Strahan or Strathgordon.

2.4 Topography and Vegetation

Much of the prospective country is low lying, however, Ordovician siliciclastics which stratigraphically overlie the prospective volcanics, form mountain ranges in the northern part of the licence area as well as Mt Osmund in the southern part.

The majority of the licence is covered with low standing, open coastal heath and button grass. Creek gullies and some of the areas in the western and easternmost parts have wet sclerophyll vegetation.

2.5 Land Use

The Wanderer River licence area is crown land and is classified as part of the South West Conservation Area. As such it is open to mineral exploration.

The Tasmanian Government proclaimed the prospective rocks south of Macquarie Harbour to be within the Sorell Peninsula Prospectivity Zone, a recognition of the mineral potential of the area. Under this act any change in the status of the land within the zone requires the approval of both houses of the Tasmanian parliament with any affected party entitled to compensation (this does not cover any decisions of the Federal government).

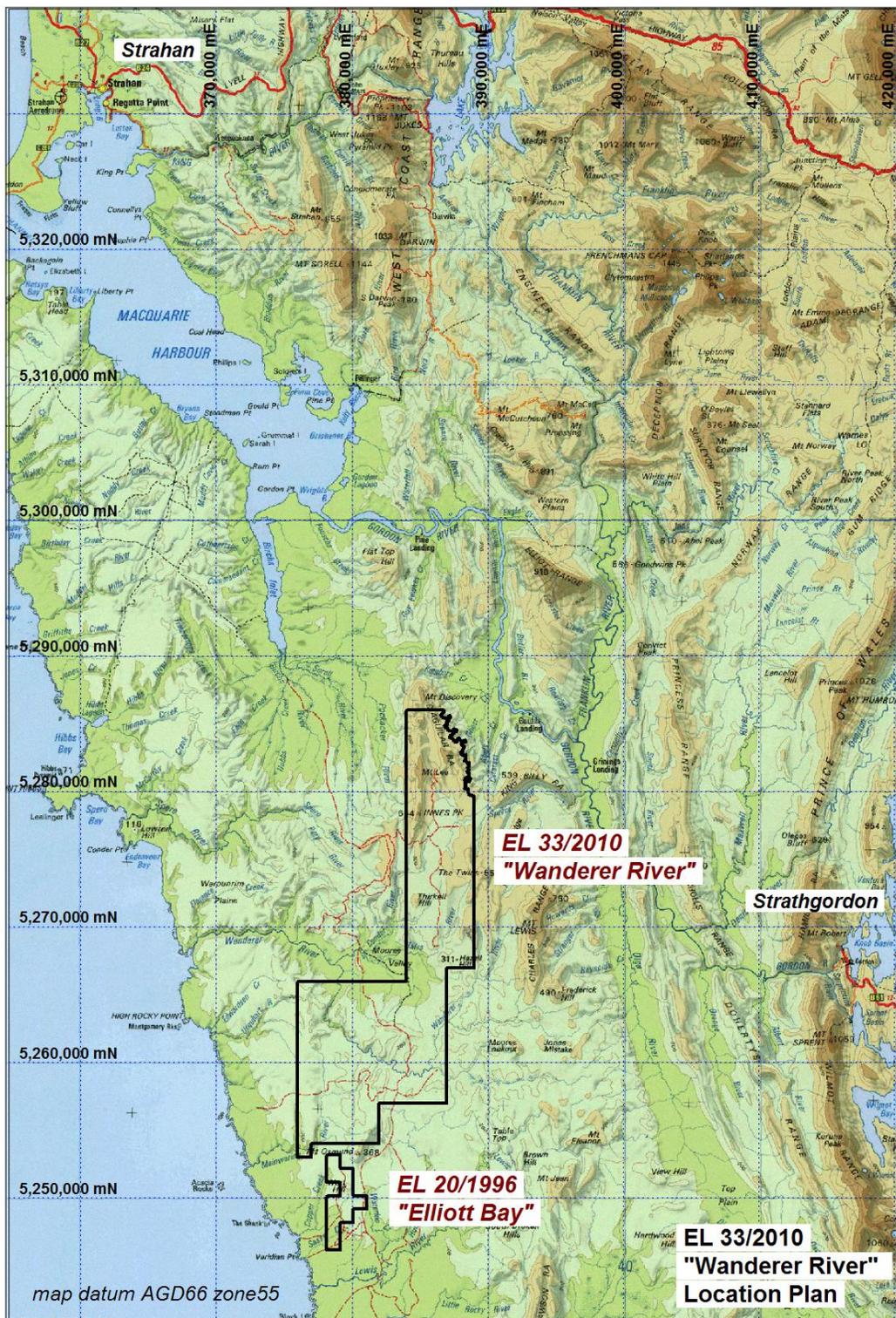


Figure 2.1: EL 33/2010 "Wanderer River" location with respect to EL 20/1996 "Elliott Bay" and road-heads at Strahan and Strathgordon (more strictly Gordon River dams site)

3.0 Geology

EL 33/2010 covers a highly significant portion of the southernmost land extent of the Mt Read Volcanics. For a detailed geological description of the prospective rocks the reader is referred to Corbett (2003) though Frontier geologists do not concur with all conclusions in this paper.

Essentially the prospective Mt Read Volcanic rocks consist of felsic volcanoclastics and felsic lavas/intrusives with lesser finer sediments.

These are overlain by shales with minor interbedded felsic volcanics of the Waterloo Creek Group, in turn conformable overlain by the Ordovician siliciclastic sediments of the Denison Group.

4.0 Exploration Philosophy

Frontier is exploring for base and/or precious metals. Mineralisation styles targeted are VHMS (Volcanogenic Hosted Massive Sulphides) either as seafloor precipitates or shallow subseafloor replacement, and/or hybrid VHMS/epithermal precious metal rich vein and/or replacement deposits.

5.0 Previous Exploration

Previous exploration has been summarized in previous reports and will not be detailed here.

6.0 Exploration Completed March 2011 to March 2012

6.1 Introduction

Work completed in the reporting year has focused on planning for the VTEM survey. Previous exploration work was appraised as part of this process.

6.2 Helicopter VTEM survey

6.2.1 Introduction

A new generation, deeper seeking, helicopter borne EM survey was flown over all prospective rocks i.e Mt Read Volcanics and Waterloo Creek Group rocks, within Frontier's two tenements in the Southern Mt. Read Volcanics area (see figure 2).

The VTEM (Versatile Time-Domain Electromagnetic) survey was flown by Geotech Airborne Pty. Ltd. of Unit 1, 29 Mulgul Road, Malaga as their project number AA926.

The Mineral Exploration Working Group gave permission for the survey to be conducted within a 6 week period from 1st February to 15th March to slot between nesting wedged tailed eagles and orange bellied parrots. The survey was flown between 12th February and 23rd February with only 6 weather days though other days only saw partial flying.

6.2.2 Data collection

The base used was Strathgordon with the helipad at The Knob above the Lake Gordon damsite.

Total survey length was 986km of which 955km was originally planned and a further 31km added during the survey. The survey area was divided into three blocks to cover the three prospective areas within the two licences.

The survey was flown AMG east-west with flightlines with 150m spacings between lines. Magnetic data was also collected by a proton precession magnetometer.

The full survey report is included as appendix A. The report covers the whole survey which was flown as three discrete blocks. EL 20/1996 "Elliott Bay" lies at the southern end of the Wart Hill block. The following is reproduced from the Executive Summary section of the report:

"During February 1st to 23rd 2012 Geotech Airborne Pty Ltd. carried out a helicopter-borne geophysical survey over the Daguilar, Moores and WartHill Blocks situated approximately 33 kilometres west of Strathgordon, Tasmania.

Principal geophysical sensors included a versatile time domain electromagnetic (VTEMplus) system, and a caesium magnetometer. Ancillary equipment included a GPS navigation system and a radar altimeter. A total of 955 line-kilometres of geophysical data were acquired during the survey.

In-field data quality assurance and preliminary processing were carried out on a daily basis during the acquisition phase. Preliminary and final data processing, including generation of final digital data and map products were undertaken from the office of Geotech Ltd. in Aurora, Ontario.

The processed survey results are presented as the following maps:

- Electromagnetic stacked profiles of the B-field Z Component,
- Electromagnetic stacked profiles of dB/dt Z Components,
- Colour grids of a B-Field Z Component Channel,
- Total Magnetic Intensity (TMI), and
- EM Time-constant dB/dt Z Component (Tau), are presented.

Digital data includes all electromagnetic and magnetic products, plus ancillary data including the waveform.

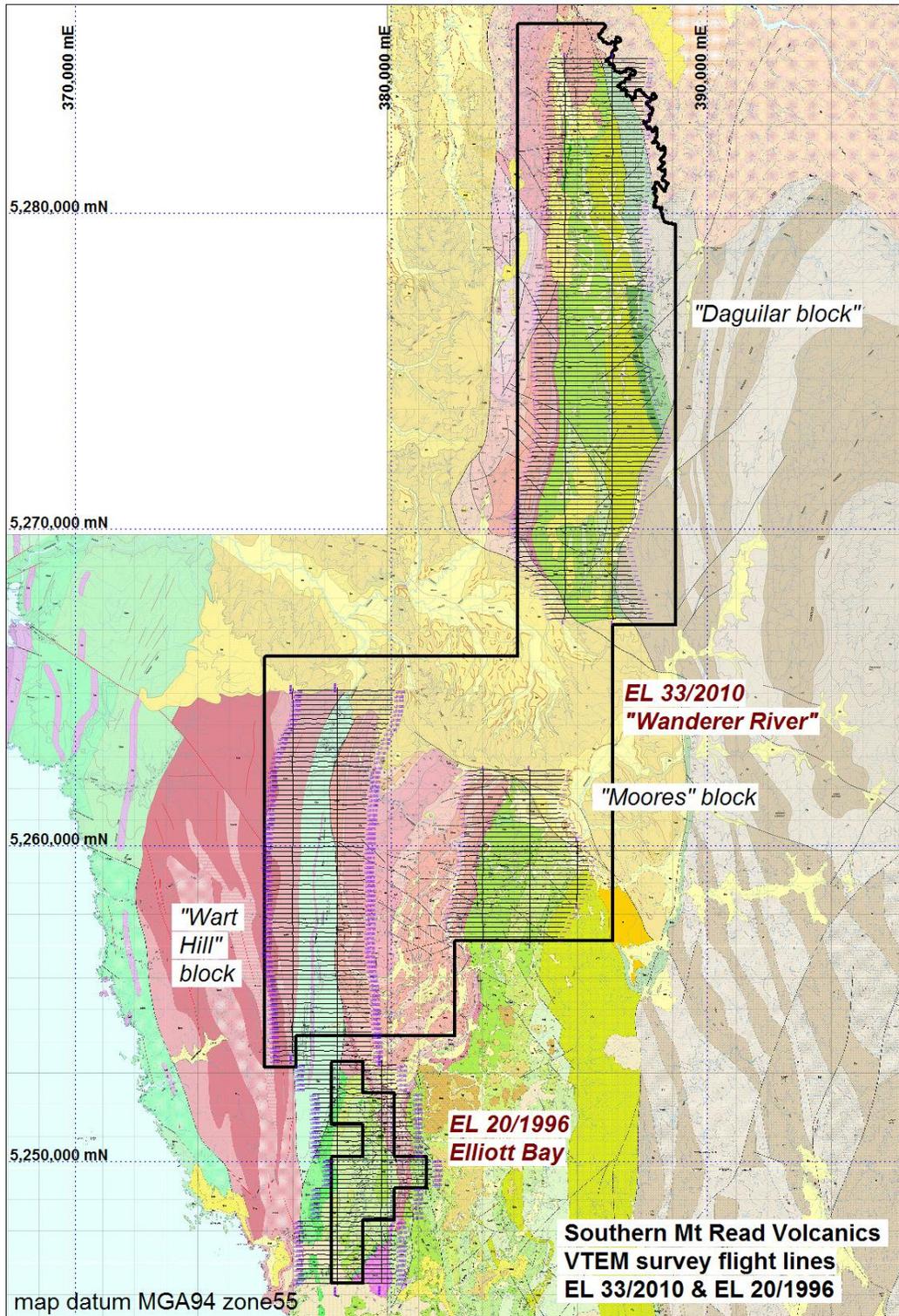


Figure 6.1: EL 33/2010 "Wanderer River" and EL 20/1996 "Elliott Bay" VTEM survey flight lines on MRT 1:25,000 geology.

The survey report describes the procedures for data acquisition, processing, final image presentation and the specifications for the digital data set."

6.2.3 Processing

Data generated was processed and imaged by geophysicist Phil Muir of Southern Mineral Exploration Geophysics, Hobart. Phil supplied the following notes to explain his approach.

"Conductivity Depth Image (CDI) Processing – Phil Muir

The original VTEM field data has been processed to generate CDI data using EmaxAIR software written by Fullagar Geophysics. EmaxAIR calculates conductivity versus depth pseudosections from the transient electromagnetic (TEM) data of various airborne EM systems. Conductivity-depth pseudosections are a convenient form of presentation of EM profiles for first-pass interpretation.

The EmaxAIR transformation proceeds in two stages: off-time data are first converted to apparent conductivity, and the depth assigned to each delay time is the depth of the induced current maximum in a half-space with conductivity equal to the apparent conductivity at that time.

The purpose of EmaxAIR's conductivity-depth processing is to quickly and reliably transform raw data into a useful form for presentation of conductivity at a true depth scale, and to allow for a fast initial interpretation of the data.

The basic method of CDI data presentation is in cross-section plots with one section per flightline. These are shown in Appendix B2. Appendix B1 contains the CDI data in ASCII format that can be used to create these section plots.

Another useful way to summarise CDI data over an area is to create plan-view "depth slice" images. In these plots the CDI data between arbitrary depth ranges are presented as images. Depth ranges can be generated using either Depth-below-surface or Relative-level (RL) limits. In this report the depth slices are based on RL intervals of 100 metres.

Depth slice CDI images are included as figures 6.9 to 6.18 this report and in Appendix B3 and B4. In the text figures and Appendix A3 the colour stretch used for each slice is consistent. In the figures in Appendix B4 the colour stretch is tailored to that individual slice; each slice has a different colour stretch and this must be remembered when comparing conductivities from one depth slice image to another."

6.2.4 Interpretation

Further interpretation is ongoing.

Geotech's in-house geophysicist's provided a discussion of anomalous results generated by the survey which is reproduced from their report (included in appendix A) herein:

" Daguiar Block

The total area coverage is 59km². Total survey line coverage is 438.8 line kilometres. Based on the geophysical results obtained, the area has several conductive zones. Some of these zones are considered as sub-horizontal lithological conductors, some as steeply dipping structural conductors, and some as local targets (reference in Appendix C: L10020, L10840 10400 RDI).

If the conductors correspond to an exploration model on the area it is recommended picking anomalies with conductance grading and center localization of the targets, detail resistivity depth imaging and plate Maxwell modelling for some of the anomalies prior to ground follow up and drill testing are recommended.

WartHill Block

The total area coverage is 58 km². Total survey line coverage is 429.7 line kilometres. Based on the geophysical results obtained, the area has several conductive zones which are considered as gently to steeply dipping structural conductors mostly along the S-N oriented dyke similar

magnetic anomalies. Conductive zone in the SW corner of the block is a linear conductive structure of about 1800m length. The structure is gently dipping to the west, and according to detail resistivity depth section, the top of the EM response is near surface (reference in Appendix C: L20130 RDI).

The resistivity depth section for L20520 (reference in Appendix C: L20520 RDI) represents a long structural conductor in the centre of the block. On the northern part of the block there is a broad but linear conductive zone oriented N-S as well. conductive structure is about 5km long and associated with the magnetic anomaly (reference in Appendix C: L21250 RDI).

Moores Block

The total area coverage is 18 km². Total survey line coverage is 146.1 line kilometres. Based on the geophysical results obtained, the area consists of conductive zones which are considered as sub-horizontal lithological conductors. Some of them are gently dipping layer-similar conductors (North-East zone), some can be considered as an alteration zone (central part of the block). The local anomaly in the center of the block is crossed by one line (L30150) and must be checked if the anomaly is from man-made source. (reference in Appendix C: L30150, L30260 & L30350 RDI)."

Referring to the anomalous zones listed by Geotech above;

D'Aguilar block

- The processing with "EmaxAIR" suggests the eastern conductive anomaly is a moderately-west-dipping feature which continues in a less conductive noisy trend across the section, reaching down to about -500m RL before flattening out.
- The anomalous conductivity zone on L10400 appears to be the response of an overburden with elevated conductivity. Based on my "EmaxAIR" processing I'm dubious about the conductivity data tightly hugging the surface. That said, my processing also suggests there's nothing on this line but a conductive overburden.
- The anomalies on the western end of L10840 are due to processing errors in the original contractor-supplied data whereby the decay curves are monotonically increasing for the first several channels of the decay curve, causing erroneously high signal levels at mid and late times (see decay curve images attached). The processing with "EmaxAIR" has automatically rejected these bad decays, hence the missing portions of the section in the west.

Wart Hill block

- The anomaly at the western end of L20130 is the Copper Creek fault and black shales. It lies outside of Frontier's tenements.
- The anomalous zone in the centre of L201520 is very weakly conductive compared to surrounding rocks and barely significant. It may be a weak edge-effect ("false anomaly") due to the more conductive shallower material to the east.
- The anomalous zone on the eastern end of L21250 corresponds with the Tertiary graben.

Moores block

- The local anomaly on L30150 is the steel girdered Wanderer River bridge. This can be seen just below the centre of the Moores block (better seen in later channels and deeper slices).
- Anomalous zones on the eastern ends of L30260 and L30350 correspond with the Tertiary graben.

Phil Muir's processed images are included in appendix B. Phil was unable to see any responses considered due to conductive sulphide mineralisation.

The survey has defined a number of lithological conductive zones. One intriguing feature being further considered is the linear zone at the southwestern corner of the Daguiar block. Here the southern part of the linear trend corresponds with the graben bounding structure whilst the northern part corresponds with the Waterloo Creek Group shales. Whilst such shales may be expected to generate an EM response the lack of a conductive response north along strike suggests that there is something different about the shales here (though it may be as simple as shearing along this unit). This linear zone has been remarked upon previously and corresponds to earlier generation Georex McPhar H-400 EM anomalies (McGregor-Dawson, 1975) assigned names Viking 12 and Viking 13 in the area referred to by previous Frontier explorers as the Thirkell South zone.

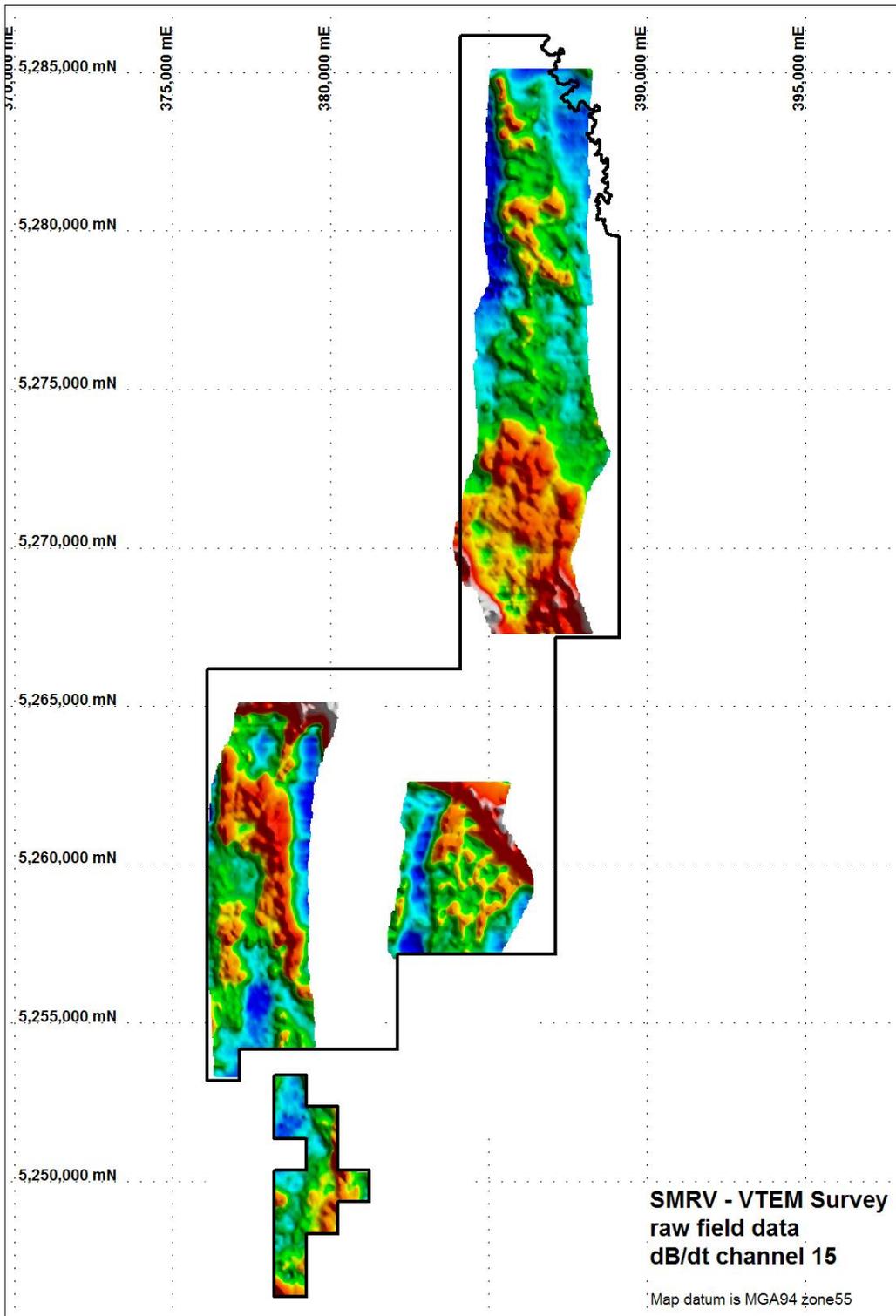


Figure 6.2: Raw field data dB/dt channel 15

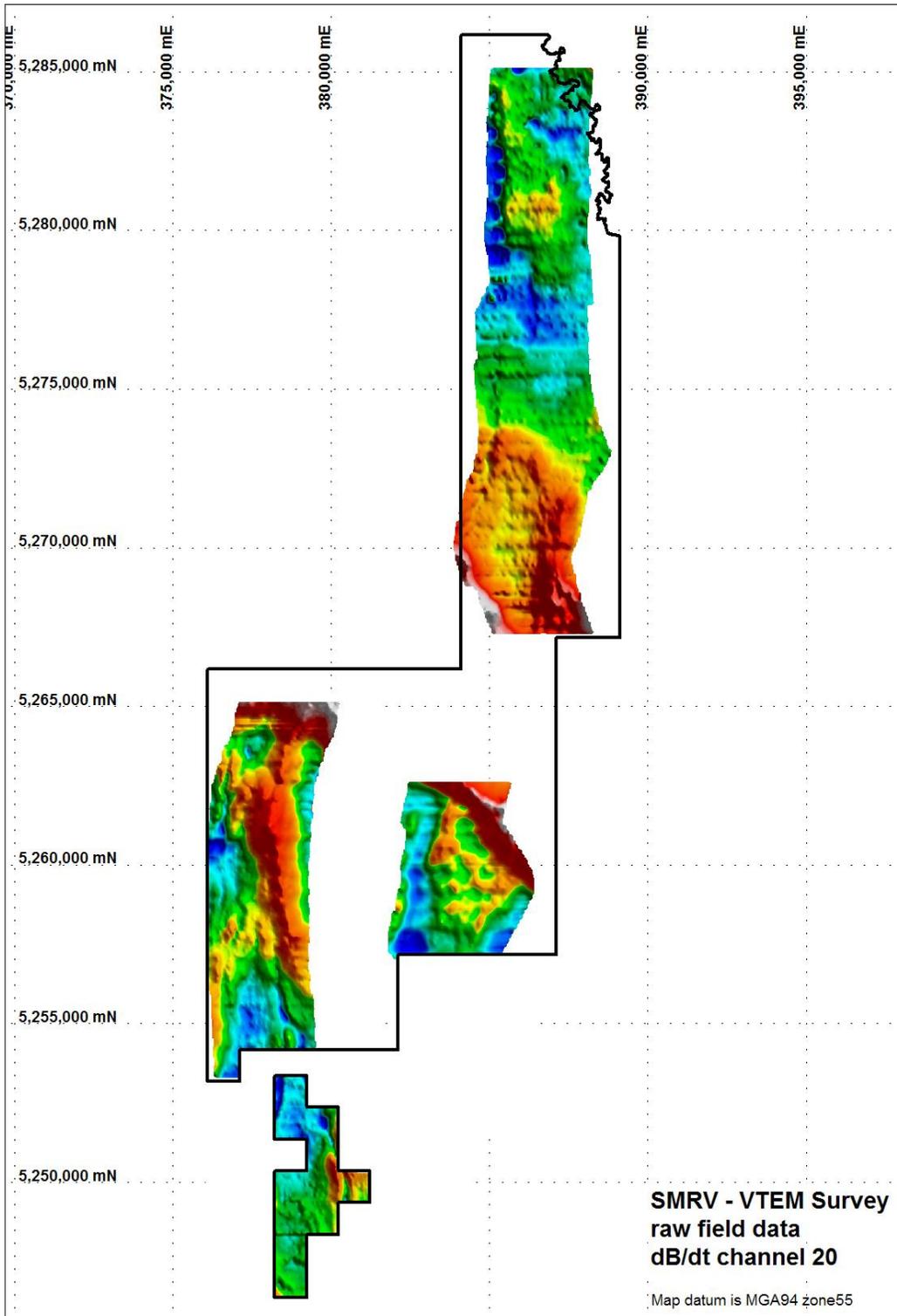


Figure 6.3: Raw field data dB/dt channel 20

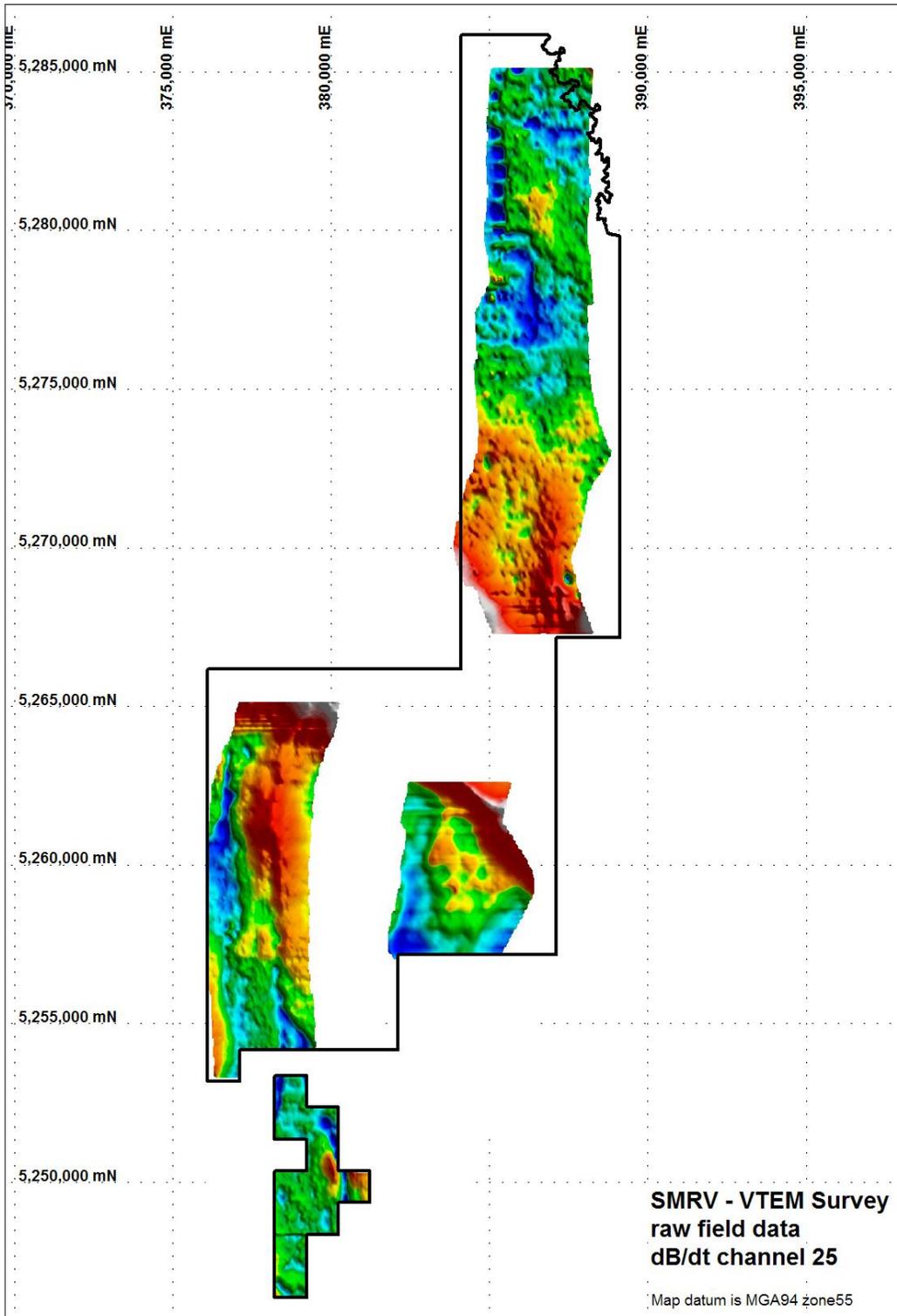


Figure 6.4: Raw field data dB/dt channel 25

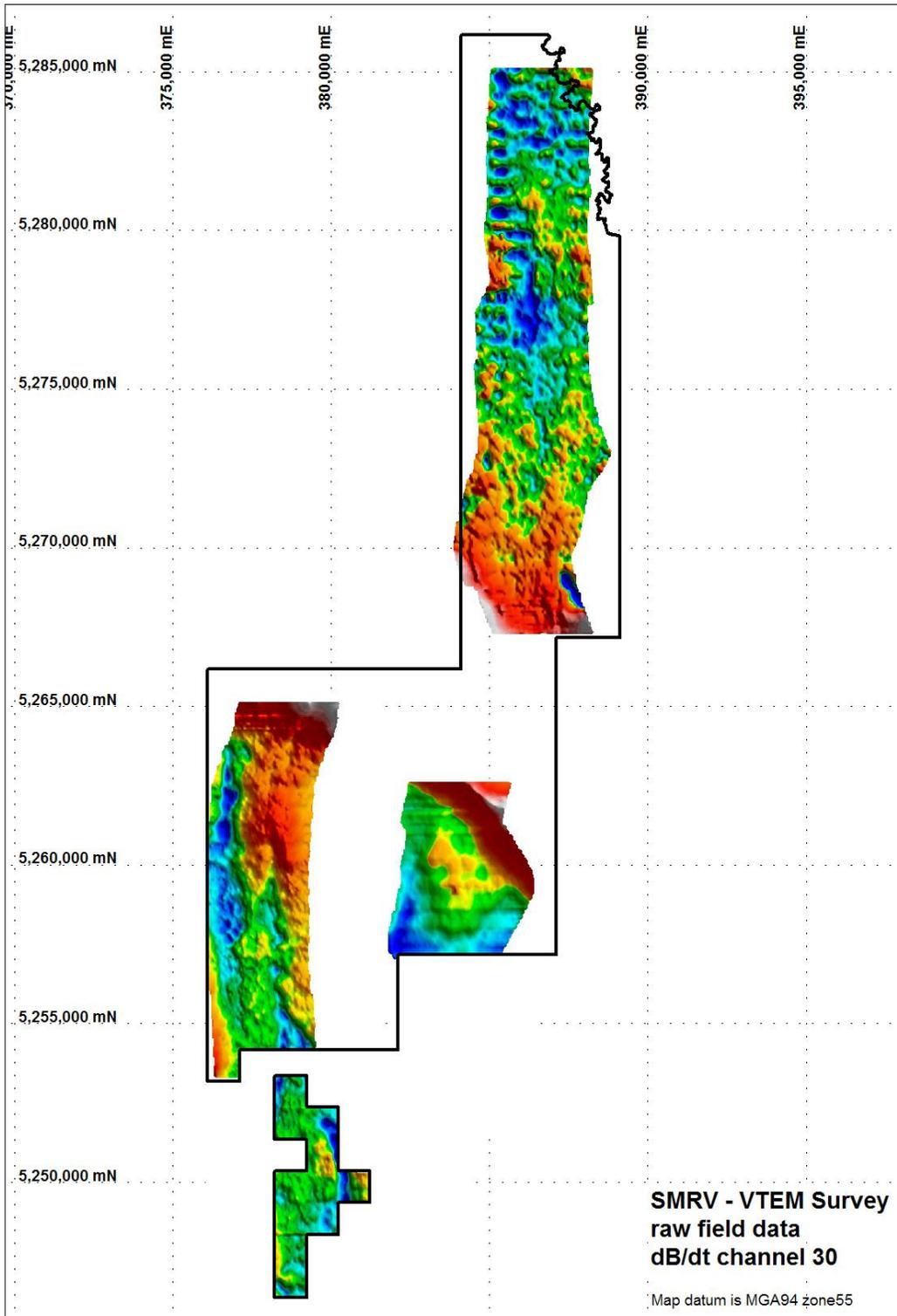


Figure 6.5: Raw field data dB/dt channel 30

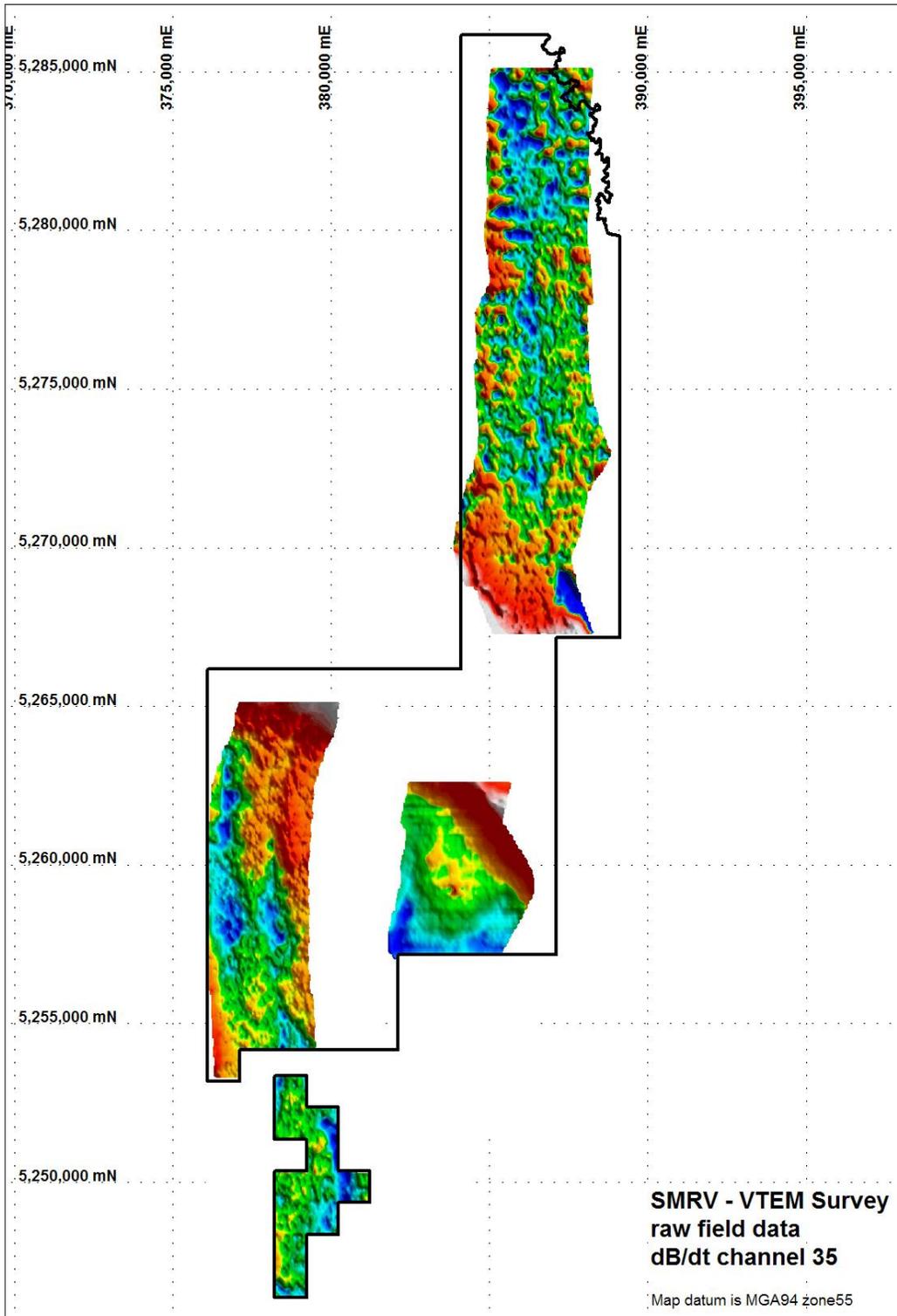


Figure 6.6: Raw field data dB/dt channel 35

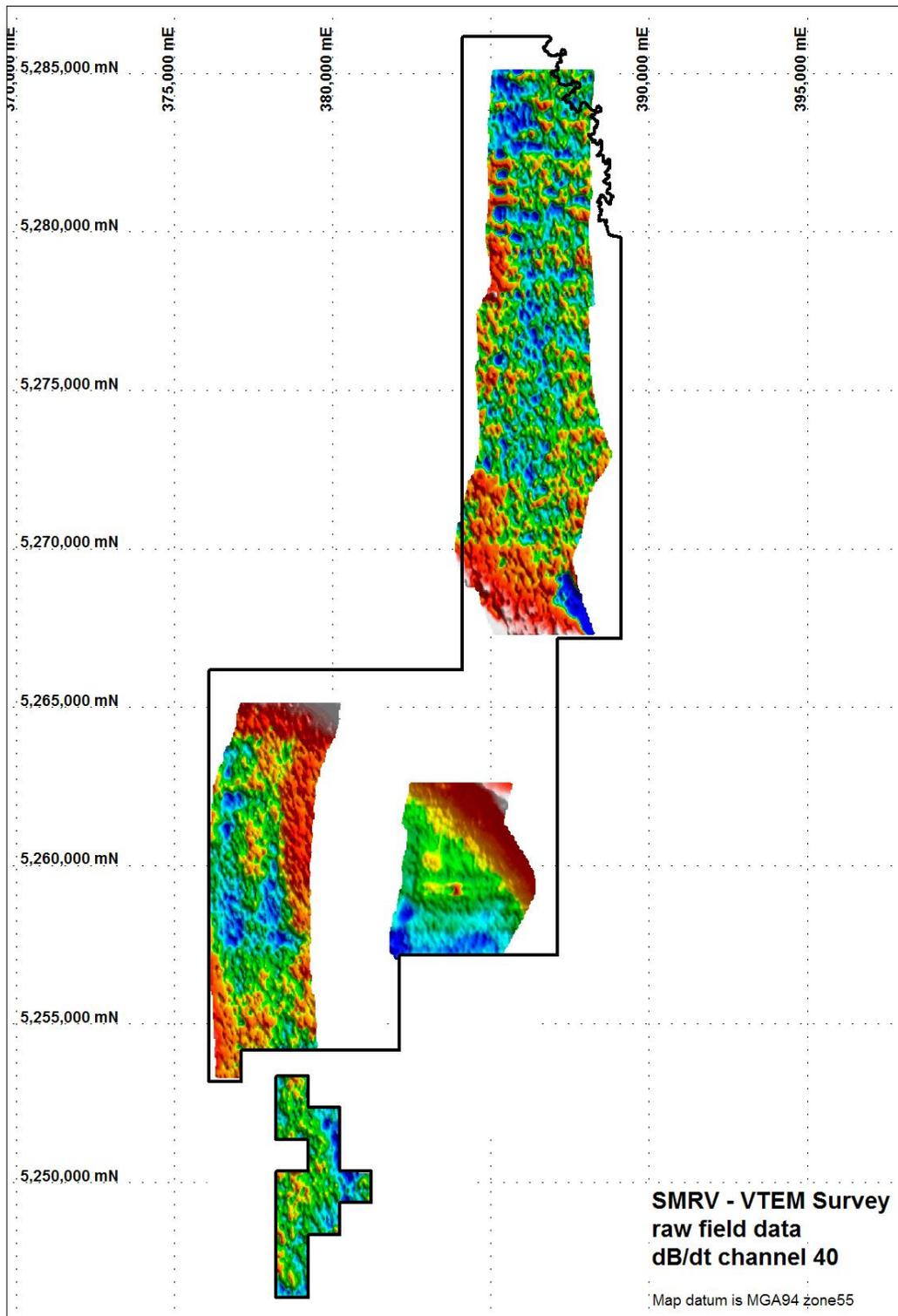


Figure 6.7: Raw field data dB/dt channel 40

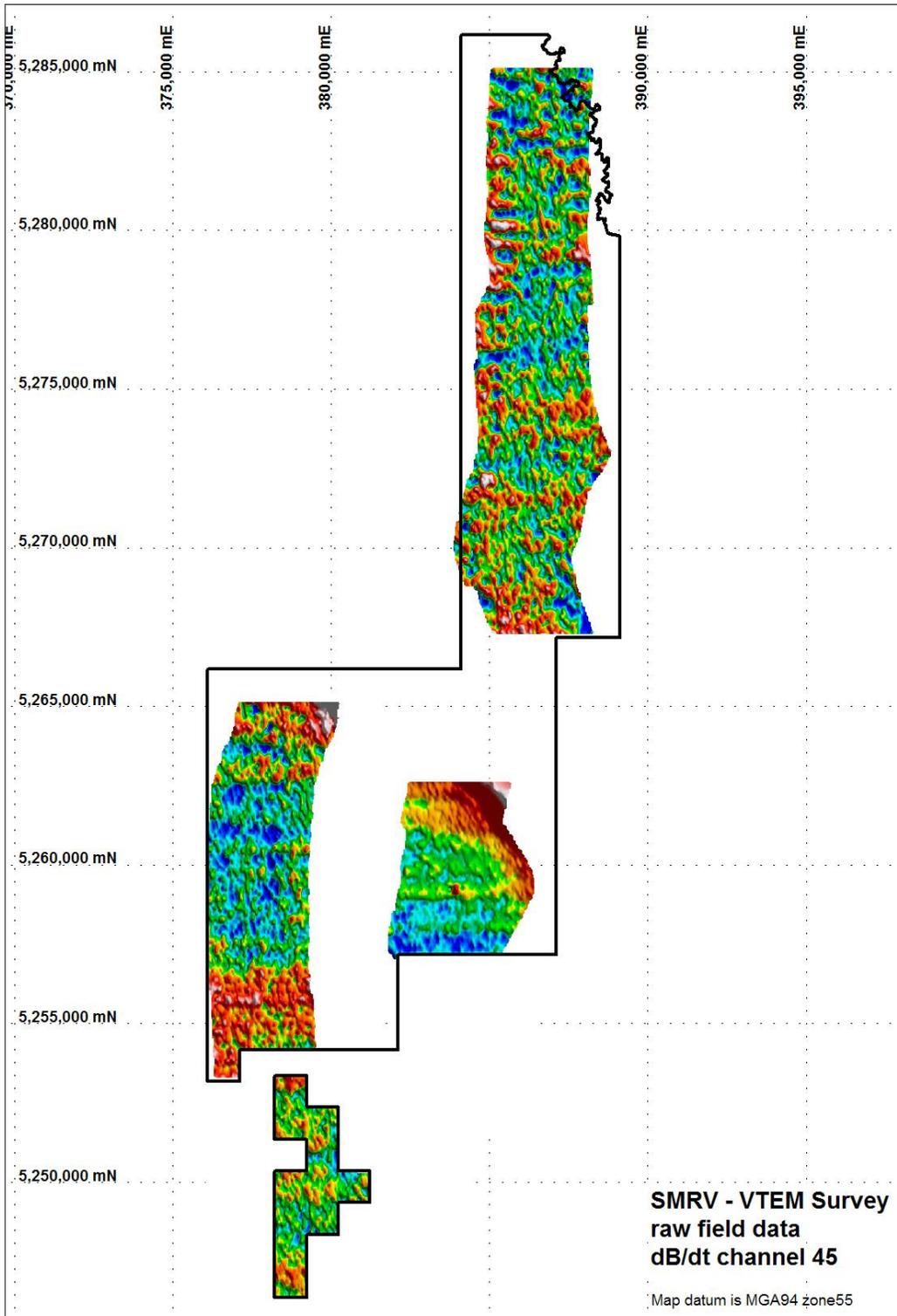


Figure 6.8: Raw field data dB/dt channel 45

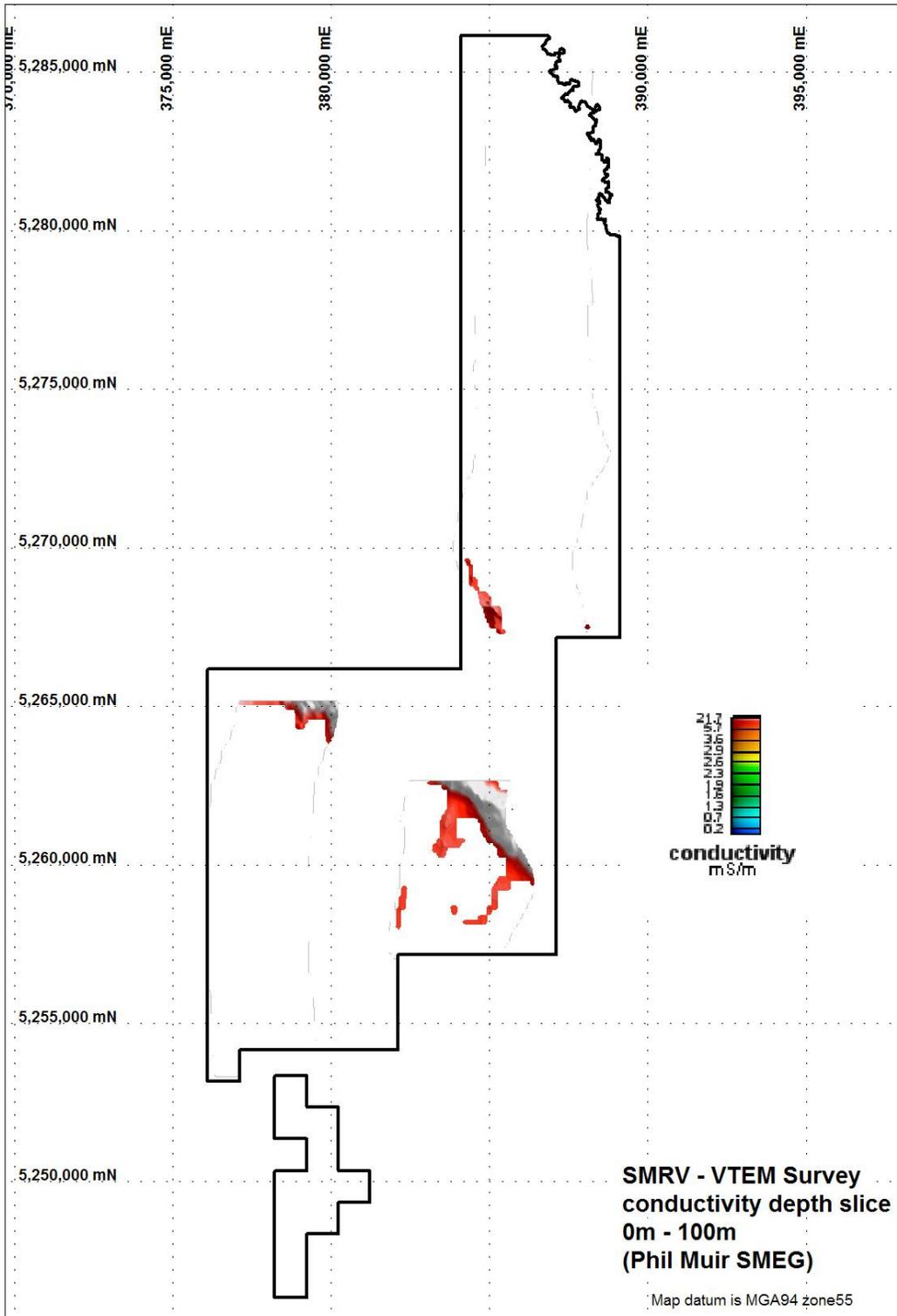


Figure 6.9: Processed data conductivity depth slice 0m to 100m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

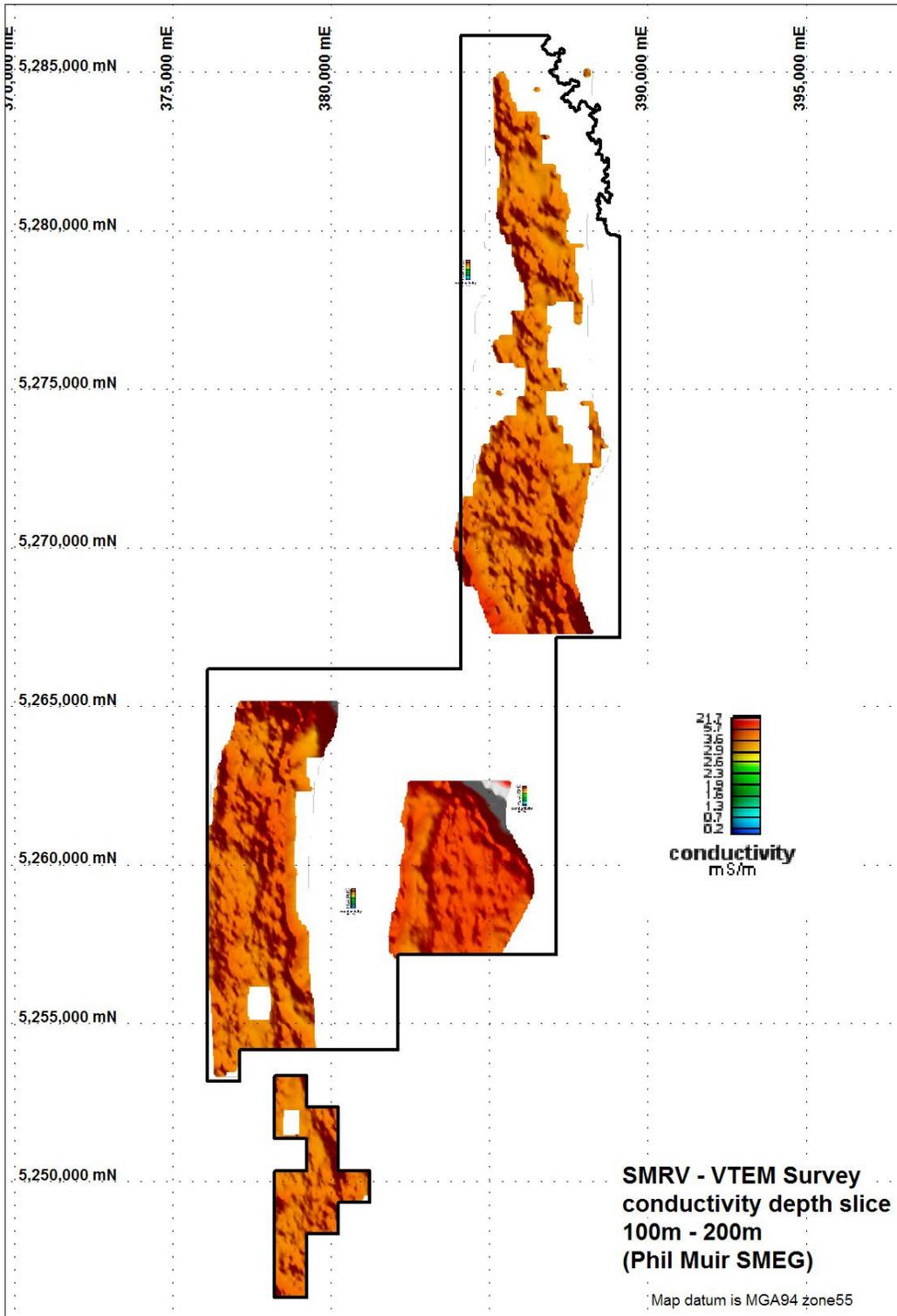


Figure 6.10: Processed data conductivity depth slice 100m to 200m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

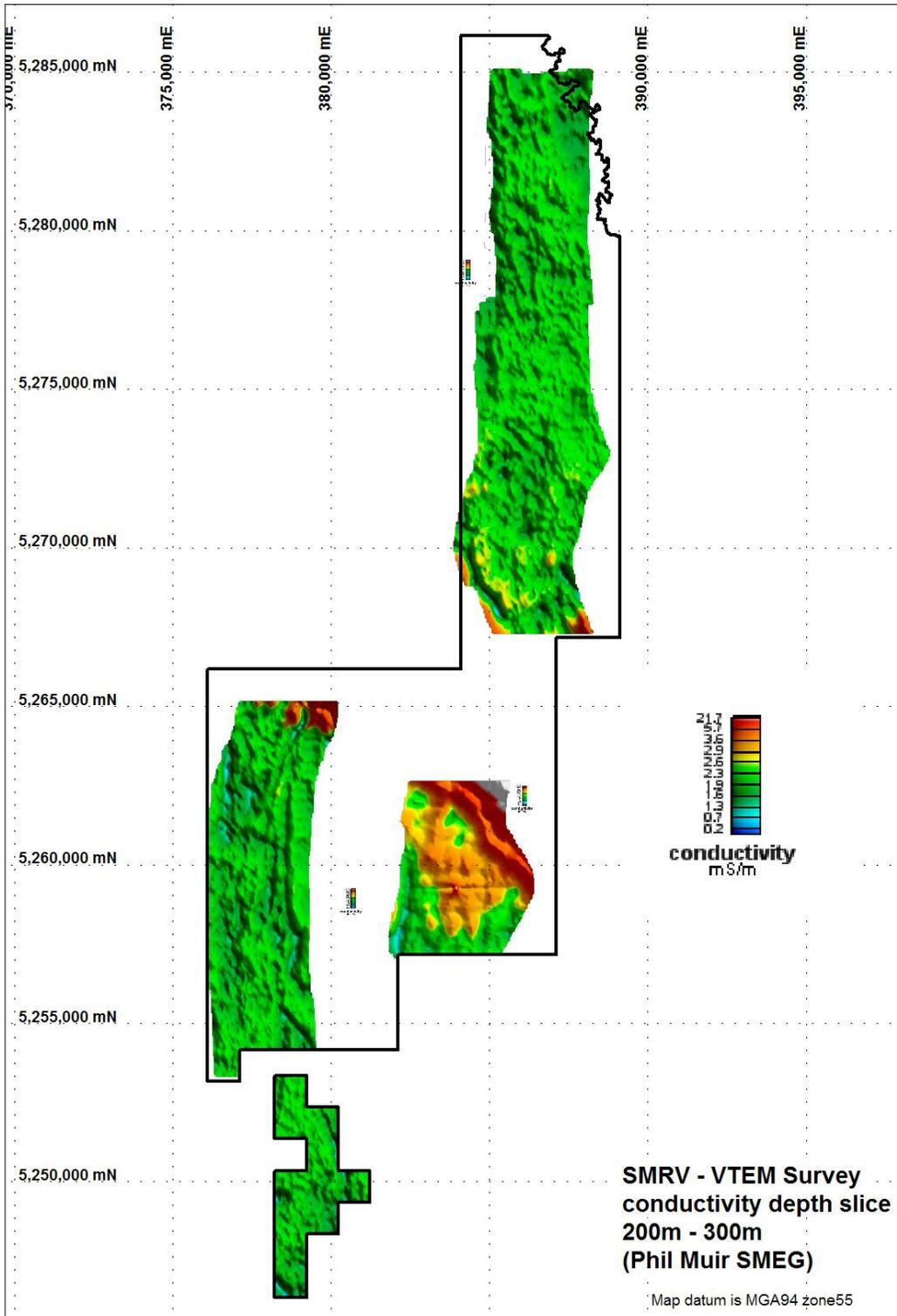


Figure 6.11: Processed data conductivity depth slice 200m to 300m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

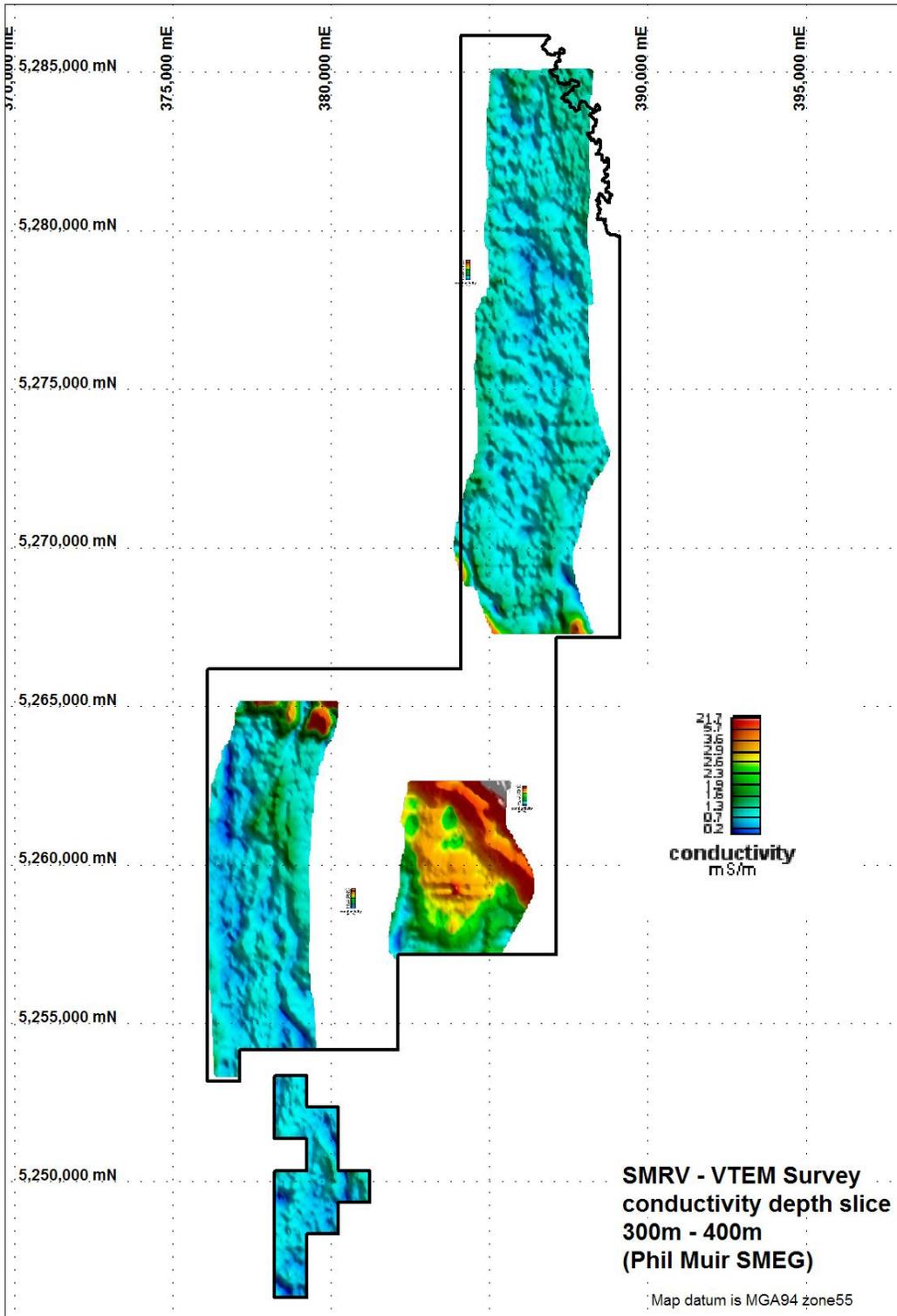


Figure 6.12: Processed data conductivity depth slice 300m to 400m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

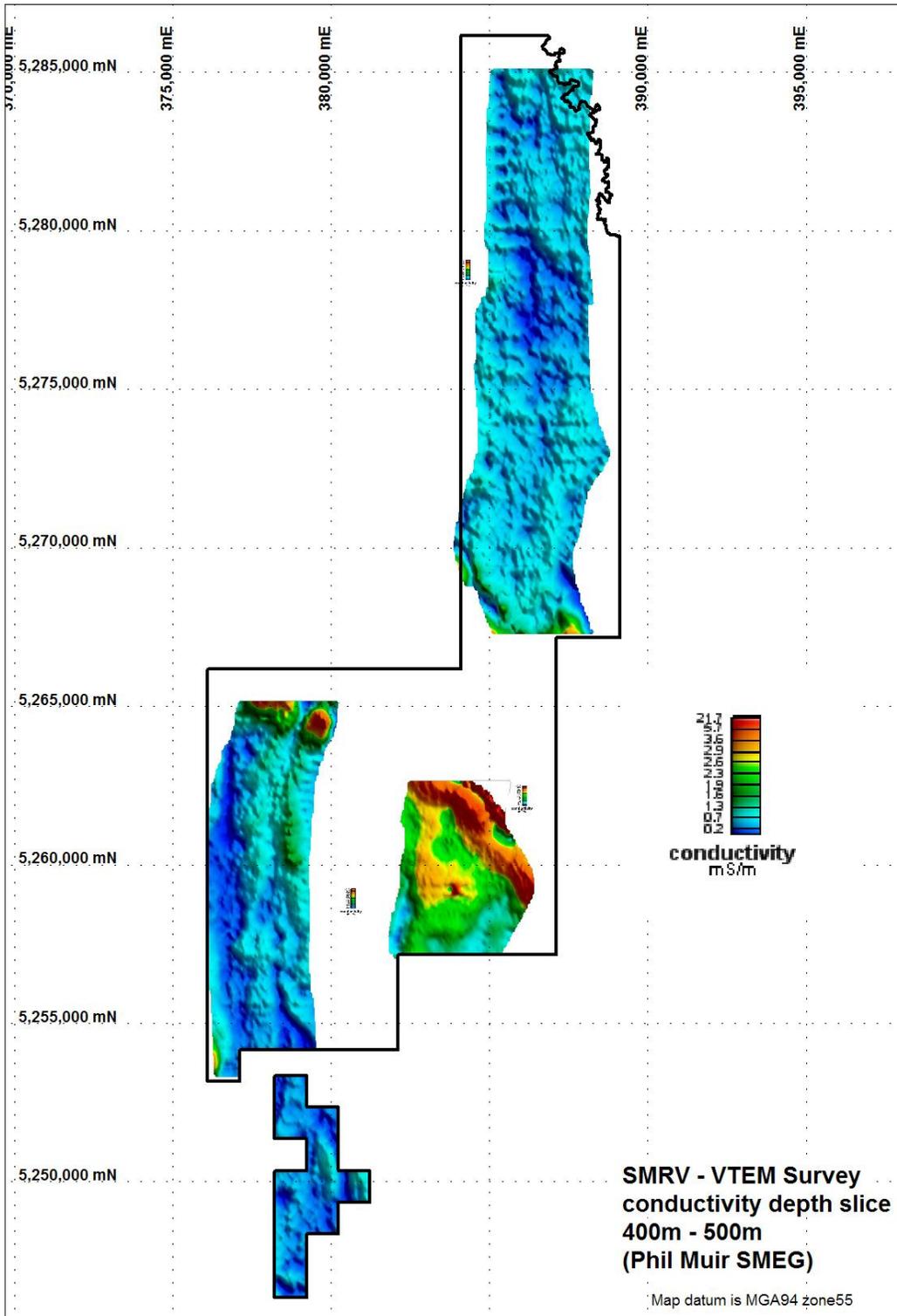


Figure 6.13: Processed data conductivity depth slice 400m to 500m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

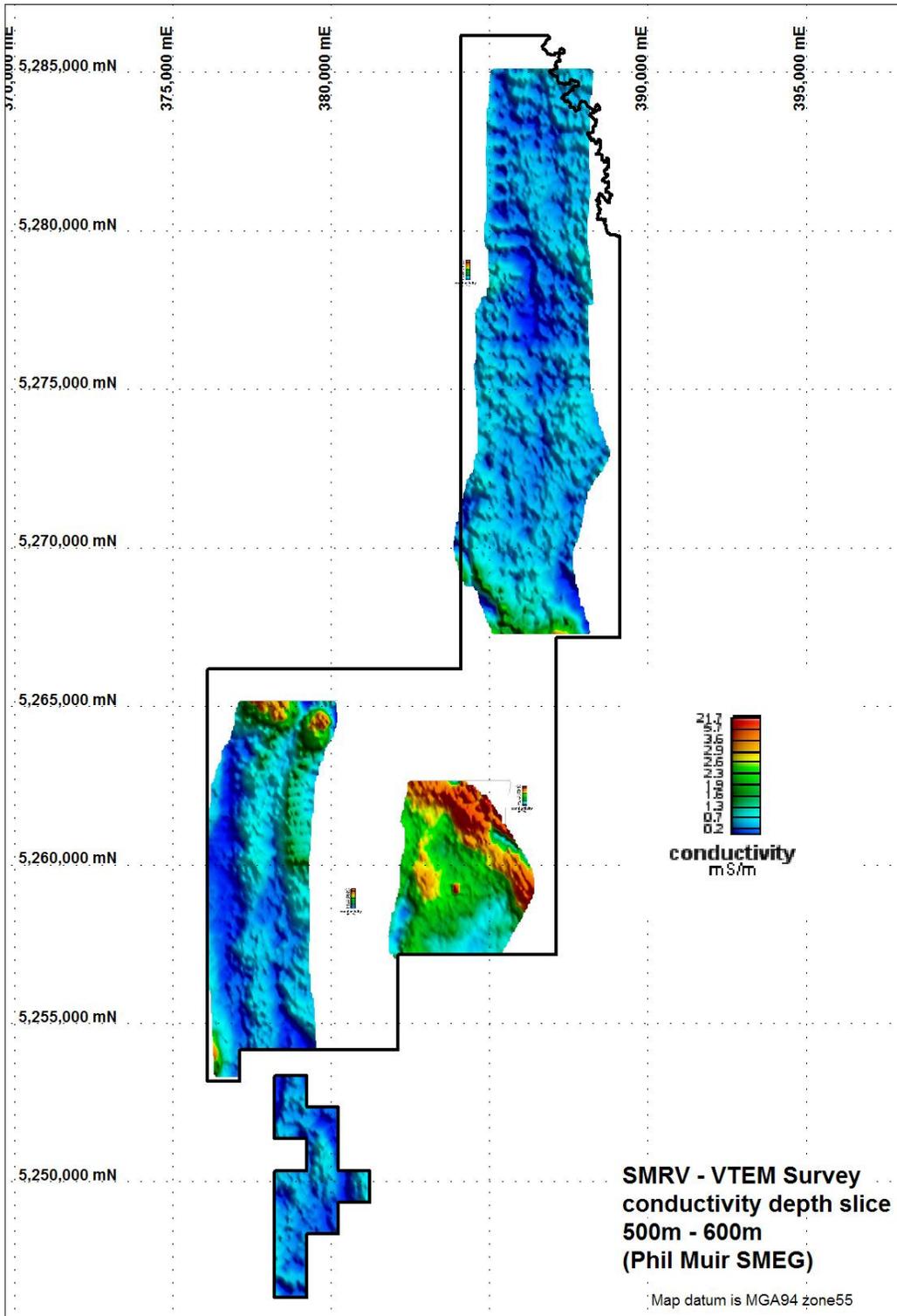


Figure 6.14: Processed data conductivity depth slice 500m to 600m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

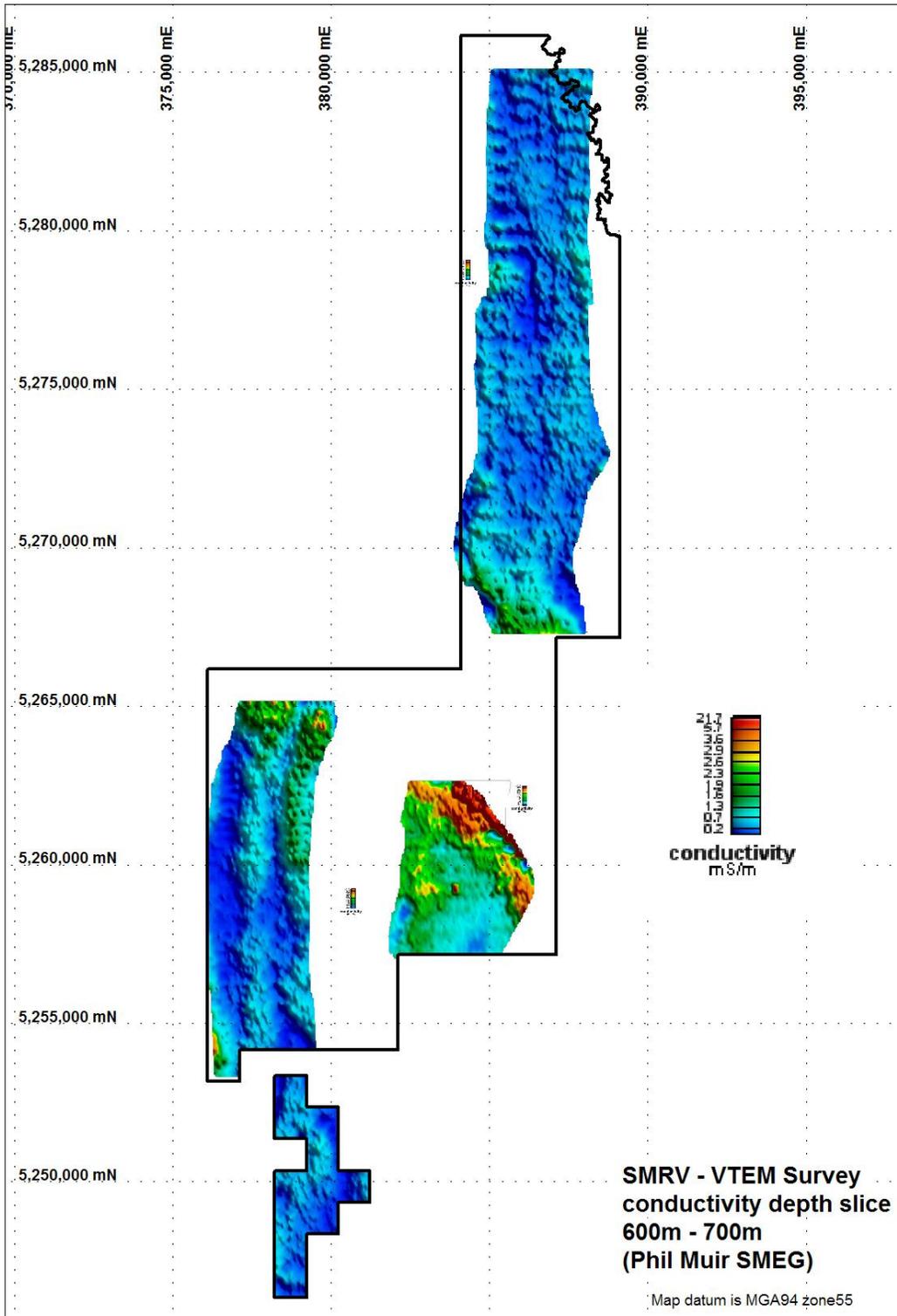


Figure 6.15: Processed data conductivity depth slice 600m to 700m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

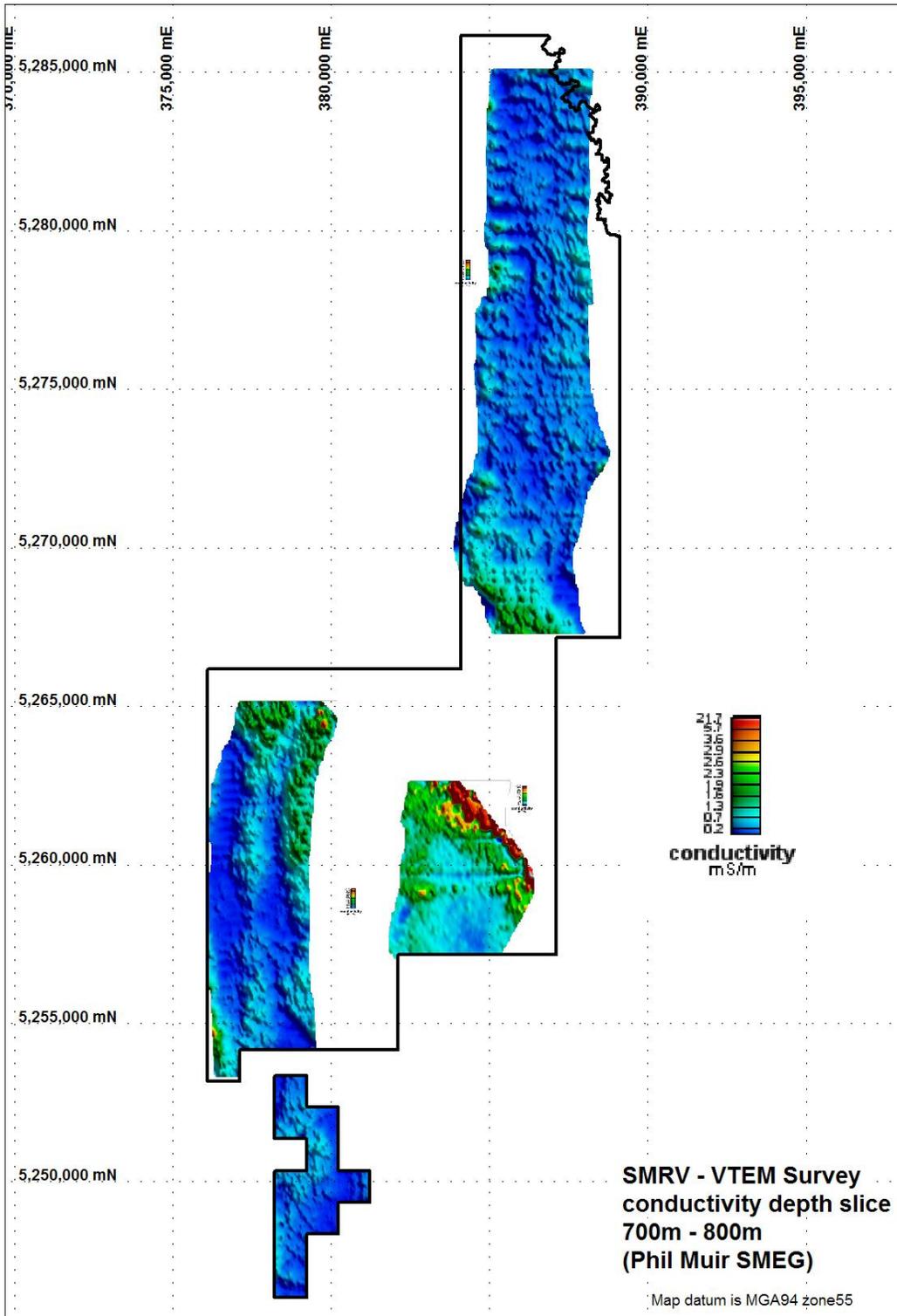


Figure 6.16: Processed data conductivity depth slice 700m to 800m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

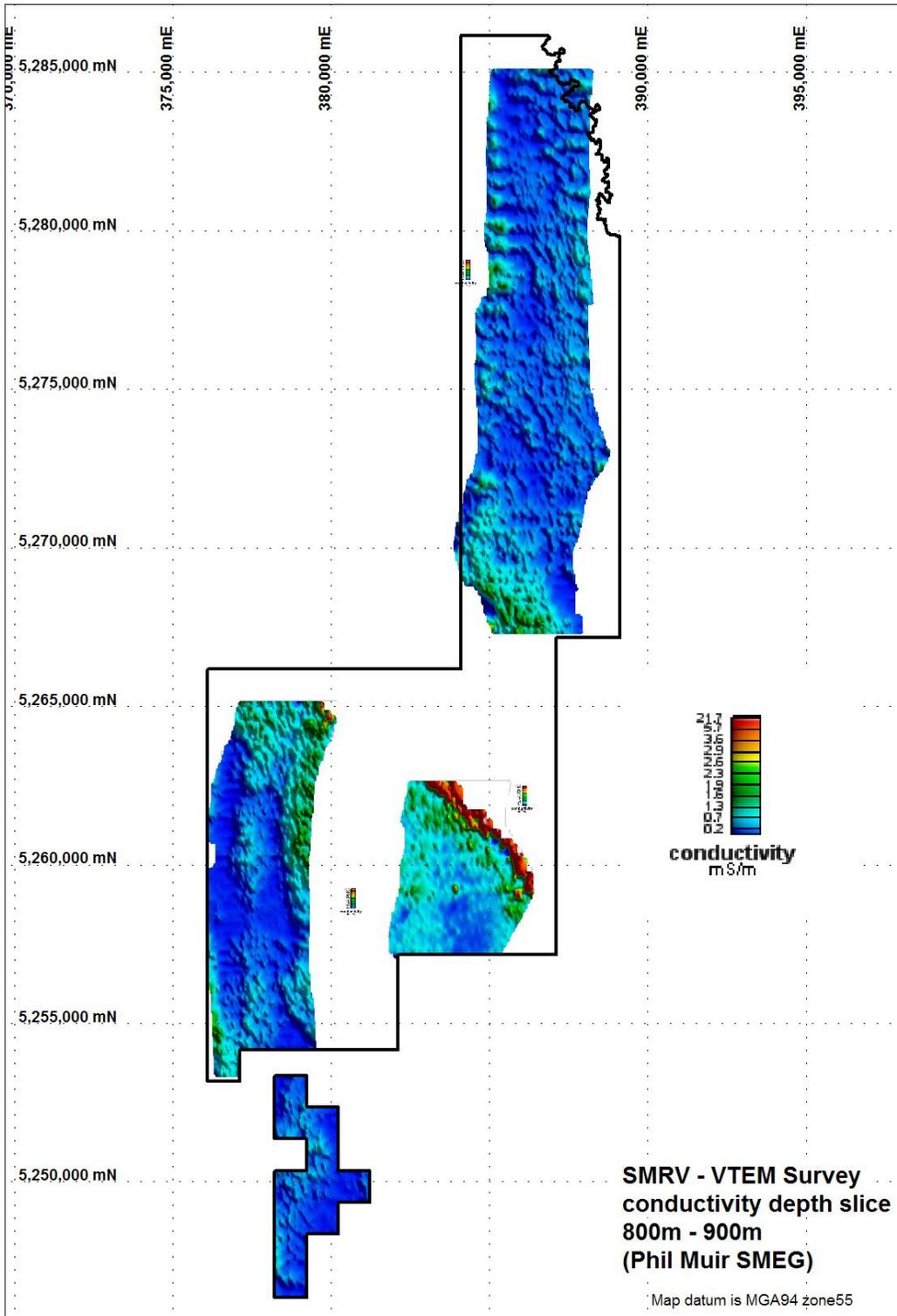


Figure 6.17: Processed data conductivity depth slice 800m to 900m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

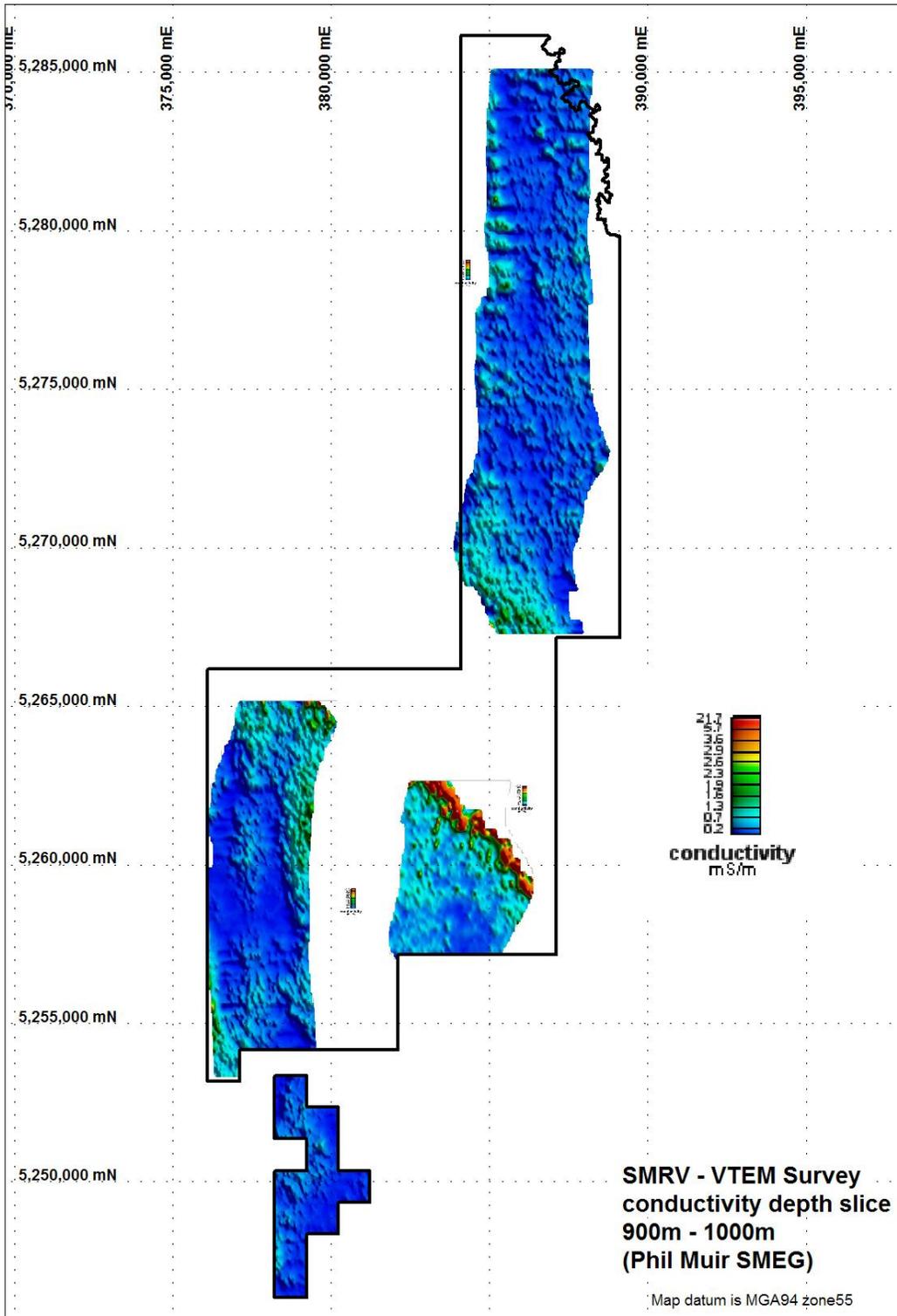


Figure 6.18: Processed data conductivity depth slice 900m to 1000m (consistent colour between slices) generated by Phil Muir, Southern Mineral Exploration Geophysics.

7.0 Proposed work March 2012 to March 2013

There is a considerable amount of work justified on the Wanderer River tenement though the volume achievable will depend on available funds.

Recommended work on the Wanderer River tenements in the 2012 to 2013 year may include;

- Further processing and interpretation EM data.
- Compilation of data relevant to any EM anomalies warranting follow-up.
- Field follow-up of anomalies generated by EM survey.
- Consideration of regional soil sampling programme targeting alteration pathfinder elements.
- Consideration of 3D IP survey.

8.0 Environmental

There was no discernible impact on the environment during the flying of the survey. No wedge tailed eagle nesting sites were recognized.

9.0 Expenditure

Expenditure was previously reported as being \$16,367 for the 2011/2012 year. This expenditure did not include the full costings of the VTEM survey which were incurred late in the reporting year.

Actual expenditure in the 2011/12 year was as follows:

Geophysics	\$215,386
Rental	\$5,459
Administration	<u>\$597</u>
TOTAL	\$221,442

10.0 References

Corbett, K D. 2003. a review of geology and exploration in the Macquarie Harbour-Elliot Bay area South West Tasmania. *Tasmanian Geological Survey Record 2003/04*.

McGregor-Dawson, J.L. (1975) EL 9/74 Birch Inlet Annual Report on Exploration 1974/75. *Unpub. Rept. for Union Oil Development Corporation*.