

Annual Report 2013 – 2014 for EL36/2010

APPENDIX 1.

Report on Aeromagnetic Data – EL36/2010
Southern Mineral Exploration Geophysics (SMEG)
August 2014

Report on
Aeromagnetic Data
over exploration licence

EL 36/2010

Corinna area, western Tasmania

August 2014



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Map coordinates

Unless noted otherwise, coordinates and bearings in this report are for MGA55 (datum: GDA94, projection: Map Grid of Australia zone 55)

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1. Introduction

Public airborne magnetic data available from Mineral Resources Tasmania was assessed for its usefulness in defining significant structural or other features on exploration licence EL36/2010.

There are several airborne surveys covering regions in the vicinity of the tenement, however only two cover the tenement area itself; the *1981 West Tasmania* survey (500m flightlines, 200m height) and the *1996 Arthur Pieman* survey (200m flightlines, 100m height). Of the four other nearby surveys, one is the high resolution 1996 Corinna (50m flightlines, 60m height) immediately to the SE of the tenement, while the remaining three are 2001-2002 WTRMP surveys (200m flightlines), two of which include electromagnetic data, however these only come to within about 10km of EL36/2010.

The best available airborne magnetic data over EL36/2010 is the *1996 Arthur Pieman* survey and this is the data discussed in the remainder of this report.

All figures in this report are of identical scale and coverage in order to facilitate easy comparison of data between the figures.

2. Discussion

The location of EL36/2010 in relation to topographic features is shown in Figure 1. Coloured digital terrain data is shown in Figure 2.

Figure 3 shows selected rock units from the 1:25k scale MRT surface geology map series. This selection comprises rock units described as dolomitic because it is some of these (the light and dark green Bernafai Volcanics in particular) that are most relevant to the comments below concerning the airborne data. Note that the colours used for rock units are not standard MRT colours but have been chosen to show the different units with more contrast.

Figure 4 shows magnetic data (reduced to the pole, “RTP”). Although no quantitative magnetic modelling has been done, it is clear that the NNE striking magnetic high trend traversing the southern half of tenement is associated with the Bernafai Volcanics. Figure 5 (first vertical derivative) and Figure 6 (tilt derivative) show the results of two processing techniques used to enhance small and/or subtle features in the RTP data.

The images in figures 4, 5, and 6 suggest that within the tenement the broader NNE magnetic trend comprises two narrow magnetic zones. The first of these is a reasonably continuous magnetic zone coinciding with the mapped western edge of the “Lsbhg” rock sub-unit (described as a dominantly grey tuffaceous and pelitic metasiltstone) within the Bernafai Volcanics. In contrast, the second zone appears as a few discrete anomalies approximately coincident with the mapped eastern edge of the “Lsbhg” rock unit. This eastern edge of the “Lsbhg” is where the Bernafai Volcanics is in fault contact with the Corinna Dolomite marking the position of the Brookside Fault. Further to the NE, outside the tenement, the Brookside workings appear to be related to this same fault contact.

Radiometric data is shown in Figure 7 (total count) and Figure 8 (K/Th ratio). While the total count data shows a relatively elevated value over most of the mapped “Lsbhg” rock sub-unit of the Bernafai Volcanics, of more interest is the consistent trend of elevated K/Th ratio data along the eastern edge of the “Lsbhg”, coinciding with the Brookside Fault and second magnetic zone (see

previous paragraph). This elevated K/Th ratio is suggestive of alteration along the fault resulting in relative potassium enrichment.

The spatially similar trends of the discrete magnetic anomalies and the elevated K/Th anomalies near the Bernafai Volcanics contact with the Corinna Dolomite suggests that this region of the Brookside Fault may be worthy of further exploration work. The fault and these geophysical anomalies lie along the eastern slopes of the Elizabeth Ridge topographic feature, immediately west of Middleton Creek. At least some of the alluvial workings in Middleton Creek could have been sourced from gold originating out of these slopes.

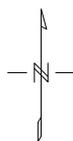
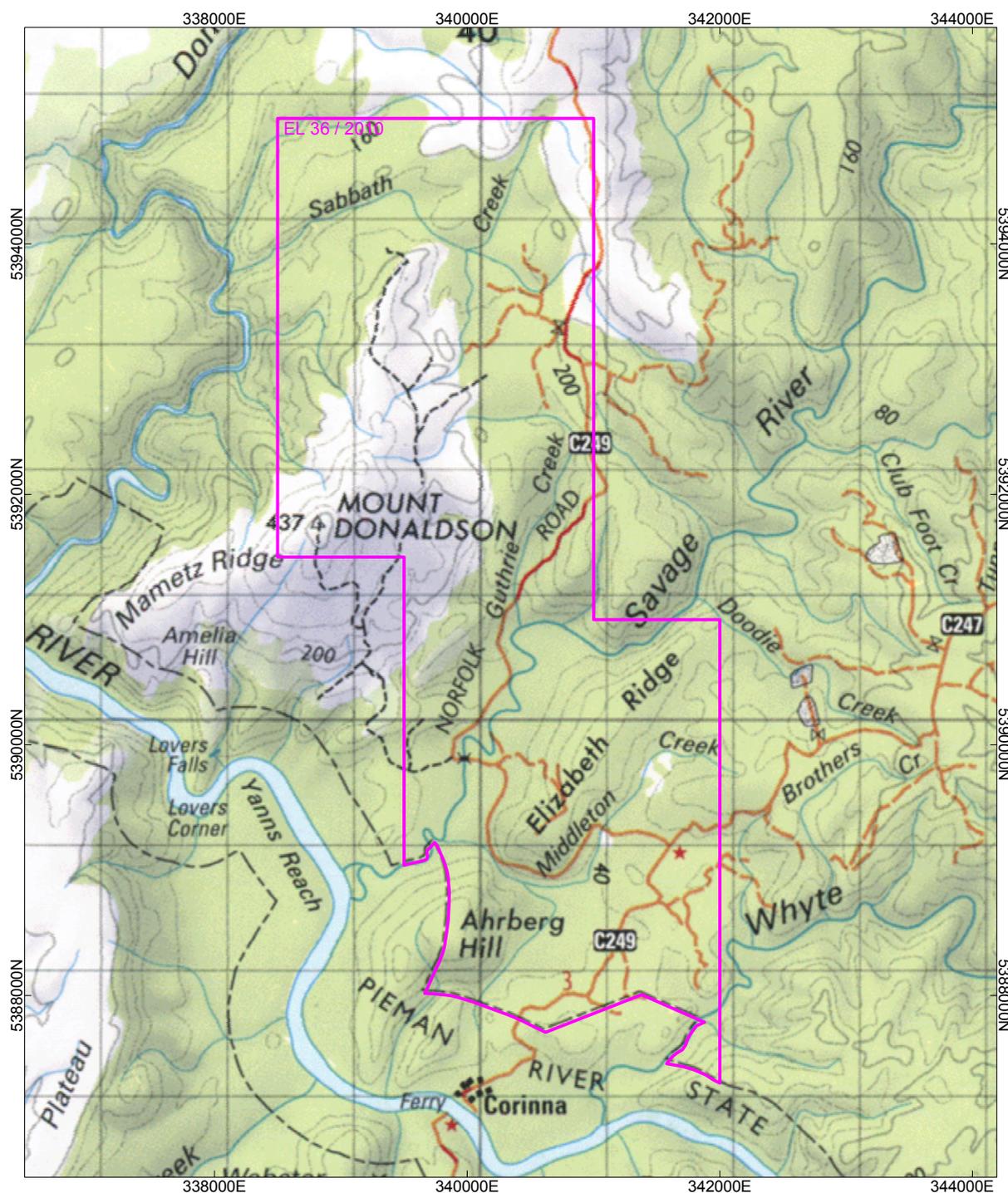
Magnetic data in the northern half of the tenement shows little of significant interest, with the possible exception of the far eastern side where the NNW-trending Bernafai Volcanics belt re-enters the tenement. Here the whole volcanics belt is almost orthogonal to its NNE trend in the southern half of the tenement. There is obviously a significant NNW structural feature controlling this change in direction, but apart from these observations the magnetics data doesn't really offer any more useful information.

Radiometric data in the northern half of the tenement shows a trend of elevated values in the position of the mapped "Lsbhg" sub-unit of the Bernafai Volcanics. There is a small K/Th ratio anomaly high on this trend, similar to those along the Brookside Fault, but it is essentially an isolated anomaly and on its own doesn't warrant being given much significance. The only other radiometric response of note in the north is about 1km due east of Mount Donaldson. Here there is a small area of high total count which has a notably high K/Th ratio; magnetics is lifeless at this location. However with no supporting information this radiometric response also can't be given much significance.

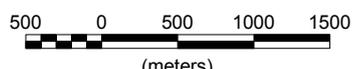
3. Conclusions and Recommendations

Based on the airborne magnetic and radiometric data, the best target for further exploration work would seem to be along the eastern side of Elizabeth Ridge where it slopes into Middleton Creek. This slope hosts the positions of several discrete magnetic anomalies as well as a distinct trend of high K/Th ratio radiometric anomalies which is suggestive of alteration. MRT geological mapping suggests that these geophysical anomalies are approximately coincident with the contact between the Bernafai Volcanics and Corinna Dolomite; this contact is the Brookside Fault which is a significant structural feature through the area and is associated with the Brookside workings further to the NE.

Figure 1



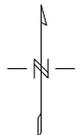
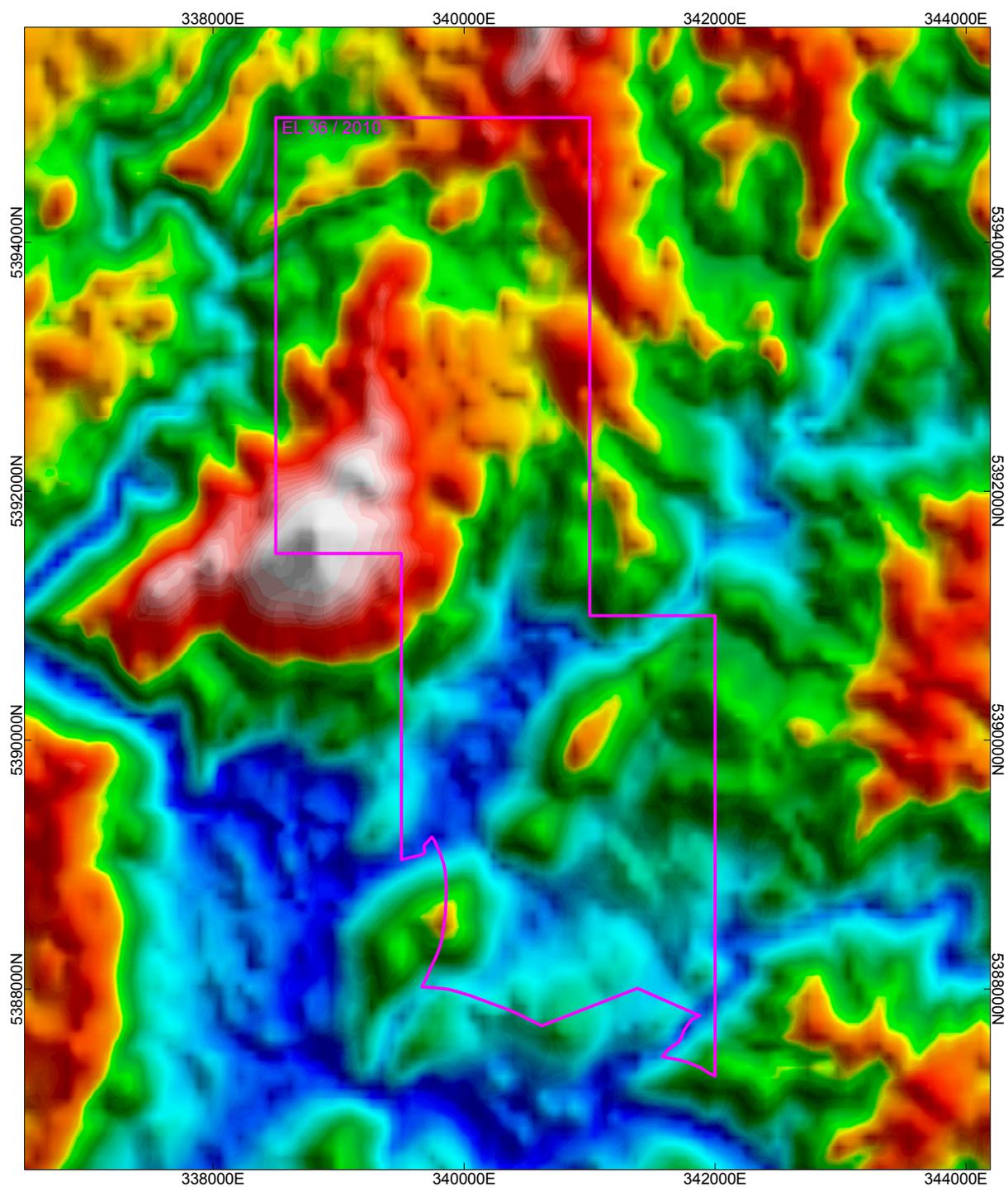
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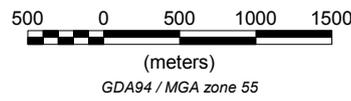
(meters)
GDA94 / MGA zone 55

EL 36/2010
Location
and Topography

Figure 2



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EL 36/2010
Digital Terrain

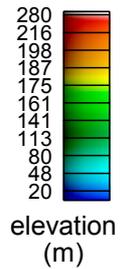
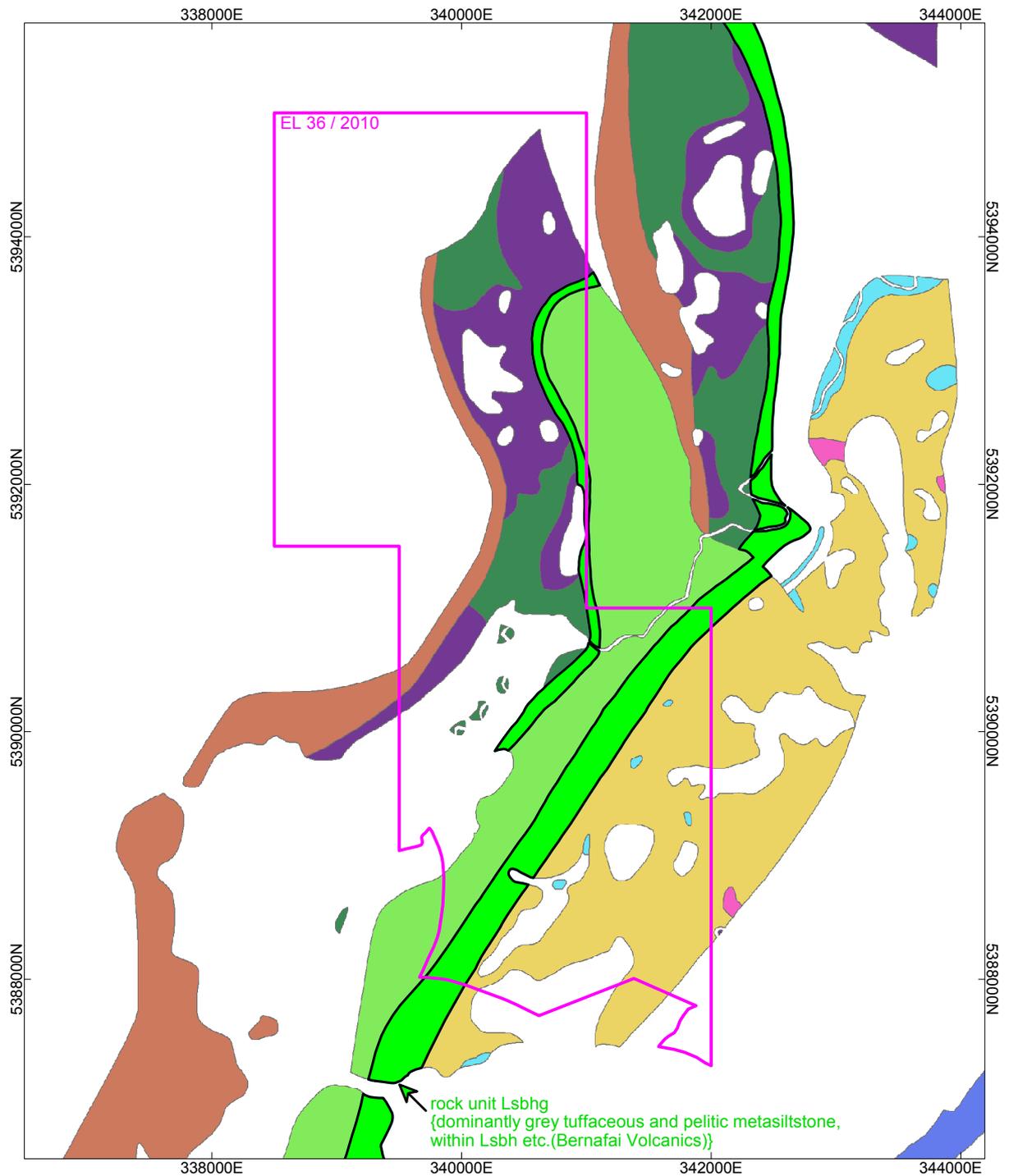


Figure 3



- Lac Chloritic schist with minor phyllite, dolomite and magnetite (Arthur Metamorphic Complex).
- Lsbh Interbedded metamorphosed basalt, basaltic wacke, slaty to phyllitic siltstone, quartzwacke and minor dolomite (Bernafai Volcanics and correlates).
- Lscho Grey slaty pelitic siltstone with minor banded chert and thin interlayers of silicified dolomite.
- Lsdh Pale grey and cream, massive, fine-grained dolomite (Corinna Dolomite).
- Lsdhs Variably silicified dolomite (variant of Lsdh).
- Lsdhss Mainly lag of silification products of dolomite (Lsdh), including silica flour, commonly obscured by Tertiary derived slope wash deposits.
- Lssh Pale grey and cream, fine-grained dolomite, locally oolitic, with stromatolites, or interbedded with richly carbonaceous siltstone (Savage Dolomite and correlates).
- Lsshs Variably silicified dolomite (variant of Lssh).
- Lsshss Mainly lag of silification products of dolomite (Lssh), including silica flour, commonly obscured by Tertiary derived slope wash deposits.

EL 36/2010

**MRT 25k scale geology
(selected rock units; "Ls" types)**

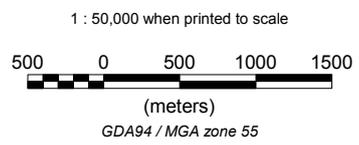
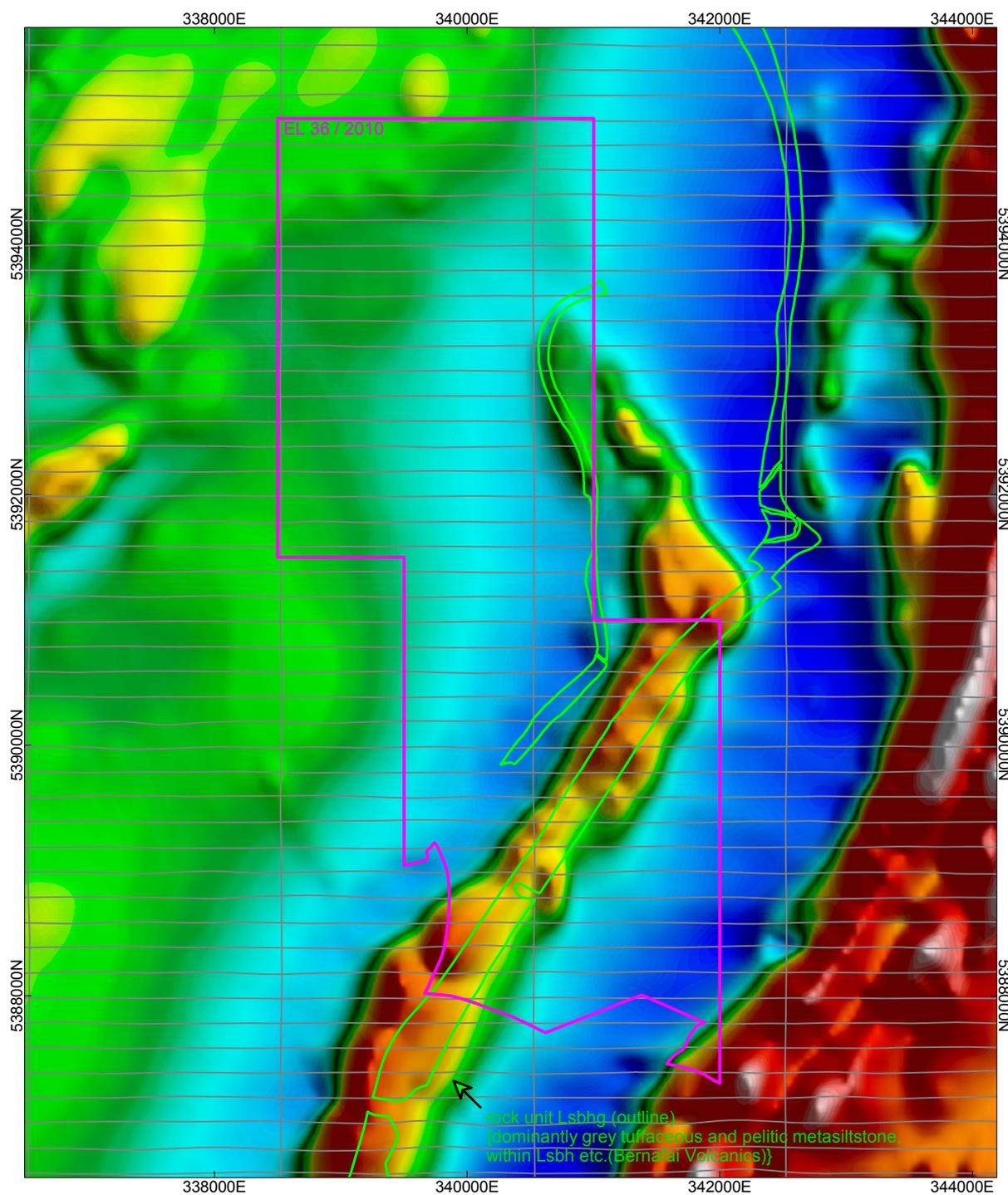
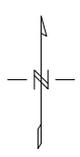
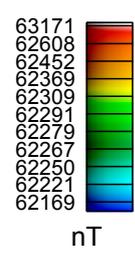


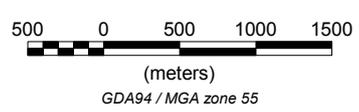
Figure 4



Flightpath overlay in grey

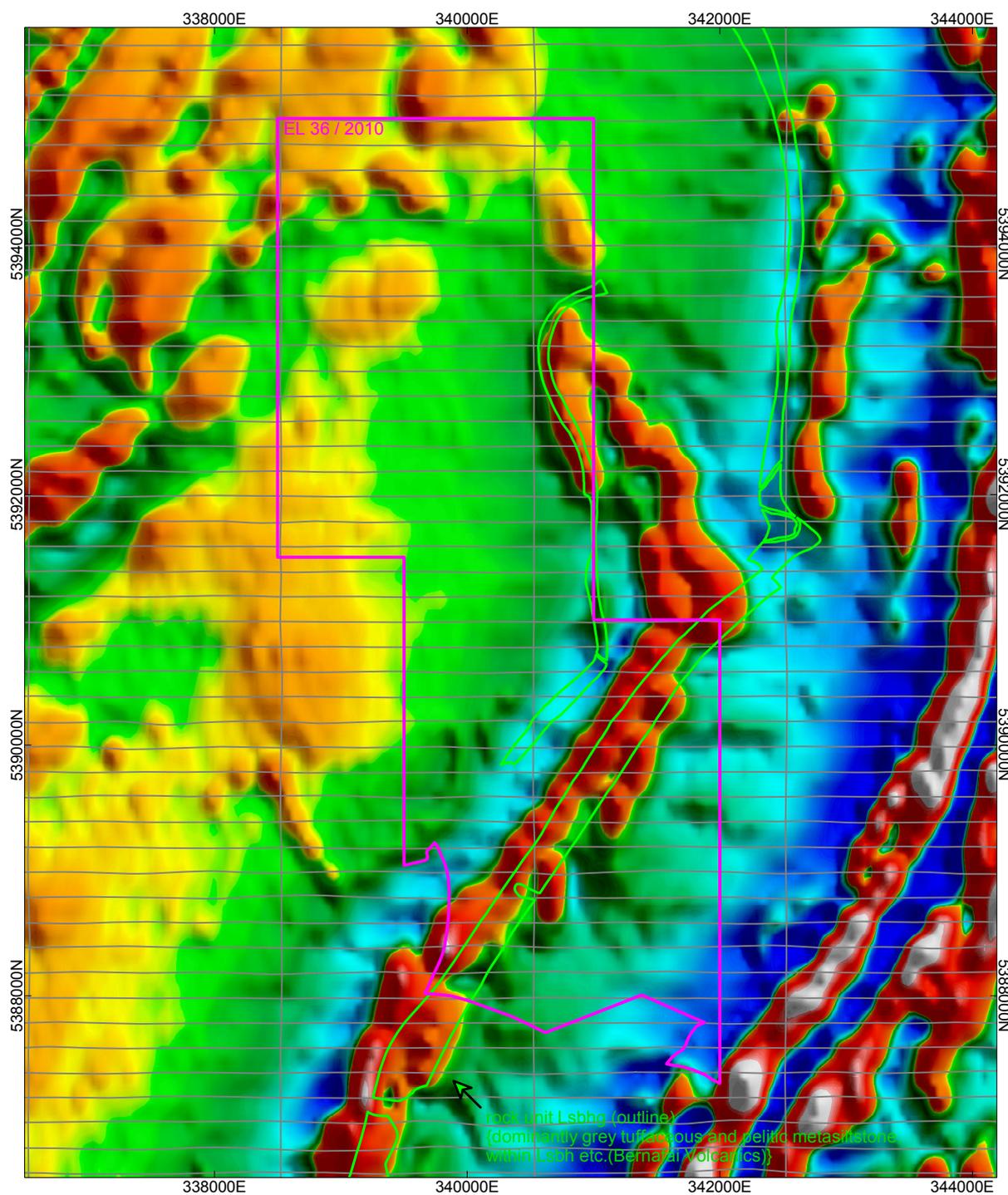


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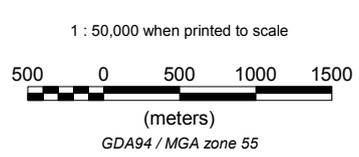
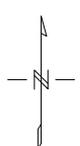


EL 36/2010
Magnetics
Reduction to the Pole

Figure 5

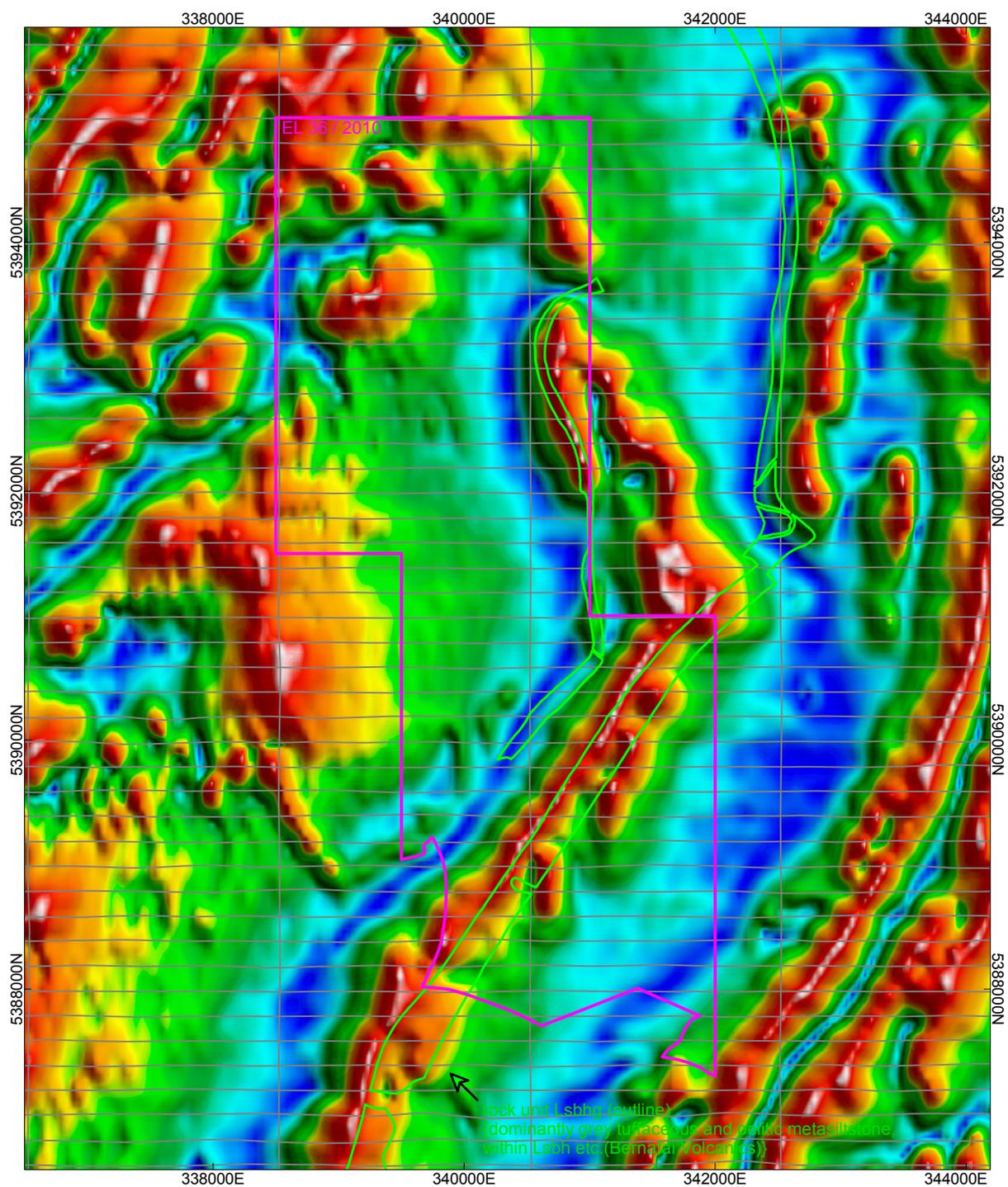


Flightpath overlay in grey



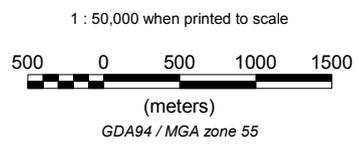
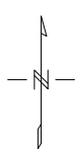
EL 36/2010
Magnetics
First Vertical Derivative

Figure 6



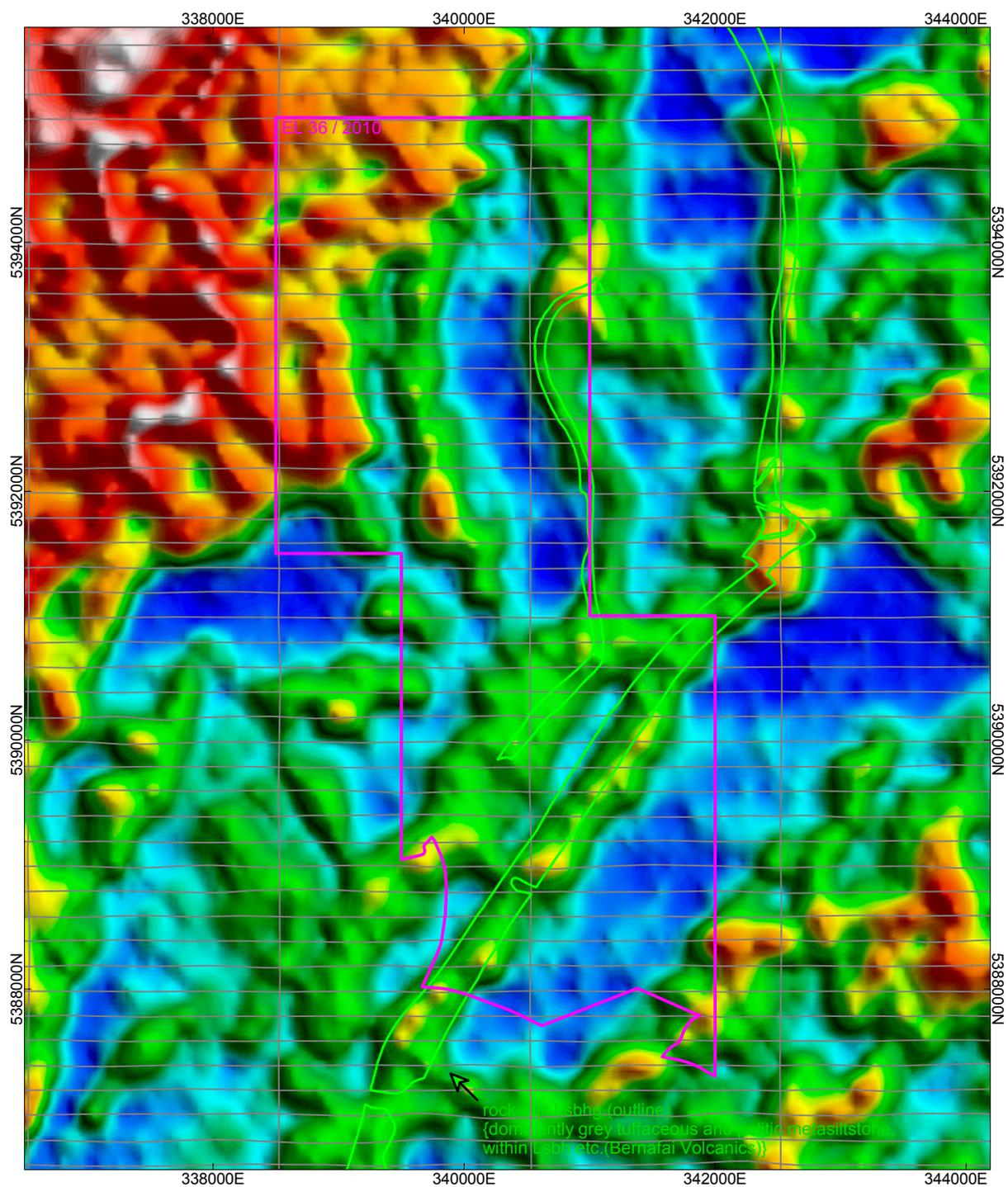
rock unit Lsbhg (outline)
dominantly grey w/ calc. and pink metasiltsone
within Lsbh etc (Bemarai Volcanics)

Flightpath overlay in grey

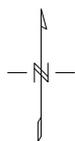


EL 36/2010
Magnetics
Tilt Derivative

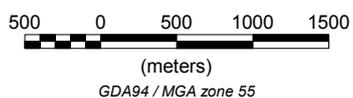
Figure 7



Flightpath overlay in grey

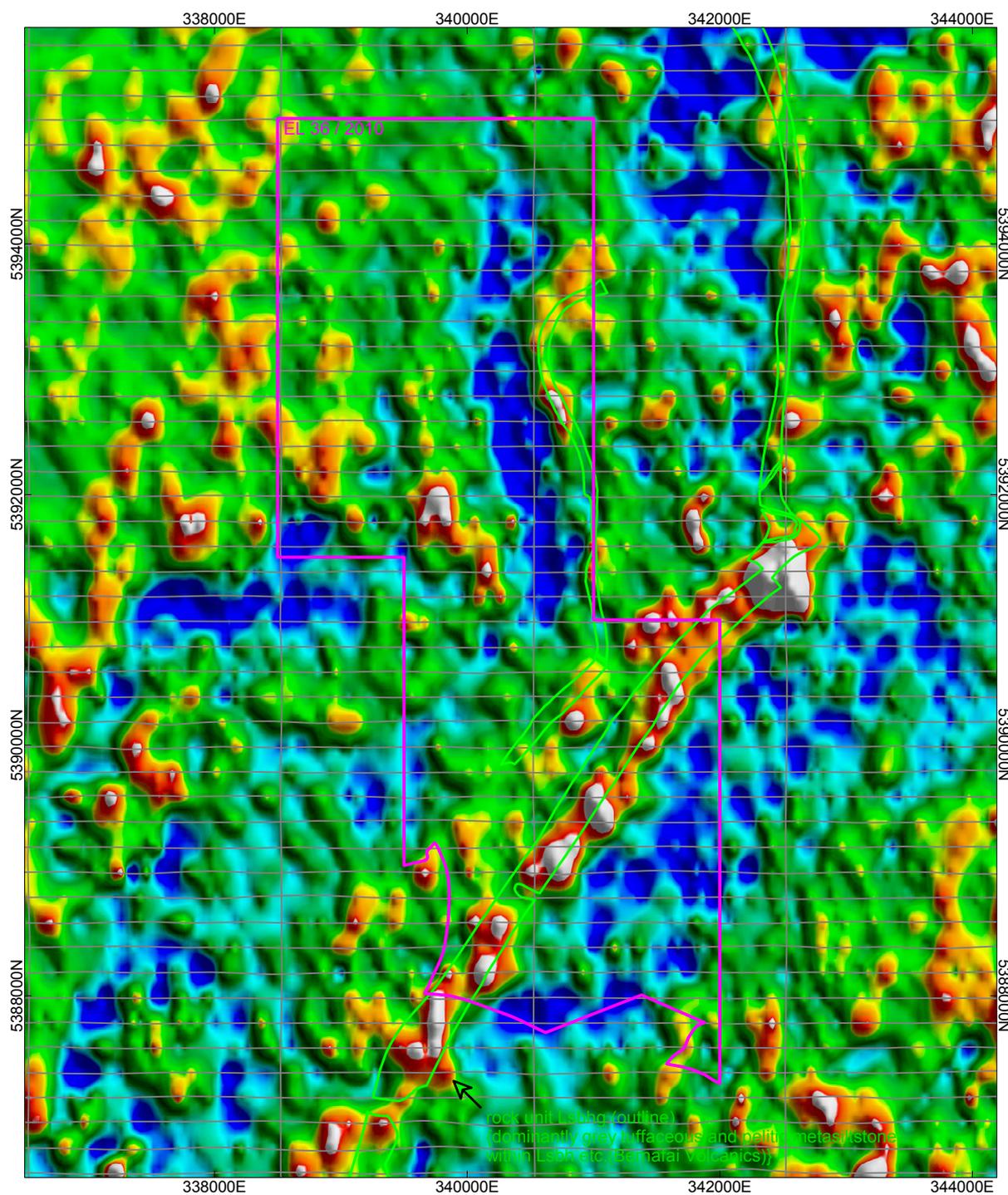


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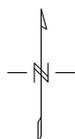


EL 36/2010
Radiometrics
Total Count

Figure 8



Flightpath overlay in grey



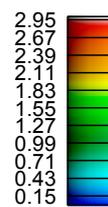
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(meters)

GDA94 / MGA zone 55

EL 36/2010
Radiometrics
K / Th ratio



K / Th
(ratio)