

**TasGold Ltd.**  
**Elliott Bay-SMRV PROJECT**  
**Aeromagnetics-Radiometrics Interpretation**  
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## **SUMMARY**

Aeromagnetic and radiometric data over the Elliott Bay-SMRV section of the Dundas Trough in the west coast of Tasmania have been processed and interpreted to assist with the identification of areas with gold ( $\pm$  base metal) exploration potential. The data is a subset of the geophysical information acquired during Mines and Resources Tasmania's Western Tasmanian Regional Minerals Programme. The moderate resolution (200m line spacing, 80m terrain clearance) data is well suited to the relatively broad (1:50,000) interpretation scale used. 1:50,000 scale TMI and radiometric image enhancements generated by S.G.C. from the MRT data formed the basis of the interpretation.

The Elliott Bay-SMRV magnetic-radiometric data set is quite variable in character. The mineralized felsic volcanics hosting the Wart Hill poly-metallic sulphides and the Sassy Creek gold  $\pm$  base metal mineralization is typically non-magnetic apart from occasional thin, weakly magnetic (andesitic?) flows and local, strongly magnetic zones associated with alteration  $\pm$  intrusives (eg. Voyager 9). Exposed sections of the felsic package generate moderate to strong radiometric responses. This high background makes recognition of outcropping sericitic alteration zones (similar to the Henty gold system) difficult. The majority of the other Lower Palaeozoic sequences and intrusives are also non- to weakly magnetic, the exception being the strongly magnetic, andesitic-mafic dominated Mainwaring Group.

The Lower Palaeozoic-Proterozoic basement seems to consist of a series of distinct, elongate slices or blocks separated by northerly oriented, probably transcurrent fault zones. The magnetic and radiometric stratigraphy display patterns consistent with large scale folding. The northerly oriented faults appear to have been active during the deposition of at least the earlier units of the Owen Conglomerate, as well as during the subsequent folding. There is some evidence for large scale thrust faulting. A later (Mesozoic-Tertiary) block faulting event, with N-S and NW orientations prominent, seems to have overprinted, but partially followed, major faults from the Palaeozoic deformation. These later faults control the sediment-filled Mesozoic to Tertiary graben that cross cuts the Palaeozoic basement in the northern/central part of the project. The prospective felsic volcanic stratigraphy appears to have been quite strongly disrupted by faulting, with N-S, NE and NW fault directions prominent. This may have resulted in fragmentation of the original VMS mineralized systems.

A suite of gold  $\pm$  base metal targets has been selected on the basis of the interpretation. Controls on the known mineralization are not well understood. Emphasis has been given to favourable structural settings associated with the assumed, primary regional structural control; i.e. major, north-south, dextral faults cutting the prospective volcanics. Specific targets within the prospective stratigraphy are classical tensional fractures, riedel shears, dilational bends, fold closures etc. Most of the high priority targets are potentially dilational settings and/or localized intrusive or alteration centres associated with the mineralized felsic volcanic package and the felsic intrusives emplaced into these volcanics.

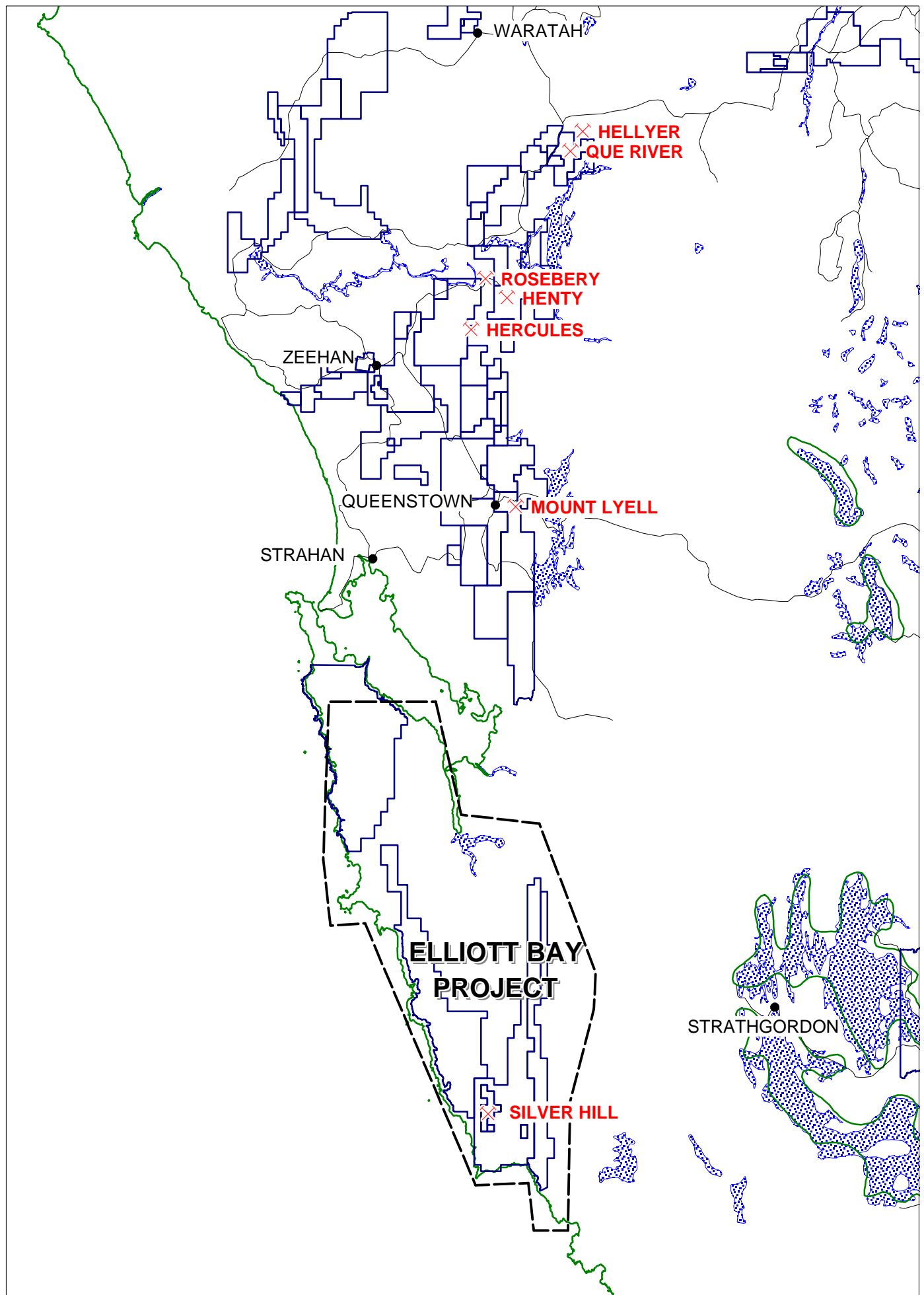


Figure 1 : Location Plan - Elliott Bay - SMRV Project

## **1. INTRODUCTION**

Aeromagnetic and radiometric data covering TasGold Ltd.'s Elliott Bay-SMRV project and surrounds have been processed and interpreted as part of TasGold's gold ( $\pm$  base metals) exploration in the southern portion of the Mt. Read Volcanics province. The Elliott Bay-SMRV project area is located south of Strahan on the west coast of Tasmania, extending south from Macquarie Harbour (Figure 1). TasGold has interests in a number of exploration tenements and applications within the project area, including ELs 20/96 and 21/99, plus ELA 24/01.

Previous exploration in the region has focussed on volcanogenic, poly-metallic massive sulphide systems similar to the Rosebery and Hellyer deposits in the northern portion of the belt (Figure 1). Geophysical data collected during these exploration programmes was reviewed by S.G.C. in May, 2000 as part of an evaluation of the project by Billiton Exploration Australia Limited (Craven and Peters, 2000).

The primary focus of TasGold's exploration programme is gold ( $\pm$  base metal) mineralization following a model based on the Henty deposit, north of Queenstown (Figure 1).

The Elliott Bay-SMRV aeromagnetic-radiometric data is part of the Minerals Resources Tasmania geophysical data base for the Western Tasmanian Regional Minerals Programme.

## **2. GEOLOGY AND BACKGROUND INFORMATION**

Geological background provided by TasGold included published 1:25,000 scale geological mapping (Tasmanian Geological Survey, ~1991-2) and compilations of exploration data collected by previous tenement holder in the region. A variety of regional aeromagnetics and radiometric images generated by MRT was also provided. Exposure of the prospective Cambrian volcanic-sedimentary stratigraphy within this rugged, incised terrane ranges from poor to good. Thick Mesozoic to recent cover is present over a considerable portion of the central and northern project area.

The focus of much of the previous exploration has been on several pods of high-grade base metal massive sulphides located at the Wart Hill (Silver Hill) prospect in the southern (Elliott Bay) section of the project (EL 20/96). This mineralization is contained within a belt of north-south striking felsic to intermediate flows and pyroclastics correlating with the 'Central Belt' of the Mt. Read Volcanics in the Queenstown area. These rocks occupy the central and eastern parts of the southern project area. In the northern-central section, they are overlain by Late Cambrian and Ordovician sedimentary succession and/or thick Mesozoic and Quaternary sediments. The prospective felsic volcanic package sub-crops again in the north-east of the project area, to the north of the sediment filled north-westerly striking Tertiary graben. The regional strike is north-south. The prospective sequence in the Wart Hill area is interpreted to face and dip steeply to the west. However, the Lower Palaeozoic stratigraphy appears to be quite strongly deformed. This could result in local and regional variations to dip and facing directions.

TasGold's primary exploration target is gold mineralization with affinities to the Henty deposit, with poly-metallic volcanogenic massive sulphide (VMS) mineralization as a secondary target. Published information on the Henty deposit (Callaghan et al., 1998) interprets this as a shallow water, gold bearing sulphidic alteration system developed along the Henty Fault. However, descriptions of the alteration, deformation and mineralization could be consistent with an epigenetic alteration/mineralization system developed during later deformation.

The strongly sulphidic zones within the major VMS base metal deposits in the Mt. Read province are typically chargeable, moderately conductive, moderate to high density and non magnetic; i.e. EM, I.P. and gravity surveys should be appropriate geophysical exploration methods for massive sulphide accumulations of economic size. From Callaghan et al.'s descriptions, I.P. methods should be the most appropriate ground geophysical method for detecting and mapping the sulphidic phase of a Henty style alteration system. The strongly sericitic alteration assemblage indicates that a similar, sub-cropping system could produce a detectable radiometric signature depending on the background response of the unaltered host rocks. There are negligible to low levels of magnetite or pyrrhotite within the alteration assemblage.

### **3. SURVEY DETAILS**

The Elliott Bay-SMRV aeromagnetic-radiometric data is part of the Minerals Resources Tasmania geophysical data base for the Western Tasmanian Regional Minerals Programme.

Survey specifications were not included in the gridded data provided by TasGold.

Approximate survey specifications of the surveys are summarized below:

Data Collection:	Tesla Airborne (+ others?)
Survey Date:	1996-2001?
Magnetometer:	Scintrex CS-2 Caesium Vapour
Spectrometer:	Exploranium GR820
Sampling Interval:	~7m (magnetics), ~70m (radiometrics)
Flight Line Separation:	200m
Flight Line Direction:	90°-270°
Tie Line Direction:	0°-180°
Tie Line Separation:	2000m
Mean Terrain Clearance:	80m
Navigation:	Differential GPS

The overall data quality seems to be fair to good considering the difficult terrain. However, it is not possible to properly assess the original data quality without access to the located data from which the MRT gridded data sets were generated. The widespread Mesozoic to recent cover limits the usefulness of the radiometrics for lithological and alteration mapping purposes over a significant amount of the area of interest.

#### **4. DATA PROCESSING**

TasGold supplied gridded magnetic (TMI), radiometric (4 channels) and DTM data covering the Elliott Bay-SMRV project area on CD-ROM. These grids and various image enhancements accompanying the data were generated by the geophysical section of the Tasmanian Geological Survey (Minerals & Resources Tasmania). No details of the processing undertaken by MRT were included with data or available on the MRT website.

The supplied grids of TMI, radiometrics and DTM data have been cleaned up to a degree by S.G.C. Limited image processing has been undertaken on these cleaned-up data sets using S.G.C.'s in house system. The enhancements used include selected sun angle illuminations, first and second derivatives, automatic gain control filters plus various combinations.

1:50,000 scale total magnetic intensity and radiometrics image-contours (Figures 2-5) were generated by S.G.C. for interpretation purposes. These included:

- Second vertical derivative of the TMI with TMI contours (greyscale)
- First vertical derivative shaded with 50% east gradient, with FVD contours.
- TMI shaded with 75% 2VD/AGC, with TMI contours
- TMI shaded with 50% east AGC gradient, with TMI contours
- Potassium channel radiometrics shaded with 50% east gradient, with potassium contours.
- Ternary (K, Th, U) radiometrics shaded with 50% east Total Count gradient, with Total Count channel contours.
- Digital Terrain, shaded with 50% east gradient, with DTM elevation contours.

Digital versions of several of the images have been forwarded to TasGold.

All maps and images generated by S.G.C. are in AGD84, Zone 55 coordinates.

## **5. INTERPRETATION**

The aeromagnetic-radiometric interpretation is presented in the form of structural/lithological compilations at 1:50,000 scale (Figures 6a & 6b). These overlay the TMI image/contour plans generated by S.G.C. (e.g. Figures 2-5). The interpretation plans combine information derived from the magnetics and the radiometrics, with priority generally being given to the magnetics. No quantitative modelling of the TMI data has been attempted. The interpretation concentrated on the areas covered by the TasGold tenements and the immediate surrounds. Interpretations outside the tenements vary from reasonably detailed to skeletal and should be used with caution. The 1:25,000 scale Geological Survey mapping provided reasonable basic geological control. However, there are a number of contrasts between the surface mapping and the geophysical data that are not readily reconcilable. The reliability and source of the main geological control used for the western side of the area (Plutonic's 1995, 1:50,000 scale regional geology compilation) is unknown. Much of this map appears to be derived from an earlier (BHP?) aeromagnetic interpretation rather than outcrop mapping. This mapping gives little indication of how the belt of Cambrian volcanics and sediments to the west of the Mainwaring group correlates with the Wart Hill sequence and the other units seen in the eastern part of the prospect area. It is also unclear if the intrusives shown on this map in the northern continuation of the Mainwaring Group have been mapped or inferred from the magnetics.

This interpretation supersedes rather than incorporates the 2000 interpretation covering the Wart Hill area (Craven and Peters, 2000). The overall data quality and resolution of the data from the Western Tasmanian Regional Minerals Programme survey is considerably better than the magnetics interpreted in 2000 (from an old Questem airborne EM survey).

### **Magnetism:**

The magnetic relief within the Elliott Bay-SMRV area is moderate, with an overall range of approximately 1500nT. The Proterozoic and Lower Palaeozoic lithological packages are typically weakly to non-magnetic, containing occasional narrow, magnetic flows or units. This is not surprising for a predominantly sedimentary and felsic-volcaniclastic package. The weakly magnetic flows within the prospective, Mt. Read equivalent felsic packages are likely to be thin andesitic to dacitic units or intrusives. Ovoid, strong magnetic features (~5246000N 380000E [Voyager 9] and 5247500N 383000E) are distinctly anomalous within the felsics. These could be mapping 'normal' lithologies (e.g. thicker andesitic or dacitic flows or intrusives). Alternatively, they may be indicative of significant, local, magnetite alteration. This could be associated with volcanism or a later, contact metamorphic event related to emplacement of the granitic intrusives mapped adjacent to Voyager 9 (chlorite-magnetite assemblages mapped by Cyprus Minerals). Such alteration could be significant as a focus for either epigenetic gold or volcanogenic sulphide systems.

Prominent, persistent, magnetic responses associated with the Mainwaring Group central and western part of the project area are reflecting the high component of andesitic to mafic volcanics and dolerites in this package. These can be traced to the north below the thick Mesozoic-Cainozoic cover. The Plutonic regional mapping indicates the presence of dioritic to granitic intrusives within the northern section of the belt of highly magnetic Mainwaring Group (west of Birch's Inlet). As mentioned above, it is not clear if these intrusives have been geologically confirmed. The magnetics for this area has not been interpreted in detail. The patterns are consistent with the presence of medium sized intrusives, but in other respects the magnetic character is similar to that seen from the Mainwaring Group in the southern part of the project area. These magnetic patterns indicate that the Mainwaring Group (and the remainder of the Cambrian stratigraphy has undergone strong deformation, with numerous strike parallel faulting and associated folding inferred. This deformation has locally produced substantial structural thickening and thinning of the magnetic stratigraphy. The inferred deformation pattern and the resultant morphology have similarities to typical Archaean greenstone belt deformation.

The elongate, strongly magnetic, N to NNE striking unit located adjacent to the western edge of ELA 24/01 and continuing to the north across Cape Sorrel could be a somewhat attenuated (fold?) repetition of part of the magnetic Mainwaring Group. However, one of the published regional geology summaries shows an elongate ultramafic complex in this area (Cape Sorrel Ultramafic). The magnetic response is consistent with a complex of this type. Its relationship to the doleritic/gabbroic units within the Mainwaring Group is not clear from the magnetics. However, the style of deformation and the intensity of the magnetic response is similar.

### **Radiometrics:**

The radiometric signatures for the major lithological/stratigraphic entities are summarized below:

Mt. Read Volcanics: Typically moderate to strong responses from all channels where outcropping. Variations in the potassium channel response are locally useful for mapping specific units within the package.

Owen Conglomerate and associated Denison Group sediments: The response from the lower half of the succession (Waterloo Creek Group) consists of alternating, weakly and moderately radiogenic (K rich) units (shales or K-feldspar rich clastics?). The unconformity or contact between the Owen Conglomerate and the underlying Mt. Read Volcanics can be mapped reasonably well in the radiometrics unless potassic rich units in the sequences are juxtaposed. The response from the upper half of the Owen Conglomerate is quiet. This is surprising considering the description of the lithologies. Perhaps the psammitic rocks in this part of the sequence are very clean quartz sandstones.

Cambrian Intrusives: Not surprisingly, the Cambrian felsic intrusives are moderately active. The overall response level is similar but probably lower than the Mt. Read Volcanics. The similarities may be due to



the fairly high proportion of relict volcanics (indicated by the magnetics) within the intrusives. The radiometric response suggests that the intrusives tend towards sodic rather than potassic rich.

Mainwaring Group: The magnetic portion of the Mainwaring Group produces the typically low radiometric response expected from a mafic dominated package. The moderately active response from the units to the west of the Mainwaring Group could be consistent with a volcanoclastic-sediment dominated Cambrian sequence or Proterozoic basement rocks. Structurally, this western Cambrian succession could be equivalent to the felsics in the Wart Hill block. However, the radiometrics suggests that the proportion of felsic volcanics in the western block is lower than in the Wart Hill area.

Proterozoic Basement: The metasediments of the Proterozoic basement on the eastern side of the area are typically moderately radiogenic, commonly showing layering consistent with the original sedimentary character.

The radiometric response from the majority of the Tertiary to recent cover is subdued.

### **Structure:**

The Lower Palaeozoic-Proterozoic basement seems to consist of a series of distinct, elongate slices or blocks separated by northerly oriented, probably transcurrent fault systems. The magnetic and radiometric stratigraphy display patterns consistent with large scale folding. Several fault bounded or disrupted, elongate anticlines (north closing) and synclines (south closing) are evident. The northerly oriented fault set appears to have been active during the deposition of at least the earlier units of the Owen Conglomerate, as well as during the subsequent folding. There is some evidence for thrust faulting - e.g. at the base of the Owen Conglomerate, at the interface between the Wart Hill felsic volcanics and the Western Epiclastics and within the Mainwaring Group, particularly in the northern, buried section. The contact between the Proterozoic basement and the Cambrian felsic intrusives and layered stratigraphy along the eastern side of the areas has been interpreted as a major shear zone which has probably been active for an extended period of time. This zone incorporates the basal Cambrian sediments (Sticht Range Beds equivalents) which seem to be confined to the contact/shear zone.

A later, block faulting event with N-S and NW fault directions prominent, seems to have overprinted but partially followed major faults active during the main Palaeozoic deformation. These later faults control the sediment filled Mesozoic to Tertiary graben that cross cuts the Palaeozoic basement in the northern/central part of the project.

The prospective felsic volcanic stratigraphy appears to have been quite strongly disrupted by faulting, with N-S, NE and NW fault directions prominent. Some of this faulting has been identified on the Geopeko, Cyprus and Geological Survey maps. However, the magnetics suggests that the degree of fragmentation could be significantly higher than indicated on the geology plans. The known massive sulphides at Wart Hill are adjacent to what appears to be a strong fault zone along the margin of the Owen

Conglomerate. Thus the original mineralized system could have been strongly disrupted and fragmented. If the felsic volcanics-Owen Conglomerate contact is a thrust zone, continuations of the Wart Hill massive sulphide mineralization could be present at relatively shallow depths beneath the south-western edge of the conglomerate. The prospective volcanics are likely to extend beneath the Tertiary graben in the north-eastern part of the project area. However, the thickness of the cover is likely to preclude effective exploration of the Cambrian basement.

The granites intruded into the southern and eastern portion of the volcanic sequence appear to be syn- to post peak deformation. However, the quartz feldspar porphyry intrusive mapped between the Mt. Read Volcanics and the Proterozoic basement is more enigmatic. It seems to display considerable stratigraphic or layered character. This suggests the shear zone inferred along the western edge of the Proterozoic block has a strong influence on this unit, either controlling its emplacement or subsequently overprinting it. There is little indication of stratigraphic layering in the published mapping. As mentioned above, this layering has been interpreted as xenoliths of Mt. Read Volcanics. However, this may not be the case if the porphyry is an early, high level intrusive-extrusive complex.

## **6. TARGETS**

For target selection, emphasis has been given to favourable structural settings within the prospective Mt. Read Volcanics in preference to specific intrusives or alteration zones that may be associated with mineralization. Known VMS systems in the Mt. Read province do not have distinct magnetic signatures. Outcropping Henty style alteration systems should produce a detectable radiometric response because of the sericite in the assemblage. However, this response may not be readily discernable within the high background potassium channel response within the prospective lithologies.

The basic geological and structural picture inferred from the airborne geophysical data suggests that the area has reasonable potential for structurally controlled gold bearing alteration systems, be they syngenetic (VMS) or re-mobilized-epigenetic in origin. Zones of particular interest include the nose of the granite emplaced into the southern section of the Wart Hill trend and along the early, N-S structural corridors, particularly those trending away from the granites. Skarns developed around the granites (e.g. chlorite-magnetite zones such as **M10**) may be potential gold, base metal or possibly tin mineralization targets. The dominant sense of displacement on the major, early northerly fault systems is not obvious. This creates some ambiguity in identification of possible dilational zones from the interpreted structure. The N-S trending Henty fault system (Callaghan et al, 1998) appears to be part of a dextral shear system, but this is by no means certain. On this basis, features that are likely to be dilational within a dextral regime have been given preference to sinistral dilational settings. This assumption is supported to an extent by the association between the Sassy Creek gold mineralization and a NE fault or trend that should be the tensional vein direction in a N-S dextral fault system. Specific targets are mostly classical tensional fractures, riedel shears, dilational bends, fold closures etc. expected in such regime.

Several small scale, possible alteration features have been interpreted from the aeromagnetics and radiometrics. These include relatively short strike length magnetic zones and possible demagnetization zones along elongate magnetic units. The short magnetic anomalies could be from Scuddles type pyrrhotitic VMS alteration. Possible alteration induced demagnetization has been noted at the Hellyer and Que River deposits. Conversely, these short strike length anomalies could be fragments of normal stratigraphy. The apparently demagnetized zones could also be local terrain clearance anomalies.

The recommended targets have been outlined on the 1:50,000 scale interpretation plans (Figure 6a & 6b). Summary comments and rankings for the individual anomalies are included in Table 1. The rankings are highly subjective and should be reviewed in the light of existing exploration or geological data. Highest priority has been assigned to situations that are possible extensions or analogues of known mineralized settings and structures. However, controls on the known mineralization are not that well understood. The target suite is not exhaustive; i.e. there are additional, similar settings that may warrant a closer look if initial follow-up of particular target types produces encouraging results.

TasGold requested comment on several of the old Voyager prospects in the Wart Hill block; i.e. V17, V19 (Wart Hill prospect), V30,31 and 33. **V17** and **V31** are adjacent to the **M12** target along the Copper Hill Fault. On the prospect descriptions supplied by TasGold, the geological setting seems quite prospective for structurally controlled gold bearing alteration systems. **M12** covers a possible dilational section of the Copper Hills Fault. This dilational environment is likely to extend into the reactive rocks in the immediate **V17** and **V31** prospect areas. Small, NE striking faults and fractures within this zone may be specific, dilational targets.

Both **V19** and **V33** are in the complex, grossly dilational zone around the Owen Conglomerate-felsic volcanic contact. Apart from the radiometric high over the wart Hill prospect, no specific geophysical features were identified in the immediate prospect areas. As suggested, the north-westerly faulted Owen Conglomerate-volcanic contact is geologically analogous to the Henty system. This fault direction is not expected to be dilational in the structural regime inferred from the geophysics. However, this interpretation has not been confirmed. Thus the fault along the contact is definitely worth a look. The small, NE cross faults (eg. **M5**, **M8**, **M14**, **M15**) through the area may also warrant checking as local, possibly dilational zones.

The setting of the **V30** prospect looks prospective. It coincides with the southern end of the **M3** target inferred from the magnetics. The structure/contact is sub-parallel to the Sassy Creek trend immediately to the north-west. The V30/M3 structure should be dilational and is near or along the granite-volcanic boundary. Conceptually, the setting looks good.

**TABLE 1: GEOPHYSICAL TARGETS ELLIOTT BAY-SMRV PROJECT**

TARGET	NORTHING	EASTING	PRIORITY	DESCRIPTION
<b>M1</b>	5242707	377525	2	Dilational section of large, NNE striking fault. Near felsic volcanics-granite contact.
<b>M2</b>	5245113	378171	1-2	Possible dilational bend along large, NNE striking fault. Near contact between felsic volcanics and granite.
<b>M3</b>	5247118	379196	1-2	Dilational(?) section of large, NNE striking fault. Near contact between felsic volcanics and granite. Coincides with the <b>V30</b> prospect.
<b>M4</b>	5246495	377966	2	Small alteration (demagnetization) zone within felsics.
<b>M5</b>	5247945	378794	1	NE striking fault zone within felsics. Sub parallel to the granite contact. Sassy Creek fault. See <b>V24 ±V29</b> prospects.
<b>M6</b>	5248360	378057	1	NE striking fault zone within felsics. Sub parallel to the Sassy Creek fault.
<b>M7</b>	5246876	377054	2-3	Possible altered Mainwaring Group along major N-S fault corridor.
<b>M8</b>	5250483	379474	1-2	NE striking fault-fracture zone ± alteration within felsics. Sub parallel to the Sassy Creek fault. Adjacent to Owen Conglomerate contact.
<b>M9</b>	5248290	380795	2	Possible demagnetized zone ± intrusives linking large faults. Near granite contact.
<b>M10</b>	5246029	380050	1	Possible large magnetite alteration zones within felsics near granite contact. Mineralized & partially tested.
<b>M11</b>	5244749	380193	2	NE striking (dilational) fault zone near felsics-granite contact.
<b>M12</b>	5250288	377870	1-2	Possible dilational bend along eastern section of major N-S fault (Copper Creek) corridor along western boundary of the Wart Hill felsics. Sub parallel to <b>V17</b> and <b>V31</b> prospects.
<b>M13</b>	5250736	377219	2-3	Possible altered Western Epiclastics along major N-S fault corridor.
<b>M14</b>	5251515	378892	2	Possible NE striking fault-fracture within felsics. Adjacent to Owen Conglomerate contact.
<b>M15</b>	5253348	378998	2-3	Possible NE striking fault-fracture within felsics. Beneath Owen Conglomerate unconformity?
<b>M16</b>	5253872	378229	1?	Possible demagnetized alteration/intrusive zone in felsics within N-S fault corridor. Analogous setting to Henty?
<b>M17</b>	5254062	377405	2	Possible altered Western Epiclastics along major N-S fault corridor.
<b>M18</b>	5252534	380777	1-2	Faulted contact between felsics and Owen Conglomerate. Possible Henty similarities
<b>M19</b>	5253251	382484	2	NE striking fault-fracture within felsics. Adjacent to Owen Conglomerate contact.
<b>M20</b>	5252719	383934	2	NE striking fault-fracture within felsics. Near granite contact?
<b>M21</b>	5246464	382588	2	Large, NE striking linking fault within felsics. Near granite contact. Dilational?
<b>M22</b>	5243284	381820	2	Complex, NE striking dilational? fault set near felsics-granite contact.

TARGET	NORTHING	EASTING	PRIORITY	DESCRIPTION
M23	5245485	384829	1-2	NE striking fault set $\pm$ potassic alteration within felsics. Near granite contact. Lewis River Zone?
M24	5246749	386440	2-3	Possible weak, magnetite alteration near felsic intrusive/volcanic contact.
M25	5244539	386474	2	Large, NE fault (dilational?) along and crossing granite-volcanic contact.
M26	5244290	387439	2-3	NE striking fault-fracture zone within granite containing relict volcanics. Alteration?
M27	5242678	387452	2-3	NE striking fault-fracture zone within granite containing relict volcanics.
M28	5239490	387252	3	NE striking fault-fracture zone within granite containing relict volcanics.
M29	5254402	388083	2	Major fault intersection zone. Mostly within granite and Proterozoic metasediments.
M30	5257406	384116	2	Possible weak magnetic alteration $\pm$ intrusives near volcanic-granitoid contact.
M31	5258696	385320	2	Possible weak magnetic alteration $\pm$ intrusives near volcanic-granitoid contact.
M32	5261122	376344	2-3	Dilational bend along major N-S fault between Western Epiclastics and Mainwaring Group.
M33	5262988	378539	2-3	Major dilational bend along N-S fault separating Western Epiclastics and Owen Conglomerate.
M34	5260887	377070	2-3	Possible altered Western Epiclastics along major N-S fault corridor.
M35	5267560	388050	2-3	Possible weak to moderate magnetic alteration $\pm$ intrusives near volcanic-Proterozoic contact.
M36	5269403	387596	3	Possible NNE fault-fracture zone near volcanic-Proterozoic contact.
M37	5271942	387750	1-2	Strong dilational bend along granite-Proterozoic-volcanic contact.
M38	5270771	385244	1-2	NNE fault-fracture set within volcanics adjacent to major N-S fault.
M39	5271819	385063	2	Possible weak to moderate magnetic alteration $\pm$ intrusive along felsic-Owen Conglomerate contact. Blind?
M40	5272683	384740	2	Possible small demagnetized zone within felsics
M41	5275202	387144	2	Possible small demagnetized zone within felsics
M42	5277062	386731	2-3	Bend (dilational??) in NNW faulted contact between volcanics and Owen Conglomerate.
M43	5277675	385255	2?	Possible NE fault-fracture zone near volcanic-Proterozoic contact. Alteration?
M44	5281126	387530	1-2	NE (dilational) fault-fracture set in strongly deformed $\pm$ altered felsics.
M45	5281546	386746	1-2	Major fault intersection along N-S fault zone. Near volcanic-Owen Conglomerate contact.
M46	5282516	386638	2-3	Bend (dilational??) in NNW faulted contact between volcanics and Owen Conglomerate.
M47	5287936	364065	2	NE (dilational) fault set in deformed $\pm$ altered possible felsic volcanics.
M48	5286559	364449	2	NE (dilational) fault set in deformed $\pm$ altered possible felsic volcanics.
M49	5282462	365583	2	Major, N-S, possibly dilational fault cross-cutting possible felsic volcanics.
M50	5281738	366128	1-2	ENE (dilational) fault set $\pm$ alteration or intrusives in possible felsic volcanics.

TARGET	NORTHING	EASTING	PRIORITY	DESCRIPTION
M51	5279926	366201	1-2?	ENE (dilational) fault set ± alteration or intrusives in possible felsic volcanics.
M52	5279757	366935	1	Major N-S fault zone. Possible dilational (Riedel) fault cutting nose of large antiform in volcanics.
M53	5278974	367272	2-3	Possible isolated magnetic alteration zone adjacent to major structural intersection.
M54	5277293	368268	2-3	Possible isolated demagnetized alteration zone near major structure.
M55	5276479	368039	2	Fault intersection ± possible dilational bend within volcanic ± sediment sequence.
M56	5273954	367295	2-3	Fault intersection ± possible dilational bend within volcanic ± sediment sequence.
M57	5273381	366165	2	~N-S axial planar(?) fault zone in deformed volcanics ± sediments.
M58	5272602	369690	2-3	Fault intersection ± possible dilational bend within volcanic ± sediment sequence.
M59	5267045	372943	1-2	Major (dilational?) bend, fault intersection and alteration zone along NNE fault zone/contact. Western boundary of Mainwaring Group? Mostly outside TasGold tenements.
M60	5265940	371147	3	Possible isolated magnetic alteration zone. Fragmented stratigraphy?
M61	5265332	368850	3	Fault intersection + sheared antiformal closure within western Cambrian volcanics, sediments
M62	5263297	371402	2	Major (dilational?) bend, fault intersection and alteration zone along N-NNE fault zone.
M63	5260541	372234	2	Major (dilational?) bend, fault intersection ± alteration zone along N-NNE fault zone. Western boundary of Mainwaring Group?
M64	5259871	373349	2	Dilational(?) bend ± alteration/intrusives. Within altered Mainwaring Group?
M65	5258954	371490	2	Dilational(?) bend ± sheared antiform along large NNW-N fault. Within western Cambrian volcanics, sediments.
M66	5254990	374973	1-2	Dilational, NE cross faults ± alteration, intrusives between major faults in Mainwaring Group.
M67	5253263	375633	1-2	Dilational, NNE cross faults ± alteration, intrusives between major faults in Mainwaring Group.
M68	5250508	373777	2-3	Possible magnetic alteration associated with local antiforms within Mainwaring Group.
M69	5247256	375836	1-2	Dilational, NE cross faults ± alteration, intrusives between major faults in Mainwaring Group.

Note: Coordinates are from the centroid of the target areas as defined by MapInfo, in AGD 84, Zone 55.

Additional targets will be generated from the western project area when interpretation is completed

## **7. CONCLUSIONS & RECOMMENDATIONS**

Interpretation of the MRT aeromagnetic-radiometric data covering TasGold's Elliott Bay-SMRV project area provides a reasonable, project scale structural-lithological framework and a basis for identification of potentially mineralized settings. The 200m line spaced data lacks the resolution for detailed, prospect scale interpretation and targeting. The structural-lithological framework that has been interpreted suggests that the area should be prospective for syngenetic (VMS style) and epigenetic gold deposits. The early stage deformation of the prospective Cambrian stratigraphy has similarities to typical Archaean greenstone belt deformation patterns. The presence of syn-post deformation granitic intrusives adds to the greenstone belt analogy and the prospectivity of the area for epigenetic lode/vein style gold mineralization.

The targets that have been identified from the geophysical interpretation are predominantly classical, potentially dilational or reactive structural-lithological settings. These are probably biased towards epigenetic styles of mineralization, but structure is also likely to have been a significant influence on the localization of earlier, VMS systems. The overall structural setting suggests that the prospectivity for epigenetic gold mineralization is not confined to the felsic volcanics (Mt. Read Volcanics) that host the known VMS mineralization in the Mt. Read Volcanics province. The structural regime has similarly affected most of the other Cambrian lithological units. Under the right conditions, these lithological packages could also host significant gold bearing alteration systems.

The targets that have been identified should be assessed and prioritized by TasGold using existing exploration data, followed by ground checking and sampling. This approach may markedly change the apparent significance of the targets. If possible, the assumed dextral character of the major N-S fault systems should also be checked and confirmed.

There is some scope for more detailed interpretation of the data over zones of interest. This could lead to more accurate location of specific structures, possible alteration features and lithologies. The resolution of the data is suitable for 1:25,000 scale and perhaps 1:10,000 scale interpretation if required. More detailed airborne surveys (50m line spacing magnetics) is recommended to assist with detailed, prospect scale exploration. Other geophysical survey/follow-up recommendations outlined in the 2000 (Craven & Peters, 2000) assessment of the Wart Hill area geophysics remain valid.

Detailed interpretation and targeting has concentrated on the tenements and applications in which TasGold has an interest. Some of the areas not held under tenement also appear to be prospective. The interpretations in these areas should be reviewed and upgraded (if necessary) if further work or ground acquisition is being contemplated.

## **8. REFERENCES**

**Craven, B.L. & Peters, W.A., 2000**

Sirotem, Magnetic and Gravity Data Review, Elliott Bay, Tasmania.

S.G.C. report prepared for Billiton Exploration Australia., May, 2000.

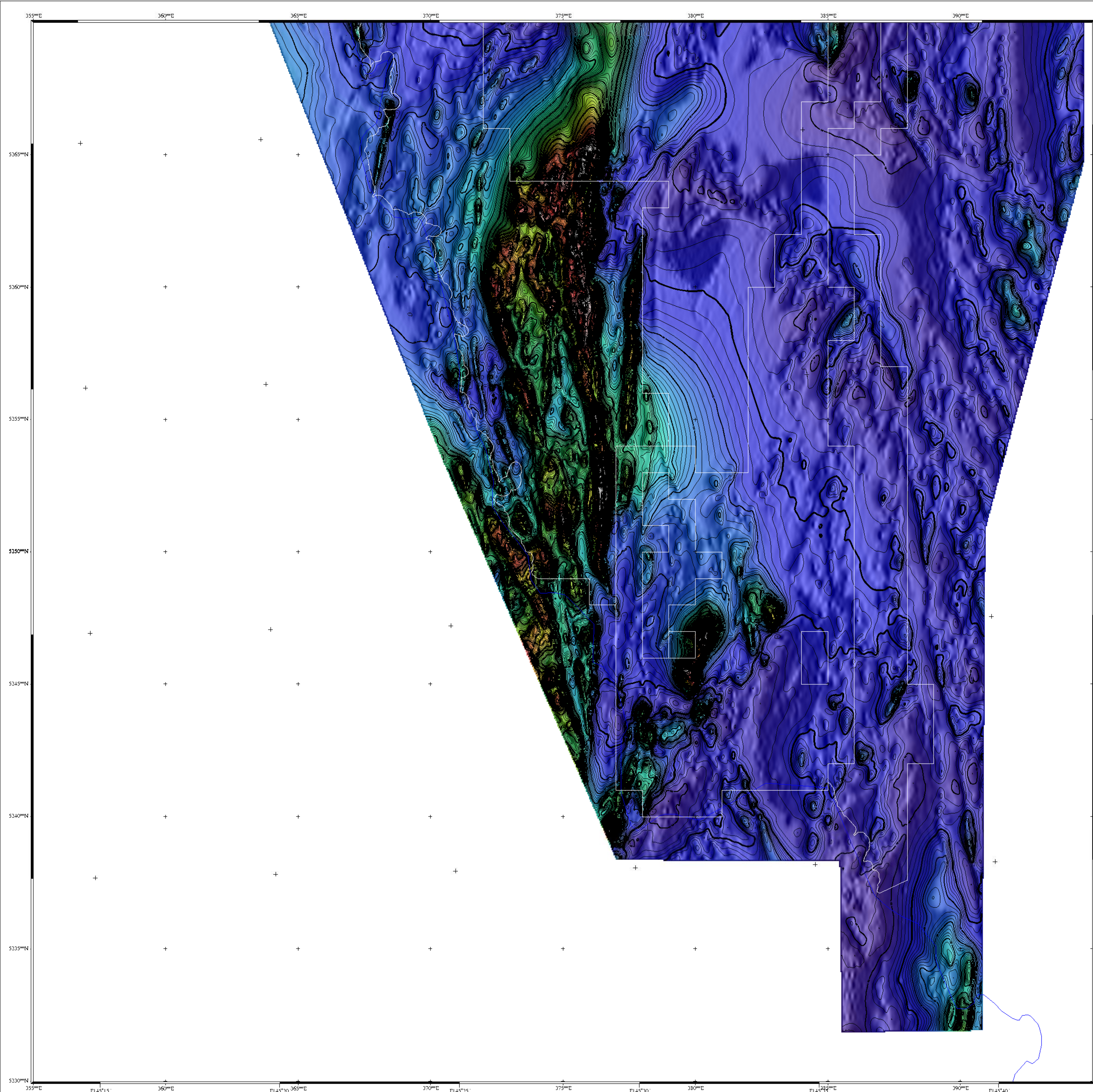
**Callaghan, T., Dunham, S., and Edgar, W., 1998.**

Henty gold deposit,

in *Geology of Australian and Papua New Guinean Mineral Deposits*

(Eds: D.A. Beckham and D.H. Mackenzie), pp473-480.





SURVEY SPECIFICATIONS - AGSO and AGSO INFILL

Contractor : Tesla Airborne Geoscience  
Aircraft : Cessna 210N, VH-BRZ  
Instrumentation : Agni, 1996  
Survey Date : 0.1 seconds  
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Flight Line Direction : 000 - 270 deg (130 deg infill)  
The Line Spacing : 2000 metres  
Mean Terrain Clearance : 90 metres

SURVEY SPECIFICATIONS - GEOLEX

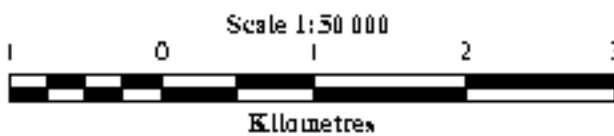
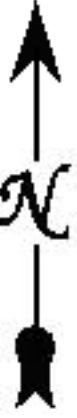
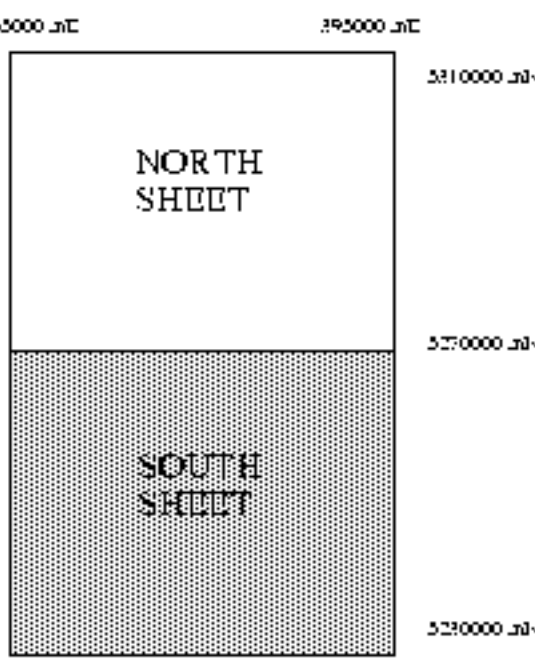
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Survey Date : 1982  
Flight Line Spacing : 500 metres  
Flight Line Direction : 000 - 270 degrees  
Mean Terrain Clearance : 200 metres

PLOT SPECIFICATIONS

First Contour Level : 10 nT  
Second Contour Level : 50 nT  
Third Contour Level : 250 nT  
Fourth Contour Level : 1000 nT  
Grid Cell Size : 40 mE x 40 mN

PROCESSING DETAILS

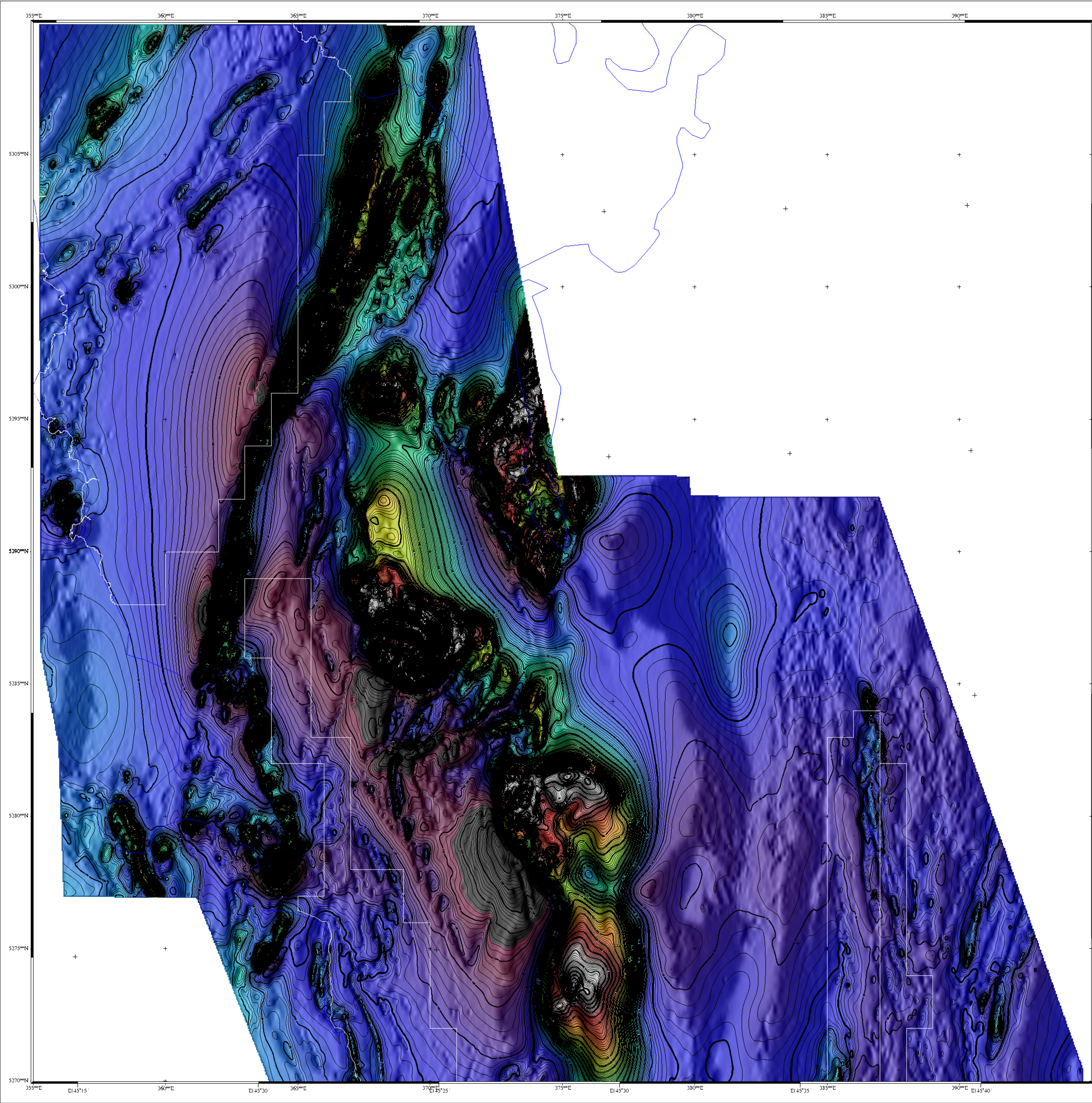
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Processor : M.J.K.  
Supervisor : B. Craven



AUSTRALIAN MAP GRID ZONE 55  
AGD 84 SPHEROID  
SOUTHERN HEMISPHERE

SOUTHERN GEOSCIENTIFIC CONSULTANTS PTY. LTD. - A.C.N. 067 552 461		
TASGOLD LTD ELLIOTT BAY PROJECT AIRBORNE GEOPHYSICAL SURVEY TOTAL MAGNETIC INTENSITY IMAGE (LIN) SHADED WITH 50% EAST AGC GRADIENT TOTAL MAGNETIC INTENSITY CONTOURS SOUTH SHEET		
DATE: 27/09/02	BY: M.J.K.	PLANNED:
SCALE: 1:50 000	REV: B. CRAVEN	2A





SURVEY SPECIFICATIONS - AGSO and AGSO INFILL

Contractor	: Tesla Airborne Geoscience
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Survey Date	: 0.1 seconds
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Flight Line Direction	: 090 - 270 deg (130 deg infill)
The Line Spacing	: 2000 metres
Mean Terrain Clearance	: 90 metres

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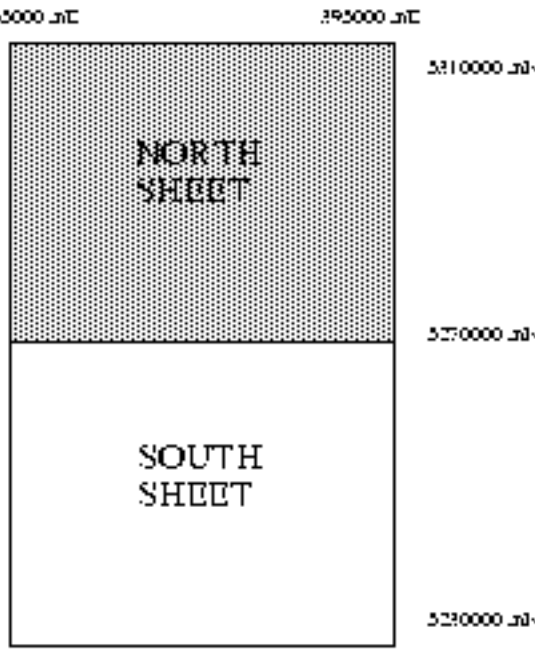
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Flight Line Direction	: 090 - 270 degrees
Mean Terrain Clearance	: 200 metres

PLOT SPECIFICATIONS

First Contour Level	: 10 nT
Second Contour Level	: 50 nT
Third Contour Level	: 250 nT
Fourth Contour Level	: 1000 nT
Grid Cell Size	: 40 mE x 40 mN

PROCESSING DETAILS

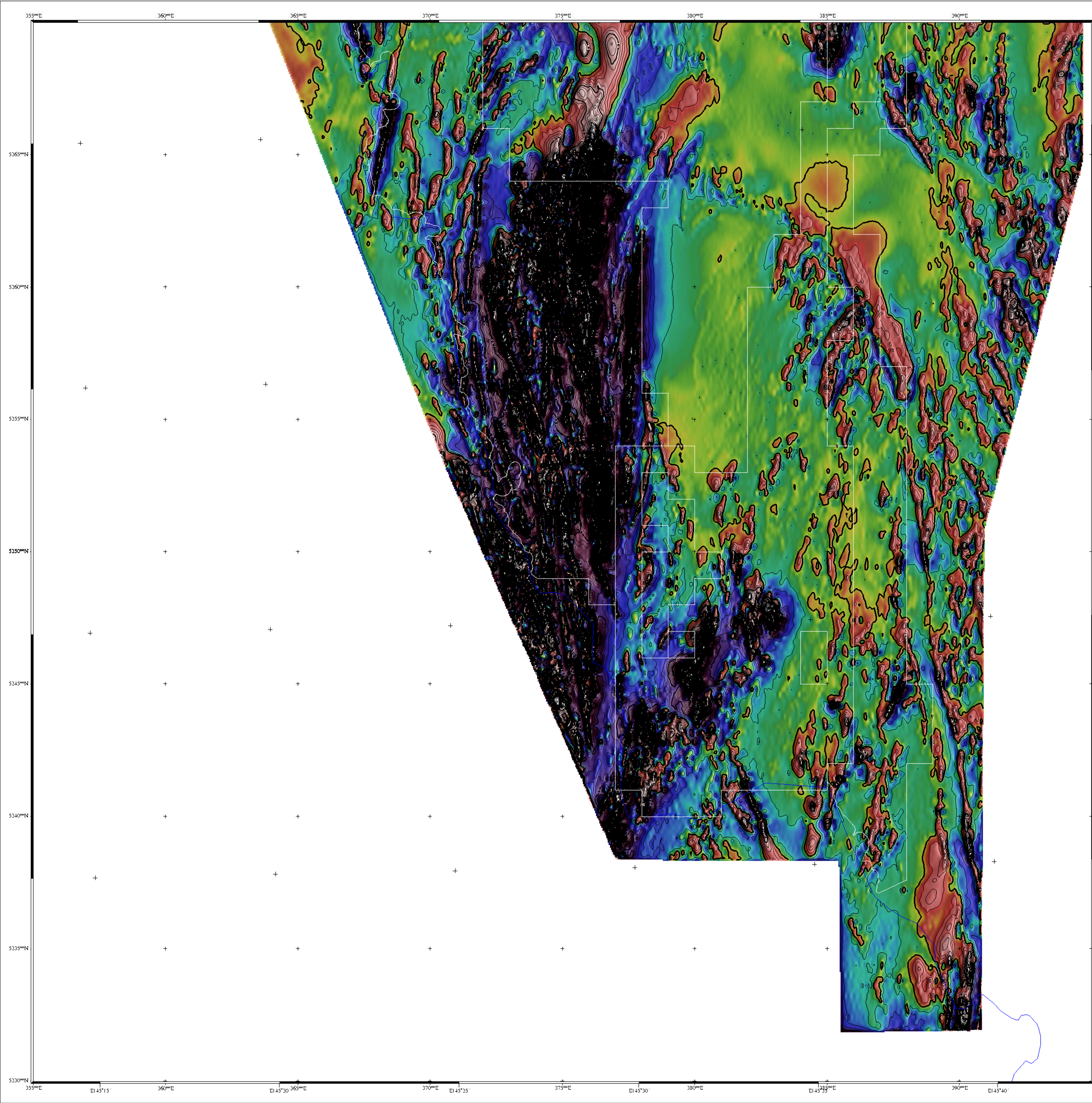
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Processor	: M.J.K.
Supervisor	: B. Craven



AUSTRALIAN MAP GRID ZONE 55  
AGD 84 SPHEROID  
SOUTHERN HEMISPHERE

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TASGOLD LTD ELLIOTT BAY PROJECT AIRBORNE GEOPHYSICAL SURVEY TOTAL MAGNETIC INTENSITY IMAGE (LIN) SHADED WITH 50% EAST AGC GRADIENT TOTAL MAGNETIC INTENSITY CONTOURS NORTH SHEET		
DATE: 27/09/02	BY: M.J.K.	PLASH NO.
SCALE: 1:50 000	REP: B. CRAVEN	2B



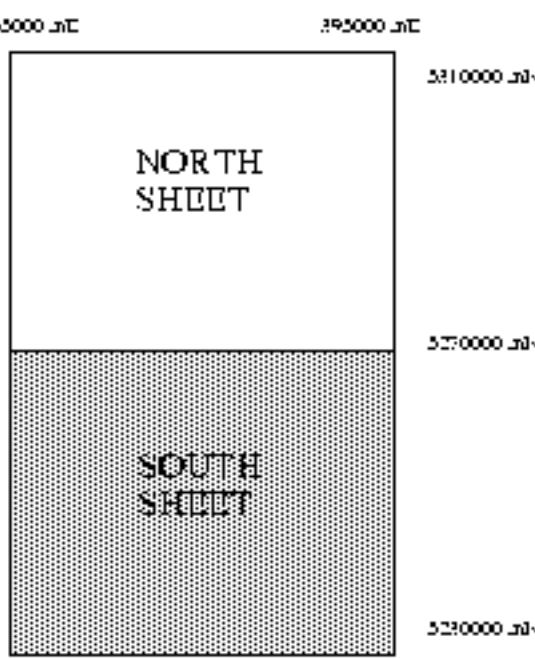


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Flight Line Direction : 090 - 270 deg (130 deg infill)  
Track Line Spacing : 2000 metres  
Mean Terrain Clearance : 90 metres

**SURVEY SPECIFICATIONS - GEOLEX**  
Contractor : Geosx  
Survey Date : 1982  
Flight Line Spacing : 500 metres  
Flight Line Direction : 090 - 270 degrees  
Mean Terrain Clearance : 200 metres

**PLOT SPECIFICATIONS**  
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Second Contour Level : 0.25 nT/m  
Third Contour Level : 1.00 nT/m  
Grid Cell Size : 40 mE x 40 mN

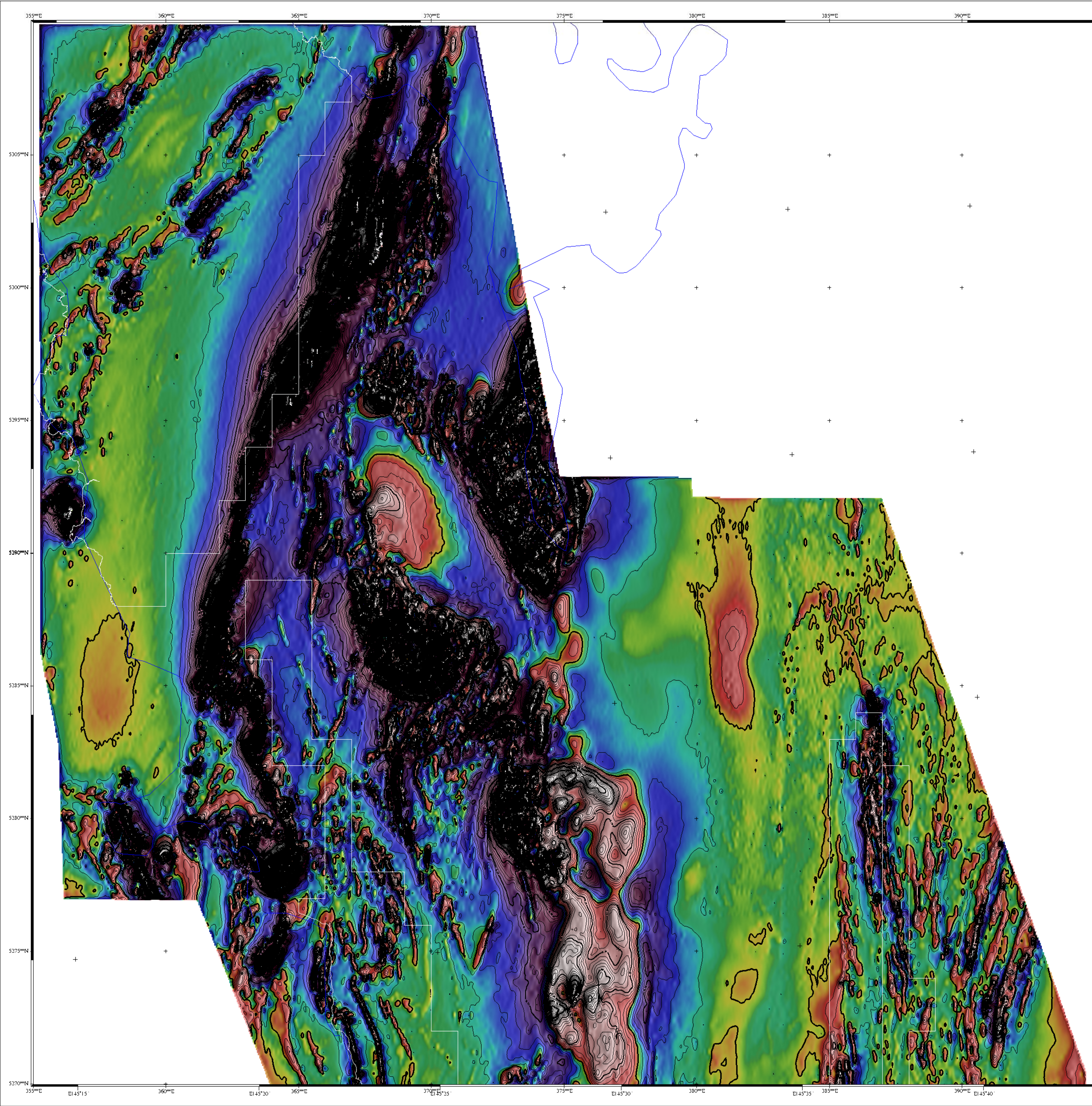
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Processing : Southern Geoscience  
Processor : M.J.K.  
Supervisor : B. Craven



AUSTRALIAN MAP GRID ZONE 55  
AGD84 SPHEROID  
SOUTHERN HEMISPHERE

SOUTHERN GEOSCIENCE CONSULTANTS PTY. LTD. - A.C.N. 067 552 461		
TASGOLD LTD ELLIOTT BAY PROJECT AIRBORNE GEOPHYSICAL SURVEY FIRST VERTICAL DERIVATIVE IMAGE (NL) SHADED WITH 50% EAST GRADIENT FIRST VERTICAL DERIVATIVE CONTOURS SOUTH SHEET		
DATE: 27/09/02	BY: M.J.K.	PLATE NO.
SCALE: 1:50 000	REV: B.CRAVEN	3A





**SURVEY SPECIFICATIONS - AGSO and AGSO INFILL**

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Aircraft : Cessna 210N, VH-BRZ  
Immersion : April, 1992  
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Mean Terrain Clearance : 90 metres

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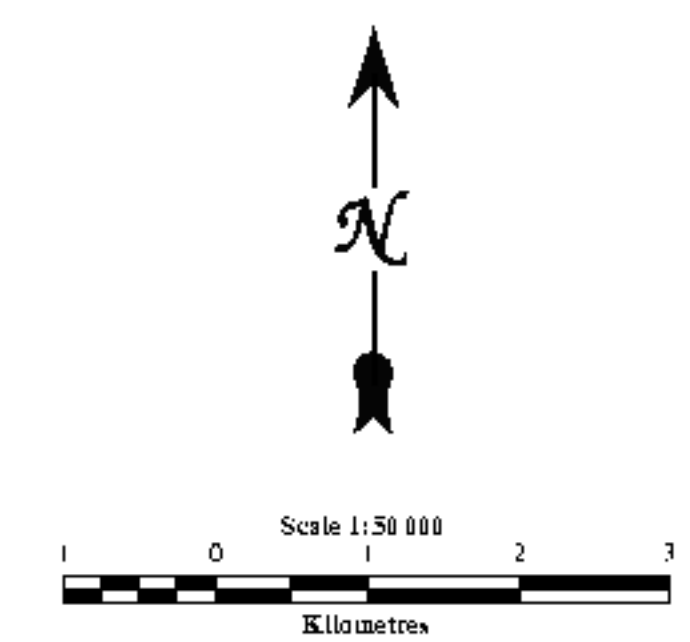
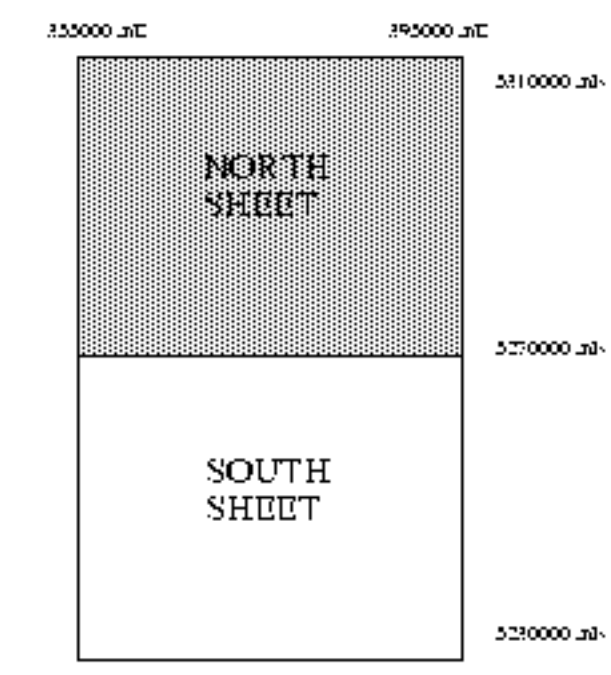
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Flight Line Direction : 090 - 270 degrees  
Mean Terrain Clearance : 200 metres

**PLOT SPECIFICATIONS**

First Contour Level : 0.05 nT/m  
Second Contour Level : 0.25 nT/m  
Third Contour Level : 1.00 nT/m  
Grid Cell Size : 40 mE x 40 mN

**PROCESSING DETAILS**

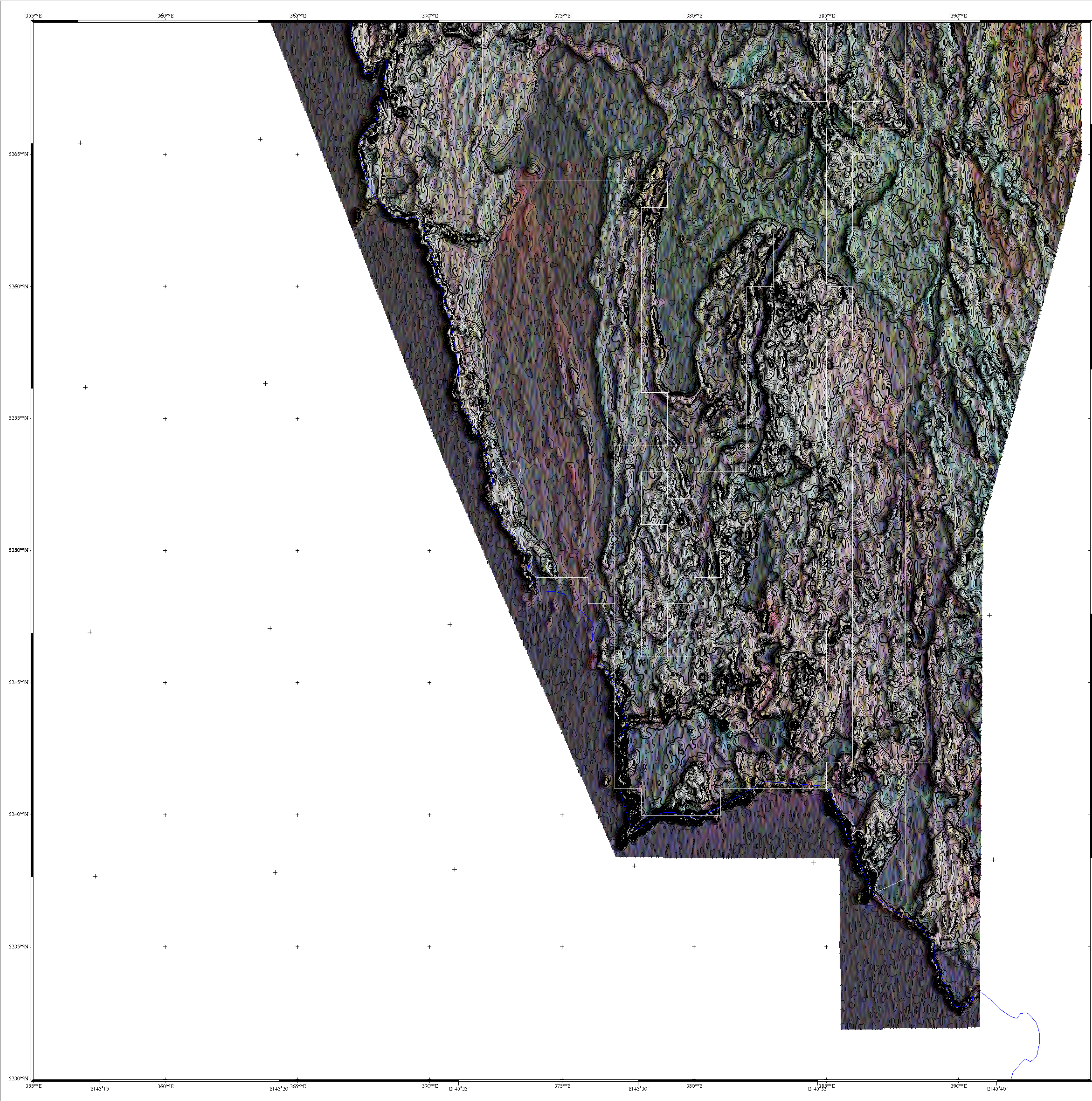
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Processor : M.J.K.  
Supervision : B. Craven



AUSTRALIAN MAP GRID ZONE 55  
AGSO 84 SPHEROID  
SOUTHERN HEMISPHERE

SOUTHERN GEOSCIENCE CONSULTANTS PTY. LTD. - A.C.N. 067 552 461		
TASGOLD LTD ELLIOTT BAY PROJECT AIRBORNE GEOPHYSICAL SURVEY FIRST VERTICAL DERIVATIVE IMAGE (NL) SHADED WITH 50% EAST GRADIENT FIRST VERTICAL DERIVATIVE CONTOURS NORTH SHEET		
DATE: 27/09/02	BY: M.J.K.	PLASH NO.
SCALE: 1:50 000	REP: B. CRAVEN	3B





**SURVEY SPECIFICATIONS - AGSO and AGSO INFILL**

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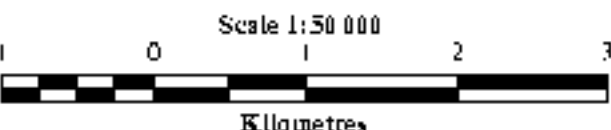
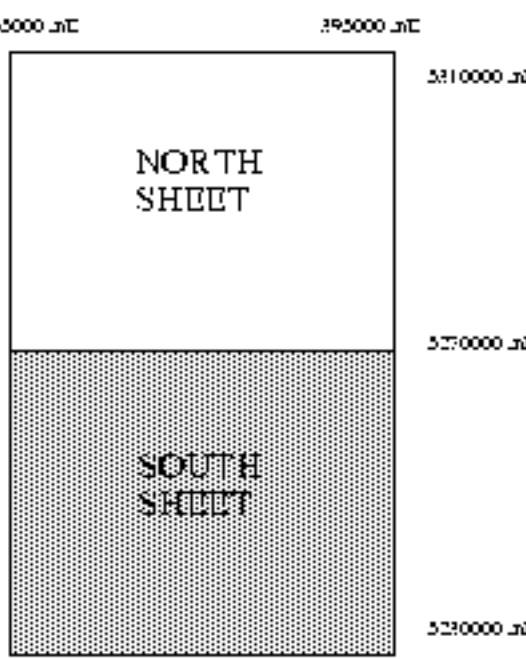
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**PLOT SPECIFICATIONS**

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Grid Cell Size : 40 m E x 40 m N

**PROCESSING DETAILS**

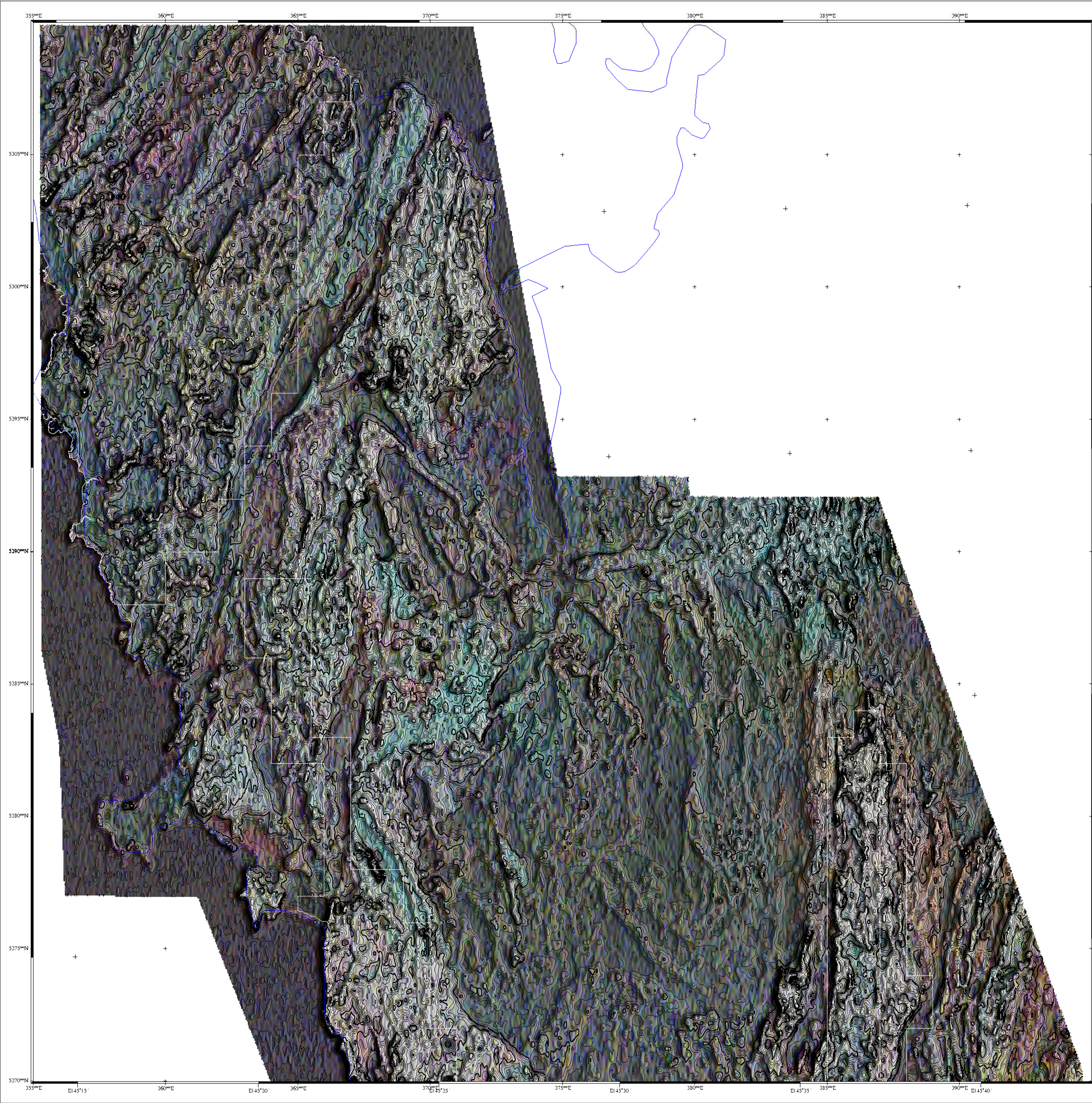
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Supervisor : B. Craven



AUSTRALIAN MAP GRID ZONE 55  
AGD 84 SPHEROID  
SOUTHERN HEMISPHERE

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TASGOLD LTD ELLIOTT BAY PROJECT AIRBORNE GEOPHYSICAL SURVEY TERNARY RADIOMETRIC IMAGE (NL) SHADDED WITH 50% TC EAST GRADIENT TOTAL COUNT RADIOMETRIC CONTOURS SOUTH SHEET		
DATE: 27/09/02	BY: M.J.K.	PLANNED:
SCALE: 1:50 000	REP: B. CRAVEN	4A





**SURVEY SPECIFICATIONS - AGSO and AGSO INFILL**

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Mean Terrain Clearance : 90 metres

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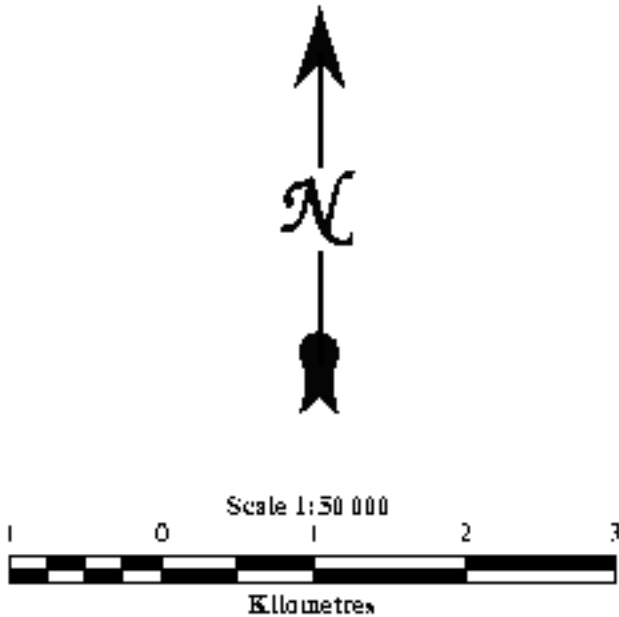
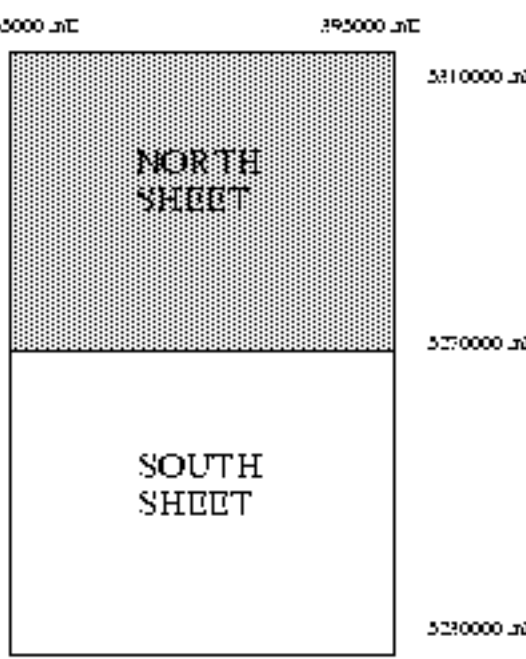
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Mean Terrain Clearance : 200 metres

**PLOT SPECIFICATIONS**


First Contour Level : 2 cps  
Second Contour Level : 10 cps  
Third Contour Level : 80 cps  
Grid Cell Size : 40 m E x 40 m N

**PROCESSING DETAILS**

Processing : Southern Geoscience  
Processor : M.J.K.  
Supervision : B. Craven



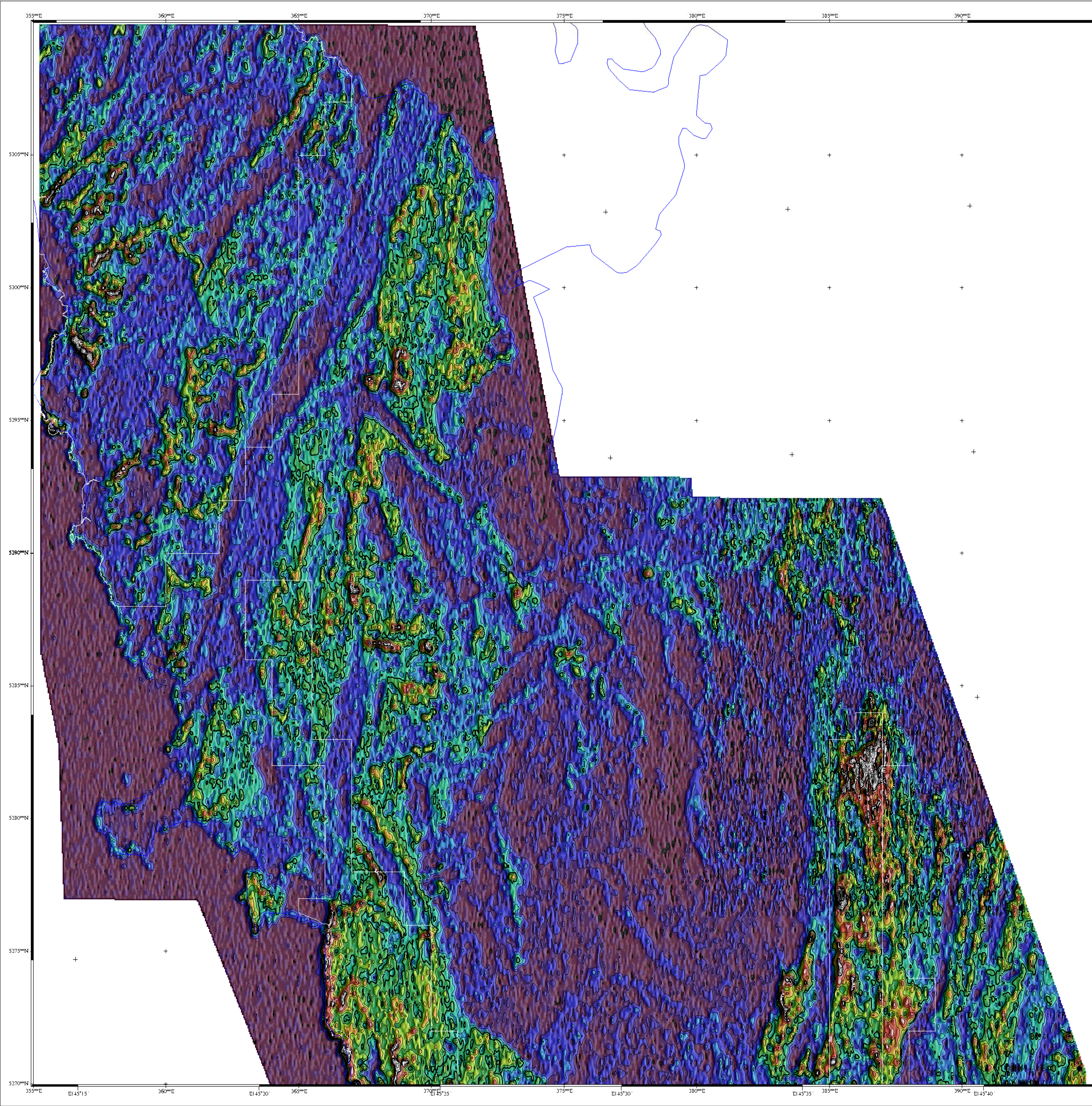
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TASGOLD LTD ELLIOTT BAY PROJECT AIRBORNE GEOPHYSICAL SURVEY TERNARY RADIOMETRIC IMAGE (NL) SHADDED WITH 50% TC EAST GRADIENT TOTAL COUNT RADIOMETRIC CONTOURS NORTH SHEET		
DATE: 27/09/02	BY: M.J.K.	PLANNED:
SCALE: 1:50 000	REP: B. CRAVEN	4B









**SURVEY SPECIFICATIONS - AGSO and AGSO INFILL**

Contractor : Tesla Airborne Geoscience  
Aircraft : Cessna 310N, VH-BNZ  
Instrumentation : Agni, 1995  
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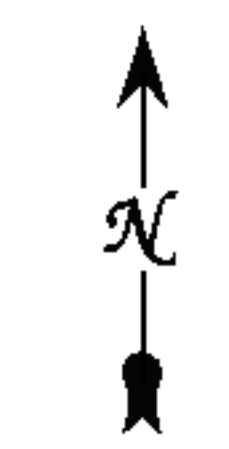
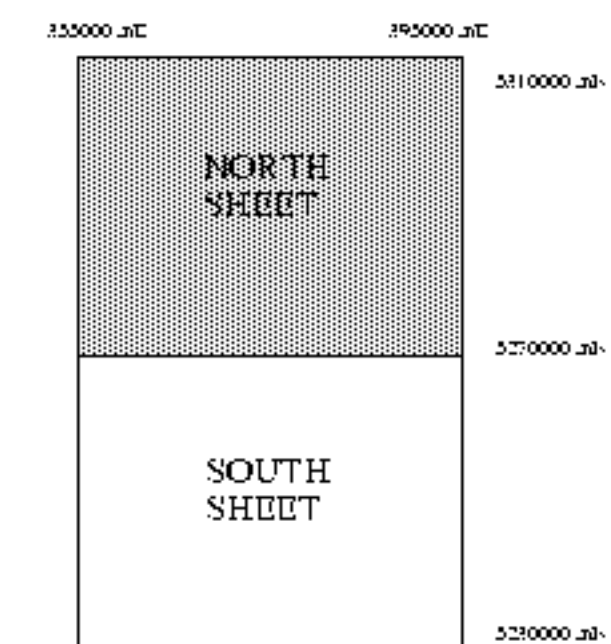
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Mean Terrain Clearance : 200 metres

**PLOT SPECIFICATIONS**

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Third Contour Level : 2.5 cps  
Grid Cell Size : 40 m E x 40 m N

**PROCESSING DETAILS**

Processing : Southern Geoscience  
Processor : M.J.K.  
Supervision : B. Craven



Scale 1:50 000  
Kilometres

AUSTRALIAN MAP GRID ZONE 55  
AGD84 SPHEROID  
SOUTHERN HEMISPHERE

SOUTHERN GEOSCIENTISTS PTY. LTD. - A.C.N. 067 552 461		
TASGOLD LTD ELLIOTT BAY PROJECT AIRBORNE GEOPHYSICAL SURVEY POTASSIUM RADIOMETRIC IMAGE (LIN) SHADED WITH 50% EAST GRADIENT POTASSIUM RADIOMETRIC CONTOURS NORTH SHEET		
DATE: 27/09/02	BY: M.J.K.	PLANNED
SCALE: 1:50 000	REP: B. CRAVEN	5B



