

## Exploration Division, Africa Asia Pacific

### Memorandum

<b>To:</b>	Peter Green, Manager – Exploration Strategies Industry Development, Queensland Department of Mines and Energy
<b>From:</b>	Allan Kneeshaw (Exploration Manager, Australia), Agnes Haker
<b>Copy:</b>	Ian Willis (ED), Mike Webb (ED), Richard Diermajer (Falcon Minerals)
<b>Date:</b>	March 2008
<b>Subject:</b>	<b>Collaborative Drilling Initiative Proposal: Saxby Project, NW Qld</b>

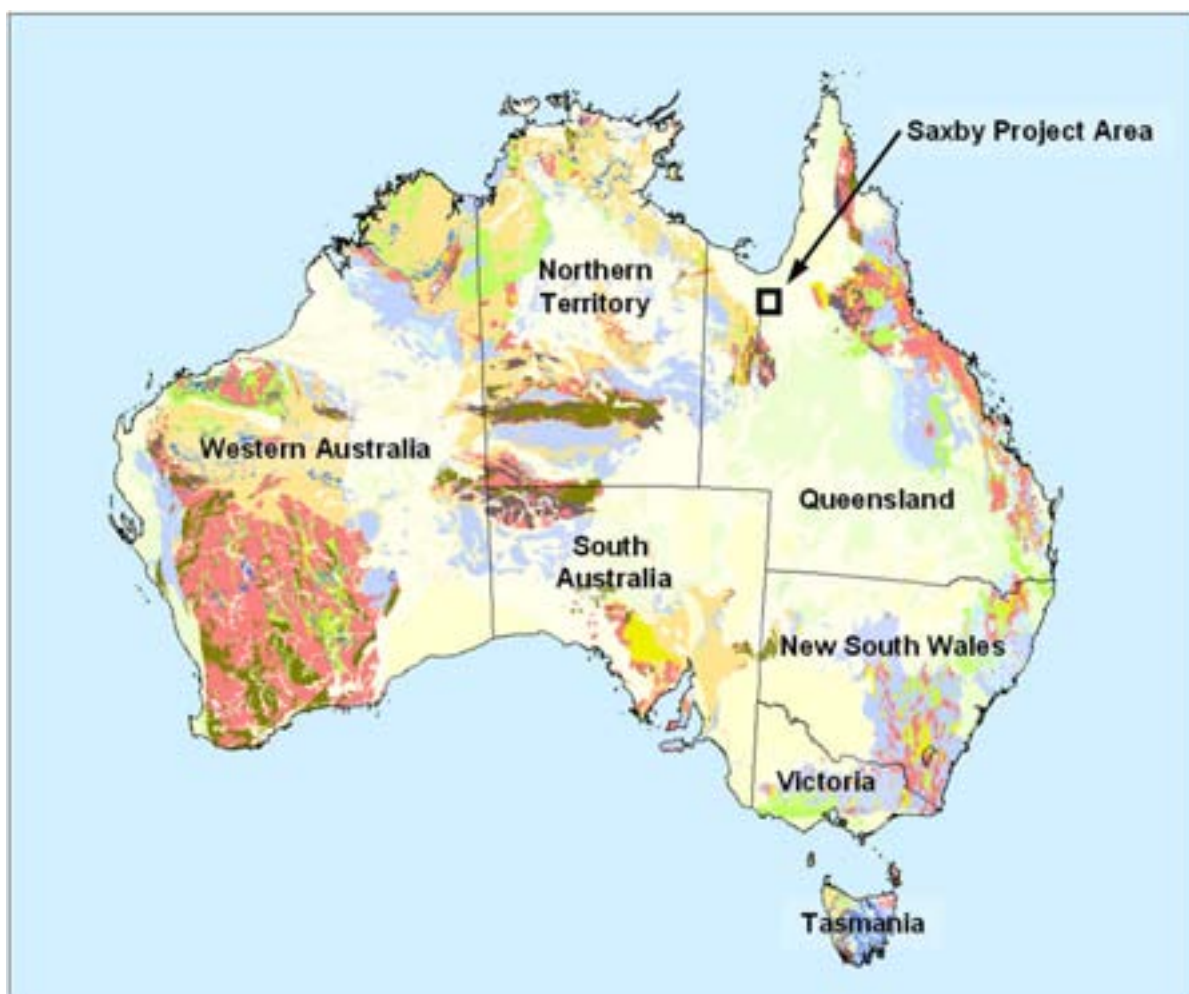
#### 1.0 SUMMARY & INTRODUCTION:

The Saxby Project is located in NW Queensland (Figure 1), in remote black soil plains of the Gulf Country, 225km NE of Mt Isa. The project is 200km from the nearest rail line and 45 km to bitumen road. It comprises the tenements EPM 13630, 15326, 15398, 15851, and 15872 (Figure 2) and is located on Canobie and Wondoola stations. The tenements are being explored under a Joint Venture Agreement between Anglo American Exploration (Australia) and Falcon Minerals; Anglo American is the operator.

The tenements cover a 500km<sup>2</sup> NNE trending gravity high, coincident with a major N-S trending structure. The magnetic signature of this gravity anomaly is complex and suggests multiple intrusive phases at the major suture line between Eastern Succession rocks of the Mt Isa Inlier to the west and Georgina basement rocks to the east. The basement rocks are covered by 400-450m of Mesozoic and Quaternary sediments of the Carpentaria Basin.

MIM explored the ground from 1992 to 1998 targeting Ernest Henry style IOCG mineralisation. They completed several geophysical surveys (gravity, magnetics, AMT) and drilled 5 holes (total of 3,591m). Three holes centred on the gravity high drilled into mafic-ultramafic intrusives with sub-economic Ni-Cu mineralisation. The best intersection (TT001D) hit 10m at 0.28% Cu and 0.25% Ni (Table 1). However, with global nickel prices at historic lows and being unable to effectively identify targets below the thick cover, MIM withdrew from the area.

Falcon Minerals acquired the leases in 2002 and commenced a review and reinterpretation of the MIM geophysical data. Based on this work Falcon Minerals drilled two holes, each to a depth of 750m. Both holes intersected mafic rocks but only one was mineralized. The mineralised hole was drilled between two of the older MIM holes and intersected vari-textured gabbros and gabbro-norites with variable amounts of olivine. The disseminated sulphides in this hole were lower in tenor than those in TT001 with the best assays being 0.23% Ni and 0.22% Cu (Table 2).

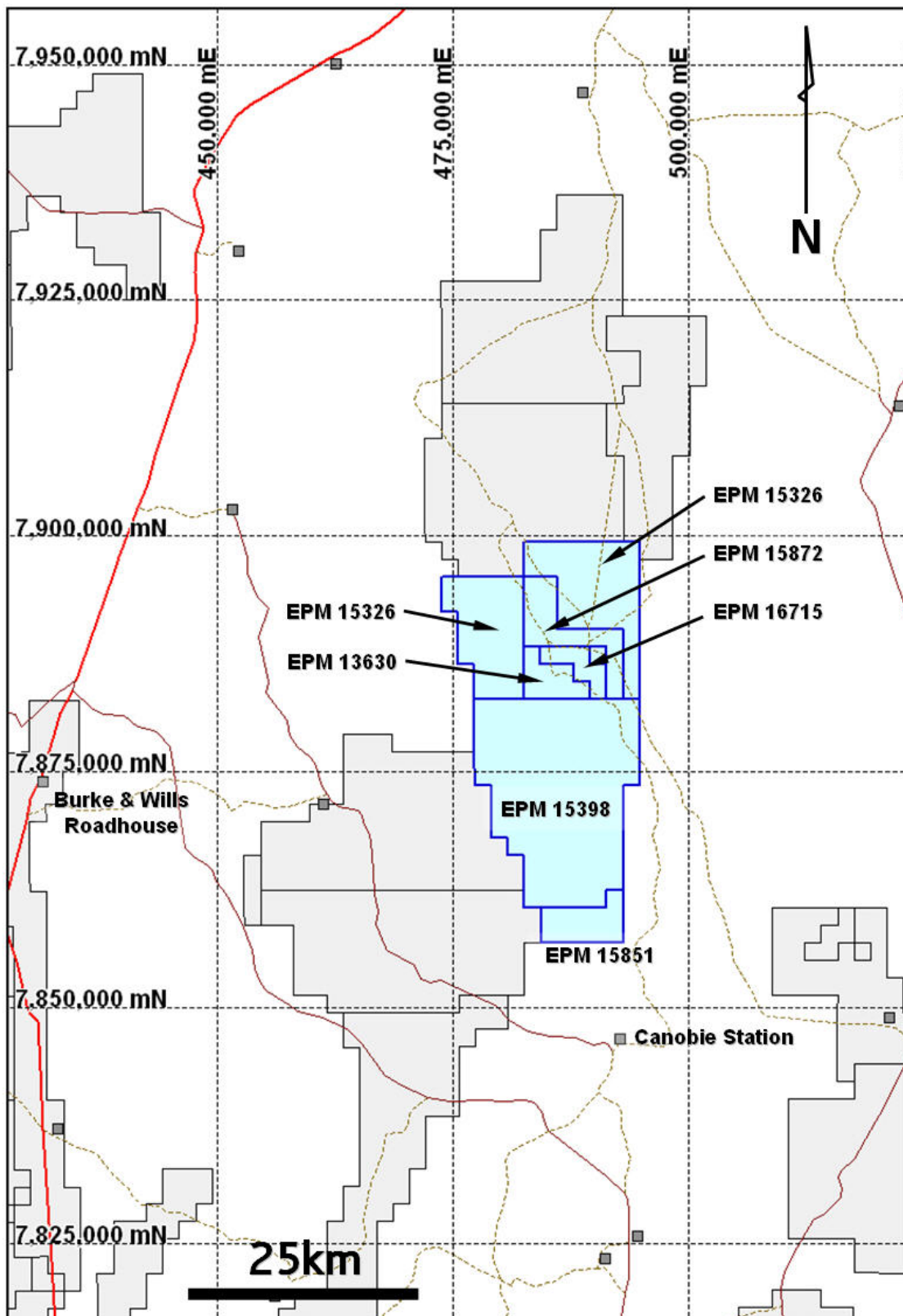


**Figure 1:** Geology map of Australia showing the location of the Saxby JV in north-west Queensland.

The large size of the gravity anomaly, the thickness of cover and the remote location of the Saxby Project, have all contributed to the mafic-ultramafic intrusive complex being a very difficult and expensive target to explore. Consequently, when the Low Temperature SQUID sensor for EM surveys became available for deployment in the field, Falcon Minerals approached Anglo American about a possible Joint Venture. Anglo American completed a 276.4 line km SQUID TEM survey over the main gravity anomaly in 2007. The survey highlighted several large, well-defined conductors in the basement.

In 2008-2009 Anglo plans to drill test the prospective anomalies with several drill holes. The exploration target is Ni-Cu-PGE mineralisation hosted in magmatic massive sulphide, analogous to the Voisey's Bay and Noril'sk-style Ni-Cu-PGE deposits in Canada and Russia respectively. In addition to testing the EM anomalies for potential economic mineralisation, the drilling will also add substantial new knowledge about the bedrock geology in this underexplored and deeply covered region of Queensland.

Due to the technical difficulties associated with drilling through 400m of unconsolidated cover, the potential costs of the drill programme may be quite high. Consequently Anglo American is seeking funding under the Collaborative Drilling Initiative from the Queensland Department of Mines and Energy to help test the new exploration concept identified at the Saxby Project in NW Queensland. If Anglo American's funding proposal is successful, the company plans to use the Smart Mining funding to drill two 900m deep diamond drill holes to test two separate EM conductors for potential massive sulphide mineralisation.



**Figure 2:** Map showing the EPM's that comprise the Saxby JV in relations to the Burke & Wills Roadhouse and Canobie Station in north-west Queensland. Grid spacing is 25km (MGA94-Z54).

## 2.0 REGIONAL CONTEXT:

The Saxby tenements lie within the Carpentaria Basin, which generally comprises 300m to 650m of Mesozoic and Quaternary sediments (Figure 3). Consequently there is a lack of knowledge about the stratigraphy, structure and potential for mineralisation in the underlying basement rocks which are interpreted to be Proterozoic. Our limited knowledge has been generated by the interpretation of geophysical datasets (seismic, magnetics & gravity) and a small amount of drilling in the area (7 holes within an area of >1,000km<sup>2</sup>).

Interpretation of regional magnetic and gravity data suggests that the Saxby Project area is located over a Proterozoic basement high with bedrock similar to the Eastern Succession of the Mt Isa Province to the south and west (Figures 3, 4 & 5), which hosts significant, world class resources of economic copper, lead and zinc mineralisation. The NNE trending magnetic belt on which Saxby is situated also hosts the Ernest Henry copper-gold deposit, approximately 140km further to the south.

The Mt Isa Province is a Proterozoic metamorphic inlier in the NW of Queensland. It is a north-trending, complex, multi-stage crustal rift that has an outcropping area of 800km by 150-250km. There were three episodes of crustal rifting in the Mt Isa Inlier at 1870, 1790 and 1679Ma, resulting in volcanism, sedimentation and some granite intrusions. This was followed by a major deformation and metamorphic event, the 1620-1540 Ma Isan Orogeny, and by emplacement of fractionated granites along the eastern margin of the province at ~1500Ma.

Geophysical data in the Saxby area indicate that a number of large granitic bodies, similar to the ~1500Ma Narku batholith to the south, may intrude the Proterozoic bedrock underneath the Mesozoic cover sequence.

Previous drilling within the Saxby Project area suggests that the cover thickness ranges from 400 to 450m, but deepens to 630m towards the west. The tenements are situated right above the eastern magnetic boundary of the interpreted northern extension of the Mt Isa Province (Figure 4). This boundary closely correlates with the major suture line between the Proterozoic Mt Isa Inlier in the west and Georgina basement rocks in the east. Seismic sections show that the cover to the east of the Saxby Project thickens rapidly to depths of 1,200m.

## 3.0 PREVIOUS EXPLORATION:

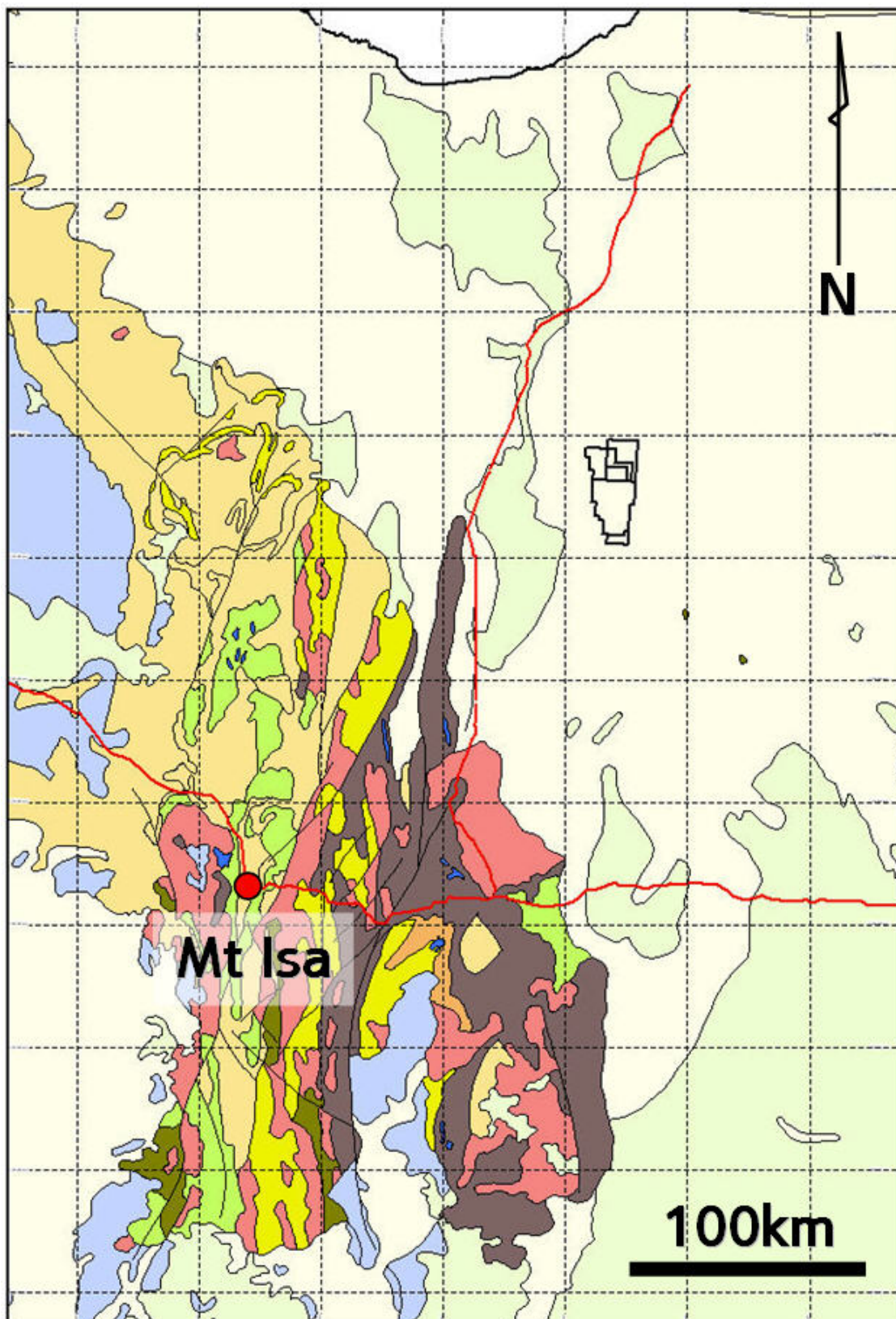
Due to the extensive cover in the area, previous exploration at the Saxby Project area has largely had a geophysical focus, with only a limited amount of drilling to test geophysical targets. Previous work completed includes:

### **BMR (1965):**

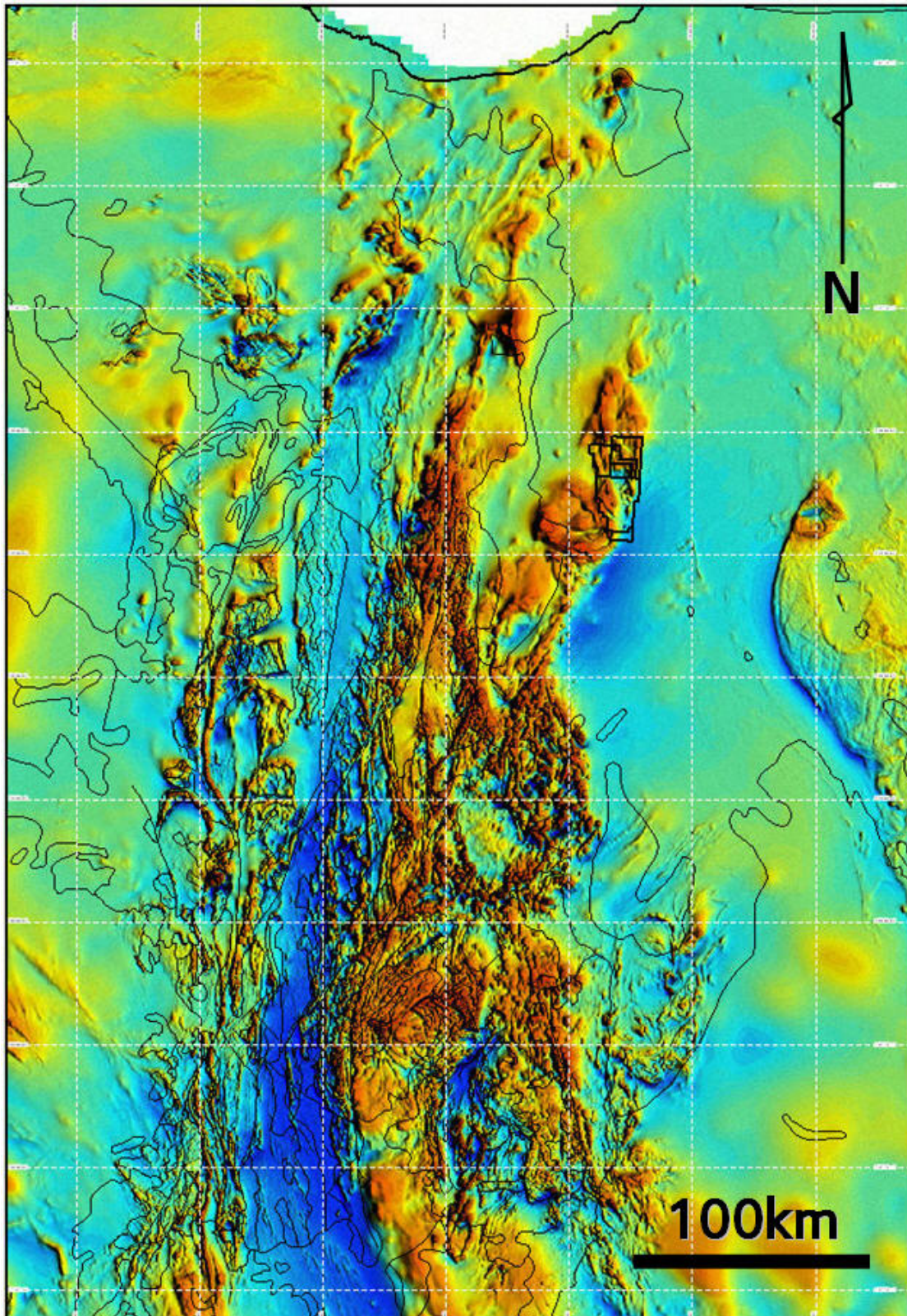
The Bureau of Mineral Resources (BMR) flew a regional aeromagnetic survey with a line spacing of 1.6 km and completed a regional helicopter supported gravity survey with a nominal station spacing of 11 km.

### **BHP Minerals (early 1980's):**

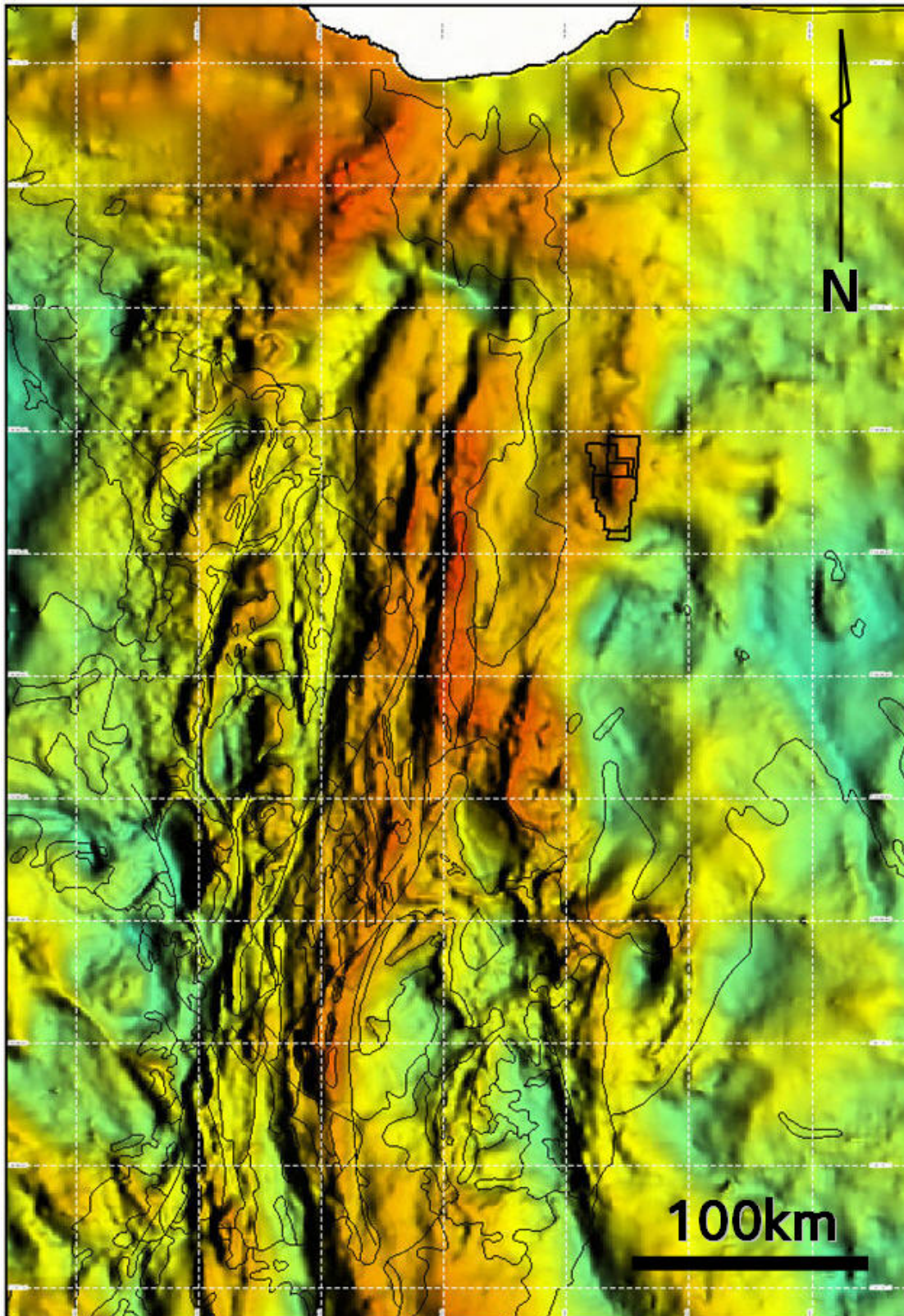
BHP Minerals flew an aeromagnetic survey with 400m spaced lines over the southern portion of the historic MIM tenement EPM 8650 in the early 1980's.



**Figure 3:** Regional geology map for the Saxby Project in north-west Queensland. The geology is taken from the Geoscience Australia 1:2.5 million scale compilation of Australia. The tenements are located above Carpentaria Basin sedimentary sequences.



**Figure 4:** Regional aeromagnetic image (RTP) overlay with outlines of major geological units – same map area as Figure 3. The NNE trending zone of magnetic highs under thick cover in the Saxby Project area is interpreted to be due to northern extensions of Eastern Succession stratigraphy.



**Figure 5:** Regional gravity image overlain with outlines of major geological units – same map area as Figure 3. The gravity high underlying the Saxby Project is part of a regional, NNE trending gravity ridge, supporting the interpretation of Eastern Succession rocks as the basement.

**Comalco Aluminum (1987):**

Comalco completed some seismic lines that crossed the project area. The seismic lines clearly show the depth to basement varies from 400m to 600m in the project area, with the Mesozoic cover sequence thickening to depths of 1,200m to the east of the project area.

**MIM Exploration (1992 to 1998):**

MIM Exploration first acquired the tenements in March 1992 as the Tea Tree Project. MIM initiated the project to target IOCG mineralisation, similar to the Ernest Henry-style deposit further to the south. During the six years of tenure MIM completed the following work programmes (Figures 6 & 7):

- Aeromagnetics – 400m spaced lines over the northern part of the tenements (area not covered previously by BHP).
- Gravity – 850 stations collected by Solo geophysics in Oct 1992.
- Seismic – MIM reviewed Comalco's existing seismic data.
- Gravity – 480 stations collected to the south-west of the current project area in Oct 1993.
- Heli-borne aeromagnetics – two small surveys with 200m spaced lines in July 1994.
- Diamond Drilling – MIM completed 3 diamond holes in 1994 (TT001D, TT002D, & TT003D) and 2 additional holes (TT004D & TT005D) in 1995 for a total of 3,591m.
- Down-hole EM – completed axial component down-hole EM on holes TT001D, TT004D & TT005D.
- Magnetic susceptibility and specific gravity measurements on core.
- Physical property measurements on 4 samples from TT001D.
- Completed 17line kms of Audio Magneto Tellurics (AMT) – ineffective due to thick, highly conductive cover.

MIM's exploration drill holes targeted magnetic and gravity features to test for IOCG style mineralisation. Drill holes TT002D and TT003D are located to the 17km and 24km SW of the current Saxby Project area (Figure 7) and both intersected (pegmatitic) granitic rocks with minor mafic veins and dolerite sills. No significant assay intercepts were reported.

Drilling shows the cover sequence in the area ranges in thickness from 420m to at least 620m comprises siltstone, sandstone, conglomerate and carbonate units within the Mesozoic Carpentaria Basin sediments

Hole TT001D (total depth 720m) targeted the centre of the main gravity high at the Saxby Project. The gravity high is coincident with a minor magnetic high. Holes TT004D and TT005D followed-up TT001D and targeted the same gravity / magnetic anomaly, the holes are located approximately 1km SW and 1.25km NE of TT001D (Figure 7).

All three holes intersected vari-textured, coarse grained gabbro, olivine gabbro and gabbro-norite. The rocks are interpreted to form a mafic intrusive complex that is the source of the gravity anomaly. The mafic intrusive rocks contain varying amounts of sulphide, ranging from a background of trace pyrrhotite and pyrite to narrow intervals of semi-massive sulphide (pyrrhotite with minor pentlandite and chalcopyrite) that have clear magmatic textures (Table 1).

The three holes also intersected units of shale and graphitic slate that range in thickness from 2m to 14m. The sediments are interfingered with fine- to coarse-grained mafic intrusions. The sediments show the effects of bleaching, silicification and textural destruction interpreted to be due to high temperature hornfelsing associated with the margins of a large intrusion. Mafic pegmatoidal phases were also noted.



**Table 1:** Summary of results from MIM diamond drilling within the Saxby Project.

Hole ID	Total Depth (m)	From (m)	Width (m)	Intercept / Comment
TT001D	720	508	10.4	0.28% Cu & 0.25% Ni
		590	3.3	0.24% Cu & 0.07% Ni
TT002D	756	-	-	No significant result
TT003D	714	-	-	No significant result
TT004D	696	547	1.2	798ppm Cu & 0.19% Ni
		609	2.1	0.11% Cu & 286ppm Ni
TT005D	705.2	515	6.0	980ppm Cu
		637	6.0	0.14% Cu & 0.12% Ni

MIM completed down-hole EM surveys on holes TT001D, TT004D & TT005D but concluded there were no off-hole conductors that warranted follow up, although a weak off-hole conductor was interpreted at the base of TT004D. The conductor was interpreted to be 200m off-hole. Unfortunately the location of the surface loops is not well documented and it has not been possible to reinterpret the down-hole EM data.

MIM also tried to target potential massive sulphide mineralisation with a 17line km AMT survey, but could not effectively penetrate the highly conductive overburden to highlight potential bedrock targets (Figure 8).

#### **Falcon Minerals (2002 to 2006):**

After MIM relinquished the tenements in 1998 the ground remained open until 2002, when new EPM's were applied for by Falcon Minerals after the potential for magmatic sulphide Ni-Cu-PGE mineralisation was highlighted by a review of the previous work. Falcon Minerals completed the following work:

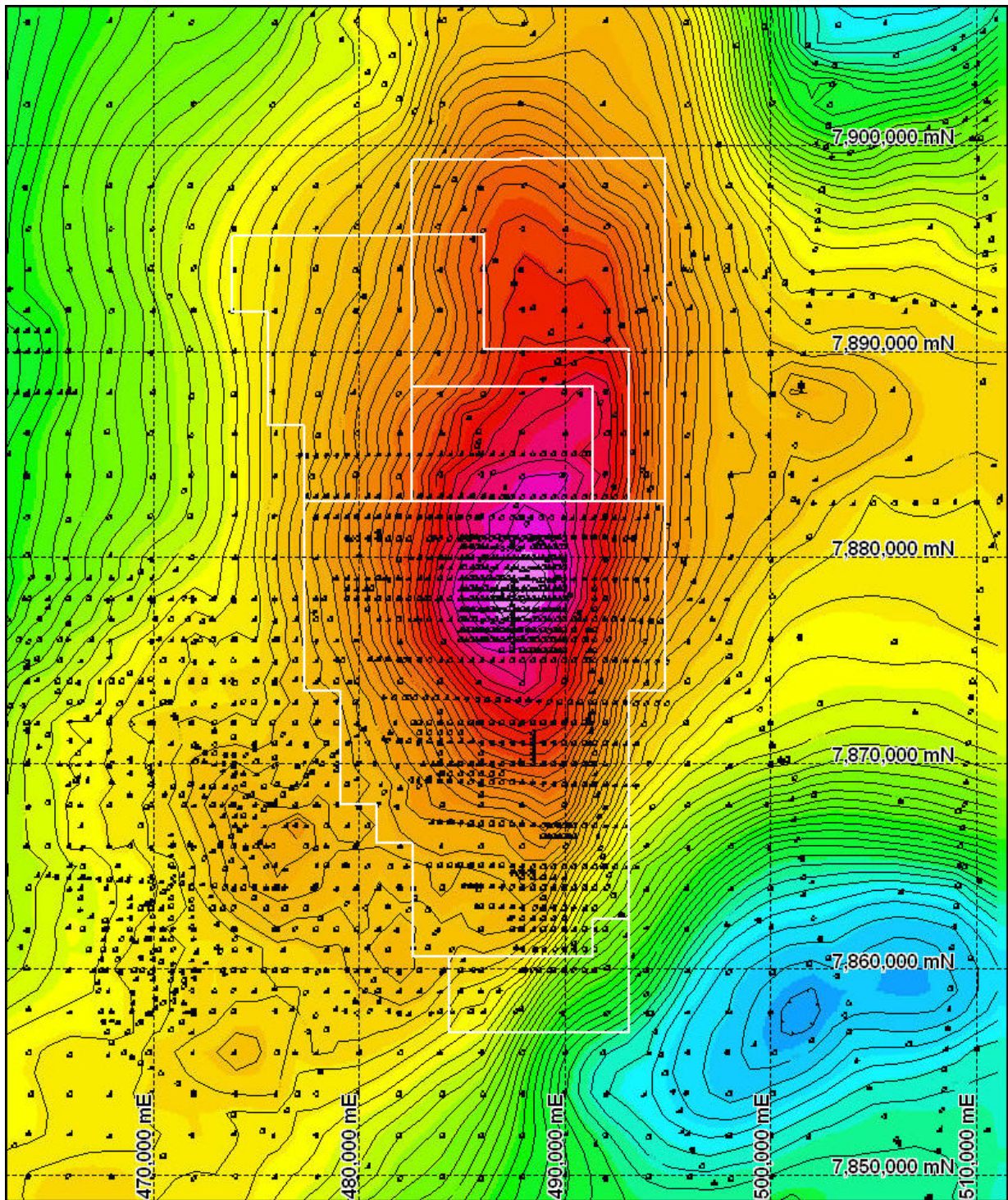
- Review and modelling of existing geophysical data in 2001/2
- Drilling of two diamond holes (SMD01 & SMD02: Figure 7).

Hole SMD01 was drilled into an isolated magnetic high about 4.5 km to the SE of hole TT001D (Figure 7). The hole was drilled vertically, intersected basement at 427m and ended at 750m. The hole intersected a nearly monotonous gabbroic intrusion with locally abundant titanomagnetite. The gabbro may represent a more fractionated version of the mineralized intrusions. Minor pyrite was observed but the hole failed to intersect any economic mineralisation.

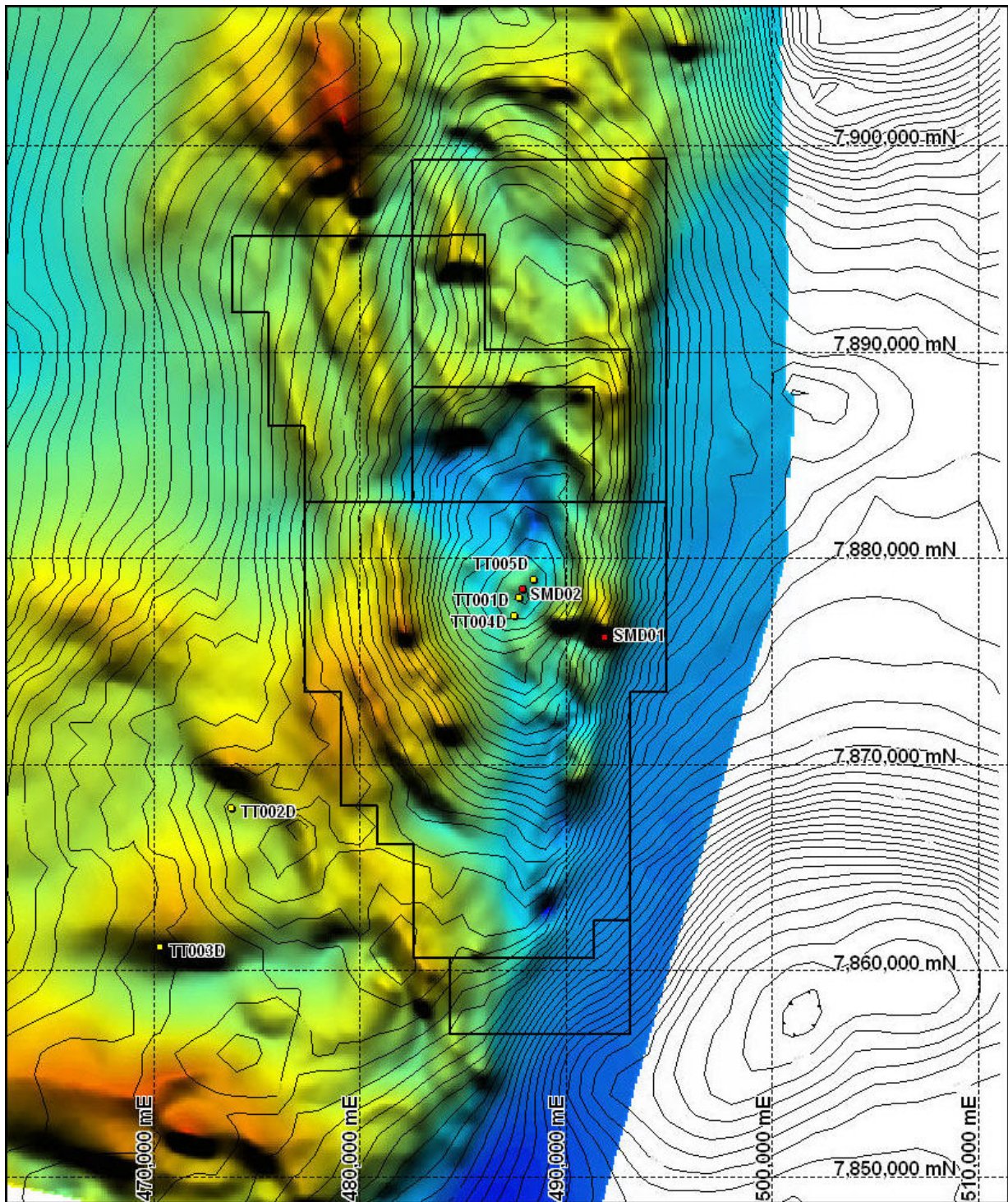
Based on the geology and results from the MIM drilling, hole SMD02 was collared between TT001D and TT005D. The hole was vertical, intersected basement at 434m and ended at 750m. The hole intersected gabbro and gabbro-norite with variable amounts of olivine. From 430m to 525m down hole the rocks contain 5% to 30% magmatic Fe sulphides (pyrrhotite & pyrite). Within this interval there are four 1m to 2m thick zones of semi-massive sulphide that host low grade nickel mineralisation (pyrrhotite >> pentlandite & chalcopyrite: Table 2). The sulphides are often associated with abundant olivine and show magmatic textures (Figures 9 & 10).

**Table 2:** Summary of results from diamond drilling completed by Falcon Minerals within the Saxby Project.

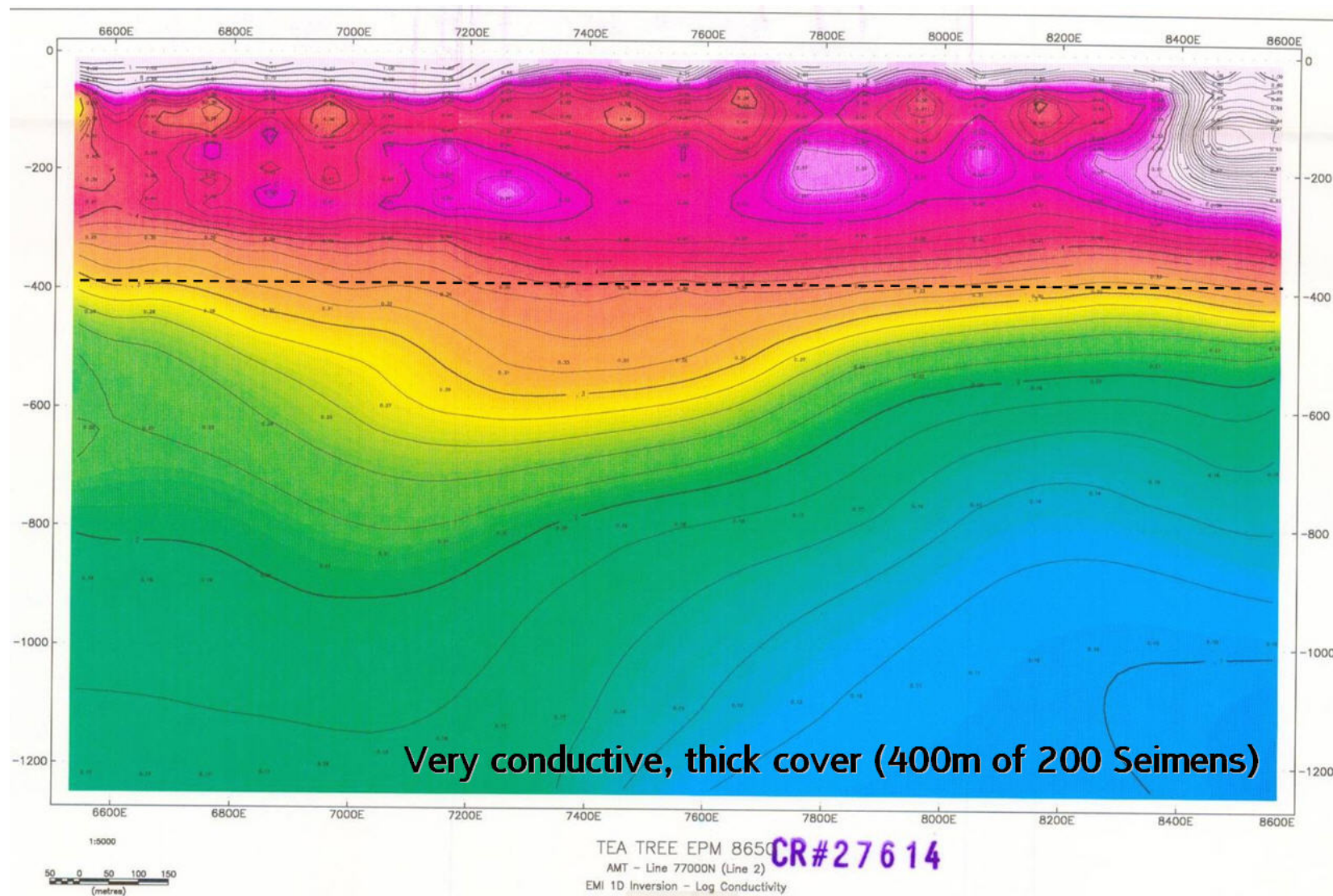
Hole ID	Total Depth (m)	From (m)	Width (m)	Intercept / Comment
SMD01	750	-	-	No significant result
SMD02	750	516	2.0	0.15%Cu and 0.23% Ni
		518	2.0	0.22% Cu and 635ppm Ni



**Figure 6:** Saxby Project area gravity image overlay with 1mgal contour lines, gravity survey stations and current EPM outlines. Grid spacing is 10km (MGA94-Z54).



**Figure 7:** Saxby Project area TMI magnetic image overlain with 1mgal contour lines and current EPM outlines. Also shown is previous MIM (Red) and Falcon Minerals (Yellow) diamond drill hole locations. Grid spacing is 10km (MGA94-Z54).



**Figure 8:** An AMT pseudosection from the MIM survey showing the effects of the thick, conductive cover masking potential bedrock targets.



**Figure 9:** Photograph of core showing net-textured magmatic sulphides (pyrrhotite  $\pm$  pentlandite & chalcopyrite) associated with cumulate textured olivine grains. Core diameter is NQ2.



**Figure 10:** Photograph of core showing semi-massive pyrrhotite (with minor pentlandite and chalcopyrite) within gabbro-norite (SMD02: 516m to 518m). Core diameter is NQ2.

Due to the thick cover, expense of drilling and the inability to effectively target potential bedrock mineralisation Falcon Minerals elected to seek a partner who could bring in some new methods or new technology that would allow the project to move forward.

### **Anglo American Exploration (2007 to Present):**

In 2006 Anglo American and Falcon Minerals began discussions to form a Joint Venture to explore the Saxby Project area for magmatic sulphide Ni-Cu-PGE mineralisation. The Joint Venture Agreement was signed on 8<sup>th</sup> November, 2006 and field work commenced in 2007 after the end of the wet season.

Anglo American's exploration strategy at the Saxby Project is to use proprietary advanced EM technology to target potential massive sulphide mineralisation under the thick cover and follow-up with effectively targeted diamond drilling. Anglo American has the world exclusive rights to use Low Temperature Superconducting Quantum Interference Devices (LT SQUID: See section 5.0 for expanded information) for use as an EM sensor.

A total of 276.4 line km of LT SQUID TEM (SQUID) was collected over a period of 3 months of field work. First pass data was collected on stations spaced 400m apart with 400m loops, measuring only the vertical component of the EM field. Preliminary lines were spaced 1.2km to 2.4 km apart. The first pass survey identified some strong bedrock conductors and the original lines were followed-up with infill lines spaced 600m to 1.2km apart (Figure 11). The infill data was collected with a station spacing of 200m to 100m with 400m loops and measured both vertical and horizontal components of the EM field.

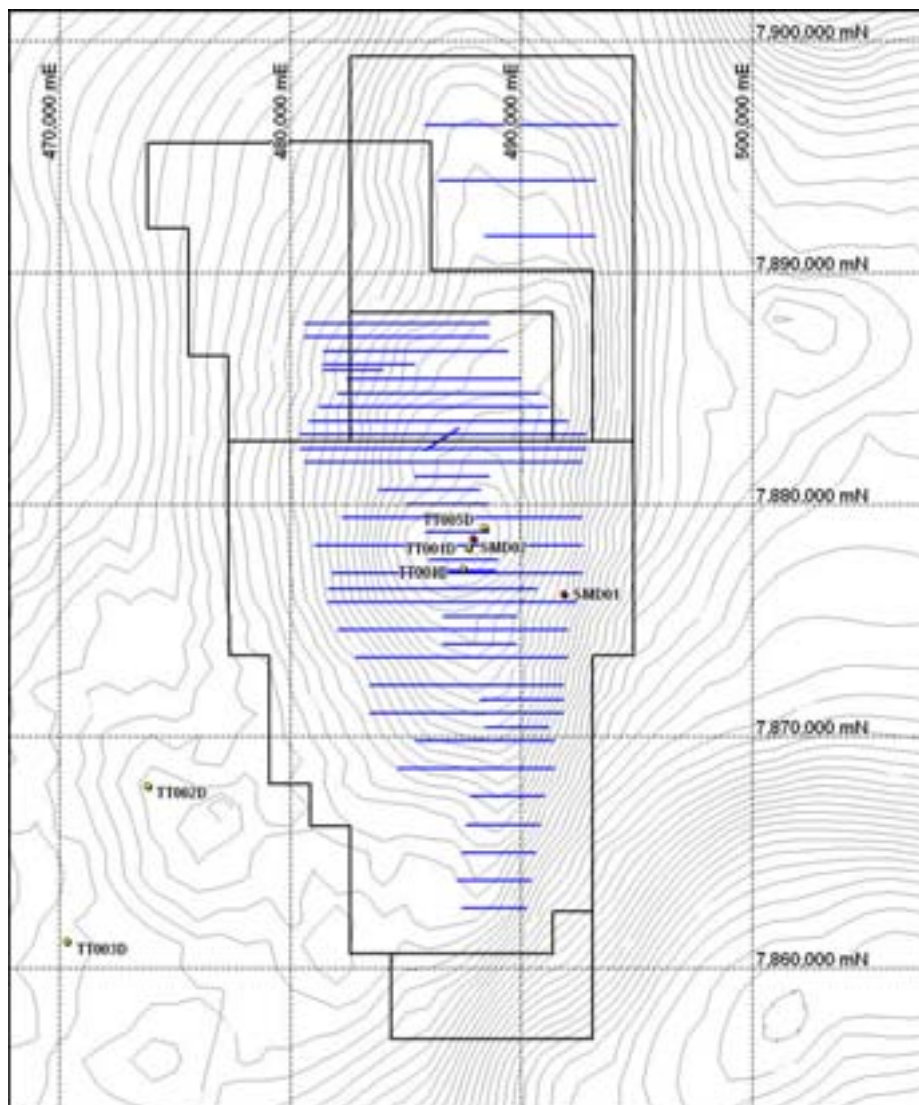
The results of the SQUID survey were very encouraging; with the system readily mapping strong bedrock conductors beneath at least 400m of very conductive (200 Siemens) cover sediments. A plan view showing an average bedrock conductivity image is shown in Figure 12. The excellent results of the SQUID survey contrast markedly with the results of other geophysical methods in the same terrain. When the results of the SQUID survey on line 7,877,000mN (Figure 13) are compared with previous AMT data on the same line (Figure 8), the SQUID data clearly shows bedrock conductors that can be accurately targeted by drilling.

As shown in Figure 12, most of the conductors defined by the SQUID TEM data are at least two kilometres long with the longest being about 8km. All the conductors are relatively strong and are likely to be related to pyrrhotite within mafic rocks or sediments. The strongest conductors lie within or at the edge of a weak to non magnetic rock type interpreted from the gravity as a mafic rock.

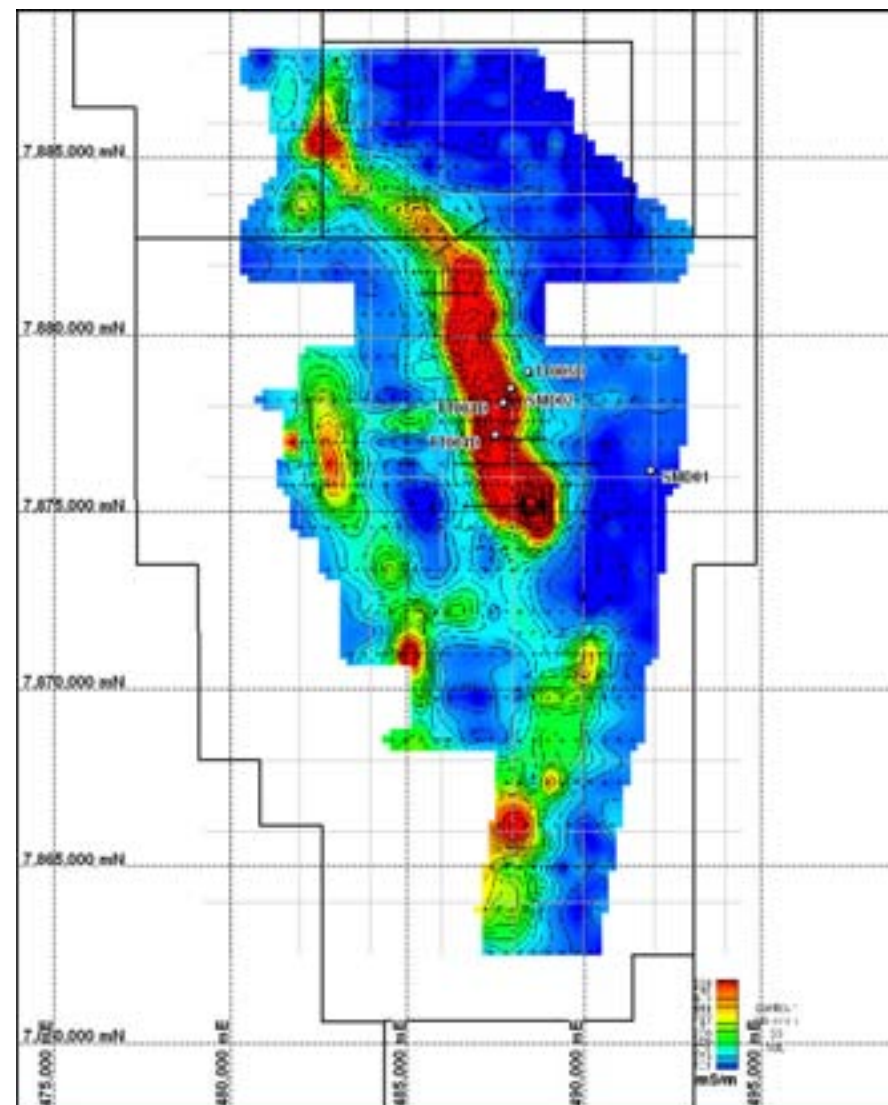
Modelling of the data shows that the bedrock EM anomalies are all strong conductors. However, on the conductivity depth slice image (Figure 12), the prominent 8km long eastern conductor appears to be significantly stronger than the other conductors. The apparent difference in the strength of conductivity is interpreted to be due to a bedrock conductor that has a flat-lying or shallow-dipping geometry which allows better coupling with the transmitted EM field.

The other, apparently weaker, conductors are interpreted to have steeper dips (in the order of 70°). Forward modelling of the EM data suggests that the conductors have similar properties and the apparent difference in anomaly strength is related to the geometry of the individual conductors, all conductors are equally valid exploration targets.

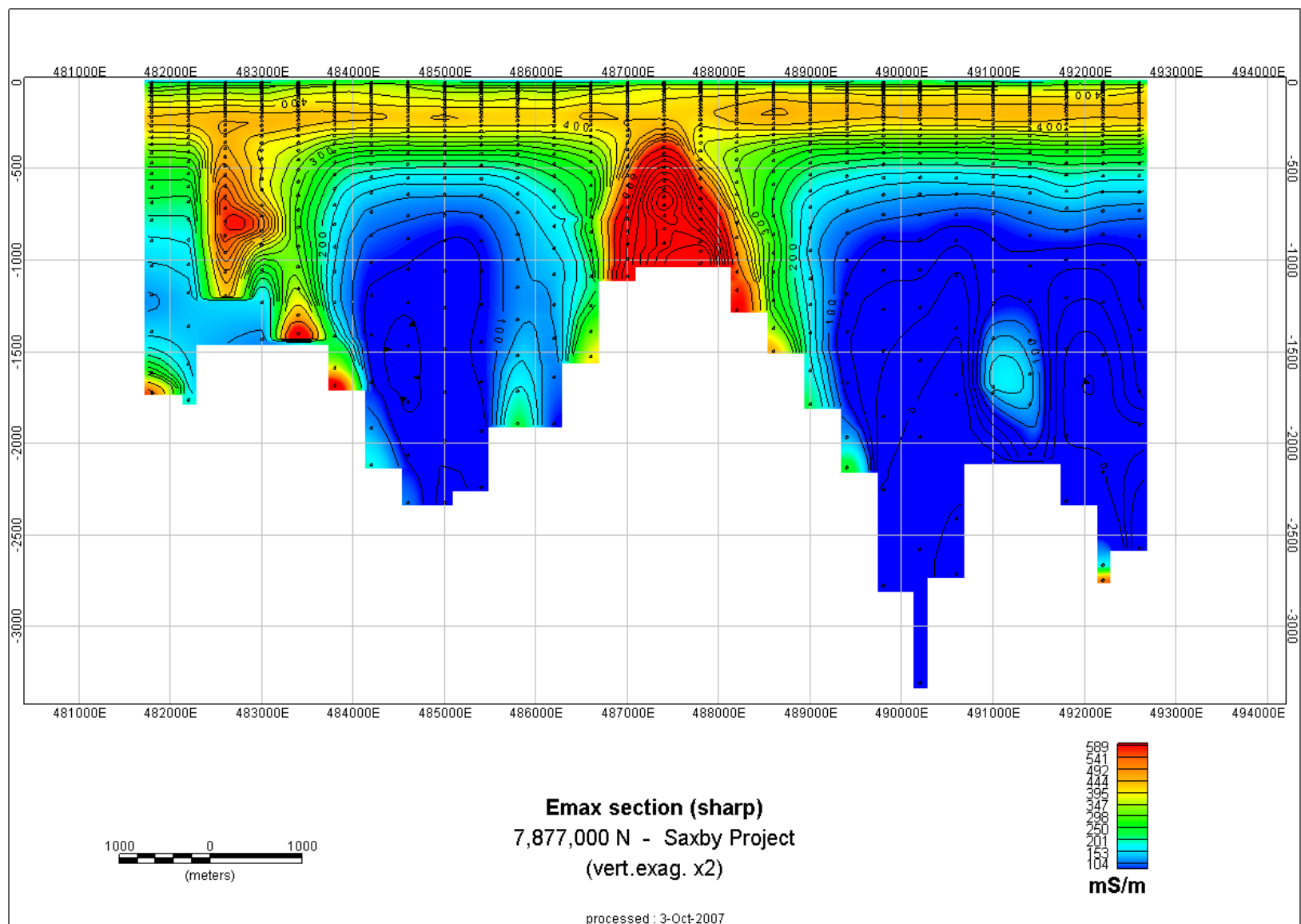
The results of the survey, combined with the geological information derived from the previous drilling were significant enough to warrant immediate follow-up with diamond drilling. Efforts were made to source a contractor and mobilise a drill rig. Unfortunately a rig with the required depth capabilities was not able to be procured before the start of the wet season in 2007.



**Figure 11:** Saxby Project showing the LT SQUID TEM lines completed by Anglo American in 2007. Also shown are gravity contours (1mgal contour lines), current EPM outlines and previous diamond drill hole locations (MIM: Red & Falcon Minerals: Yellow). Grid spacing is 10km (MGA94-Z54).



**Figure 12:** Saxby Project showing a Conductivity Depth Slice (700m to 1,000m) generated from data from the LT SQUID TEM survey completed by Anglo American in 2007. Also shown are individual TEM reading stations and the previous diamond drill hole locations. Grid spacing is 5km (MGA94-Z54).



**Figure 13:** East-West oriented Conductivity Depth Image (CDI) pseudosection (looks North) from the LT SQUID TEM survey on line 7,877,000mN (MGA94-Z54) that clearly highlights bedrock conductors under the thick cover. All axis are in metres (vertical axis has 2x exaggeration). Survey station spacing along the line is 400m.



## 4.0 TARGET DETAILS:

### Deposit Model & Targeting Criteria:

The exploration target at Saxby is magmatic sulphide Ni-Cu-PGE mineralisation hosted within a large mafic-ultramafic intrusive complex, similar to the Voisey's Bay (137Mt @ 1.6% Ni & 1% Cu) and Noril'sk (1.8Bt @ 0.65% Ni, 1.3% Cu, 3.41g/t Pd & 0.94g/t Pt) Ni-Cu-PGE deposits. These large deposits are being economically mined to depths of 1,000m below surface. The exploration target at Saxby ranks highly on a global scale due to the combined elements of:

- favourable rock types (gabbro, olivine-gabbro and gabbro-norite),
- variable magmatic textures,
- presence of magmatic sulphide (both disseminated and semi-massive),
- abundant S-bearing country rock (graphitic slates),
- large gravity anomaly (Figure 6),
- complex, composite magnetic anomalies (Figure 7) and
- Large, strong bedrock EM conductors.

The mafic-ultramafic intrusive rocks that have been intersected in the previous drilling completed by MIM and Falcon Minerals are interpreted to be part of a large, complex intrusion that is responsible for the regional gravity high at the Saxby Project. The textural variations, presence of magmatic sulphide and olivine-rich nature of the rocks all indicate the possibility for a Voisey's Bay or Noril'sk style of magmatic system to be present at Saxby.

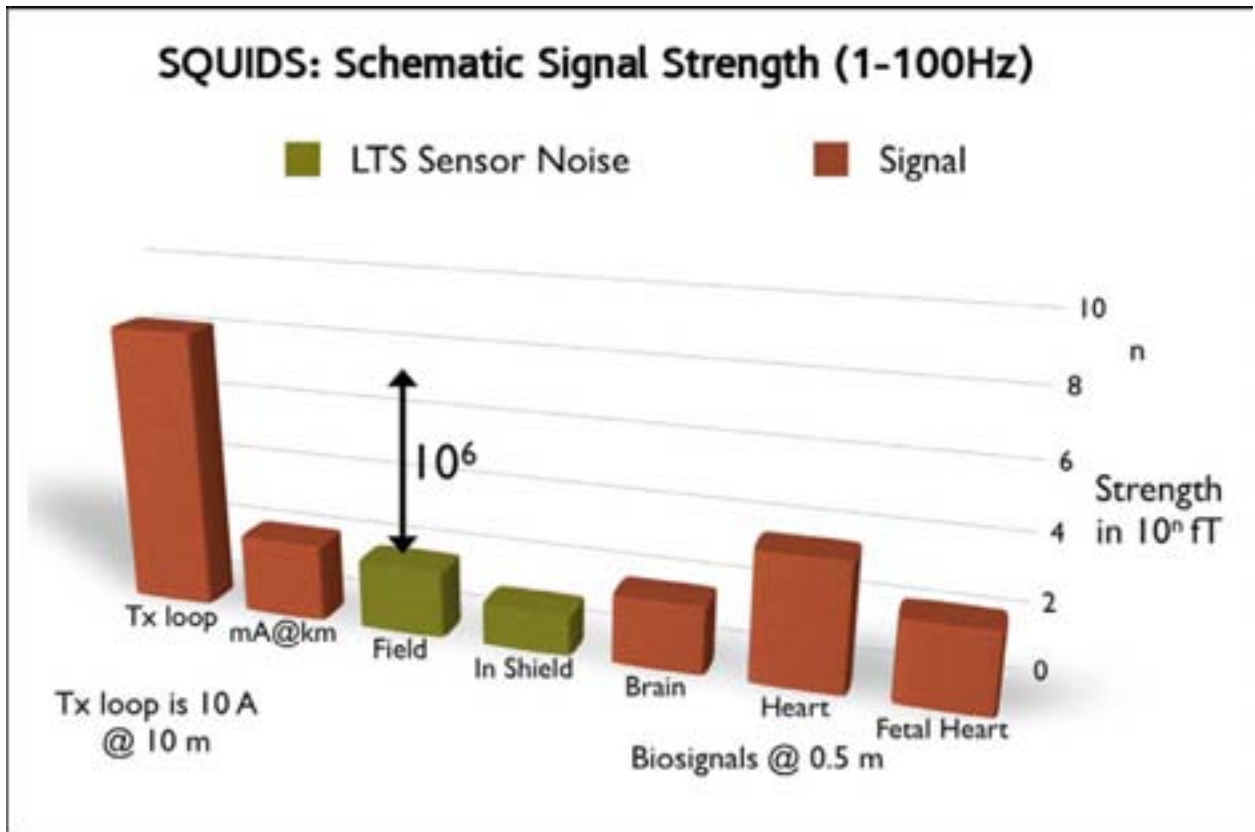
The presence of a potentially sulphur-rich country rock (shale and graphitic slate) adjacent to the intrusion to act as a sulphur source to help initiate the formation of an immiscible metal-rich sulphide fluid within the magma chamber is another positive target criteria. When these elements are combined with the presence of extensive, strong EM conductors in the bedrock at Saxby, the project looks comparable in size and scale (in geographic terms) to other world-class Ni-Cu-PGE systems.

### Innovation – LT SQUID Technology:

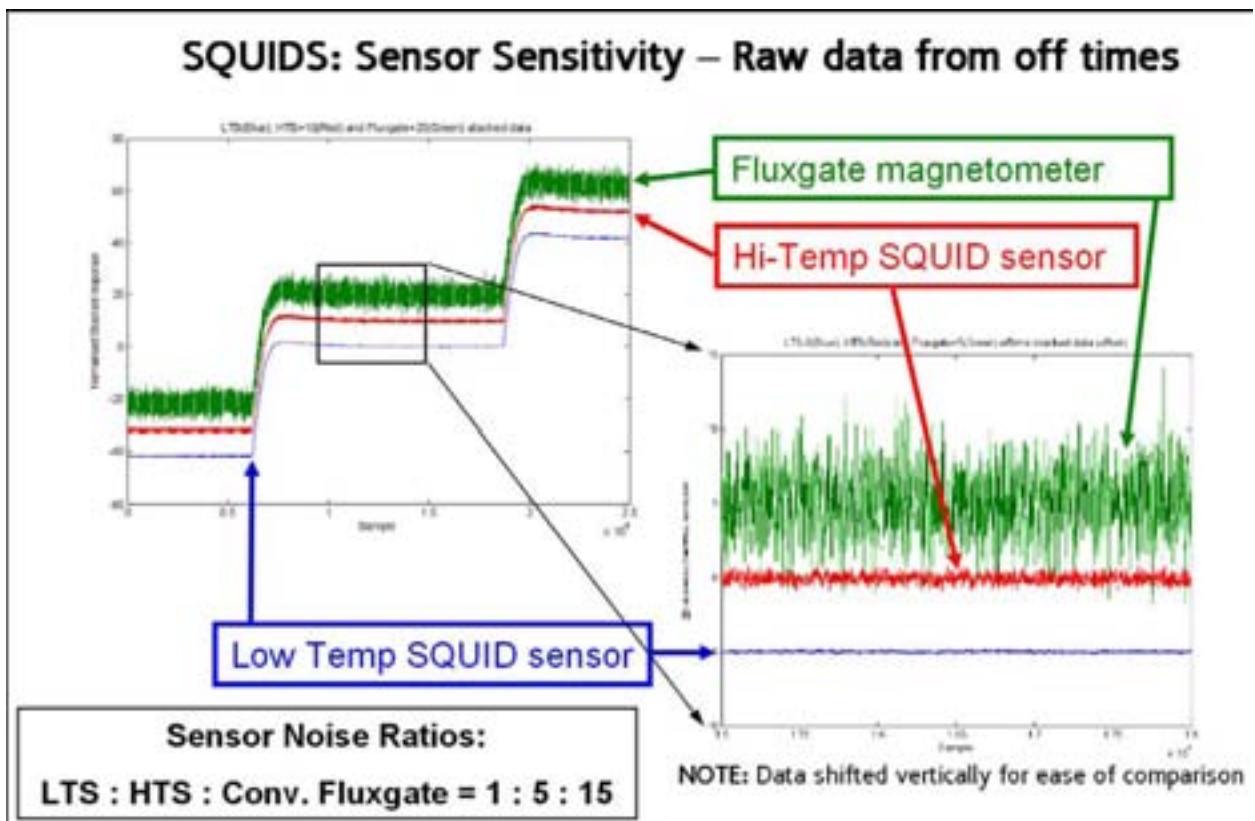
The Low Temperature SQUID sensor is proprietary technology developed by researchers in Germany that is exclusive to Anglo American. SQUID sensors are tiny sensors that measure very small magnetic fields ~ 1/1,000,000,000 earth's field (Figures 14 & 15), this allows very low signal to noise ratios and the detection of late EM fields that are produced by the slow current decay in good bedrock conductors (eg: massive sulphides), see Figure 15.

The advantage of a SQUID sensor over other EM field sensors is that the SQUID sensor can record late or weak EM fields that are below the back-ground noise (or "detection level") of a conventional EM field sensor like a fluxgate magnetometer or coil (Figures 15 & 16).

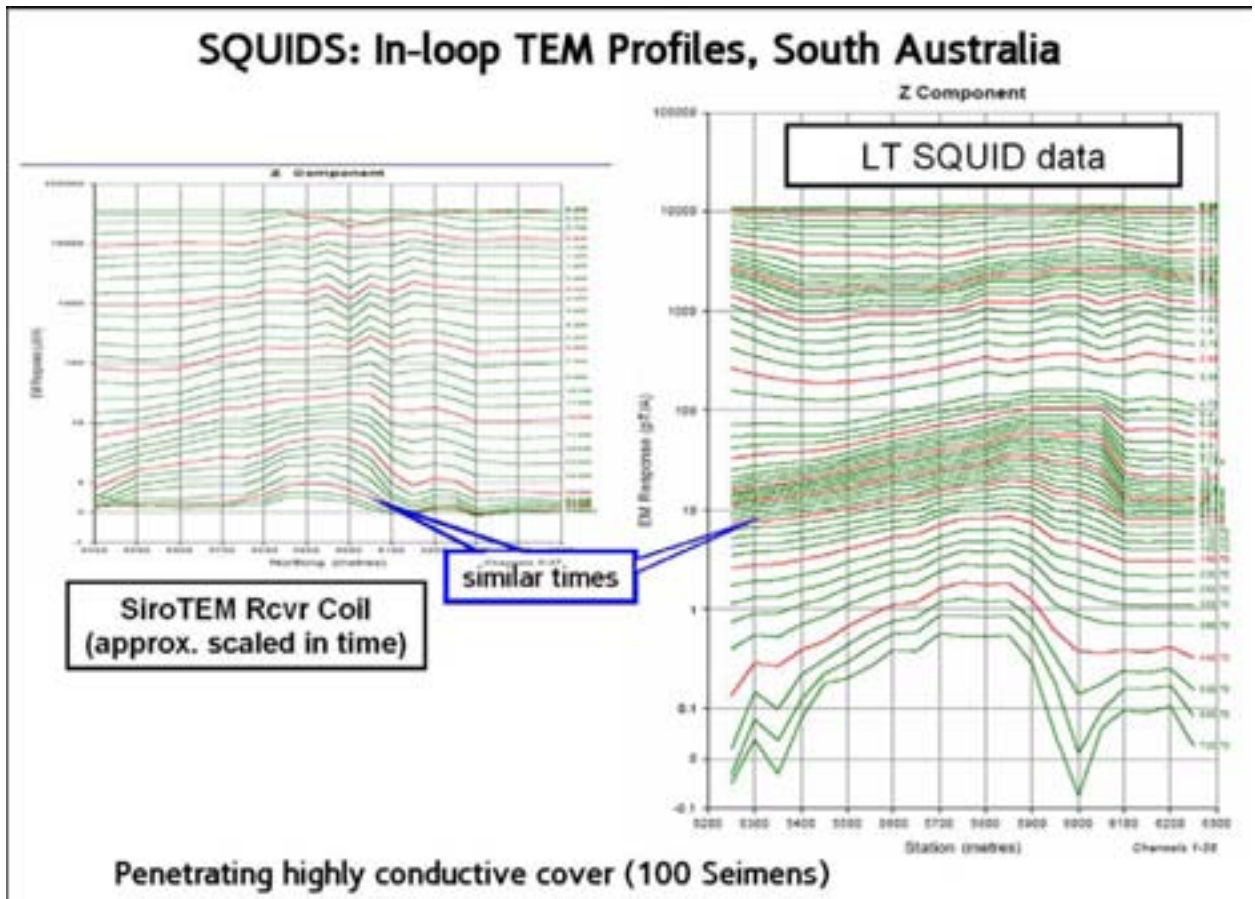
SQUID sensors are only about 1 cm in diameter and have components of only a few atoms thick. The sensors need to be cooled down to cryogenic temperatures for the materials to attain super-conductivity. Thus they require rather bulky cryostats and highly specialized manufacturing facilities. The sensors attain super-conductive properties at 4°K or -269°C and have to be submersed in liquid Helium to operate; these are called Low Temperature SQUIDS (Figure 17). High temperature SQUIDS have a higher signal to noise ratio (Figure 15) and operate at 77°K or -196°C and are submersed in liquid Nitrogen.



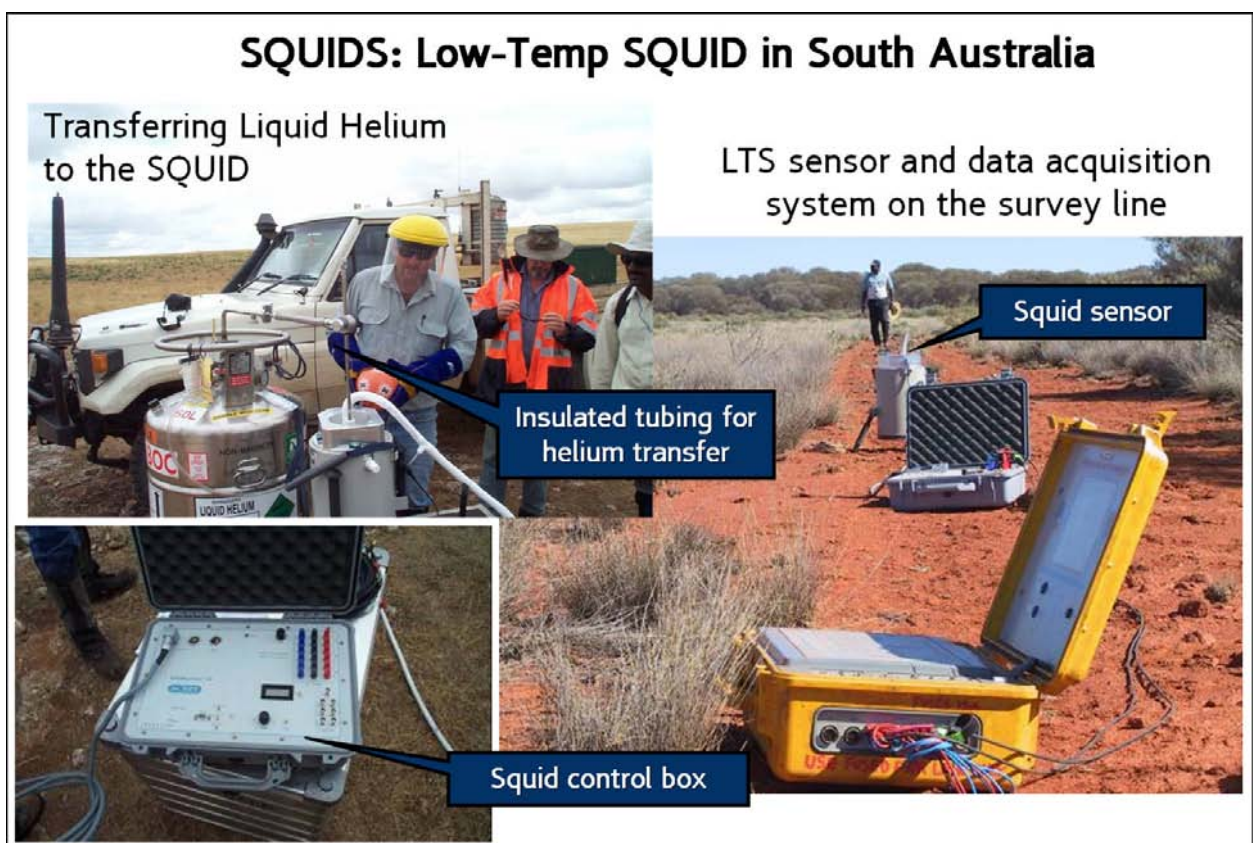
**Figure 14:** Comparison of background LT SQUID sensor noise levels compared to the transmitter loop and other natural (biometric) EM fields.



**Figure 15:** Comparison of the sensor sensitivity between conventional a Fluxgate magnetometer, Hi-Temperature SQUID and Low-Temperature SQUID sensors.



**Figure 16:** Comparison of the capability of the LT SQUID sensor to capture late time data compared to a conventional SIO-TEM sensor.



**Figure 17:** Low Temperature SQUID in the field along pre-existing grid lines in South Australia.

Anglo American has used the Low Temperature SQUID to target massive sulphides at depth and this technique has, for the first time, allowed the definition of strong EM anomalies that were never previously identified by conventional geophysical techniques. The non-economic conductive minerals that have been identified in the MIM and Falcon Minerals drill core are pyrrhotite and graphite and it could be argued that these could explain the geophysical response. However, geophysical modelling suggests that it is highly unlikely that these minerals alone could account for such large EM anomalies. Therefore the conductors could potentially represent large massive sulphide Ni-Cu-PGE deposits and warrant drill-testing.

#### **Innovation – Nickel Sulphide Exploration in the “Copper Homeland”:**

The proposed exploration programme can be described as geologically innovative because the Mt Isa Block is generally not regarded as a prospective province for nickel mineralisation, certainly not for the style and scale of Voisey’s Bay or Noril’sk style Ni-Cu-PGE mineralisation. Very few companies have explored for nickel in the Mt Isa region and no major nickel deposits have been discovered.

## **5.0 PROPOSED EXPLORATION PROGRAMME:**

Due to the large scale and size of the exploration target, Anglo American plan to drill several deep holes at the Saxby Project during the 2008 field season using a large capacity diamond drill rig.

However, due to the significant thickness of the cover sequence and potential technical difficulties associated with drilling at such depths, the anticipated costs of the drill programme are quite high. Consequently Anglo American is seeking support from the Queensland Department of Mines and Energy, in the form of funding under the Collaborative Drilling Initiative (Smart Mining programme), to assist the testing of the new exploration concept identified at the Saxby Project in NW Queensland.

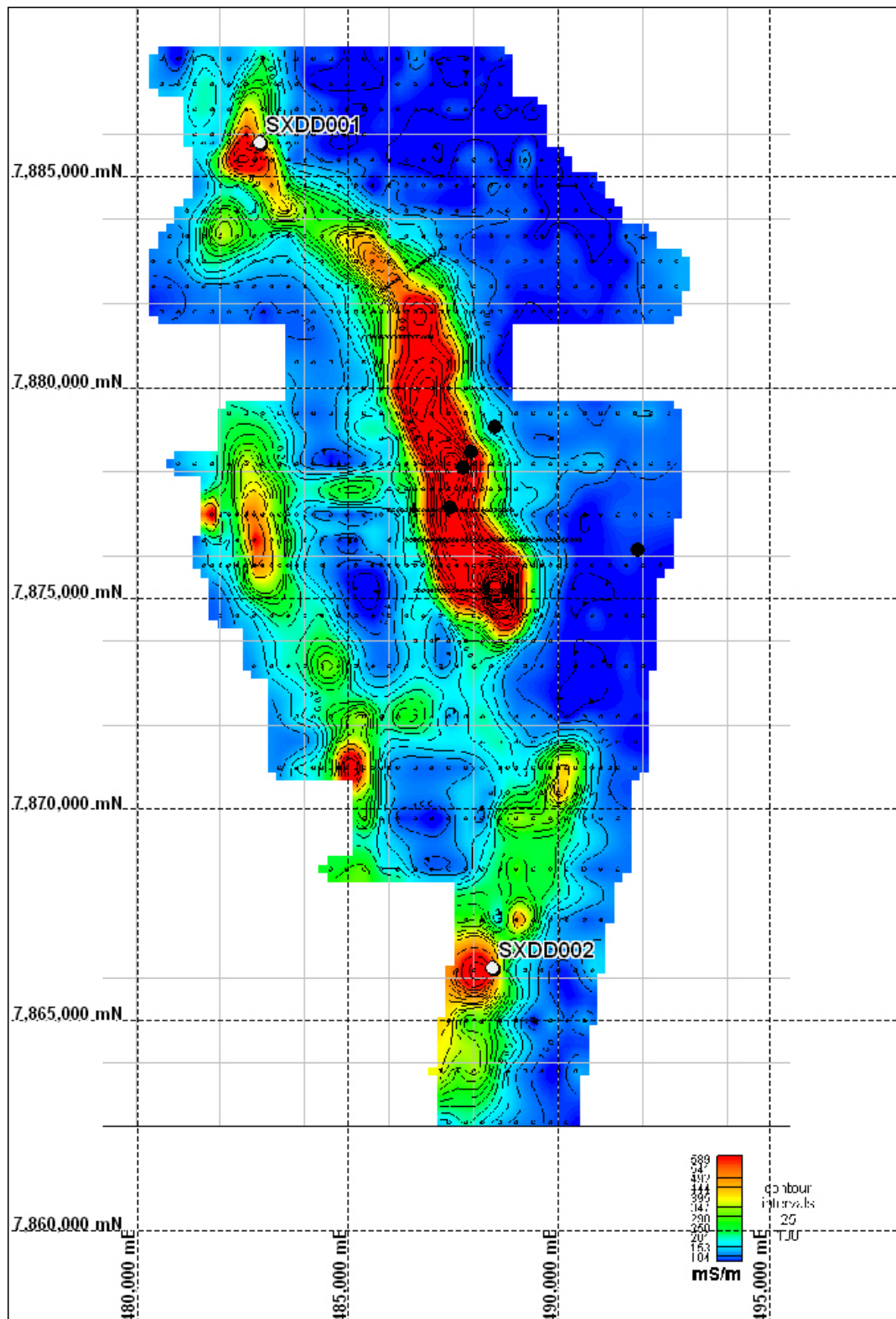
#### **Deep Diamond Drill Holes:**

If this proposal is successful, Anglo American plan to use the Smart Mining funding to drill two 900m deep diamond drill holes to test two separate EM conductors at the Saxby Project for potential massive sulphide mineralisation (Figure 18). The provisional coordinates for the drill hole collars are listed in Table 3. The proposed drill holes are also shown as drill traces on conductivity pseudosections in Figures 19 & 20.

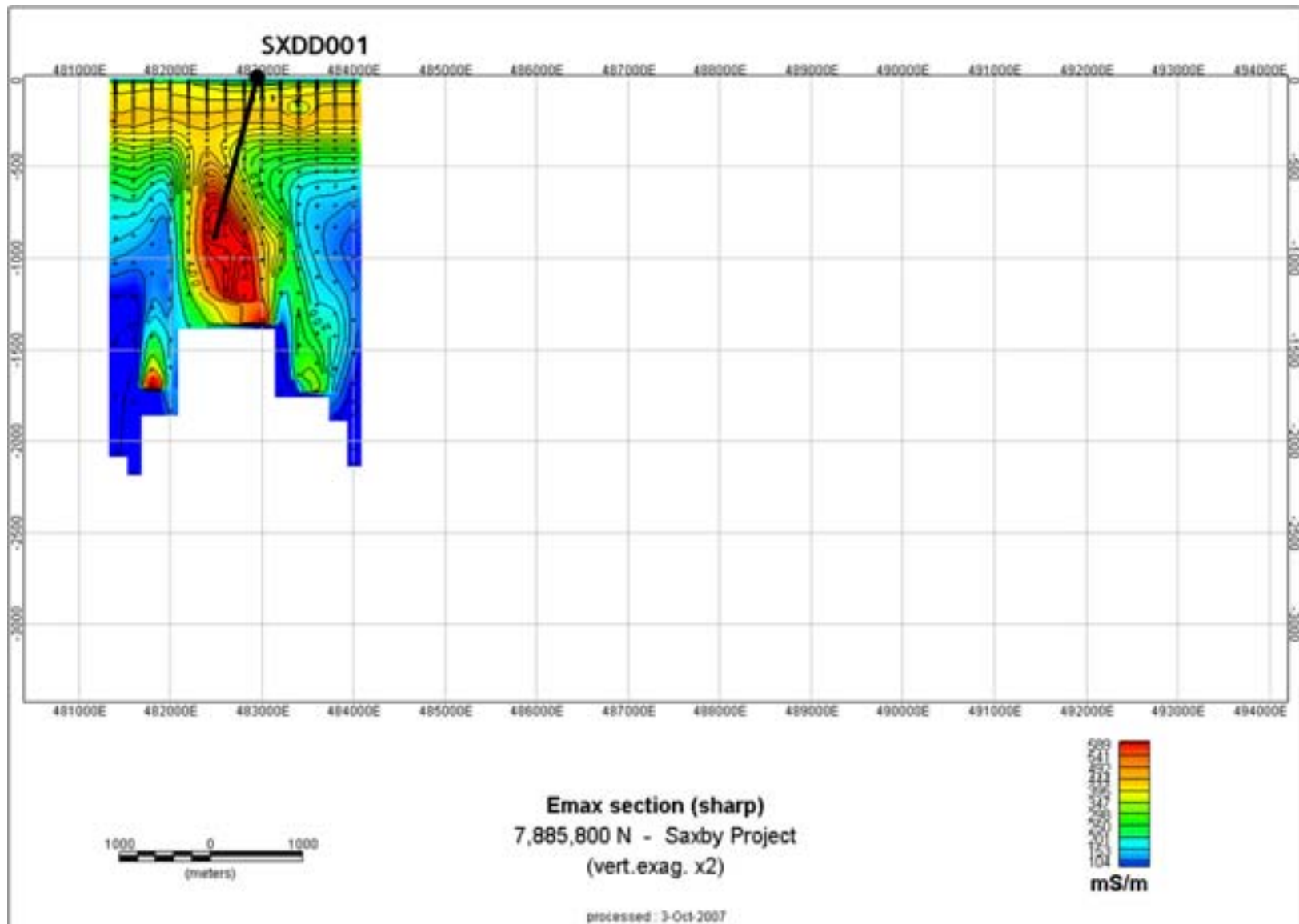
**Table 3:** Proposed deep diamond drill holes to test bedrock conductors at the Saxby Project.

Hole ID	Planned Depth (m)	East (MGA94-Z54)	North (MGA94-Z54)	Azimuth	Dip	Tenement
SXDD001	900	482,950	7,885,800	270	-60	EPM 13630
SXDD002	900	488,450	7,866,200	270	-60	EPM 15398

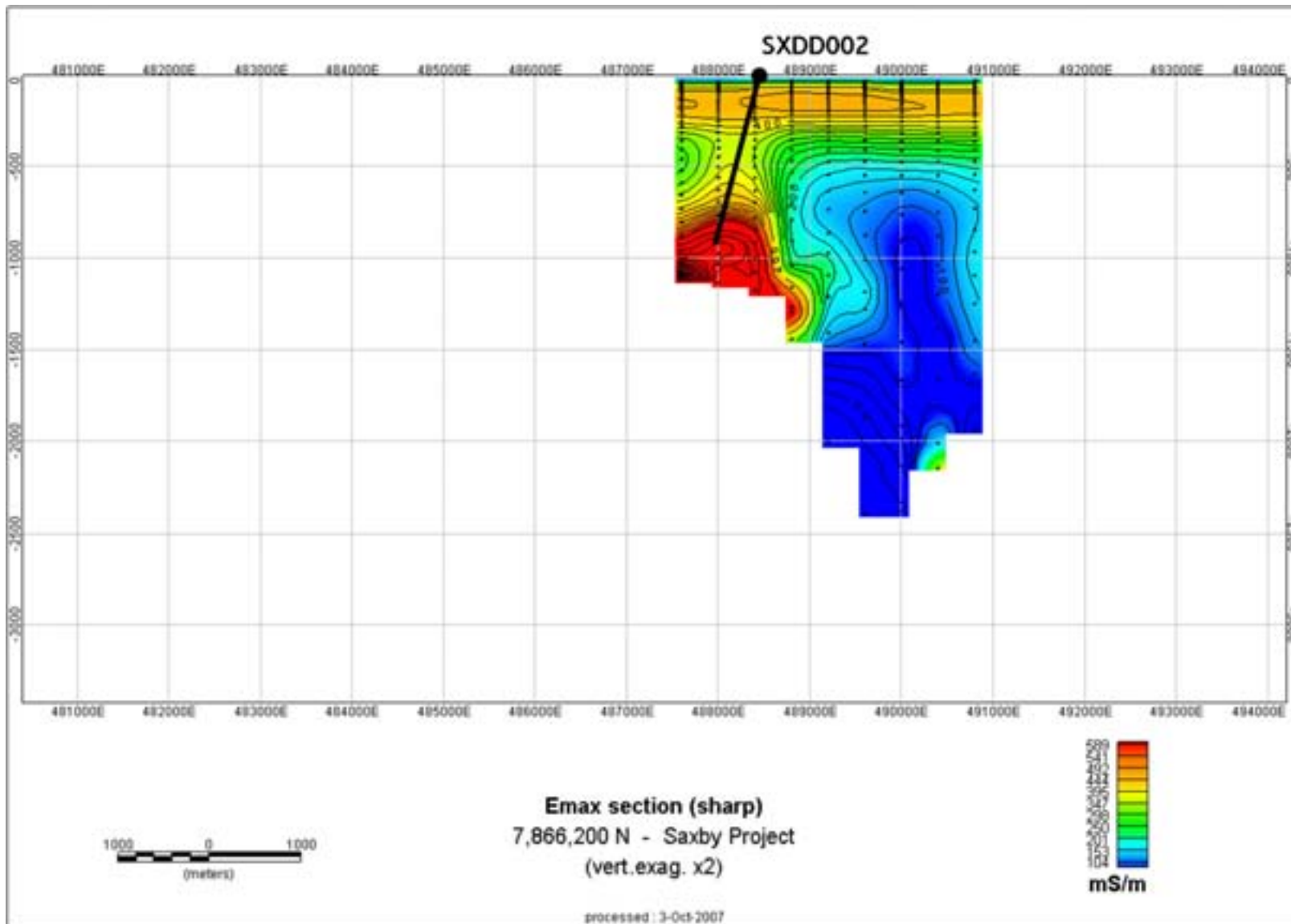
It is important to note that modelling of the EM data is being refined and an in-fill SQUID survey around some of the known conductors is part of the field work planned for 2008. Consequently, the location of the proposed drill hole collars may move by up to 500m as a result of better target definition from the results of in-fill EM survey data, but the primary target will remain unchanged.



**Figure 18:** Location of proposed deep diamond drill holes SXDD001 & SXDD002 with respect to the strong anomalies on the Conductivity Depth Slice. Previous drill holes are shown in black. Grid spacing is 5km (MGA94-Z54).



**Figure 19:** East-West oriented Conductivity Depth Image (CDI) pseudosection (looks North) for line 7,885,800mN (MGA94-Z54) illustrating the target bedrock conductor under the thick cover. The trace of the proposed deep diamond hole SXDD001 is also shown. All axis are in metres (vertical axis has 2x exaggeration). Survey station spacing along the line is 200m.



**Figure 20:** East-West oriented Conductivity Depth Image (CDI) pseudosection (looks North) for line 7,866,200mN (MGA94-Z54) illustrating the target bedrock conductor under the thick cover. The trace of the proposed deep diamond hole SXDD002 is also shown. All axis are in metres (vertical axis has 2x exaggeration). Survey station spacing along the line is 400m.

### **Sampling, Analysis and Survey Methods:**

Information about the drilling technique, sampling methodology, analysis and survey methods that will be used during the deep diamond drilling programme at the Saxby Project is presented below:

- Drill hole collars will be located using differential GPS.
- Drilling in bedrock will use an NQ diameter drill string with NQ2 bit size.
- Whilst coring in bedrock, down hole surveys will be collected approximately every 40m.
- Where possible drill core will be oriented.
- Drill core recovered from the hole will be marked up to calculate recovery information.
- The core will be logged to collect geological, structural and basic geotechnical data.
- Where the presence of abundant sulphides is recorded, the core will be sampled as ½ core over sample intervals of 1m.
- Where the sulphide contents are low (ie: in disseminated zones) the sample interval may be spaced out to 2m and the core sampled as 1/3 core.
- Samples will be analysed for precious and base metals using the following methods
  - Precious metals (Au, Pt & Pd) via Fire Assay with AAS finish.
  - Base metals (Ni, Cu, Ag, Pb & Zn) and other elements via 4-acid digest with ICPOES or ICPMS finish.

## **6.0 SUMMARY COMMENTS:**

### **Innovation – New Technology:**

This is the first time the LT SQUID has been used as a technique to explore for massive sulphide Ni-Cu-PGE mineralisation in Australia. The work at the Saxby Project shows that this technique works very well in a remote terrane with thick, conductive cover and that it can be used with confidence to define drill targets where other geophysical techniques have failed.

Anglo American plan to carry out a deep diamond drilling programme at the Saxby Project in 2008 to explore for potential massive sulphide hosted Ni-Cu-PGE mineralisation. The drilling programme will target bedrock conductors highlighted by the results of the SQUID TEM survey.

### **Expanding Exploration Frontiers:**

The proposed exploration programme will add significant new knowledge to the nature of the basement in this part of the Carpentaria Basin. The proposed exploration programme can also be regarded as innovative because it targets potential massive sulphide Ni-Cu-PGE mineralisation in a region that has previously been regarded as unprospective for nickel mineralisation. Few companies have explored for nickel in the Mt Isa region and no major nickel deposits have been discovered.

## **7.0 COSTING AND TIMEFRAMES:**

### **Drilling Timeframes:**

Based on analysis of drill shift reports from previous drilling in the Saxby Project area, each deep diamond drill hole will take approximately 2 weeks to complete. Holes are envisaged to require 1 week of casing with mud rotary drilling through the Mesozoic cover before coring can begin in the basement. The diamond tail should take another week to get to the planned depth.



The two holes that are proposed to be funded via the Smart Mining Collaborative Drilling Initiative (the “Smart funded holes”) will form part of a larger drilling campaign that should comprise between 6 and 8 holes in total (including the Smart funded holes). The duration of the drill programme is expected to last between 3 and 4 months. Due to the large size of the project area, the two Smart funded holes will be drilled in the order dictated by logistical practicalities.

#### **Direct Drilling Costs:**

Quotes have been received from several drilling contractors to perform the deep diamond drilling programme at the Saxby Project in 2008. Based on the analysis of the drill contractor’s quotes and information contained in the drill shift reports from previous drilling, the forecast direct drilling costs are expected to range between \$170/m and \$200/m (Table 4).

These costs include reasonable forecasts for mud-rotary drilling rates, core drilling rates, down-hole surveys and other units of chargeable time. A break-down of the forecast costs is provided in Appendix 1.

**Table 4:** Forecast direct drilling costs for the two proposed deep diamond drill holes at the Saxby Project.  
**Note:** *Cost Estimate 1 is based on forecast /expected drilling conditions. Cost Estimate 2 is a contingency estimate in case poor ground conditions are encountered.*

<b>Hole ID</b>	<b>Planned Depth</b>	<b>Estimated Cost 1 (\$/m)</b>	<b>Estimated Cost 1</b>	<b>Estimated Cost 2 (\$/m)</b>	<b>Estimated Cost 2</b>
SXDD001	900m	\$170	\$153,000	\$200	\$180,000
SXDD002	900m	\$170	\$153,000	\$200	\$180,000
<b>Totals:</b>	<b>1,800m</b>		<b>\$306,000</b>		<b>\$360,000</b>

## APPENDIX 1:

### ESTIMATES OF DIRECT DRILLING COSTS

The table below documents, as was best able to be determined from the drill available drill shift reports from previous drilling, the reasonable forecast of costs for;

- Mud-rotary drilling rates,
- Diamond core drilling rates,
- Down-hole surveys,
- Chargeable time directly related to drilling.

The cost estimate does not include;

- Mobilisation charges,
- Water cartage,
- Time charged for down-hole geophysical surveys,
- Field support and company staff costs,
- Demobilisation charges.

The forecast costs are a reasonable best-estimate of charges, the actual costs may be higher if poor drilling conditions are encountered within the holes.

Description	Average Cost	Estimated Units per Hole	Estimated Cost per Hole
Mud rotary (0m to 500m)	\$70 per metre	400m	\$28,000
NQ Diamond Core (400m to 1,000m)	\$170 per metre	500m	\$85,000
*Work Time & Chargeable Time	\$500 per hour	60 hours	\$30,000
Down-hole surveys	\$120 per shot / survey	12 surveys	\$1,440
<b>Subtotal:</b>			<b>\$144,440</b>

Estimated Cost of Consumables	6% of total drill costs	\$8,666
<b>Estimated Hole Cost:</b>		<b>\$153,106</b>

Number of holes	2
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<b>Estimated Total Cost:</b>	<b>\$306,213</b>
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<b>Estimated Cost (\$/m):</b>	<b>\$170 per metre</b>
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\* **Note:** Work Time & Chargeable Time estimates are based on 2 to 2¼ hours per shift on a hole that is forecast to take 2 weeks (28 shifts) to complete.