



**Exploration Permit for Minerals
EPM 14449 Snake Creek
Final Report for the period
27 June 2005 to 26 June 2010**

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Date: 17 August 2010

SUMMARY

Aim of Project

Exploration Permit for Minerals EPM 14449 Snake Creek was explored primarily for iron oxide-copper-gold mineralisation associated with regional-scale structures within the EPM including the Cloncurry Fault and the Cloncurry Thrust.

Object of Report

This report documents the results of exploration on EPM 14449 conducted from 27 June 2005 to 26 June 2010.

Location

EPM 14449 is located between 25 and 50 km south of Cloncurry.

Tenure

EPM 14449 originally consisted of 81 sub-blocks and was granted to Glengarry Resources Limited on 27 June 2005 for a term of 5 years. Following the relinquishment of 27 sub-blocks on 14 August 2008 and 18 sub-blocks on 27 June 2009, the tenement comprised 36 sub-blocks until it was allowed to expire on 26 June 2010.

Datum

Data are presented in GDA94 Map Grid of Australia Zone 54 datum.

Summary of Exploration

Exploration on EPM 14449 from 27 June 2005 to 26 June 2010 included extensive soil sampling, rock-chip sampling, geological mapping and RC drilling.

Conclusions

Geochemistry, mapping and drilling results on EPM 14449 were disappointing. Drilling at the best targets near the Robur and Robur North prospects returned only weak Cu, Au, Mo and U anomalies.

At the Consternation prospect near the Cloncurry Fault, a 2 m gold intercept from drill hole SCR0001 was suggestive of a gold-only (Tick Hill style) target. However, results were not considered sufficiently encouraging to justify further work.

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1. INTRODUCTION

This final report documents exploration work conducted over the 36 sub-blocks of Exploration Permit for Minerals EPM 14449 for the complete term of the permit from 27 June 2005 to 26 June 2010. EPM 14449 was granted to Glengarry Resources Limited (Glengarry) on 27 June 2005 for a period of 5 years.

The tenement is prospective for iron oxide-copper-gold and Tick Hill style gold mineralisation associated with regional-scale structures within the EPM including the Cloncurry Fault and the Cloncurry Thrust.

Work on EPM 14449 has been conducted by Glengarry, Xstrata Copper (Xstrata) and Ivanhoe Australia Ltd (IAL). Exploration on the EPM has been managed under Joint Venture Agreements with Glengarry by Xstrata (June 2005 to June 2006) and Ivanhoe Cloncurry Mines Pty Ltd (September 2008 to June 2010). Ivanhoe Cloncurry Mines Pty Ltd is a 100% owned subsidiary of IAL.

2. LOCATION AND ACCESS

EPM 14449 is located between 25 km and 50 km south of Cloncurry (Figure 1). The tenement is accessed by proceeding east along the Barkly Highway from Cloncurry and then turning south into Powerhouse Rd - Roxmere Rd for 8 km. Access through the tenement is gained by using station tracks. Vehicular access through much of the project area is difficult due to the rugged nature of the terrain.

Intermittent closure of the roads due to flooding and heavy rains occurs from January to March.

3. TENURE

EPM 14449 originally consisted of 81 sub-blocks and was granted to Glengarry Resources Ltd on 27 June 2005 for a term of 5 years. Upon grant of the tenement, Glengarry executed a joint venture agreement with Xstrata. Xstrata managed the project until their withdrawal from the joint venture in December 2006.

Following the relinquishment of 27 sub-blocks on 14 August 2008 and 18 sub-blocks on 27 June 2009, the tenement comprised 36 sub-blocks until it was allowed to expire on 26 June 2010 (Figure 2). The small Robur Mining Lease (ML 90079) was excised from the northwest corner of the EPM.

<u>BIM</u>	<u>Block</u>	<u>Sub-blocks</u>
CLON	823	d e k
CLON	824	f l m r s t x y z
CLON	896	c d e h j k n o s t x y z
CLON	897	r v x
CLON	968	e k
CLON	969	a c f h n o

Total = 36 sub-blocks until expiry on 26 June 2010

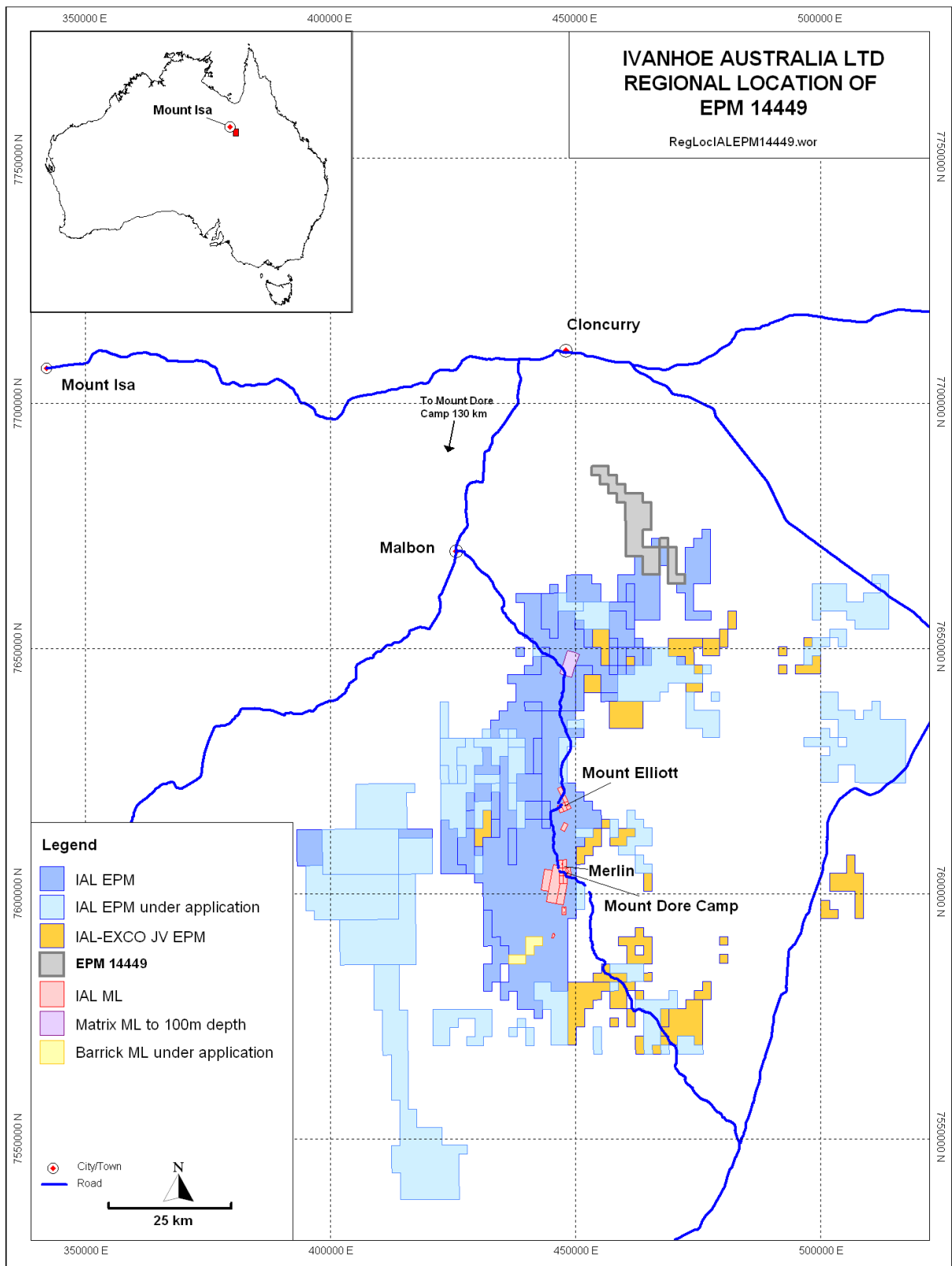


Figure 1: Regional location of EPM 14449

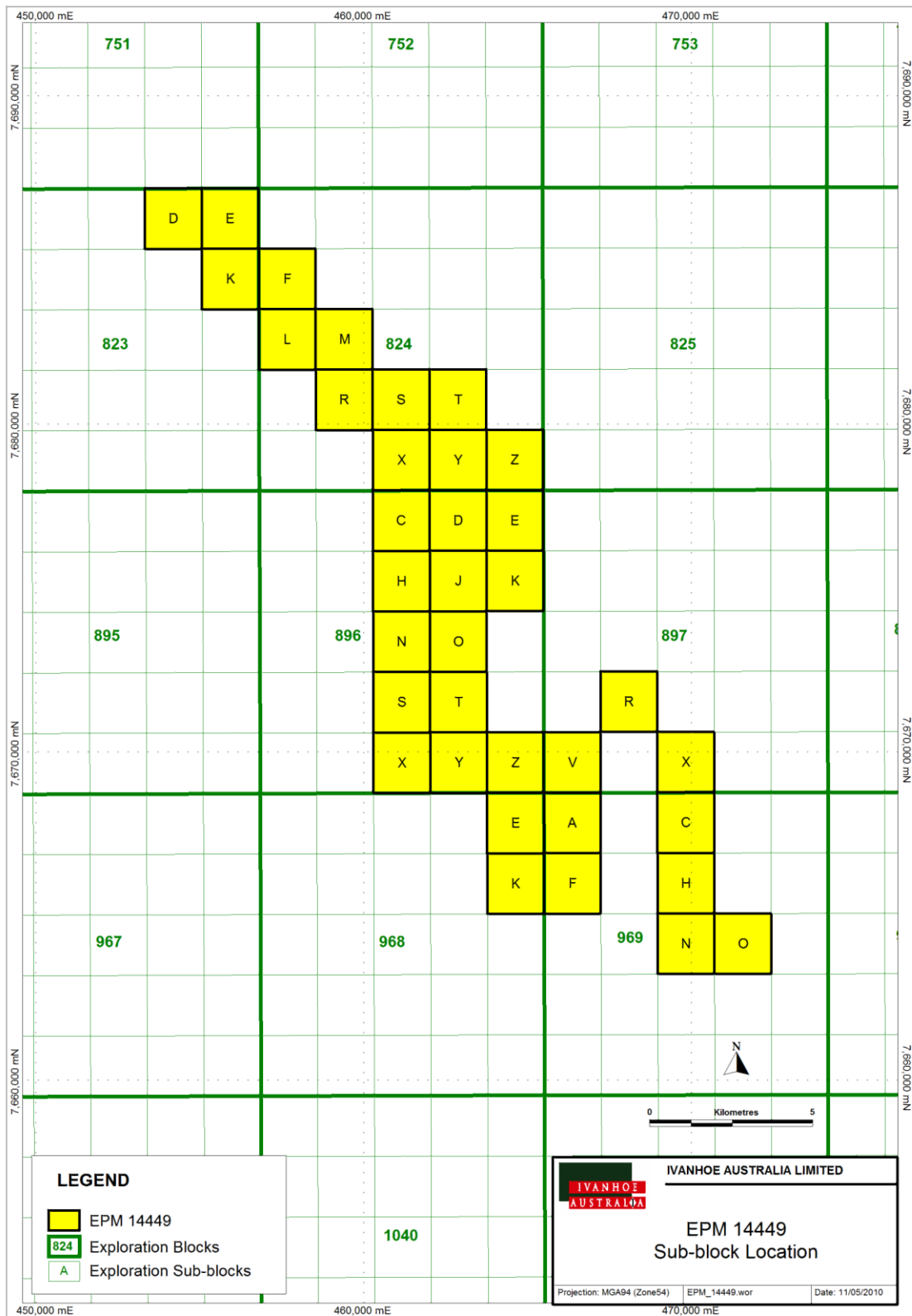


Figure 2: EPM 14449 sub-block location

4. GEOLOGY AND MINERALISATION

4.1 Regional Geology and Mineralisation

EPM 14449 lies within the Eastern Fold Belt of the Mount Isa Inlier (Figure 3). The oldest rocks outcropping within the Eastern Fold Belt belong to the basement sequence which was metamorphosed to amphibolite facies during Barramundi Orogeny (1890-1870 Ma). Some basement rocks are found directly west of the Starra Mine (Blake and Stewart, 1992) and consist of highly deformed gneiss, migmatite, schist and strongly foliated granites (Blake, 1987).

Unconformably overlying the basement rocks, the Mesoproterozoic rocks of the Eastern Fold Belt can be divided into two broad cover sequences, Cover Sequences 2 and 3 that are based on lithological affinities and temporal associations. Cover Sequence 2 (ca 1790-1690 Ma) includes the calc-silicate rocks of Corella Formation (considered the equivalent of the Doherty Formation) and the felsic volcanics of the Argylla Formation (Tewinga Group). Recent age dates have led to a reinterpretation of some of the cover stratigraphy. Cover Sequence 3 (1680-1610 Ma) now incorporates the Soldiers Cap Group and the new, informally named Young Australia Group (Foster and Austin, 2008), both of which were formerly assigned to Cover Sequence 2. The Soldiers Cap Group (including the Kuridala Formation) is the most extensive member of the Maronan Supergroup (Beardsmore et al., 1988). The Young Australia Group includes the Answer Slate, the calc-silicate rocks of the Staveley Formation, the Marimo Slate and Agate Downs Siltstone formerly assigned to the Mary Kathleen Group of Cover Sequence 2. The Young Australia Group is considered likely to be the lateral facies equivalent of the younger units within the Soldiers Cap Group (Foster and Austin, 2008).

These rock packages have been intruded by at least three main phases. The earliest intrusive suite (1750-1730 Ma) includes the Gin Creek Granite and the Jesse Granite (Wyborn et al., 1988; Page and Sun, 1998). The second suite of granites intruded ca 1590-1530 Ma and includes the Maramangee Granite and the Mt Margaret Granite (Page and Sun, 1998). The third intrusive phase produced the most voluminous suite of granites which make up the Williams and Naraku Granites. These intrusions range in age between 1520 and 1490 Ma (Wyborn et al., 1988; Page and Sun, 1998).

The basement and cover sequences were deformed and metamorphosed by the Isan Orogeny of ca 1600-1500 Ma (Blake and Stewart, 1992; Foster and Rubenach, 2006). Up to seven deformational events in the Eastern Fold Belt have been recorded in the literature (D1 through to D7) (Bell, 1983; Beardsmore et al., 1988; Bell et al., 1988; Loosveld, 1989; Nijman et al., 1992; Stewart, 1992; Mares, 1998; Laing, 1998). Of these deformation events four major events are described below. The earliest deformation event (D1) in the Eastern Fold Belt was a compressional event which produced thrusts, horizontal isoclinal folding and flat lying mylonites. The second compressional event (D2) produced the dominant upright, tight to isoclinal, north south trending folding seen in the Inlier. This event is interpreted to be synchronous with the peak of metamorphism (Page and Bell, 1986; Oliver, 1995). Metamorphic grade is highest in the southeast (upper amphibolite facies) with greenschist facies predominating toward the northwest (Jacques et al., 1982). The third deformational phase (D3) was a horizontal event producing shallow, dipping folding and refolding of D2 folds. The fourth folding event (D4) was similar in orientation to the D2 event, being dominantly east-west horizontal shortening which produced upright north-south oriented folds and reactivated flat lying D3 structures. Several brittle events occurred after D4 during a "cooling down" transition from a ductile to brittle regime. These events produced northeast and northwest trending faulting and are thought to be integral to the formation of many of the deposits in the region.

Several regional scale alteration events can be seen within the rocks of the Eastern Fold Belt. These large metasomatic events also play a fundamental part in the formation of the majority of ore deposits within the belt, by either being directly associated with carrying ore minerals or by rheologically preparing rocks for brittle fracture or ductile shearing. The first of these events is a regional Na-Ca metasomatic

event that alters large volumes of rock to albite and silica. The larger of the albite alteration zones are usually concentrated next to major regional structures. The second regional alteration event consists of large scale K-Fe-Mg alteration producing K-feldspar, pyroxene, actinolite, epidote and scapolite. Both these alteration assemblages are commonly found associated with Fe-oxide copper gold deposits within the region. Mineralisation styles within the Eastern Fold Belt can be divided into four broad categories: Au dominated deposits (Tick Hill, Gilded Rose, Mount Frieda), Cu dominated deposits (Mount Elliott, Starra, Osborne, Ernest Henry, Eloise, etc.), Pb-Zn-Ag deposits (Cannington, Pegmont, Dugald River, etc.) and U deposits (Mary Kathleen).

There are several styles of Au-dominated deposit which occur in a range of lithologies and metamorphic grades. The common denominator in this group is the structural control. Tick Hill probably represents the best known Au dominated deposit in the Eastern Fold Belt and between 1991 and 1994 was one of Australia's largest Au producers. Tick Hill is a high-strain zone hosted deposit where gold is confined within laminated quartz, K-feldspar bands within the Mary Kathleen Group (now Young Australia Group) calc-silicates (Crookes, 1993).

The Cu dominated group of deposits can be divided into two broad categories: the Fe-oxide Cu-Au deposits and the Cu-Au ± Pb-Zn-Ag deposits. The Fe-oxide Cu-Au deposits of the Eastern Fold Belt come in a broad range of categories, from breccia hosted deposits like the Ernest Henry deposit through to shear hosted deposits such as Eloise. All deposits contain a distinctive structural control whether it is a large zone of brecciation or a discrete shear zone formed via competency variations on host rock lithologies. The Cu-Au ± Pb-Zn-Ag deposits (for example Mount Dore, Kuridala) are characterised by being hosted within brecciated carbonaceous black shale and do not have a major Fe-oxide component. The Mount Dore example consists of a sequence of intensely brecciated black shale bound on either side by a hanging-wall granite (thrust contact) and a foot-wall of silicified shale. Mineralisation occurs as chalcocite-native copper-chrysocolla-cuprite tenorite in the oxide zone and chalcopyrite-sphalerite-galena-molybdenite in the sulphide zone.

Pb-Zn-Ag deposits in the Eastern Fold Belt generally lie within the higher metamorphic grade rocks of the Soldiers Cap Group. Of these deposits, Cannington is the most notable (45 Mt @ 11.9% Pb, 4.8% Zn and 520 g/t Ag) (Roche, 1994). Cannington is hosted on the contact between a barren amphibolite and migmatite and gneiss. In some parts of the deposit a rough zonation from higher Zn at the margin of the amphibolite to Pb and Ag distal exists (Roche, 1994). Mineralisation consists of sphalerite and galena with some native silver.

Mary Kathleen represents the only uranium deposit to be mined within the Mount Isa Inlier. Hosted within the contact aureole of the Burstall Granite, mineralisation consists of uraninite as inclusions within allanite. Dating of uraninite has shown that mineralisation is younger than the Burstall Granite (Page, 1983) and it has been suggested that the skarn host rocks represent a chemical trap for fluids generated during regional metasomatism (Oliver, 1995).

4.2 Prospect Geology

The Snake Creek Anticline has been studied in detail by academics constructing the structural and tectonothermal evolution of the Mount Isa Inlier (Rubenach et al., 2008). This work has focussed on regional alteration assemblages (Na-Ca), structural evolution and metamorphic zoning. A summary of their work follows.

The Cloncurry Thrust (Figure 4) and Cloncurry Fault bisect EPM 14449 from southeast to northwest. The mylonitic Cloncurry Thrust separates the calcareous Doherty Formation to the west and siliceous Soldiers Cap to the east resulting from early movement along a deep-seated crustal structure. The Cloncurry Fault, hosted mainly in the Doherty Formation, dips steeply resulting from brittle reactivation of the crustal

scale structure. Regional Na-Ca alteration accompanied early movement (syn-post peak metamorphism) on the Cloncurry Thrust and subsequent movements (Rubenach et al., 2008; Mark and Foster, 1997).

The Snake Creek Anticline composed of Soldiers Cap Group metasediments hosts some of the best preserved structures in the Inlier along with Queensland Mining Corporation's Mount Norma mine. At the core of the anticline, the Llewellyn Creek Formation (garnet, staurolite, andalusite schist) hosts pre-metamorphic mafic units.

The Mount Norna Quartzite wraps around the core with a distinct erosion resistive quartzite marker unit at its contact with the Llewellyn Creek Formation. The interbedded mafic volcanic and sedimentary units of the Toole Creek Formation enclose the Mount Norna Quartzite to the north and east, while the entire Soldiers Cap Formation has been displaced by the Cloncurry Thrust to the west.

West of the Cloncurry Thrust, the Doherty Formation has been folded and later brecciated from granitic intrusion. Workers suggest the Doherty Formation is highly metasomatised and brecciated Staveley Formation (Parsons, 2008).

The Saxby Granite, a member of the Williams – Narku batholiths, intruded both the Doherty and Soldiers Cap Formations around 1525 Ma after the peak period of metamorphism.

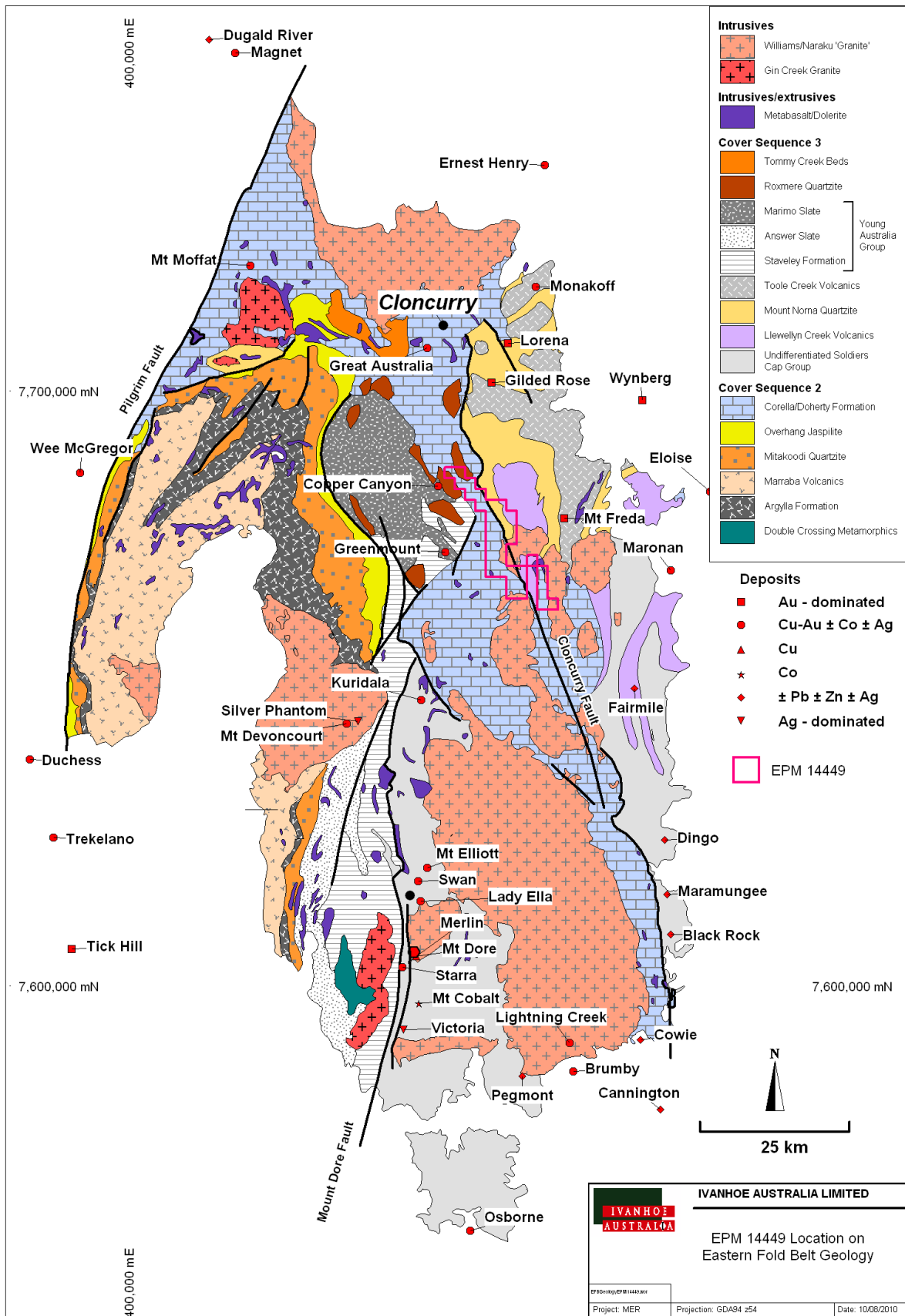


Figure 3: EPM 14449 on Eastern Fold Belt geology (modified after AGSO)

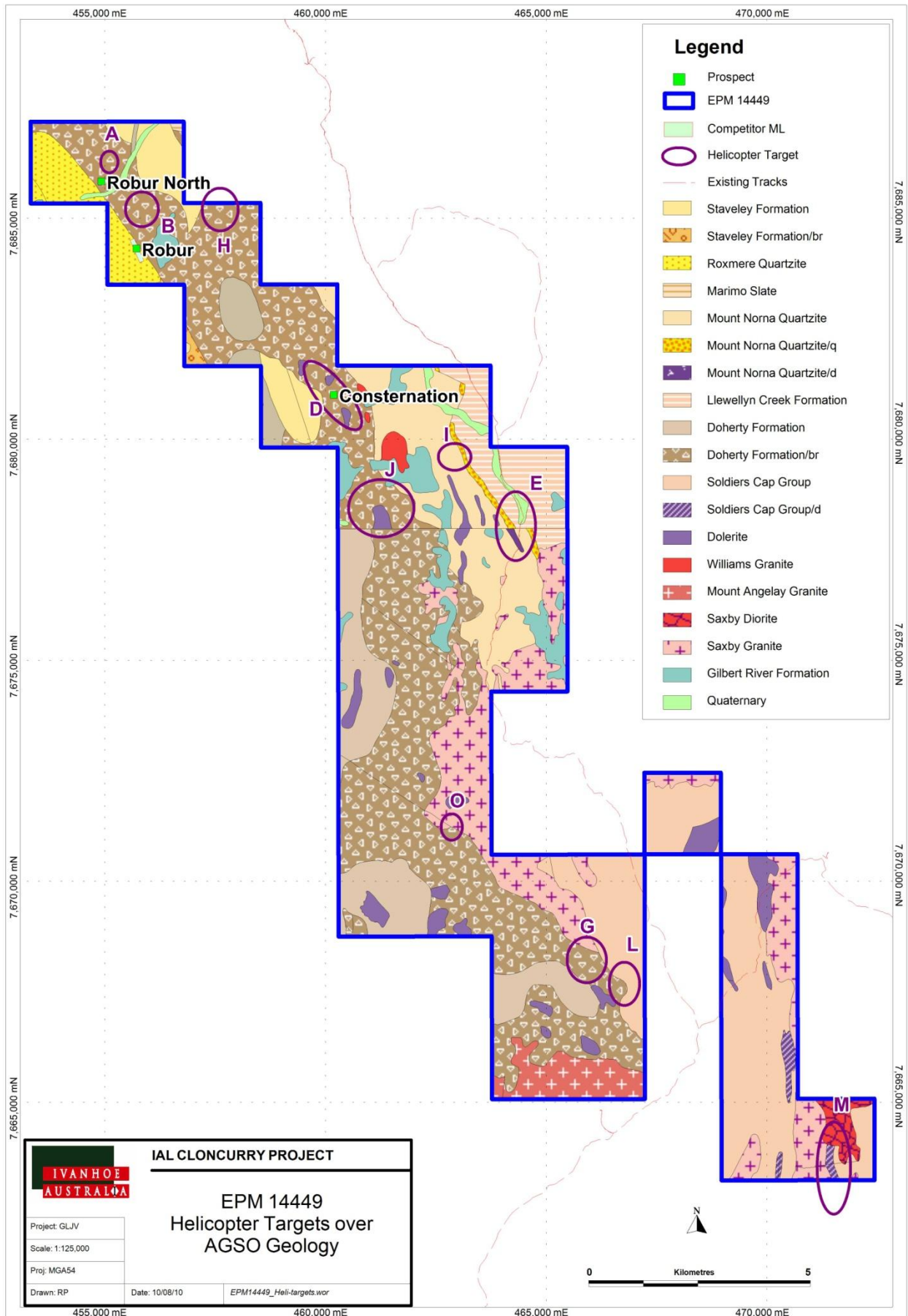


Figure 4: EPM 14449 Helicopter targets over AGSO geology

5. SUMMARY OF WORK DONE AND RESULTS OBTAINED

5.1 Work Done Prior to Grant of EPM 14449

Work done over the greater Snake Creek area by explorers prior to the grant of EPM 14449 was restricted to stream sediment sampling and limited rock-chip and soil sampling. Patchy weak copper and/or gold anomalism were apparent within parts of the brecciated Doherty Formation to the west of the Cloncurry Fault.

5.2 Work Done on EPM 14449 by Xstrata Copper and Glengarry Resources

In 2005 and 2006, Xstrata undertook rock-chip and soil sampling programs. Part of a regional soil sampling program was conducted on a 50 m x 200 m grid north of Robur. The remainder of the program used a 100 m x 500 m grid and covered the length of the Cloncurry Fault system focussing on the Doherty Formation. Several copper anomalies were identified. In the Robur area Xstrata interpreted these anomalies as elevated values associated with outcropping mafic units that were unlikely to host economic mineralisation (Jungmann, 2006).

The soil sampling program identified an anomalous area along the Cloncurry Fault that was named Consternation. As a follow-up to Xstrata's work, Glengarry collected infill soil samples over a 6 km strike length of the Consternation trend on a nominal 200 m x 50 m grid during the 2007-2008 reporting period. An additional 73 infill samples on a 100 m x 50 m grid were collected to close off the anomalous zones. The results showed a new coincident gold and copper soil anomaly defined by >20 ppb Au and >200 ppm Cu, and anomalous copper and patchy gold elsewhere.

Xstrata soil samples are shown as a thematic plot for copper in Figure 5. All assay values are given in Appendix 1.

Glengarry collected a total of 25 float and rock-chip samples (Crowe, 2007). Xstrata and Glengarry rock-chip and float assay data are given in Appendix 2 and shown in Figure 6.

5.3 Work Done on EPM 14449 by Ivanhoe Australia Ltd

5.3.1 Helicopter Reconnaissance

In 2008 IAL used existing soil geochemical data, known structures and Hymap hyper-spectral data to define the 14 best anomalies within EPM 14449 (Whitehead et al., 2009).

In February 2009 the sites of 11 of these anomalies were accessed by helicopter. The remaining three sites were downgraded after amphibolites and calcrete colour anomalies were identified by visual inspection from the air.

At the 11 sites visited, lithologies were verified and rock-chip samples were taken. Sites of geochemical anomalies were checked for amphibolites that may have caused elevated values in soil assay data. At the sites of structural anomalies any regional albitisation, iron alteration and copper mineralisation were noted. A total of 89 rock-chip samples was taken from a range of lithologies to establish background geochemical values (Appendix 3 and Figure 6).

Five targets were chosen from the 14 using data gathered during the helicopter survey including subtle copper showings, alteration and associated structures ((Whitehead et al., 2009; Figure 4).

5.3.2 Rock-chip Sampling and Mapping

From the work described above, the Robur North, Robur and Consternation prospects in the northwest of the tenement were identified as being the most prospective areas in EPM 14449. Mapping was done in these three areas (Figure 7).

Robur North and Robur both contain small copper showings within favourable lithologies (schist and calc-silicates). Consternation has a moderate copper-gold soil anomaly related to a banded calc-silicate unit and a gossanous schist unit where the Doherty Formation has been thrust over the Soldiers Cap Formation.

Fifteen targets at Robur North, Robur and Consternation were generated and tested with nine RC drill holes.

5.3.3 RC Drilling

In June and July 2009 IAL drilled nine RC holes for a total depth of 1,520 m (Table 1 and Figure 7). Drilling intersected mainly calcareous and pelitic metamorphosed units intruded by granitoids or mafics (Figures 8 to 14). Polymetallic mineralisation typically occurs within short intersections of metasedimentary rocks, igneous rocks, skarns and faults. The best assay result was 8 m @ 0.33 g/t Au and 3 g/t Ag from 92-100 m in SCR0005. This hole was followed up by SCR0009 that returned disappointing results. The best intersections are listed in Table 2, and all assay results are given in Appendix 4.

Table 1: EPM 14449 2009 RC drill hole collars

Hole ID	Prospect	Easting*	Northing*	EOH	Dip	Hole type
SCR0001	Consternation	459471	7682305	66	-60	RC
SCR0002	Consternation	459775	7682205	196	-60	RC
SCR0003	Consternation	459890	7681277	198	-60	RC
SCR0004	Robur	455962	7684966	190	-60	RC
SCR0005	Robur North	455011	7685817	172	-60	RC
SCR0006	Robur North	455176	7686332	200	-60	RC
SCR0007	Robur North	455301	7686339	202	-60	RC
SCR0008	Consternation	460644	7681351	208	-60	RC
SCR0009	Robur North	455008	7685819	148	-80	RC

*Datum is GDA 94 Map Grid of Australia zone 54

Table 2: EPM 14449 Best intersections from 2009 drill holes

Hole	From (m)	To (m)	Intersection
SCR0001	2	4	2 m @ 0.64 g/t Au
SCR0002	82	86	4 m @ 685 ppm U
SCR0002	84	86	2 m @ 0.69 g/t Au and 270 ppm Mo
SCR0005	92	100	8 m @ 0.33 g/t Au and 3 g/t Ag
SCR0005	106	116	10 m @ 0.29% Cu and 0.1 g/t Au

The anomalous section in SCR0001 occurs in a calc-silicate altered banded rock with very strong pervasive clay replacement underneath a moderate Au soil sample (Figure 8). The source of this gold anomaly presents a gold-only target in Tick Hill style host rocks. In SCR0002, the narrow U, Au and Mo anomalies occur within a gabbro at the faulted contact with siltstone (Figure 9). The Cu, Au and Ag intersections in SCR0005 occur within phyllite and slate proximal to a feldspathised fault, and correspond to the Robur North surface copper showing (Figure 12).

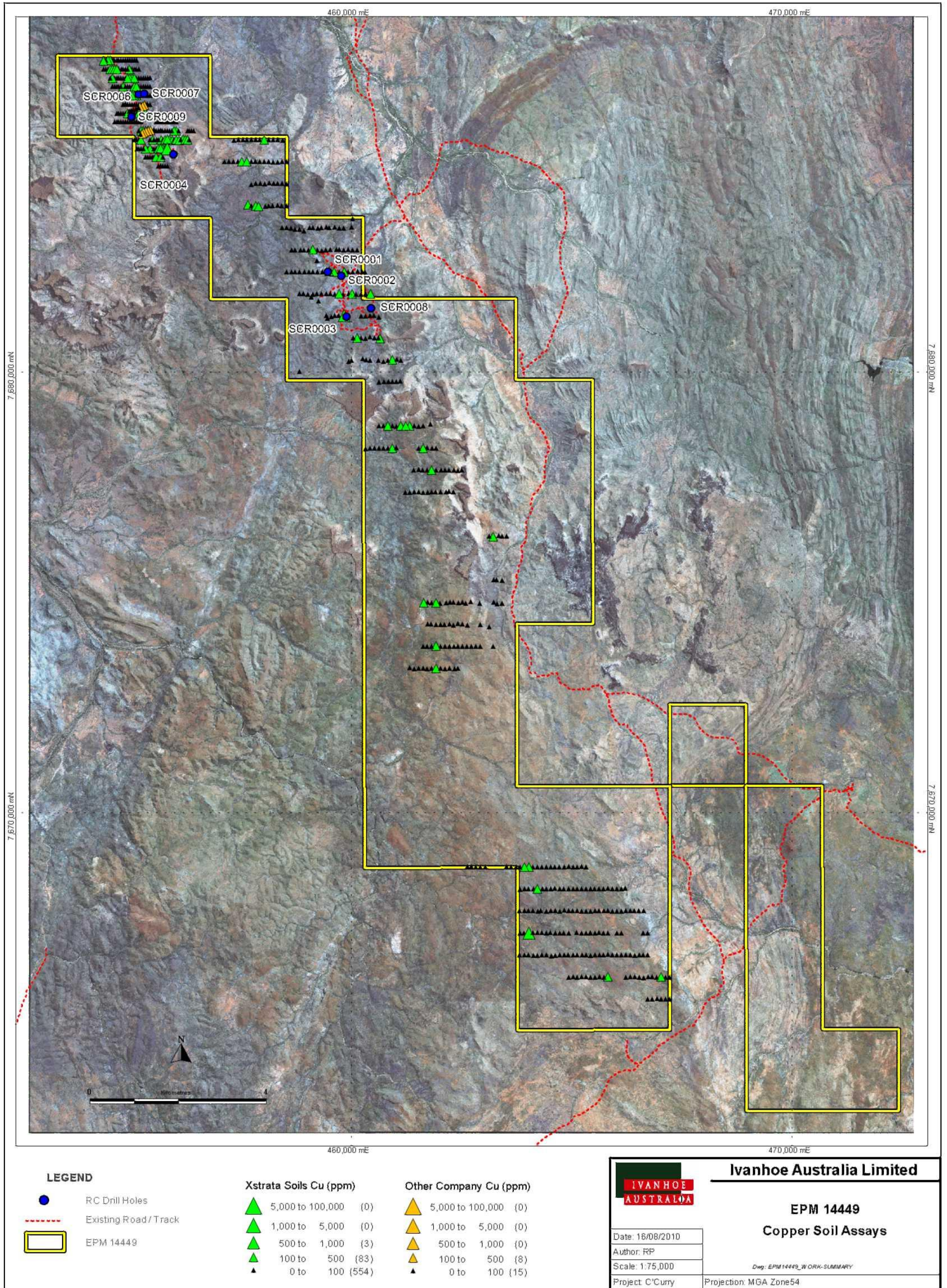


Figure 5: EPM 14449 Cu soil sample thematic plot and location of drill holes and rock-chip samples

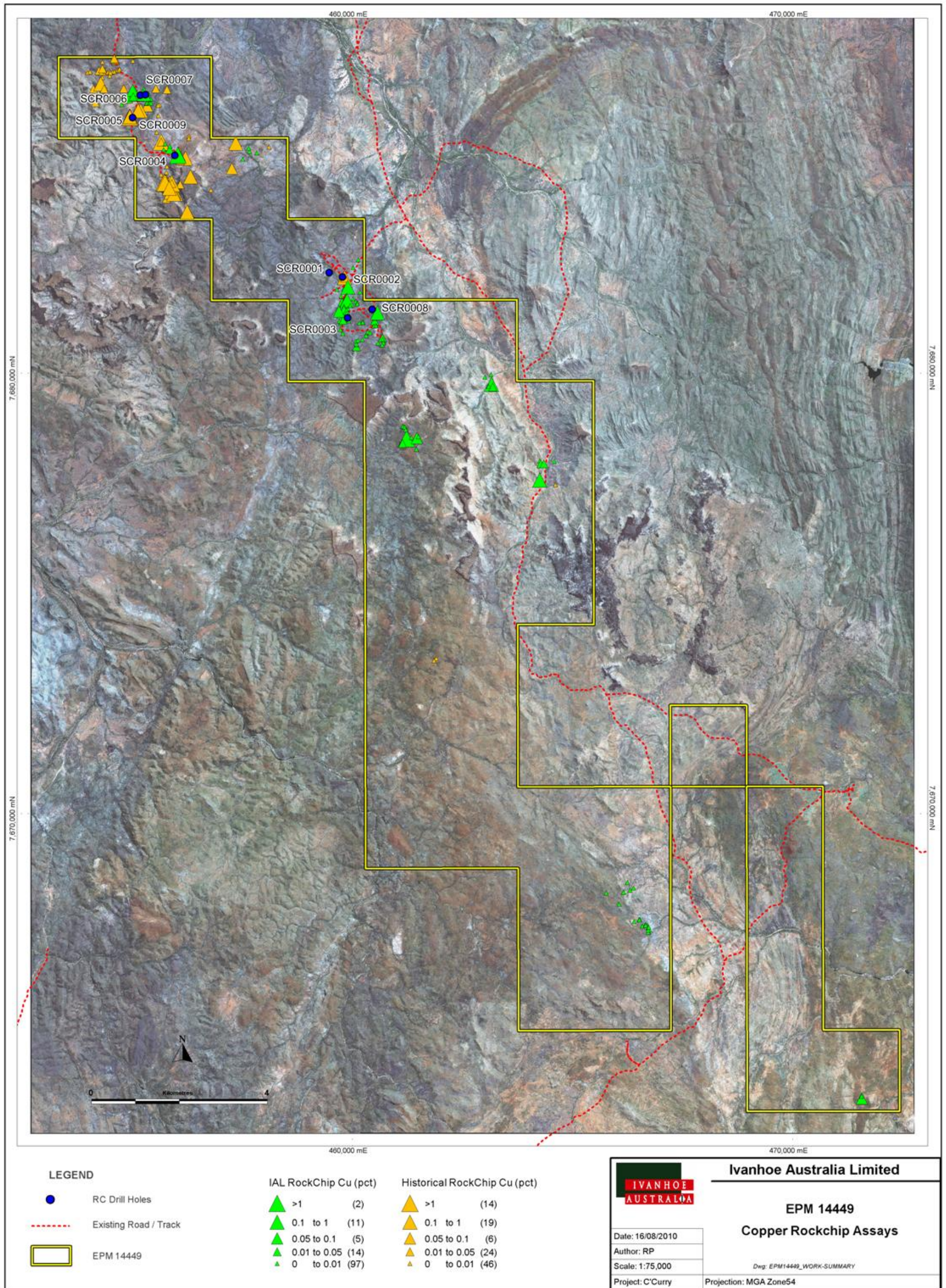


Figure 6: EPM 14449 Cu rock-chip sample thematic plot and location of drill holes and soil samples

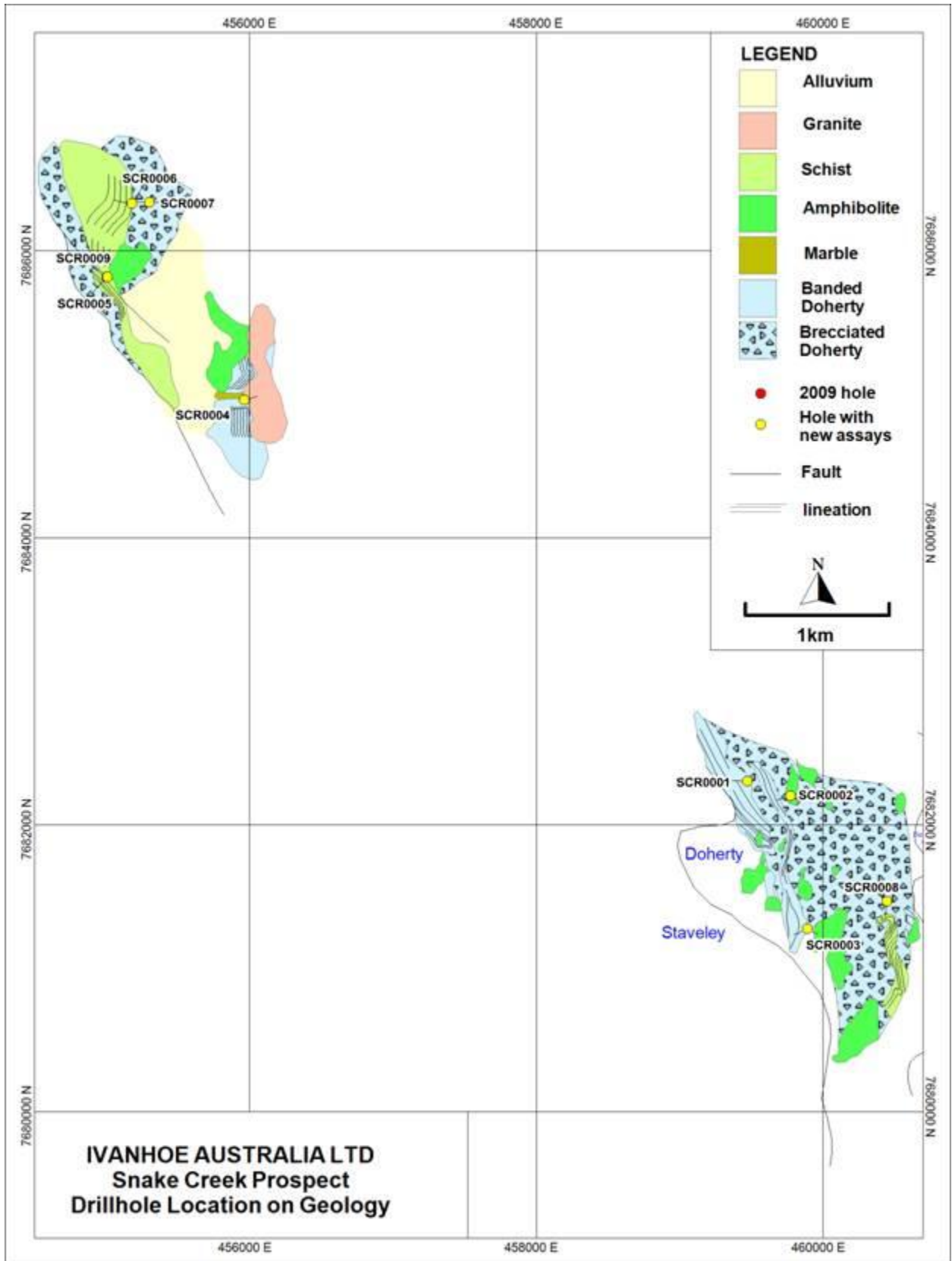


Figure 7: EPM 14449 Robur North, Robur and Consternation 2009 drill hole location on geology

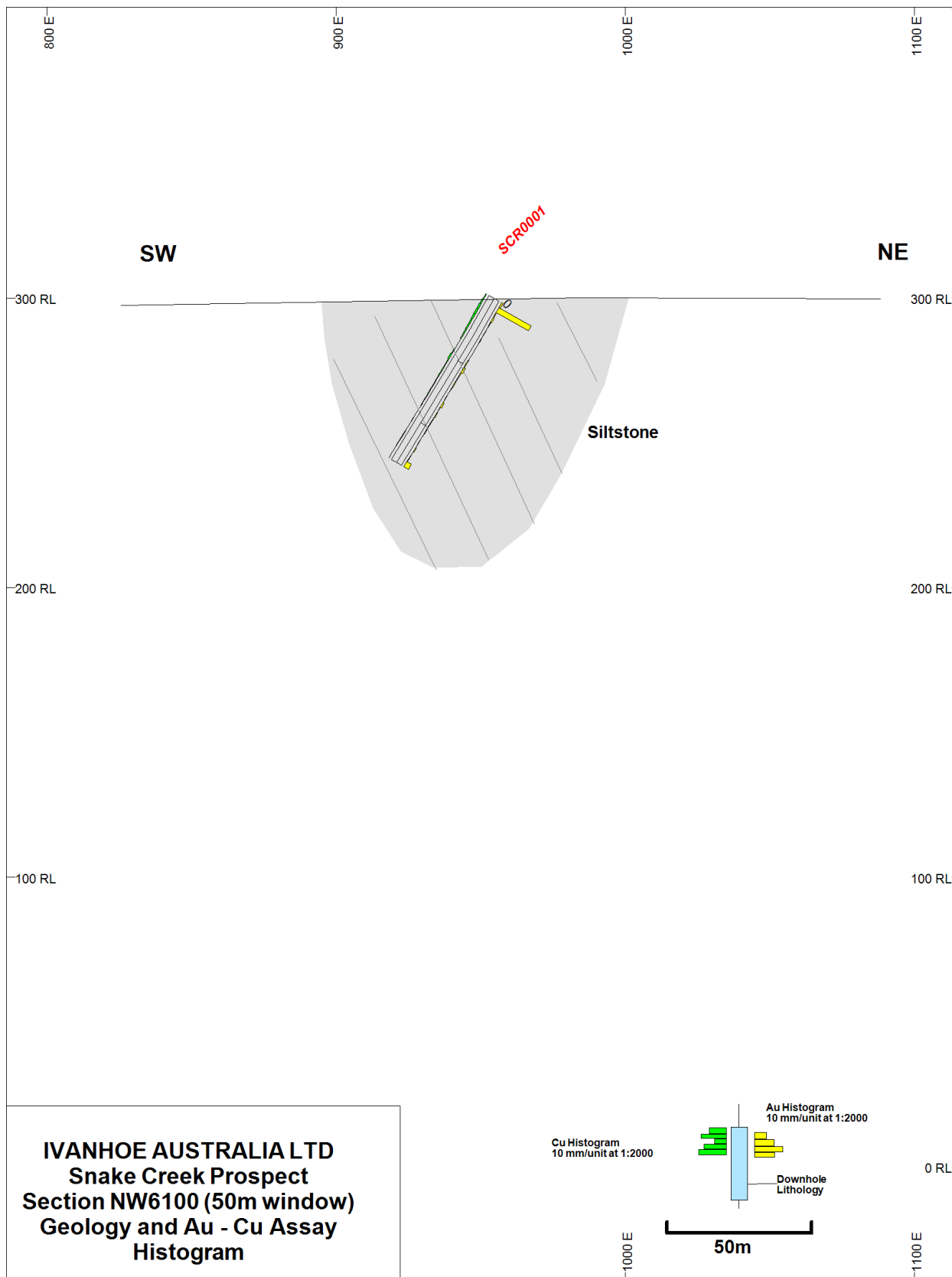


Figure 8: EPM 14449 SCR0001 cross-section

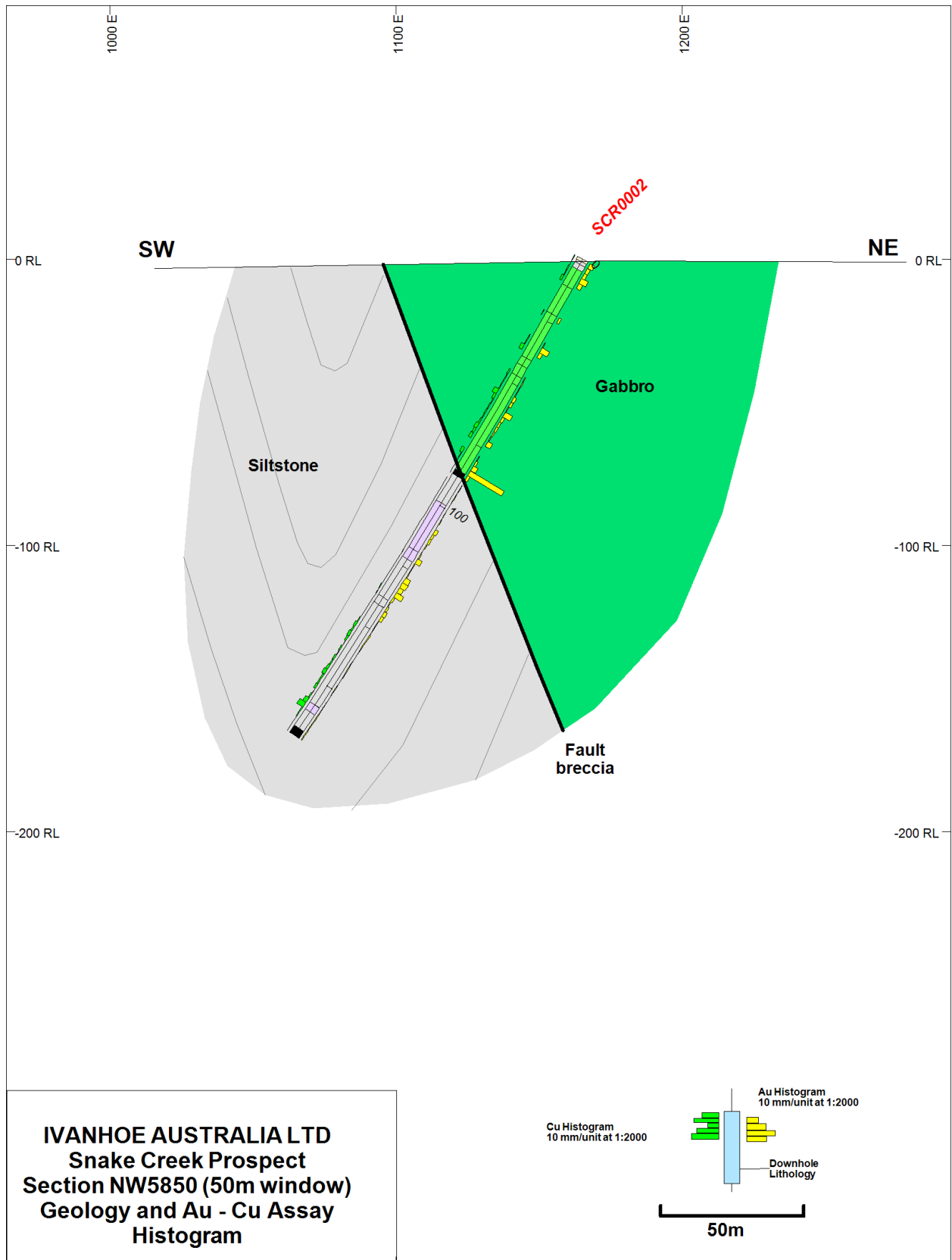


Figure 9: EPM 14449 SCR0002 cross-section

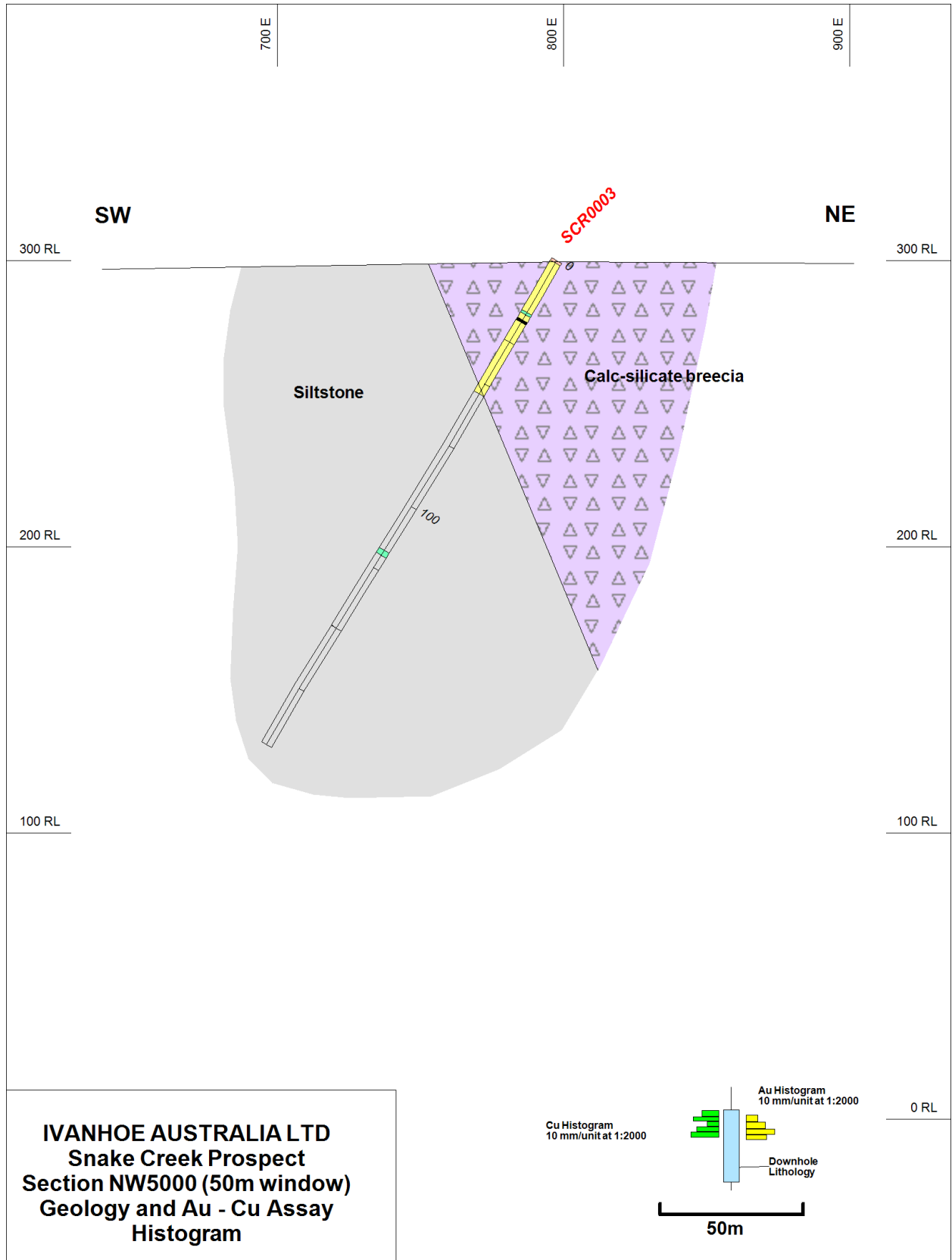


Figure 10: EPM 14449 SCR0003 cross-section

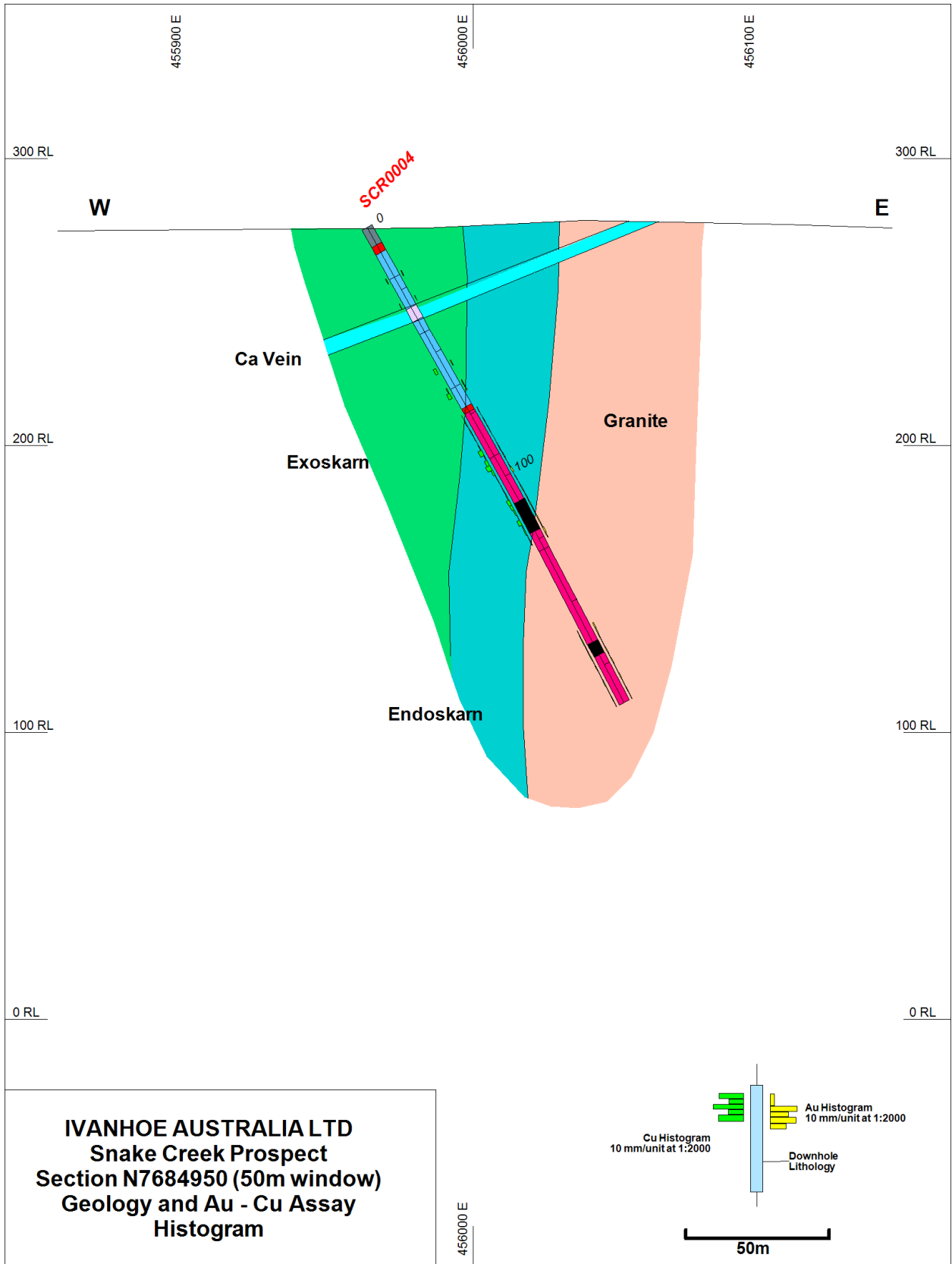
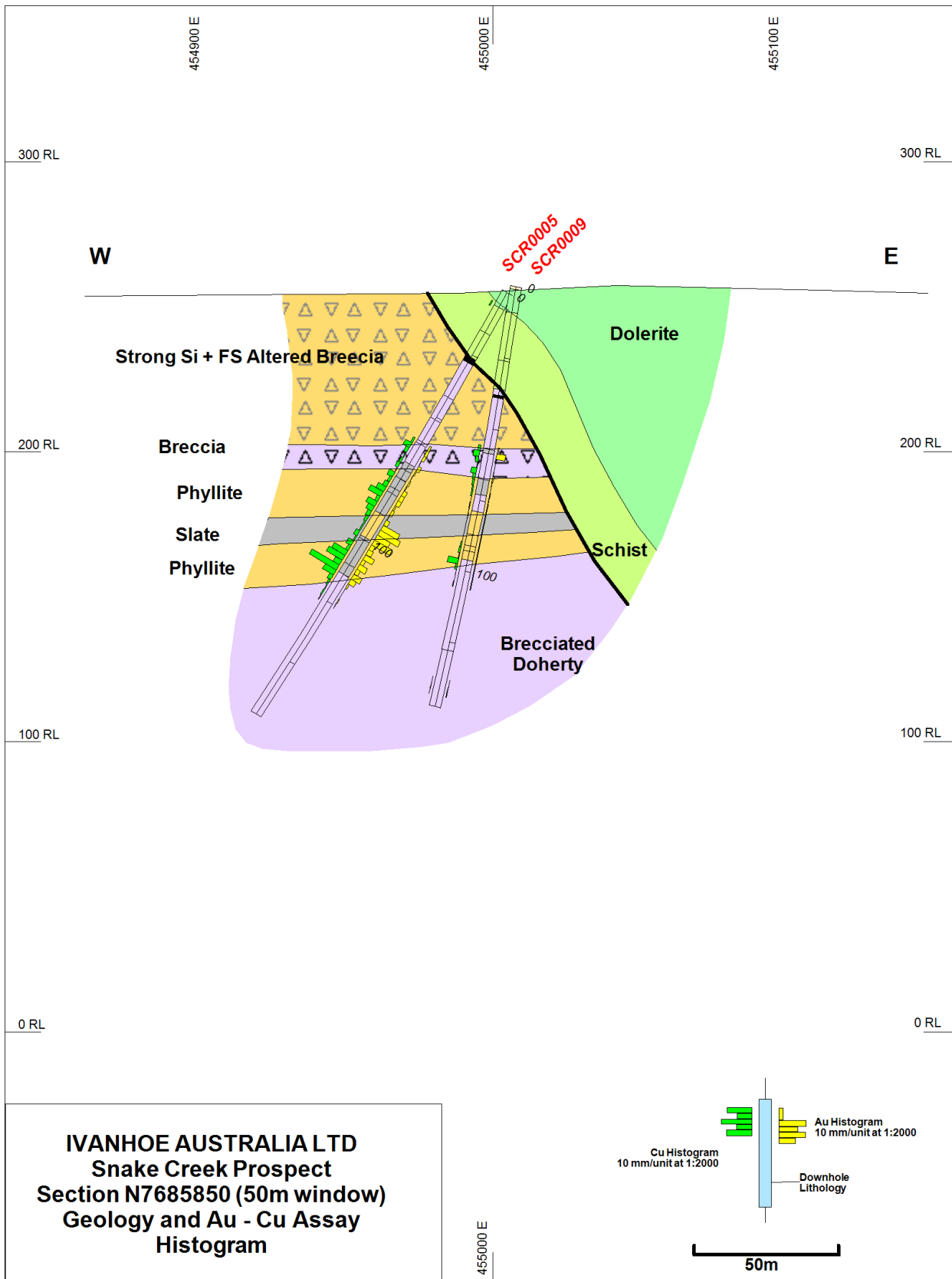


Figure 11: EPM 14449 SRC0004 cross-section



IVANHOE AUSTRALIA LTD
Snake Creek Prospect
Section N7685850 (50m window)
Geology and Au - Cu Assay
Histogram

Figure 12: EPM 14449 SCR0005 and SCR0009 cross-section

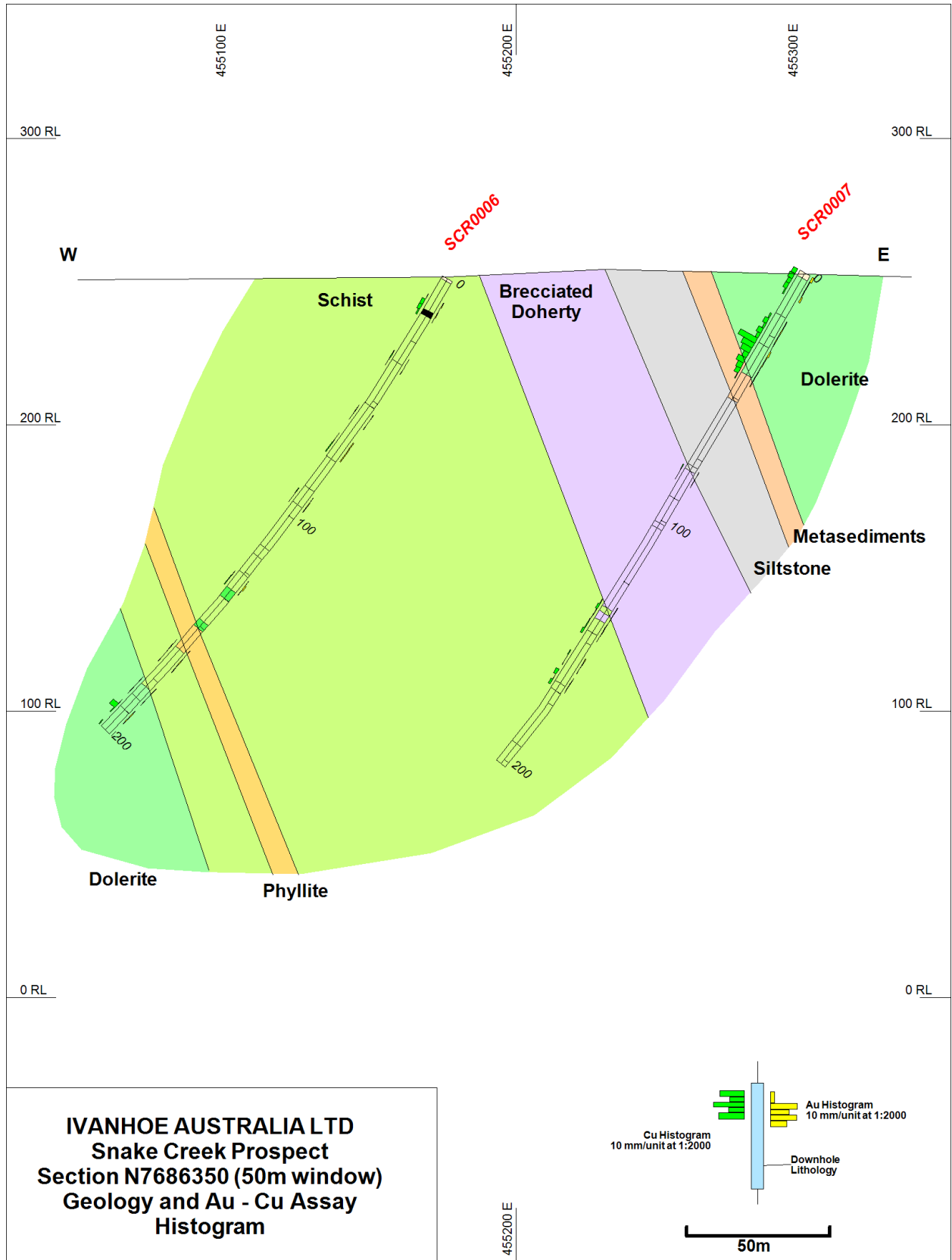


Figure 13: SCR0006 and SCR0007 cross-section

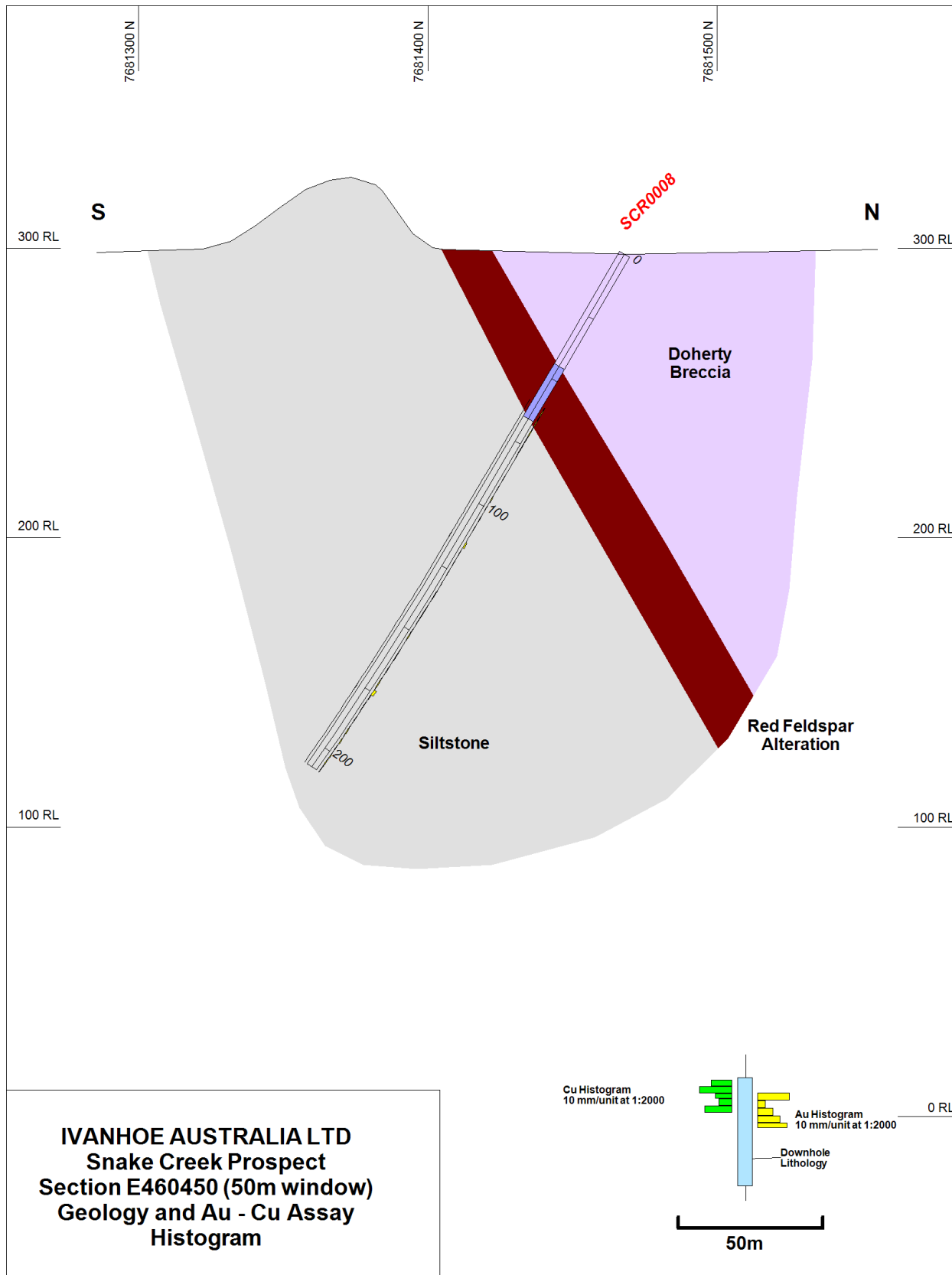


Figure 14: SCR0008 cross-section

6. CONCLUSIONS

Geochemistry, mapping and drilling on EPM 14449 proved disappointing. Drilling at the best targets near the Robur and Robur North prospects returned only weak Cu, Au, Mo and U anomalies.

At Consternation prospect near the Cloncurry Fault, the 2 m gold intercept from SCR0001 was suggestive of a gold-only (Tick Hill style) target. Although further exploration for Tick Hill style deposits at Consternation could be done, results were not considered sufficiently encouraging to justify further work given the high annual expenditure commitments on the tenement.

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Appendix 1: EPM 14449 Xstrata soil assays

Data included as a separate component in QDEX.

Appendix 2: EPM 14449 Xstrata and Glengarry rock-chip and float assays

Data included as a separate component in QDEX.

Appendix 3: EPM 14449 IAL Rock-chip assays

Data included as a separate component in QDEX.

Appendix 4: EPM 14449 2009 RC drilling assays

Data included as a separate component in QDEX.