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## **SURPRISE PROJECT Cloncurry**

**EPM 13677**

### **Final Report for Period 18 November 2002 to 17 November 2011**

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<b>PROJECT OPERATOR:</b>	Gateway Mining Limited
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## **List of Plans**

Plan 1: Work Summary, 1:25,000

Note: As all Surprise Project tenements have been relinquished, this is a summary of work carried out over both contiguous EPM's 13677 and 9053

## **Digital Data**

Note – all data has been previously supplied with the relevant exploration and relinquishment reports. We have re-projected geochemical data to MGA94, and included datasets that cover EPM13677.

EPM13677\_Gravity.txt

EPM13677\_Rocks.txt

EPM13677\_Soils\_05.txt

EPM13677\_Soils\_96\_02.txt

## SUMMARY

The Surprise Project is located 8 kilometers southwest of Kajabbi and 100 kilometers northeast of Mount Isa and most lately included four mining leases (ML's 2483,2509,2686,90102) and two exploration permits for minerals (EPM's 9053,13677). Other previously relinquished tenements included EPM11171 and 11203, and are not discussed here.

Renewal applications for the Mining Leases were withdrawn in 2010, and EPM13677, the subject of this report, was allowed to lapse on its expiry date of November 17, 2011. EPM9053 was allowed to lapse upon expiry on 19/10/2013.

The Surprise Project was operated as an integrated exploration programme over all licences. This report includes a summary of all work carried out over the project area due to the integrated nature of the programmes, and the fact that at the time of preparation all licenses have been relinquished.

The original target was structurally controlled gold, copper and copper/gold mineralisation, with later work targeting possible IOCG or Mt Isa style copper mineralisation.

Recorded known production from the Surprise Mine between 1907 and 1976 was 4987 tonnes with grades from 9.8% to 16% copper and some gold at 2-4 g/t. From 1992 to 1994, H. Mostler produced some 805 tonnes of ore averaging 10.45% copper and 2.15 g/t gold.

Previous exploration was carried out by Carpentaria Exploration, Vam Ltd, Pancontinental Mining, Aurotech NL, Australian Ores & Minerals and Cyprus Gold Corporation which included gridding, soil and stream sampling, geological mapping, geophysical surveys, reverse circulation and diamond drilling.

A comprehensive exploration programme was carried out by Gateway Mining from 1995 until 2006, when Minotaur entered into a JV agreement with Gateway Mining.

Minotaur withdrew from the Joint Venture in 2008, and subsequent work by Gateway has involved a comprehensive data review, with no field activities being completed. This work was not as per the proposed work programme due to the withdrawal of the JV partner, who had submitted the most recent renewal applications which included the proposed work programmes.

Work included soil, rock chip and stream sediment sampling, geological mapping, and ground geophysical surveying including IP, EM and gravity.

Sixty four RC and diamond drillholes were drilled for a total of 3889m over a number of prospects, with mineralisation generally being confined to narrow quartz/carbonate/sulphide veins.

The results downgraded the prospectivity for the discovery of economic mineralisation, and the decision was made to relinquish all tenements.

# **1. INTRODUCTION**

## **1.1 Location**

Gateway Mining's Surprise Project is located 8 kilometres southwest of Kajabbi and 100 kilometres northeast of Mount Isa within the Mount Isa Inlier in northwest Queensland.

Access to the project is good via the sealed Barkly Highway to Cloncurry thence northwards along the Burke Development Road and a final 25 kilometres to Kajabbi crossing the Leichhardt River on an unsealed road. Another route is via the unsealed Lake Julius gravel road which exits northwards from the Barkly Highway about 18 kilometres east of Mount Isa.

Access within the project area is good along a central north south road, from which branch numerous fair-weather tracks.

The Project area is covered by the Cloncurry 1:250,000 geological and topographic sheet and the Quamby and Prospector 1:100,000 geological and topographic sheets. The entire project is located on the Coolullah Station pastoral lease. The location of the project area is shown in figure 1.

## **1.2 Tenure**

The Surprise Project, at the time of relinquishment of EPM13677 consisted of two EPM's. These are summarised in the Schedule of Tenure and Schedule of Sub-blocks.

EPM9053 of originally eleven sub-blocks, was one of three original EPM's (the others being 11171 and 11203, since relinquished) and four ML's. EPM9053 was subsequently been reduced to eight sub-blocks.

EPM13677, originally of four sub-blocks, was applied for to cover potential extensions to geochemical anomalism in the NE corner of EPM9053. This had been reduced to two sub-blocks by the time of surrender.

The Surprise Project had Joint Reporting Status.

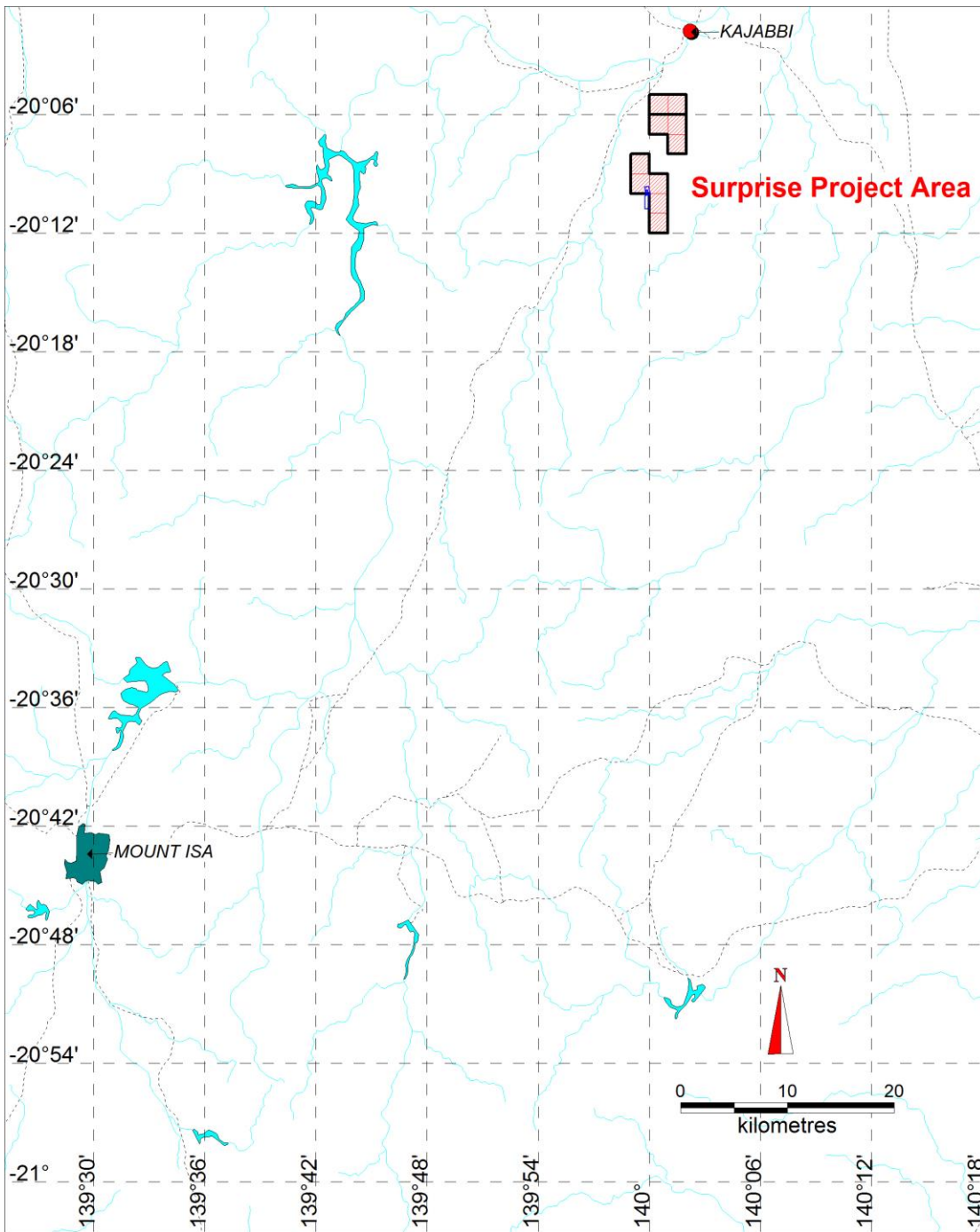
The tenements are shown in figure 2.

### Schedule of Tenure

<b>Title</b>	<b>Date of Grant</b>	<b>Date of Expiry</b>	<b>Area</b>	<b>Registered Owner</b>
EPM 9053	20/10/92	19/10/13	8 sub-blocks	Gateway Mining 100%
EPM13677	18/11/02	17/11/11	2 sub-blocks	Gateway Mining 100%, not renewed on expiry

### Schedule of Sub-blocks

<b>Block ID Map</b>	<b>Block</b>	<b>Sub-blocks</b>
EPM 9053		
CLON	96	UZ
CLON	97	FGMV
CLON	169	AF
EPM 13677		
CLON	97	AB



**Figure 1: Location Plan – Surprise Project**

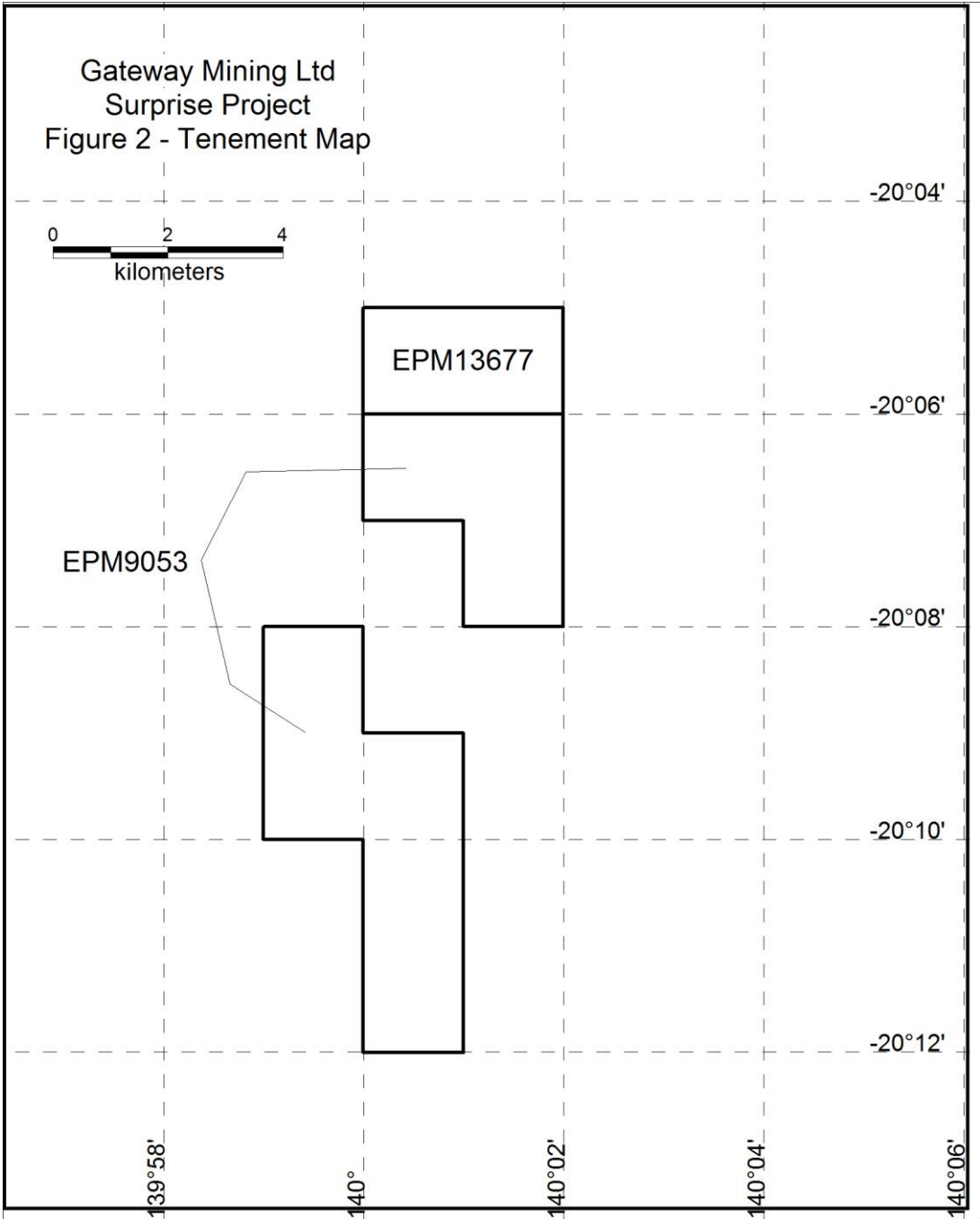


Figure 2: Tenement Map.



### **1.3 History of Production**

The Surprise Mine is first mentioned in Mines Department records from 1907. Recorded production between 1907 and 1976 was 4987 tonnes with grades from 9.8% to 16% copper and gold in the range of 2-4 g/t. No production records are available for the recent lease holdings from 1977-1992. From 1992 to 1994, H. Mostler produced some 805 tonnes of ore averaging 10.45% copper and 2.15 g/t gold.

### **1.4 Previous Exploration**

Previous exploration for the project is reported in. A summary of all exploration carried out over the tenements is presented later in this report.

- (1) Surprise EPM 9053 - Progress Reports (Period 26 Oct 1994 to 25 Oct 1997) - Gateway Mining NL.
- (2) Surprise Project EPM 9053, 11171,11203, ML's 2483, 2509, 2686 ,90102 – Progress Reports (Period 20 October 1997 to 19 October 2000)- Gateway Mining NL.
- (3) Surprise Project EPM 9053, 11171, ML's 2483, 2509, 2686, 90102 – Progress Report (Period 20 October 2000 to 19 October 2001)- Gateway Mining NL
- (4) Surprise Project EPM 9053, 11171, ML's 2483, 2509, 2686, 90102 – Progress Report (Period 20 October 2001 to 19 October 2002)- Gateway Mining NL
- (5) Surprise Project EPM 9053, 11171, ML's 2483, 2509, 2686, 90102 – Progress Report (Period 20 October 2002 to 19 October 2003)- Gateway Mining NL
- (6) Surprise Project EPM 9053, 13677, ML's 2483, 2509, 2686, 90102 – Progress Report (Period 20 October 2004 to 19 October 2005)- Gateway Mining NL
- (7) Surprise Project EPM 9053, 13677 ML's 2483, 2509, 268, 90102 – Report for Period 20 October 2005 to 19 October 2006
- (8) Surprise Project EPM 9053, 13677 ML's 2483, 2509, 268, 90102 – Report for Period 20 October 2006 to 19 October 2007
- (9) Surprise Project EPM 9053, 13677 ML's 2483, 2509, 268, 90102 – Report for Period 20 October 2007 to 19 October 2008
- (10) Surprise Project EPM 9053, 13677 ML's 2483, 2509, 268, 90102 – Partial Relinquishment Report for Period 20 October 2007 to 19 October 2008

(11) Surprise Project EPM 9053, 13677 ML's 2483, 2509, 268, 90102 – Report for Period 20 October 2008 to 19 October 2009

(12) Surprise Project EPM 9053, 13677 ML's 2483, 2509, 268, 90102 – Report for Period 20 October 2009 to 19 October 2010

(13) Surprise Project EPM 9053, 13677 ML's 2483, 2509, 268, 90102 – Report for Period 20 October 2010 to 19 October 2011

(14) Surprise Project EPM 9053, 13667 – Report for Period 20 October 2011 to 19 October 2012

## **1.5 Physiography**

Most of the area is covered in scattered scrub and dominated by low ridges predominantly striking north south. The Surprise mine northern extension and northeastern areas are characterised by resistant quartz ridges while the central portion is flat to gently undulating. Minor cover exists towards the northern tenement boundary.

## **2. GEOLOGY**

### **2.1 Regional Geology**

The project area includes prospective rocks of the lower Proterozoic Corella and Argylla Formations. Rock types in the Corella Formation are calcsilicates, hornfels, dolomites, granofels and shales that are intruded by or interbedded with basic intrusive or volcanic rocks. Variations in biotite, actinolite and scapolite content are the main differences in the calcsilicate units. Scapolite is commonly developed within the shale sequences. Calcite bodies are developed along shears in the calcsilicate rocks and in less silicified areas, dolomites are veined by calcite.

Rock types within the Argylla Formation include metamorphosed rhyolites, basalts and quartzites. The Argylla is distinct from the Corella in that the Argylla is generally a more acid/quartz assemblage of rock units. A younger intrusive, the Wonga Granite, outcrops about 4 km to the west of EPM 9053.

## **2.2 Local Geology**

The mining lease areas consist of a sequence of north-northwest trending, near vertical but west dipping calcsilicates and amphibolites of varying composition. In the mine area scapolite is frequently observed, but the dominant alteration is feldspathic in the form of vertical stringers of pink feldspar that cross-cut the actinolite-bearing calcsilicate rocks. There are alteration rims of magnetite around actinolite. The dominant alteration in the mine area is a strong and persistent silicification.

A feature of the immediate mine area are lenses of calcite and quartz. This zone of alteration extends for several hundreds of metres north and south of the mine and may correspond to lithology parallel shearing. Similarly, a large carbonate-hosted gossan lies along the strike of quartz units in the northeastern area.

## **2.3 Mineralisation**

Cyprus Gold demonstrated that mineralisation occurs as either copper-gold or gold alone as at the Surprise Mine, Big Norm Prospect (Leichhardt King) and several small pits and prospects north and northeast of the Surprise Mine. At the Surprise Mine mineralisation is predominantly copper with gold credits and is hosted by calcsilicates of the Corella Formation within coarsely crystalline pink, brown and white calcite and is typical of the vein-stockwork shear-related mineralisation style found in the Mt Isa Inlier. The calcite lodes strike at approximately 020° (NNE) oblique to the dominant foliation of 330° (NNW). In the north-east corner of 9053 a similar style of mineralisation is evident from preliminary surface rock and soil sampling. Mineralisation exposed in the Surprise Mine workings comprise copper oxides, silicates (chrysocolla) and carbonates (malachite and minor azurite) with supergene bornite and primary chalcopyrite with gangue quartz and calcite.

Gold at Big Norm appears to be associated with massive jasperoidal material with variable copper. An iron oxide gossan also appears mineralised, suggesting the primary equivalent may be an iron sulphide with gold.

### **3. WORK COMPLETED IN CURRENT YEAR**

#### **3.1 Data Review**

Work carried out during the current period has included reviewing data and endeavoring to find a new JV partner.

This work completed was not as presented in the proposed work plan, due to the previous withdrawal of the JV partner (who prepared the original proposals), and with Gateway not being able to secure a new JV partner.

### **4. LIFE OF TENURE EXPLORATION – SURPRISE PROJECT**

#### **4.1 Introduction**

A summary of work carried out over the project is attached as Plan 1. The bulk of the work was carried out on EPM9053 – much of the discussion below refers to that tenement.

Gateway commenced work on the Surprise Project in 1994, with this continuing until 2006 when Minotaur Exploration entered into a JV with Gateway. Minotaur withdrew in 2008, and subsequent work has been limited to data interpretation.

Field work carried out over the Surprise Project has included geological mapping, geochemical sampling (soils, rock chips, stream sediments), ground geophysics (IP, EM, magnetics) and RC drilling (47 holes for 2275m).

Gateway has targeted gold and gold/copper, and has intersected some limited shear hosted and oxide mineralisation. The results of the various programmes have however decreased the potential for the area to host economic mineralisation, and thus the decision was made to relinquish the tenements.

A summary of work carried out is included in Plan 1, and is discussed on a prospect by prospect basis below.

All data has been previously submitted with the relevant exploration reports, and a comprehensive discussion of activities and results is presented in the relevant reports.

Given that, at the time of writing, both EPM's (9053 and 13677) have been relinquished, this report will discuss the results from both together.

## **4.2 Reconnaissance**

Project wide reconnaissance work has included stream sediment sampling, rock chip sampling, geological mapping and a gravity survey.

Rock chip sampling generally targeted known workings, and as expected returning anomalous gold and copper from dumps and vein outcrops. The results from the stream sediment pointed towards known workings.

The gravity survey, carried out by Minotaur, was designed to test for possible IOCG mineralisation, which would be reflected as a residual high reflecting a buried hematite and or magnetite body. However the results reflected the known geology, with a high in the east being coincident with a N-S trending mafic dyke.

## **4.3 Surprise Mine (Includes Surprise North and Big Norm)**

Initial work was targeted at potential down dip and along strike extensions (along the shear hosting the Surprise mineralisation) of the Surprise Mine. This work included eleven RC drillholes for 960m, and four diamond holes for 654.5m. These were drilled during 1995 and 1996, and targeted known structures and IP anomalies along a strike length of around 2.5km N-S..

The drilling at the mine intersected up to 9m @ 1.76g/t Au and 1.42% Cu (Hole SU007, 102-111m, equating to a true width of ~3-4m. Mineralisation is hosted in a quartz/calcite/sulphide lode.

Diamond holes testing the structure and coincident IP anomalies north and south of the mine intersected some sheared and altered zones of low-grade mineralisation, with the maximum being 1m @ 0.52% copper.

The results of this work indicated a well-defined, pinching and swelling structure, with little chance to host economic mineralisation.

## **4.4 Startle Prospect**

Work over the Startle Prospect, largely completed in 1995 to 1997, included soil and rock chip sampling, IP surveying and RC drilling.

The Startle prospect includes a copper-gold soil anomaly with a strike length (NS) of ~700m, and a width of 250m, and is located over the contact between calc-silicates of the Corella Formation to the east and a mafic dyke/amphibolite to the west

Results of IP work indicated the presence of weak subsurface conductors at the Startle anomalies on lines 14000N. A strong IP response west of the gossan was recorded. A 50-100 metre wide highly chargeable zone has been identified at depth. Three lines of IP covering a 400 metre strike length all identified the same chargeable zone, there was no EM response.

Twenty eight reverse circulation drill holes tested the Startle anomaly on three drill traverses 200 metres apart. Holes intersected weakly altered meta-sandstone rock, minor quartz veining and oxide copper primarily malachite with minor amounts of azurite. Three zones of oxide copper were intersected on line 14200N. Drilling has only tested the zone to a 30 metre vertical depth.

Significant intersections included:

Hole No	Northing	Easting	From (m)	To (m)	Interval (m)	Cu %	Gold g/t
SUC9	14000	13920	8	18	10	0.12	-
SUC10	14200	13900	35	38	3	0.50	-
SUC14	14200	14030	5	7	2	-	0.24
SUC16	14200	13920	11	18	7	0.49	-
SUC17	14200	13900	14	21	7	1.21	-
SUC18	14200	13880	30	37	7	0.41	-
SUC32	14000	13800	21	24	3	0.18	-
SUC33	14200	14015	3	9	6	0.17	-
SUC35	14200	13990	25	32	7	0.19	-
SUC36	14200	13860	2	9	4	0.22	-
			28	30	2	0.46	-

Hole No	Northing	Easting	From (m)	To (m)	Interval (m)	Cu %	Gold g/t
SUC37	14200	13840	20	25	5	0.15	
SUC41	14400	13960	0	5	5	0.28	
SUC42	14400	13940	15	27	12	0.32	

In 2008 Minotaur drilled two holes, 08RCSU002 and 08RCSU003, into an anomaly generated by the inversion of historic IP data. These holes intersected some low grade intersections of copper associated with quartz and carbonate veining. The best copper intersection was 7m @ 0.61% Cu from 65m in hole 08RCSU002.

Again, the work at Startle has downgraded the prospectivity for economic mineralisation.

#### **4.5 Area 2 Prospect**

The Area 2 Prospect, to the north of Startle, contains some low grade copper soil anomalism. The anomalism trends NE, and was tested by Gateway in 12 shallow RC holes for 475m on two traverses 200m apart, with no significant results. One (08RCSU004, 102m) was drilled by Minotaur to test a coincident IP anomaly, again with no significant results. Some trace sulphide (pyrite and pyrrhotite) was noted by Minotaur, hosted within mafic units.

#### **4.6 Gossan Prospect**

The Gossan Prospect is located NE of Area 2, and consists of a low-moderate order copper soil geochemical anomaly with a NS strike length of approximately 700m, and delineated by one or two anomalous samples per line. Three shallow RC holes, (SUC45-47) for 140m were drilled by Gateway. The holes generally intersected amphibolite, with no significant mineralisation.

#### **4.7 Northern And Central Shears**

These zones are marked by scattered workings, and some copper anomalous soils and rockchips. Dipole-dipole and gradient array IP surveys were carried out over these prospects, which delineated chargeable zones crosscutting the geology, indicating possible structurally related features. No further work was carried out on these prospects.

#### **4.8 Gold Targets – Jolt, Astound, Dazzle**

These geochemical targets were delineated following a 2001 review of exploration data by AUSMEC.

These were all interpreted as being related to tensional structures, with the longest, Jolt, originally interpreted as striking for approximately 3.5km NNW, and up to 400m wide. The Jolt anomaly is within banded calc-silicate gneisses of the Corella Formation, to the east of the contact with the mafic dyke.

A subsequent statistical analysis of the results has significantly downgraded this anomaly, with anomalous samples being redefined as those >36ppb gold using population analysis, with these now forming an irregular, 700m long NS trending anomaly in the southern part of the originally interpreted anomaly. The irregular distribution of anomalous samples may reflect a series of en-echelon N-E trending veins.

This analysis has also downgraded the Astound and Dazzle anomalies.

No further work is deemed necessary on these gold anomalies.

#### **4.9 Summary and Conclusions**

Work at Surprise has downgraded all prospects, with no further work warranted. Observations and conclusions from this work include:

- Mineralisation is quartz/carbonate vein hosted, related to a series of N-S trending regional shears and tensional structures
- Copper is the dominant mineralisation, with both primary and oxide copper intersected
- Some vein related gold and copper/gold mineralisation is also present in the area
- The generally narrow width of the veins downgrades the potential for economic mineralisation
- Soil geochemical anomalies are commonly patchy, and although may have significant strike length, commonly only occur on one or two samples per line
- IP and EM anomalies too are generally related to structure – drilling of these did not intersect significant mineralisation or else did not vector towards significant mineralisation.

Given the above, and the significant expenditure on the tenements, it was recommended that the tenements not be renewed upon expiry.



## **5. ACKNOWLEDGEMENT AND WARRANTY**

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