ADDRESS
Office J, Level 2, 1139 Hay St.
West Perth, WA, 6005
Australia

PHONE
+61 414799659
ABN
96 095 684 389

EMAIL
pmcneil@frontierresources.com.au
WEBSITE
www.frontierresources.com.au

ASX : FNT

ASX Limited
Company Announcements Office

27th July 2016

TECHNICAL REPORT – QUARTER ACTIVITIES REPORT PERIOD ENDING 30 JUNE 2016

Frontier Resources Ltd (ASX:FNT) is focussed on mineral exploration in Papua New Guinea (**PNG**) and its 100% interests in the Bulago and Muller Exploration Licences. PNG is recognised as being highly prospective and the Company is targeting copper+/- gold +/-molybdenum porphyries and intrusive related epithermal gold deposits in the Papuan Fold Belt.

The Fold Belt contains the Ok Tedi porphyry copper-gold Mine (located 120km WNW), Porgera intrusive/ epithermal related gold Mine (100km east) and Kili Teke porphyry copper-gold Deposit (50km east). The giant Grasberg porphyry copper-gold +skarns is in this same zone in West Papua.

- The Share Purchase Plan was successful, with subscriptions for a total of $204,900 and 6,830,015 new shares. The Shareholders who participated in the capital raising are thanked very much for their support and encouragement.

  Managing Director, Mr Peter McNeil M.Sc. commented:

  The Share Purchase Plan was very successful and the funds raised will enable us to undertake our objective of additional drilling at the high grade gold Swit Kai Project, commencing within a month.

  The drilling team will mobilise as soon as logistical requirements are finalised. It is the peak wet season in August /September and we are assuming it is still safe to operate in East Creek.

  Frontier will attempt to evaluate targets, including 2 holes at East Creek Upper, 2 holes at East Creek Lower Zones and 2 holes on Camp or Kapia ridgeline, targeting the inferred high grade gold plunge associated with the intersecting mineralised structural orientations.

- Three diamond core holes (37.4m total of HQ TT) were completed during the Quarter and assays from EZU001, EZU002 and EZU003 from the Swit Kai East Creek Upper Zone, Bulago, all showed significantly elevated gold grades when associated with intrusives, quartz veining and brecciated zones.

  The best intercept was in EZU001 with 5.0m grading a weighted average of 13.92 g/t gold, from surface. This includes a best intercept of 1.0m grading 29.7 g/t gold + 6.5 g/t silver, from 3.0 to 4.0m downhole.

  Hole EZU002 returned 3.6m grading 7.92 g/t gold, from surface and EZU003 had 2m grading 6.44 g/t gold plus 1m grading 4.79 g/t gold, from 1.0m downhole. The peak assay in EZU003 was 25.40 g/t gold, showing the nugget effect (grade variability) from very fine grained native gold.

  The holes targeted a moderate-steep SSW dipping gold mineralised zone, with a jackhammer channel sampled intercept of 2.0m grading 195.0 g/t gold + 39.1 g/t silver (released to ASX 1/4/14). However, the gold encountered is primarily flat lying /conformable with the sediments, with a secondary association with the targeted dipping zone.

  High grade gold at Swit Kai is hosted by narrow silica/ quartz veins with multiple episodes of intense brecciation, lead + zinc and semi massive sulphides in intrusives proximal to large scale normal moderate/steep south dipping structures and conformable with horizontal sediments. Both structures have zones with >100 g/t gold.

  The mineralisation model has been refined and there is excellent strike continuity potential that can now be easily drill accessed relative to the topography. Gold in soil anomalies along trend to both the east and west of the Lower Zone, indicate a strike length to +480m total.

Many new targets have been proposed from the topographic evaluation and its refinement is ongoing. Flat spots indicate resistance to erosion and silicified (possibly brecciated and gold mineralised) intrusive. Multiple horizontal and dipping levels of gold mineralisation are predicted. Three south dipping structural zones have been mapped (with the Swit Kai Zone in the middle) that all contain known gold, zinc and copper mineralisation and have been mapped for >2 kilometres along strike. This increases tonnage potential significantly.

Historic grid soils defined at least 14 gold anomalies (>0.10 g/t gold), with 3 about 1,000m long and Suguma the least impressive. The ~1,000m x 350m anomaly in the NE contains the peak gold, zinc and lead in soil anomalism on the grid. Anomaly 1 [~1,000m x 500m] was cut by hole BUL005 and the bottom of hole BUL006, but apart from Swit Kai, no other gold soil anomalies have been drilled.

Gold anomalies in drainages to the west of Swit Kai indicate its unevaluated strike potential and drainages to the N and NW have never been sampled. The region has excellent mineralisation potential, with strong radiometric and aeromagnetic anomalies that require substantial evaluation.

- **Exploration to capitalise on the increased US dollar gold price and leveraged Australian dollar - PNG Kina is planned to include continued drilling at the high grade gold Swit East Creek Upper and Lower Zones as soon as possible**.

  Seven holes were drilled historically on the porphyry target in the Bulago Valley. Petrography notes transitional potassic - calc-potassic alteration and that the complex suite of intrusives at Bulago are similar to alkali porphyries at Ridgeway (NSW), Dinkidi (Philippines) and in BC. They are elongate vertically, with a small cross-section and high-grade copper- gold in a core of intense alteration (calc-potassic) and quartz-sulphide veins. Alteration haloes from the core are narrow (200-300m).

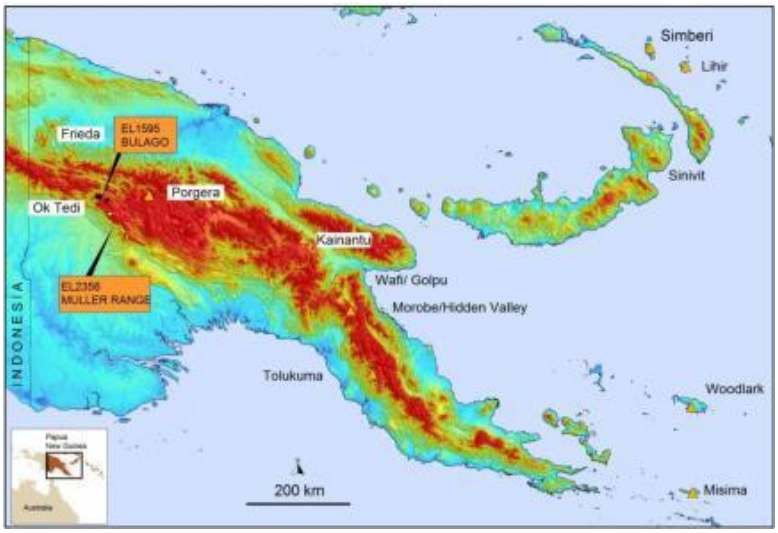
  The strongest individual copper in soil anomaly is >1,200m x 125m, trends NNW and is located west of the best hole (BUL007). The porphyry geochemistry indicates two mineralisation events /zones, being copper + gold and gold only.

  Historic assay intercepts from BUL007 are: 95.3m grading 0.15 g/t gold (from 243m, 61.0m grading 0.18 g/t gold plus 0.10 % copper (from 350m) and 42.2m grading 0.11 g/t gold plus 0.14% copper (from 538.8m down hole).

  OK Tedi quote --*The results of the soil geochemistry and drilling at Bulago suggest that two high-grade cores may be located at depth broadly bounded by holes BUL001, 003, 006 and BUL007 in the north and at depth broadly bounded by holes BUL002, 004,005 in the east.*

- **Fourteen skarn anomalies were interpreted from aeromagnetics and geology**, with ten proximal to the overlying limestone contact and spaced consistently around the basin. Three are within the basin and one is a sinkhole near the EL's topographic high in the SE.

  Assay results from the single line of ridgeline soil samples over 2 anomalies (located within fly camping distance from Swit Kai) each returned distinct zones with elevated zinc, silver, gold, arsenic, antimony but low copper. The assay results are still low order relative to the Bulago area norms and their relevance will be further evaluated, as we are attempting to 'see through' a sediment cap for the skarn and 'geochemical' leakage is an excellent vector to such a source. Further evaluation is warranted.

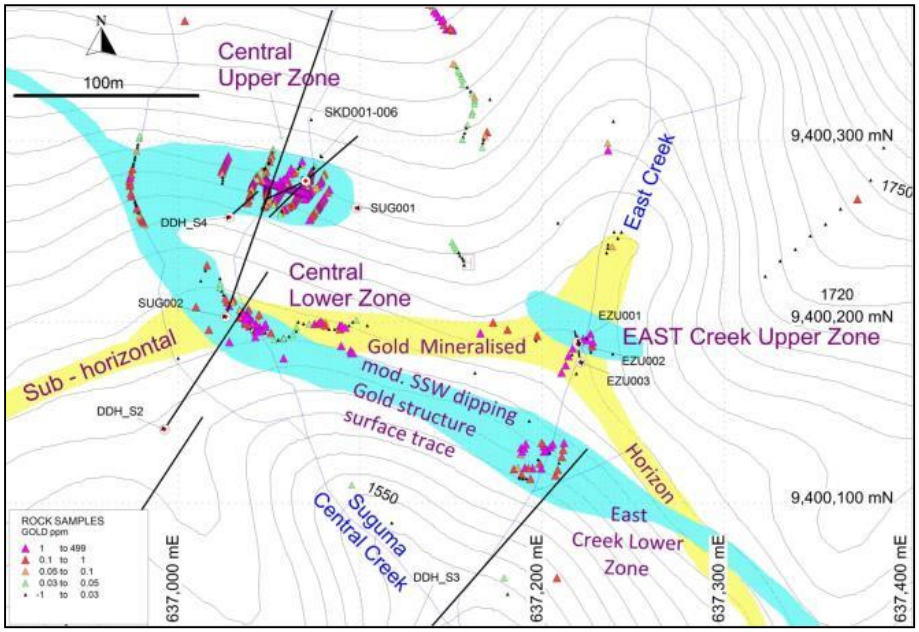


The Company's 'new' CSD500 drill rig in Kimbe has been containerised for shipping to the Mt Hagen base, for an increased work load at Bulago and/or for future exploration at the Baia /Tingi porphyry copper Projects.

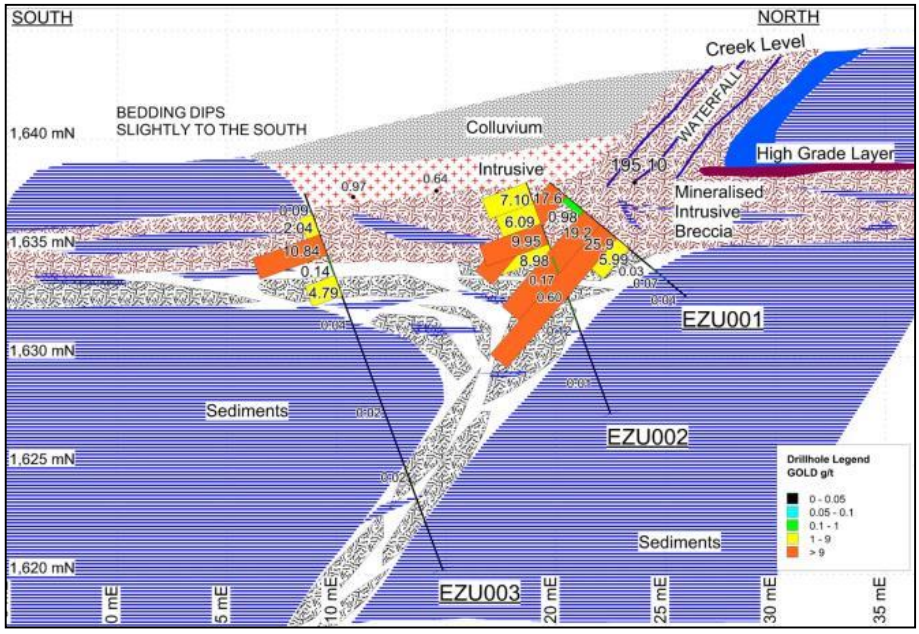
DETAILS

Frontier's drilling program at the Swit Kai East Creek Upper Zone, Bulago EL in Papua New Guinea, targeted a 2.0m wide gold mineralised interval that graded 195.0 g/t in demolition jackhammer trench channel sampling (4/2014) that appeared to dip moderately south. It was noted by the current drilling, that it then comes from a sub- horizontal zone of gold mineralisation that is conformable with the sediments and the dip slope mineralisation does not extend further at that location.

The three holes totalled 37.8m and were completed approximately perpendicular to the dipping mineralisation/ structure, on azimuths of 350° magnetic. Hole collar co-ordinates (handheld GPS- AGD66) and information is tabulated below. Drilling was suspended in May due to minor but debilitating rig hydraulic issues (easily fixed with new seals), but will continue at the Upper and Lower high grade gold Zones as soon as reasonably possible.



Hole EZU001 returned 5.0m grading a weighted average of 13.9 g/t gold from surface. Some grade variability / nugget effect was noted, with the average becoming 15.8g/t if the high assays are used and 11.9 if the low assays are used. EZU001 (8.1m) was inclined to 40° and collared 3m south of the waterfall face (or assumed north end of high-grade zone).



In EZU002 (11.3m) the skid position was the same but the inclination was 70° and the collar was further south 1.0m. Hole EZU002 returned 3.6m grading 7.92 g/t gold, from surface. Hole EZU003 (18.4m) was collared a further 5.0m to the south and was also inclined at 70°; it contained 2m grading 6.44 g/t gold, plus 1m grading 4.79 g/t gold, from 1.0m downhole. The peak assay in EZU003 was 1m of 25.40 g/t gold, showing the nugget effect (grade variability) from very fine grained native gold.

The first native gold in rock for the Bulago EL ever was noted in hole EZU002 at 1.15m and at 3.00m downhole (peak gold assay from 1.0m to 2.0m = 6.11g/t and from 3.0m to 3.6m = 9.39g/t), then in hole EZU001 at 0.70m (0.0m to 1.0m = 7.37 g/t gold).

Gold mineralisation is hosted by narrow silica / quartz veins producing stock-workings, with multiple generations of intense brecciation, dogstooth quartz and lead + zinc sulphide minerals + semi massive sulphides that are located in intrusives proximal to large scale normal moderate to steep south dipping structures (faults) and conformable with the sub-horizontal host siltstone. The most strongly veined,

brecciated and base metal sulphide mineralised intercepts are the most prospective for high grade gold mineralisation.

Frontier drilled under the gold mineralisation at the Central Upper Zone in late 2014, testing for sub-horizontal and north dipping possibilities to it. The drilling proved that all the Central Upper Zone mineralisation is related to fault/fracture fill /silicification on the 'dip slope' and is not sub-horizontal. It is therefore relatively thin (1 to 2m?) and to test it now would means drilling directly on the 50 degree dip slope (which would have been done if it were possible).

That lesson was taken to East Creek and we focused on evaluating the south dipping structure, but the mineralisation turned out to be predominantly flat lying. Gold mineralisation is undoubtedly also located in the dip slope structure targeted, but its size and tenor of the grade has not yet been determined.

The Central Lower Zone actually corresponds to the East Creek Upper Zone (both are sub-horizontal gold mineralisation on the same 'level') and the Central Upper Zone corresponds more to the East Creek Lower Zone (mod-high angle south dipping mineralisation). Conceivably, the highest grade mineralisation would be where they intersect.

EL 1595 - BULAGO EAST CREEK PROSPECT DRILLING INFORMATION - MAY 2016

East Creek Hole ID	Co-ordinates (AMG066)			Azimuth	Inclination	End of Hole Depth (m)
	Northing	Easting	RL (m)	(degrees mag)	(degrees)	
EZU001	9400189	637219	1638.0	350	-40	8.1
EZU 002	9400188	637220	1638.0	350	-70	11.3
EZU 003	9400178	637221	1637.5	350	-70	18.4
				Total Meters of Drilling		37.8

East Creek Drill Hole EZU001

From (m)	To (m)	Intercept (m)	Gold Average (g/t)	Gold Max. (g/t)	Gold Min. (g/t)	Silver (g/t)	Zinc (%)	Lead (%)	Arsenic (%)
0.0	1.0	1.0	17.6	21.0	14.2	10.2	0.45	0.09	0.27
1.0	2.0	1.0	0.98	1.29	1.02	4.1	0.06	0.09	0.03
2.0	3.0	1.0	19.2	20.9	17.4	8.8	0.37	0.11	0.15
3.0	4.0	1.0	25.9	29.7	22.1	6.5	0.25	0.05	0.13
4.0	5.0	1.0	5.99	5.52	6.46	2.1	0.08	0.02	0.06
5.0	6.0	1.0	0.03	-	-	-	-	-	-
6.0	7.0	1.0	0.07	-	-	-	-	-	-
7.0	8.1	1.1	0.04	-	-	-	-	-	-

East Creek Drill Hole EZU002

From (m)	To (m)	Intercept (m)	Gold Average (g/t)	Gold Max. (g/t)	Gold Min. (g/t)	Silver (g/t)	Zinc (%)	Lead (%)	Arsenic (%)
0.0	1.0	1.0	7.10	7.37	6.82	5.2	0.47	0.07	0.36
1.0	2.0	1.0	6.09	6.11	6.07	6.2	0.26	0.12	0.25
2.0	3.0	1.0	9.95	12.1	7.79	6.3	0.28	0.11	0.29
3.0	3.6	0.6	8.98	9.39	8.57	8.3	0.37	0.10	0.51
3.6	4.6	1.0	0.17	-	-	-	-	-	-
4.6	5.6	1.0	0.60	-	-	1.0	-	-	-
5.6	7.0	1.4	0.12	-	-	-	-	-	-
7.0	9.0	2.0	0.01	-	-	-	-	-	-
9.0	11.3	2.3	-	-	-	-	-	-	-

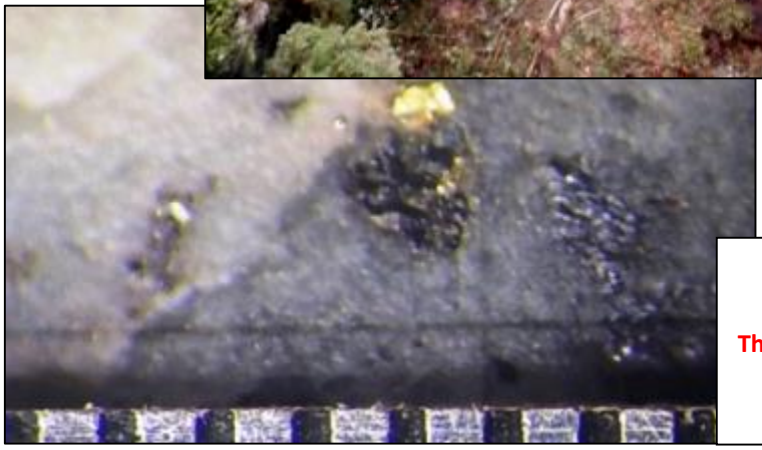
East Creek Drill Hole EZU003

From (m)	To (m)	Intercept (m)	Gold Average (g/t)	Gold Max. (g/t)	Gold Min. (g/t)	Silver (g/t)	Zinc (%)	Lead (%)	Arsenic (%)
0.4	1.0	0.6	0.09	-	-	1.2	-	-	-
1.0	2.0	1.0	2.04	-	-	2.9	0.45	-	0.22
2.0	3.0	1.0	10.85	25.40	4.36	4.2	0.44	0.06	0.48
3.0	4.0	1.0	0.14	-	-	1.6	0.05	-	0.03
4.0	5.0	1.0	4.79	7.56	3.12	4.0	0.32	0.06	0.18
5.0	6.0	1.0	0.04	-	-	0.6	-	-	-
6.0	7.0	1.0	0.02	-	-	-	-	-	-
7.0	9.0	2.0	0.02	-	-	-	-	-	-
9.0	11.0	2.0	0.02	-	-	-	-	-	-
11.0	13.0	2.0	-	-	-	-	-	-	-
13.0	15.0	2.0	0.05	-	-	0.9	-	-	-
15.0	18.4	3.4	0.01	-	-	2.7	-	-	-

The best immediate large /regional target is the next zone upslope from Swit Kai, according to the aeromagnetics. Another excellent new zone to test is downslope from Swit Kai and has very strong zinc and lead, plus gold anomalies in grid based soil sampling and an OTML rock outcrop sample to 27 g/t gold.

Excellent drill targets are the junctions of the sub-horizontal mineralised layer on 1630m RL and the moderate south dipping structures. This creates a horizontal plunge possibility for higher grade mineralisation, that is apparent is EZU001.

Technical information regarding Bulago was released to the ASX on 16/6/16, 11/6/16, 10/5/16, 21/4/16, 12/12/14, 5/12/14, 4/7/14, 11/6/14, 1/4/14, 18/10/12, 24/5/12, 17/5/12, 28/2/11 and 16/3/10; it is also summarised in Quarterly Reports.



Visible gold in hole EZU002 through a binocular microscope

The scale is in increments of 0.5mm (1 alum. + 1 black). Field of view is 8.0mm and magnification is about 40 times.

GOLD AND COPPER EXPLORATION
EL 1595 - BULAGO, PAPUA NEW GUINEA

By: Peter McNeil M.Sc., July 2016

Frontier is targeting intrusive/ epithermal related gold deposits and copper- gold -molybdenum porphyries in the Papuan Fold Belt on the geologically young and highly prospective southern fall of the mountainous spine of PNG. Frontier owns the Bulago and along strike Muller Exploration Licences plus all required equipment to run its own exploration programs, including drill rigs, bulldozers, crawlers and trucks.

The Fold Belt contains the Ok Tedi porphyry copper-gold Mine (located 80km WNW), Porgera intrusive/ epithermal related gold Mine (120km east) and Kili Teke porphyry copper-gold Deposit (50km east). The giant Grasberg porphyry copper-gold +skarns is in this same zone in West Papua.

Drilling is strongly warranted and exploration to capitalise on the increased US dollar gold price and leveraged Australian dollar - PNG Kina will include drilling at the high grade gold Swit East Creek Upper and Lower Zones, the SW porphyry target, plus new structural /geochemical targets ASAP.

DRILL TARGETS

Swit Kai high grade gold: 3 holes at East Creek Upper (90m) & 3 holes at Lower (90m)
2 holes at Central Upper (20m) & Lower (40m)
2 holes on Kapia ridgeline (120m) targeting the plunge

High grade /bulk gold: 1 hole at SK River Zone East (100m), targeting OTML 'diorite' that graded 37 g/t gold
1 hole at SK Headwater Zone (100m), targeting gold bearing structural zones

Low grade gold: 1 hole in NE Bulago Valley targeting very strong gold- zinc-lead soil anomalism (330m)
This hole may transition to porphyry copper at depth

Porphyry copper-gold: 1 hole in SW Bulago Valley at strong copper + gold soil anomalism W of BUL007 (330m)
1 hole in NW Bulago Valley at strong copper + gold soil anomalism W of BUL001 (330m)

Polymetallic Skarns: 2 holes in SE Bulago Valley at Funutu's very strong gold + zinc +lead soil anomalism, gold - zinc skarn outcrop zone + aeromagnetic anomaly & Porgera Zone 7 type target (150m)

Three styles of mineralisation:

- Very high-grade gold (to 754 g/t) associated with intrusive/host rock contact breccia and shear zones.
- Porphyry copper- gold -molybdenum mineralisation associated with the stock itself (to 3.38 g/t gold).
- Very high-grade skarn (to 205 g/t gold) mineralisation associated with the intrusives/ overlying limestones.

The drainage basin (3.5km x 5.5km) has a very well defined, strong, cohesive, ~14 km^2 gold in stream sediment/ panned concentrate anomaly (with 6 discrete and large zones) and a well-defined gold, zinc and copper (+/- lead) drainage anomaly that covers the centrally located porphyry copper / gold mineralised intrusive.

HIGH-GRADE GOLD MINERALISATION

- Grid soils defined at least 14 gold anomalies (>0.10 g/t gold), with 3 about 1,000m long and Suguma the least impressive. The ~1,000m x 350m anomaly in the NE contains the peak gold, zinc and lead in soil anomalism on the grid. Anomaly 1 ([~1,000m x 500m] was cut by hole BUL005 and the bottom of hole BUL006, but apart from Swit Kai, no other gold soil anomalies have been drilled.

- Outcrops at Swit Kai were, systematically broken/channelled (with a demolition jackhammer), sampled, mapped, evaluated and tracked laterally in 'trenches' over 95m and 120m strike lengths, respectively. Gold in soil anomalies along trend to both the east and west of the Lower Zone, indicate an excellent continuing strike length to +480m total.

- High grade gold at Swit Kai is hosted by narrow silica/ quartz veins with multiple episodes of intense brecciation, lead + zinc and semi massive sulphides in intrusives proximal to large scale normal moderate/steep south dipping structures and conformable with horizontal sediments. Both structures have zones with >100 g/t gold.

- Frontiers drilling at Swit Kai in late 2014 (with the Company's CSD500 rig) attempted to evaluate the very high grade gold outcrops at the Central Upper Zone, but ultimately we drilled underneath the mineralised horizon with 6 holes and SKD004 had 0.50m grading 46.3 g/t gold + 11.4 g/t silver, from 1.20m to 1.70m.

  In 4/2016 drilling targeted extensions 130m to the east, targeting 2.0m grading 195.0 g/t gold and 3m grading 45.2 g/t gold (not yet tested). Three holes (37.4m) had a best intercept in EZU001 of 5.0m of 13.92 g/t gold (from surface), including 1.0m of 29.7 g/t gold + 6.5 g/t silver, in a flat lying /conformable zone. Hole EZU002 returned 3.6m of 7.92 g/t gold (from surface) and EZU003 had 2m of 6.44 g/t gold, plus 1m of 4.79 g/t gold.

- Gold anomalies in drainages to the west of Swit Kai indicate its unevaluated strike potential and drainages to the N and NW have never been sampled. The region has excellent mineralisation potential, with strong radiometric and aeromagnetic anomalies that require substantial evaluation.

- High-grade gold mineralisation model refined and it shows excellent strike potential that can be easily drilled. Many new targets are proposed from topographic modelling. Flat spots indicate silicification and possibly gold mineralised intrusive that then feeds from and up into the mod/steep dipping mineralised structures. High grades will be targeted at the structural intersection (flat plunge). Three south dipping structural zones have been mapped (with the Swit Kai Zone in the middle) that all contain known gold, zinc and copper mineralisation and have been mapped for >2 kilometres along strike. This increases tonnage potential significantly.

PORPHYRY COPPER - GOLD MINERALISATION

- Seven holes were drilled on the porphyry target in the Bulago Valley. Petrography notes transitional potassic - calc-potassic alteration and that the complex suite of intrusives at Bulago are similar to alkali porphyries at Ridgeway (NSW), Dinkidi (Philippines) and in BC. They are elongate vertically, with a small cross-section and high-grade copper- gold in a core of intense alteration (calc-potassic) and quartz-sulphide veins. Alteration haloes from the core are narrow (200-300m).

- The strongest individual copper in soil anomaly is >1,200m x 125m, trends NNW and is located west of the best hole (BUL007)**.** The porphyry geochemistry indicates two mineralisation events /zones, being copper + gold and gold only. Assay intercepts from BUL007 are: 95.3m grading 0.15 g/t gold (from 243m, 61.0m grading 0.18 g/t gold plus 0.10 % copper (from 350m) and 42.2m grading 0.11 g/t gold plus 0.14% copper (from 538.8m down hole).

- OK Tedi quote --***The results of the soil geochemistry and drilling at Bulago suggest that two high-grade cores may be located at depth broadly bounded by holes BUL001, 003, 006 and BUL007 in the north and at depth broadly bounded by holes BUL002, 004,005 in the east.***

- Fourteen skarn anomalies were interpreted from aeromagnetics and geology, with ten proximal to the overlying limestone contact and spaced consistently around the basin. Three are within the basin and one is a sinkhole near the EL's topographic high in the SE. Further evaluation is strongly warranted.

EL 1595 - Significant Bulago Gold and Copper Drill Results

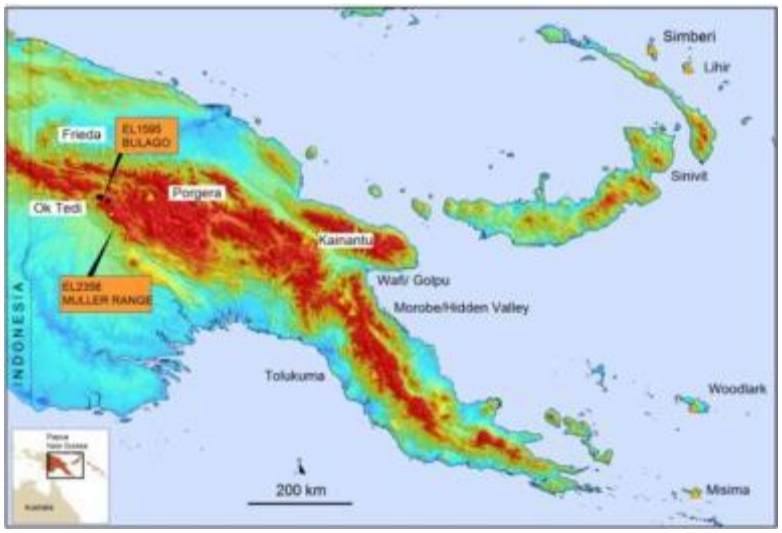
Hole ID		Intercept Length	Gold (g/t)	Copper (ppm)	From (m)	To (m)
BUL001		9.5m	0.32	137	29.5	39.0
plus		224.1m	0.06	**1255**	119.0	343.1
incl		76.1m	0.16	**1510**	267.0	343.1
plus		9.7m	0.21	124	359.5	369.2
plus		**12.7m**	**0.10**	**1061**	**371.8**	**384.5**
plus		2.4m	0.54	550	385.6	388.0
plus		21.0m	0.42	100	407.0	428.0
incl		**3.0m**	**2.04**	101	**422.0**	**425.0**
plus		1.3m	0.10	828	439.0	440.3
BUL002		**63.2m**	**0.10**	**1152**	**27.8**	**91.0**
incl		**0.9m**	**1.32**	585	**86.1**	**87.0**
BUL003		370.5m	0.06	347	19.1	389.6
incl		**75.9m**	0.04	674	63.5	139.4
plus		**5.9m**	**1.71**	92	**367.1**	**373.0**
plus		**2.0m**	**0.50**	178	**379.0**	**381.0**
BUL004		**1.5m**	**1.22**	280	**80.0**	**81.5**
BUL005		363.1m	0.09	95	0.0	363.1
incl		**2.0m**	**1.80**	173	**197.0**	**199.0**
BUL006		**1.5m**	**3.19**	158	**20.5**	**22.0**
plus		**1.6m**	**2.57**	199	**83.9**	**85.5**
BUL007		**346.0m**	**0.11**	**771**	**235.0**	**581.0**
incl		9.1m	0.13	720	62.0	71.1
plus		5.1m	0.22	327	113.9	119.0
plus		**12.0m**	**0.14**	619	**133.0**	**145.0**
plus		8.0m	0.14	320	175.0	183.0
plus		**103.3m**	**0.15**	639	**235.0**	**338.3**
plus		**61.0m**	**0.16**	**1017**	**350.0**	**411.0**
plus		5.3m	0.15	763	432.7	438.0
plus		**37.0m**	0.08	**1160**	**490.0**	**527.0**
plus		**44.2m**	**0.11**	**1352**	**538.8**	**583.0**

NB: BUL007 has very low Ag and As, with Mo increasing downhole.

SUMMARY

The Bulago EL covers two broad intrusive complexes (Idawe and Tumbudu Stocks) that belong to a suite of small and isolated upper Miocene to Pliocene diorite to monzonite intrusives within the Australian Plate sediments south of the Lagaip Fault Zone.

These intrusives form a zone that stretches from Porgera in the east to Ok Tedi in the west and the fault zone is considered to be a major structural boundary between the Australian and Melanesian Plates. Ok Tedi (copper-gold), Bulago (copper-gold, high and low grade gold), Kili Teke (copper-gold), Porgera and Mt Kare (both high and low grade gold) are associated with this 'Fold and Thrust Belt'.



The Bulago porphyries are located in the northern sector of the 45 kilometre diameter 'Aluni Caldera', are proximal to the NNE trending Strickland-Bulago River Structure and intrude the northern flank of the Muller Anticline.

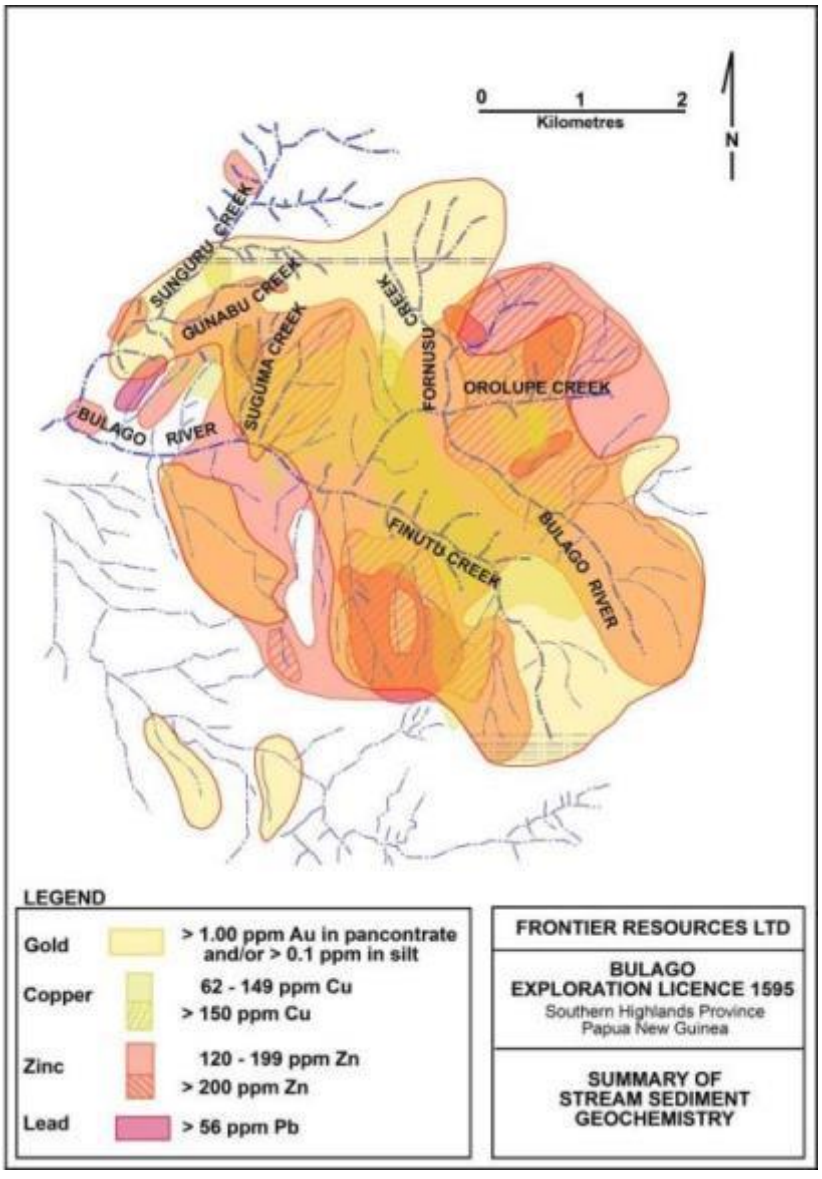
This situation provided excellent 'structurally prepared and repetitive' locations to focus gold, porphyry copper- gold molybdenum and also higher grade gold- zinc- copper-lead skarn mineralisation (at limestone/ intrusive contacts). The high grade outcrops are structurally and genetically related over a relatively large area.

The Bulago drainage basin contains a very well defined, strong and cohesive approximately 14 sq km gold in stream sediment and panned concentrate anomaly. There are 6 discrete and large prospect areas within this gold anomaly.

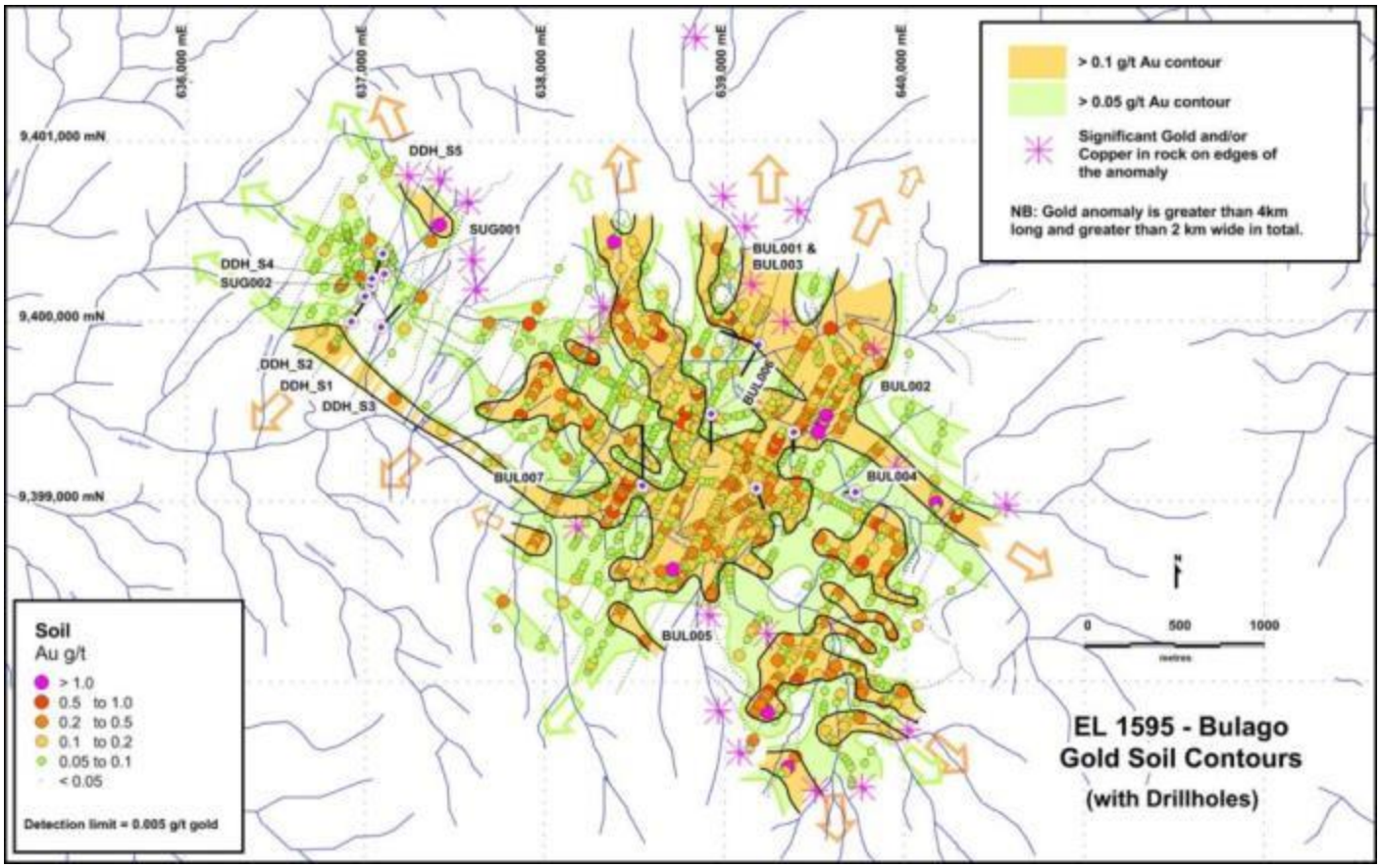
The prospects are located within a large elliptical (3.5km x 5.5km), well-defined gold, zinc and copper (+/- lead) drainage anomaly that covers a centrally located porphyry copper / gold mineralised intrusive.

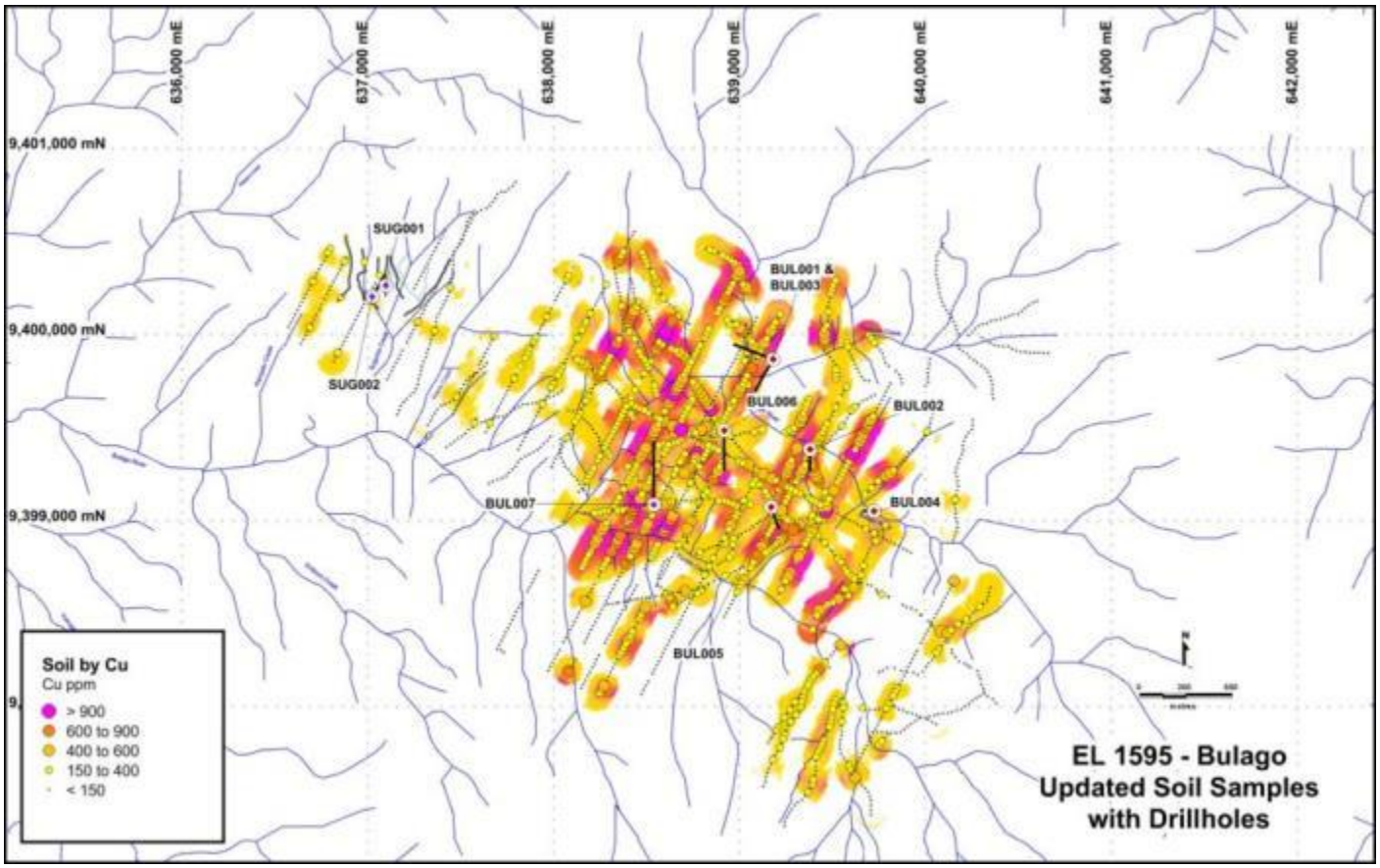
Precious and base metal anomalism continues up to and into the peripheral limestones demonstrating the potential for economic skarn deposits.

Frontier's 2009 soil sampling revealed multiple, extensive and strong gold anomalies associated with widespread copper anomalies of weaker intensity, but still very well defined. The gold anomaly (>50ppb) is broadly NW-SE and around 2,500m long and 2,000m wide (5 sq km). It has about 10 distinct higher grade zones or prospects.



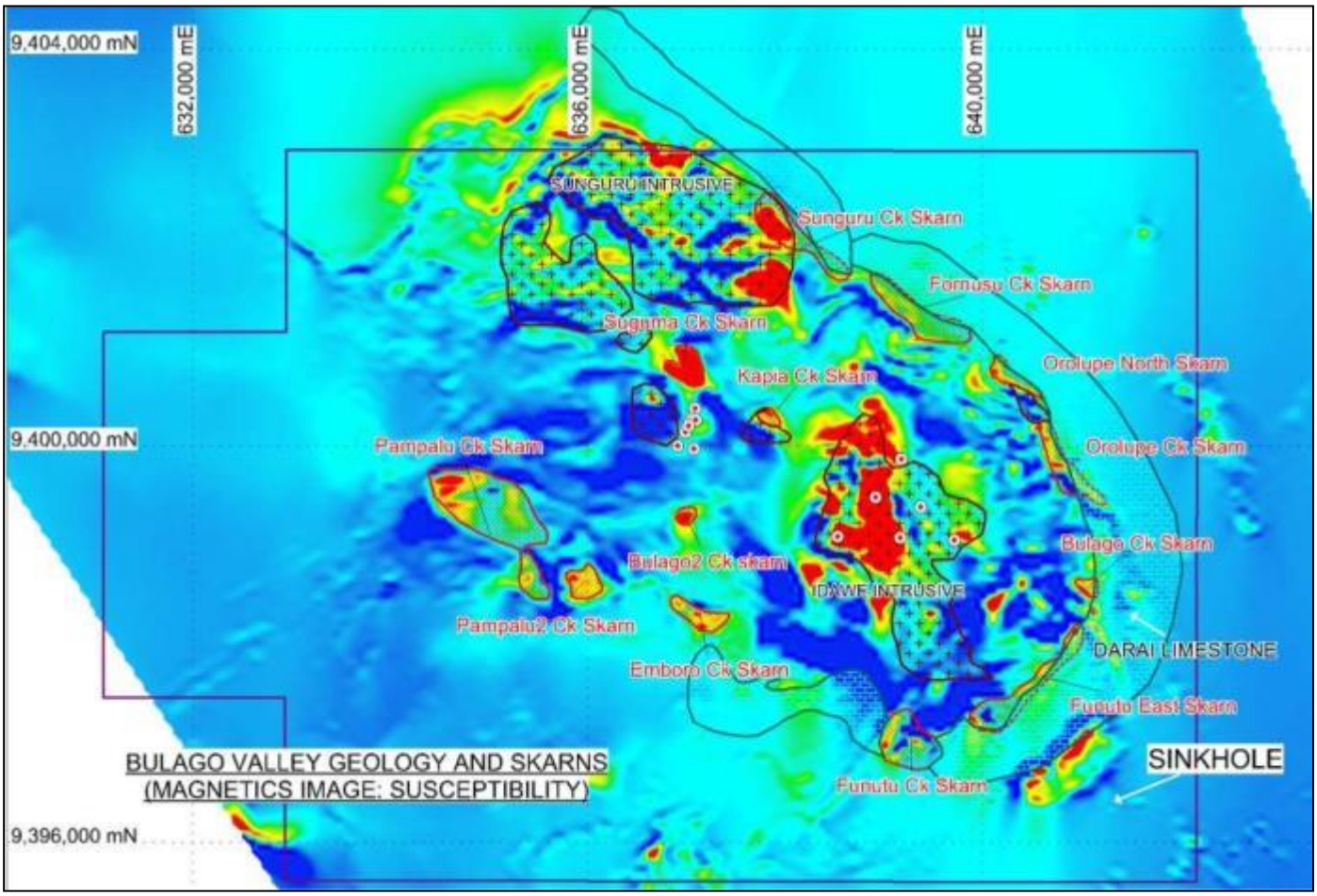
The copper anomaly consists of two approximately N-S (+NE-SW) trending, 1,600m long and 200m to 550m wide zones at >300 ppm. The full extent of the anomaly is around 4,000m long (NW-SE) at >150ppm.

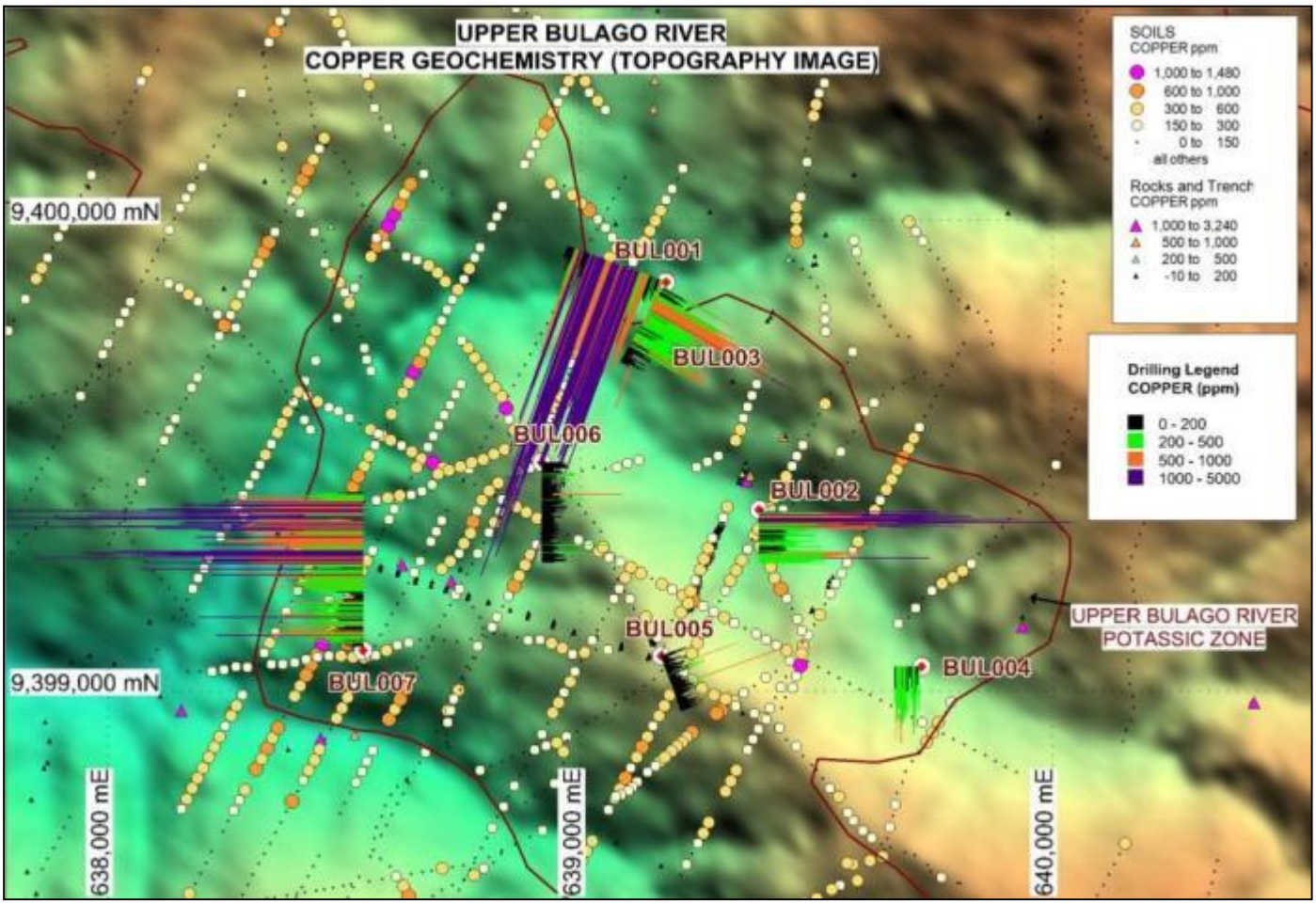

636,000 mE
637,000 mE
638,000 mE
639,000 mE
640,000 mE
9,401,000 mN
9,400,000 mN
9,399,000 mN
DDH_S5
SUG001
DDH_S4
SUG002
DDH_S2
DDH_S1
DDH_S3
BUL001 &
BUL003
BUL006
BUL002
BUL007
BUL004
BUL005
> 0.1 g/t Au contour
> 0.05 g/t Au contour
Significant Gold and/or Copper in rock on edges of the anomaly
NB: Gold anomaly is greater than 4km long and greater than 2 km wide in total.
Soil
Au g/t
> 1.0
0.5 to 1.0
0.2 to 0.5
0.1 to 0.2
0.05 to 0.1
< 0.05
Detection limit = 0.005 g/t gold
0
500
1000
EL 1595 - Bulago
Gold Soil Contours
(with Drillholes)


636,000 mE
637,000 mE
638,000 mE
639,000 mE
640,000 mE
641,000 mE
642,000 mE
9,401,000 mN
9,400,000 mN
9,399,000 mN
SUG001
SUG002
BUL001 &
BUL003
BUL006
BUL002
BUL007
BUL004
BUL005
Soil by Cu
Cu ppm
> 900
600 to 900
400 to 600
150 to 400
< 150
EL 1595 - Bulago
Updated Soil Samples
with Drillholes

Bulago porphyry Prospect

The Frontier/OTML JV completed seven drill holes on the Bulago porphyry (2,711.1m) and two holes on the Swit Kai (Suguma) high grade gold target (591.9m) in 2012.





The 7 holes on the porphyry target demonstrated substantial intercepts of low grade gold with and without copper, but failed to locate substantial widths of higher grade copper-gold mineralisation.

However:

- Drilling will continue at the high grade gold Swit East Creek Upper and Lower Zones plus newly advanced associated targets as soon as reasonably possible.
- Grid based geochemistry historically demonstrated at least 14 gold in soil anomalies, with 3 about 1,000m long and Suguma actually the least impressive of all of them.
- None of the gold in soil anomalies have been drill tested except Anomaly 1 ([~1,000m x 500m] and cut by BUL005 and the bottom of BUL006).
- The gold in soil anomaly in the NE is ~1,000m x 350m, it contains the peak gold in soil anomalism located on the grid, but remains to be tested by trenching and drilling.
- The strongest zone of copper in soil geochemistry trends NNW and is >1,200m x 125m. This anomaly also remain to be drilled.
- Petrography from hole BUL007 notes transitional potassic - calc-potassic alteration and the complex suite of intrusives at Bulago suggest similarity with alkali porphyries at Cadia / Ridgeway (NSW), Dinkidi (Philippines) and several in British Columbia.

  Such deposits typically are elongate vertically with a small planar cross-section, in which high - grade copper- gold mineralisation is confined to a core of intense calc - potassic alteration and quartz-sulphide veins containing bornite, surrounded by zones of outer calc-potassic and potassic alteration, where bornite is replaced in abundance successively by chalcopyrite and pyrite.

  Alteration haloes are typically narrow reaching only 200-300m from the mineralised core. The results of the soil geochemistry and drilling at Bulago suggest that two high-grade cores may be located at depth broadly bounded by holes BUL001, 003, 006 and BUL007 in the north and at depth broadly bounded by holes BUL002, 004,005 in the east.

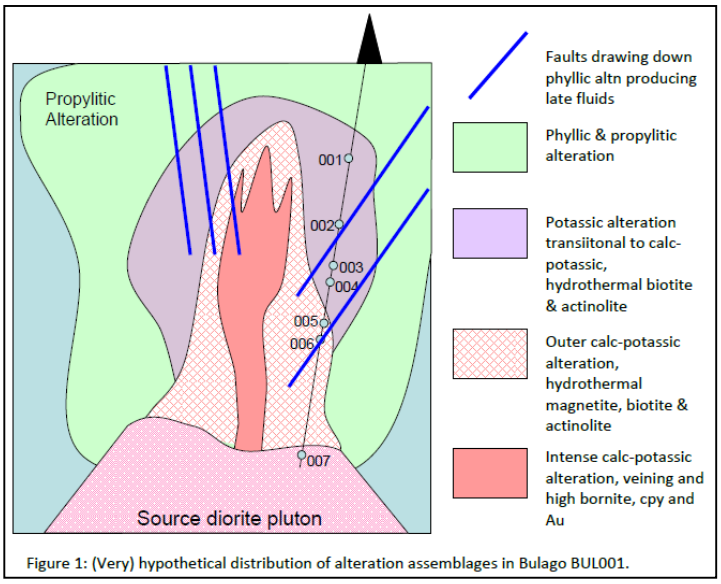


Figure 1: (Very) hypothetical distribution of alteration assemblages in Bulago BUL001.

- Drilling is strongly warranted from hole BUL007 pad toward the very cohesive and strong gold and copper anomalies and possible core zone located to the west.

Swit Kai (Suguma) Prospect

High grade gold mineralisation is hosted by narrow silica / quartz veins that produce small stock-workings with multiple generations of intense brecciation, dogstooth quartz and lead + zinc sulphide minerals + semi massive sulphides; these are located in intrusives proximal to large scale normal moderate to steep south dipping structures (faults) and conformable with the sub-horizontal siltstones/sediments.

The most strongly veined, brecciated and base metal sulphide mineralised intercepts are the most prospective for high grade gold mineralisation. The conformable mineralisation appears to have more massive sulphide and zinc /lead mineralisation than the dip slope mineralisation, suggesting slightly different times and pulses of mineralisation using both joined structures. Each structure contains demonstrated zones with >100 g/t gold mineralisation, but the dip slope appears to have the highest grades, with up to 500 g/t gold in outcrop channel samples.

Five narrow gold mineralised zones (+/-silver +/- zinc +/- arsenic) were cut by hole SUG002, including a high-grade intercept of 27.0 g/t gold over 1.3m, at the Lower Horizon - dip slope zone, at the contact between the diorite and sediments. Four narrow zones of gold mineralisation were cut in hole SUG001, with a peak of 1.7m of 1.56 g/t. All these zones represent dip slope mineralisation and were only 10- 15cm wide, within a 1.5 to 3m sample. This indicates each small mineralised section has an actual grade of about 30 g/t gold.

2015 Drill Holes

Drill Pad 1 was located in the central sector of the Swit Kai Prospect near the top end of Trench 1. One 'section fan' of five holes was completed from drill pad 1 and the sixth hole started a new 'horizontal fan'.

The drilling targeted the high grade gold mineralisation related to the 45^{o} dip slope, an associated 70^{o} north dipping strongly silicified intrusive with hydrothermal breccias/sulphides and the flat lying host sediments (for conformable mineralisation as at the Lower Zone).

Drill holes tested down /across the surficial high grade gold zone and also across the intrusive for proximal sub-parallel repeats of the high grade gold and for possible lower grade bulk gold mineralisation. The intrusive was strongly silicified and fractured but lacked significant hydrothermal breccias/sulphides.

The very high grade gold mineralisation at the Upper Zone appears to be a relatively thin layer associated intrusives and concentrating at the dip slope. The lack of breccias in the core holes implies that the high grade mineralisation was not intersected and that we actually drilled underneath the actual horizon.

The best result was in hole SKD004 with 0.5m grading 46.3 g/t gold + 11.4 g/t silver, from 1.2m to 1.7m downhole.

No significant width breccia repeats were noted downhole in the drilling, however SKD005 had a semi massive pyrite, pyrrhotite, magnetite, galena and sphalerite vein from 39.3m to 39.6m.

The Swit Kai drilling targeted the high grade gold mineralisation related to a 45^{o} south dipping /E-W trending fault (dip slope) and attempted to test:

1. Down and across (to the south) the surficial high grade gold zone.
2. Across the host and related 70^{o} south dipping intrusive for proximal sub-parallel (stacked) repeats of the high grade gold.
3. For proximal lower grade bulk gold mineralisation within the intrusive.
4. For conformable high grade gold mineralisation (as demonstrated in April at the Lower Zone).

The intrusive was strongly silicified and fractured but lacked significant hydrothermal breccias/sulphides as observed in the surficial high grade rocks and was only very weakly gold mineralised.

The relatively thin, high grade gold mineralisation at the Upper Zone appears to be controlled by the 45^{o} south dip fault (dip slope), is localised by/in the intrusive and at the contact of the relatively flat lying siltstones, but there was no evidence for conformable gold mineralisation.

<u>Significant Swit Kai Prospect Upper Zone Drill Results Included:</u>

SKD001 with 0.80m grading 0.76 g/t gold + 8.6 g/t silver, from 0.00 to 0.80m.

SKD002 with 1.95m grading 0.75 g/t gold + 4.8 g/t silver, from 58.45m to 60.4m.

SKD003 with no significant assay results.

SKD004 with 0.50m grading 46.3 g/t gold + 11.4 g/t silver, from 1.20m to 1.70m.

SKD005 with 0.60m grading 0.91 g/t gold + 13.6 g/t silver (+741 ppm copper in a semi massive sulphide vein), from 39.3m to 39.6m.

SKD006 with 1.90m grading 5.73 g/t gold + 9.8 g/t silver (+0.42% zinc), from 7.40m to 9.30m

The Suguma Prospect area has additional zones with high-grade gold from continuous chip outcrop channel samples and several additional areas of continuing interest. The 3 zones are >130m to the east of the trace of SUG002 and include 4.0m of 135.6 g/t gold (with 6.0m of 21.1g/t gold along strike across East creek), 7.5m of 67.0 g/t gold (and 4.0m of 36.4 g/t gold along strike) and 10.0m of 14.3g/t gold.

2016 Drill Holes

Drill holes EZU001, EZU002 and EZU003 from the Swit Kai East Creek Upper Zone all showed elevated gold grades when

associated with intrusives, quartz veining and brecciated zones.

Three diamond core holes (37.4m total of HQ TT) targeted a moderate-steep SSW dipping gold mineralised zone, with a jackhammer channel sampled intercept of 2.0m grading 195.0 g/t gold + 39.1 g/t silver (released to ASX 1/4/14). However, the gold encountered in the holes drilled is primarily flat lying /conformable with the sediments, with a secondary association with the targeted dipping zone.

The best intercept was in EZU001 with 5.0m grading a weighted average of 13.92 g/t gold, from surface. This includes a best intercept of 1.0m grading 29.7 g/t gold + 6.5 g/t silver, from 3.0 to 4.0m downhole.

Hole EZU002 returned 3.6m grading 7.92 g/t gold, from surface and EZU003 had 2m grading 6.44 g/t gold plus 1m grading 4.79 g/t gold, from 1.0m downhole. The peak assay in EZU003 was 25.40 g/t gold, showing the nugget effect (grade variability) from very fine grained native gold.

The mineralisation model has been refined and there is excellent strike continuity potential that can now be easily drill accessed relative to the topography.

Many new targets have been proposed from the topographic evaluation and its refinement is ongoing. Flat spots indicate resistance to erosion and silicified (possibly brecciated and gold mineralised) intrusive. Multiple horizontal and dipping levels of gold mineralisation are predicted over significant strike distances. The Zone 7 - Porgera very high grade epithermal gold deposit is an applicable target model.

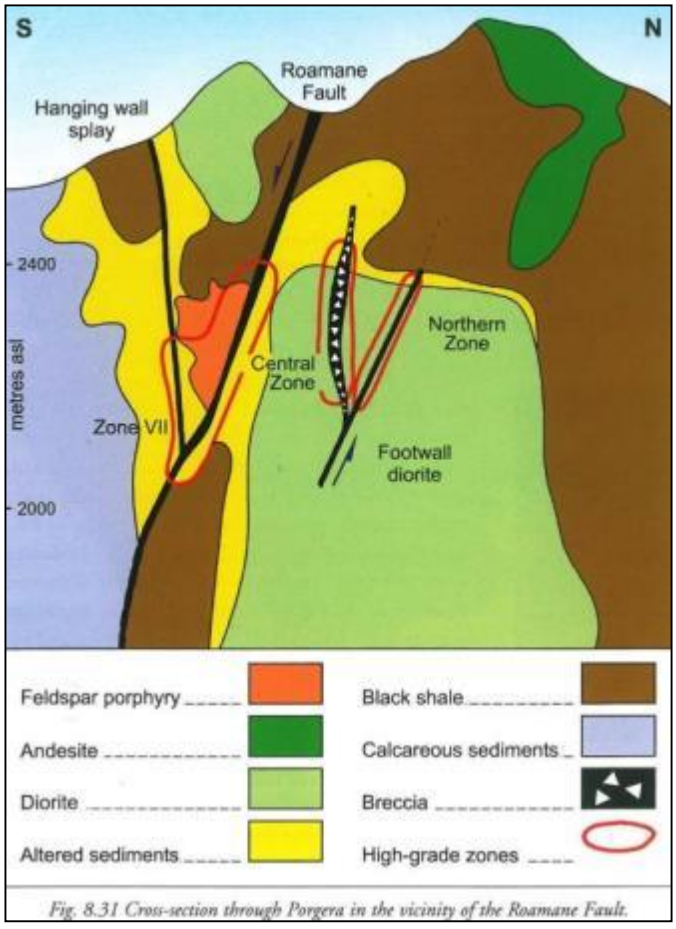


Fig. 8.31 Cross-section through Porgera in the vicinity of the Roamane Fault.

Many magnetic anomalies elsewhere around the base of the Darai Limestone escarpment still require follow up for potential skarn mineralisation.

The Sunguru Intrusion, part of the Idawe Stock in the headwaters of Sunguru Creek west of the Bulago intrusions, is totally unexplored and warrants reconnaissance gold sampling. The only sampling completed shows gold anomalies associated with the interpreted strike extensions of the Swit Kai mineralisation and the proposed larger Upper Reaches known mineralisation. Sunguru has a stronger K channel radiometric signature than at Bulago and may be more alkaline in composition.

DETAILS

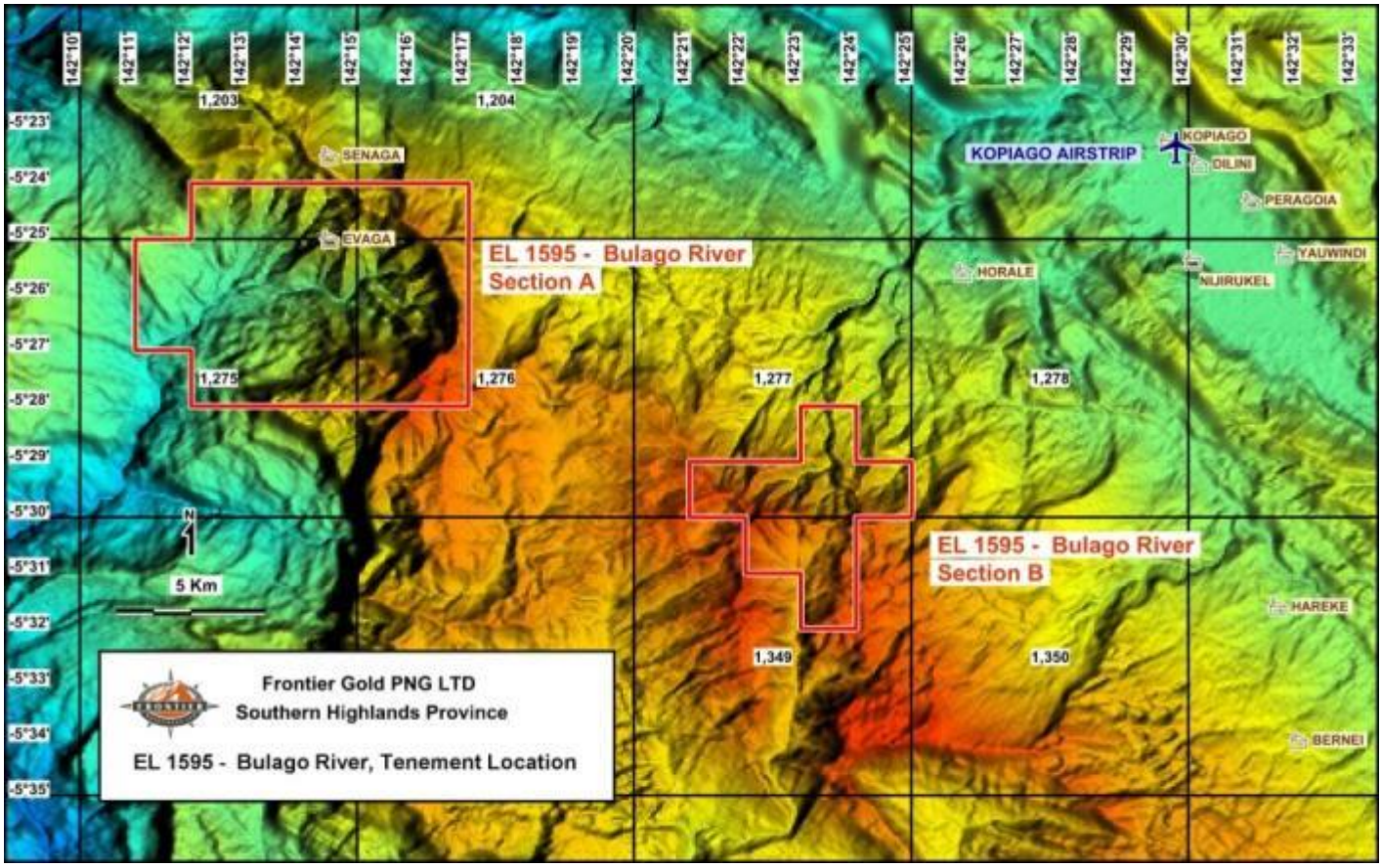
TENEMENT

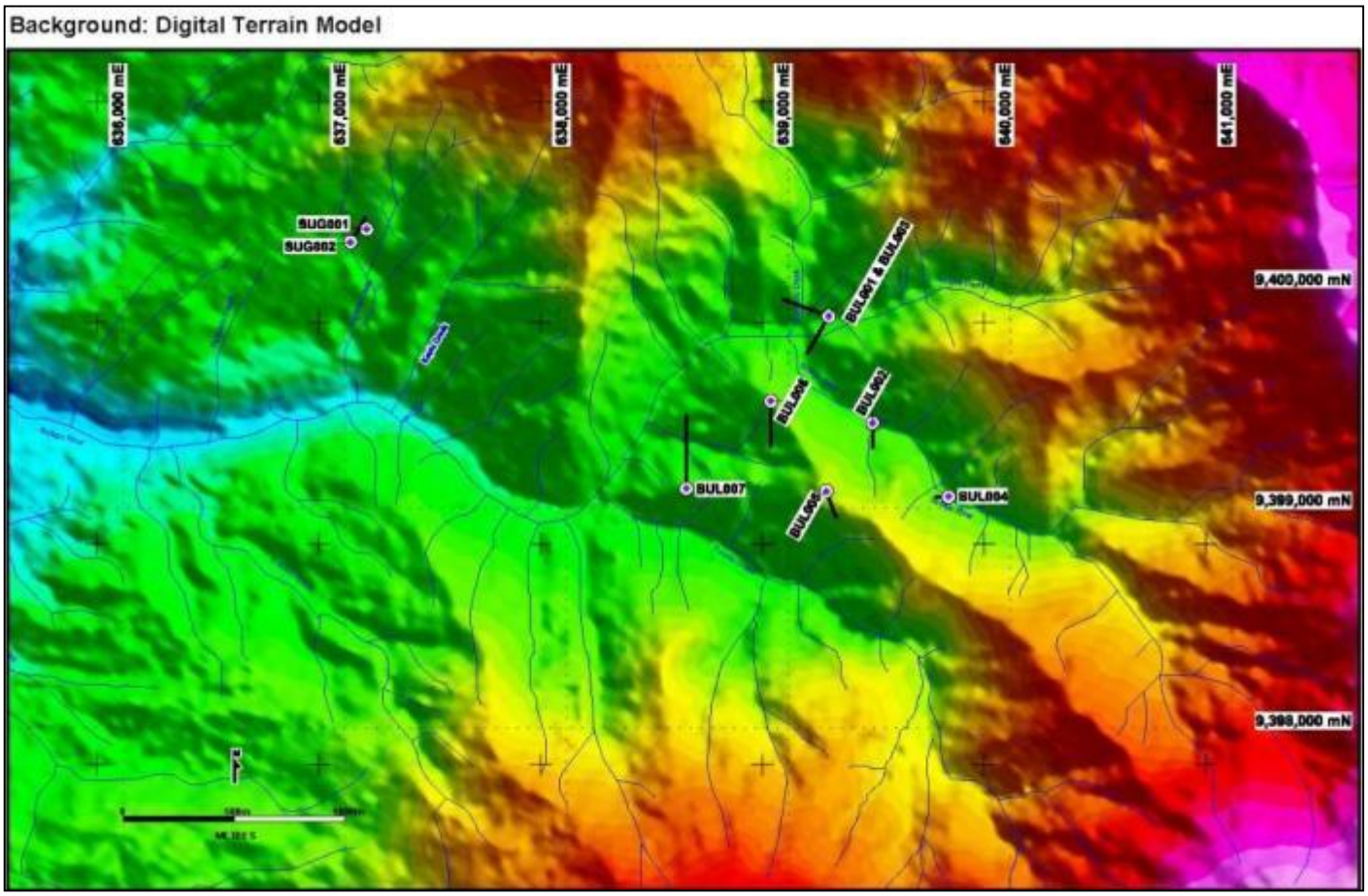
EL 1595 was granted to Frontier Gold Ltd (a wholly owned subsidiary of Frontier Resources Ltd) on the 7th of July, 2008 for a renewable period of two years. The license was subsequently renewed in 2010, 2012, 2014 and is currently up for renewal again. In late 2010, OTML and Frontier Resources agreed to a joint venture to explore the area. The OTML JV was terminated on 12/9/2013.

The Exploration Licence covered an area of 100 square kilometres (30 sub blocks in 2 sections), straddling the border region amongst the Hela and Western Provinces of Papua New Guinea.

EL 1595 is centred on the headwaters of the Bulago River, a tributary of the Strickland River that is accessible only by helicopter. The nearest airstrips suitable for fixed wing aircraft are in the Strickland Gorge area at Agali 20km to the north, Lake Kopiago 32km to the north east and Bimin, 26km to the northwest. An airstrip has been constructed at Bulago about 10km to the SW of Swit Kai, but it is not yet certified.

Existing foot tracks link nearby villages. The nearest major centre is Oksapmin to the north. Further major centres are Mendi and Mt Hagen, some 230km to the east. A 4-wheel drive road connects Mendi and Mt Hagen to Koroba.



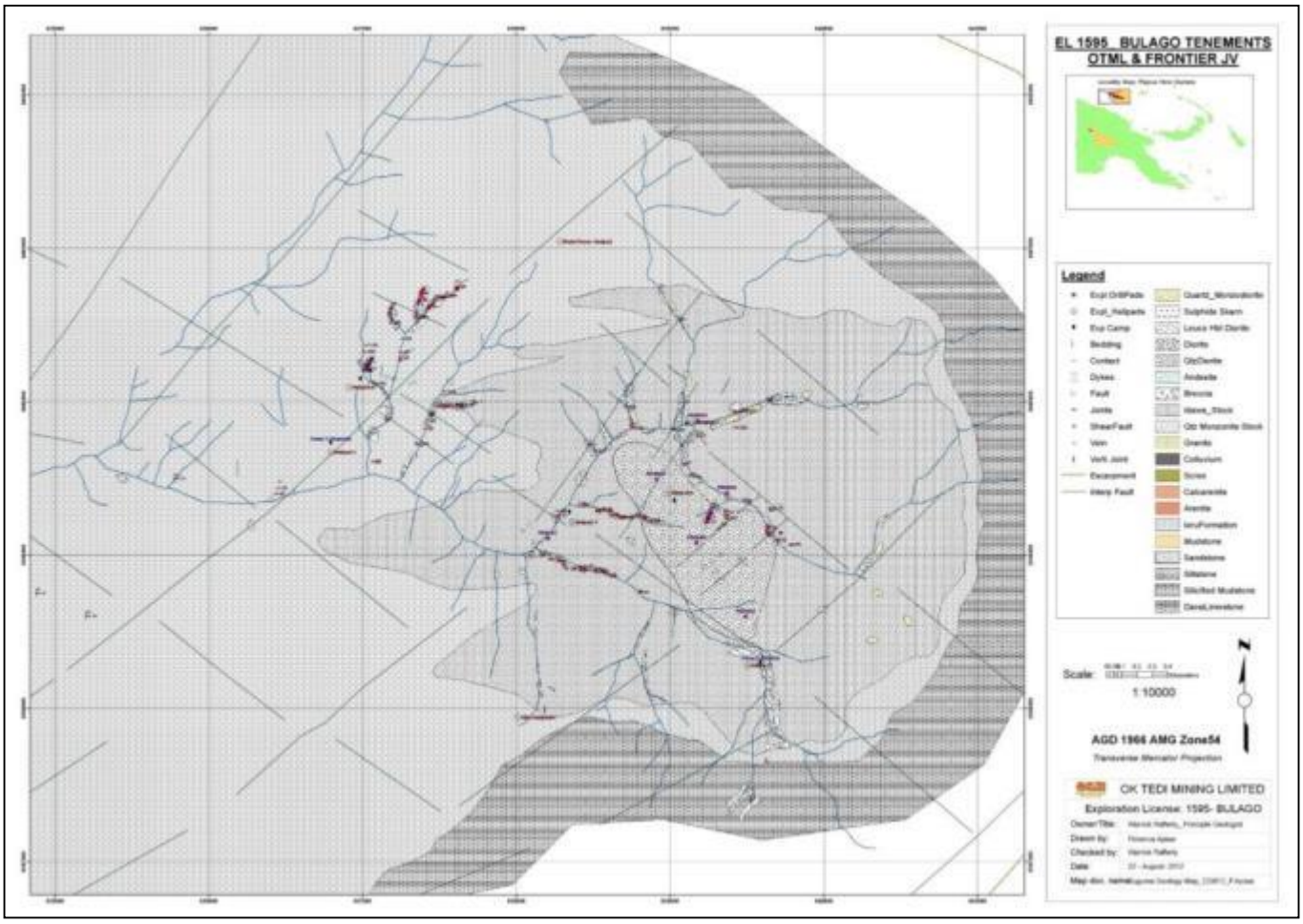


The area is characterised by very high rainfall with > 10,000mm per annum. Cloud cover and fog are prevalent all year round. The wettest period is June-August. The area is covered by primary tropical rain forest and sparsely populated. It comprises steep rugged mountains topped by limestone escarpments and near vertical cliffs. Elevations range from about 600m in the SW to over 3200m in the central east.

GEOLOGY

THE IDAWE Stock, host to the mineralisation at the Bulago Prospect, trends northwest to southeast, sub-parallel with the Lagaip Fault Zone. It comprises a number of phases varying from monzonite to diorite in composition, emplaced into Upper Cretaceous carbonaceous and calcareous sediments including siltstone, limestone and mudstone of the Ieru Formation with evidence of local contact hornfelsing. Darai Limestone forms a prominent escarpment surrounding the prospect.

Two separate stocks have been mapped, being the Eastern Idawe stock and the Suguma stock located just west of the Suguma Prospect mineralisation. The Idawe stock trends north-west to south-east, sub parallel with the Lagaip Fault and is exposed for 85m and is open ended. The intrusives are generally monzonitic to dioritic in composition. Initially only the eastern stock was believed to be mineralised, but subsequent mapping indicates that this assumption /conclusion requires reassessment. This is highly encouraging and could represent significant potential for discovering high grade gold or porphyry copper-gold mineralisation in the area. There may be other untested high-level mineralised stocks in better topographic locations within the EL and this should be assessed.



The mineralisation model for EL 1595 is the same as for Porgera (+ Mt Kari) and Ok Tedi, as the Bulago River is located in a geologically similar environment. Pleistocene to Miocene aged intrusives are emplaced within the Mesozoic to Tertiary aged Australian Plate sediments and three major types of mineralisation have been identified:

- Very high-grade gold (to 754 g/t) associated with intrusive/host rock contact breccia and shear zones. This style of mineralisation is noted in breccias and shear zones in areas adjacent to the intrusives. The zones are generally narrow but high grade (Porgera model).
- Porphyry copper- gold -molybdenum mineralisation associated with the stock itself (Ridgeway/Ok Tedi model).
- Very high-grade skarn (to 145 g/t gold) mineralisation associated with the intrusives/ overlying limestones (Ok Tedi model). The skarn mineralisation in the Bulago region is not well defined but has been sampled and mapped in float/outcrop, returning very high gold and base metal values. Multiple magnetite (+/- mineralisation?) skarns are apparent in aeromagnetic signatures.

Ok Tedi deposit mine cross sections are shown to illustrate the narrow surface aspect for exploration regarding a very large copper - gold deposit. There was no significant outcropping copper mineralisation (on this section) and surficial gold may well have been a better pathfinder!

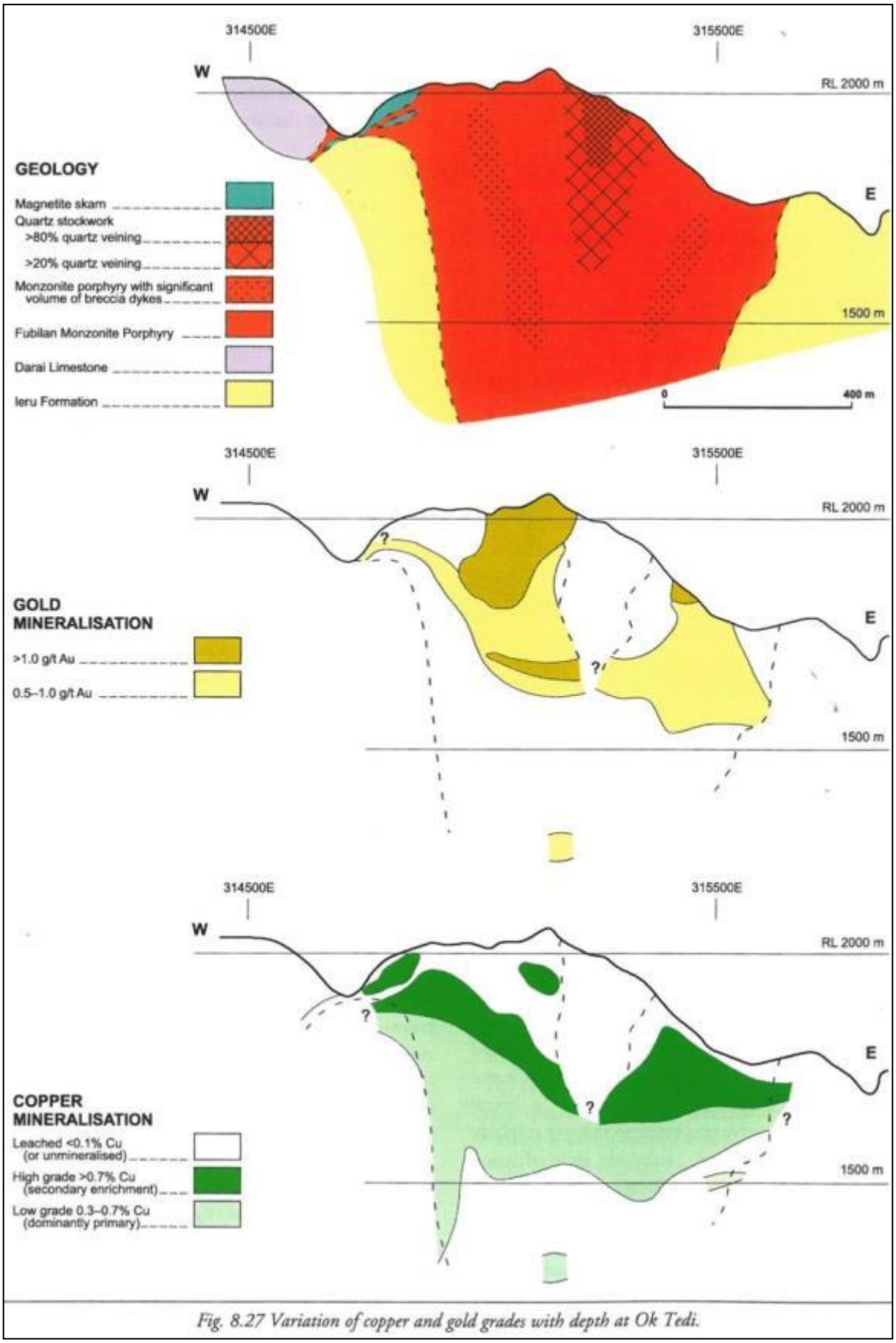


Fig. 8.27 Variation of copper and gold grades with depth at Ok Tedi.

The Porgera mineralisation model is shown as Zone & has similarities to Swit Kai and the systems are similar sized.

Mineralised skarn float is present in Funutu Creek where sub-outcropping skarn has been located in the headwaters at the base of the escarpment suggesting that the stock may also have intruded the Darai Limestone. The Bulago Porphyry, part of the Idawe Stock, lies in the headwaters of Bulago River, at elevations between 1400m and 2000m, surrounded by limestone bluffs. A phase of the Idawe Stock west of Bulago Prospect intrudes similar sediments at Suguma and a separate phase is located in the headwaters of Sunguru Creek.

At Suguma mudstones and siltstone of the Ieru Formation are hornfelsed against the Suguma Diorite and intruded by a swarm of dikes and sills up to 10m thick of a broad range of equigranular and porphyritic rocks. North of Suguma, in the headwaters of Suguma Creek, hornfelsing increases upstream and the sediments appear to be strongly silicified with weak K-feldspar alteration and pyrite-chlorite +/- epidote along veinlets and fractures.

The dikes and sills are mostly unaltered but hornblende laths are locally altered to chlorite +/- epidote and fine to medium-grained magnetite There is also evidence of local weak potassic alteration with disseminated K-feldspar and secondary biotite in the quartz-hornblende diorites.

A fault zone, striking 300^0 and dipping SW at 50^0 comprising strongly milled and sheared rock with abundant clay, sub-parallel quartz-sulphide veins and 3-5 % sulphides has been mapped here. Sub-parallel faults and joints north and south of the fault zone suggest it is a major structure. A hornblende diorite dike up to 5m wide appears to crosscut the fault with pyrrhotite.

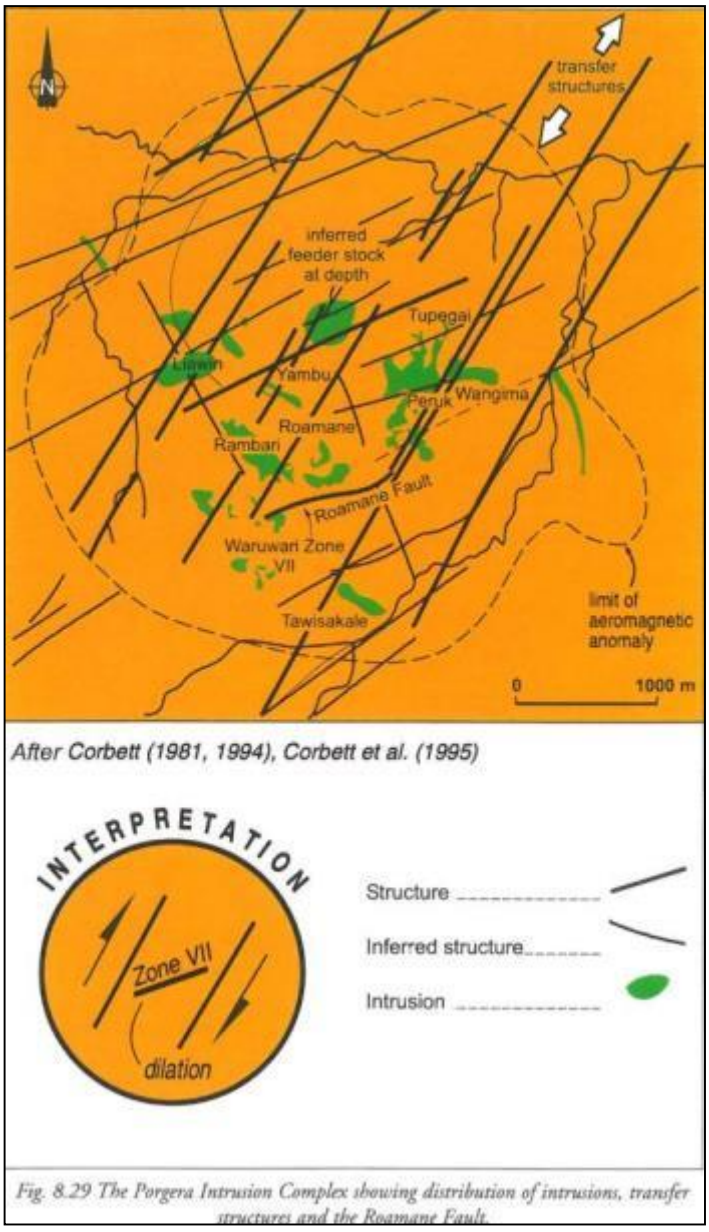


Fig. 8.29 The Porgera Intrusion Complex showing distribution of intrusions, transfer structures and the Roamane Fault.

In the lower part of Kapia Creek, immediately east of Suguma Creek, siltstones are intruded by microdiorite, feldspar porphyry and hornblende diorite sills and dikes, similar to Suguma Creek. Quartz-sulphide veins in hornblende diorite were mapped at one location. Float includes breccias with quartz-sulphide veins.

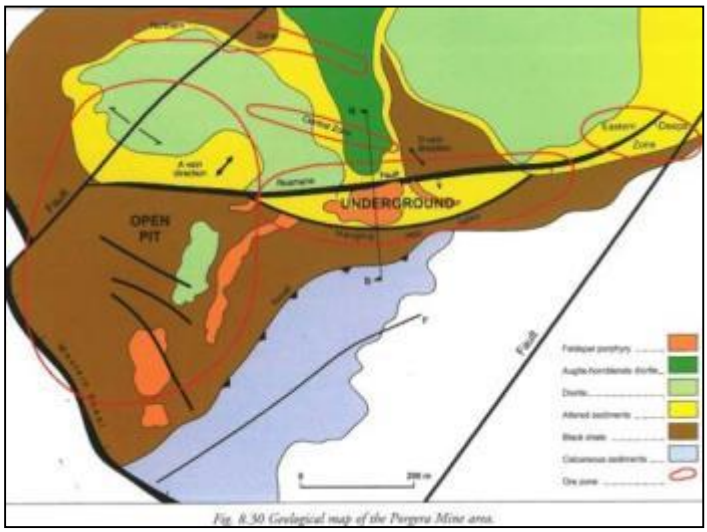


Fig. 8.30 Geological map of the Porgera Mine area.

In Fornusu Creek, medium-grained intrusives varying from quartz monzonite porphyry to quartz-feldspar-hornblende diorite in composition and minor dikes of intermediate to mafic composition and variable texture intrude the sediments, mostly siltstones, with local hornfelsing but little hydrothermal alteration, fractures or veins. Strong chlorite-epidote +/- magnetite alteration is evident with 2-5% disseminated and vein-fill pyrite, pyrrhotite and marcasite. Potassic (K-feldspar-biotite) alteration is weak and localised. Minor argillic (clay-sericite) alteration occurs mainly along structures.

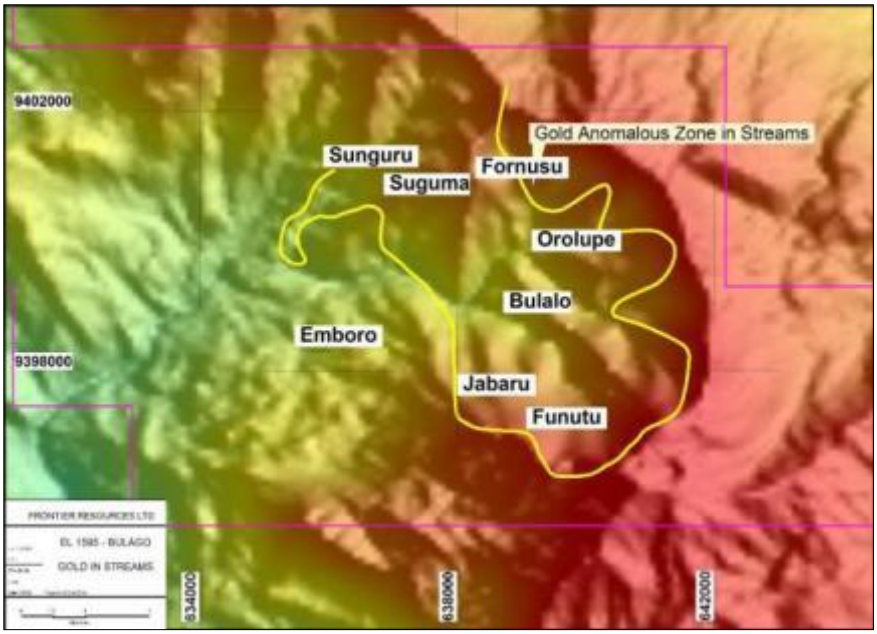
The intrusives contain occasional xenoliths of mudstone and siltstone. The dikes have a preferred east-west trend that parallel some fracture sets and quartz veins. Darai Limestone may overlie the siltstones to the north with steep escarpments. An intrusion breccia was mapped at the junction of Orolupe, Fornusu and Bulago Creeks, at the junction

of cross-cutting faults. It comprises a siliceous breccia of angular to sub-angular intrusive material with jarosite (? after pyrite-marcasite) and occasional haematite. It is highly leached.

Outcrop in Funutu Creek consists of medium to coarse-grained hornblende-quartz-feldspar porphyry and alteration is similar to that from Fornusu Creek.

EXPLORATION HISTORY

The Bulago drainage basin contains a very well defined, strong and cohesive approximately 14 sq km gold in stream sediment and panned concentrate anomaly (Figure 1). There are 6 discrete and large prospect areas within this gold anomaly, including Suguma and Funutu (Figure 2). The prospects are located within a large elliptical (3.5km x 5.5km), well-defined gold, zinc and copper (+/- lead) drainage anomaly that covers a centrally located porphyry copper / gold mineralised intrusive. Precious and base metal anomalism continues up to and possibly into the peripheral limestones demonstrating the potential for economic skarn deposits.



Exploration by CRAE in 1970/1971 concentrated on porphyry copper style mineralisation although the possibilities for stratiform base metals, lateritic nickel and bauxite were examined. No attention was paid to the possibility for gold mineralisation occurring in the area and no gold analyses were undertaken. Their work consisted of regional stream geochemistry with some subsequent detailed stream sediment sampling and mapping.

Low grade porphyry copper mineralisation associated with a series of intermediate porphyry intrusives was located; however outcrop grades did not exceed 1000 ppm copper. The Idawe intrusive stocks at Suguma at the headwaters of the Bulago River were first delineated during this time.

Since then the area has been explored intermittently by other companies including Kennecott, Niugini Mining, Equatorial Gold and Indo Pacific Mining. Four main areas of interest were generated; the main one being the Suguma prospect at the headwaters of Bulago River. Most of the subsequent exploration activities were concentrated here until the OTML porphyry drilling.

During the first 6 months of the Niugini Mining JV they undertook reconnaissance and semi-detailed geological mapping, stream sediment, pan concentrate, rock and soil sampling. A total of 894 samples were collected (– 80 mesh stream sediments, 93 pan concentrates, 87 rock and 625 soils).

Niugini Mining defined a 3 km^2 copper geochemical anomaly centred on the NW termination of the main eastern stock. The anomaly is marked by a predominance of copper in stream sediment, soil and rock values in excess of 150 ppm. The highest copper value in stream sediment was 540 ppm. The highest soil value, 1310 ppm came from nearby. Anomalous Pb-Zn geochemistry forms a halo, probably of the order of 1 km, peripheral to the copper zone. Maximum values obtained in soils were 337 ppm Pb and 1600 ppm Zn respectively.

A gold anomalous zone of at least 10 km^2 overlaps the copper and lead-zinc zones. This gold zone is characterised by numerous soil geochemical values in the 0.05 to 0.5 g/t Au range. Higher gold values (such as 1.22 g/t Au) appear to stem from dyke contact zones and narrow veins. Silver values were quite erratic

The Suguma Prospect has very high gold grades associated with intrusives in narrow to moderate width (1 to 7m) structures and the contact aureole sediments. It is located on the NW side of a large (1km x 1km) copper and disjointed gold in soil anomaly, within a large (4.5km x 6km), well-defined sub-circular, gold, zinc and copper drainage anomaly. The drainage anomaly covers the recessive intrusive filling a circular drainage basin (the Au/k-1 Prospect), with anomalism continuing up to the peripheral limestones /skarns.

Sulphidic breccia/intrusive outcrop channel samples (true width unknown) include: 15m of 57.4 g/t gold, 6m of 72.2 g/t gold, 0.85m of 754 g/t gold, 2m of 188 g/t gold (re-assay of 220 g/t gold), 1.4m of 55 g/t gold + 34 g/t silver. Historically five holes were drilled here for 829.95m, but did not intersect any comparable high-grade gold. Drill hole sectional evaluation shows opportunity for an alternate model (steeper dip to mineralisation) with the prospectivity remaining high.

The Au/k-1 Prospect gold in soil anomaly is part of the soil anomaly noted above and is 300 x 400m in size centred on a hill, with a highest assay of 0.45 g/t gold. Copper is weakly anomalous and pitting consistently yielded samples greater than 0.1 g/t gold, to a peak of 3.38 g/t gold. It appears to represent a porphyry copper prospect and requires re-evaluation.

4 km to the SE of the Suguma Prospect, at the Funutu Prospect, there were very high grade precious and base metal outcrop intrusive /breccia rock samples collected, that have never been mapped, soil sampled, trenched or drilled. These include:

- 197 g/t gold + 363 g/t silver + 0.55% copper + 5.72% zinc + 5.5% lead
- 108 g/t gold + 200 g/t silver + 0.38% copper + 4.8% zinc + 2.63% lead
- 43 g/t gold +120 g/t silver + 0.49% copper + 1.7 % zinc + 0.86% lead

2 km to the SE of Suguma a boulder of skarn assayed 145 g/t gold + 11g/t silver + 0.78% copper + 8.6% zinc + 0.34% lead. The skarn potential of the region now requires drilling.

Two soil samples from west of Fornusu Creek reported 13 g/t Ag. Arsenic was noted to be quite abundant in the Sugumbe Creek vein mineralisation. Scattered arsenic in soil anomalies (>50 ppm As) fall into two north to north-west trending zones, which overlap both the copper and the lead-zinc zones.

Bulalo (Au- K1) Prospect Highlights
High–grade silver mineralisation was noted in a 1.5m wide quartz sulphide vein outcrop. Two grab samples over the interval assayed 7.04 g/t gold + **3,150 g/t silver** + 2.61% copper + 3.44% zinc and 4.14 g/t gold + **1,960 g/t silver** + 1.73% copper + 2.89% zinc, respectively.

Funutu Prospect Highlights
Intrusive outcrop grab rock samples assayed 8.33 g/t gold + 44 g/t silver and 3.30 g/t gold + 25 g/t silver. Semi massive sulphide outcrop rock samples assayed to 0.3 metre of 2.85 g/t gold + 230 g/t silver + 1.0% copper + 8.29 % zinc + 6.64 % lead. Skarn float assayed to 16.9% zinc + 20 g/t silver and outcrop assayed to 5m of 0.18% copper + 0.1 g/t gold in several samples.

The 1986 program conducted by Norfolk Investments included the evaluation of the earlier work, a photo-geological study, follow-up stream sediment sampling in the area where Kennecott collected the 2.59 g/t Au sample and detailed follow-up of the Upper Bulago River drainage area.

Norfolk could not repeat the 2.59g/t result and considered the original result to be spurious. They recognised a number of different styles of precious metal mineralisation in the Upper Bulago river area:

- Low to moderate grade gold mineralisation within the altered and mineralised hornblende diorite suggesting a large tonnage, low grade, porphyry style target. They outlined a number of gold in soil anomalies – anomaly 1 yielded pit samples containing more than 0.7 g/t gold with a peak value of 3.38 g/t Au.
- High to very high (bonanza) grade gold and silver mineralisation associated with base metal and arsenic sulphides probably occurring at or near the contact of the eastern Idawe Stock with surrounding sediments.

Goldner and Chan (1986) suggest a number of mineralisation styles including –

- Breccia zones within the sediments where breccia fragments have been annealed by sulphides. This type of material was found in Suguma Creek in float and outcrop. A 1.4m wide zone yielded a composite chip sample (sample 090) result of 55 g/t gold and 34 g/t silver, while numerous float samples of sulphide bearing breccias in Suguma Creek contained highly significant gold values ranging from 2.56 g/t Au (sample 085 – including 22 g/t Ag, 560 ppm Cu, 2520 ppm Pb, 8100 ppm Zn and 50 ppm As) to 280 g/t Au (sample 078 – including 148 g/t Ag, 254 ppm Cu, 383 ppm Pb, 4200 ppm Zn and 4.17% As) and (sample 076 – 205 g/t Au, 194.4 g/t Ag, 4400 ppm Cu, 1.35% Pb, 4.95% Zn and 3.93% As).

- High grade gold values were also obtained from a brecciated quartz veined diorite outcrop in Funutu Creek. One sample (031) yielded between 73 and 108 g/t gold. (see plan 8, Goldner and Chan, 1986 for sample locations).
- Massive or banded metal sulphides containing very high (bonanza) grade gold values and suggesting replacement or skarn type mineralisation. A float sample (076) contained 205 g/t gold, 194 g/t silver, 0.44% copper, 1.35% lead, 4.95% zinc and 3.93% arsenic. Suguma Creek is considered to have considerable potential for small to medium tonnage high-grade gold mineralisation.
- Quartz veined limestone breccia material found as float in the Bulago River and more particularly in Fornusu Creek suggest late stage epithermal type activity.

Goldner and Chan (1986) again suggested that the geological framework and mineralisation styles at Bulago appear to be similar to the Porgera deposit where both low-grade disseminated and high to very high-grade gold mineralisation has been discovered.

Chan, McDonald and Goldner (1987) reported on the July/August 1987 exploration program conducted by Equatorial Gold. Results were so encouraging that two areas, Suguma Creek and Anomaly Au/k-1 were elevated to prospect status warranting drill testing. The Suguma Creek prospect was considered to be a prime target with high to very high gold values obtained from sulphide rich horizons within altered and silicified sediments within the contact aureole and to the west of the Eastern Idawe Stock. The best results obtained from traverse chip sampling included 15m (sample 1208) averaging 57.4 g/t gold and a separate 6m interval (sample 1213 averaging 72.2 g/t gold as well as 31 g/t Ag, 310 ppm Cu, 1300 ppm Pb, 3000 ppm Zn, and 8900 ppm As.

The Au/k-1 prospect is a 300 to 400m gold in soil anomaly within the Eastern Idawe Stock. Deep hand pitting consistently yielded samples containing greater than 0.1 g/t Au, with the highest value being 3.38 g/t gold. Work on this prospect indicated porphyry style mineralisation.

The results of field work undertaken by Equatorial Gold between April and July, 1988 are contained in the report by Goldner and Small (1988). The work included detailed exploration of the surface gold mineralisation at the Suguma Prospect and further reconnaissance investigation of the gold stream sediment anomaly in the Bulago River catchment.

At the Suguma Prospect, Equatorial drilled 5 diamond bore holes totalling 829.95m. The drilling program failed to intersect economically significant gold values – the best assay being 0.6m returning 1.00g/t gold. The drilling was designed to test a moderately dipping (dip slope) roughly east-west trending structure that was mineralised at the surface. Equatorial considered that the geological and structural framework of the Suguma mineralisation was more complex than previously envisaged. Fault and shear zones appear to be the major structural controls and later faulting may have displaced some of the mineralised horizons.

Goldner and Small (1988) reported that additional sampling during 1988 resulted in refining and in some cases extending the previously defined anomalous gold zone. The high gold in pan-concentrate values obtained by Kennecott in the lower portion of Sunguru Creek was confirmed. In addition, sampling yielded significant gold in pan-concentrate values and float samples from two of the main west flowing tributaries (Omai and Gunabu Creeks) in the upper portion of Sunguru Creek.

Kennecott's original sampling of Emboro Creek on the southern side of the Bulago River yielded low gold results. However, the additional 1988 sampling in this drainage yielded interesting gold values and a new apparently separate stream sediment anomaly was outlined. Extremely high (greater than 500 g/t Au) gold in pan-concentrate values were obtained from Jabaru and Muabalu Creeks and some small nuggets were panned. The extreme topography and the resulting small pan-concentrates may account for some of the high values but the presence of coarse gold was encouraging.

Additional sampling in the upper reaches of the Bulago River and its major tributaries, Fornusu and Orolupe Creeks, has refined and somewhat extended the eastern and north-eastern boundary of the main stream sediment anomaly.

The drainage geochemical surveys have delineated an extensive area of stream sediment and panned concentrate mineralisation. The image below shows that the Suguma area is in the northwestern part of this anomaly (see the creek name for its general location). Most of the exploration to date has been concentrated in this area.

The other areas have had no or no effective follow–up work conducted on them. The drill holes did not intersect any significant gold and base metal mineralisation. The stream sediment anomalies for copper, lead and zinc are also

outlined in the figures section (from Goldner and Small 1988). The main copper anomaly occurs as an irregular NW-SE trending zone which encompasses much of the Eastern Idawe Stock in the upper part of the Bulago River as well as many of the smaller intrusives in the Suguma and Gunabu Creek areas.

The strongest part of the copper anomaly (values > 150ppm Cu) appears to be localised entirely within the eastern Idawe stock. The relatively small zones of anomalous lead values are generally either peripheral to, or on the edges of the larger copper anomaly. A small discrete lead anomaly occurs in the area of the known Suguma mineralisation. Zinc has a wider anomalous distribution than copper and generally covers the same area outlined as being anomalous in gold.

According to Goldner and Small in general the low proportion of significantly mineralised float and outcrop samples does not adequately explain the widespread, high grade gold in pan-concentrate results. They suggest that further field work would be required to locate the source of the gold. They suggest "further detailed exploration of the anomalous drainages is clearly justified because the area as a whole is considered to have excellent potential for the discovery of economic gold mineralisation. As previous regional outcrop sampling has been rather sparse and largely restricted to grab sampling, further work should concentrate on extensive composite chip sampling of all mineralised and/or altered outcrops."

Equatorial Gold carried out little work on the tenement during the period 1989/1990. In 1990 the Company contracted David Shatwell Pty Ltd to examine all previous work and suggest a new exploration program (Plibersek, 1990). Shatwell claimed that the best chance for a large high grade Porgera type target is gold anomaly K-1 and possibly some of the smaller anomalies, K-2, K-3, K-4, K-8, K-9 and K-13, which surround it. He also indicated that Funutu Creek was a possible "Porgera Zone 7" type target. The possibility is suggested of a NW trending structure passing through the mineralised outcrops in Upper Funutu Creek and through soil anomalies K-11, K-10, K-5 and K-6, a possible strike length of 3km. He outlined a program that concentrated on these targets. It seems that Equatorial Gold did no further work on the tenement. Possible mineralisation trends are shown in a figure from Shatwell.

Abadin did limited stream reconnaissance, follow-up mapping and sampling in the Bulago River drainage area In 1995, but no data is included in the report of Unamba (1996). Waisime (1997) reported on work undertaken by Abadin Pty Ltd, now with a name change to Indo Pacific Mining (PNG) Pty Ltd.

A number of anomalous gold results confirmed previous results. A zone comprising thin brecciated quartz-pyrite-(galena) veins returned a peak grade of 26.3 g/t gold. A 2m true width sample interval including a 60-80 cm quartz-pyrite-(galena-sphalerite) vein yielded 12.5g/t gold. Waisime suggested that the gold mineralisation was structurally controlled and was associated with quartz, carbonate and base metal sulphides. He indicated that the primary targets are fractures or fault controlled epithermal to mesothermal gold mineralisation and deeper level porphyry gold and copper mineralisation.

Sample No	Type	Sample description	Au (g/t)	Comments
S006	OTC/GR	Py/sph/cpy/ga/qz on flt plane/diorite	2.02	
S011	OTC/GR	Bx'ed qz/py/sph vn in diorite	0.825	
S012	OTC/CH	Qz/py/ga/sph vn in diorite	2m of 12.1	2m true width
S014	OTC/GR	Bx'ed & oxidised diorite	0.997	
S016	OTC/GR	Py/cly fill on flt plane	0.602	
S021	OTC/CH	Bx'ed qz/py/sph/ vn in diorite	0.5m of 8.9	0.5m true width
S024	OTC/CH	Sh'rd/ bx'ed cly/py/qz'ga/sph fill	1m of 0.577	1m true width
S031	OTC/CH	Sh'rd/ bx'ed cly/py/qz/ ga/ sph fill	2m of 0.563	2m true width
S037	OTC/GR	Bx'ed qz/py/ga vn on flt plane	0.923	
S045	OTC/GR	Flt/bx vn qz/py/sph/pb	26.3	
SO47	OTC/GR	Qz/py/mag vn	2.95	
S074	OTC/GR	Bx'ed py/cpy/qz vn	0.524	
S076	OTC/GR	Flt/bx zone qz/py vmn	0.51	
S093	FL	Gossan	0.864	
S122	OTC/CH	Bx zone py/cpy/cc/sp/ga/vn	2m of 3.78	2m true width
S123	OTC/GR	Ga/py/cpy/vn along flt plane	0.66	
S124	OTC/GR	Py/cpy/cov along flt plane	0.766	
S125	OTC/CH	Fracture fill py oxidised	0.662	
S127	OTC/GR	Flt/bxa zone py/cly on flt plane	0.86	
S133	OTC/GR	Py/cpy/ga on fltplane	0.524	
S139	OTC/CH	Py vn in shear/bx zone	2m of 1.35	2m true width
S140	OTC/CH	Flt/bx zone qz/py/sph/ga vn	2m of 12.5	2m true width
S158	FL	Bx'ed qz/py vn oxidised	0.799	

Waisime considered that the area east of Suguma Creek, towards Ima and Funutu Creeks to be a high priority target in terms of structurally controlled gold mineralisation. In this area major structures intersect and dilate and may have localised the mineralisation. The anomalous gold results obtained by Indo Pacific are shown in the Table below. (OTC/GR – outcrop grab, OTC/CH – outcrop channel, FL – float).

FRONTIER EXPLORATION

Outcrop Channel Sampling

Frontier undertook continuous chip outcrop channel sample assaying in the Upper Central Creek Zone in late 2009 and results included 12 metres grading 138 g/t gold + 49 g/t silver, within an interval of 27 metres grading 66.8 g/t gold + 25 g/t silver. Peak assay results in that interval included **3 metres grading 303 g/t gold**, 125 g/t silver and 8.89% zinc.

Two discrete high-grade gold horizons were located in outcrop within the Central Creek Zone. The 'Upper Zone' of high-grade gold mineralisation (noted above) has its 'width' open to the north, with the final 3 metre channel sample grading **161 g/t gold** + 47 g/t silver. Its strike extent appears to be >160 metres to the east (past East Creek).

Suguma Prospect - Upper Central Creek Continuous Channel Chip Sample Assay Results

Sample Length	Gold g/t	Silver g/t	Copper (%)	Pb %	Zn %	Sample Number
0 to 3m	9.49	<5	0.01	0.02	0.28	192822
3 to 6m	9.72	8	0.01	0.30	0.25	192823
6 to 9m	1.94	<5	<0.01	0.14	0.43	192824
9 to 12m	10.8	9	0.02	0.11	0.34	192825
12 to 15m	16.9	7	0.02	0.09	0.07	192826
15 to 18m	31.9	18	0.03	0.09	0.23	192827
18 to 21m	303.0	115	0.13	0.21	0.15	192828
21 to 24m	56.0	17	0.08	0.02	0.14	192829
24 to 27m	161.0	47	0.19	0.43	0.36	192830
27m grading	**66.8**	**25**	0.05	0.16	0.25	
incl. 12m grading	**138.0**	**49**	0.11	0.19	0.22	

The grade of a composite channel sample from the 'Lower Zone' was 18 metres grading 40.3 g/t gold. This appears to have been taken along strike.

Suguma Prospect - Lower Central Creek Continuous Channel Chip Sample Assay Results

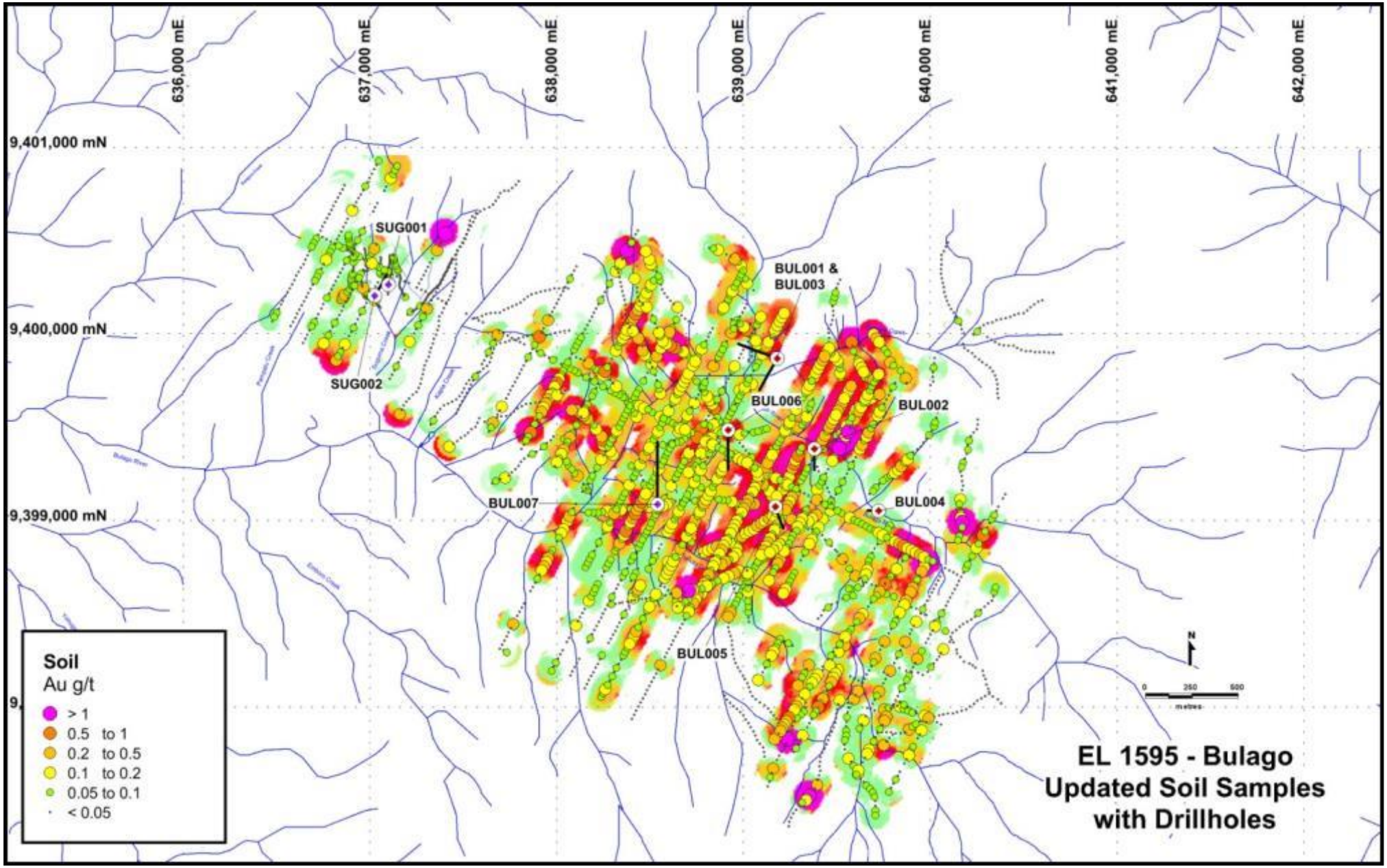
Sample Length	Gold g/t	Silver g/t	Copper (%)	Pb %	Zn %	Sample Number
0 to 3m	3.91	81	0.09	0.24	2.36	192837
3 to 6m	0.42	16	0.06	0.03	1.25	192838
6 to 9m	32.20	17	0.05	0.07	1.33	192839
9 to 12m	17.70	22	0.05	0.10	0.73	192840
12 to 15m	142.00	42	0.03	0.16	0.76	192841
15 to 18m	45.50	12	0.05	0.22	0.34	192842
18m grading	**40.29**	**32**	0.06	0.14	1.13	
incl.12m grading	**79.13**	**31**	0.06	0.18	1.05	

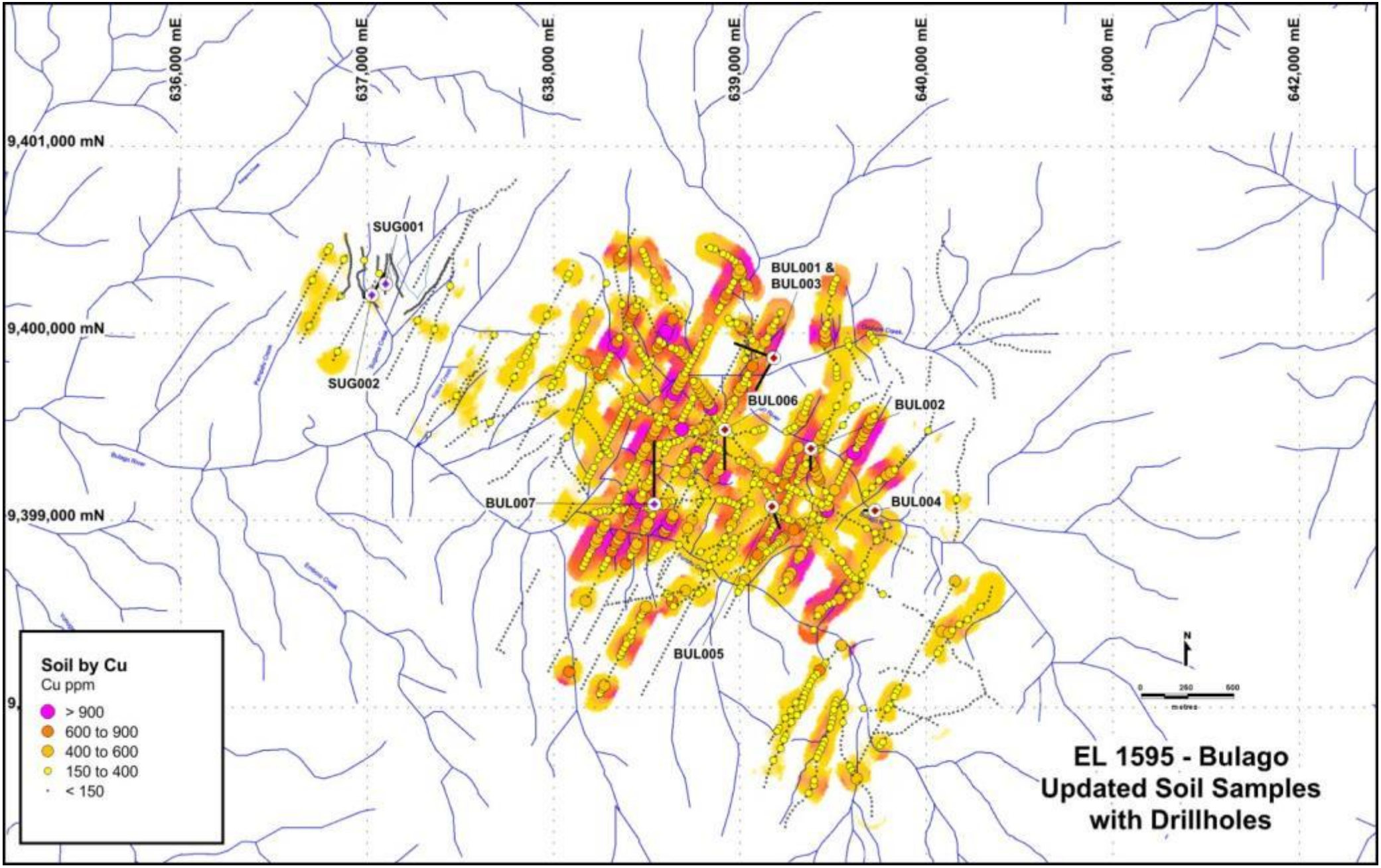
These horizons were both sampled basically north–south (up the creek) and are separated horizontally by 50 metres. The outcrop continuous chip samples were collected where possible by their exposure and orientation and do not necessarily represent true widths of mineralisation.

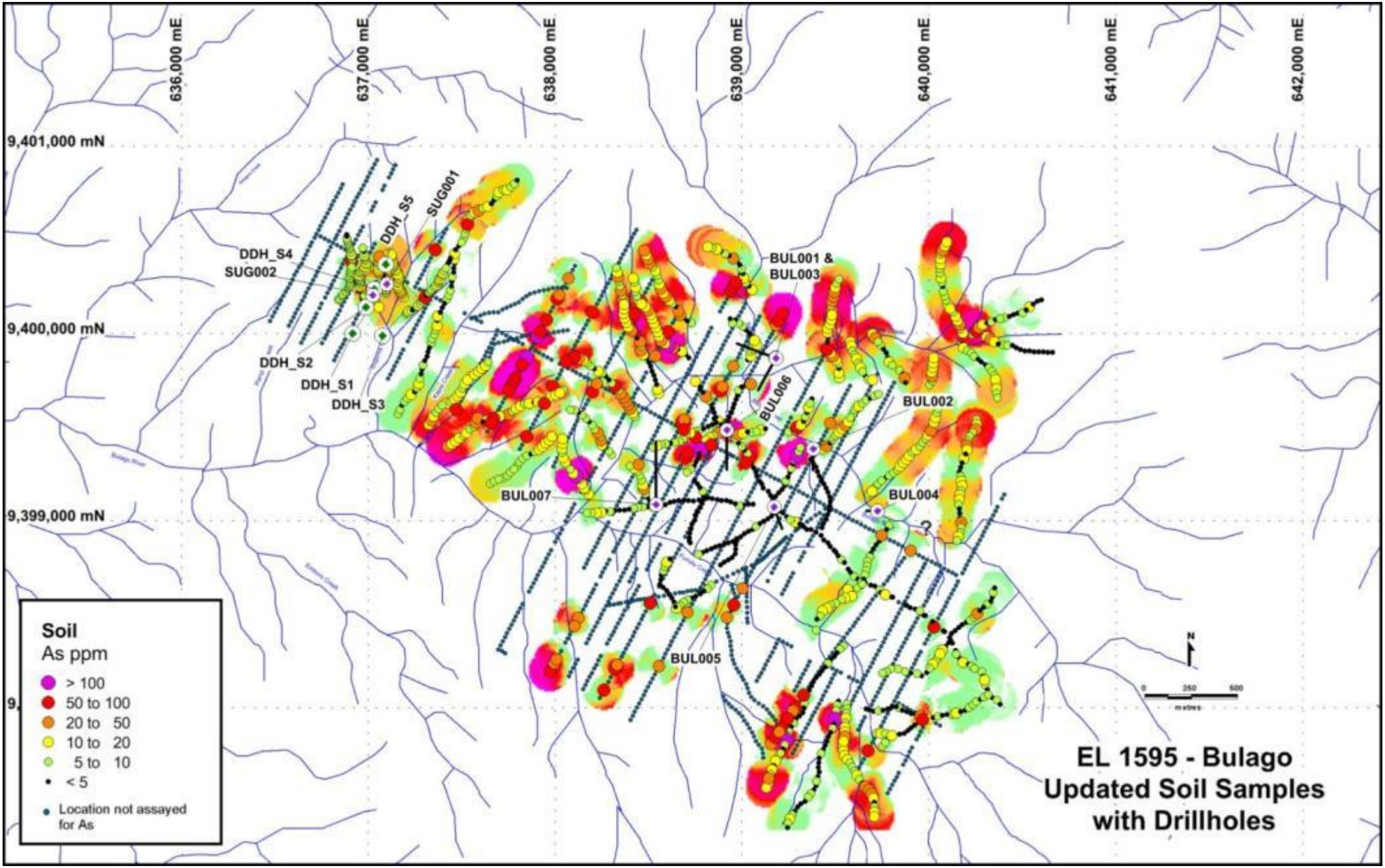
A large grid-based geochemical and geological exploration program was initiated in early October 2009. The survey intended to cover a massive 7 sq km soil sampling grid and about 70% of the drainages that are strongly gold anomalous in that area. The soil grid was going to consist of up to 70 kilometres of lines on a 100m spacing (but locally also 200m), with samples collected at 25m downline intervals. It targeted up to 2,800 soil samples to be collected, subject to the constraints imposed by the rugged terrain.

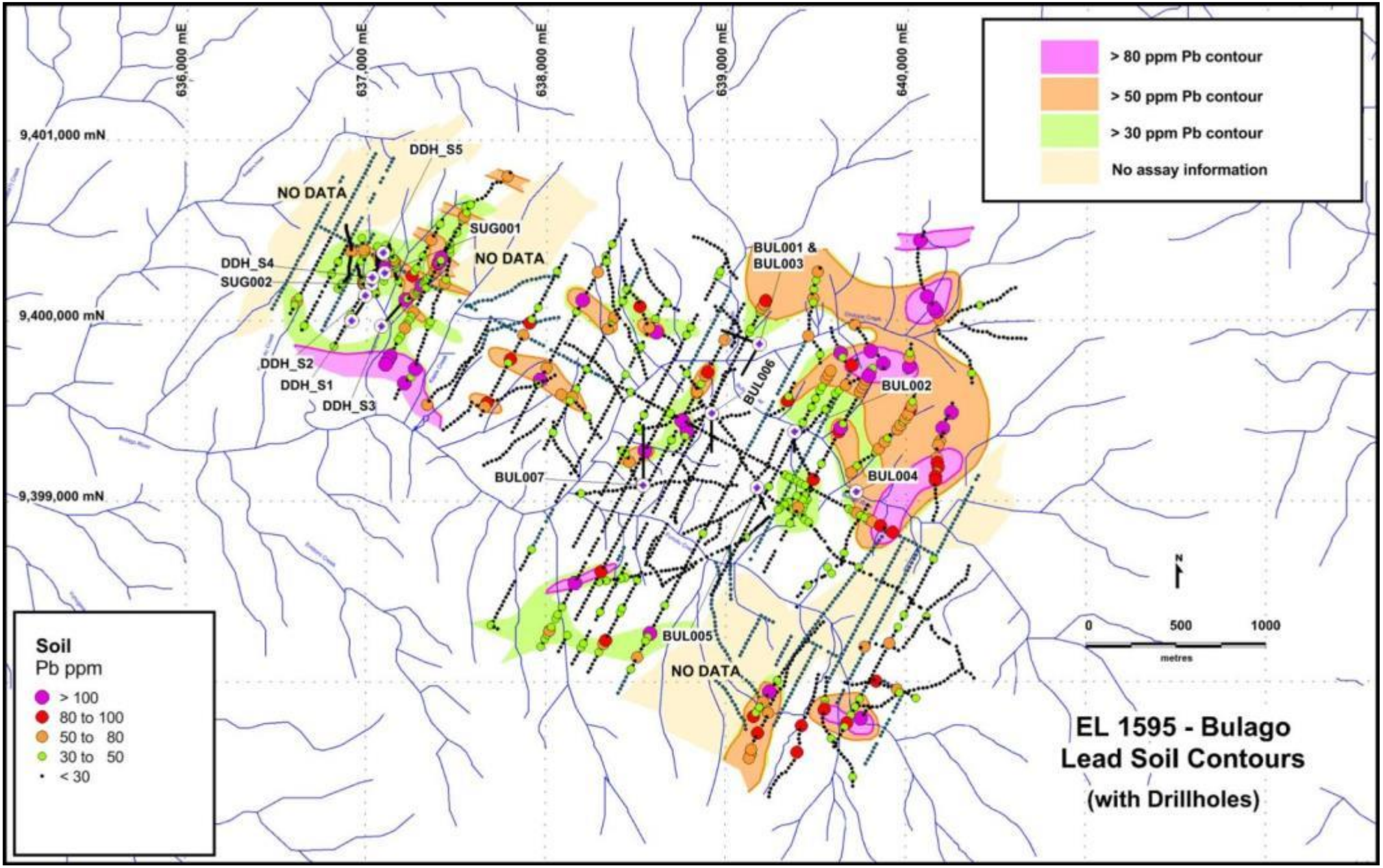
The exploration team consisted of 6 geologists, plus 11 field technicians and 45 landowner labourers. Geological mapping was undertaken to define mineralisation trends, to allow the creation of mineralisation models for the prospects and to assist in refining future drilling targets. A total of 1,672 soil sample, 349 rock samples and 164 trench samples were collected.

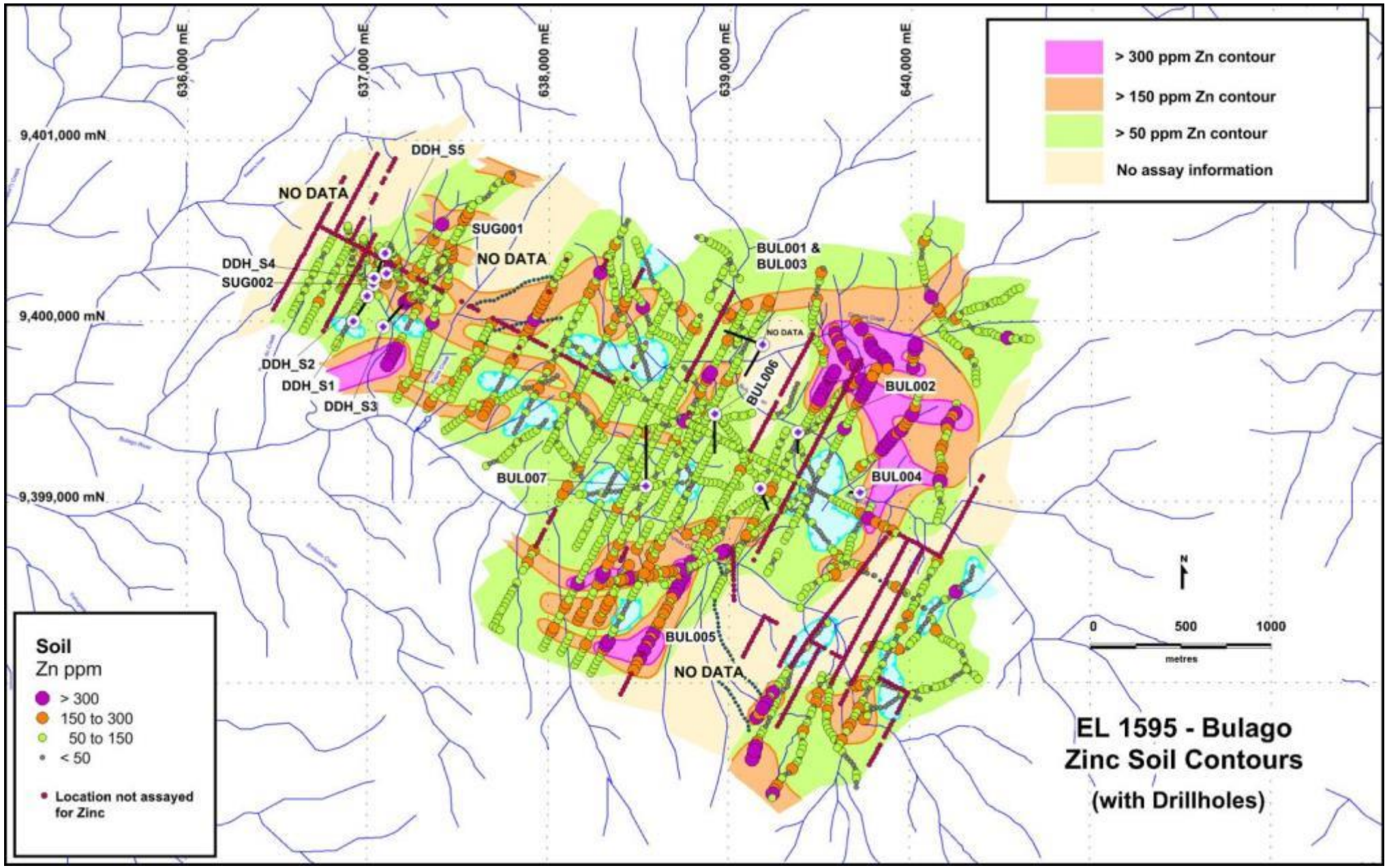
An extensive hand trenching program was planned on the high-grade gold targets, but this proved difficult to accomplish. Hand trenching has been undertaken at the Bulalo Prospect (see below for a description of the project). However, due to various strategic, technical and logistic reasons it was also decided to undertake a much broader based program and evaluate as much of the area for gold and base metal mineralisation as possible, prior to undertaking a large amount of detailed work at any particular prospect.


636,000 mE
637,000 mE
638,000 mE
639,000 mE
640,000 mE
641,000 mE
642,000 mE
9,401,000 mN
9,400,000 mN
9,399,000 mN
SUG001
SUG002
BUL001 &
BUL003
BUL006
BUL002
BUL007
BUL004
BUL005
Soil
Au g/t
> 1
0.5 to 1
0.2 to 0.5
0.1 to 0.2
0.05 to 0.1
< 0.05
N
0
250
500
metres
EL 1595 - Bulago
Updated Soil Samples
with Drillholes


636,000 mE
637,000 mE
638,000 mE
639,000 mE
640,000 mE
641,000 mE
642,000 mE
9,401,000 mN
9,400,000 mN
9,399,000 mN
SUG001
SUG002
BUL001 &
BUL003
BUL006
BUL002
BUL007
BUL004
BUL005
Soil by Cu
Cu ppm
> 900
600 to 900
400 to 600
150 to 400
< 150
N
0
250
500
metres
EL 1595 - Bulago
Updated Soil Samples
with Drillholes


636,000 mE
637,000 mE
638,000 mE
639,000 mE
640,000 mE
641,000 mE
642,000 mE
9,401,000 mN
9,400,000 mN
9,399,000 mN
DDH_S4
SUG002
DDH_S5
SUG001
DDH_S2
DDH_S1
DDH_S3
BUL001 &
BUL003
BUL006
BUL002
BUL007
BUL004
BUL005
Soil
As ppm
> 100
50 to 100
20 to 50
10 to 20
5 to 10
< 5
Location not assayed for As
N
0
250
500
EL 1595 - Bulago
Updated Soil Samples
with Drillholes


636,000 mE
637,000 mE
638,000 mE
639,000 mE
640,000 mE
9,401,000 mN
9,400,000 mN
9,399,000 mN
> 80 ppm Pb contour
> 50 ppm Pb contour
> 30 ppm Pb contour
No assay information
DDH_S5
NO DATA
SUG001
NO DATA
DDH_S4
SUG002
DDH_S2
DDH_S1
DDH_S3
BUL001 &
BUL003
BUL006
BUL002
BUL004
BUL007
BUL005
NO DATA
Soil
Pb ppm
> 100
80 to 100
50 to 80
30 to 50
< 30
N
0
500
1000
metres
EL 1595 - Bulago
Lead Soil Contours
(with Drillholes)


636,000 mE
637,000 mE
638,000 mE
639,000 mE
640,000 mE
9,401,000 mN
9,400,000 mN
9,399,000 mN
> 300 ppm Zn contour
> 150 ppm Zn contour
> 50 ppm Zn contour
No assay information
DDH_S5
NO DATA
SUG001
NO DATA
DDH_S4
SUG002
BUL001 &
BUL003
NO DATA
DDH_S2
DDH_S1
DDH_S3
BUL006
BUL002
BUL007
BUL004
BUL005
NO DATA
N
0
500
1000
metres
Soil
Zn ppm
> 300
150 to 300
50 to 150
< 50
Location not assayed for Zinc
EL 1595 - Bulago
Zinc Soil Contours
(with Drillholes)

OTML EXPLORATION

Airborne geophysics (magnetics, radiometrics and DTM) was flown by UTS Geophysics (2848 line kilometres at 50m line spacings and mean sensor height of 50m). Mira Geoscience carried out a preliminary unconstrained inversion model of the magnetic data by using local magnetic susceptibility measurements from outcrops, an interpretation of the results and commented on the OTML drilling proposal.

Geological work concentrated in areas of known mineralisation from previous workers in the Suguma, Fornusu, Upper Bulago and Funutu areas in the eastern part of the Idawe Stock and comprised creek traverse mapping, trenching and sampling, ridge & spur soil sampling and rock chip (outcrop and float) sampling. A total of 664 geochemical samples were collected and assayed in 2011.

OTML compiled the original Kennecott ridge and spur soil sampling and continued with infill ridge and spur soil sampling between the Kennecott lines to close off the original Bulago Cu-Au soil anomaly. A series of close-spaced soil lines were sampled at Suguma to assist with tracing the mineralised zone identified and drilled by Equatorial Gold NL in 1988 and re-sampled by Frontier Resources. Geological mapping was limited to a small area at Suguma this reporting period.

During the 2011 reporting period, 997 surface samples were collected for assay. Assay results undergo QA/QC inspection before they are appended to the OTML database along with sample location coordinates, sample collection information and detailed lithological descriptions provided previously from the field in digital Acquire database format. Results include all OTML samples to date, including those previously reported (Niru & Kepa) that have been updated with additional sample data.

Drill core was photographed and logged onsite. Sample intervals (mostly 1-2m), were assigned and marked up on the core before it was transported back to Tabubil. Here the logging and sampling intervals were validated against the logs, the core was sawn in half and one half was taken for preparation and assay while the remaining half was returned to the core trays, palletised and stored. A total of 1018 samples were assayed.

Magnetic susceptibility measurements using a TerraPlus KT10 magnetic susceptibility meter were taken on the crushed reject bags of all rock and drill core samples. Specific gravity measurements were determined by the wax sealed water displacement method.

Soils

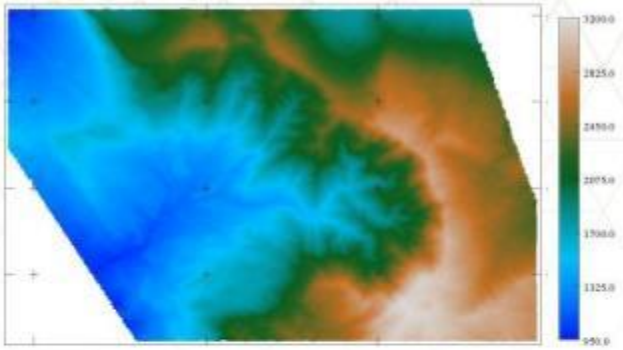
Infill ridge and spur soil sampling continued during this reporting period with the completion of 43 lines providing a clearer understanding of the soil copper-gold anomaly. The >200ppm Cu soil anomaly, 2 x1.6km in size, is broadly coincident with the interpreted extent of the Bulago Porphyry from the K channel of the airborne radiometrics survey, although it is apparent that the Porphyry extends east of the soil anomaly where it is probably unmineralised. The >200ppm Cu anomaly extends southwards for 1km to the Funutu Skarn area as a tail. It is not closed off here and further sampling is in progress.

Two zones of >400ppm Cu in soils have been identified, the larger of which measures 600x200m in size, straddling Bulago River. The second, circular in shape and approximately 200m in diameter, lies east of Camp 4. Four large soil gold anomalies, >0.2 g/t Au, are identified, within and peripheral to the >200ppm Cu soil anomaly and partially coincident with the >400ppm Cu soil anomalies.

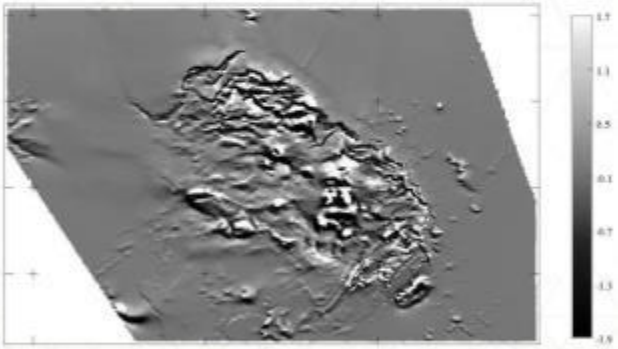
There are 4 small and separate molybdenum anomalies >10ppm Mo, all of which are confined to the >200ppm Cu soil anomaly. One lies north of the >400ppm Cu anomaly straddling the Bulago River and another is partially coincident with that Cu soil anomaly. The third is broadly coincident with the >400ppm Cu and gold anomaly east of Camp 4 but is larger than it and the fourth forms a sinuous zone within the southern tail of the >200ppm Cu anomaly that is not closed off.

Bulago - Gridded Data Products MAG

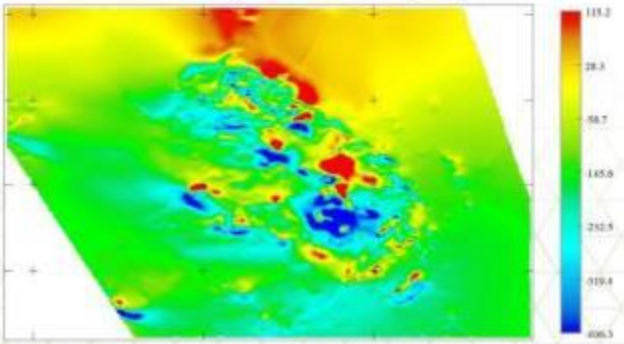
Terrain Model (m)



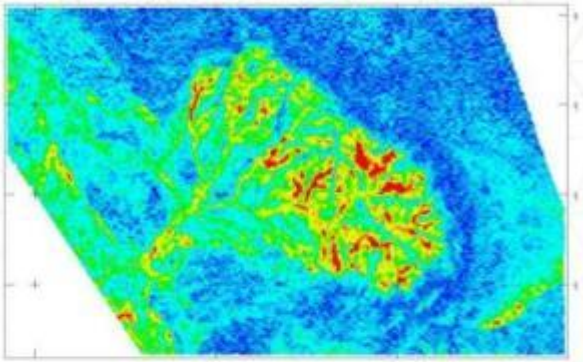
First Vertical Derivative (nT/m)



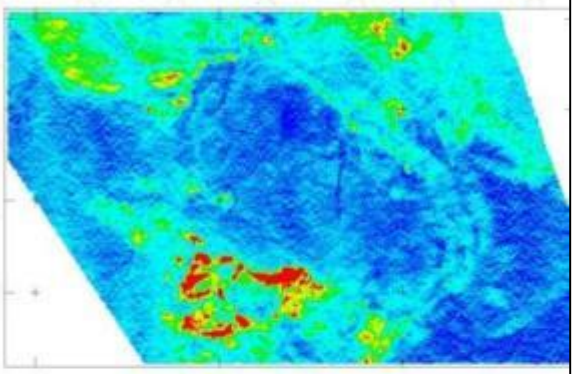
Total Magnetic Field (nT)



Bulago - Gridded Data Products Radiometrics

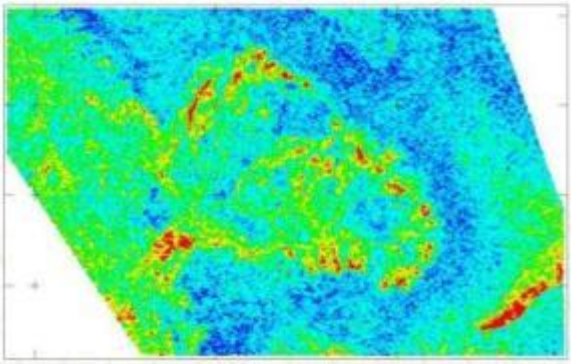


Potassium

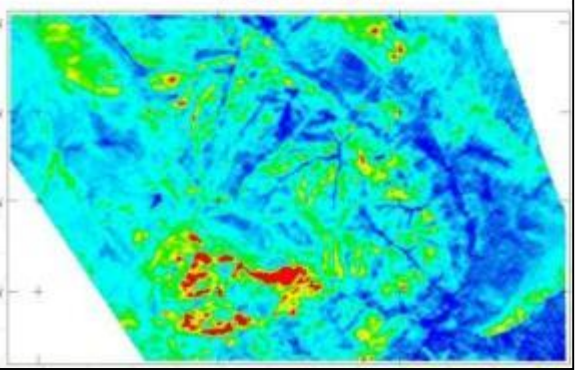


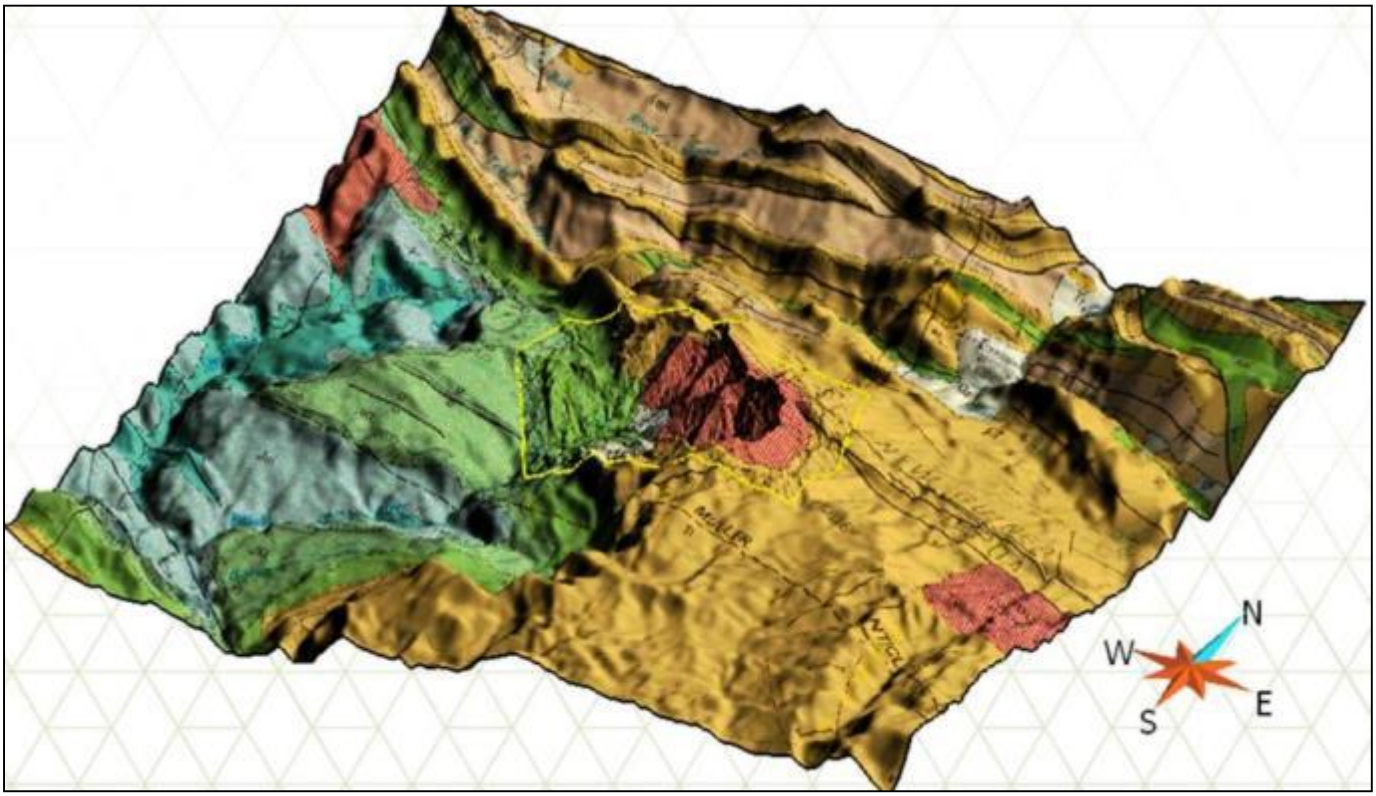
Uranium

Thorium



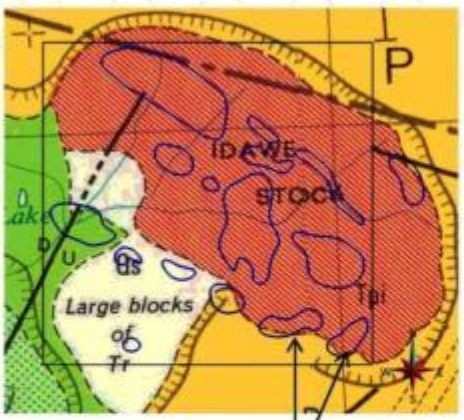
Total Count



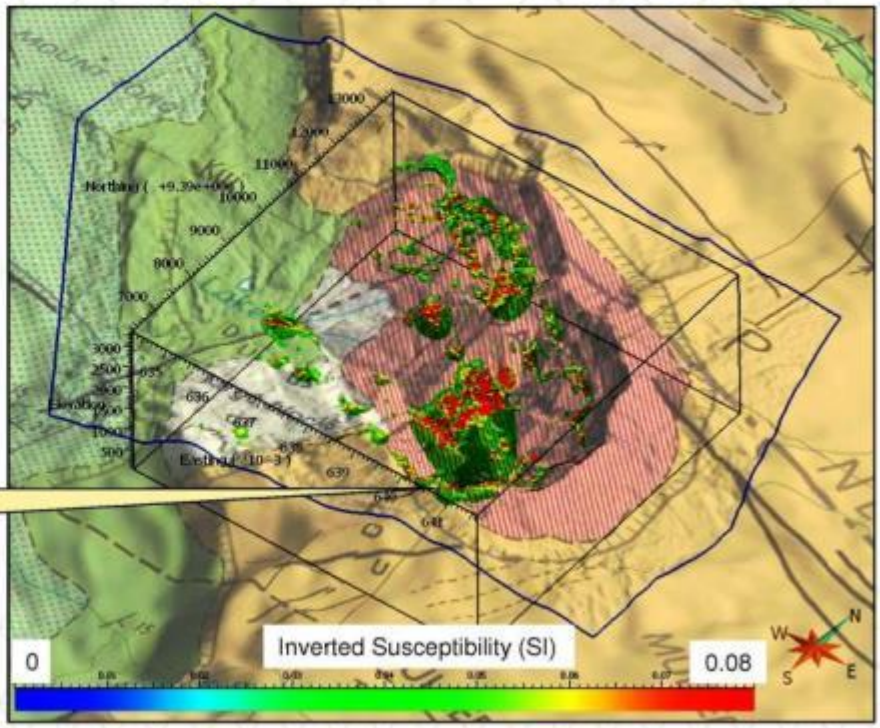


Local Unconstrained Inversion – 50m Resolution

- Local Inversion with geology overlay (Georeferencing requires confirmation)



Potential for skarn targets surrounding intrusive at limestone contact



Mira Geoscience
...modelling the earth

Voxels shown are > 0.025 SI

Anomalous lead, >22ppm Pb, is irregularly distributed, partly peripheral and parly overlying the >200ppm Cu anomaly. A large irregular zone lies across the nothern part of the >200ppm Cu anomaly. It is extensive over the eastern side of the Bulago Porphyry and beyond into the surrounding sediments and overlies part of the northern >400ppm Cu anomaly. A second zone lies along Toporo Ridge south of Camp 4.

Anomalous zinc, >130ppm Zn, is also irregularly distributed and largely peripheral to the >200ppm Cu anomaly and the Bulago Porphyry. Two of the larger zones are coincident with Pb anomalies in sediments north of the Bulago Porphyry and on its eastern margin.

Anomalous arsenic, >13ppm As, is very irregulalry distributed generally around the margins and peripheral to the Bulago Porphyry and the >200ppm Cu anomaly. In the north a broad zone overlies the northern part of the porphyry and the >200 and >400ppm Cu anomalies. It extends into the sediments through the headwaters of Kapia Creek, coincident with a number of Pb anomalies here. A series of narrow and elongate sub-parallel arsenic anomalies lie on the eastern margin of the porphyry and extend into the sediments. They fall within the broad Pb-Zn anomalies here and are sub-parallel with interpreted structural zones and arsenic soil anomalies in the Suguma region. There are also several arsenic anomalies in the Funutu Skarn area associated with other small isolated Cu, Pb, Zn, Mo anomalies here.

The main airborne magnetic positive anomaly is largely coincident with the central part of the soil copper anomaly, but surrounded by isolated smaller anomalies extending beyond the soil copper anomaly and the interpreted extent of the porphyry from the K channel of the airborne radiometrics.

Ridge and spur soil sampling of the Bulago Porphyry successfully outlined a large copper anomaly broadly surrounded and partly overlapped by anomalous Pb, Zn, As. Two significant zones of >400ppm Cu lie within the broad copper anomaly each with partly coincident and/or surrounding gold and molybdenum anomalies. An elongate Cu-Mo anomaly extends south to the Funutu Skarn where there are a number of small isloated Pb, Zn and As anomalies. Parts of the soil copper anomaly are not closed off and futher sampling is in progress.

The anomalous geochemistry is broadly coincident with the interpreted extent of the Bulago Porphyry based on the K Channel radiometrics of the airborne survey and the magnetic susceptibility from the same survey.

Two samples of diorite from Fornusu Creek contain 1110ppm Cu and 1.51 g/t Au, respectively and further reconnaissance is warranted here. Shears in siltstones in adjacent tributaries in the Upper Bulago River assayed 1855 and 1110 ppm Cu and 1.54 and 1.91 g/t Au, respectively. Further reconnaissance is warranted to determine the significance of these structures on the margins of the Bulago Porphyry in an area of anomalous soil Pb, Zn, As geochemistry.

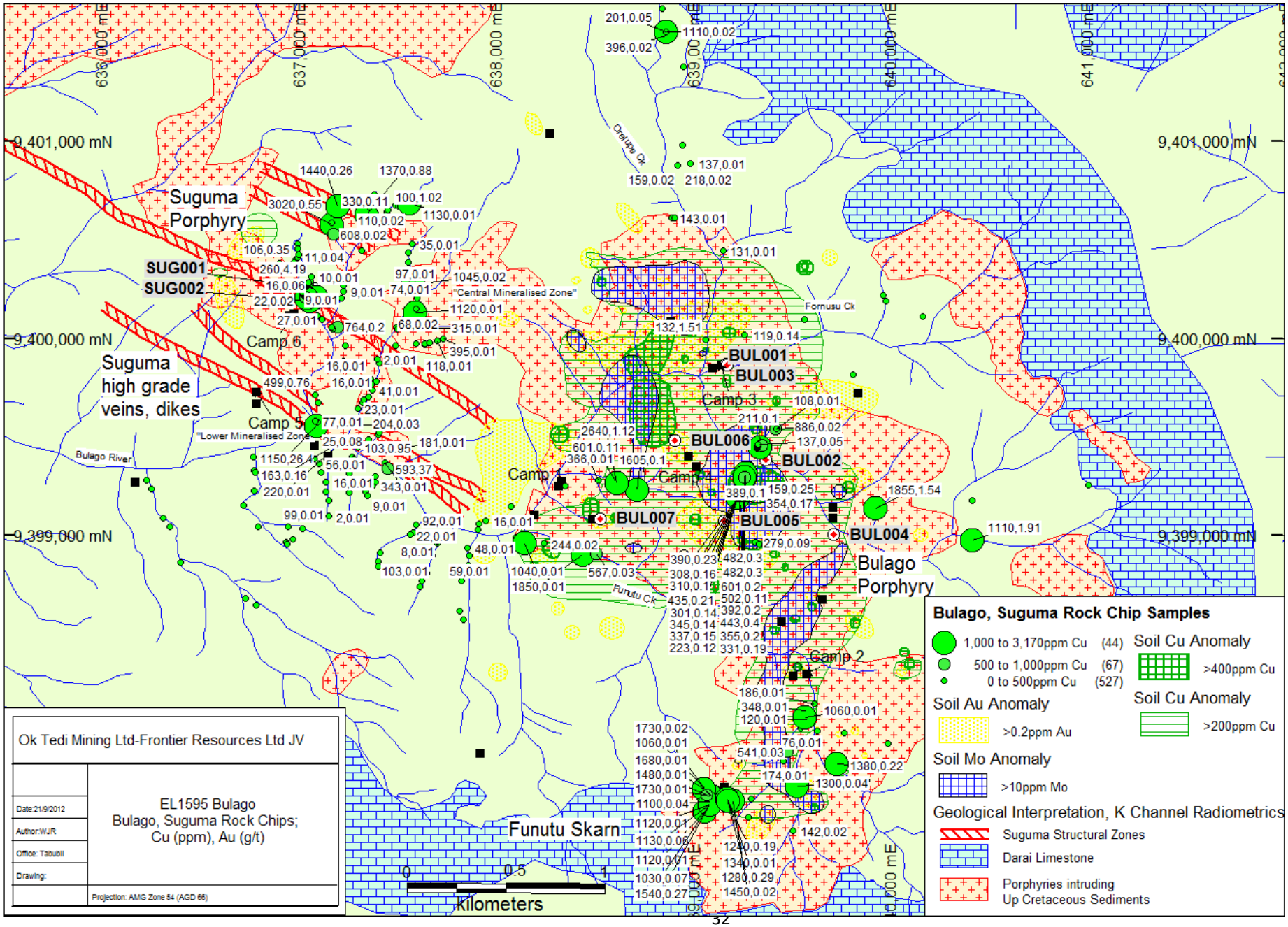
Three samples of pyrite-pyrrhotite skarn from Upper Funutu Creek assayed 1380, 1300, 1060 ppm Cu and up to 0.22g/t Au. They may be derived from further bodies of skarn mineralisation east of the known sub-outcropping mineralisation in an area of minor magnetic anomalies. Further reconnaissance mapping is required here.

Two samples from Toporo Creek, draining the region between the two significant >400ppm soil Cu anomalies assayed 1605 and 2640 ppm Cu and 0.1 and 1.12 g/t Au, respectively. This area requires more detailed mapping and rock chip sampling. Other lower-grade samples, listed in the database, may also warrant follow-up.

Funutu Skarn

Follow-up of the pyrrhotite-chalcopyrite-pyrite-sphalerite mineralised boulders of skarn in Funutu Creek, found and reported by Kennecott (Miller and Weir, 1985) and re-sampled by OTML (Niru and Kepa, 2011), lead to the discovery of sub-outcropping sulphide skarn mineralisation , mineralised intrusives and diorite endoskarn in the headwaters of Funutu Creek.

However the geochemistry of the float boulders does not match that from the occurrences of skarn sampled by OTML upstream. Gold, copper, lead, zinc and silver are highly anomalous from one of the Kennecott samples and it is likely that other occurrences high-grade skarn mineralisation are present in these headwaters.


636,000 mE
637,000 mE
638,000 mE
639,000 mE
640,000 mE
641,000 mE
9,401,000 mN
9,400,000 mN
9,399,000 mN
Suguma Porphyry
SUG001
SUG002
Suguma high grade veins, dikes
Camp 6
Camp 5
"Lower Mineralised Zone"
"Central Mineralised Zone"
Bulago River
Orai Upe Ck
Fornusu Ck
Funutu Ck
Camp 1
Camp 4
Camp 3
Camp 2
BUL001
BUL003
BUL006
BUL002
BUL007
BUL005
BUL004
Bulago Porphyry
Funutu Skarn
1440,0.26
1370,0.88
3020,0.55
330,0.11
100,1.02
110,0.02
1130,0.01
608,0.02
106,0.35
11,0.04
35,0.01
260,4.19
10,0.01
97,0.01
1045,0.02
16,0.06
9,0.01
74,0.01
22,0.02
9,0.01
1120,0.01
27,0.01
764,0.2
68,0.02
315,0.01
395,0.01
16,0.01
2,0.01
118,0.01
499,0.76
16,0.01
41,0.01
23,0.01
77,0.01
204,0.03
25,0.08
103,0.95
181,0.01
1150,26.4
56,0.01
593,37
163,0.16
16,0.01
343,0.01
220,0.01
9,0.01
99,0.01
2,0.01
92,0.01
22,0.01
8,0.01
103,0.01
59,0.01
48,0.01
16,0.01
244,0.02
1040,0.01
1850,0.01
567,0.03
201,0.05
1110,0.02
396,0.02
159,0.02
218,0.02
137,0.01
143,0.01
131,0.01
132,1.51
119,0.14
108,0.01
211,0.1
886,0.02
137,0.05
2640,1.12
601,0.11
366,0.01
1605,0.1
389,0.1
159,0.25
354,0.17
1855,1.54
1110,1.91
279,0.09
482,0.3
482,0.3
601,0.2
502,0.11
392,0.2
443,0.4
355,0.21
331,0.19
390,0.23
308,0.16
310,0.15
435,0.21
301,0.14
345,0.14
337,0.15
223,0.12
186,0.01
348,0.01
120,0.01
1060,0.01
76,0.01
541,0.03
1380,0.22
174,0.01
1300,0.04
142,0.02
1730,0.02
1060,0.01
1680,0.01
1480,0.01
1730,0.01
1100,0.04
1120,0.01
1130,0.06
1120,0.01
1030,0.07
1540,0.27
1240,0.19
1340,0.01
1280,0.29
1450,0.02
0
0.5
1
kilometers
Ok Tedi Mining Ltd-Frontier Resources Ltd JV
Date:21/9/2012
Author:WJR
Office: Tabubil
Drawing:
EL1595 Bulago
Bulago, Suguma Rock Chips;
Cu (ppm), Au (g/t)
Projection: AMG Zone 54 (AGD 66)
Bulago, Suguma Rock Chip Samples
1,000 to 3,170ppm Cu (44)
500 to 1,000ppm Cu (67)
0 to 500ppm Cu (527)
Soil Au Anomaly
>0.2ppm Au
Soil Mo Anomaly
>10ppm Mo
Soil Cu Anomaly
>400ppm Cu
Soil Cu Anomaly
>200ppm Cu
Geological Interpretation, K Channel Radiometrics
Suguma Structural Zones
Darai Limestone
Porphyries intruding
Up Cretaceous Sediments

Drilling
Drill holes BUL001-007 at Bulago were designed to test geochemical, geophysical and geological targets as follows:

BUL001: Located within the north-eastern part of the 200ppm Cu soil anomaly, 400m east of the northern 400ppm Cu soil anomaly and adjacent to an extensive partly coincident >0.2 g/t Au soil anomaly. Planned to intersect the magnetic anomaly at depth as modelled from 3D inversion of airborne magnetic survey.

BUL002: Located on the margins of the 200ppm Cu soil anomaly, a 0.2 g/t Au soil anomaly and targeting a zone of 400ppm Cu in soils. Mineralised intrusive with potassic alteration mapped along a structural trend. No significant magnetic anomalies.

BUL003: Located within the north-eastern part of the 200ppm Cu soil anomaly, 400m east of the northern 400ppm Cu soil anomaly and adjacent to an extensive partly coincident 0.2 g/t Au soil anomaly. Planned to intersect the magnetic anomaly at depth as modelled from 3D inversion of airborne magnetic survey. Drilled from same location as BUL001 and orthogonal to that hole.

BUL004: Located on the margin of 200ppm Cu soil anomaly. Mapped mineralised intrusive contact. No significant magnetic anomaly.

BUL005: Located on Toporo Ridge near the centre of the 200ppm Cu soil anomaly, within a 0.2 g/t Au soil anomaly and surrounded by isolated 400ppm Cu soil anomalies. On the margin of the magnetic anomaly.

BUL006: Located on Toporo Ridge near the centre of the 200ppm Cu soil anomaly, within a small 0.2 g/t Au soil anomaly and adjacent to the main 400ppm Cu soil anomaly. At the centre of the main magnetic anomaly.

BUL007: Collared on the margins of the 200ppm Cu anomaly in a small 0.2 g/t Au soil anomaly, near a small area of 400ppm Cu in soils to test part of the main magnetic anomaly and an outlier of it.

Bulago 'Porphyry' Drill Results
Assay intercepts are summarised in the Tables below.

BUL001 returned the most encouraging Cu and Au intersections of 124m of 0.13% Cu from 119m (no significant gold), 76m of 0.15% Cu from 267m including 68.1m of 0.17g/t Au from 275m (that includes 33m of 0.22g/t Au from 293m), 68.5m of 0.22g/t Au from 359.5m (no significant copper), and 12.7m of 0.11% Cu from 371.8m.

The upper copper intersection from 119m is from biotite-k-feldspar-epidote-actinolite-quartz-magnetite-pyrite-titanite altered monzodiorites and plagioclase-hornblende diorite porphyries. Chalcopyrite is disseminated and in veins while trace molybdenite is present in quartz veins and their selvages (best assay of 0.013% Mo). Veins include actinolite-epidote-pyrite-chalcopyrite, quartz-pyrite+/-chalcopyrite, pyrite and quartz-molybdenite types. Fractures have chlorite-magnetite-epidote and chlorite-sericite-pyrite altered selvages. Anhydrite first appears at 226m as pervasive alteration and anhydrite-pyrite veins.

The lower copper intersection from 267m with gold from 275m is in mostly monzodiorite with a short section of siltstone. In the intrusive early quartz veins are crosscut by chlorite-epidote-pyrite veins that are in turn crosscut by late anhydrite+/-sulphide veins and it is apparent that the gold is associated with anhydrite alteration, consistent with higher Ca assays through this section. There are also chlorite-epidote-magnetite veins, k-feldspar veins with biotite-chlorite altered selvages and fractures with epidote-magnetite altered selvages.

The lowermost gold intersection with a short interval of 0.11% Cu is from monzodiorites with two narrow feldspar porphyry ?dikes, with anhydrite-pyrite veins with epidote selvages, anhydrite-chlorite-sericite-sulphide veins, anhydrite+/-quartz-sericite-pyrite-chalcopyrite veins, quartz+/-pyrite veins and k-feldspar veins. Gold is similarly associated with anhydrite and the interval of copper mineralisation is associated with elevated K assays possibly from secondary K-feldspar.

BUL002 intersected monzodiorite and feldspar porphyry from 27.8-91m that assayed 63.2m of 0.12% Cu, 0.10g/t Au, the best mineralised section, while the overall grade of the hole was 319.2m of 0.05% Cu, 0.08g/t Au. Gold-only intersections include 20.9m of 0.17g/t Au from 70.1m, 41m of 0.15g/t Au from 192m, 2m of 0.45g/t Au from 245m and 14.7m of 0.16g/t Au from 254.2m. The intrusives are weakly chlorite-epidote-magnetite altered, appear to have been overprinted by sericite-clay-chlorite-quartz-pyrite, and contain 2-10% pyrite, weak chalcopyrite and trace

molybdenite (assays up to 0.0039% Mo). Copper increases towards the bottom of the hole from 254m in K-feldspar-biotite-magnetite-chlorite-epidote-actinolite altered monzonite porphyry, monzodiorite and feldspar porphyry, towards the 400ppm Cu soil anomaly. The gold intersections are associated with faults and brecciation, quartz-sericite-chlorite-clay-pyrite alteration and zones of chlorite-epidote-actinolite alteration. The magnetic susceptibility of the core is overall low throughout the hole, consistent with the absence of a magnetic anomaly here.

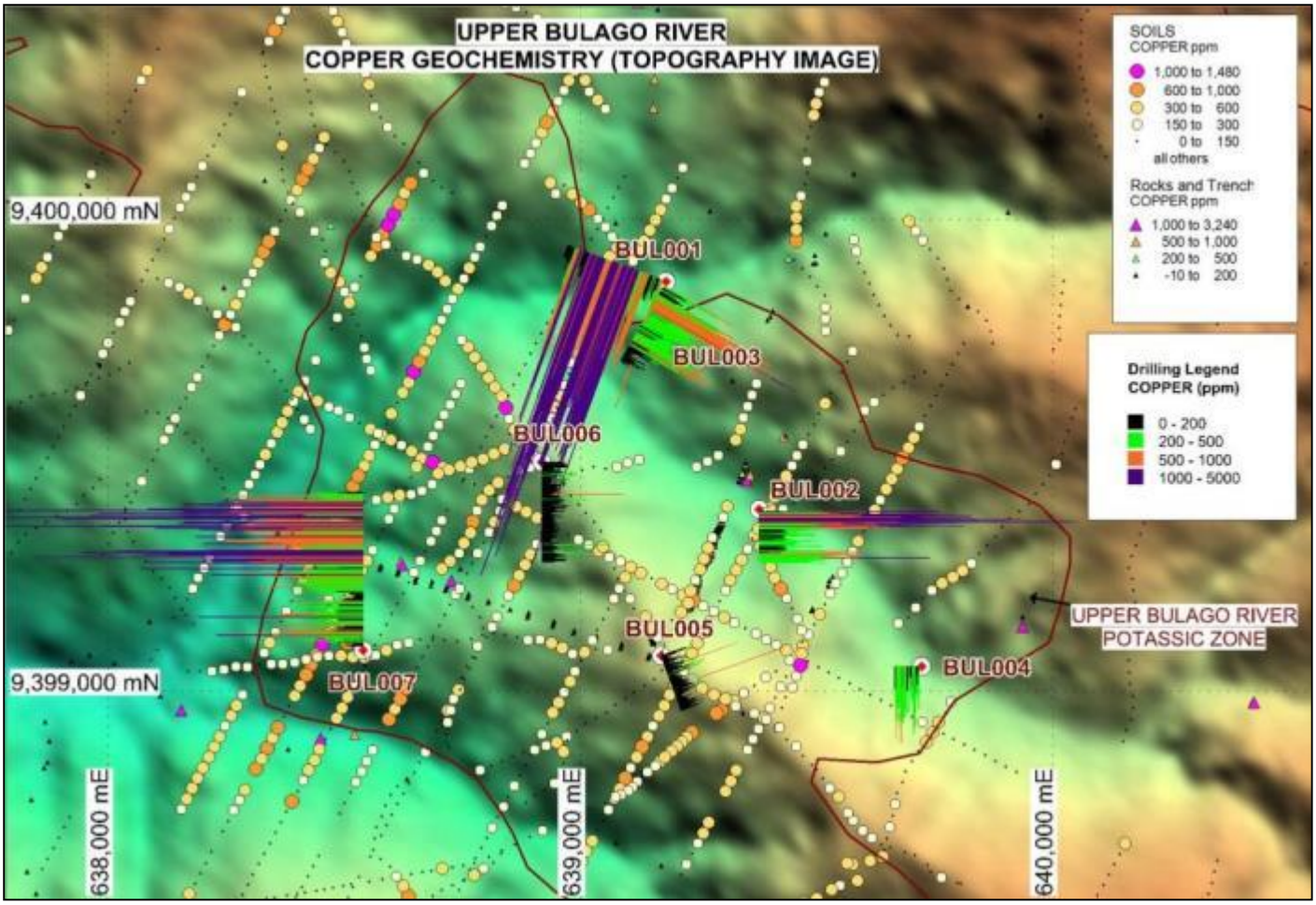
BUL003 intersected a short interval of 8m of 0.11% Cu and 0.05g/t Au from 128 (part of a lower grade zone of 0.07% Cu from 63.5-139m) and 18.3m of 0.66g/t Au from 364.7m, otherwise the overall grade of the hole was 0.03% Cu, 0.06g/t Au. The copper intersection is from monzodiorite with K-feldspar-biotite-quartz-chlorite-actinolite-magnetite alteration overprinted by late sericite-pyrite-quartz alteration. Sulphides comprised 2-5% pyrite with trace chalcopyrite, consistent with the assays. The lower gold intersection is from a chlorite-illite/kaolinite-carbonate-pyrite altered fault zone in epidote-chlorite altered diorite. Magnetic susceptibility is low throughout the upper part of the hole including the copper mineralised section, but rises in the lower part of the hole from about 270m consistent with the 3D model. From here the intrusives are mostly unaltered-weak chlorite-epidote altered, copper is very low and the magnetic susceptibility is probably derived from primary magnetite in an unaltered-weakly altered rock.

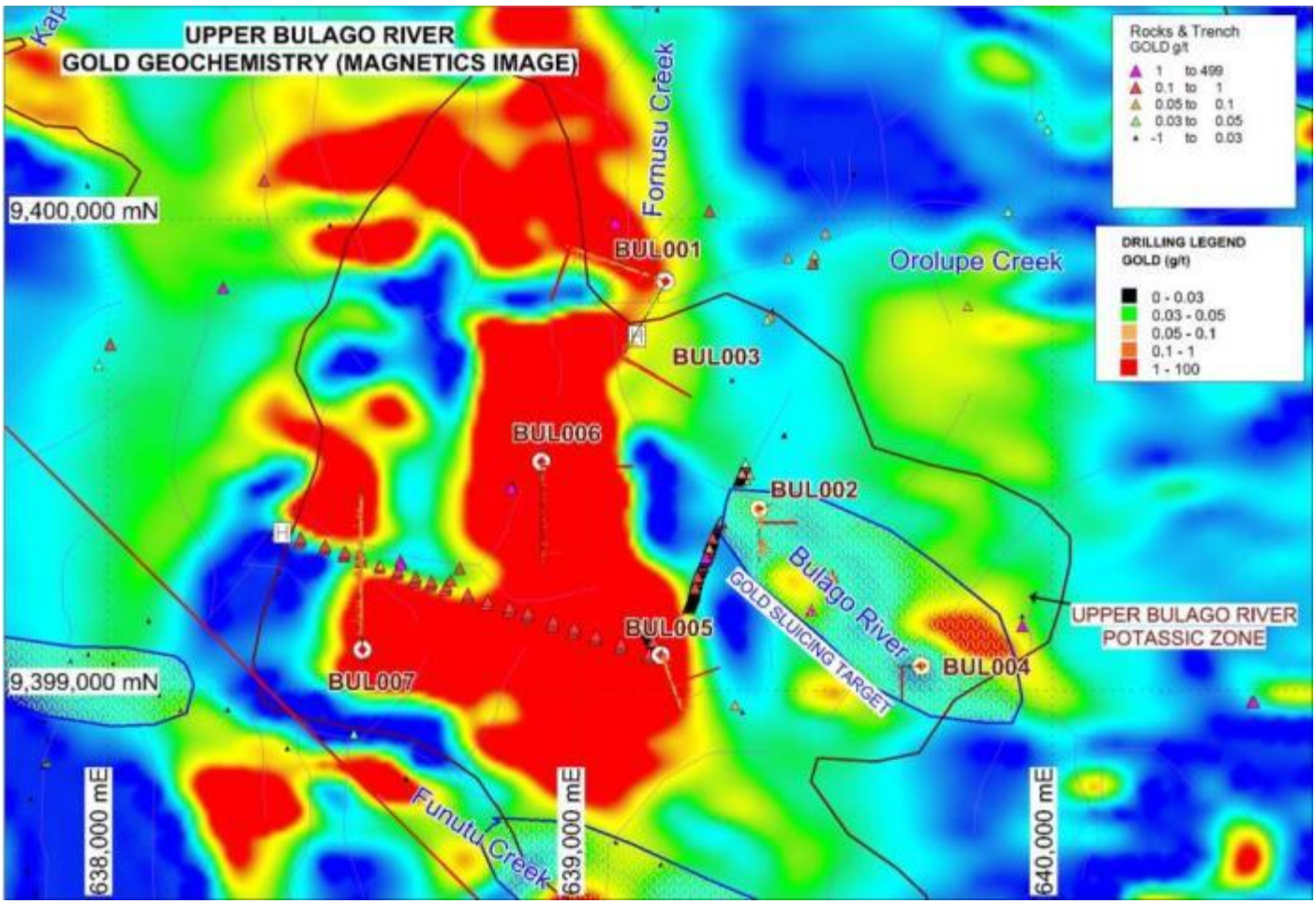
EL 1595 - Significant Bulago Gold and Copper Drill Results

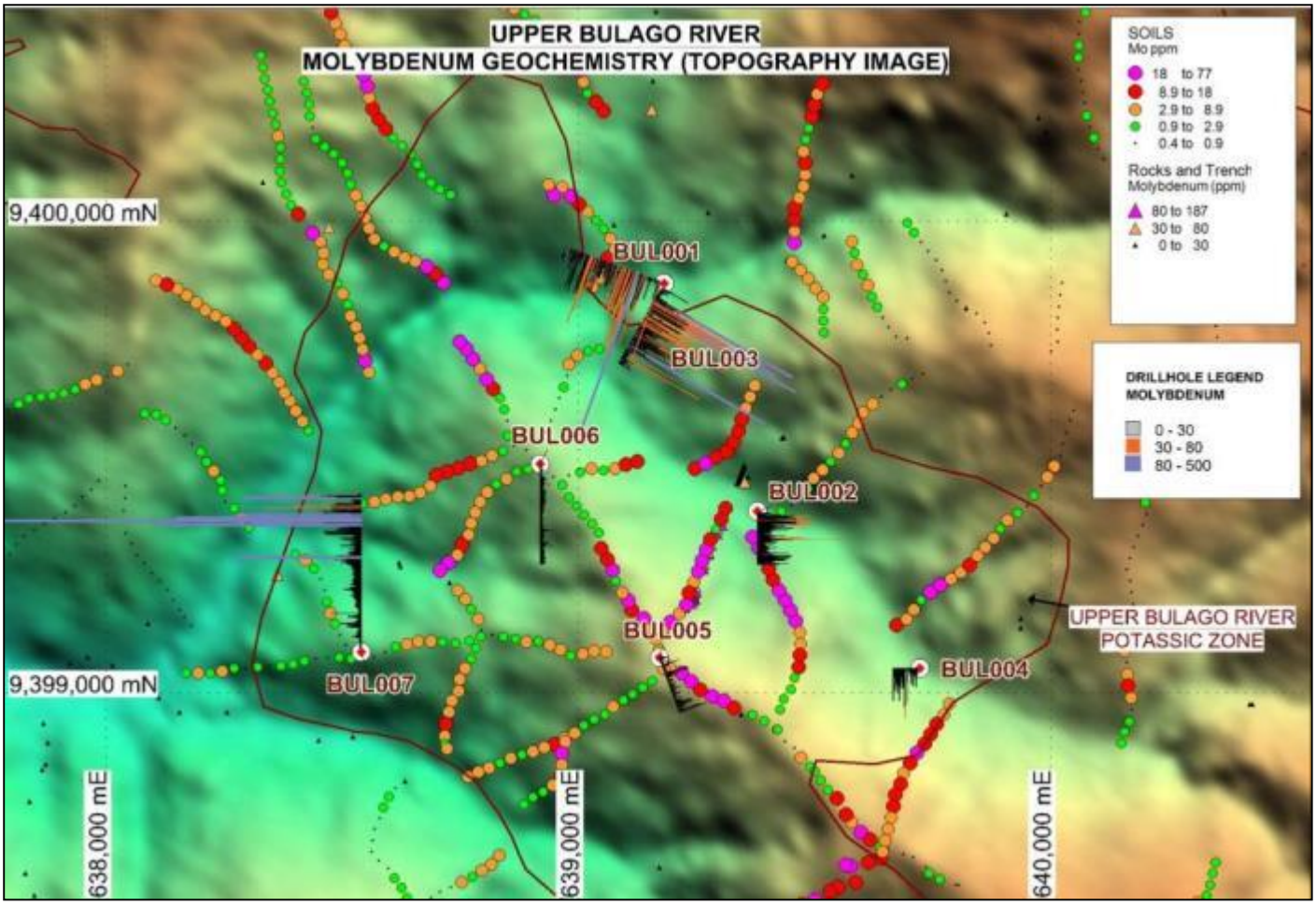
Hole ID		Intercept Length	Gold (g/t)	Copper (ppm)	From (m)	To (m)
BUL001		9.5m	0.32	137	29.5	39.0
plus		224.1m	0.06	**1255**	119.0	343.1
incl		76.1m	0.16	**1510**	267.0	343.1
plus		9.7m	0.21	124	359.5	369.2
plus		**12.7m**	**0.10**	**1061**	**371.8**	**384.5**
plus		2.4m	0.54	550	385.6	388.0
plus		21.0m	0.42	100	407.0	428.0
incl		**3.0m**	**2.04**	101	**422.0**	**425.0**
plus		1.3m	0.10	828	439.0	440.3
BUL002		**63.2m**	**0.10**	**1152**	**27.8**	**91.0**
incl		**0.9m**	**1.32**	585	**86.1**	**87.0**
BUL003		370.5m	0.06	347	19.1	389.6
incl		**75.9m**	0.04	674	63.5	139.4
plus		**5.9m**	**1.71**	92	**367.1**	**373.0**
plus		**2.0m**	**0.50**	178	**379.0**	**381.0**
BUL004		**1.5m**	**1.22**	280	**80.0**	**81.5**
BUL005		363.1m	0.09	95	0.0	363.1
incl		**2.0m**	**1.80**	173	**197.0**	**199.0**
BUL006		**1.5m**	**3.19**	158	**20.5**	**22.0**
plus		**1.6m**	**2.57**	199	**83.9**	**85.5**
BUL007		**346.0m**	**0.11**	**771**	**235.0**	**581.0**
incl		9.1m	0.13	720	62.0	71.1
plus		5.1m	0.22	327	113.9	119.0
plus		**12.0m**	**0.14**	619	**133.0**	**145.0**
plus		8.0m	0.14	320	175.0	183.0
plus		**103.3m**	**0.15**	639	**235.0**	**338.3**
plus		**61.0m**	**0.16**	**1017**	**350.0**	**411.0**
plus		5.3m	0.15	763	432.7	438.0
plus		**37.0m**	0.08	**1160**	**490.0**	**527.0**
plus		**44.2m**	**0.11**	**1352**	**538.8**	**583.0**

NB: BUL007 has very low Ag and As, with Mo increasing downhole.

BUL004 was terminated due to high water inflow. There were no mineralised intersections and the hole averaged 105.4m of 0.03% Cu, 0.04g/t Au. The interval from 0-81.5m comprises weak chlorite-epidote-magnetite altered diorite/monzodiorite with intervals averaging 240-325ppm Cu alternating with intervals of <83ppm Cu. From 81.5-115m the monzodiorite is biotite-?K-feldspar-magnetite-quartz-pyrite altered and the copper grade averages 312ppm Cu. Magnetic susceptibility is low but decreases further with the change in alteration and copper geochemistry downhole. Better copper mineralisation may have been expected if the hole had been able to be continued.


UPPER BULAGO RIVER
COPPER GEOCHEMISTRY (TOPOGRAPHY IMAGE)
SOILS
COPPER ppm
1,000 to 1,480
600 to 1,000
300 to 600
150 to 300
0 to 150
all others
Rocks and Trench
COPPER ppm
1,000 to 3,240
500 to 1,000
200 to 500
-10 to 200
Drilling Legend
COPPER (ppm)
0 - 200
200 - 500
500 - 1000
1000 - 5000
9,400,000 mN
9,399,000 mN
638,000 mE
639,000 mE
640,000 mE
BUL001
BUL003
BUL006
BUL002
BUL005
BUL004
BUL007
UPPER BULAGO RIVER
POTASSIC ZONE


UPPER BULAGO RIVER
GOLD GEOCHEMISTRY (MAGNETICS IMAGE)
Rocks & Trench
GOLD g/t
1 to 499
0.1 to 1
0.05 to 0.1
0.03 to 0.05
-1 to 0.03
DRILLING LEGEND
GOLD (g/t)
0 - 0.03
0.03 - 0.05
0.05 - 0.1
0.1 - 1
1 - 100
Formusu Creek
Orolupe Creek
Bulago River
GOLD SLUICING TARGET
Funutu Creek
9,400,000 mN
9,399,000 mN
638,000 mE
639,000 mE
640,000 mE
BUL001
BUL003
BUL006
BUL002
BUL005
BUL004
BUL007
UPPER BULAGO RIVER
POTASSIC ZONE



BUL005 intersected no significant copper mineralisation; it averaged 363.1m of 0.01% Cu, 0.09g/t Au. There were zones of low-grade gold; 47.1m of 0.15g/t Au from 6.9m, 4m of 0.26g/t Au from 207m, 21.3m of 0.19g/t Au from 298m and 6.1m of 0.22g/t Au from 357m. The hole intersected hornblende diorite from surface to 358.2m then passed into a fault zone with monzodiorite, which is weakly mineralised with gold, base metals and arsenic, where the hole was terminated in bad ground.

Weak chlorite-epidote-pyrite alteration persists from surface to about 200m where it changes to chlorite-epidote magnetite-pyrite. K-feldspar-biotite-quartz-chlorite-actinolite-epidote-magnetite first appears around 300m and continues to the fault near the bottom of the hole. The low grade gold mineralisation is apparently associated with chlorite-epidote-actinolite-magnetite-pyrite alteration, pyrite-epidote veins and pyrite fractures. Base metals are slightly elevated in this hole. The magnetic susceptibility is elevated, consistent with the margins of the magnetic anomaly.

BUL006 intersected no significant copper mineralisation and the average grade over the hole is 422.4m of 0.01% Cu, 0.04g/t Au. Short gold intersections include 1.5m of 3.19g/t Au from 20.5m, 1.6m of 2.06g/t Au from 83.9m and 4m of 0.16g/t Au from 96m. Monzodiorite was logged throughout the hole. Chlorite-actinolite-magnetite-pyrite alteration is present throughout accompanied by intervals of weak K-feldspar alteration and veins. Quartz-sericite-clay-pyrite alteration is confined to narrow faults and shear zones. The gold intersection from 83.9m is accompanied by elevated base and toxic elements and is probably related to a narrow shear/fault zone. The overall magnetic susceptibility is high, consistent with its position at the centre of the magnetic anomaly.

BUL007 intersected variably altered diorite, hornblende diorite, monzodiorite, intrusion breccia and felsic dike. From 0-110.9m the hornblende diorite/monzodiorite is quartz-K-feldspar-biotite-magnetite-chlorite-sericite altered with 2-5% disseminated, fracture and vein-fill pyrite and quartz-pyrite, K-feldspar+/-quartz-pyrite and quartz-biotite-chlorite-pyrite-trace chalcopyrite veins and veinlets.

From 110.9-507.2m diorite and hornblende diorite/porphyry are calc-potassic altered with assemblages of quartz+/-K-feldspar-biotite-chlorite+/-sericite+/-actinolite+/-epidote-magnetite alteration with 1-4% disseminated, fracture and vein-fill sulphides of mostly pyrite with minor visible chalcopyrite and molybdenite. Veins include assemblages of quartz, K-feldspar, chlorite, sericite, epidote, actinolite, magnetite and sulphides.

The intrusion breccia from 507.2-509.8m is potassic (quartz-K-feldspar) altered with 3-5 % sulphides of mostly pyrite with minor chalcopyrite and molybdenite.

Diorite and hornblende diorite from 509.8-612.6m are variably calc-potassic (chlorite+/-sericite-actinolite-epidote+/-biotite+/-magnetite altered with up to 3% sulphides of mostly pyrite with minor chalcopyrite and molybdenite as disseminations and fracture and vein fills. Veins comprise assemblages of quartz, K-feldspar, biotite, actinolite, epidote, chlorite, sericite, magnetite and sulphides.

Quartz-sericite pyrite alteration with 3-10% disseminated, fracture and vein-fill sulphides is confined to narrow zones in a felsic dike and diorite. Pyrite is predominant with minor chalcopyrite and molybdenite. Veins comprise quartz+/-carbonate+/-K-feldspar+/-epidote.

From 612.6-649.45m alteration decreases in intensity in the diorite and hornblende diorite where secondary biotite is overprinted with chlorite+/-sericite+/-actinolite and contains 1-3% disseminated, fracture and vein-fill sulphides of mostly pyrite with minor chalcopyrite and molybdenite. Veins are comprised of quartz, biotite, sericite, epidote, actinolite, magnetite and sulphides.

Interpretation of Drill Results - Seven drill holes were completed for a total of 2711.1m to test the Cu-Mo-Au soil geochemical anomalies and the underlying magnetic anomalies. They all intersected a variety of diorites, hornblende diorites, feldspar porphyries, monzodiorites and intrusion breccias as logged. Limited thin section petrography from BUL001, indicates a medium-K calc-alkaline diorite association with similarities to alkalic porphyries. Preliminary 3D modelling of the holes has been carried out.

BUL001 north of Bulago River returned the most significant results including 124m of 0.13% Cu from 119m, 76.1m of 0.15% Cu from 267m, 68.1m of 0.17g/t Au from 275m, 33m of 0.22g/t Au from 293m and 68.5m of 0.22g/t Au from 359.5m from an overall grade from the entire hole of 440.3m of 0.08% Cu, 0.1g/t Au. The core is variably potassic-calc-potassic (k-feldspar-biotite-actinolite-epidote-magnetite-chlorite-anhydrite-pyrite) altered with minor chalcopyrite. This hole extended into the northern gold soil anomaly but did not reach the northern 400ppm Cu anomaly. The alteration is typical of the outer core zone of a mineralised alkali porphyry intrusive complex.

BUL003, adjacent to BUL001, intersected 75m of low grade copper mineralisation containing a short interval of 8m of 0.11% Cu in the upper part of the hole. The copper intersection is from monzodiorite with calc-potassic (K-feldspar-biotite-quartz-chlorite-actinolite-magnetite) altered intrusives similar to BUL001. The lower gold intersection of 18.3m of 0.66g/t Au from 364.7m, is from a chlorite-illite/kaolinite-carbonate-pyrite altered fault zone in epidote-chlorite altered diorite. The intrusives are mostly unaltered-weak chlorite-epidote altered in the lower part of the hole, copper is very low, and it is apparent that hole drilled away from the mineralisation in BUL001.

BUL002 returned the second most important mineralised intersection from the upper part of the hole but copper increases towards the bottom of the hole in K-feldspar-biotite-magnetite-chlorite-epidote-actinolite altered intrusives beneath the eastern 400ppm Cu anomaly.

BUL004 intersected biotite-?K-feldspar-magnetite-quartz-pyrite alteration downhole with an increase in copper mineralisation and better copper mineralisation is anticipated at depth that may be part of the same mineralisation from BUL002 beneath the eastern 400ppm soil copper anomaly.

BUL005 intersected near-surface zones of low-grade gold mineralisation in chlorite-epidote-actinolite-magnetite-pyrite altered intrusives sufficient to explain the soil anomaly and at depth it terminated in a fault zone with weak gold-base metal geochemistry. Alteration increases in intensity downhole and calc-potassic (K-feldspar-biotite-quartz-chlorite-actinolite-epidote-magnetite) alteration appears around 300m but is not copper mineralised. It may be peripheral to the mineralisation expected at depth between BUL002 and BUL004.

BUL006 intersected barren chlorite-actinolite-magnetite-pyrite alteration with intervals of weak K-feldspar alteration and veins at the centre of the main magnetic anomaly. The central part of the magnetic anomaly may not be significantly mineralised and the hole drilled away from the main 400ppm Cu anomaly to the north.

BUL007 was drilled on the western margin of the 200ppm soil Cu anomaly and the underlying magnetic anomaly. It intersected extensive sections of calc-potassic (chlorite-actinolite-epidote-magnetite-K-feldspar-biotite-silica-pyrite) alteration with chalcopyrite-molybdenite mineralisation and is awaiting sample preparation and assay. The alteration

is similar to that from holes BUL001 and BUL003 however visual estimates of the copper grades are less than that reported from BUL001.

The hole lies approximately 1km southwest of holes BUL001 and BUL003 and 500m from the centre of the northern 400ppm Cu soil anomaly. Holes BUL001 and BUL003 lie 400m northeast of this soil anomaly and although reported encouraging grades also did not extend beneath the 400ppm copper anomaly. These 3 holes have intersected low-grade copper mineralisation that is believed to lie peripheral to a higher grade core situated beneath the 400ppm Cu soil anomaly.

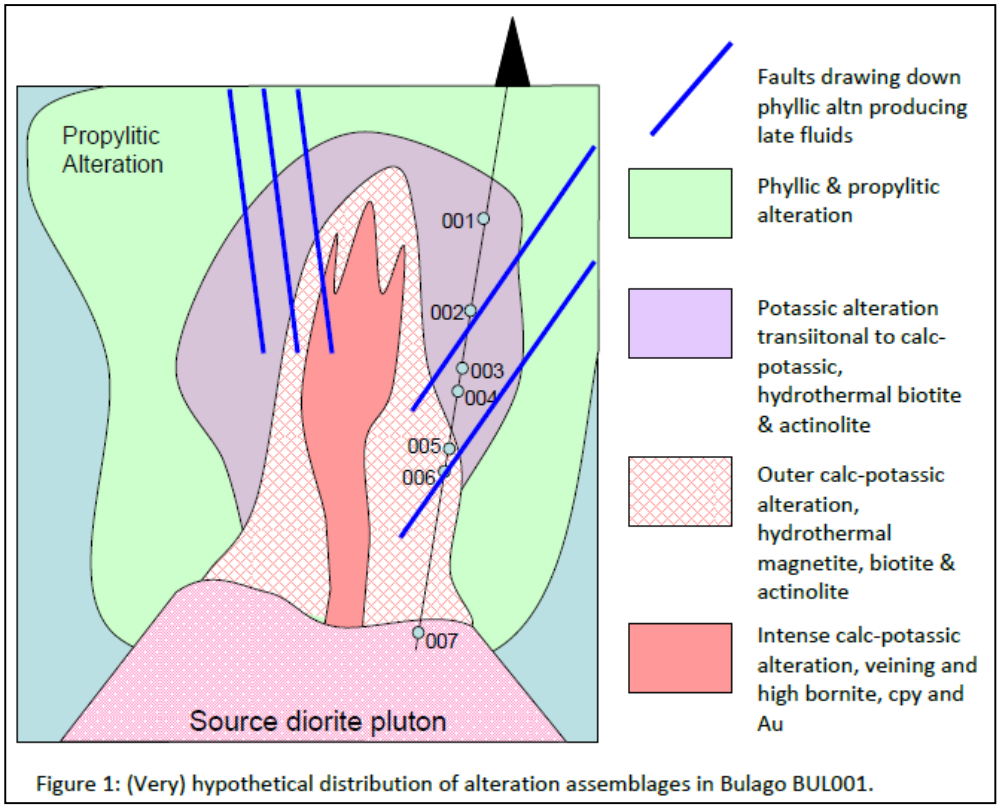
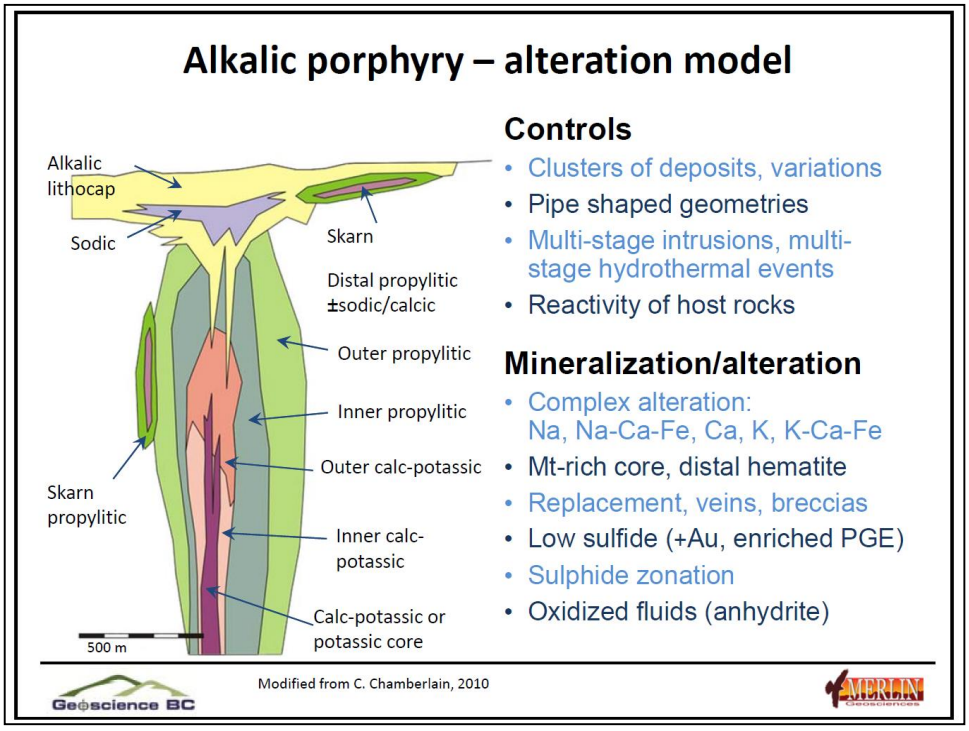


Figure 1: (Very) hypothetical distribution of alteration assemblages in Bulago BUL001.

The porphyry geochemistry from BUL007 indicates two mineralisation events/zones, being copper+ gold and gold only. Significant weighted assay intercepts are: 95.3m grading 0.15 g/t gold (from 243m), 61.0m grading 0.18 g/t gold plus 0.10 % copper (from 350m) and 42.2m grading 0.11 g/t gold plus 0.14% copper (from 538.8m)

Limited petrography identifying transitional potassic-calc-potassic alteration suites, coupled with the apparently complex suite of intrusives suggest similarity with alkali porphyries at Cadia in NSW, Dinkidi in the Philippines and British Columbia.



These are typically elongate vertically with a small planar cross-section in which high-grade copper-gold mineralisation is confined to a core of intense calc-potassic alteration and quartz-sulphide veins containing bornite, surrounded by zones of outer calc-potassic and potassic alteration where bornite is replaced successively by chalcopyrite and pyrite in abundance. Alteration haloes are typically narrow reaching only 200-300m from the mineralised core.

Ok Tedi Mining Ltd quote***....The results of the soil geochemistry and drilling at Bulago suggest that two high-grade cores may be located at depth broadly bounded by holes BUL001, 003, 006 and BUL007 in the north and at depth broadly bounded by holes BUL002, 004,005 in the east.***

SUGUMA

Suguma Prospect lies 2.5km northwest of the Bulago Porphyry and soil Cu-Au anomaly. Reports of common free gold from pan concentrates and stream sediment Au-Zn-Pb-Cu anomalies lead previous explorers to two sub-parallel WNW-ESE trending zones of faults and brecciation, multiple intrusion of porphyritic dikes and sills of variable composition and alteration and narrow quartz-sulphide veins and breccias, sampling of which gave high-grade gold and base metal assays.

The JV agreement with Frontier Resources required OTML to drill 500m of core by end of May 2012. OTML remapped the prospect area, mineralised veins and breccias, altered and mineralised dikes mapped previously and relocated the collars of 5 drill holes by Equatorial Gold NL in 1988.

Suguma and Kapia Creeks were remapped in detail and outcrops of mineralised veins and breccias, altered dikes and sediments were sampled. Seven lines of close-spaced (10m) ridge and spur soil samples were completed between the creeks to assist with tracing the mineralised zones over a potential strike length of 500m as mapped by previous explorers.

Results for Cu, Pb, Zn, As are contoured. Copper is not anomalous except for two isolated anomalies in the Kennecott soil data over the Suguma Porphyry immediately west of Suguma Creek. Lead (>22ppm Pb) outlines a broad anomaly over the "Central Mineralised Zone" and a smaller anomaly over the "Lower Mineralised Zone". These reduce to isolated spots on adjacent lines at >100ppm Pb. Zinc, >130ppm Zn identifies small zones in the centres of the "Central Mineralised Zone" and Lower "Mineralised Zone" and elsewhere.

Anomalous arsenic, >13ppm As, defines a narrow sinuous zone through the centre of the "Central Mineralised Zone" coincident with some of the lead anomalies >100ppm Pb and adjacent to lead anomalies ranging from 38-100ppm Pb. Other isolated arsenic anomalies are closely associated with other lead and zinc anomalies elsewhere. Gold is not anomalous.

Initial resampling of altered intrusives and quartz-sulphide veins and breccias and the surrounding siltstones by OTML at Suguma returned similar high grade gold-silver-base metal results to previous explorers. This included quartz-base metal veins assaying from 1.46 to 16.45g/t Au, weakly altered diorite 400m in a tributary upstream from Suguma that assayed 37g/t Au and samples of hornfelsed siltstone with disseminated pyrrhotite assaying 9.71 to 71.3g/t Au.

During more detailed mapping and sampling this reporting period a total of 87 rock chip samples were taken. Samples with assays of >1000ppm Cu or >1.0g/t Au are summarised also in a table below. Southern Horizon (OTML- Wes Vein) assayed from 1.21 to 151g/t Au and 20.6 to 75.2g/t Ag, with high base metals. The weakly altered diorite in the tributary upstream from Suguma was re-sampled but the results are not significant and a sample mix-up or contamination is suspected.

Further sampling of hornfelsed sandstones and siltstones adjacent to veins and in the footwall of Wes Vein returned 4.68 to 13.05g/t Au and 15.4 to 51.1g/t Ag, supporting the earlier sampling and suggesting the potential for bulk lower-grade Au-Ag mineralisation in the hanging and footwall sediments to the quartz veins.

Six samples from reconnaissance during the previous reporting period in the headwaters of Suguma Creek of diorite and siltstone assayed from 100-3020ppm Cu and 0.01- 4.02 g/t Au. These warrant follow up.

Soil sampling at Suguma outlined two elongate lead anomalies coincident with the "Central and Lower Mineralised Zones" as mapped by Equatorial Gold. Within these zones higher concentrations of lead in the soil coincide with spotty arsenic and zinc anomalies and a narrow sinuous zone of anomalous arsenic in the central part of the "Central Mineralised Zone" 500m in length.

The soil results are consistent with the base metal mineralisation from nearby outcropping quartz-sulphide, carbonate-sulphide and sulphide veins and breccias in the diorites and surrounding sediments although the high-grade gold assays from rock sampling are not reflected in the soil geochemistry. Lead and arsenic, from galena and arsenopyrite in the veins, are probably the better pathfinder elements.

There was no rock sampling from the "Lower Mineralised Zone" although quartz-sulphide veins in siltstone from Kapia Creek nearby assayed 204ppm Cu. An area of coincident anomalous Pb-Zn-As geochemistry, in close proximity to outcropping veins and breccias with visible base metals and high-grade gold assays, was therefore targeted for drilling two holes to test a model of stacked veins, altered and mineralised dikes and sills controlled by major WNW-ESE

structures, and the potential for lower grade gold mineralisation of the surrounding sediments in the centre of the "Central Mineralised Zone".

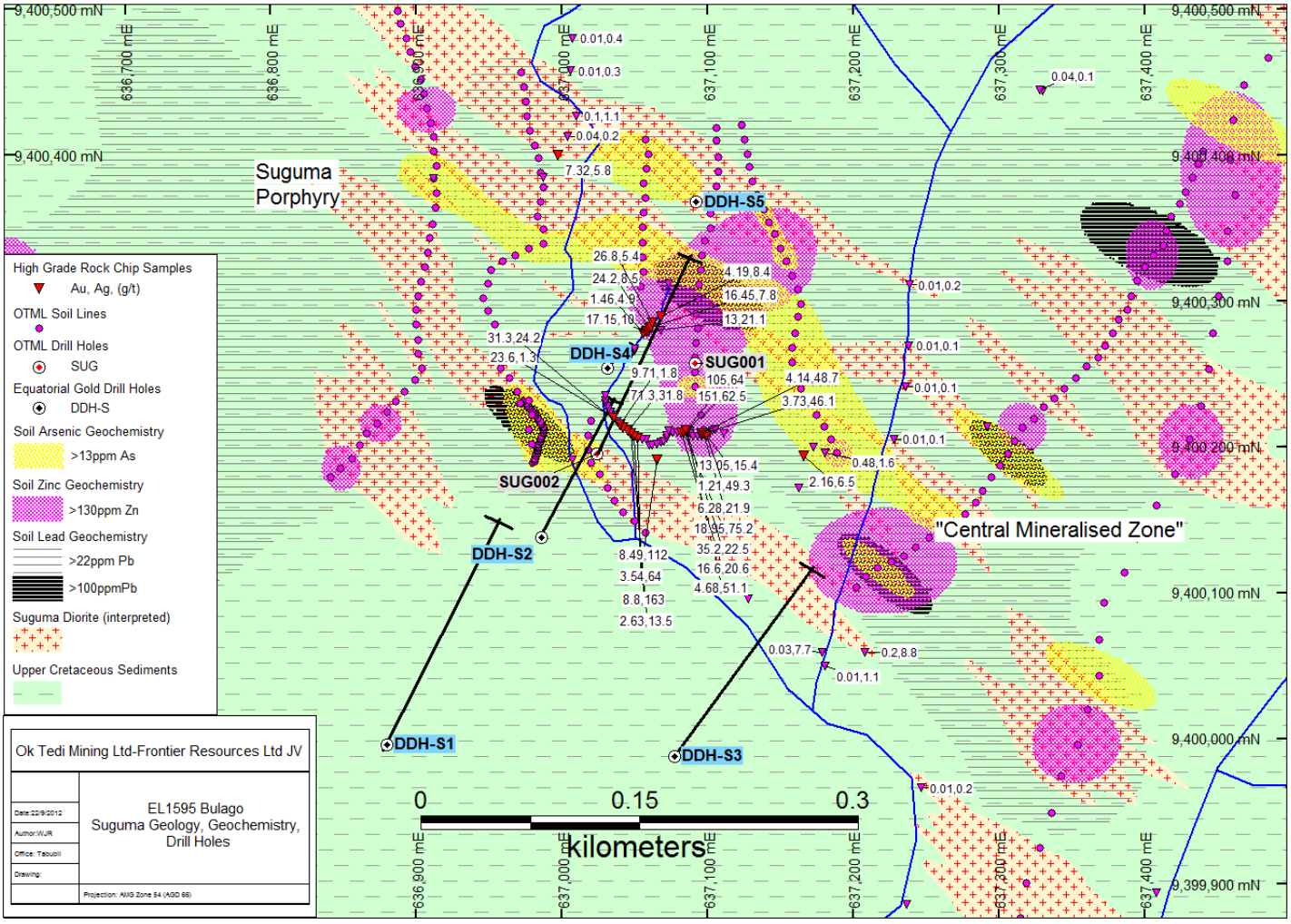
In the lower part of Kapia Creek, immediately east of Suguma Creek, siltstones are intruded by microdiorite, feldspar porphyry and hornblende diorite sills and dikes, similar to Suguma Creek. Quartz-sulphide veins in hornblende diorite were mapped and sampled at one location, that assayed 1045ppm Cu and 0.02g/t Au. Float includes breccias with quartz-sulphide veins. Float and outcrop of the siltstones and intrusives were chip sampled, but the best result was 1120ppm Cu and 0.01g/t Au.

OTML noted that Suguma Prospect drill holes SUG001 and 002, were to test a model for stacked quartz-precious-base metal veins and breccias dipping shallowly to the north and south and altered and mineralised intrusive dikes and sills in sandstones and graphitic siltstones and mudstones controlled by major WNW-ESE structures.

SUG001 was located about 25m to the east the Upper Horizon mineralised outcrop and was surrounded by high-grade veins and drilled vertically to test for stacked veins dipping shallowly north and south and dikes and sills. The hole was extended to depth to test for mineralised porphyry. SUG002 was sited on south side of the "Central Mineralised Zone" and was intended to test the width and extent of its mineralisation.

SUG001 and 002 weighted drill assay results

Hole ID	Depth From (m)	Depth To (m)	Length (m)	Gold g/t
SUG001	**52.3**	**55.0**	**2.7**	**0.95**
	140.0	143.0	3.0	0.16
	201.3	**203.0**	**1.7**	**1.56**
SUG002	**12.0**	**13.3**	**1.3**	**27.00**
	78.0	**81.0**	**3.0**	**0.86**
	97.4	109.0	11.6	0.11
	171.0	173.0	2.0	0.18
	191.0	204.3	13.3	0.21



SUG001 intersected a sequence of dark-grey-black sandstones and graphitic mudstones and siltstones, intruded by dikes of grey-green diorite hornblende diorite and hornblende porphyry, 0.55-26.85m thick (as intersected) and the hole was terminated in diorite. The diorites and hornblende porphyries are mostly weakly chlorite-epidote+/-

carbonate+/-actinolite altered with trace to 3% disseminated and fracture-fill pyrite+/-pyrrhotite. A narrow dike of hornblende diorite at 234.7m is chlorite-epidote-actinolite-magnetite-feldspar altered. They are cut by rare, thin, quartz+/-calcite-base metal veins and veinlets up to 1cm thick.

The lowermost diorite from 307.75m is chlorite-epidote-magnetite altered with fine-grained disseminated magnetite, trace pyrite+/- pyrrhotite clots and weak pyrite+/- pyrrhotite fracturing with narrow sericite selvages. The sediments above it from 264.8m are variably bleached and strongly hornfelsed suggesting that this intrusive is thicker and may be a larger diorite intrusion. Elsewhere the sediments are mostly hornfelsed and unaltered with rare thin quartz-calcite-pyrite-pyrrhotite+/-shalerite+/-galena+/-chalcopyrite/covellite/chalcocite veins and veinlets up to 14cm thick. Hairline quartz-pyrite-pyrrhotite-veinlets are present from 220.35-250.9m.

SUG002 intersected a similar sequence of dark-grey-black sandstones and graphitic mudstones and siltstones, intruded by dikes of grey-green diorite, hornblende diorite and hornblende porphyry from 0.3-57.52 m thick (as drilled), and the hole was terminated in unaltered mudstone with pyrite-pyrrhotite fractures. The intrusives are less frequently altered compared with SUG001 and are only locally weakly-strongly chlorite-epidote+/-actinolite altered with 1-3% disseminated, patchy and fracture-fill pyrite+/-pyrrhotite. Hornblende in the dike at 214.3m is altered to biotite. They are cut by rare quartz-sulphide veins, quartz-pyrite-pyrrhotite veinlets, epidote-sulphide veinlets, sphalerite veins, gypsum-pyrite-pyrrhotite+/-sphalerite fractures and pyrite-pyrrhotite-sphalerite fractures. The sediments are mostly unaltered but hornfelsed and locally variably bleached from 191.1-232.8m. Epidote-pyrite-pyrrhotite-sphalerite clots are present from 230.9-232.8m. They contain 1-3% pyrite-pyrrhotite mainly on fractures, and rare quartz-pyrite, quartz+/-calcite-pyrite-pyrrhotite-+/-sphalerite+/-chalcopyrite+/-sphalerite, calcite-pyrite+/-pyrrhotite+/-galena+/-sphalerite and gypsum-pyrite-pyrrhotite-sphalerite veins and veinlets up to 2cm thick from 0-191.9m. Veining is absent from 206.15m.

Interpretation of Drill Results

Drilling at Suguma aimed to test a model for stacked quartz-precious-base metal veins and breccias dipping shallowly to the north and south and altered and mineralised intrusive dikes and sills in sandstones and graphitic siltstones and mudstones controlled by major WNW-ESE structures. Surface sampling had also shown that there was also potential for disseminated precious-base metal mineralisation in the sediments adjacent to the veins, and by inference adjacent to the intrusives.

Both holes intersected sequences of alternating sandstones and graphitic siltstones and mudstones intruded by multiple bodies of diorite, hornblende diorite and hornblende porphyry, as expected. However the dikes (and ?sills) are mostly only weakly altered and very poorly mineralised with thin and sparse quartz-pyrite-pyrrhotite+/-base metal sulphide veins and veinlets and pyrite-pyrrhotite+/-base metal sulphide-filled fractures. The sediments are often hornfelsed but only locally bleached except in SUG001 where they are strongly bleached from 264.8-307.75m in contact with weakly altered diorite at the bottom of the hole. They are similarly sparsely veined and fractured. However, graphite is strong throughout the finer-grained sediments and present in the sandstones and would be a good reductant for gold precipitation and it is apparent that fluids have permeated them from the presence of sulphide-filled fractures and disseminated pyrite-pyrrhotite.

The extent of the diorite in SUG001 from 307.75m and the intensity of bleaching in the overlying sediments suggests that this is a larger intrusion and the hole may have intersected the Suguma Porphyry that outcrops immediately west of Suguma Creek.

SUG002 was collared near the southern side of the “Central Mineralised Zone” and intersected sparse mineralisation until 206.15m where the mineralisation stops and it appears that the hole passed though the northern side of the zone, as intended.

Conclusions from Exploration Work at Suguma

Previous exploration work discovered narrow, shallow-dipping, high-grade quartz-precious-base metal veins and breccias in graphitic sediments and altered and brecciated narrow diorite dikes and sills with similar veins in “mineralised zones” in Suguma Creek. Five drill holes by Equatorial Gold failed to adequately test the “Central Mineralised Zone”; four holes failed to reach the zone and the fifth hole tested only a short section of it.

Sufficient work by OTML was able to identify a small area of potentially higher-grade mineralisation from soil sampling and rock chip sampling of the “Central Mineralised Zone” and two holes were drilled to test the depth and width extents of the zone, based on a model of near-vertical dikes and shallowly inclined sills and quartz-base metal veins

controlled by WNW-ESE trending structures with potential for lower grade disseminated Au-Ag mineralisation in the sediments. Both holes intersected multiple narrow diorite intrusives but the extent of alteration, veining and mineralisation suggests that the mineralisation is uneconomic although assays are awaited.

Mapping and soil geochemistry indicate that the mineralisation is poddy and discontinuous although this remains open to the east. It is not a target for OTML and no further work is recommended. SUG002 was located on the south side of the “Lower Horizon” to test the width and extent of its gold mineralisation and that of the "Upper Horizon' also. The hole intersected sparse mineralisation until end of hole at 206.15m. If the gold mineralisation has a steep northerly dip or plunge, then both holes would be ineffective. As drilled, there is a full 200m between the Upper Horizon outcrop and the possible downhole intersection location for sub vertical mineralisation (a very long way when testing high grade gold).

Both holes intersected sequences of alternating sandstones and graphitic siltstones and mudstones intruded by multiple bodies of diorite, hornblende diorite and hornblende porphyry. Dikes and sills are mostly only weakly altered and very poorly mineralised with thin and sparse veinlets and filled fractures.

The sediments are often hornfelsed but only locally bleached except in SUG001 where they are strongly bleached from 264.8-307.75m contacting weakly altered diorite at the bottom of the hole. Graphite is strong throughout the finer-grained sediments and is possibly linked to gold mineralisation.

Five narrow gold mineralised zones (+/-silver +/- zinc +/- arsenic) were cut by hole SUG002.

- A high-grade intercept of 27.0 g/t gold over 1.3m was demonstrated at the contact between the diorite and sediments.
- Four narrow zones of gold mineralisation were cut in hole SUG001, with a peak of 1.7m of 1.56 g/t.
- The targeted outcrop for SUG002 was 15m grading 24.7 g/t gold + 47g/t silver + 2.08% zinc (OTML assaying), however, the 27.0 g/t gold drill intercept contains 2,250ppm arsenic and insignificant silver and zinc, suggesting a different gold mineralising event.

The Suguma Prospect area has 3 remaining zones with high-grade gold from continuous chip outcrop channel samples and several additional areas of continuing interest.

- The 3 zones are >130m to the east of the trace of SUG002 and include 4.0m of 135.6 g/t gold (with 6.0m of 21.1g/t gold along strike across East creek), 7.5m of 67.0 g/t gold (and 4.0m of 36.4 g/t gold along strike) and 10.0m of 14.3g/t gold.

FRONTIER EXPLORATION

in April 2014 for high grade gold mineralisation at the Swit Kai Prospect (formerly Suguma), was highly successful and concentrated on the Upper Zone gold mineralised occurrence, with limited work on the Lower Zone.

The megascopically mineralised/altered and brecciated intrusive and/or siltstone outcrops at the Swit Kai Prospect were located, cleaned, systematically broken/channelled (with a demolition jackhammer), sampled, mapped, evaluated and tracked laterally in 'trenches' over 95m and 120m strike lengths, respectively. Gold in soil anomalies along trend to both the east and west of the Lower Zone, indicate an excellent continuing strike length to +480m total.

The relationship between the Upper and Lower Zones is not well understood. They are separated by small distances vertically /laterally and appear to have significant individual E-W strike lengths. The intensity of brecciation and alteration at the Upper Zone suggests it is closer to a major mineralising conduit, whereas the Lower Zone has significant widths of more 'passive' silicification, but also high grade conformable gold mineralisation. The very strongly brecciated and silica- sericite altered arsenopyrite- pyrite mineralised, E-W to ESE-WNW trending + moderate SW plunging zones are open along strike to the west and east and down dip/plunge. The host sedimentary rocks and intrusives were normally below detection (where not mineralised, brecciated/altered).

Upper Zone Trench 1 was sampled on a 1.0m and 0.5m down-outcrop basis and it has 5 zones for a cumulative total of 7m with >100 g/t gold (weighted average for the non-contiguous 5 zones =240 g/t gold). Trench 7 was slightly

oblique to strike and it further defined the high grade zone with 10.0m grading 89.8 g/t gold (including 1.0m of 283.5 g/t), plus 3m of 69.2 g/t gold at its western end. The eastern outcrop strike extension of the Upper Zone returned 2m grading 195.0 g/t gold.

The Lower Zone assay results included peaks of 0.4m grading 293.5 g/t gold and 0.3m grading 197.0 g/t gold (~30m apart on the same structure and neither location was sampled above or below them at those locations), plus 11 samples with >25 g/t gold and 13 additional assays > 1.0 g/t gold. The Lower Zone's East Creek strike extension returned 3.0m grading 45.17 g/t gold and there were also results such as 0.4m grading 293.5 g/t gold about 80m west, plus 2.0m of 37.0 g/t gold a further 40m west and 2.0m of 41.50 g/t gold 15m further west.

The maximum strike length of both zones will be further defined with additional trenching in the eastern and western sectors to further demonstrate the continuity and grade of the high-grade gold mineralisation. Drill testing is strongly warranted. One of the Company's small diamond core drilling rigs (that will drill to a maximum of 330m), drill gear, sampling and camp equipment will be shipped from Kimbe forthwith to commence the mobilisation process (ship, truck, fixed wing, helicopter, man) to the Bulago drill site.

Good relationships were renewed and/or established with the landowners in April and they are very supportive of the Company and mineral exploration as a means of obtaining development in their region.

Upper Zone Jackhammer Trenching Results

The Upper Zone (UZ) Jackhammer trenching returned very significant weighted average and individual assay intercepts of very high to moderate grade gold over +215m strike length, from all 10 trenches.

Very high grade gold mineralisation (>100 g/t) was delineated in silicified and altered intrusive, strongly brecciated and/or high sulphide rocks and at/near the intrusive /host siltstone contact. There were 13 different samples with >100 g/t gold, including a peak result with 1m grading 499 g/t gold.

Significant sample length assay highlights (that do not necessarily represent true lengths) in successive trenches from east to west include:

East Creek east bank	-	2.0m grading 18.9 g/t gold (the only sample collected on the east bank)
East Creek west bank	-	2.0m grading 195.0 g/t gold, within 8m grading 50.2 g/t gold (Figure 5)
Trench 3	-	2.0m grading 27.8 g/t gold, plus 5.5m of 3.07 g/t gold
Trench 4	-	8.0m grading 36.1 g/t gold, plus 4m of 6.98 g/t gold
Trench 1	-	2.0m grading 252.3 g/t gold, plus 1.5m grading 145.3 g/t gold, plus 5m grading 172.3 g/t gold, plus 14.0m grading 24.3 g/t gold
Trench 2	-	1.0m grading 83.6 g/t gold, within 14m grading 24.3 g/t gold
Trench 5	-	1.0m grading 108.5 g/t gold, within 11m grading 31.2 g/t gold
Trench 5b	-	2.0m grading 25.2 g/t gold, within 7m grading 11.5 g/t gold
Trench 6	-	1.0m grading 128.0 g/t gold, within 13m grading 11.9 g/t gold and
West Creek	-	grab rock of 7.98 g/t gold, within 9m grading 0.97 g/t gold (gold grades are expected to improve as the intrusive contact is approached), as it was entirely within siltstone.

The Upper Zone was tracked and sampled in eight north - south trenches or mineralised outcrops over a 100m strike length, plus in one approx. east - west trending trench trending partly along strike. Another trench an additional 115m further east produced an excellent strike extension, to total over 215 metres.

All Upper Zone assays >0.10 g/t gold are included, along with the gravimetric gold assays that were undertaken to check repeatability of high grade gold samples that contained high concentrations of arsenic. The gravimetric assays confirmed the Fire Assay results, with good repeatability and acceptable levels of variability.

The gold mineralised intercepts quoted below for the Upper Zone cannot reflect true widths, as the geometry is uncertain and the samples were collected as possible 'down and/or across' the outcrops at least to some extent. The

slope of the outcrop (E-W dip slope) is approximately 45 degrees, so if the mineralisation is sub-vertical or sub-horizontal then it would equate to about 70% of the 'down outcrop' length quoted. The true width of the mineralised zone is then related to the orientation of the sampling line and the strike of the gold mineralisation.

UZ - T1 42.5m long trench approximately N-S down the outcrop with weighted internal intercepts of:
2.0m grading 252.3 g/t gold (505 gram-metres gold)
Plus 1.5m grading 145.3 g/t gold (218 gram-metres gold)
Plus 9.0m grading 104.8 g/t gold (943 gram-metres gold) - incl 5m grading 172.3 g/t gold
Plus 2.0m grading 10.6 g/t gold (21 gram-metres gold) followed by 6m of 0.27 g/t gold then
Plus 2.0m grading 33.5 g/t gold (67 gram-metres gold).
The mineralised zone is 38.5m long down a small creek with a weighted average (no cut-off) of 45.8 g/t gold and peak gold of 1m grading 499 g/t, it contains a composite high grade weighted intercept of 20.5m grading 85.6 g/t gold (for a composite total of 1,754 gram-metres gold) and corresponding composite low tenor weighted intercept of 18m grading 0.43 g/t gold.

UZ - T7 30.0m long trench across the outcrop approximately E-W, with internal intercepts of:
26m grading 44.9 g/t gold (1,167 gram-metres gold) - entire trench consistently mineralised
incl 10.0m grading 89.8 g/t gold (898 gram-metres gold) - incl 1.0m grading 283.5 g/t gold
Plus 13.0m grading 4.80 g/t gold (62 gram-metres gold)
Plus 3.0m grading 69.2 g/t gold (208 gram-metres gold)
for a composite total of 1,168 gram-metres gold.

UZ - East 8.0m long trench on the western bank of 'East Creek' with an intercept of:
2.0m grading 195.0 g/t gold, within 8.0m grading 50.2 g/t gold (402 gram-metres gold) and also
2.0m grading 18.9 g/t gold --- as the only sample taken across the creek on the eastern bank.

UZ - T2 37.0m long trench approximately N-S down the outcrop with internal intercepts of:
14.0m grading 24.3 g/t gold (339 gram-metres gold) - including low internal interval-1m of 0.17 g/t.

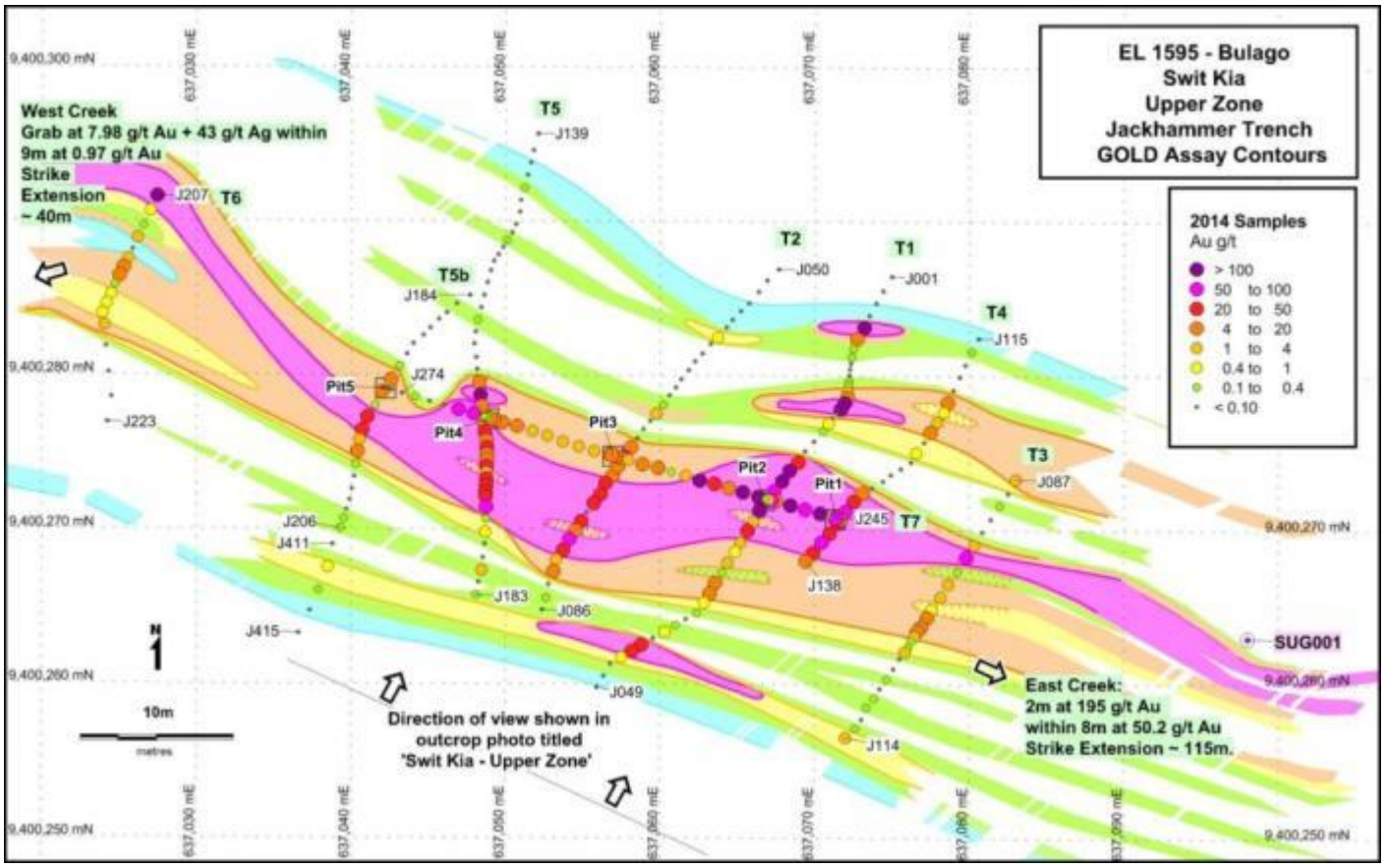
UZ - T4 24.0m long trench approximately down the outcrop N-S with internal intercepts of:
8.0m grading 36.1 g/t gold (289 gram-metres gold)
Plus 4.0m grading 6.98 g/t gold (28 gram-metres gold)- incl 1.0m grading 17.8 g/t gold
for a composite total of 317 gram-metres gold.

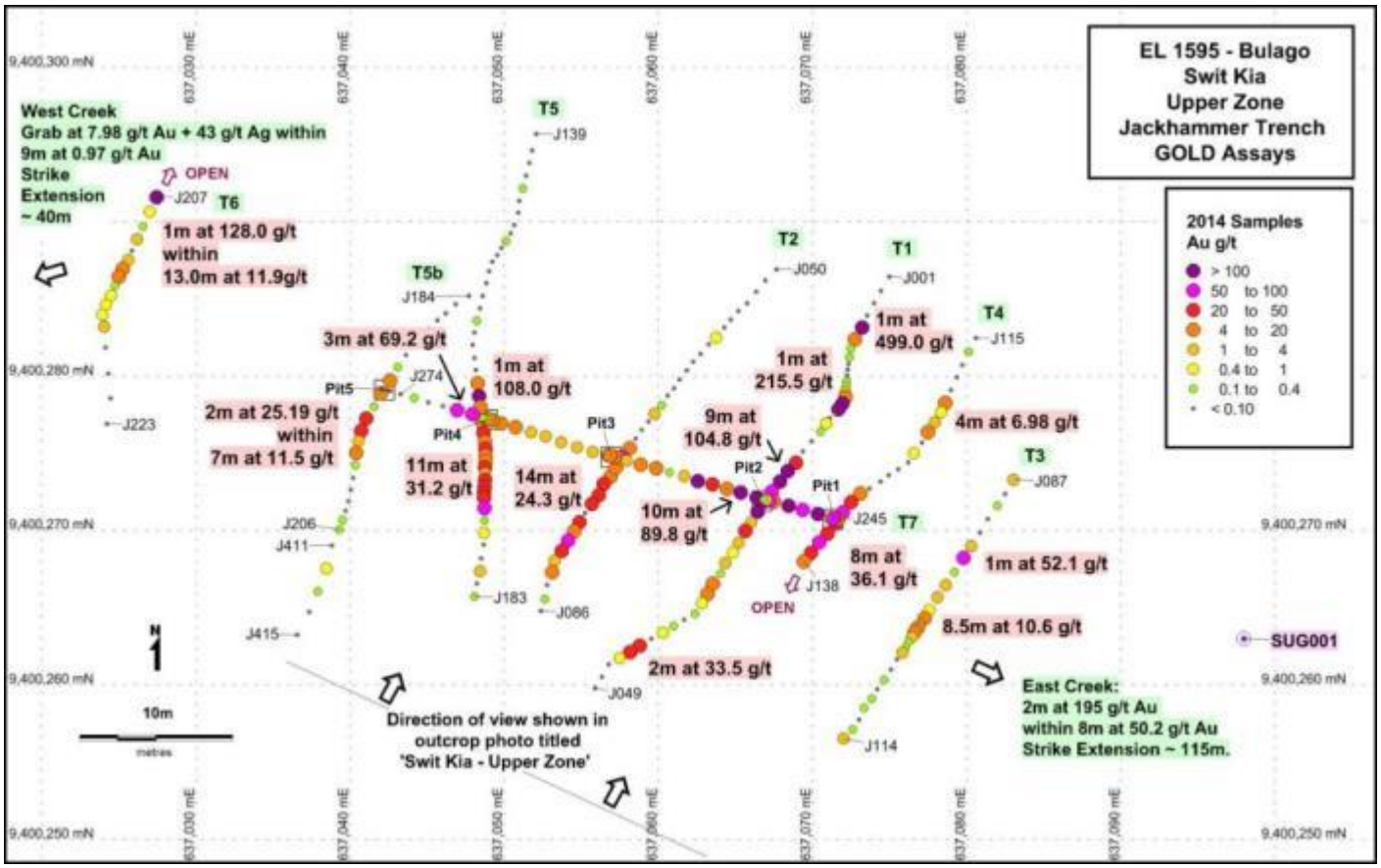
UZ - T5 40.0m long trench approximately down the outcrop N-S with an internal intercept of:
11.0m grading 31.2 g/t gold (343 gram-metres gold).

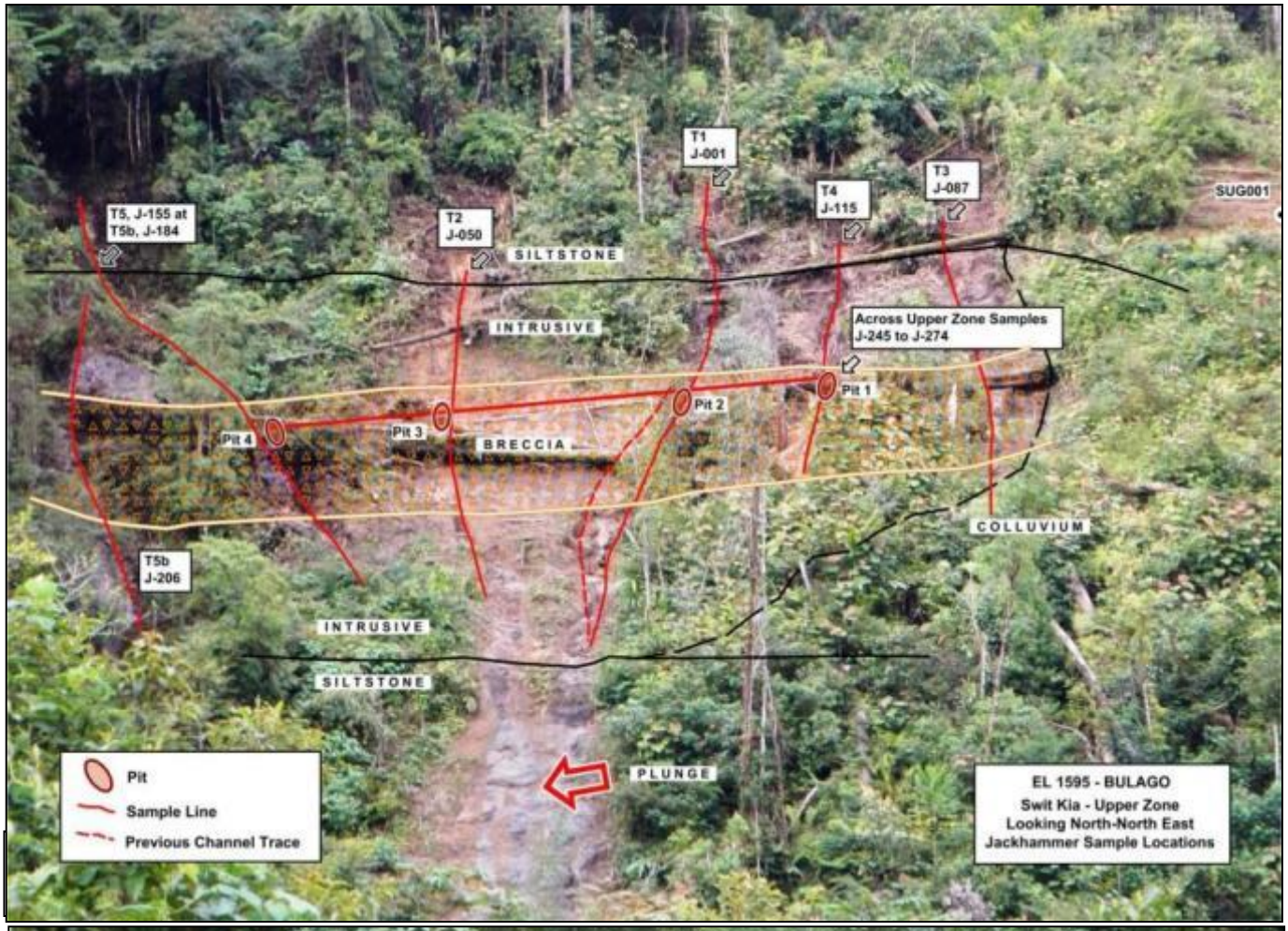
UZ - T6 21.0m long trench approximately N-S down outcrop in a creek with intercepts of:
13.0m grading 11.9 g/t gold (155 gram-metres gold)
incl 1.0m grading 128.0 g/t gold
and 2.0m grading 8.76 g/t gold
and 5.0m grading 0.68 g/t gold for a composite total of 176 gram-metres gold.

UZ - T5b 23.0m long trench N-S down outcrop with an intercept of 7.0m of 11.5 g/t gold (80 gram-metres gold).
UZ - T3 24.0m long trench N-S down the outcrop with internal intercepts of:
2.0m grading 27.8 g/t gold (56 gram-metres gold)
Plus 5.5m grading 3.07 g/t gold (17 gram-metres gold) for a composite total of 73 gram-metres gold.

UZ - W Ck 82.0m long trench ~N-S down 'West Creek' with an intercept in host siltstone rock only of:
9m grading 0.97 g/t gold, including 2.0m grading 2.86 g/t gold for a composite total of ~9 gram-metres gold.
A grab sample from this zone also returned 8.0 g/t gold.


EL 1595 - Bulago
Swit Kia
Upper Zone
Jackhammer Trench
GOLD Assay Contours
2014 Samples
Au g/t
> 100
50 to 100
20 to 50
4 to 20
1 to 4
0.4 to 1
0.1 to 0.4
< 0.10
West Creek
Grab at 7.98 g/t Au + 43 g/t Ag within
9m at 0.97 g/t Au
Strike
Extension
~ 40m
East Creek:
2m at 195 g/t Au
within 8m at 50.2 g/t Au
Strike Extension ~ 115m.
Direction of view shown in
outcrop photo titled
'Swit Kia - Upper Zone'
SUG001
T1
T2
T3
T4
T5
T5b
T6
T7
Pit1
Pit2
Pit3
Pit4
Pit5
10m


EL 1595 - Bulago
Swit Kia
Upper Zone
Jackhammer Trench
GOLD Assays
2014 Samples
Au g/t
> 100
50 to 100
20 to 50
4 to 20
1 to 4
0.4 to 1
0.1 to 0.4
< 0.10
West Creek
Grab at 7.98 g/t Au + 43 g/t Ag within
9m at 0.97 g/t Au
Strike
Extension
~ 40m
OPEN
1m at 128.0 g/t
within
13.0m at 11.9g/t
3m at 69.2 g/t
1m at
108.0 g/t
2m at 25.19 g/t
within
7m at 11.5 g/t
11m at
31.2 g/t
14m at
24.3 g/t
10m at
89.8 g/t
9m at
104.8 g/t
1m at
215.5 g/t
1m at
499.0 g/t
4m at 6.98 g/t
8m at
36.1 g/t
1m at 52.1 g/t
8.5m at 10.6 g/t
2m at 33.5 g/t
East Creek:
2m at 195 g/t Au
within 8m at 50.2 g/t Au
Strike Extension ~ 115m.
Direction of view shown in
outcrop photo titled
'Swit Kia - Upper Zone'
SUG001
T1
T2
T3
T4
T5
T5b
T6
T7
Pit1
Pit2
Pit3
Pit4
Pit5
10m



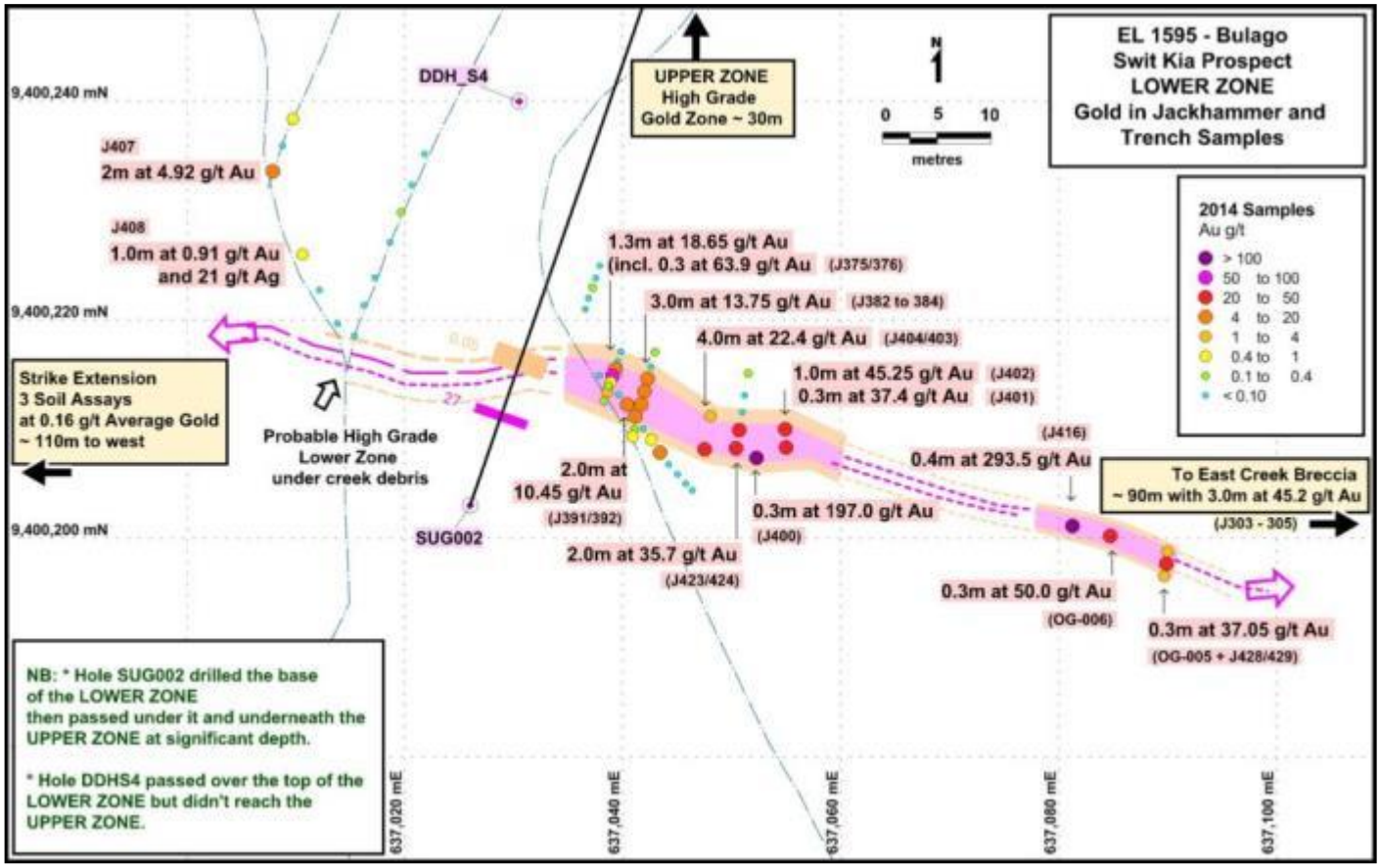
Upper Zone - East Creek 8.0m long trench on the west bank with intercepts of 2.0m grading 195.0 g/t gold, within 8.0m grading 50.2 g/t gold (402 gram-metres gold), plus 2.0m grading 18.9 g/t gold [as the only sample taken across the creek on the east bank (behind the photo)].

The slope of the Lower Zone outcrop (E-W dip slope) is approximately 45 degrees, so if the mineralisation is sub-vertical or sub-horizontal, then it would equate to about 70% of the 'down outcrop' length quoted. The true width of the mineralised zone is then related to the orientation of the sampling line and the strike of the gold mineralisation (best is perpendicular). The actual orientation of the gold mineralisation at the Swit Kai - Lower and Upper Zones is yet to be confirmed by specifically targeted drilling.

Lower Zone Jackhammer Trenching Results

The Lower Zone of the Swit Kai Prospect returned very significant high grade weighted average and individual gold assay intercepts from a very high grade, sub-horizontal, gold mineralised horizon that appears to be localised at the juncture of an E-W trending 45 degree south dip slope fault.

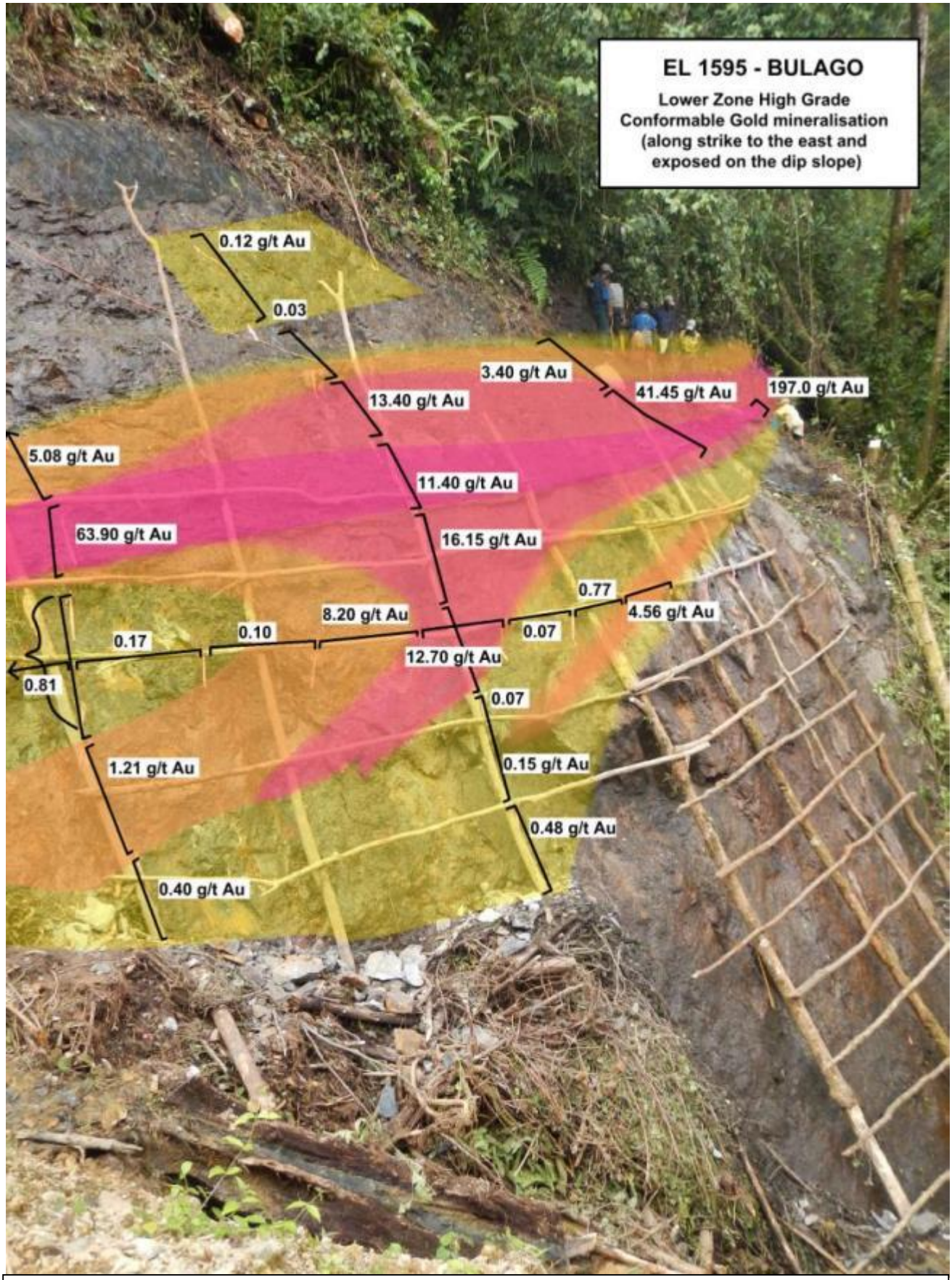
The Lower Zone was not sampled as systematically as the Upper Zone due to the original exploration program planning and subsequent time constraints in the field. The very strongly sulphide mineralised, brecciated and silicified horizon was tracked laterally, cleaned, jack-hammered (broken) into channels, sampled, mapped and evaluated, as possible in 9 continuous Jackhammer trenches plus from 4 outcrop exposures (totalling 81.3m). This work demonstrated a 180m strike length of generally very high grade gold, with possible extensions to 470m and further possible extensions to more than 1,200m



Mineralisation is hosted by siltstones with an upper leuco-dioritic sill that is underlain with 2 discernible layers of differentially but highly silicified and pyritised siltstone, then a 20cm to 80cm layer of massive sulphide (arsenopyrite, pyrite, galena, sphalerite and chalcopyrite) then strongly brecciated intrusive and into unmineralised siltstones.

Weighted average intercepts below in sequence from east to west and in Table 3. Details of repeated 50 gram Fire, Gravimetric gold and silver- copper- zinc - lead - arsenic -antimony ICP assays are in Table 7).

Significant jackhammer sample length weighted 50 gram fire assay gold highlights (most approximate true widths) in successive trenches over a 180m strike length of the Lower Zone from east to west include:



The Lower Zone Main outcrop with the high grade gold layer starting on the left about head height and looking along strike to the east where the field crew is jackhammer sampling. The Lower outcrop face remains unsampled at this time.

East Creek Extension - 1.0m grading 79.35 g/t gold, within 3m grading 45.17 g/t gold (J303-305)

East O/C - East - 0.3m grading 37.05 g/t gold, within 2.8m grading 4.98 g/t gold (OG-005)

East O/C -Middle - 0.3m grading 50.0 g/t gold (* No other samples at this location) (OG-006).

East O/C West - 0.4m grading 293.5 g/t gold* (J416)

Main O/C East - 1.3m grading 43.44 g/t gold* (J401-402)

Main O/C East - 0.3m grading 197.0 g/t gold* (J400)

Main O/C East - 2.0m grading 35.70 g/t gold) (J423-424)

Main O/C Central - 2.0m grading 41.45 g/t gold* (J404)

Main O/C Across - 2.0m grading 10.45 g/t gold (J391-392)

Main O/C Central - 3m grading 13.75 g/t gold (J382-384)

Main O/C West - 0.3m grading 63.9 g/t gold, within 1.3m grading 18.65 g/t gold (J375-376)

West of Main O/C - 1.3m grading 27.0 g/t gold (hole SUG002, 12-13.3m, at base of colluvium and base of LZ)

West Creek Extension - 2.0m grading 4.92 g/t gold (J407 proximal to 1.0m sub-vertical at 0.91 g/t gold (J408), but with 26 g/t silver and + 2.0% zinc /lead + arsenic. The western extension of the LZ requires additional cleaning downstream to get to a lower RL to sample where the higher grade mineralisation is projected/ expected to be located. The intrusives often form sills and also tend to form flatter spots at the base of steeper sections of sediments.

The total inferred strike length of the Lower Zone is approximately 470m between gold in soil assays in both directions (consisting of a cluster of 3 soils to the west averaging 0.16 g/t gold and 1 at the eastern end of 0.24 g/t gold) and along the projected E-W structure that can be traced using geomorphology /debris slumps.

A composite total of 491.6m of sampling was completed in the Upper (410.3m) and Lower (81.3m) Zones and their strike extents (Tables 4 and 5). Four hundred and twenty nine continuous chip channel samples were collected in total from the Upper Horizon (ten main outcrops over 0.5m to 2.0m lengths, median ~1m in the 'east' to 2m in the 'west'), the Lower Horizon (three up-slope /somewhat across dip channels over 0.2m to 4.0m lengths, median ~ 1m plus one along strike series, plus several partly across strike samples) and the 'East Creek' (channel samples over 1.0m to 2.0m lengths, median ~ 2m).

The gold mineralisation in the Lower Zone is conformable with a specific relatively flat lying sedimentary layer and its intersection with the E-W trending and 45^{o} south dipping regional fault. The Lower Zone is overlain by several about 1m thick, very strongly silicified, pyritised and sometime brecciated siltstones that looked prospective, but generally were not. The Lower Zone is then 'capped' by an unmineralised intrusive sill into unaltered sediments that helps act as a marker horizon (shown in photo 20).

Drill hole SUG002 appears to have drilled into the bottom of, then under the Lower Zone and returned an intercept **of** 1.3m grading 27 g/t gold. Erosion has removed part of the mineralised horizon of the Main Outcrop, as it is all colluvium downhole until that intercept. No other drill holes at the Swit Kai Prospect have tested the concept of down plunge or conformable high grade gold mineralisation; they all targeted about 3m thick, stacked, normal dip slope mineralisation.

The measured thickness of an eroded exposure of E-W trending dip slope fault at East Creek South (the next dip slope located to the south of the Lower Zone Breccia in East Creek) was 2.8m. The fault zones small remaining outcrop contained low grade gold mineralisation such as 1m of 0.72 g/t and displayed significant brecciation but no silicification. The grade of the mineralised section that was eroded away (about 2.0m) is unknown. Frontier attempted to dig a trench along strike to the east to find a complete outcrop of the structure to sample, but the trench was terminated in colluvium.

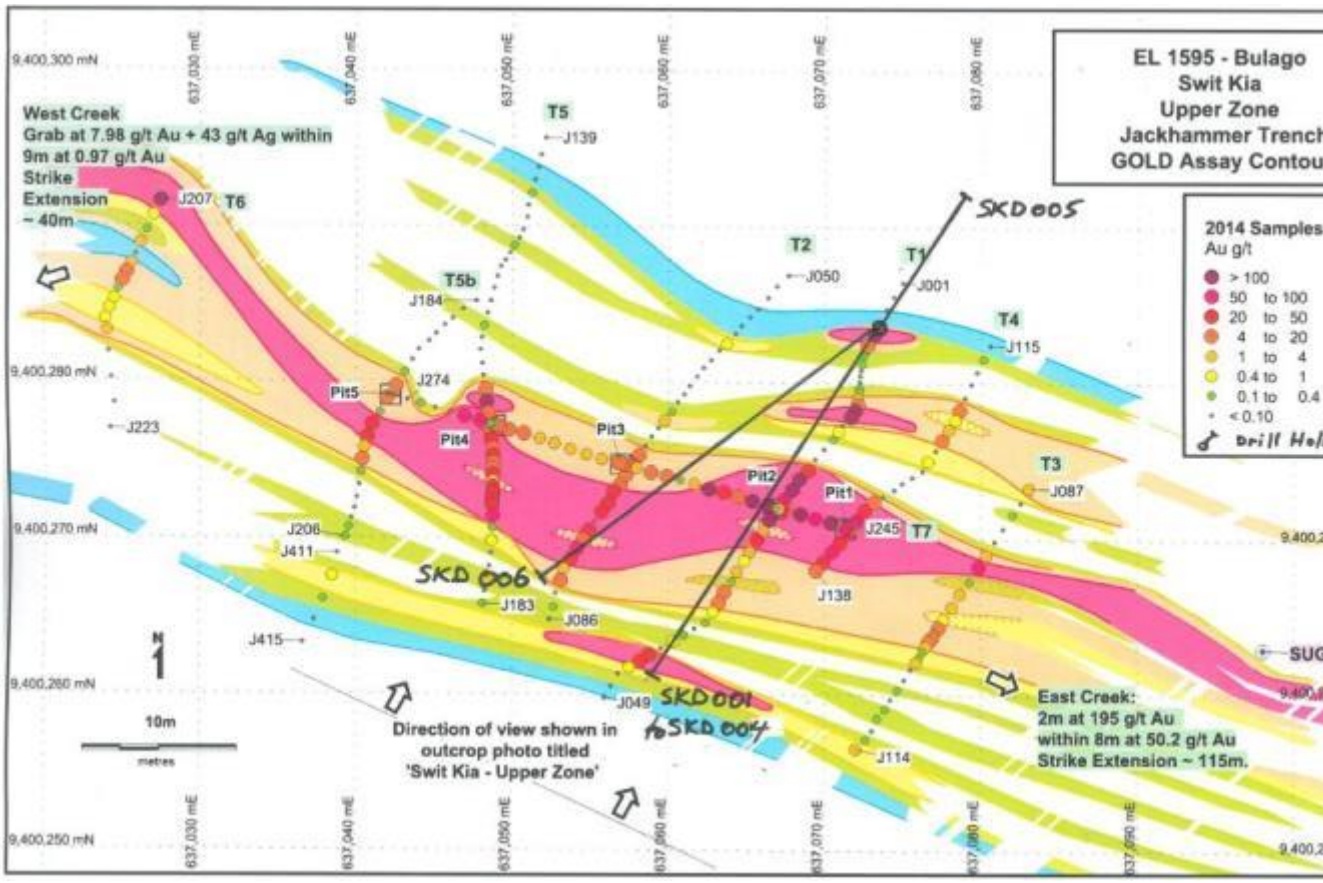
The East Creek Breccia is north of that location and it also demonstrated a 3.0m intercept of high grade gold mineralisation at/above the angle of the dip slope, plus had a 4.0m thickness of low tenor gold (7m mineralised thickness). The Upper Zone East Creek Extension showed 8.0m of mineralisation in total, including 2.0m of 195 g/t.

Zones with dip slope related, plunge and conformable mineralisation would however, be expected to have thicker zones of gold mineralisation where all the structures intersect and better fluid flow is developed enhancing the mineralisation process. These zones will be targeted by drilling that is proposed to commence as soon as logistically possible.

2015 Drilling

Drill Pad 1 was located in the central sector of the Swit Kai Prospect near the top end of Trench 1. One 'section fan' of five holes was completed from drill pad 1 and the sixth hole started a new 'horizontal fan'. The drilling targeted the high grade gold mineralisation related to the 45° dip slope, an associated 70° north dipping strongly silicified intrusive with hydrothermal breccias/sulphides and the flat lying host sediments (for conformable mineralisation as at the Lower Zone).

Drill holes tested down /across the surficial high grade gold zone and also across the intrusive for proximal sub-parallel repeats of the high grade gold and for possible lower grade bulk gold



mineralisation. The intrusive was strongly silicified and fractured but lacked significant hydrothermal breccias/sulphides.

The very high grade gold mineralisation at the Upper Zone appears to be a relatively thin layer associated intrusives and concentrating at the dip slope. The lack of breccias in the core holes implies that the high grade mineralisation was not intersected.

The best result was in hole SKD004 with 0.5m grading 46.3 g/t gold + 11.4 g/t silver, from 1.2m to 1.7m downhole. No significant width breccia repeats were noted downhole in the drilling, however SKD005 had a semi massive pyrite, pyrrhotite, magnetite, galena and sphalerite vein from 39.3m to 39.6m.

The Swit Kai drilling targeted the high grade gold mineralisation related to a 45° south dipping /E-W trending fault (dip slope) and attempted to test:

1. Down and across (to the south) the surficial high grade gold zone.
2. Across the host + 70° south dipping intrusive for proximal sub-parallel (stacked) repeats of the high grade.
3. For proximal lower grade bulk gold mineralisation within the intrusive.
4. For conformable high grade gold mineralisation (as demonstrated in April at the Lower Zone).

The intrusive was strongly silicified and fractured but lacked significant hydrothermal breccias/sulphides as observed in the surficial high grade rocks and was only very weakly gold mineralised.

The relatively thin, high grade gold mineralisation at the Upper Zone appears to be controlled by the 45^{o} south dip fault (dip slope), is localised by/in the intrusive and at the contact of the relatively flat lying siltstones, but there was no evidence for conformable gold mineralisation. We missed it by drilling totally below the S dipping high grade zone.

Drill Pad 1 was located in the central sector of the Swit Kai Prospect near the top end of Trench 1 at about the only suitable location. One 'section fan' of five holes was completed and the sixth hole started a new 'horizontal fan'.

Significant Swit Kai Prospect Upper Zone Drill Results Included:

SKD001 with 0.80m grading 0.76 g/t gold + 8.6 g/t silver, from 0.00 to 0.80m.

SKD002 with 1.95m grading 0.75 g/t gold + 4.8 g/t silver, from 58.45m to 60.4m.

SKD003 with no significant assay results.

SKD004 with 0.50m grading 46.3 g/t gold + 11.4 g/t silver, from 1.20m to 1.70m.

SKD005 with 0.60m grading 0.91 g/t gold + 13.6 g/t silver (+741 ppm copper in a semi massive sulphide vein), from 39.3m to 39.6m.

SKD006 with 1.90m grading 5.73 g/t gold + 9.8 g/t silver (+0.42% zinc), from 7.40m to 9.30m.

2016 Drilling

Drilling at Swit Kai East Creek Upper Zone, targeted a 2.0m wide gold mineralised interval that graded 195.0 g/t + 39.1 g/t silver in demolition jackhammer trench channel sampling (4/2014) that appeared to dip moderately south. Holes EZU001, EZU002 and EZU003 (37.4m total of HQ TT) from the Swit Kai East Creek Upper Zone, Bulago, all show significantly elevated gold grades when associated with intrusives, quartz veining and brecciated zones.

Three diamond core holes were completed that targeted a moderate-steep SSW dipping gold mineralised zone, with a jackhammer channel sampled intercept of 2.0m grading 195.0 g/t gold + (released to ASX 1/4/14). However, the gold encountered is primarily flat lying /conformable with the sediments, with a secondary association with the targeted dipping zone.

The best intercept was in EZU001 with 5.0m grading a weighted average of 13.92 g/t gold, from surface. This includes a best intercept of 1.0m grading 29.7 g/t gold + 6.5 g/t silver, from 3.0 to 4.0m downhole.

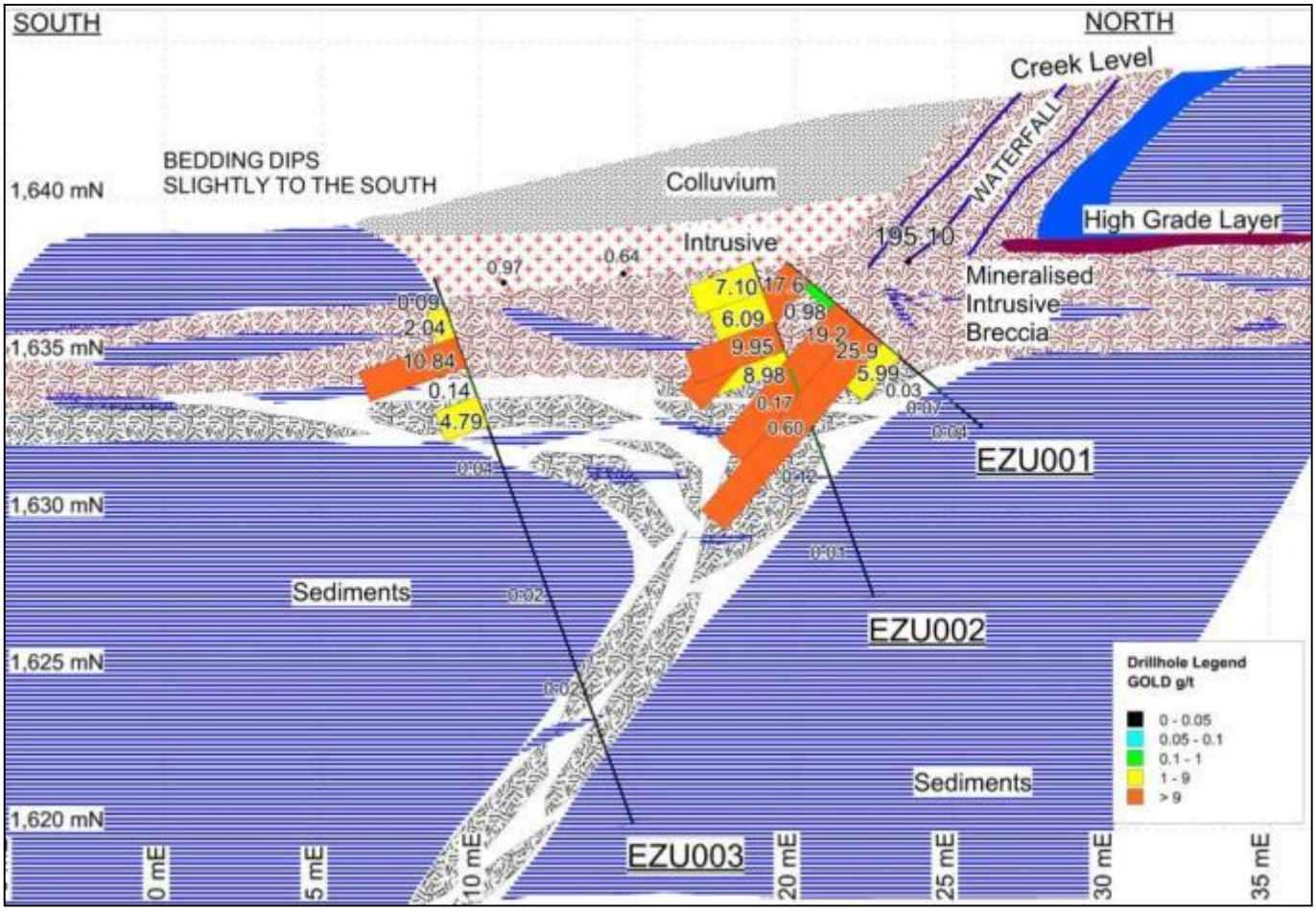
Hole EZU002 returned 3.6m grading 7.92 g/t gold, from surface and EZU003 had 2m grading 6.44 g/t gold plus 1m grading 4.79 g/t gold, from 1.0m downhole. The peak assay in EZU003 was 25.40 g/t gold, showing the nugget effect (grade variability) from very fine grained native gold.

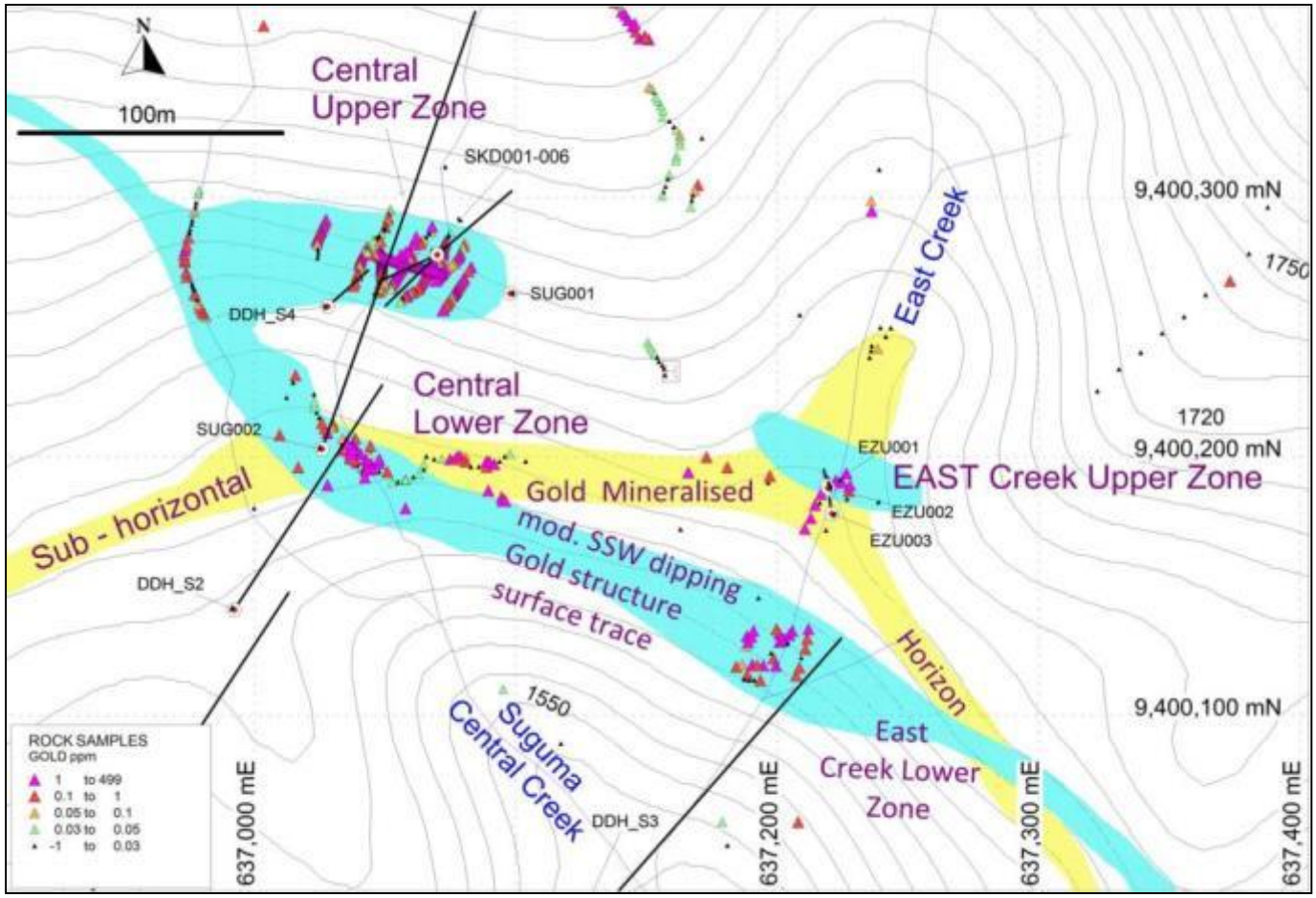
Drilling will continue at the high grade gold Swit East Creek Upper and Lower Zones plus newly advanced associated targets as soon as reasonably possible.

The mineralisation model has been refined and there is excellent strike continuity potential that can now be easily drill accessed relative to the topography. Many new targets have been proposed from the topographic evaluation and its refinement is ongoing. Flat spots indicate resistance to erosion and silicified (possibly brecciated and gold mineralised) intrusive. Multiple horizontal and dipping levels of gold mineralisation are predicted over significant strike distances. Additional information relating to the strike potential of the project will be released when plans are generated.

The first native gold in rock for the Bulago EL ever was noted in hole EZU002 at 1.15m and at 3.00m downhole (peak gold assay from 1.0m to 2.0m = 6.11g/t and from 3.0m to 3.6m = 9.39g/t), then in hole EZU001 at 0.70m (0.0m to 1.0m = 7.37 g/t gold).

Hole No	Comments
EZU001 EOH=8.1m	0.0 to 0.90m fg chl alt dior o/p by ill-ser-qtz cut by vn bxia zones, charat by intense fg, white, vuggy qtz-po-gal -?bn-?cpy vng. 0.90 to 2.80m wk vng. 2.80-4.70m great zone of intense qtz-po-gal-bn + some grey suph. ? adularia vns selvged by pink k-spar. 4.70 to 7.0m wk /occas hairline qtz-po-gal vng. 7.0 to 8.10m (EOH) Blk Mudst
EZU002 EOH=11.3m	Great zone of altn & mineralization from 0.0 to 6.90m. Charat.. Silc hydrotherm Bx /or veined bxias in silc dior host. with fg, milky vuggy qtz-po-gal-?bn veins selvged by pinkish k-spar. Blk mudst from 3.60m, Contact zone from 3,60-6.90m is significantly veined with fg milky partly banded,vuggy qtz + po-gal-some ?adularia veins. 6.90 to 11.30m (EOH) Blk mudst.
EZU003 EOH=18.4m	0.0 to 0.20m Colluvium, 0.20-0.60m blk finely banded mudst. 0.60 to 3.10m altd dior cut by vned bxias /stworked of milky, white vuggy qtz-po-gal-other sulph. Sevlaged by K-spar. Vugs often filled by fine py. 3.10 to 5.30m blk mudst /hornfelse cut by fg banded vuggy qtz-po±other sulph. Vns & vnd bxia zones. 5.30 to 18.40m (EOH) bik mudst.





Gold mineralisation is hosted by narrow silica / quartz veins producing stock-workings, with multiple generations of intense brecciation, dogstooth quartz and lead + zinc sulphide minerals + semi massive sulphides that are located in

intrusives proximal to large scale normal moderate to steep south dipping structures (faults) and conformable with the sub-horizontal host siltstone. The most strongly veined, brecciated and base metal sulphide mineralised intercepts are the most prospective for high grade gold mineralisation.

The Central Lower Zone actually corresponds to the East Creek Upper Zone (both are sub-horizontal gold mineralisation on the same 'level') and the Central Upper Zone corresponds more to the East Creek Lower Zone (mod-high angle south dipping mineralisation). Conceivably, the highest grade mineralisation would be where they intersect.

The best immediate large /regional target is the next zone upslope from Swit Kai, according to the aeromagnetics. Another excellent new zone to test is downslope from Swit Kai and has very strong zinc and lead, plus gold anomalies in grid based soil sampling and an OTML rock outcrop sample to 27 g/t gold. Excellent drill targets are the junctions of the sub-horizontal mineralised layer on 1630m RL and the moderate south dipping structures. This creates a horizontal plunge possibility for higher grade mineralisation, that is apparent is EZU001.

GEOPHYSICAL AND GEOCHEMICAL DATA REVIEW, BULAGO VALLEY

Summary

The geophysical and geochemical data from Bulago Valley (EL 1595) show the area to be highly prospective for gold, copper and molybdenum. A total of 13 skarn targets are yet to be tested by drilling and sampling. In addition, four areas of anomalous geochemistry require follow-up mapping and sampling for porphyry related mineralisation. Significant gold in drainages further highlight the potential for gold deposits in the area as well as the possibility of low cost alluvial gold mining.

Ok Tedi Mining Limited completed seven drillholes at Bulago for 2711.1m and two drillholes at Suguma (Swit Kai prospect) for 591.9m. They also completed an airborne geophysical survey in 2010 and a soil sampling programme between 2001 and 2012. The airborne radiometric data (potassium, thorium and uranium equivalent channels) have been used to define the boundaries of Darai Limestone along the Bulago Valley Rim and the inner intrusive monzonite to diorite stocks.

The occurrence of monzonite to diorite intrusive stocks and limestone within Bulago Valley suggest potential for the development of skarn mineralisation around the intrusive margins. Rock samples from the Upper Funutu Creek assayed 1380, 1300, 1060 ppm copper and up to 0.22 g/t gold. A magnetic skarn target has been identified at the headwaters of Funutu Creek at the contact margin of Darai Limestone in the outer escarpment zone.

From the airborne magnetic data, a total of seven skarn targets were selected in the upper headwaters of existing drainage (Sunguru Ck, Fornusu Ck, Orolupe North, Orolupe Ck, Bulago Ck, Funutu East Ck, Funutu Ck) along the upper valley escarpment rim, being the contact margin with Darai Limestone. A further six skarn target areas (Suguma Ck, Kapia Ck, Bulago 2 Ck, Emboro Ck, Pampalu Ck, Pampalu 2 Ck) were identified within Bulago Valley near the margins of inner intrusive stocks.

From the existing soil, rock and trench geochemistry, four target areas were identified as being recommended for follow-up mapping and sampling. These include the Swit Kai Au(Pb) Zone in the headwaters of the Swit Kai prospect, Fornusu Cu+ Au(Mo) Target, Orolupe Au(Pb) Target and the Funutu Au+ Cu+ Mo (Pb) Target, which drains from the Funutu Skarn in the upper headwaters of Funutu Creek.

Local landowners pan for alluvial gold within the drainages of Bulago Valley and there is a possibility for economically viable larger scale gold sluicing by Frontier Resources Ltd to generate income from an operation with relatively low capital expenditure. Four areas were selected where there is highly anomalous gold collected from historical stream sediment and panned concentrate stream samples in locations with reasonable access in the lower reaches of drainages.

The Swit Kai sluicing target at Suguma Creek occurs downstream from the Swit Kai gold prospect. The Orolupe gold sluicing target is at the intersection of the Bulago River and Orolupe Creek. The Bulago Sluicing target occurs between the Ok Tedi Mining Ltd drillholes BUL002 and BUL004. The Funutu Sluicing target is next to a helipad and downstream from skarn and anomalous gold in stream, soil and rock samples.

It is recommended to further investigate the skarn and geochemical target areas and set-up a gold sluicing system to determine the viability of collecting alluvial gold.

Drillholes BUL001 to BUL007 within the Idawe Intrusive Stock need to review by plotting cross-sections of geochemistry and geology to compare with three dimensional modelling of the airborne magnetic data.

Geophysical Review

UTS Geophysics completed a low level airborne magnetic and radiometric survey of the Bulago Prospect area in 2010 for Ok Tedi Mining Ltd. The Ok Tedi fact and interpretive geological maps were used in conjunction with the airborne radiometric data to define the boundaries of intrusives and limestones within the tenement boundary at Bulago Valley.

The radiometric data ratio between equivalent potassium channel (eK) and equivalent thorium channel (eTh) as a greyscale image highlights intrusive phases of monzonite to diorite composition mapped in the area. The Idawe intrusive is defined by a high eK:eTh ratio (Figure 1) and is generally red colour in the Ternary radiometrics image). This intrusive, also high in the magnetics imagery (Figures 3 and 4), has been reported by Ok Tedi to be emplaced into Upper Cretaceous carbonaceous and calcareous sediments including siltstone, limestone and mudstone. The Idawe stock comprises a number of phases varying from monzonite to diorite in composition.

Ok Tedi drillholes BUL001-007 were completed within the Idawe intrusive (Bulago porphyry) to test magnetic anomalies and gold-copper soil anomalies. BUL001 returned the best Cu and Au intersections of 124m at 0.13% Cu from 119m depth with no significant gold within altered monzonite. The other drillholes intersected K-feldspar altered monzonite porphyry with some copper and gold mineralisation. Higher readings in the K:Th ratio image seem to be a reasonable predictor of the presence of K-feldspar monzonite intrusive. Petrography indicates the presence of a complex suite of intrusives in the Bulago Valley with similarity to other alkali porphyry deposits including Cadia (NSW), Dinkidi (Philippines and British Columbia (Canada).

Elevated readings in the K:Th ratio image have been interpreted as intrusive complexes near Suguma Creek, surrounding the Swit Kai Prospect and at Sunguru Creek. These complexes are also evident from the Ternary image as reddish in colour. Ok Tedi reported evidence of weak potassic alteration with disseminated K-feldspar associated with the Suguma Diorite, which can be detected from high K:Th ratio imagery.

The presence of limestone within the 'Bulago Valley' and its eastern escarpment of Darai Limestone suggest that the proximal feldspar intrusives may concentrate mineralisation into localised skarns at the Limestone contact. At Funutu Creek, a large boulder of mineralised skarn was first described from the historical Kennecott-Niugini Mining joint venture exploration programme in 1983 to 1985. A large 800m diameter zone of anomalous gold in stream, rock and soil samples occur at Funutu Creek, 500metres downstream from the interpreted Funutu Creek Skarn.

Skarn mineralisation will often develop around the borders of intrusive masses such as monzonite and granodiorite, making the Bulago Valley a target area for skarn ore deposits. Skarns often contain appreciable amounts of magnetite which can be detected from geophysical magnetic surveys. From the airborne magnetic images, seven skarn targets have been identified along the eastern escarpment rim of Darai Limestone. An additional six skarn targets have been identified within the Bulago Valley escarpment.

Feldspar porphyry has been reported at Kapia Creek, 600m east of Swit Kai, where there is an interpreted intrusive associated with a high K:Th ratio anomaly.

At Fornusu Creek, quartz monzonite porphyry intrusives have been identified where anomalous gold in stream and rock samples have been outlines in a Cu+ Au(Mo) geochemical target zone.

Skarn Targets

The occurrence of monzonite to diorite intrusive stocks and limestone within the Bulago Valley area suggest potential for the development of skarn mineralisation around the intrusive margins. Ok Tedi followed-up pyrrhotite-chalcopyrite-pyrite-sphalerite mineralised boulders of skarn in Funutu Creek reported by Kennecott Mining in 1985. Ok Tedi found sub-cropping sulphide skarn mineralisation, mineralised intrusives and diorite endoskarn in the headwaters of Funutu Creek.

Funutu Ck Skarn: A significant airborne magnetic anomaly (Figure 3 and 4) has been identified in the upper headwaters of Funutu Creek at the contact with Darai Limestone on the south-eastern escarpment of Bulago Valley. The 600m diameter target (639310e, 9397060n) sits in the upper reaches of Funutu Creek 150m upstream from significant geochemical anomalies and 900m upstream from an area proposed for alluvial gold sluicing. Ok Tedi report that there is no magnetic anomaly associated with the geochemical anomalism downstream from the skarn target. This may be due to smaller amounts of magnetite related to narrow patches of mineralisation that cannot be discriminated in the airborne data.

Funutu East Skarn: This magnetic anomaly occurs as a 1500m elongated target along the contact with Darai Limestone on the south-eastern escarpment. The anomaly (Figure 3) cuts the upper reaches of the Bulago River (640820e, 9398000n) and can be followed-up with additional stream sampling.

Bulago Ck Skarn: A 200m diameter magnetic target (641090e, 9398560n) occurs at the eastern upper reaches of one of the Bulago River tributaries. The target occurs at the contact of the Darai Limestone.

Orolupe Ck Skarn: This 1000m elongated magnetic anomaly runs along the contact of the Darai Limestone at the eastern margin of the Bulago Valley escarpment. It cuts the Orolupe Creek (640630e, 9400040n) 400m upstream from gold and lead anomalism in soil and rock samples.

Orolupe North Skarn: This 600m long magnetic anomaly occurs on the eastern escarpment on the contact with Darai Limestone cutting through the upper reaches of the Orolupe Creek (640550e, 9400510n) and 500m upstream from a gold in soil anomaly.

Fornusu Ck Skarn: This 1200m elongated magnetic anomaly runs along the north-eastern escarpment contact with Darai Limestone in the upper reaches of Fornusu Creek (639050e, 9401420n). It is 600m upstream from anomalous gold in stream samples.

Sunguru Ck Skarn: This 1100m elongated magnetic anomaly occurs in the upper reaches of Sunguru Creek (638080e, 9402010n) at the contact between the Sunguru Intrusive complex and Darai Limestone. A gold sluicing target occurs a further 2400m downstream.

Six skarn magnetic anomalies (Suguma Ck, Kapia Ck, Bulago 2 Ck, Emboro Ck, Pampalu Ck, Pampalu 2 Ck) have been identified downstream within the Bulago Valley near the margins of interpreted intrusive stocks. These skarn targets are logistically more readily accessible to further exploration testing such as rock sampling, compared to those on the upper escarpment.

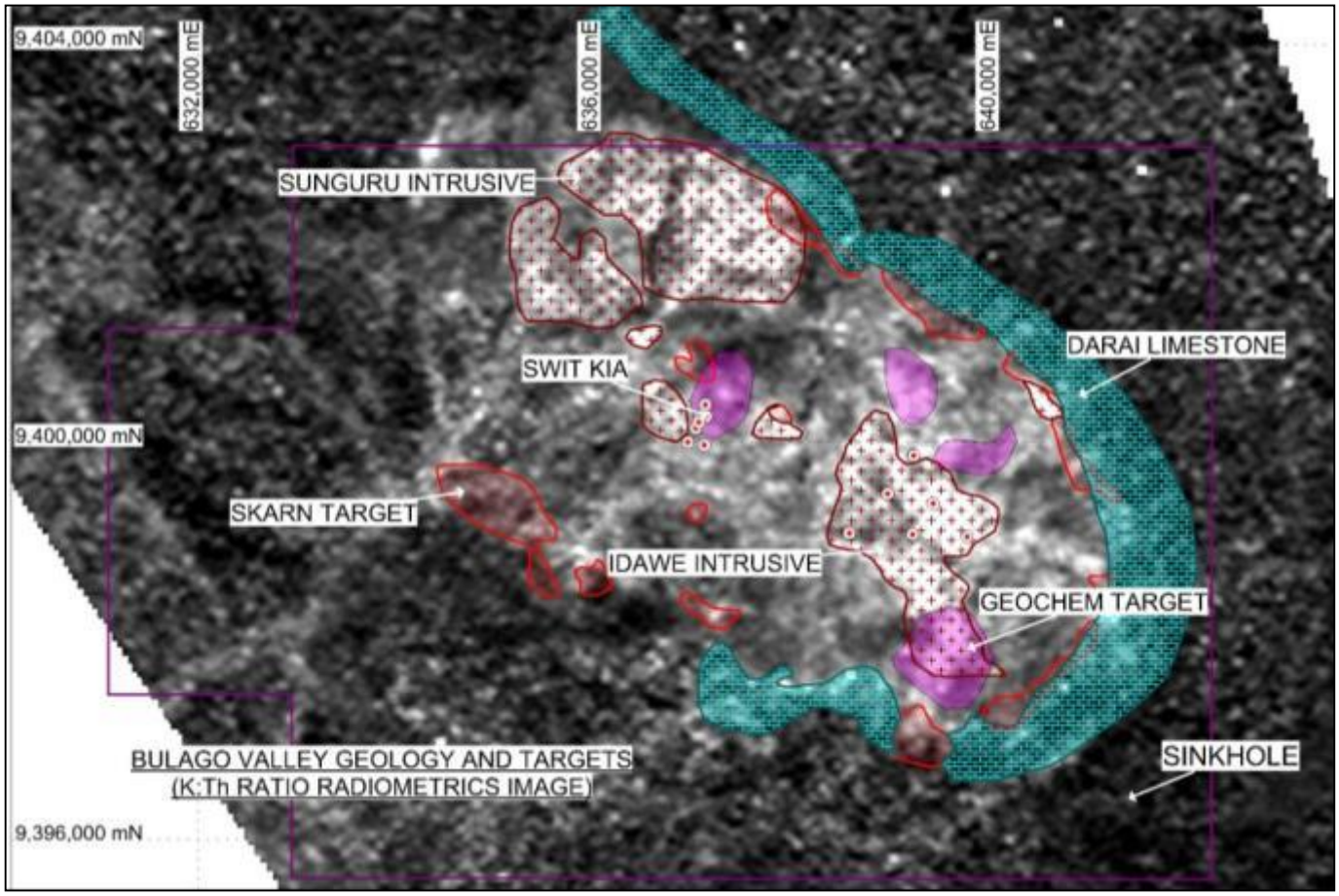
Suguma Ck Skarn: This 340m diameter magnetic anomaly (637000e, 9400810n) occurs 400m upstream from the Swit Kai prospect with gold anomalous stream samples downstream. An interpreted monzonite intrusive lies 200m to the southwest. Remnant intrusive diorite clasts and hornfelsing is noted in rock samples at the margins of this anomaly.

Kapia Ck Skarn: Adjacent to the Suguma Creek, this 160m diameter magnetic anomaly is 650m east of Suguma Creek on the northern margin of an interpreted monzonite intrusive (637840e, 9400290n).

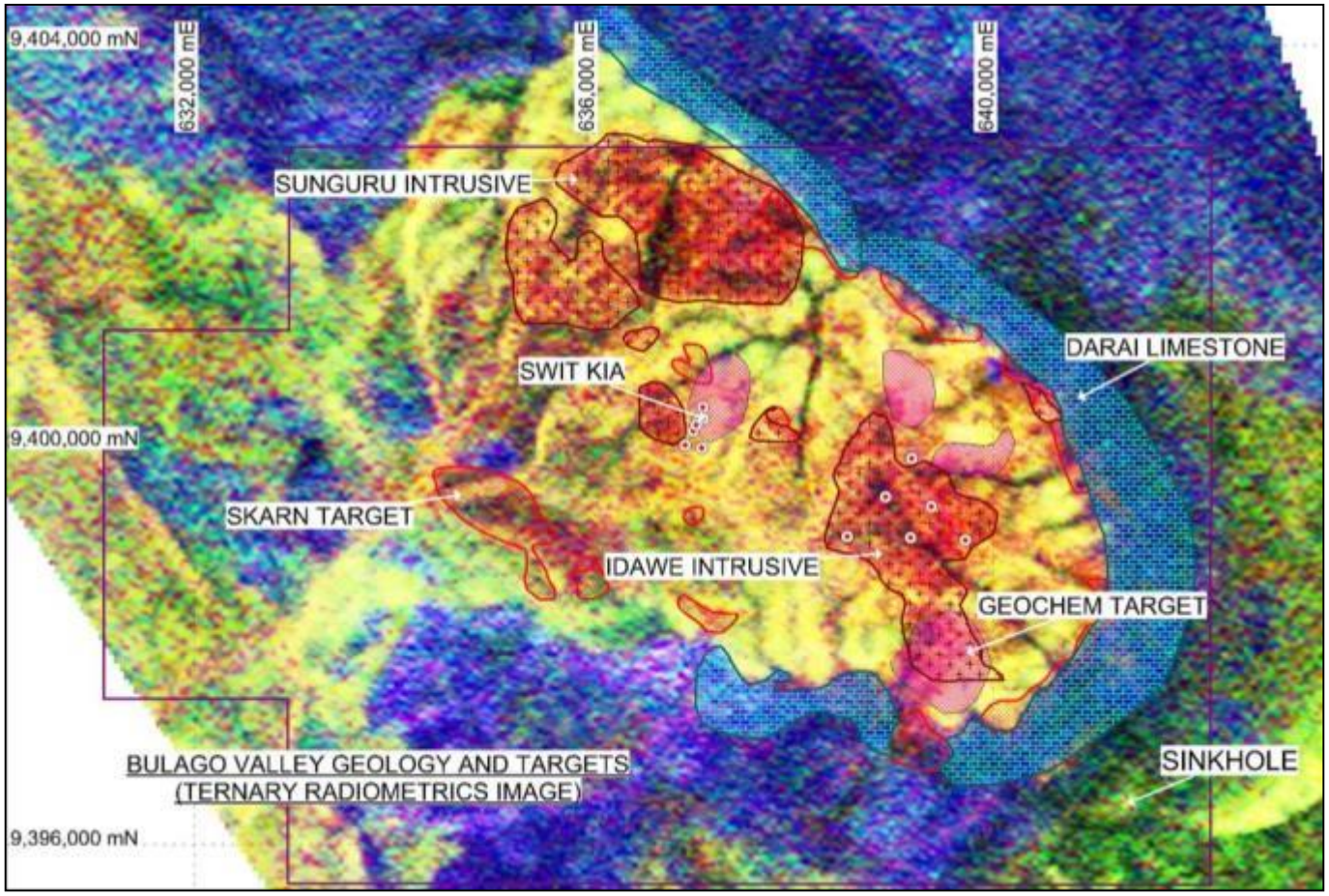
Bulago 2 Ck Skarn: This 160m diameter magnetic anomaly is 700m downstream from Swit Kai (636990e, 9399290n) and 100m south of the Bulago River.

Emboro Ck Skarn: At the headwaters of Emboro Creek (637220e, 9398240n), this 500m by 150m magnetic anomaly is about 1100m upstream from the junction of the Bulago River and 100m north of interpreted Darai Limestone.

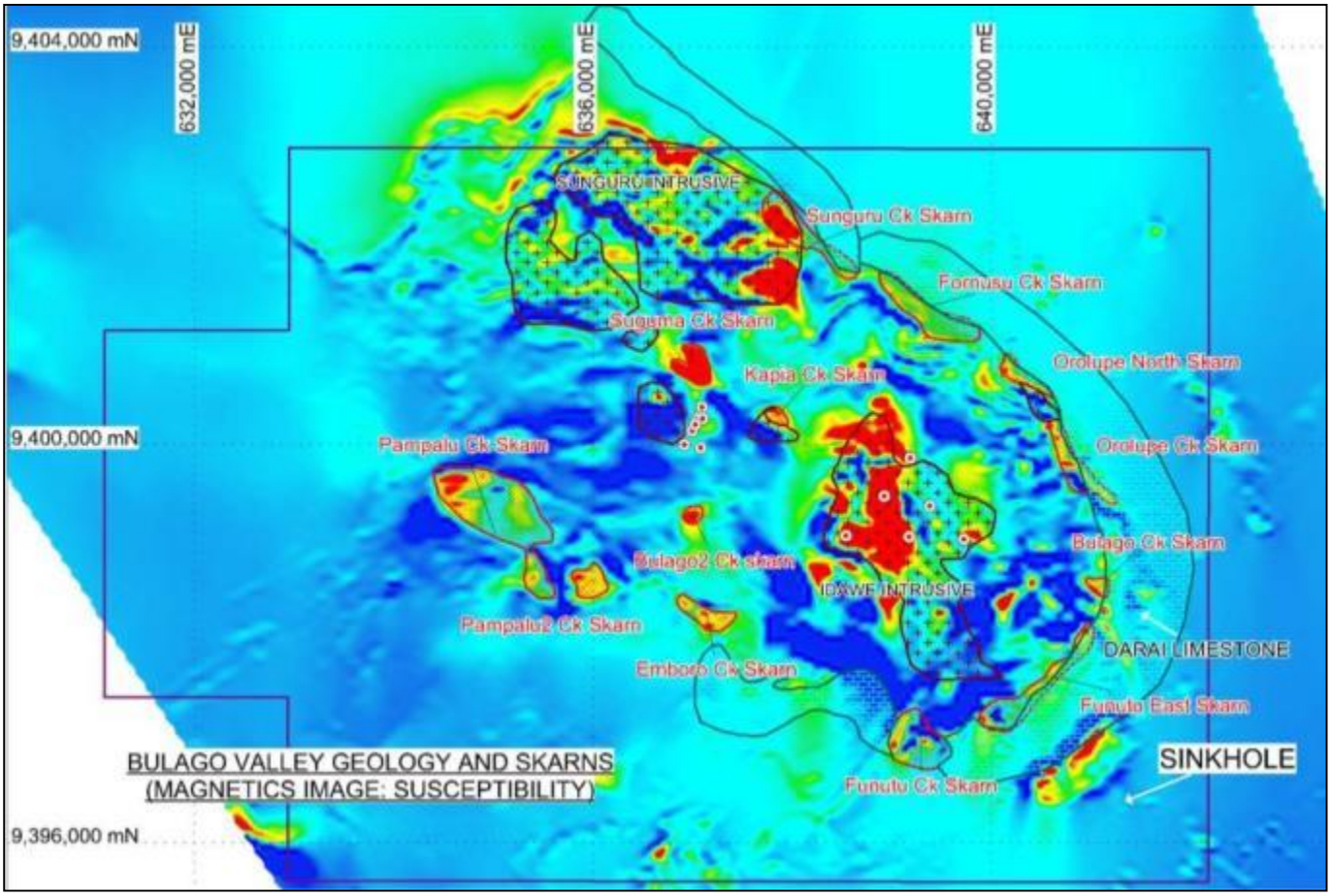
Pampalu and Pampalu 2 Ck Skarns: Further downstream, 600m northeast of 'Topse Village' (633950e, 9399020n), the 1000m elongated Pampalu Ck skarn target straddles the Bulago River (634600e, 9399490n). The smaller 230m diameter Pampalu 2 Ck magnetic anomaly (635970e, 9398610n) occurs further upstream.



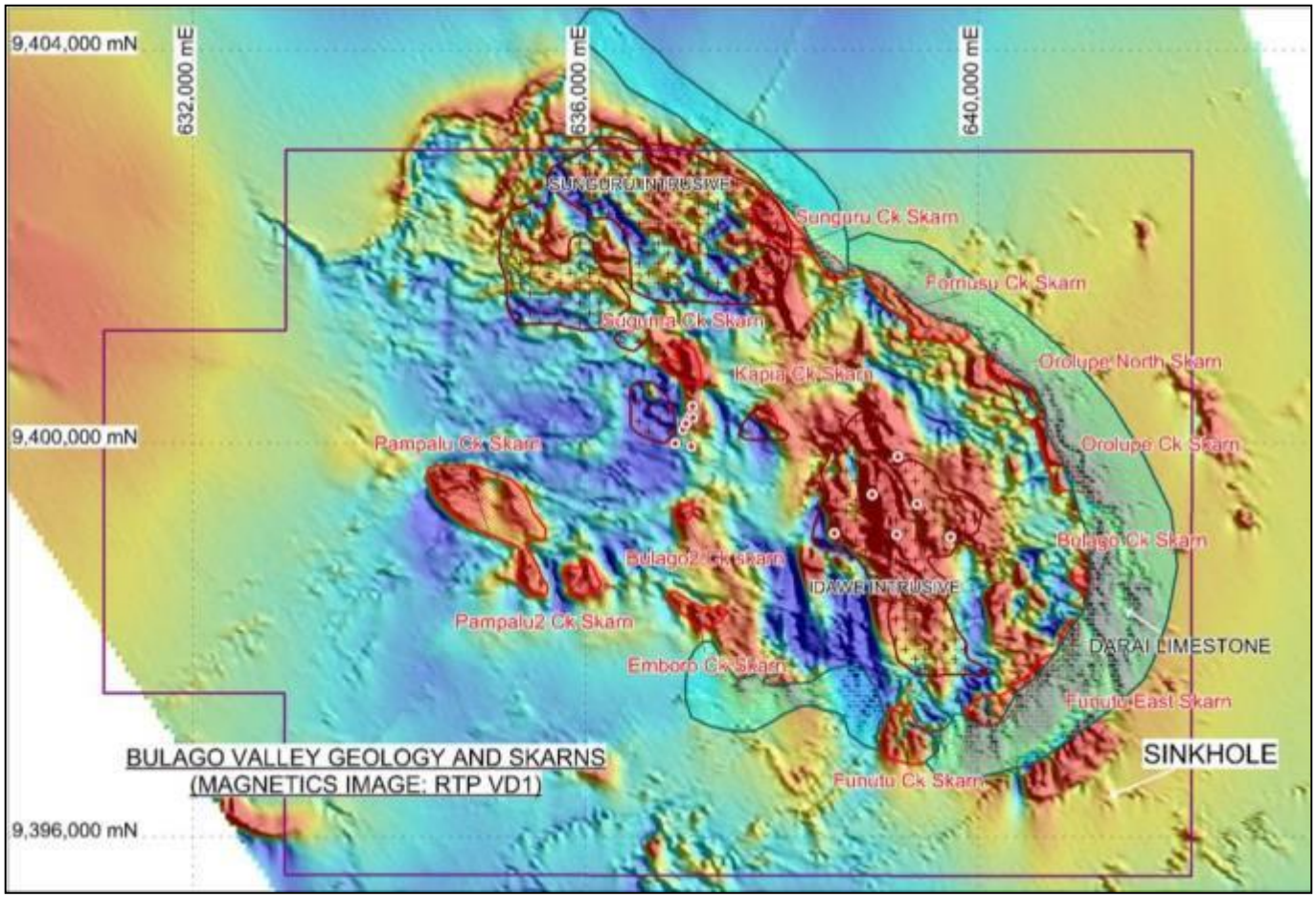
Radiometrics K:Th Ratio Image Highlighting Intrusive Complexes



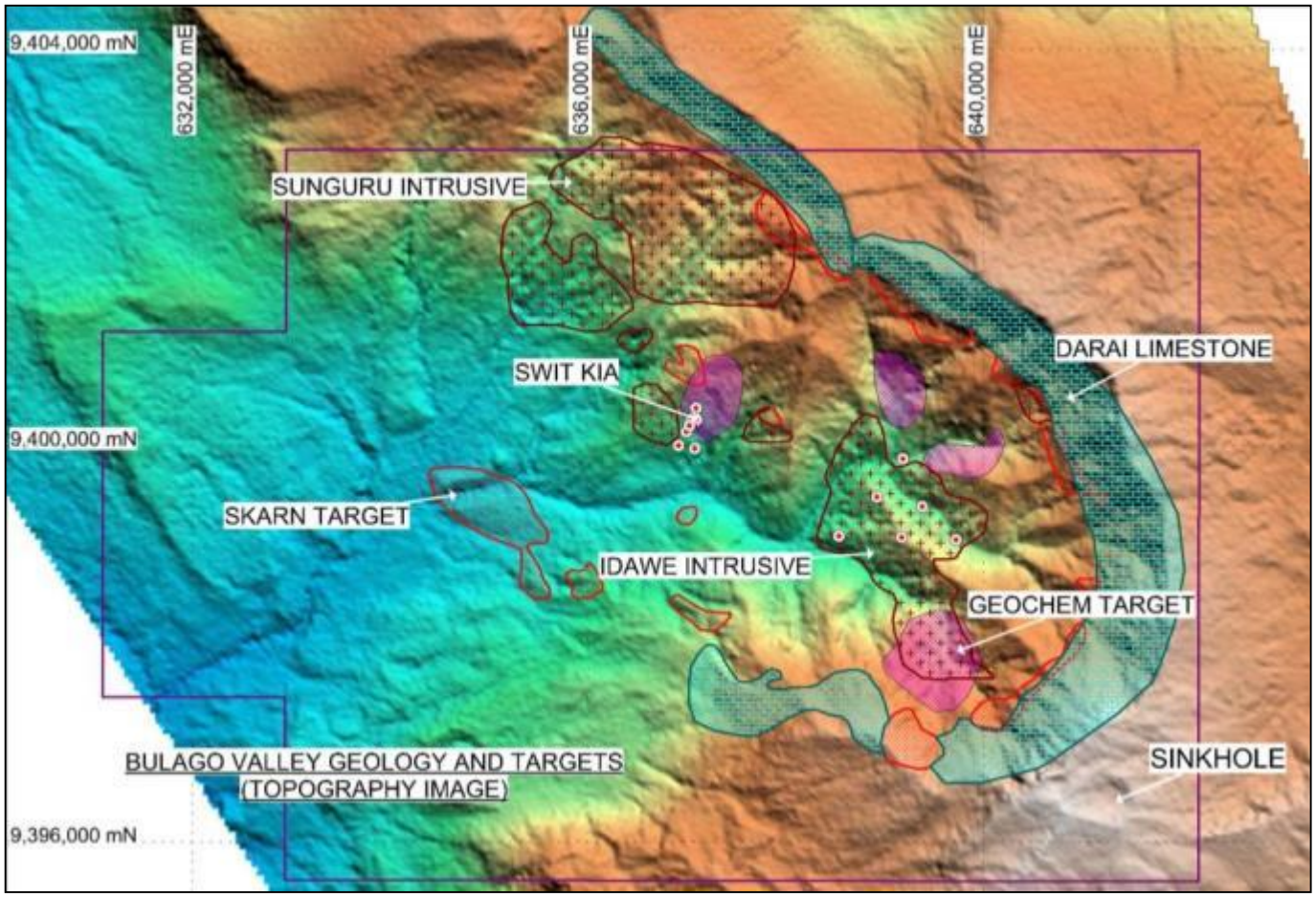
Ternary Radiometrics Image (Red=Potassium, Green=Thorium, Blue=Uranium)



Modelled Magnetics (susceptibility) Image Showing Skarn Targets



Magnetics Image (RTP VD1) showing Skarn Targets



Skarn and Geochem Targets on Digital Topography Image

GEOCHEMISTRY REVIEW

The Swit Kai Au(Pb) Zone (637220e, 9400410n) is a 900m x 500m area of anomalous gold in stream, rock and soil geochemistry which also encompasses the Swit Kai prospect. The area occurs between two interpreted monzonite intrusives 100m to the southeast and southwest. Ok Tedi reported quartz-base metal veins assaying 1.46 to 16.45 g/t Au. Frontier Resources completed additional jackhammer trench sampling and drilling with extensive documentation of results in their Annual Report, 2015.

The Fornusu Cu+ Au(Mo) Target is next to the northern margin of the Idawe Intrusive complex with anomalous gold and copper in rock samples. At its south-eastern margin, anomalous molybdenum occurs which is related to the magnetic contact with the intrusive. The existence of anomalous gold and copper in rock samples need further follow-up sampling.

The Orolupe Au (Pb) Target has anomalous gold in soils samples and gold in rock samples to 0.162 g/t. Being on the north-eastern margin of the Idawe Intrusive, anomalous lead exists in the soil geochemistry. Outer anomalous lead in soils is expected surrounding the margins of intrusive complexes.

Some anomalous rock samples of molybdenum occur in trench sampling within the Idawe intrusive (639240e, 9399200n). Anomalous molybdenum in soils occur throughout the magnetic phases of the Idawe intrusive complex.

The Funutu Cu+ Au+ Mo (Pb) target area (639600e, 9398000n) covers a 900m diameter area at the headwaters of Funutu Creek, 200m downstream from the Funutu Ck skarn target. Most of the northern extent of this geochemically anomalous target area is within the interpreted Idawe intrusive complex. There is anomalous gold identified from a number of soil lines and there are numerous anomalous gold in rock samples of up to 3.3 g/t. There are anomalous copper in soil samples and 15 rock samples contain over 1000ppm copper, up to 1450 ppm Cu. Anomalous molybdenum in soil samples are within the Idawe monzonite intrusive complex. Anomalous lead-in-soil samples represent the southern margin of the intrusive complex. An area for possible gold sluicing exists downstream of near a historical helipad (639500e, 9398150n).

Alluvial Gold Targets

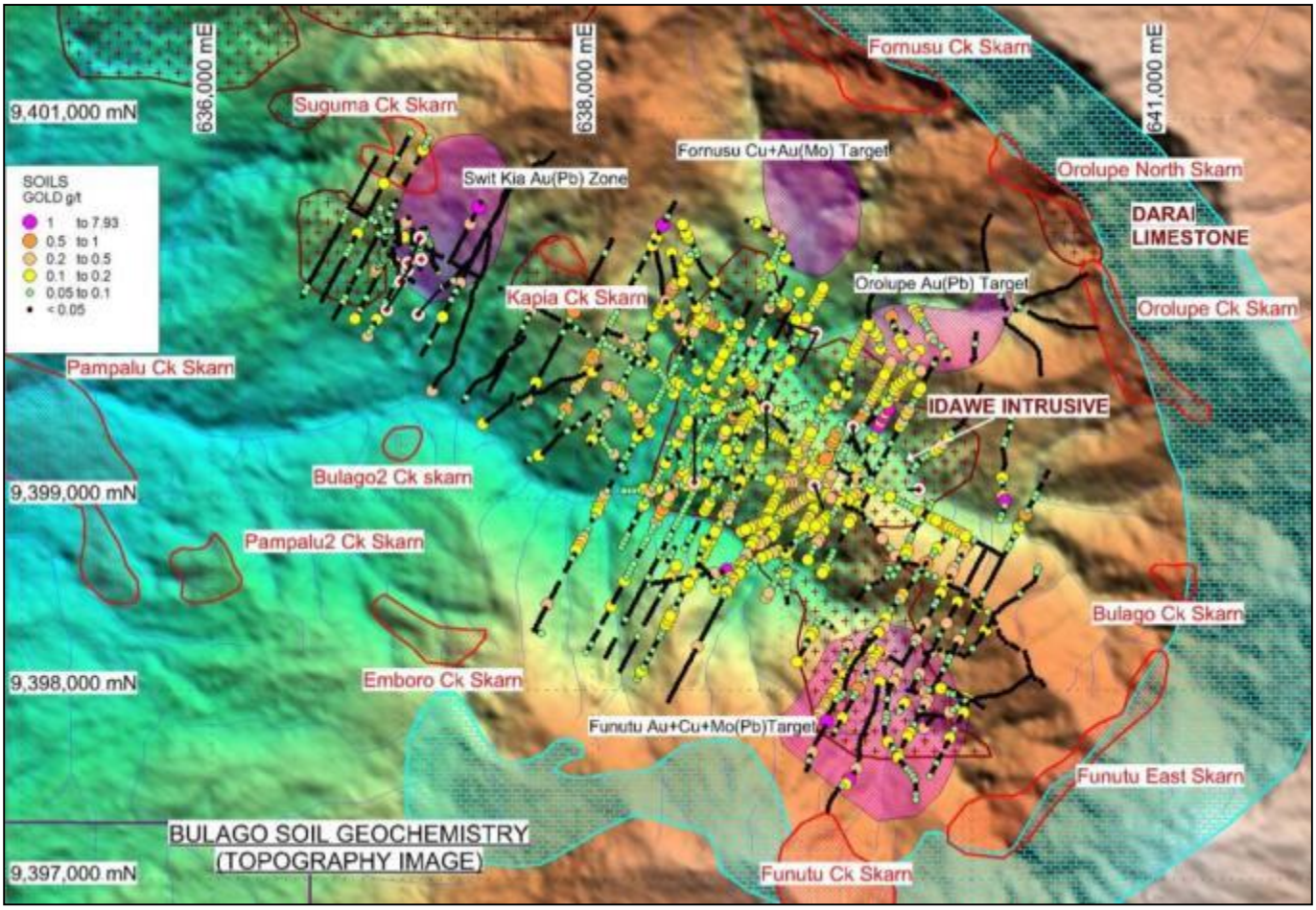
Alluvial gold mining by local landowners within the drainages of Bulago Valley indicates the possibility for gold sluicing by Frontier Resources to generate income. Four areas were selected where there is highly anomalous gold collected from historical stream sediment and panned concentrate stream samples. These areas were selected downstream from gold anomalous locations where access is possible in the lower reaches of drainages.

Swit Kai Sluicing Target: This area is runs 500m along Suguma Creek, 200m downstream from the Swit Kai prospect where significant gold in trench samples were taken by Frontier Resources. The area covers the junction with Funutu Creek and continues 400m upstream along Funutu Creek where a 37 g/t gold in rock sample occurs (637460e, 9399330n). Anomalous gold in stream samples occur both at the junction of Suguma Ck and Funutu Ck and 500m upstream towards Swit Kai. A helipad is marked near the Junction of the two creeks (637090e, 9399480n).

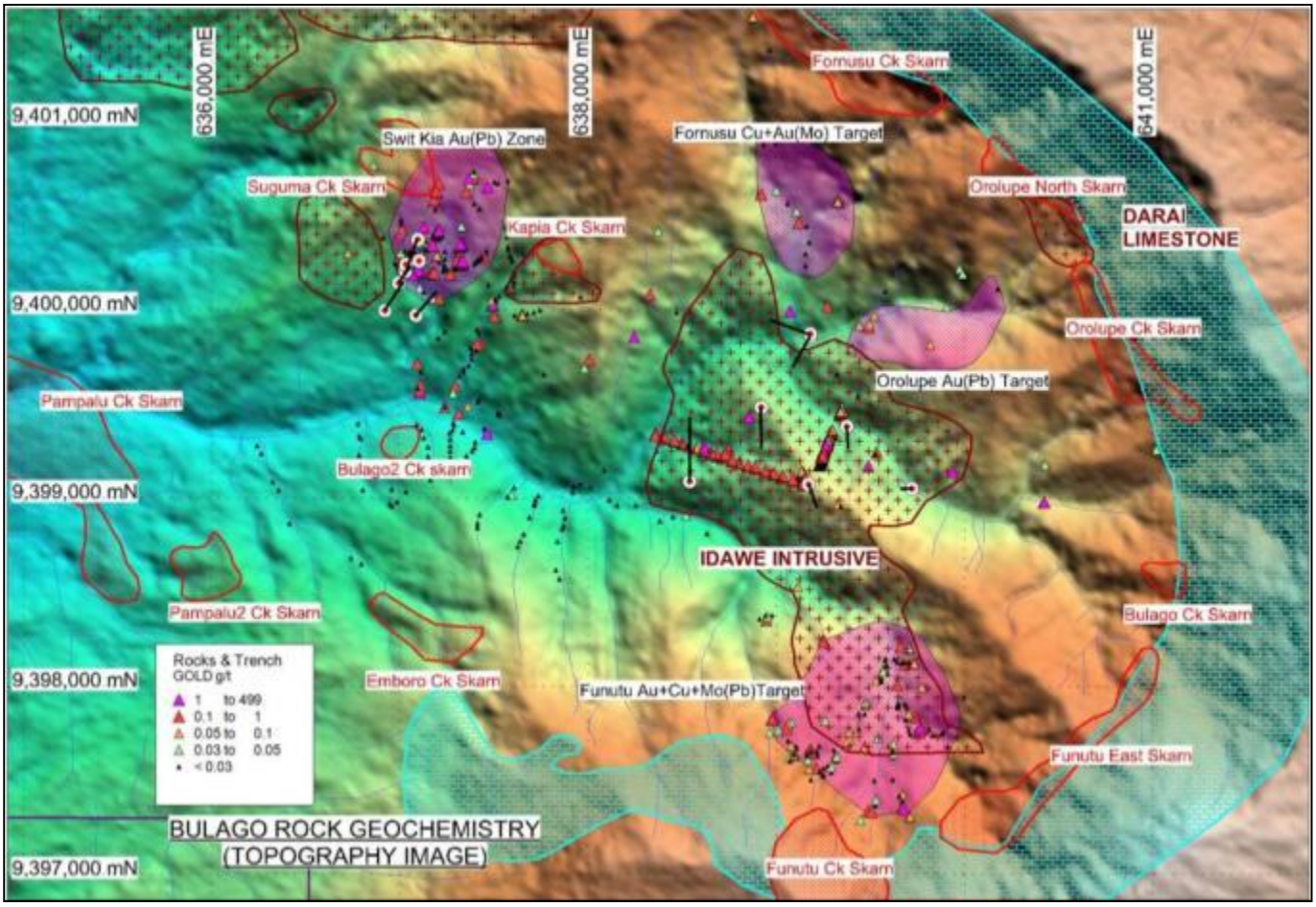
Orolupe Sluicing Target: This target area is 350m further upstream from the Swit Kai Sluicing Target at the junction between Funutu Creek and Orolupe Creek where anomalous stream samples were collected (638150e, 9399030n). The target area stretches a further 450m downstream from the creek junction. Alluvial gold from the Idawe intrusive would have been captured along both the Orolupe and Funutu creeks which cut through the monzonite.

Funutu Sluicing Target: The Funutu Sluicing target occurs over a 1000m stretch of Funutu Creek next to a historical helipad (639520e, 9398150n) and 900m downstream from the Funutu Ck Skarn target. Over ten anomalous gold in creek samples and other anomalous gold in soils and rock chip samples occur directly upstream from this target zone. This is an excellent area for significant potential alluvial gold.

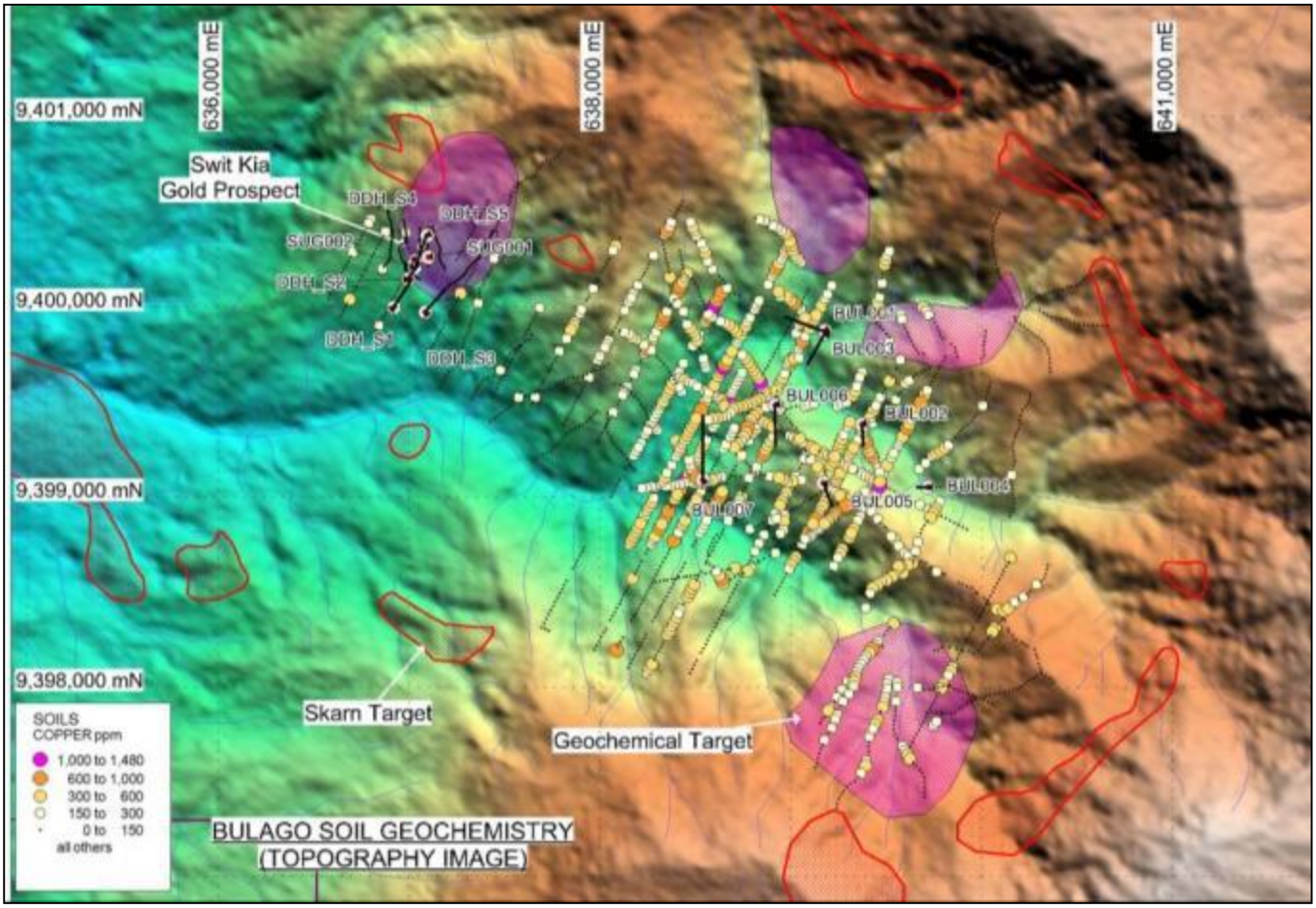
Bulago Sluicing Target: This target zone is between Ok Tedi drillholes BUL002 and BUL004 400m upstream from a historical helipad (639130e, 9399750n). Within the Idawe intrusive complex, this 700m long zone along Bulago River drains anomalous gold in stream and rock samples below the upper reaches of skarn targets along the escarpment.



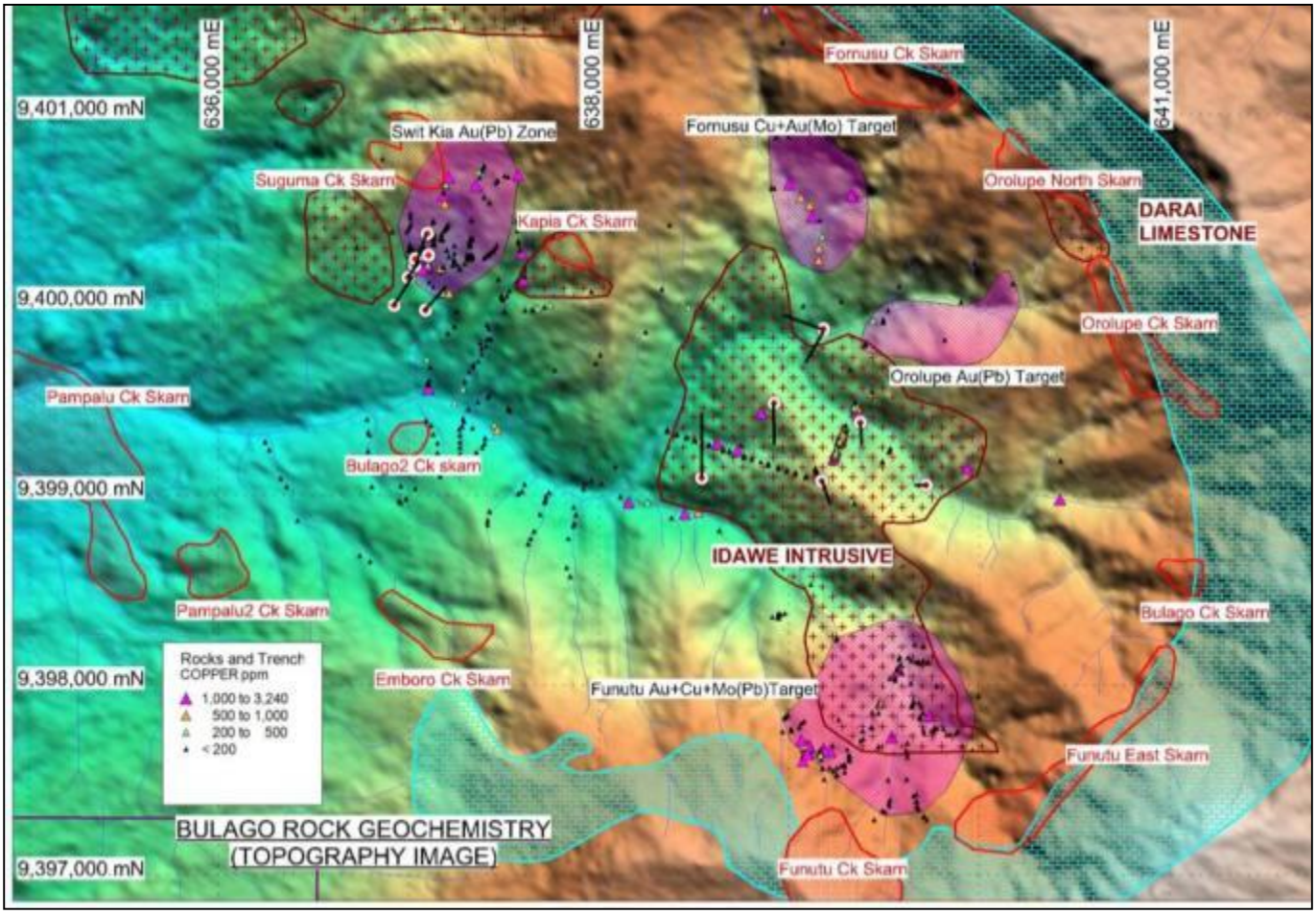
Gold Soil Geochemistry with Targets and Geology



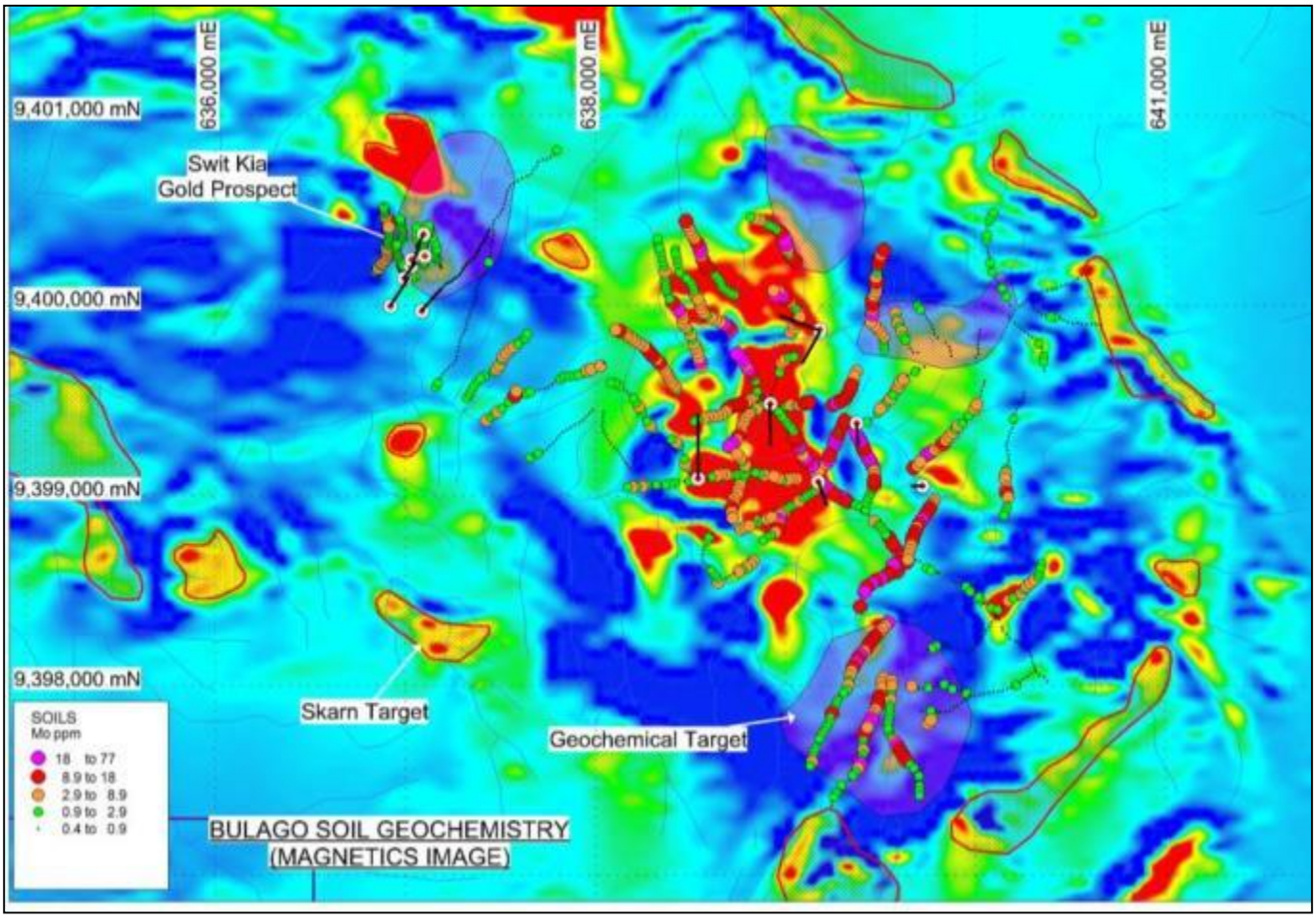
Gold in Rock Samples Showing Targets and Interpreted Geology



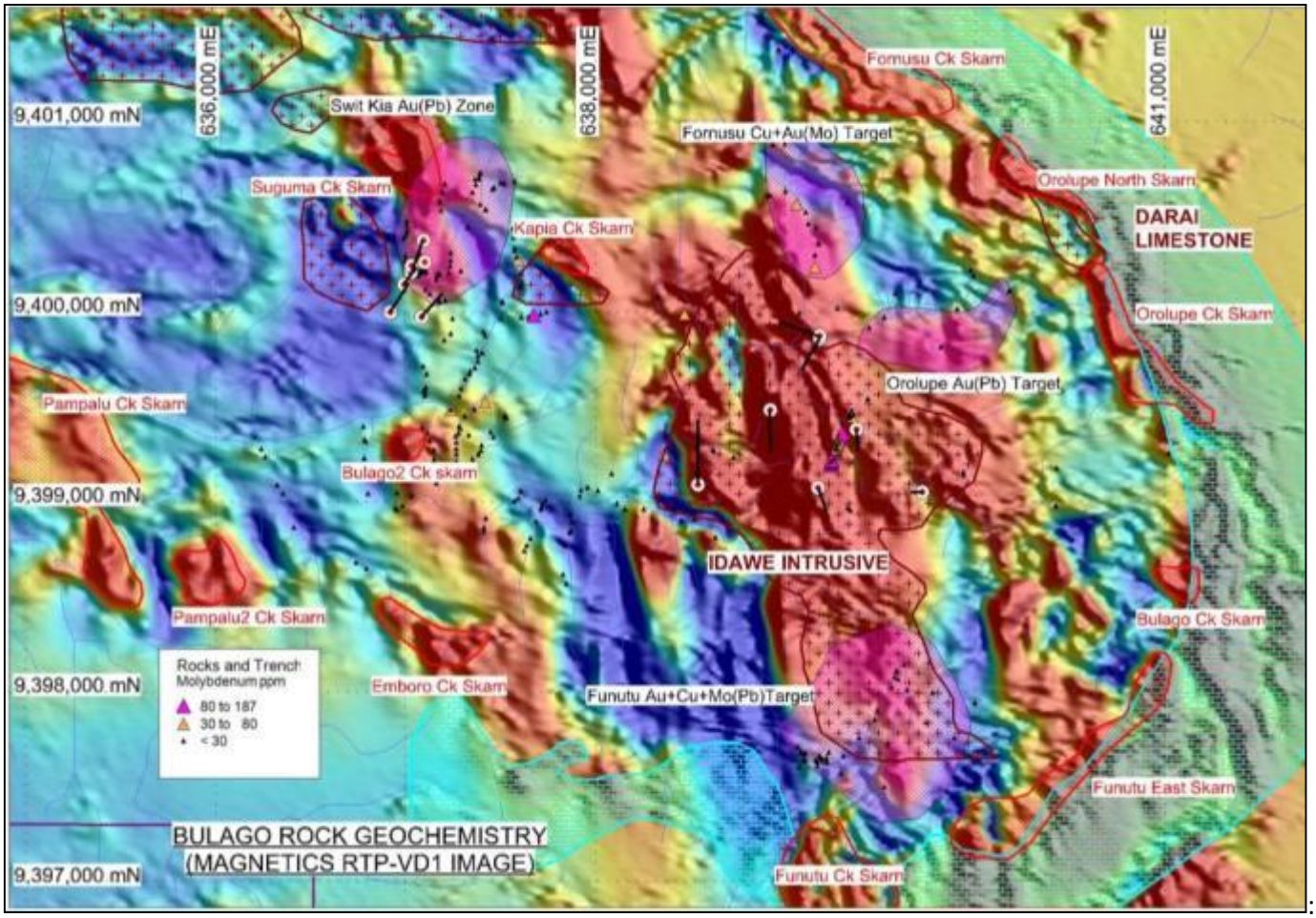
Copper Soil Geochemistry with Targets and Geology



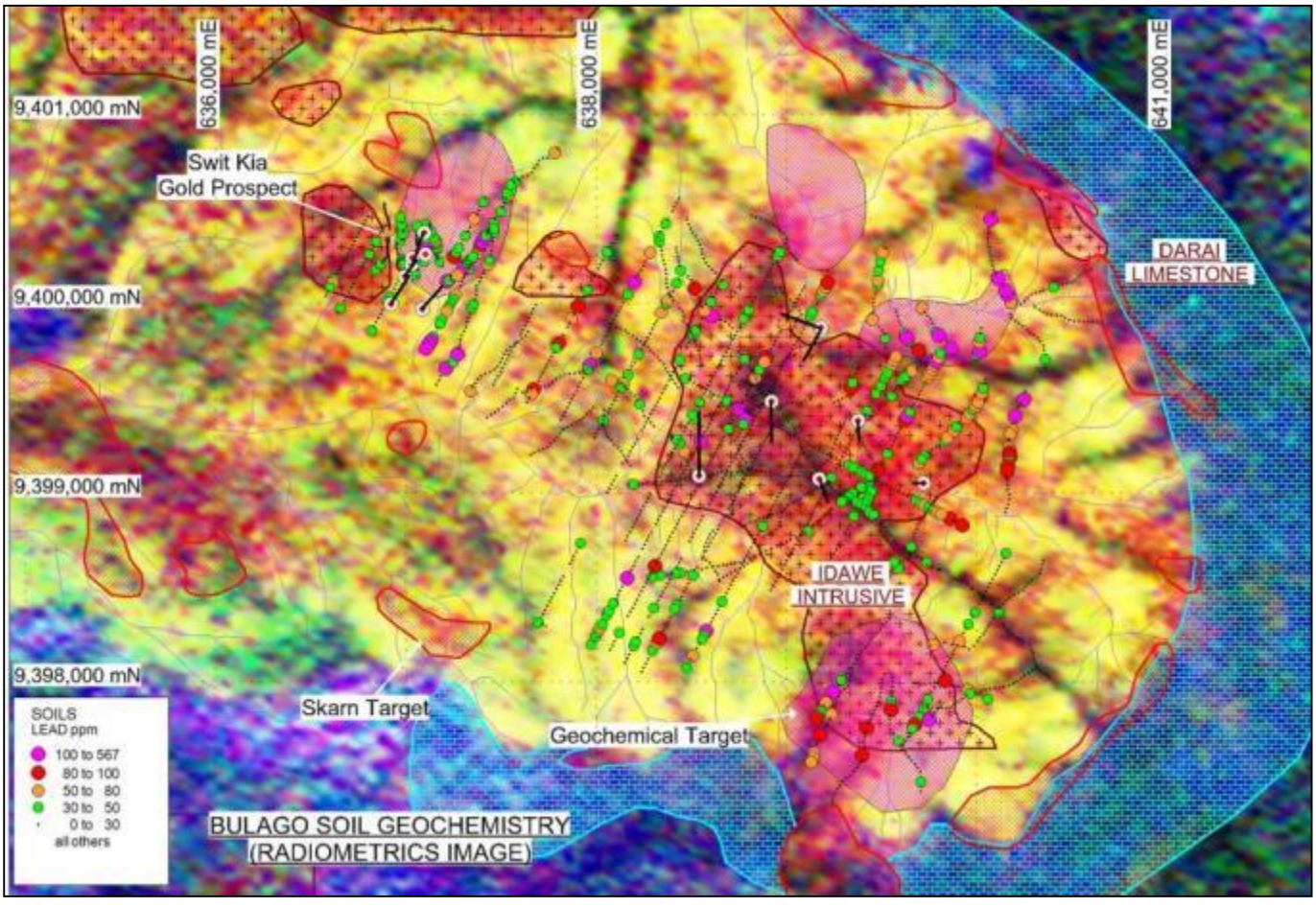
Copper in Rock Samples Showing Targets and Interpreted Geology



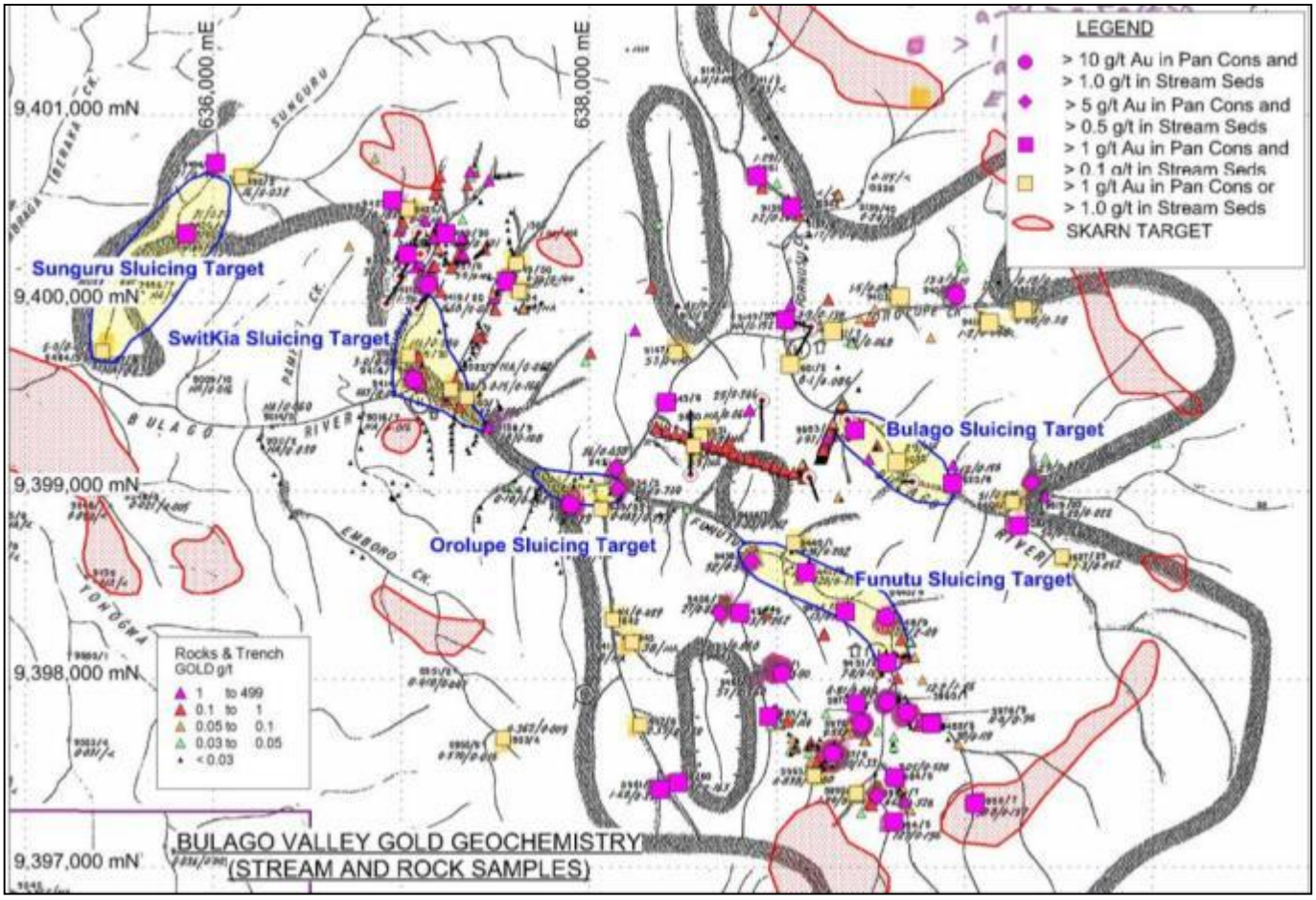
Molybdenum Soil Geochemistry and Targets on Magnetic Susceptibility Image



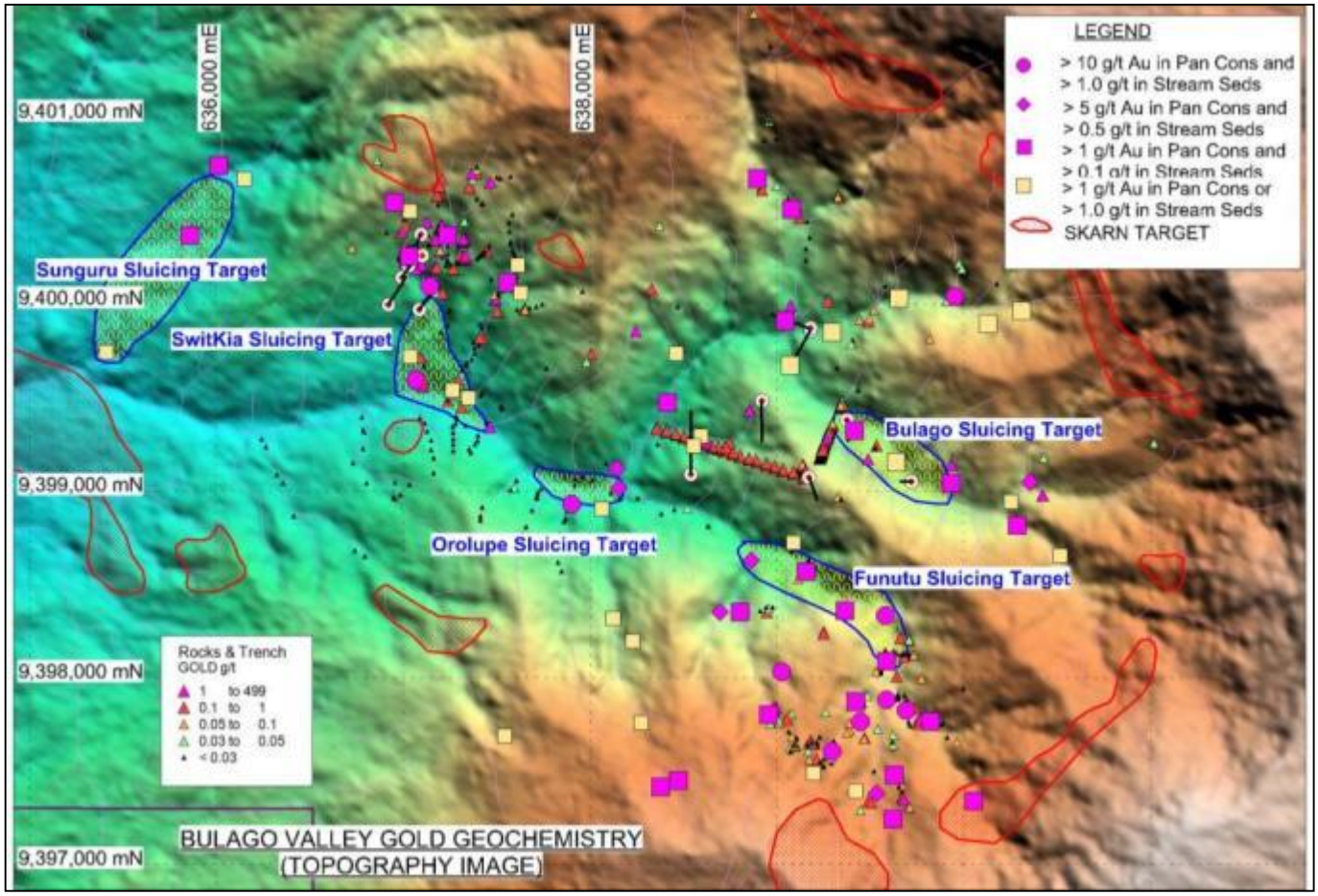
Molybdenum in Rock Samples on Magnetics (RTP-VD1) Image



Lead Soil Geochemistry with Interpreted Geology on Ternary Image



Stream Gold Geochemistry and Sluicing Target Areas



Stream Gold Geochemistry on Topography Image

Sink Hole

In the southeast corner of the tenement boundary, a 430m diameter circular sinkhole occurs as a depression in the topographic image (Figure 15). An outer 800m diameter topographic halo indicates that the edges may have been 'altered' by an underlying intrusive event, resulting in a halo that has hornfelsed the limestone making it less resistant to weathering.

The inner topographic depression is slightly magnetic and has slight elevations of potassium (red) and Thorium (green) at its centre . An underlying intrusive within the Darai Limestone may have caused this anomaly which is a target for skarn mineralisation. The target could be tested with rock samples within its core or a drillhole.

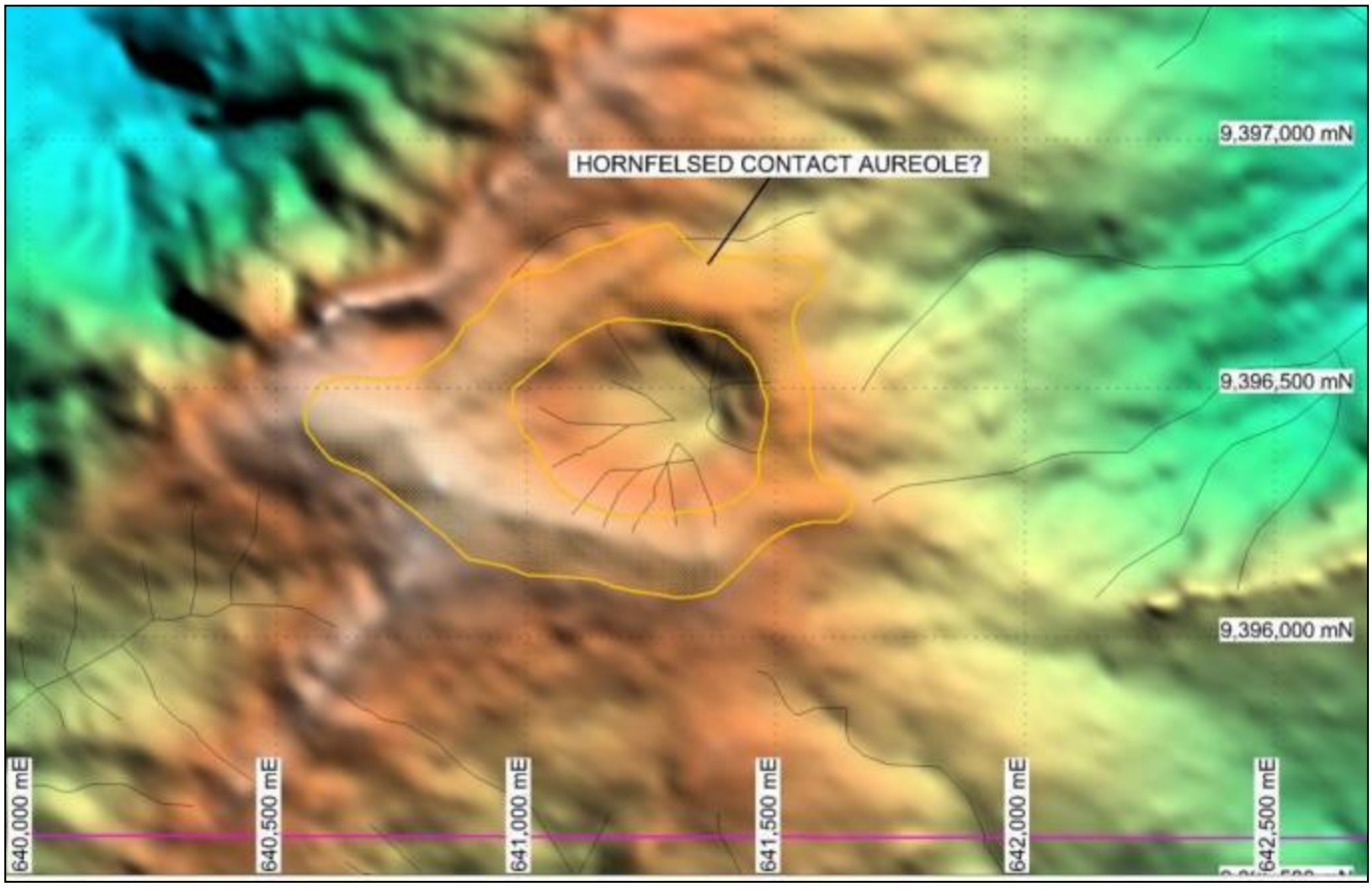
CONCLUSION

A total of 13 skarn targets have been identified and require follow-up geological mapping, sampling and drilling. Four areas of anomalous geochemistry are recommended for additional mapping and sampling for porphyry related mineralisation.

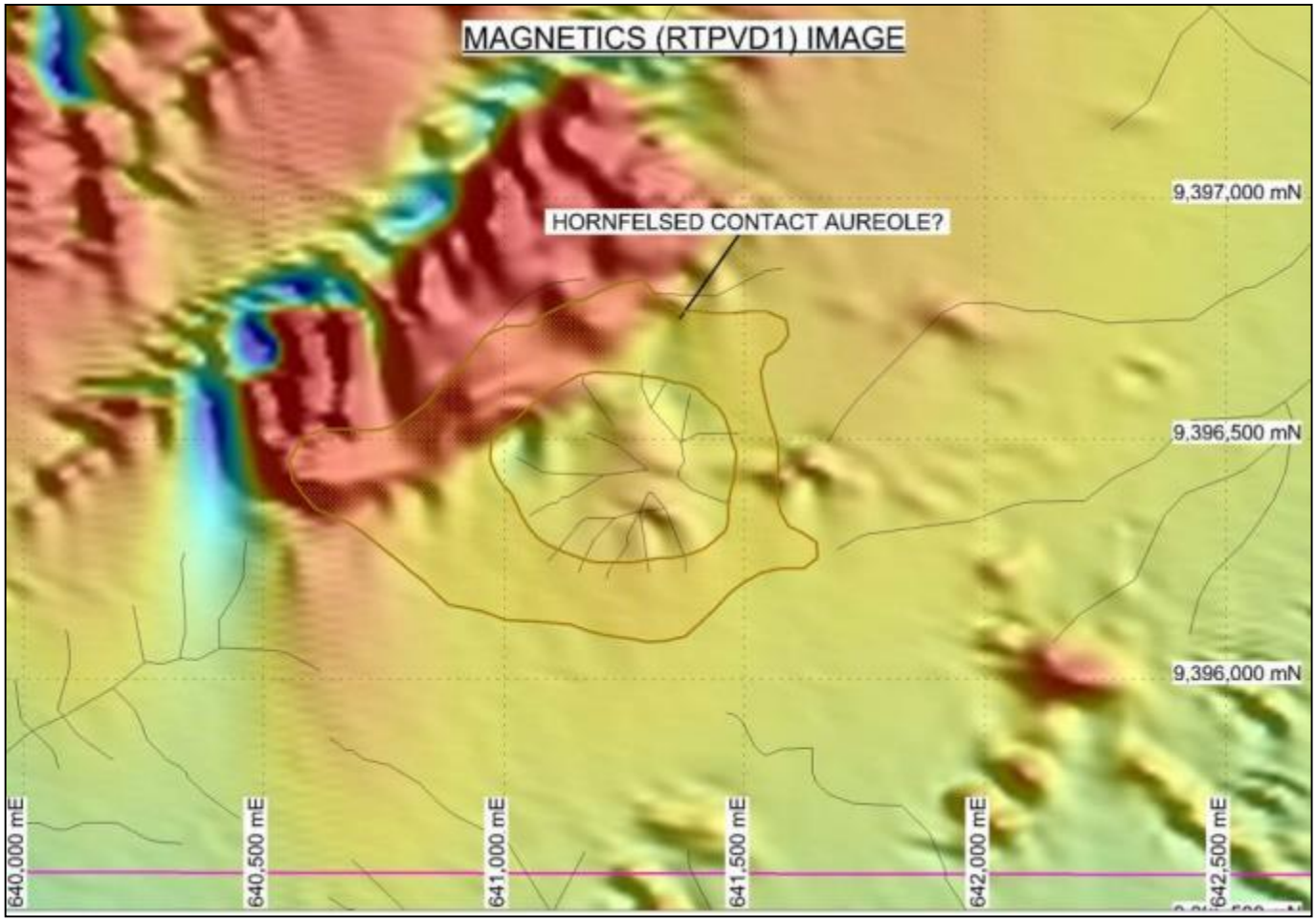
Alluvial gold mining occurs in drainages by local landowners. Four target areas have been identified as sites for testing with gold sluicing equipment to determine the viability of alluvial gold mining using low capital expenditure equipment.

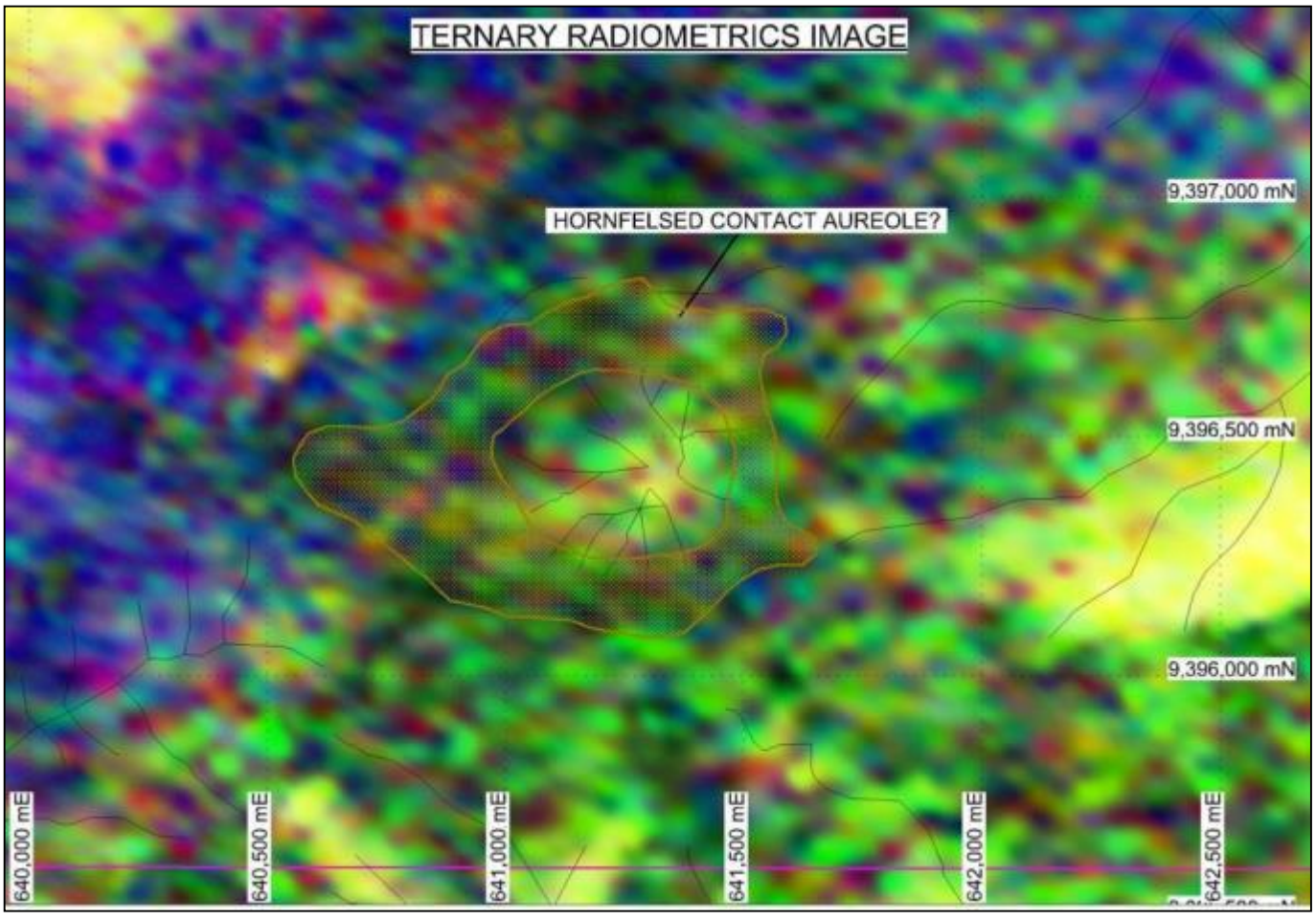
A 430m diameter sinkhole topographic feature within the outer escarpment of Darai Limestone has been selected for further ground inspection and sampling. A raised outer elevated topographic aureole is interpreted to be contact metamorphosed and an underlying skarn target is proposed.

It is recommended that the seven drillholes completed by Ok Tedi Mining Ltd within the Idawe intrusive complex be further analysed in cross-section for both geology and geochemistry. The magnetic data is recommended to be modelled in three dimensions and analysed at the identified skarn targets and within the Idawe Intrusive complex.



Topographic Image Showing a Sinkhole





Magnetics Image over the Sinkhole Target

Radiometrics Image over a Sinkhole target

UPDATED REVIEW OF 3D MAGNETIC MODEL - BULAGO VALLEY

Summary

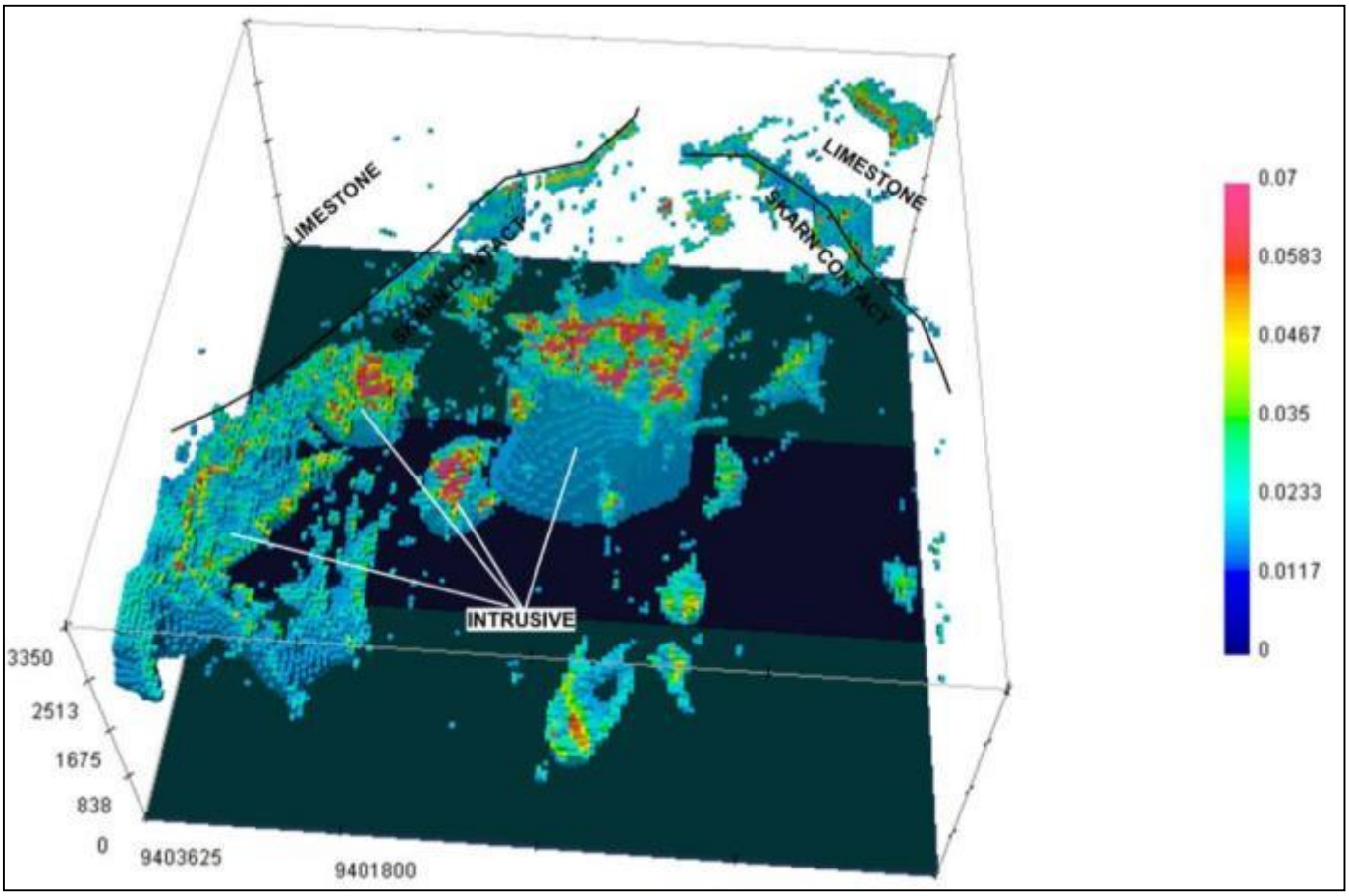
The three dimensional magnetic model of the airborne magnetic data shows structural zones at depth which are linked to the movement of hydrothermal fluids and gold/copper mineralisation towards existing prospects including the Swit Kai gold zone. Margins of the magnetic Idawe intrusive complex have anomalous gold in surface geochemistry in rock and soil samples.

The base of the Darai Limestone can be traced along a layer of horizontal magnetic anomalies. Numerous intense magnetic anomalies within Bulago Valley are likely to be related to skarn mineralisation, including those which occur along the horizontal layer at the headwaters of Bulago River and other tributaries, 400-600m from the Bulago Valley Rim. The Bulago River has a significant underlying magnetic expression related to alluvial magnetic material eroded from the Idawe intrusive complex. Some areas along this river have significant gold in stream sediments samples and are targets for alluvial gold mining/prospecting.

Regional Review of The 3D Magnetic Model

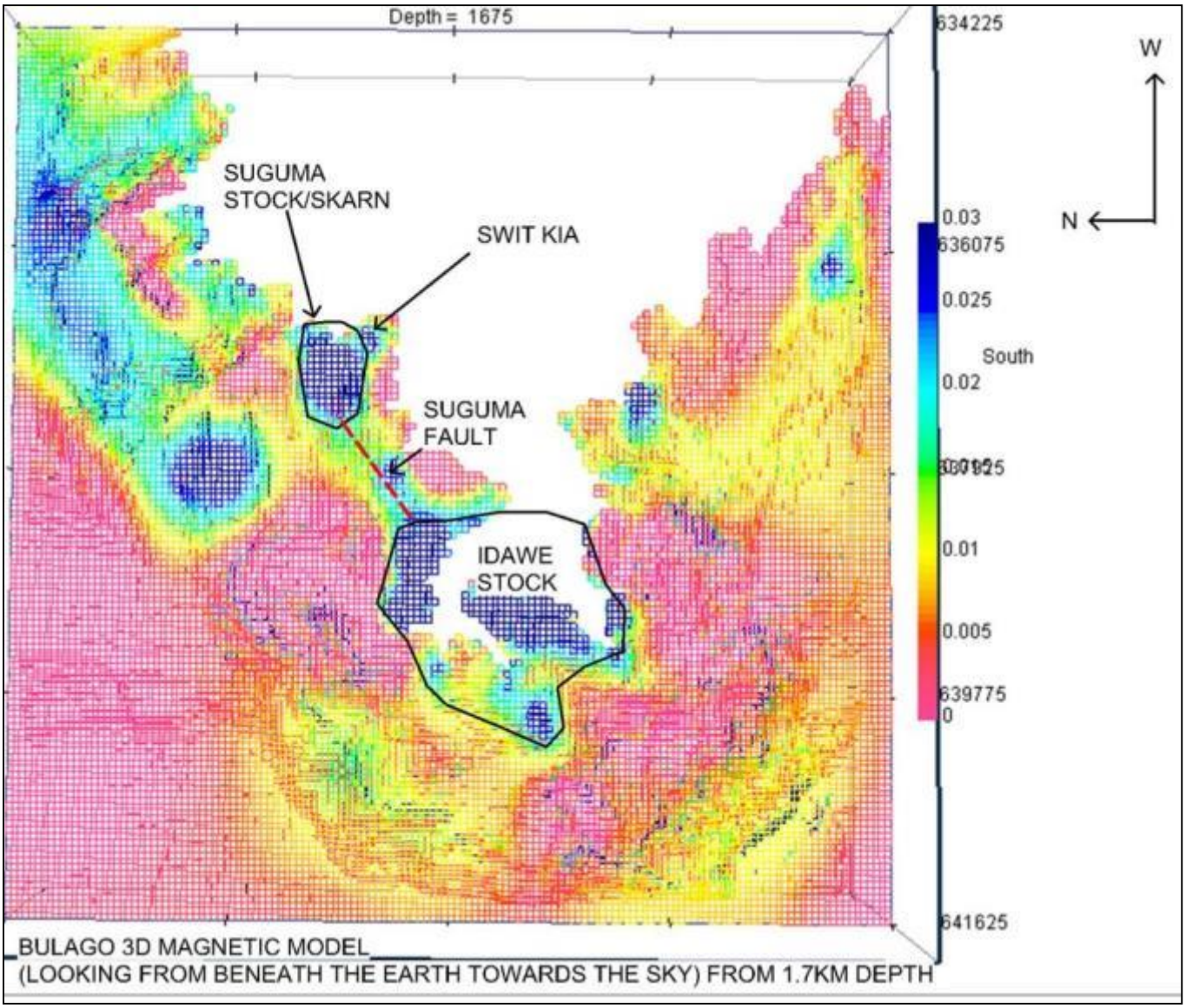
The Idawe magnetic intrusive complex) is modelled along with other magnetic intrusive/ skarn like magnetic bodies. There exist horizontal magnetic anomalies along the contact with the overlying Darai limestone. The magnetics appear as an outer halo and likely to contain skarn styles of mineralisation. Hydrothermal fluids are interpreted to emanate from the Idawe intrusive complex along structures and come into contact with the limestone, causing metamorphism and mineralisation.

Viewing from beneath the magnetic model, the magnetic Idawe intrusive is evident as a circular magnetic body. Bulago River is controlled by deep-set structures emanating from the Idawe stock. The Suguma Fault, is likely to have carried hydrothermal fluids and minerals from Idawe to the magnetic Suguma stock/skarn and Swit Kai gold prospect.



Magnetic Model of the Idawe Intrusive Complex looking East

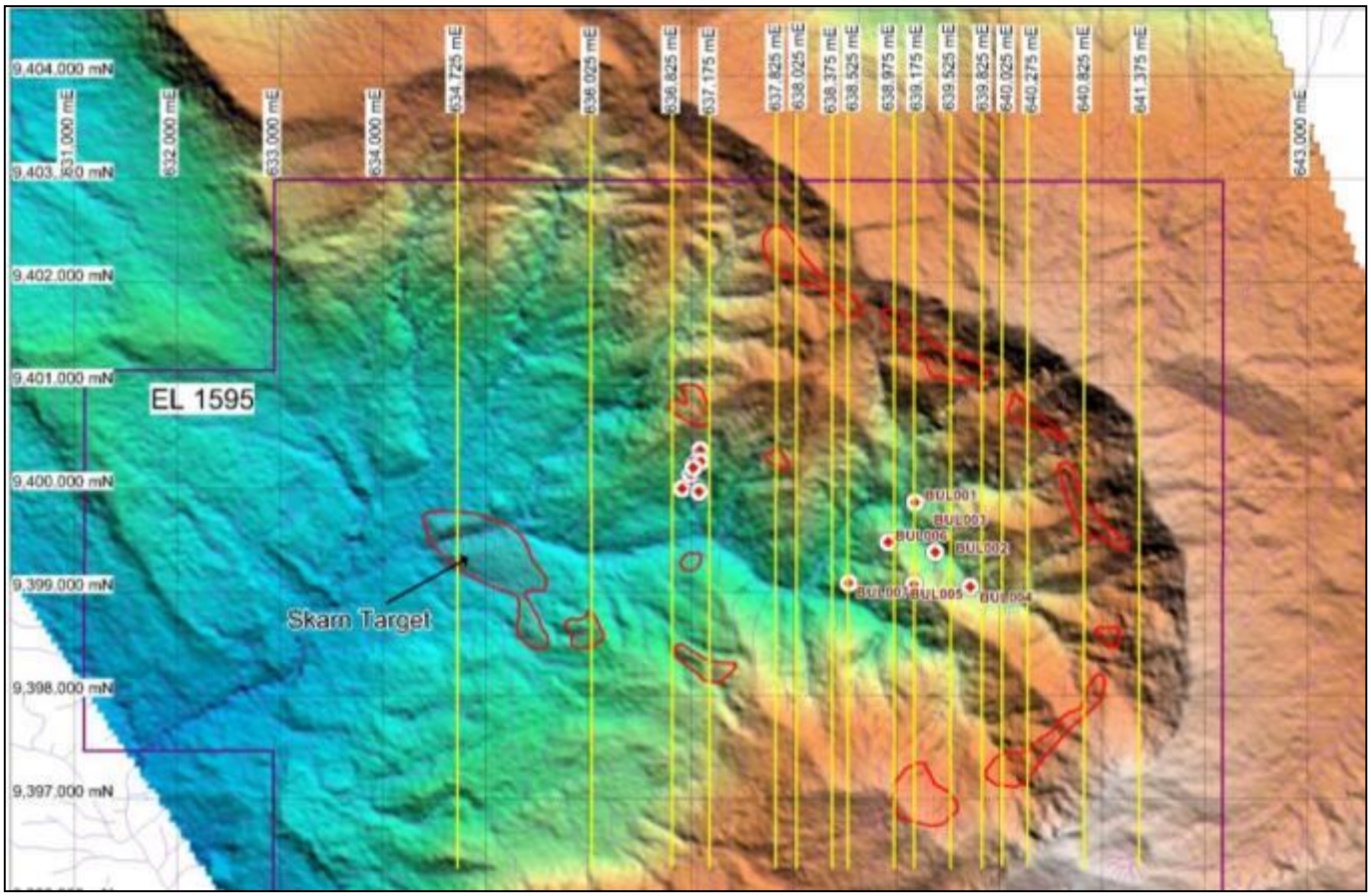
The magnetic model shows deep-set faults important for the emplacement of mineralisation emanating from the magnetic Idawe intrusive complex. Styles of mineralisation include skarn, veins and stockwork.



Deep-set Structures viewed From beneath the Magnetic Model

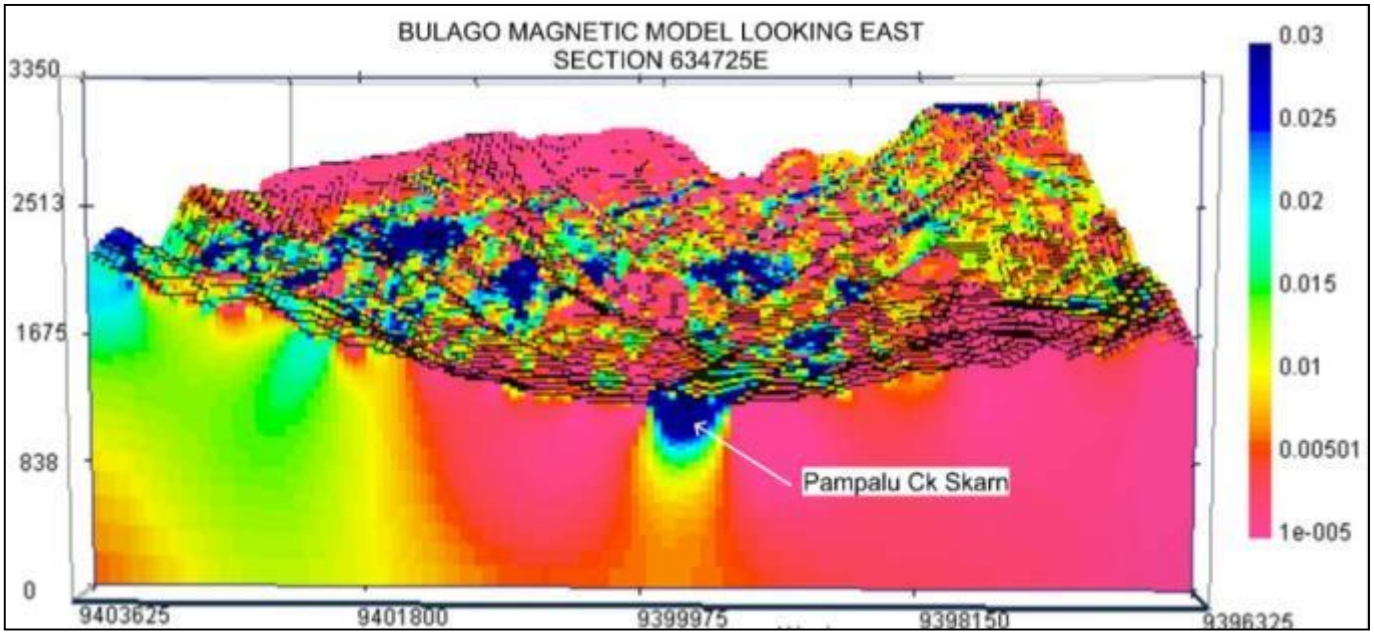
Cross Sections of The Magnetics Model

A series of 17 cross-sections looking towards the east, were selected along previously defined target areas related to skarn mineralisation, alluvial gold and anomalous geochemistry.

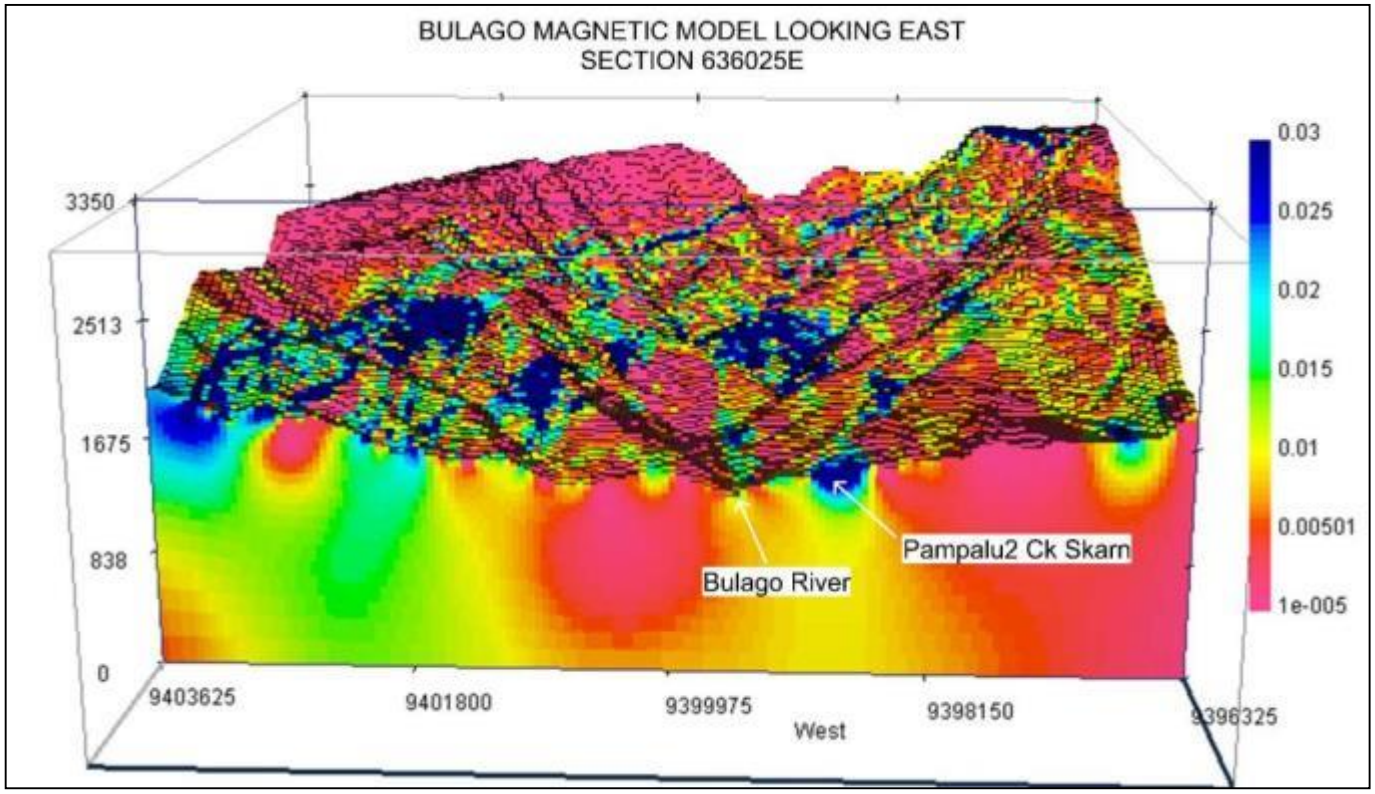


Location of 3D Magnetic Cross-Sections on Topography Image

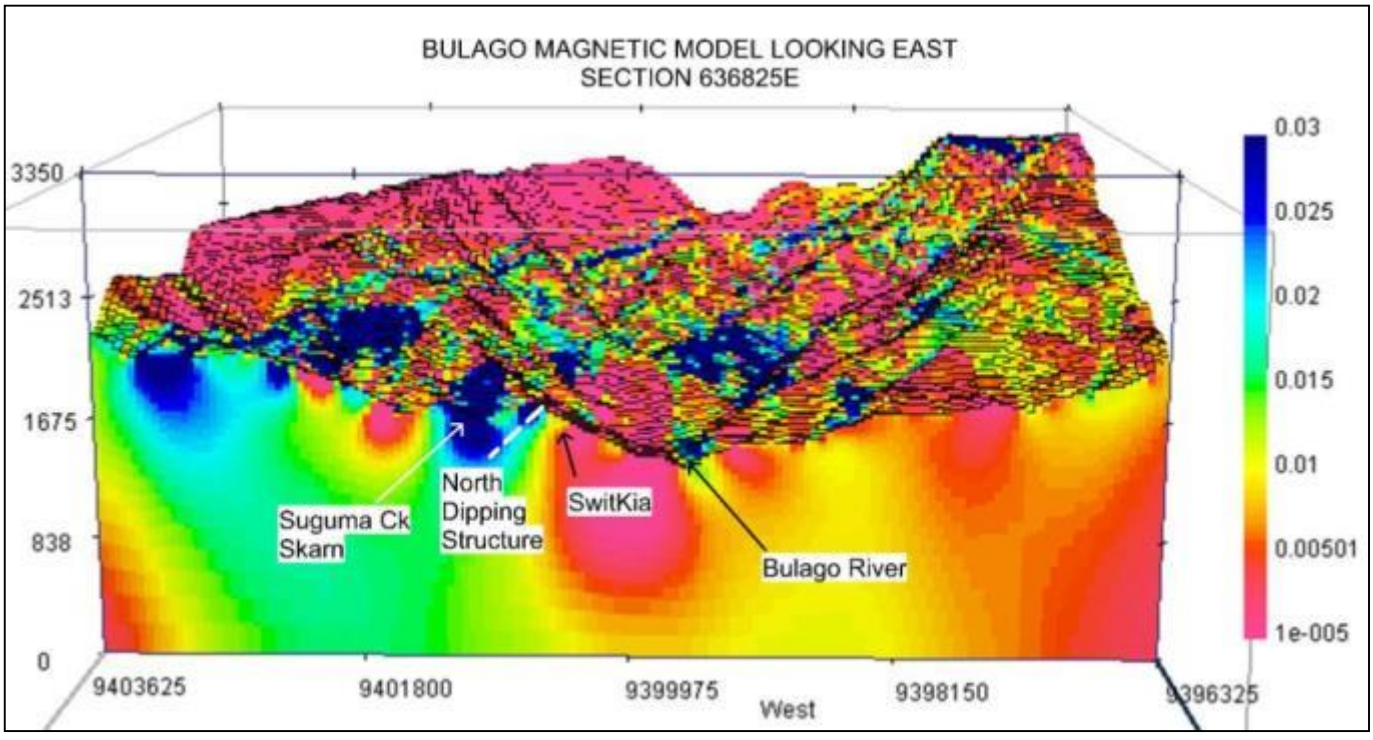
The magnetic cross-sections (shown below), start at the western part of the magnetic model and progress towards the east. Interpretation is given below each section.



The Pampalu Ck Skarn target occurs at the Bulago River and is a 300m deep, very magnetic (0.05 SI) anomaly. This target warrants creek mapping and sampling along Bulago River at 634725E.

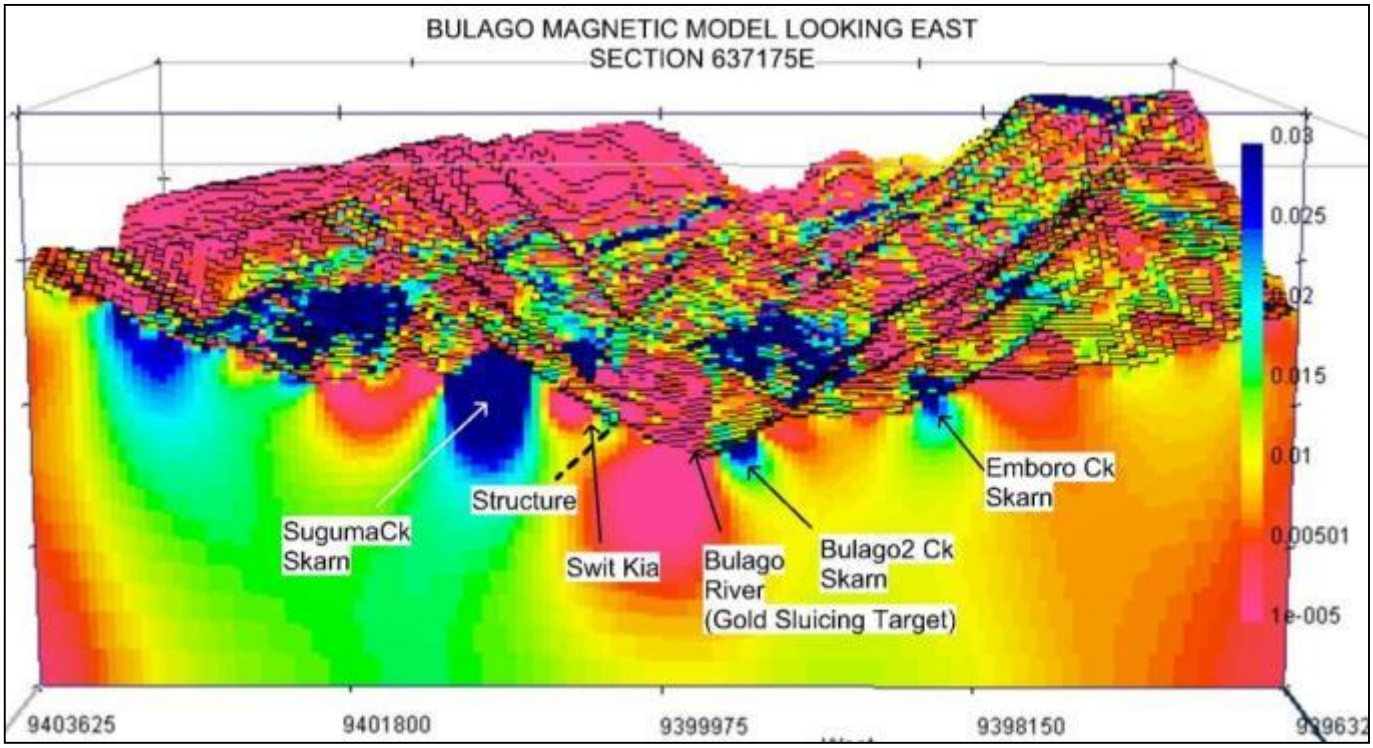


The Pampalu 2 Ck skarn magnetic (0.035SI) target occurs on the southern tributaries, 600m south of Bulago River. This is a lower priority target due to difficult access.

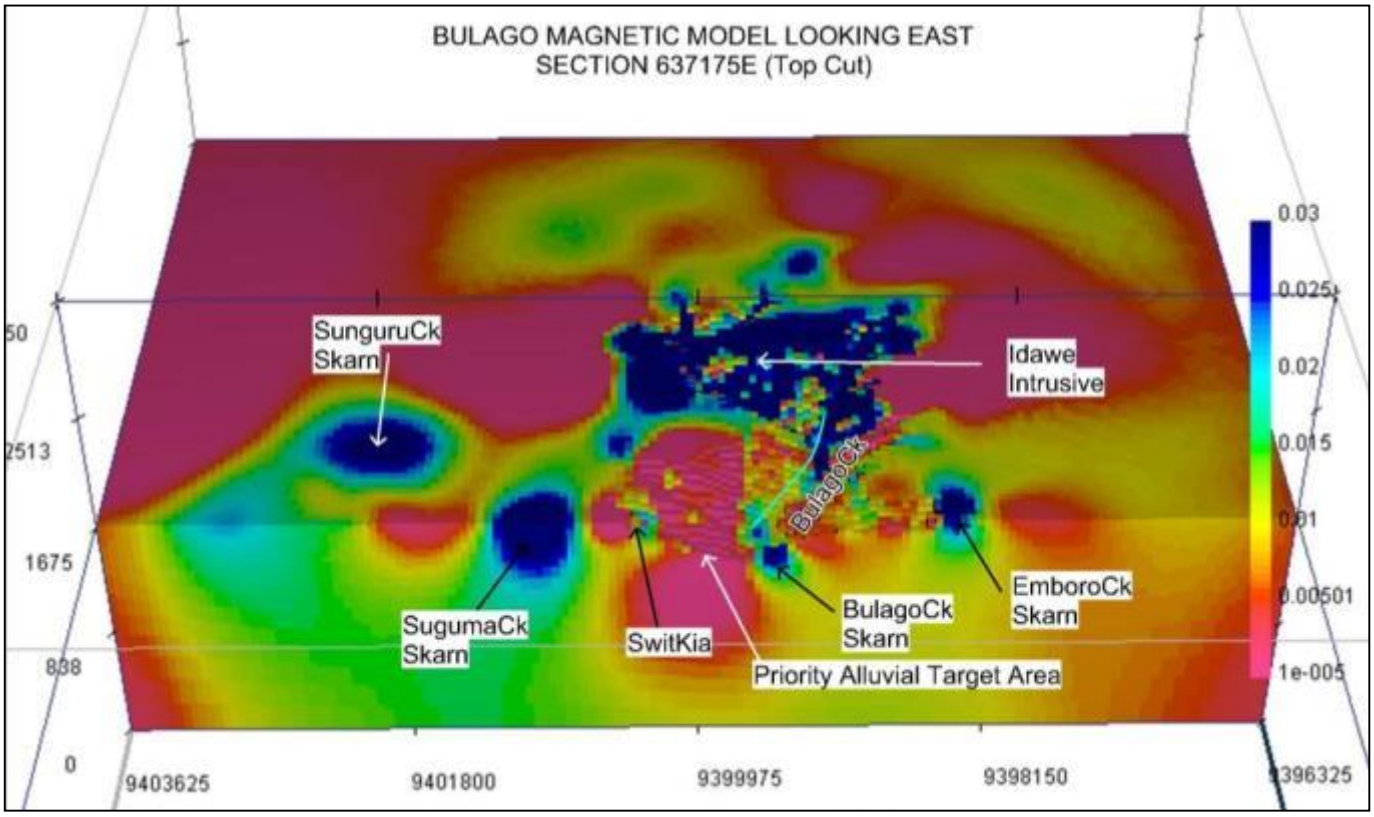


The Bulago River is associated with a weaker magnetic (0.016SI) anomaly caused by the erosion of magnetite from the Idawe intrusive complex at the upper reaches of the river.

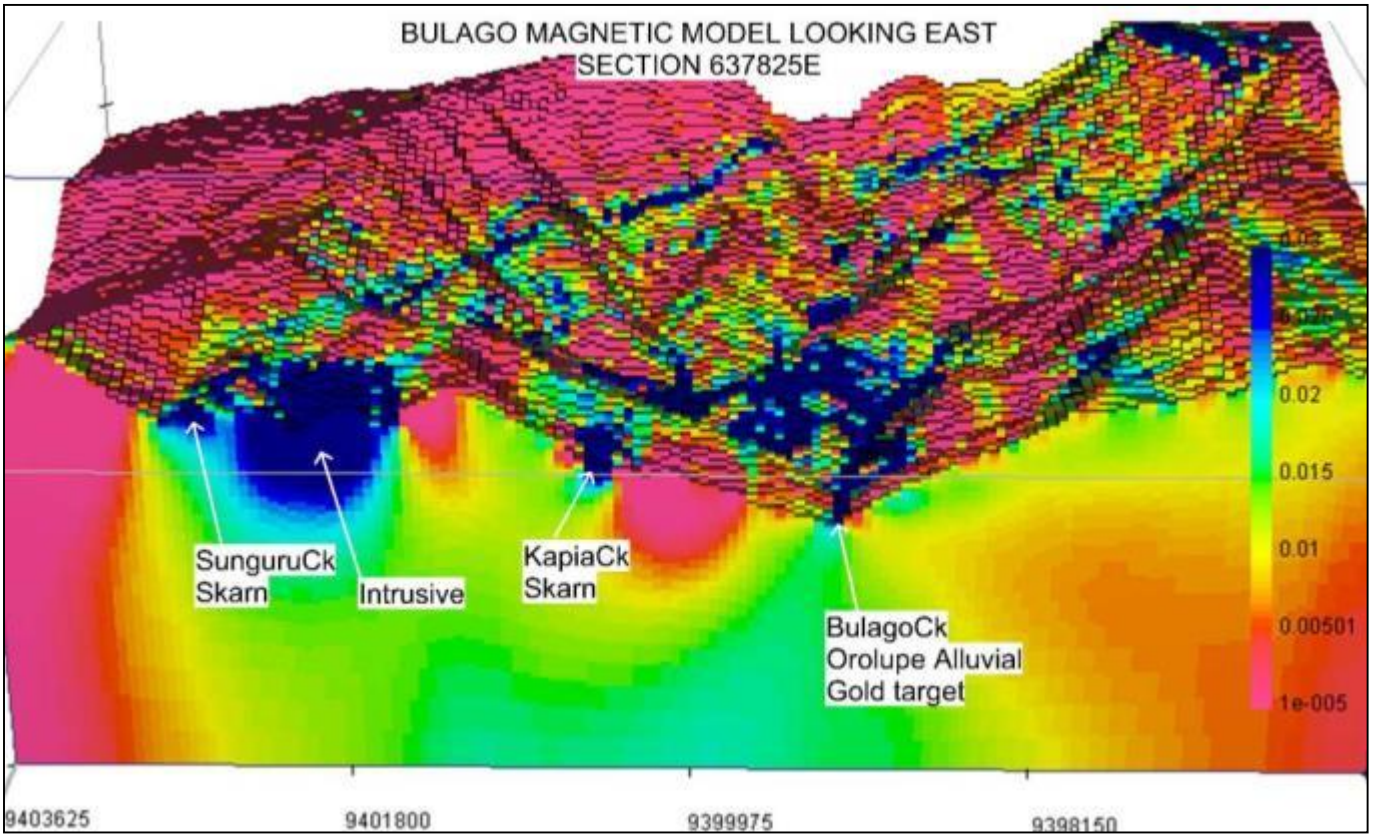
The Swit Kai prospect mineralisation is associated with the contact of the Suguma Ck skarn/intrusive target associated with a north dipping structure.



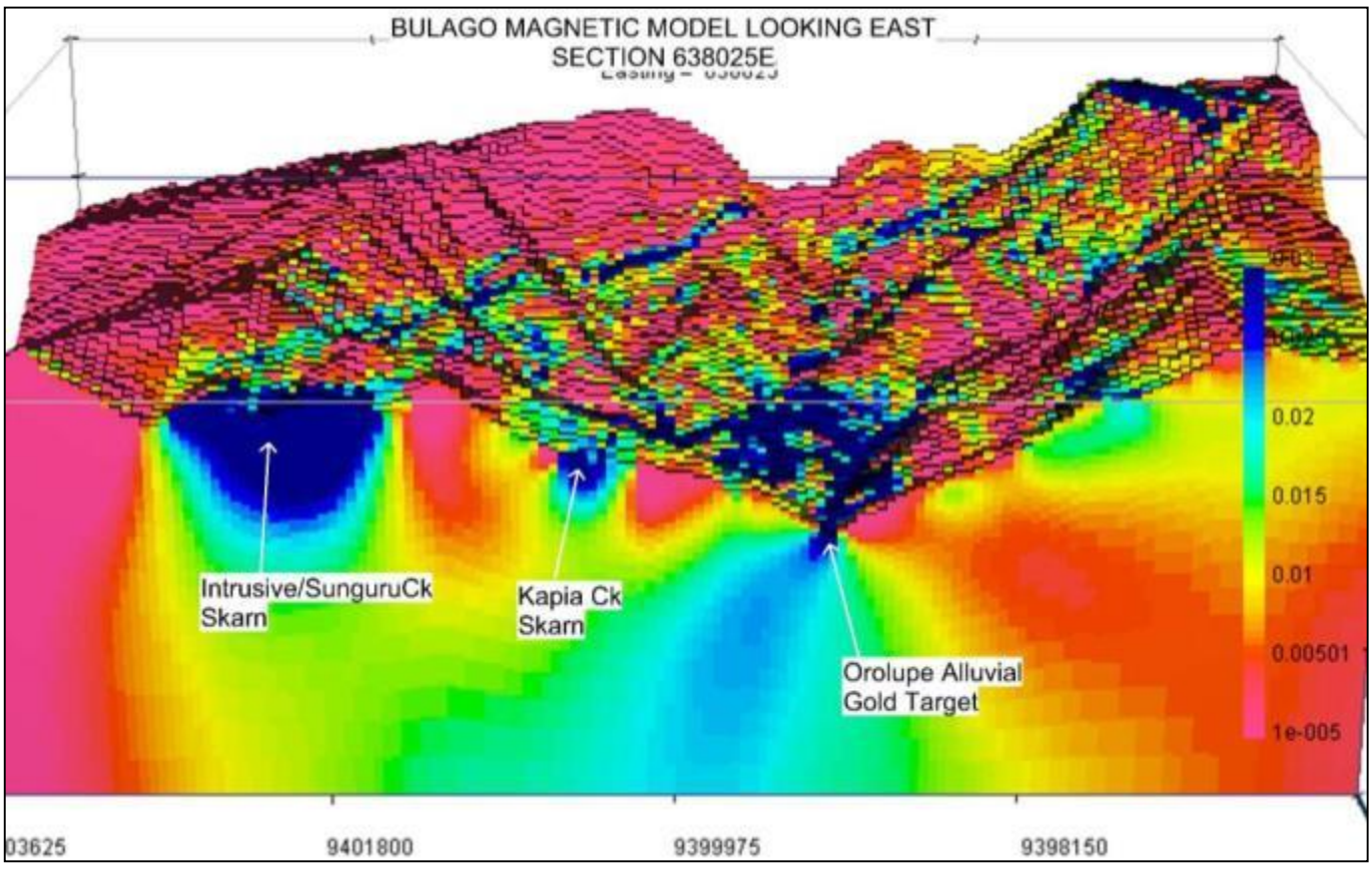
The Swit Kai gold mineralisation is associated with a structure dipping north towards the magnetic (0.062SI) Suguma Ck skarn/intrusive target. The Suguma Ck anomaly is itself structurally controlled by a northwest-southeast trending structure at 300m depth. The Suguma Fault (Figure 2) may have been a pathway for hydrothermal fluids migrating from the larger magnetic Idawe intrusive complex.



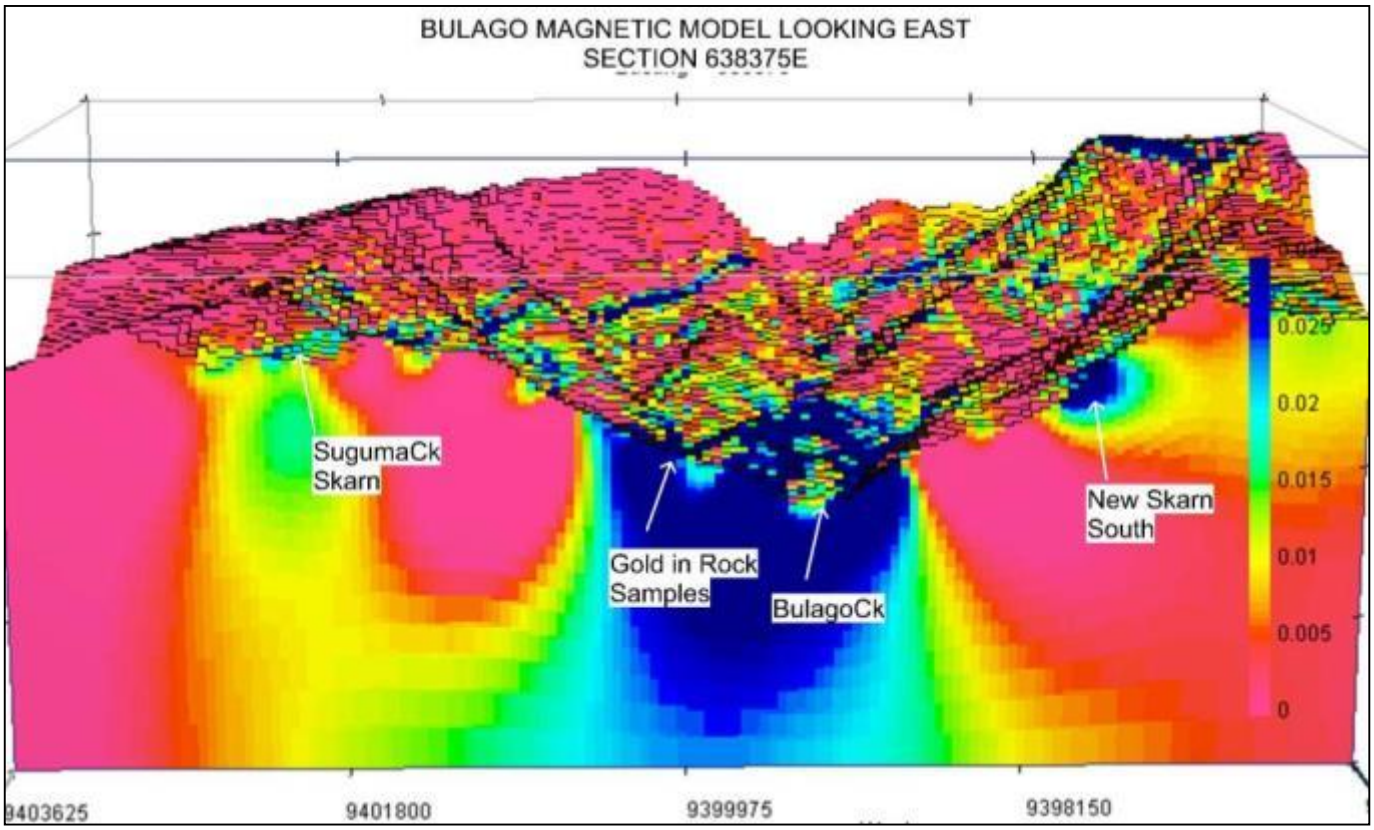
The Suguma Fault occurs as a magnetic lineament between the Suguma Ck skarn and Idawe Intrusive. The magnetic (0.044SI) Bulago Ck skarn is located 200m south of the river/creek. The lower priority Emboro Creek skarn (0.04SI) is 1200m south of Bulago River. The area along Suguma Creek downstream from Swit Kai is a high priority alluvial gold target at (637090e, 9399530n).



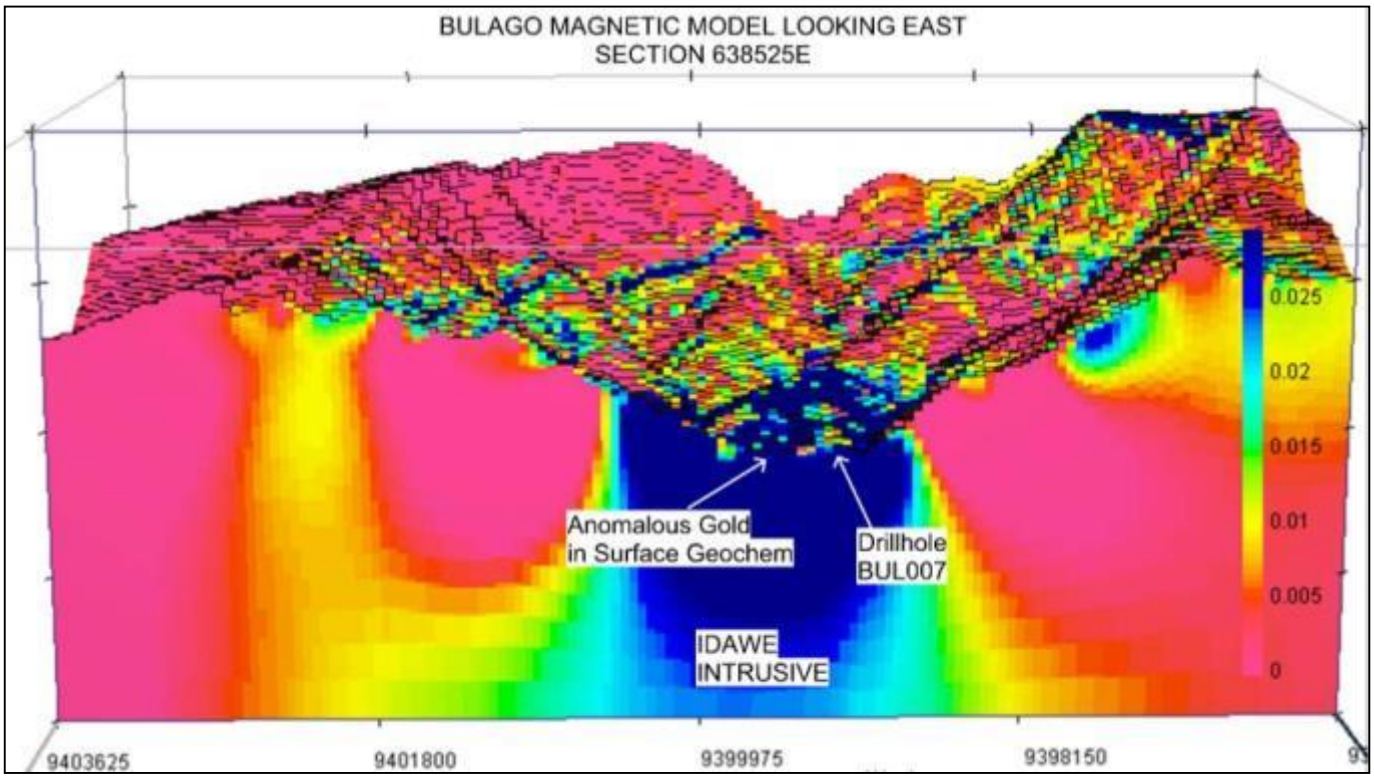
The Orolupe alluvial gold target occurs at 9399000N and also has accumulated magnetite along the creek bed. The Kapia Ck skarn target is quite magnetic (0.059SI) at the headwaters of Kapia Creek. The Sunguru Ck Skarn magnetic (0.037SI) target is more difficult to access and of lower priority. It is 500m north of a larger and more magnetic (0.074SI) intrusive related anomaly.



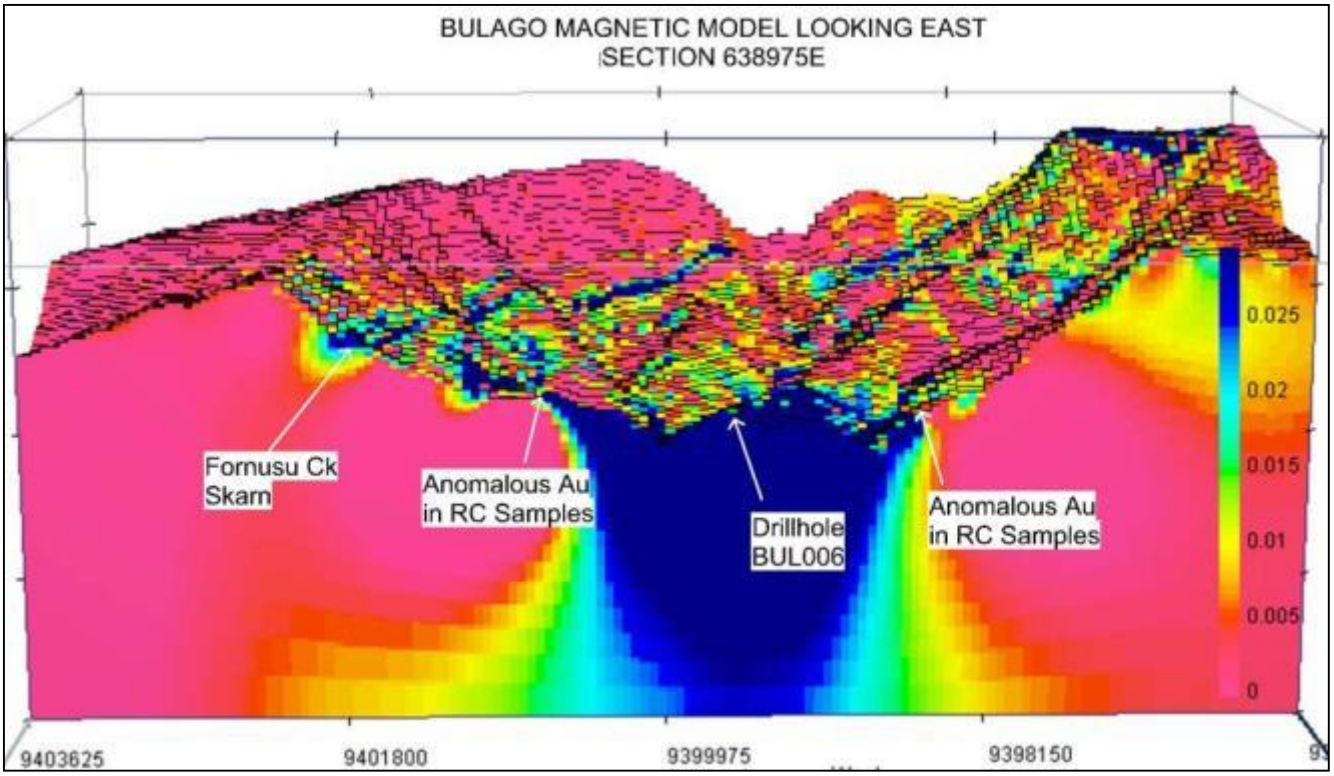
The Orolupe alluvial gold target is associated with increased magnetic alluvial material further upstream at the creek junction with Funutu Ck at 9399030N.



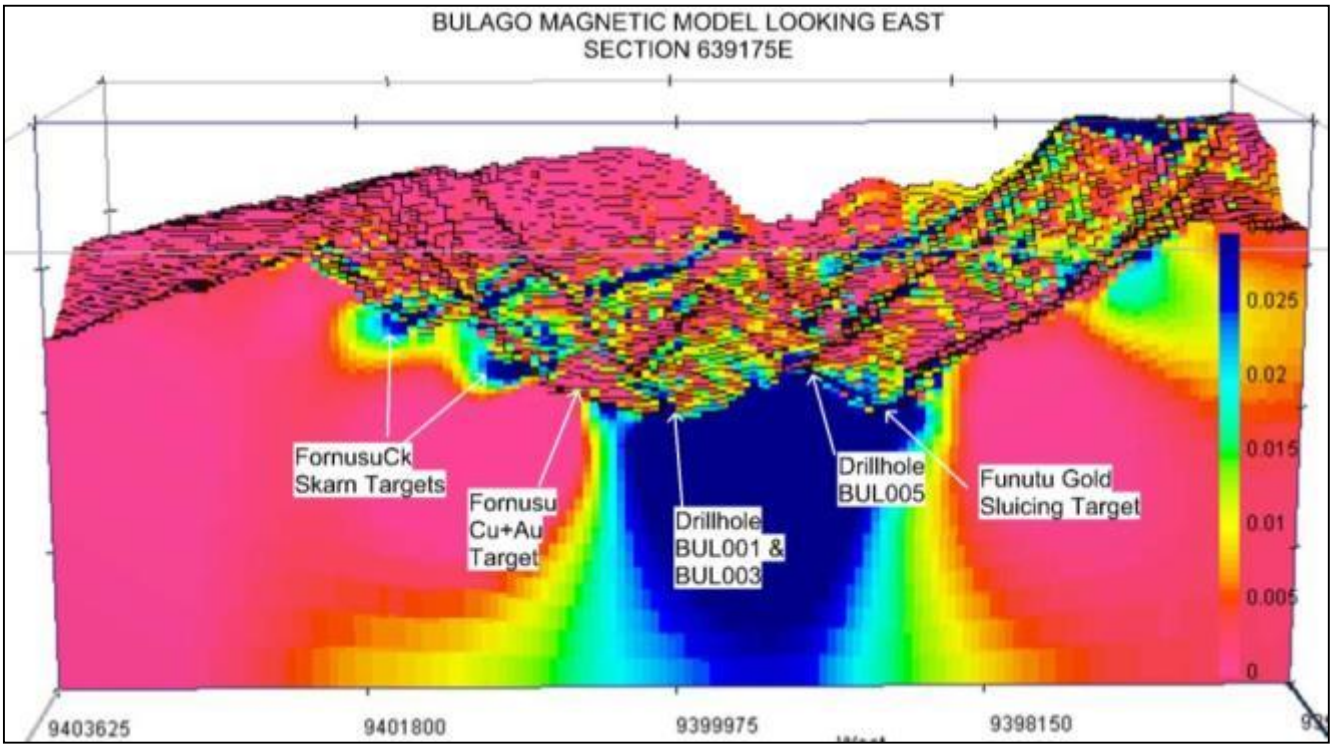
The Bulago River runs through the Idawe intrusive, following a structure. The river carries eroded magnetite downstream. A previously unmapped lower priority “new skarn south” target occurs 1500m south of Bulago River at 9397800N.



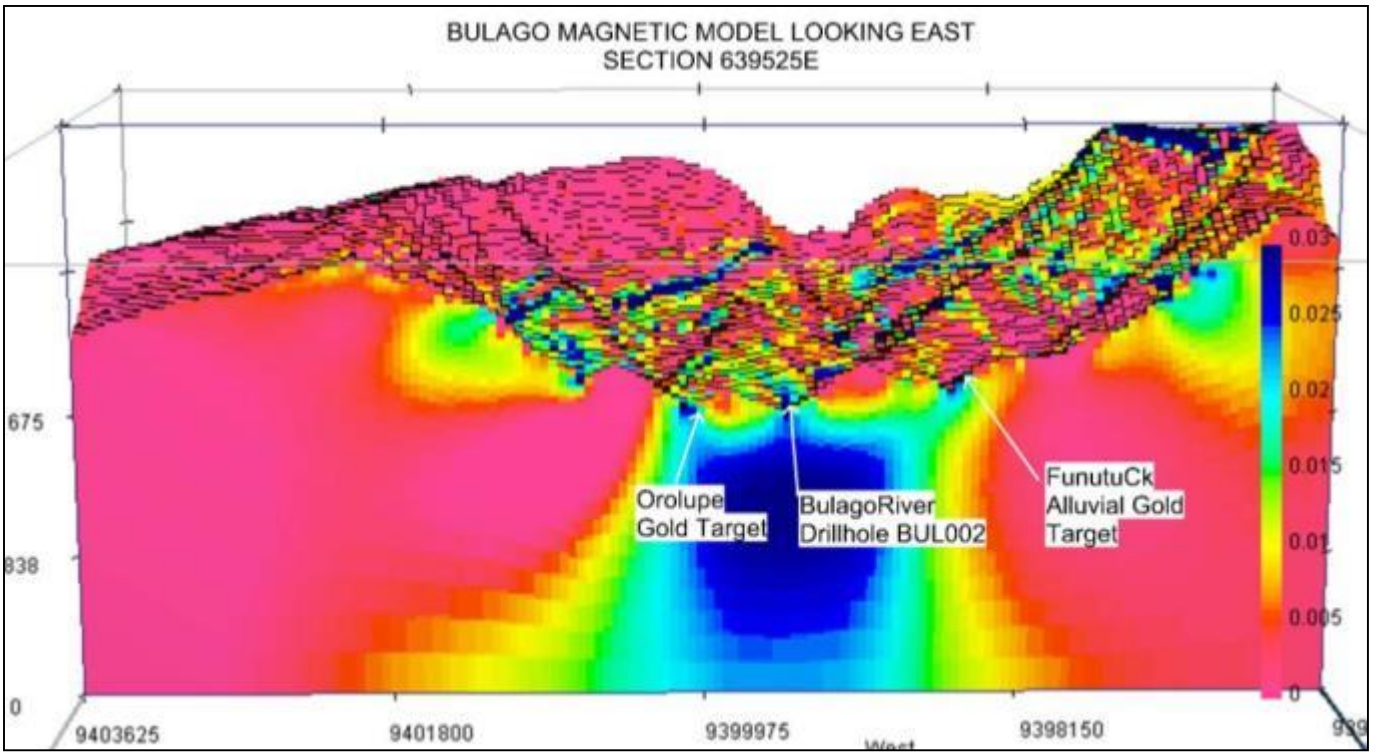
Anomalous gold in surface geochemistry and within drillhole BUL007 occurs within the magnetic Idawe intrusive complex. BUL007 intersected significant molybdenum and copper mineralisation towards the bottom of the hole.



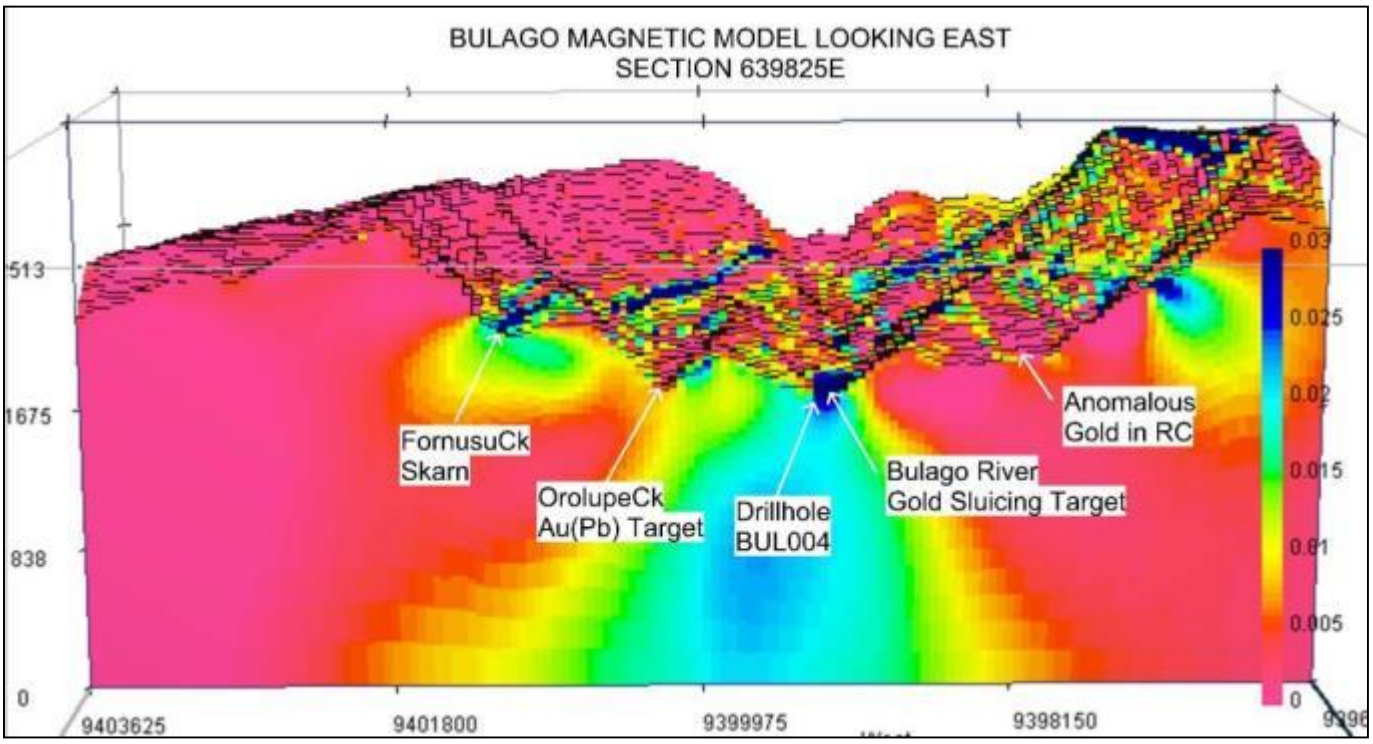
The magnetic Fornusu Ck skarn is part of the 5km long horizontal magnetic bedding (skarn) beneath the Darai Limestone. Anomalous gold occurs in the southern and northern margins of the Idawe intrusive. Drillhole BUL006 was drilled in the centre of the Idawe magnetic (0.057 SI) intrusive on a topographic ridge. Significant amounts of magnetite were intersected throughout the hole with narrow intersections of gold mineralisation including 1.6m at 2 g/t from 83.9m depth and 1.5m at 3.19g/t from 20.5m depth.



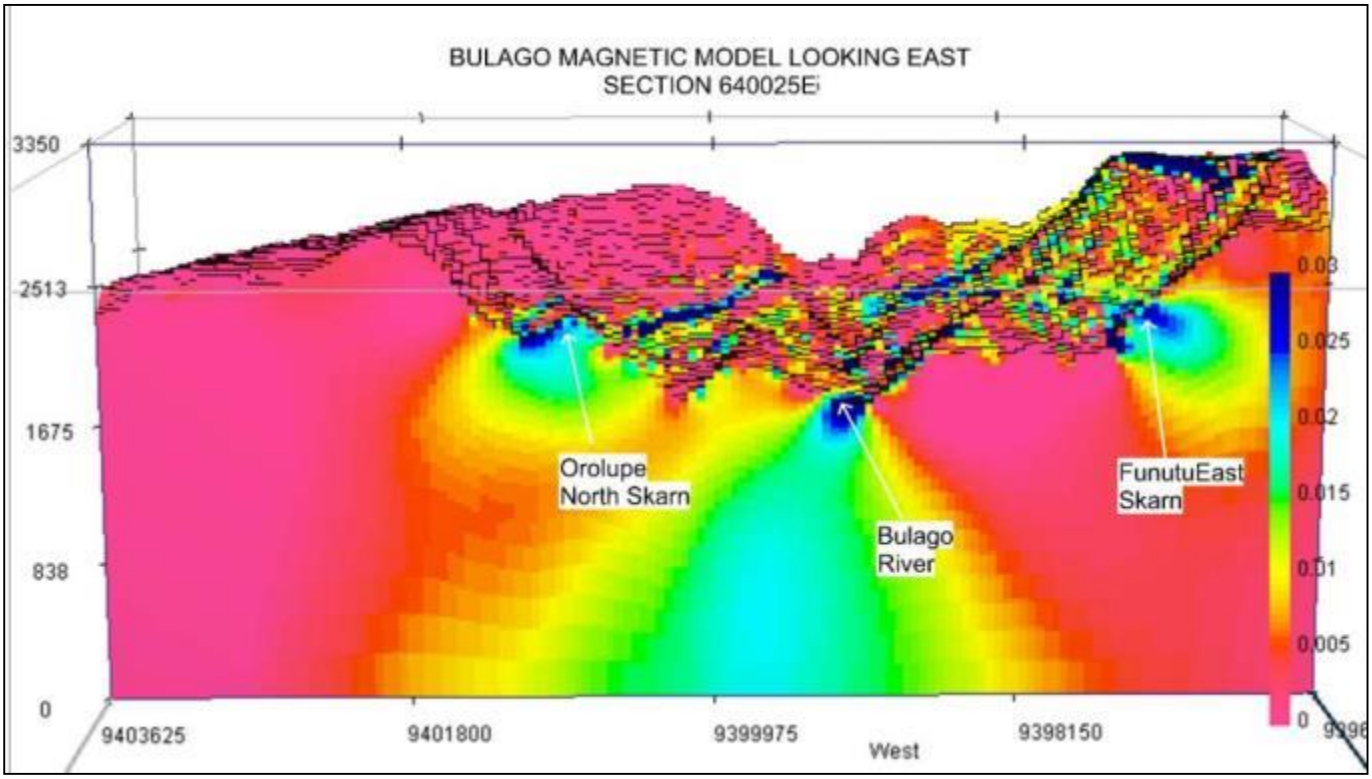
The Fornusu copper and gold geochemical target occurs on the northern margins of the magnetic Idawe intrusive complex. The Funutu Creek alluvial target (9398570N) is downstream of gold anomalous surface samples but its difficulty of access makes it a lower priority target. Drillhole BUL001 intersected 124m at 0.13% Cu from 119m depth and 1.8m at 128ppm Mo from 113m depth within k-feldspar altered monzodiorite. BUL003 intersected 8m of 0.11% Cu with Mo up to 2m at 113ppm from 134m depth within altered monzodiorite. Increased magnetic susceptibilities confirm the presence of magnetite towards the bottom of the hole within magnetic monzodiorite.



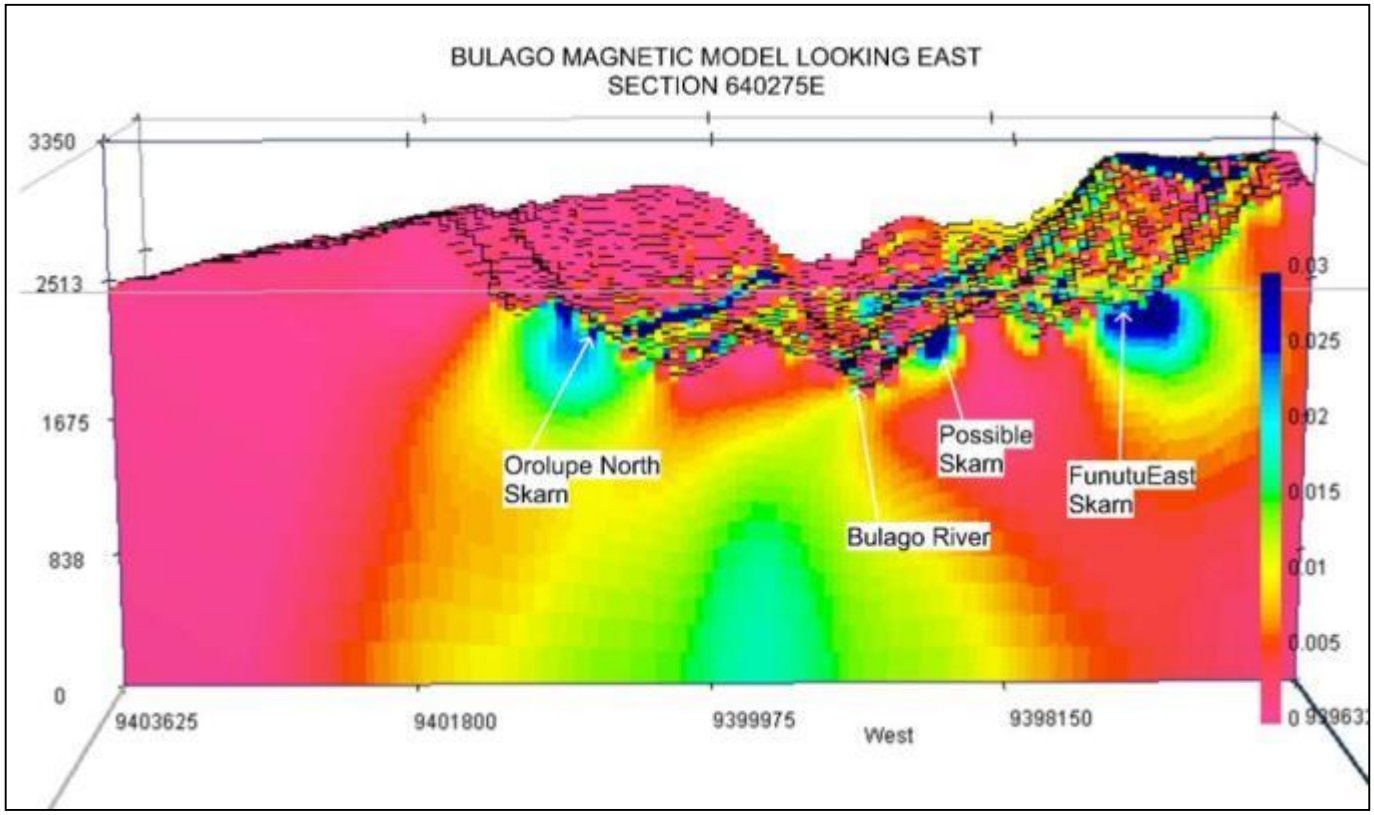
The Idawe magnetic (monzodiorite) intrusive is approximately 1500 to 1800m in diameter. Drillhole BUL002 was drilled within the Bulago River and intersected weak copper and molybdenum mineralisation within monzodiorite and feldspar porphyry. The Orolupe Creek gold geochemical target occurs on the northern margins of the Idawe intrusive complex along Orolupe Creek.



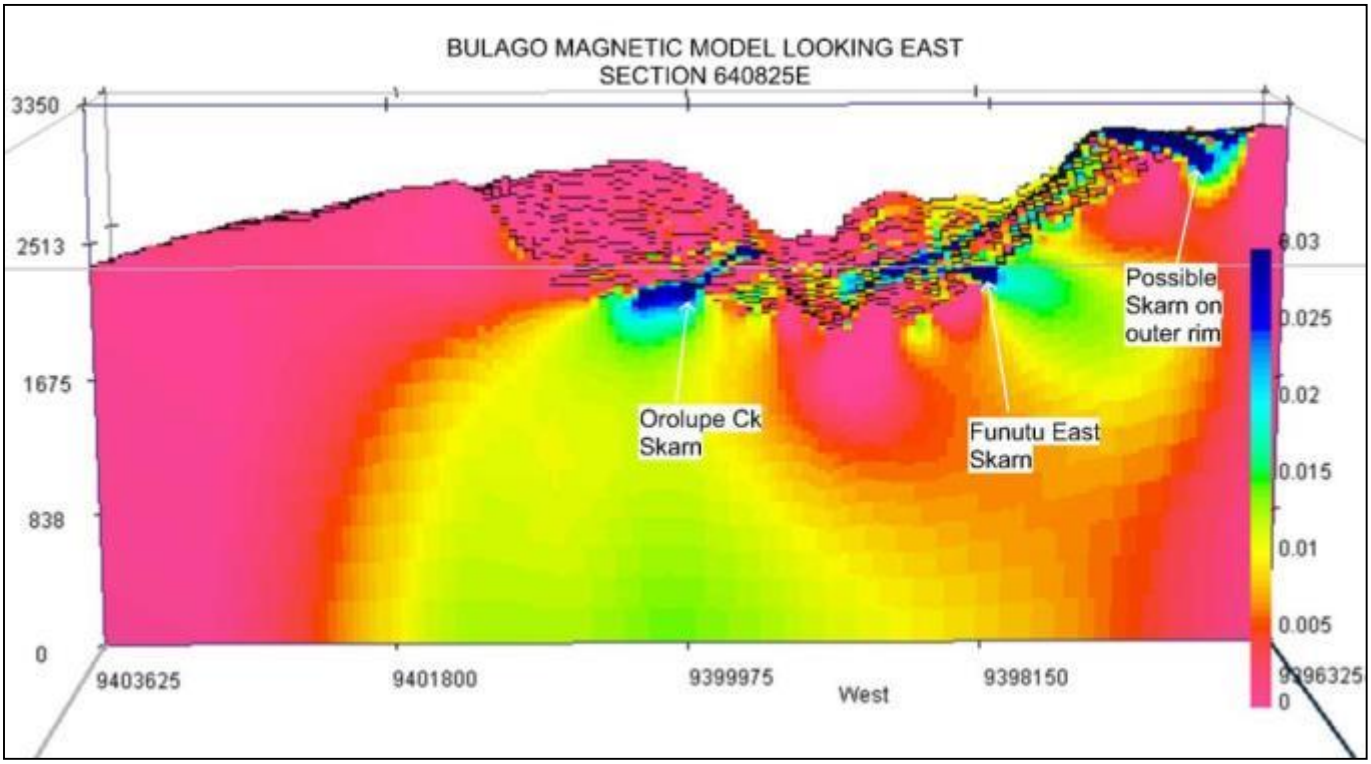
Drillhole BUL004 was drilled within the magnetic (0.057SI) Bulago River gold sluicing target area, intersecting 1.5m grading 1.22 g/t Au at 80m depth. Copper values increased as alteration increased towards the bottom of the hole.



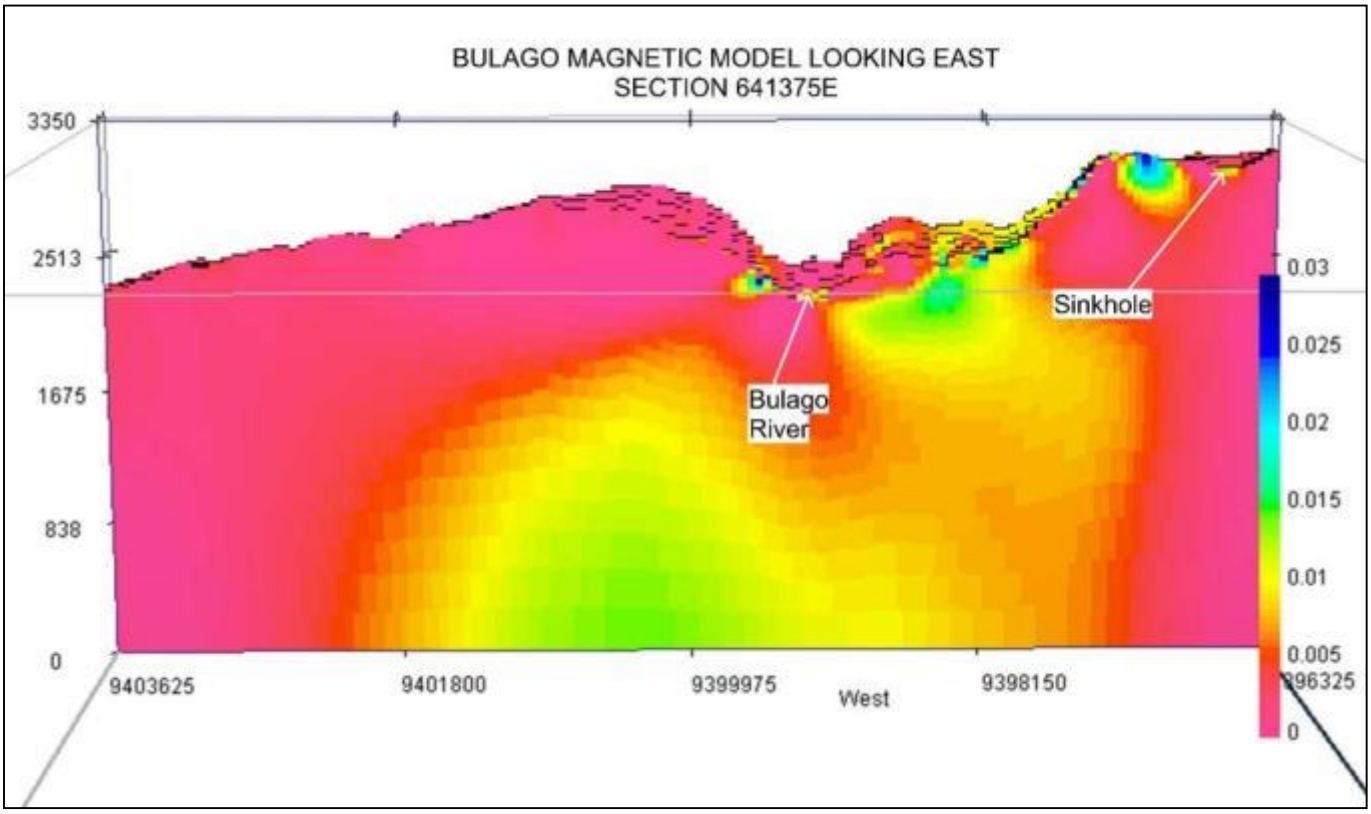
The magnetic (0.03SI) Orolupe North Skarn target is a lower priority target area due to its difficulty of access. The Bulago River magnetic (0.047SI) anomaly may be related to an intrusive event. The Funutu East Skarn is a magnetic (0.031SI) target of low priority due to its difficult accessibility.



As expected, the Bulago River upstream of the Idawe Intrusive complex does not contain alluvial magnetite. A possible magnetic (0.044SI) skarn target is evident 550m south of the Bulago River.



An additional possible magnetic (0.052SI) skarn target is evident on the outer part of the Bulago Valley Rim at 9396853E. Two outer skarn targets “Orolupe Ck” and “Funutu East” are still visible as magnetic anomalies in the upper reaches of the Bulago River and Orolupe Creek.



A moderate magnetic (0.014SI) anomaly related to a sink hole occurs at 9396600N, 630m beyond the outer Valley Rim and within Darai Limestone.

Conclusion

There are structural controls evident in the magnetic data at various depths, particularly since the central "Heat Engine" of the Idawe Intrusive contains significant magnetite that can be tracked with the movement of hydrothermal fluids and more importantly gold and copper mineralisation.

The Swit Kai gold zone appears to be controlled at depth by a north dipping structure which is in turn connected to the magnetic Suguma Ck skarn target. This skarn target is connected through the Suguma Fault to the Idawe intrusive.

Gold mineralisation in surface and drillhole geochemistry occurs along the margins of the Idawe intrusive which may be a diagnostic indicator for locating mineral deposits.

Along the contact with Darai Limestone at the headwaters of Bulago Valley, at least 7 to 9 skarn-like magnetic targets are identified in a 2.5km radius halo. These targets are more difficult to access than the additional six magnetic anomalies of interest occurring within the lower reaches of Bulago Valley.

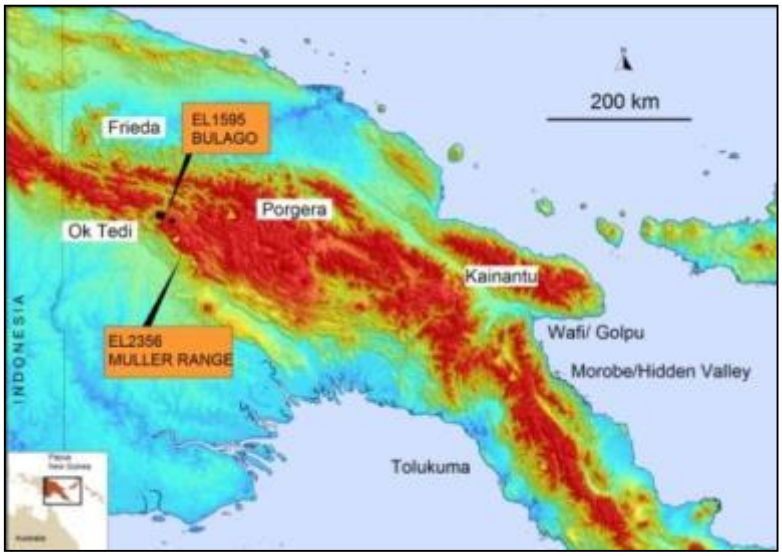
COPPER AND GOLD EXPLORATION AT EL 2356 - MULLER RANGE

PAPUA NEW GUINEA

By: Peter McNeil M.Sc., July 2016

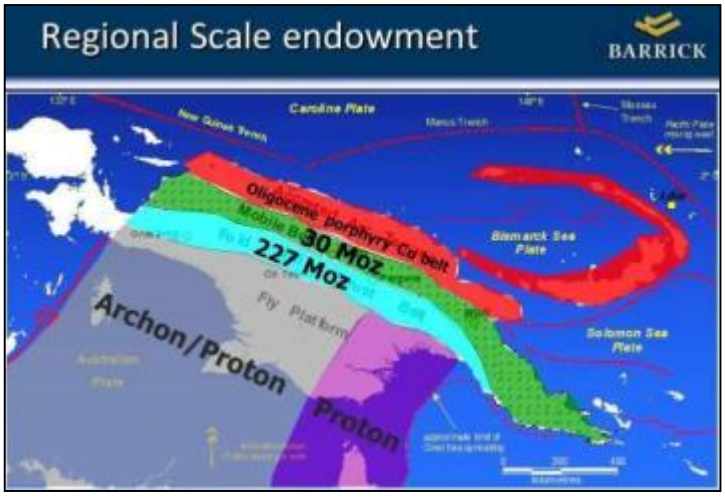
Frontier is targeting intrusive/ epithermal related gold deposits and copper- gold -molybdenum porphyries in the Papuan Fold Belt on the geologically young and highly prospective southern fall of the mountainous spine of PNG. Frontier owns the Bulago and along strike Muller Exploration Licences plus all required equipment to run its own exploration programs, including 4 drill rigs, bulldozers, crawlers and trucks.

The Fold Belt contains the Ok Tedi porphyry copper-gold Mine (located 80km WNW), Porgera intrusive/ epithermal related gold Mine (120km east) and Kili Teke porphyry copper-gold Deposit (50km east). The giant Grasberg porphyry copper-gold +skarns is in this same zone in West Papua.



Drilling is strongly warranted and exploration to capitalise on the increased US dollar gold price and leveraged Australian dollar - PNG Kina will include drilling the Tingi and Baia porphyry targets.

The EL is now being reduced to 3 non-contiguous blocks with 56 sub-blocks covering 187Km^2, Muller EL is located in the highly geologically Prospective Fold/Thrust Belt of PNG, along strike from the Ok Tedi Mine and Frontier's Bulago Project. The areas are relatively close to infrastructure such as the Hides Power Station and roads.



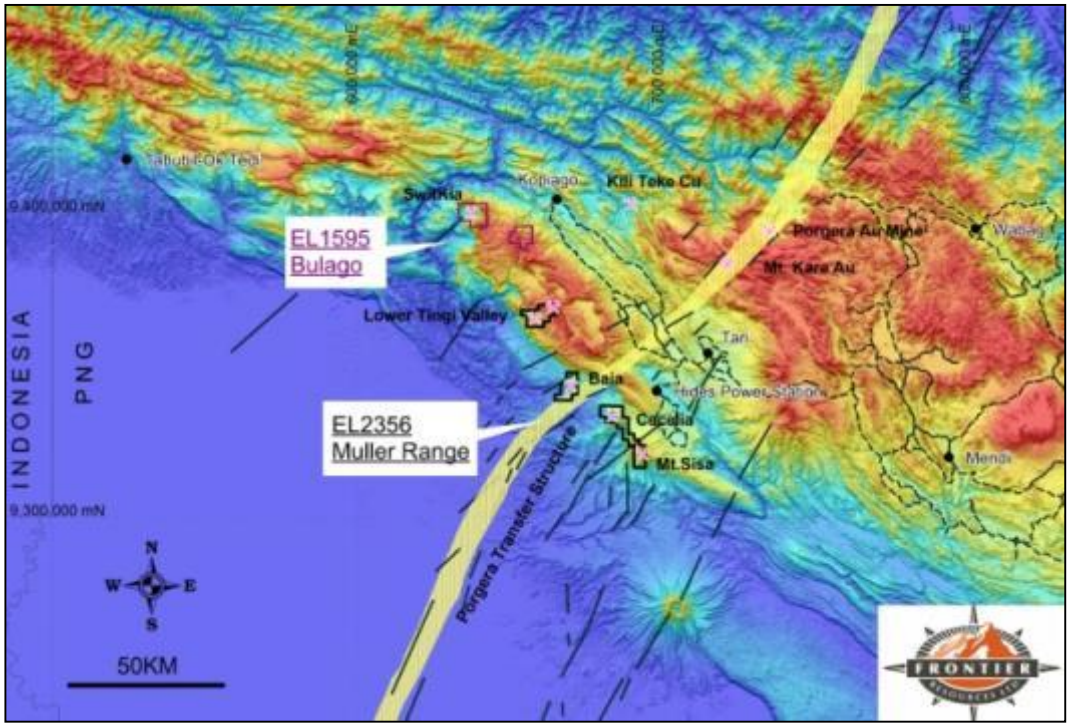
The primary targets are shallow buried porphyry copper- molybdenum- gold mineralisation, higher grade skarns and epithermal gold.

The EL contains (NW to SE):

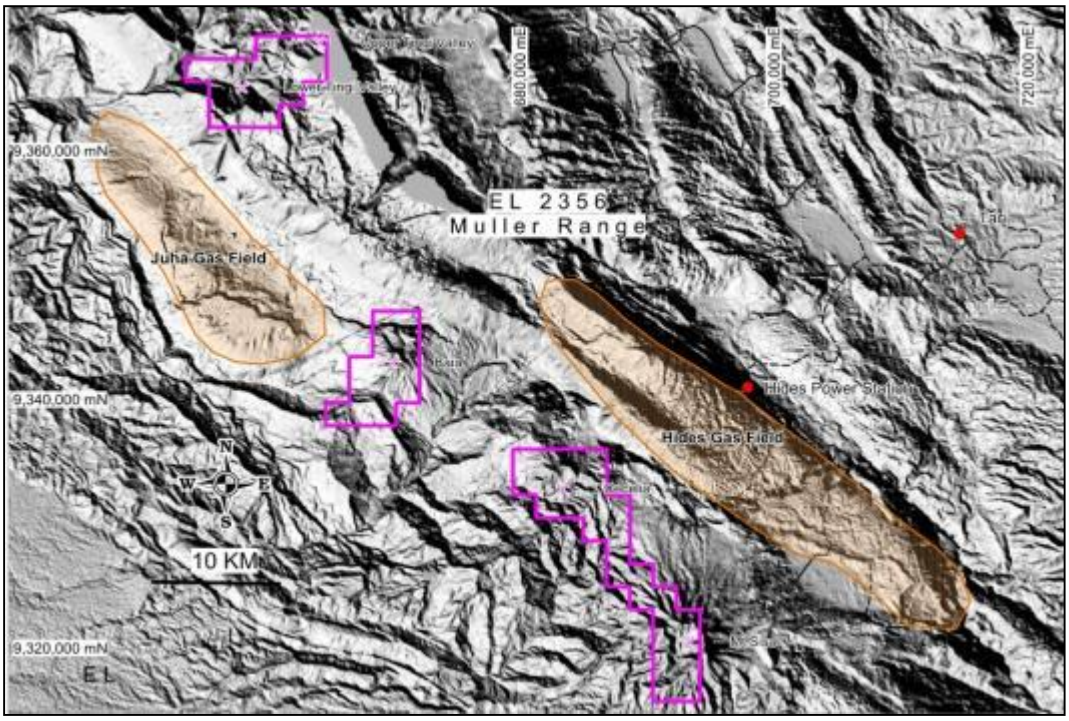
- Two known drill ready porphyry occurrences at Tingi and Baia (never drilled).
- A possible high sulphidation/ intrusive related gold Prospect, with a possible buried porphyry copper-gold-molybdenum target at Cecilia River.
- Copper in stream anomalies in the structural zone to/at the Mt Sisa volcanic centre.

The Tingi Intrusive Complex is exposed over a 4 sq.km area making it a significant sized porphyry intrusive complex. Tingi is strikingly similar in tectonic setting, size, geology and mineralisation to the Ok Tedi porphyry copper-gold deposit. The main difference is the level of erosion, with Tingi being less eroded than Ok Tedi and therefore almost totally preserved.

Mineralisation is described as structurally controlled porphyry copper -gold mineralisation, marginal lead -zinc skarn with associated copper –gold - silver anomalism and low sulphidation quartz-sulphide gold + copper style veins. Better copper-gold mineralisation generally occurs at the upper margins of porphyry intrusions and within the adjacent host rocks, particularly where breccias provide permeability for the migration of mineralising fluids.



Biotite hornfels cap some intrusions and contact breccias are recognised. The Bougainville (Panguna) copper -gold porphyry has breccias formed within a barely unroofed apophysis on the margin of a larger intrusion and as such, the breccias at Tingi represent excellent exploration targets.



Historic exploration results at Tingi include:

- Strong gold in soil anomalies (including 90m of 2.14 g/t gold to a high of 6.09 g/t gold), plus strong lead-zinc ridge soil anomalies (including 390m of 0.17% lead + 0.33% zinc) on the northern half of the main target, reflecting stratabound base metal skarn mineralisation along the base of the Darai Limestone. The tropical setting may have leached copper from the surficial soils and rocks and provided low copper assay results.
- A 250m x 200m soil–rock-chip anomaly (>300 ppm copper and >0.1 g/t gold) was delineated coincident with phyllic-altered diorite.
- Gold assays from float rock include 30 g/t gold, 12 g/t gold and 4.9 g/t gold.
- Outcrop rock grab samples include 1.1g/t gold + 0.26% copper + 0.29% lead + 8.8% zinc), 3.72g/t gold + 1.55% zinc + 0.53 g/t lead.
- Pyrite altered quartzite wall rocks had assays to 0.97 g/t gold + 58 g/t silver + 0.24% copper, that probably represents low sulphidation epithermal quartz-sulphide gold + copper mineralisation that formed marginal to the porphyry copper-gold intrusions.

- Channel sampling along strike of Jerry's skarn (6m thick x 30m long + an additional 50m in gossan outcrop to the southwest) returned an average for 20 non-continuous outcrop channel samples of 1.18g/t gold. A total of 15 x 2m channel samples were taken with best results of 2m continuous chip sampling showing 28m of 0.78 g/t gold including 2m of 4.36g/t gold and 2m of 2.58g/t gold.
- 10m of polymetallic massive sulphide assayed 3.3 g/t gold + 0.12% copper + 0.8% lead+ 1.9% zinc, within potassically and phyllicly altered diorite, representing a feeder for the base metal skarn mineralisation.
- A 24m wide zone of copper averaged 0.085% copper within andesite porphyry, with up to 10% pyrite and minor chalcocite.
- A 3m channel sample of brecciated massive sulphide magnetite skarn at the andesite porphyry / Darai Limestone contact assayed 1.17 g/t gold + 33 g/t silver + 0.16% copper + 1.80% lead + 3.50% zinc.

The Baia Project is a >4 sq km porphyry system, with the correct geochemical, geological and structural characteristics that strongly warrants exploratory drilling.

- **Baia has a large copper - gold - molybdenum in soil anomaly and seven copper- molybdenum anomalous skarn targets that are defined by magnetic anomalies at the limestone /intrusive contact.**
- The project is located on the Porgera Mine - Mt Kare Transfer Structure which reputedly controls fracturing and mineralisation. It is about 50km south of Harmony's excellent Kili Teke porphyry copper -gold discovery.
- Copper in soil geochemistry demonstrates a distinct cohesive anomaly that is about 900m long north- south and about 600m wide east -west. There are three smaller, but still large, copper anomalies that are about 500m long and up to 200m wide, associated with skarns.
- Zinc and lead soil geochemistry at Baia demonstrates a typical zinc/ lead halo around a 1,000m diameter core to the porphyry copper system, which is approximately coincident with the outer margins of the copper anomaly. The zinc/ lead anomaly has a width of about 500m and an outer annulus diameter of about 2,200m.
- Dominant alteration is propylitic, with structurally controlled phyllic and patchy un-mineralised potassic.
- Regional airborne magnetics show peripheral magnetic anomalies related to intrusives. The prospect is located on a topographic high in a major ENE trending fault zone/ transfer structure (as per the OK Tedi Mine located to the WNW).

The Cecilia Prospect can be rapidly advanced to drill testing with additional exploration.

- **Cecelia requires substantial exploration to evaluate its epithermal gold prospectivity.**
- **The mineralised zone is about 2.5km long, initially being ENE gold-zinc-lead anomalism that transitions through an argillic alteration zone to copper molybdenum - arsenic anomalism (each being >1,000m long with argillic displaced to the south).**
- Cecilia has high sulphidation epithermal gold type advanced argillic alteration, with vuggy quartz - alunite-pyrophyllite, plus strong argillic and propylitic alteration, which has been covered by a recent agglomerate
- Stream sediment geochemistry >250ppm copper and altered rock chip samples returned 0.616g/t gold and 0.12 g/t gold + 710ppm copper.
- Intrusive outcrop up to 0.62% copper with chalcopyrite and bornite in the upper reaches of the Project area and altered granodiorite float of 0.18% copper.
- Pebble dykes are common, indicating a probable buried porphyry copper-gold-molybdenum target.

Despite its seemingly remote location, potential access to a possible mine is relatively good, with several options available to the area. The biggest plus is that it is located near the Hides Power Station and immediately adjacent to Esso/Oil Search's Juha Gas – Condensate field. When Juha is developed is of prime importance to a possible Tingi mine, in that a Topping Plant could be set up at Juha 3 to provide unlimited gas for a thermal power station, diesel fuel for mine operations, and possibly Jet A1 fuel for aircraft operations, plus better access.

DETAILS

Tingi Valley porphyry copper-gold and skarn Project

The Tingi Prospect is located on the border between the Western and Southern Highlands Provinces about 150 km south east of Ok Tedi. The EL area is drains via several major rivers such as the Nomad to the Strickland River and is very sparsely inhabited. The nearest road head is at Tari, about 50 km away. Access is better than at Bulago.

The name Tingi derives from the Huli word for 'bad smell'. There are strong sulphur seeps and hydrocarbon seeps along Tingi Creek. The smell of sulphur can be very strong and can be smelt from a helicopter flying near the creek.

The valley is uninhabited, due to its rugged and inhospitable nature. Ownership of the valley is shared between three clans from the Lavani Valley and the Sinali people from Topi village, 8km downstream from the main prospect. At present, there are two airstrips in/near the area, Suabi and Dahamo.

There are two possible routes for mobilisation of a drilling rig to Tingi. The equipment could be trucked to Tari via the Highlands (Okuk) Highway and then shuttled from Tari to Suabi by Twin Otter. The alternative is to ship the containers to Kiunga and to fly the rig from Kiunga to Dahamo. Bulk fuel is available at Kiunga and a bigger load can be lifted out of Kiunga at sea level than out of Tari at 5500ft, but the distance is further.

Geology

The area is covered by Mesozoic sediments (mudstone, siltstone, sandstone) overlain by early Tertiary limestone intruded by Tertiary–Pleistocene monzonite and diorite stocks. Within the prospect, several small diorite stocks and sill complexes intrude Darai Limestone and underlying Mesozoic sediments. Copper – gold mineralisation appears to be associated with these intrusive bodies.

The Tingi Valley Prospect is at the very roof of the intrusion complex and higher temperature copper regimes would be expected at depth. Gold is best developed with the sulphide/magnetite mineralisation that is associated with major NE-SW structures, with later N-S structures for localising mineralisation. A modern airborne magnetic/radiometric survey is recommended to help map structures and zones of potential mineralisation including skarn and porphyry related intrusives.

Historical Exploration

Petroleum companies, exploring the region prior to BP's search for porphyry copper in the 1970's, located a solitary rock float grading 20 g/t gold. In the late 1960's and early 70's, CRA Exploration and BP conducted regional stream geochemical sampling for porphyry copper–gold–molybdenum and located weak (up to 98ppm lead) anomalies in the vicinity of Tingi Valley.

In the early 1980's, BP located altered intrusive rocks in the headwaters of the Wai Dia river and following regional mapping located the Tingi Valley Prospect. They did not discover an exposed porphyry copper system but assayed some altered intrusive float sample that assaying 20 g/t gold.

Exploration PNG Pty Ltd carried out an inconclusive one-week field program in 1988 on the Tingi Valley area previous investigated by BP to evaluate its gold potential. It reported drainage gold anomalies and exposures of gold-mineralised altered intrusive rocks.

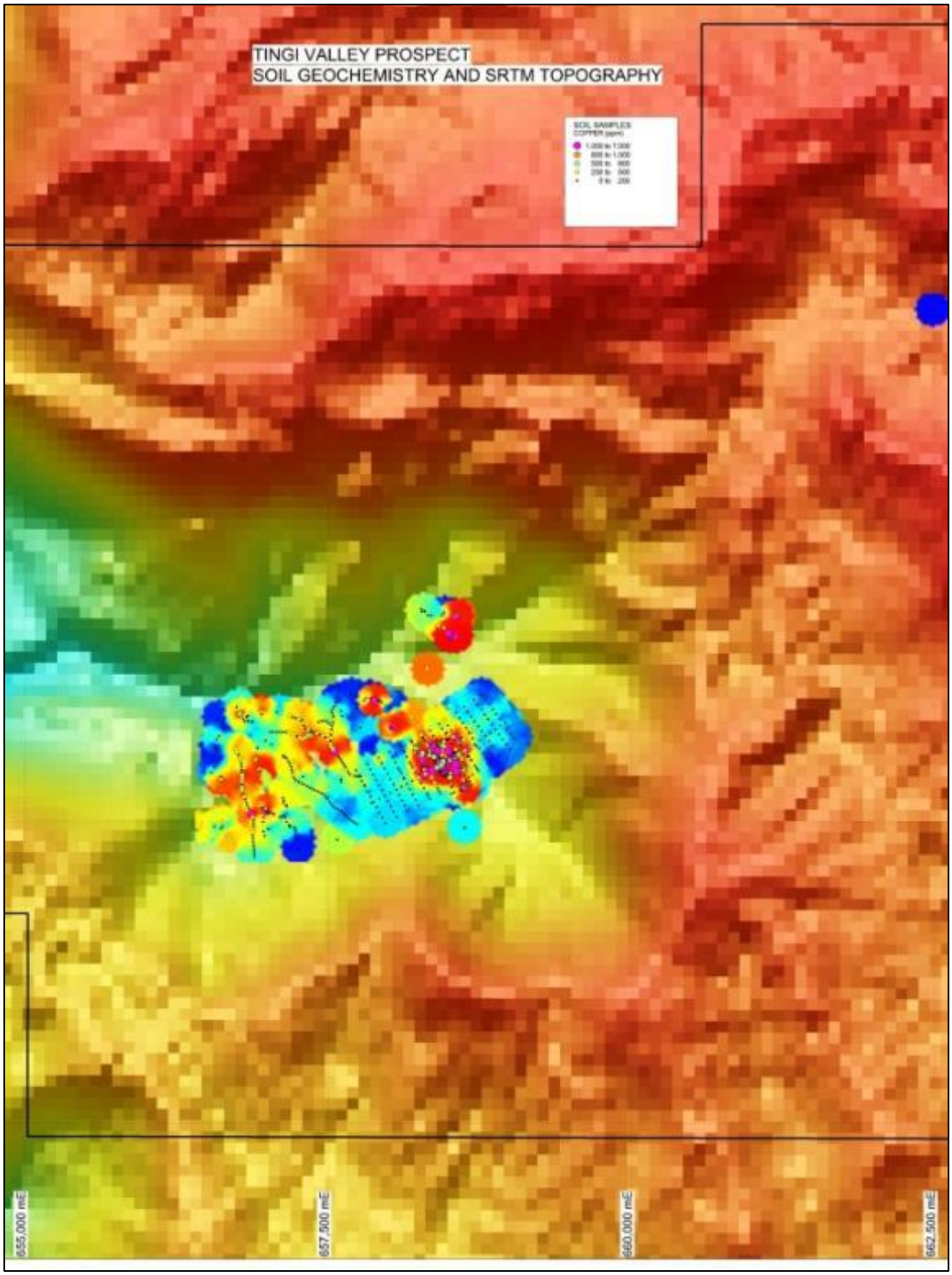
In 1991 Kennecott pegged this area to target copper gold porphyry style mineralisation. They acquired the open file high-level aeromagnetic data covering the area and image re-processed it. Three magnetic anomalies were identified in the Tingi Valley area and a fourth coincident with the Ku Stock about 15km to the northwest. The aeromagnetic and surface data suggested that two separate porphyry targets exist in the Tingi Area though both appeared buried beneath a cover of Darai Limestone or only locally exposed.

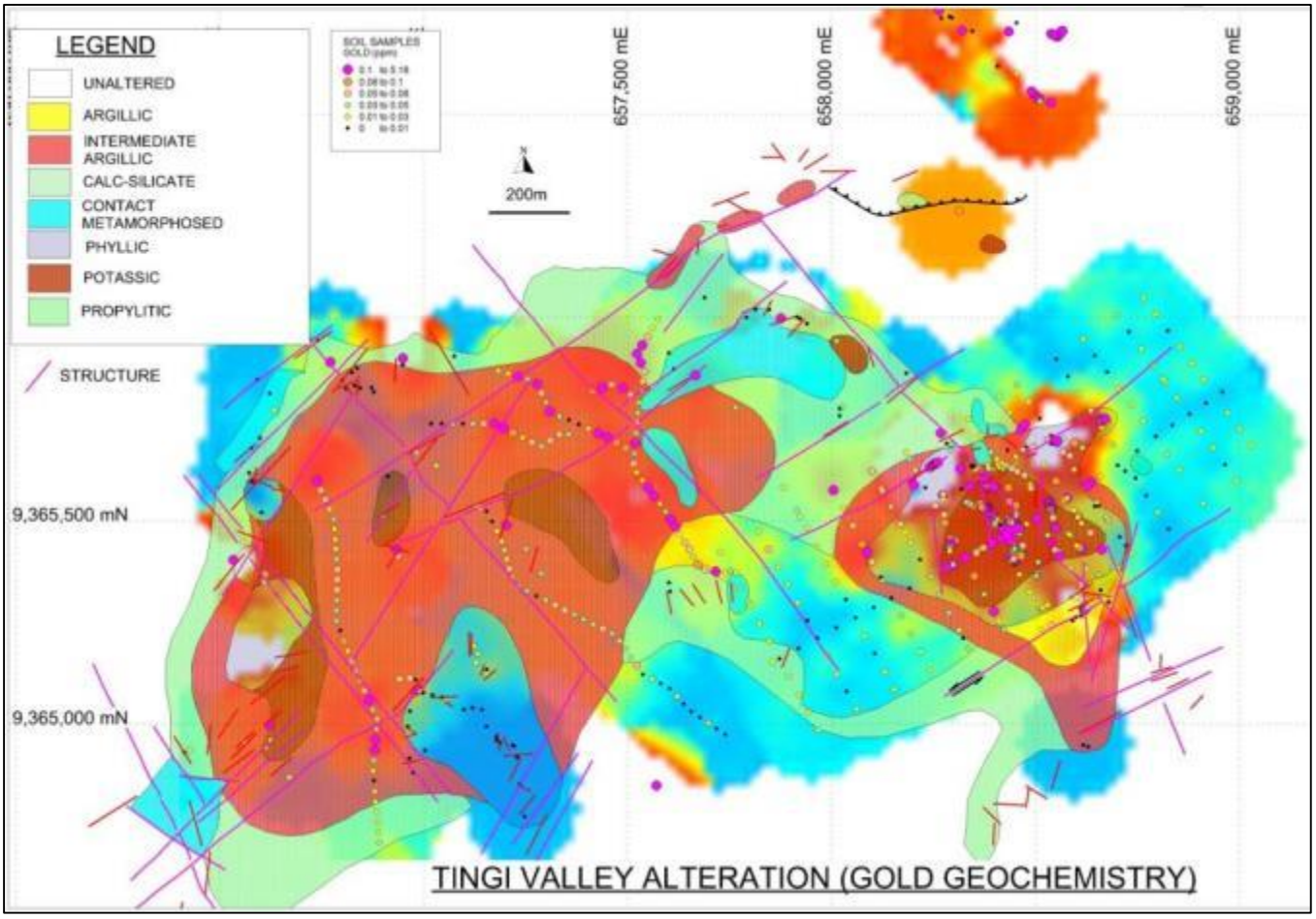
Kennecott completed two field programs. The first was a helicopter supported reconnaissance drainage sampling program in February 1992, which covered the entire tenement area. The techniques used were bulk sediment (-80# and BLEG) and panned concentrates. The second field program involved surface mapping in the Tingi Valley area during February-March 1992.

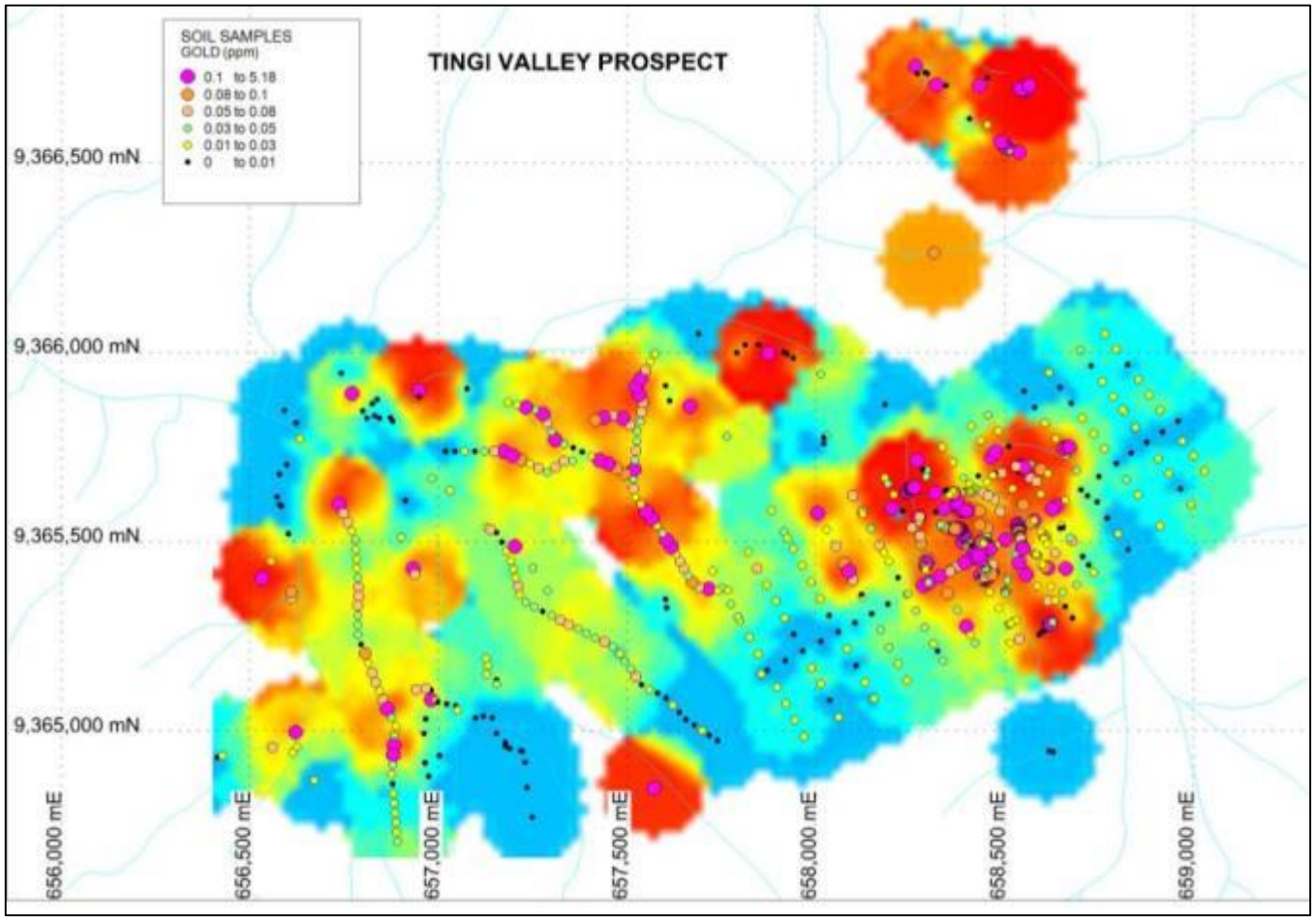
Kennecott delineated a 250m x 200m soil–rock-chip anomaly (>300 ppm copper and >0.1 g/t gold) coincident with phyllic-altered diorite. A 10m exposure of polymetallic massive sulphide enclosed within potassically and phyllicly altered diorite assayed 0.12% copper, 3.3 g/t gold and 0.8% lead and 1.9% zinc. Kennecott considered that this outcrop may represent a feeder for the base metal skarn mineralisation emanating from the mineralised diorite. Scattered throughout the area are spot gold assays from float of 4.9 g/t gold, 30 g/t gold, and 12 g/t gold. Strong lead-zinc ridge soil anomalies flank the northern half of the main target and reflect stratabound base metal skarn mineralisation along the base of the Darai Limestone. Kennecott withdrew from PNG for corporate reasons.

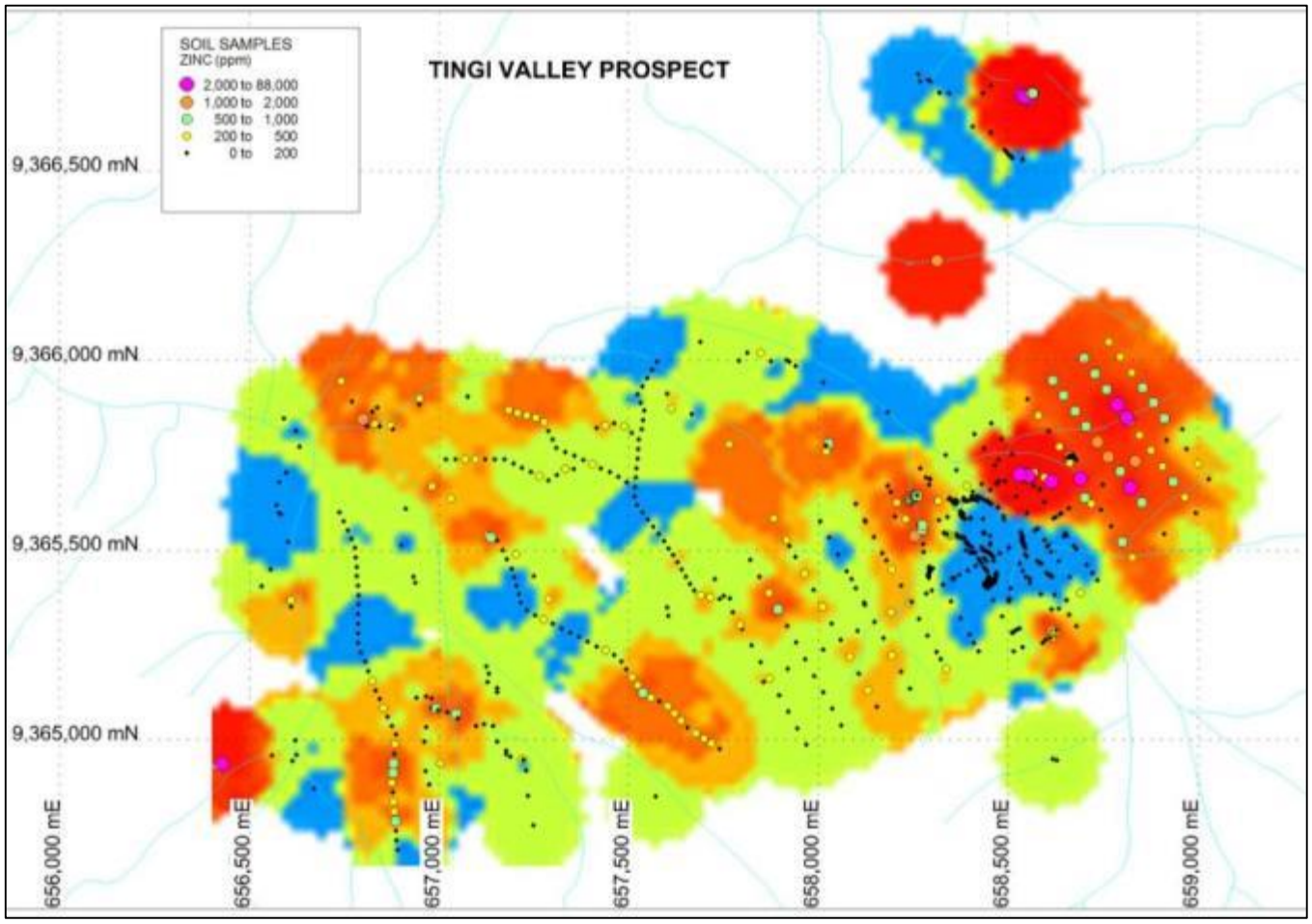
In 1996, Wantok Mining conducted detailed programme of mapping and trenching and shallow drilling of five Jacro drillholes totalling 34.01m, which was abandoned due to continuous equipment failure (this is not regarded as "drilling" as it did not achieve sufficient depth penetration. A total of 137 two-metre channel samples were collect from the trench, 90 additional rock chip and float samples and 17 petrological samples were also collected.

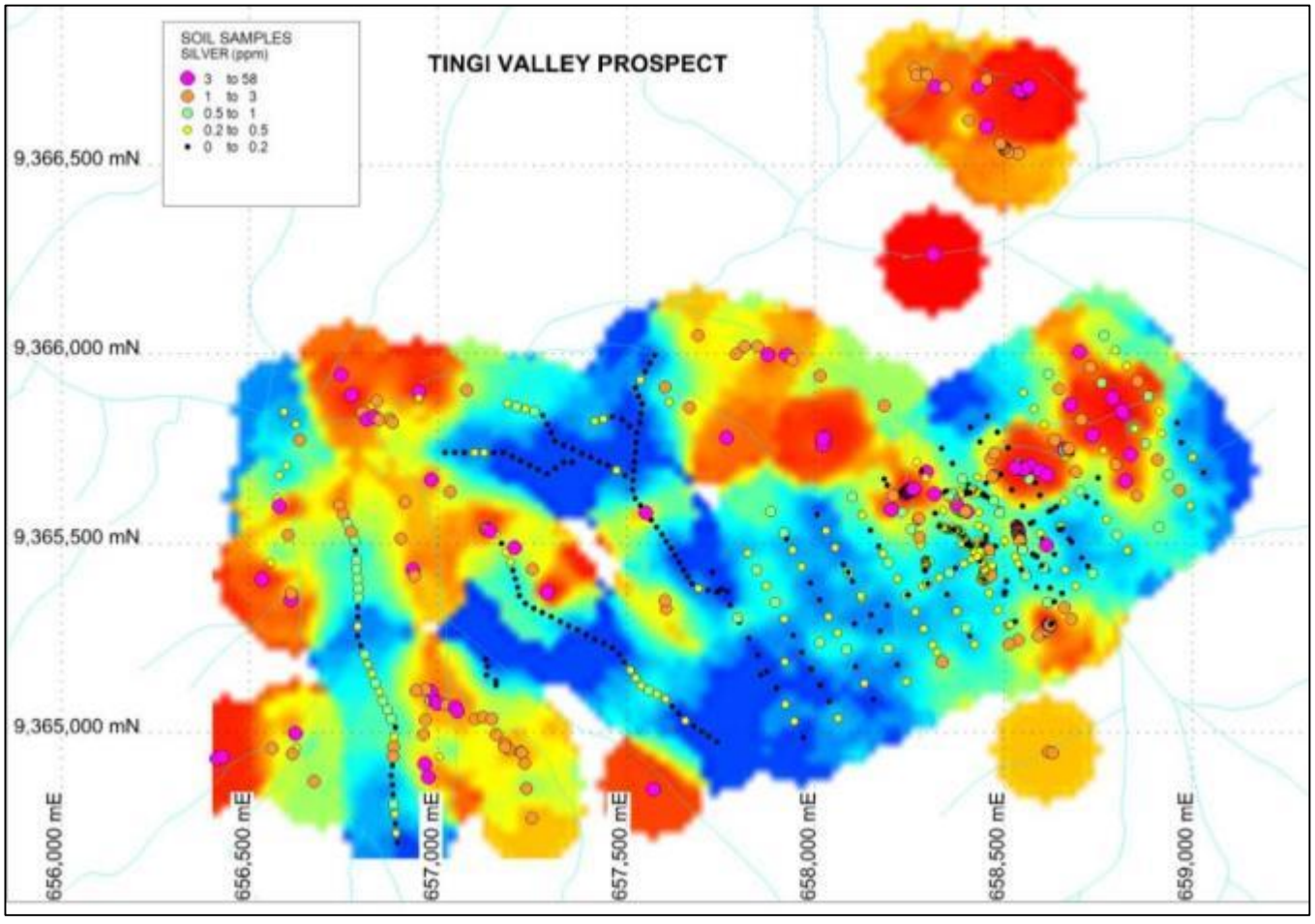
The two-metre channel sampling along Tingi Creek produced a 24m wide zone of anomalous copper averaging 853 ppm copper within andesite porphyry containing up to 10% pyrite and minor chalcocite. In Haro creek a 3m horizontal channel sample of brecciated massive sulphide magnetite skarn assayed 1.17 g/t gold, 1623 ppm copper 1.795 lead, 3.5% zinc and 33 g/t silver. This zone is at the contact between the andesite porphyry intrusion and the overlying Darai Limestone.

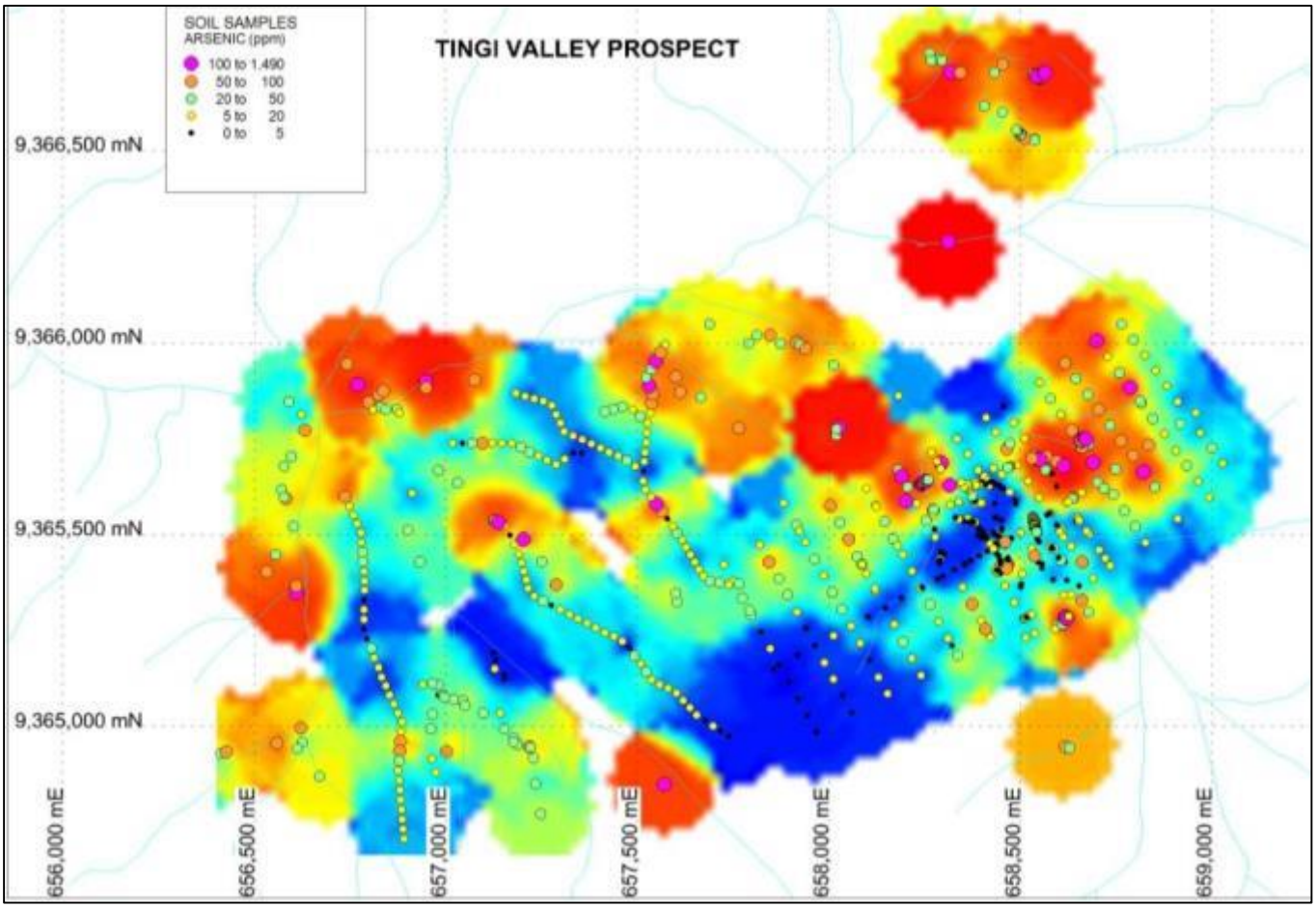


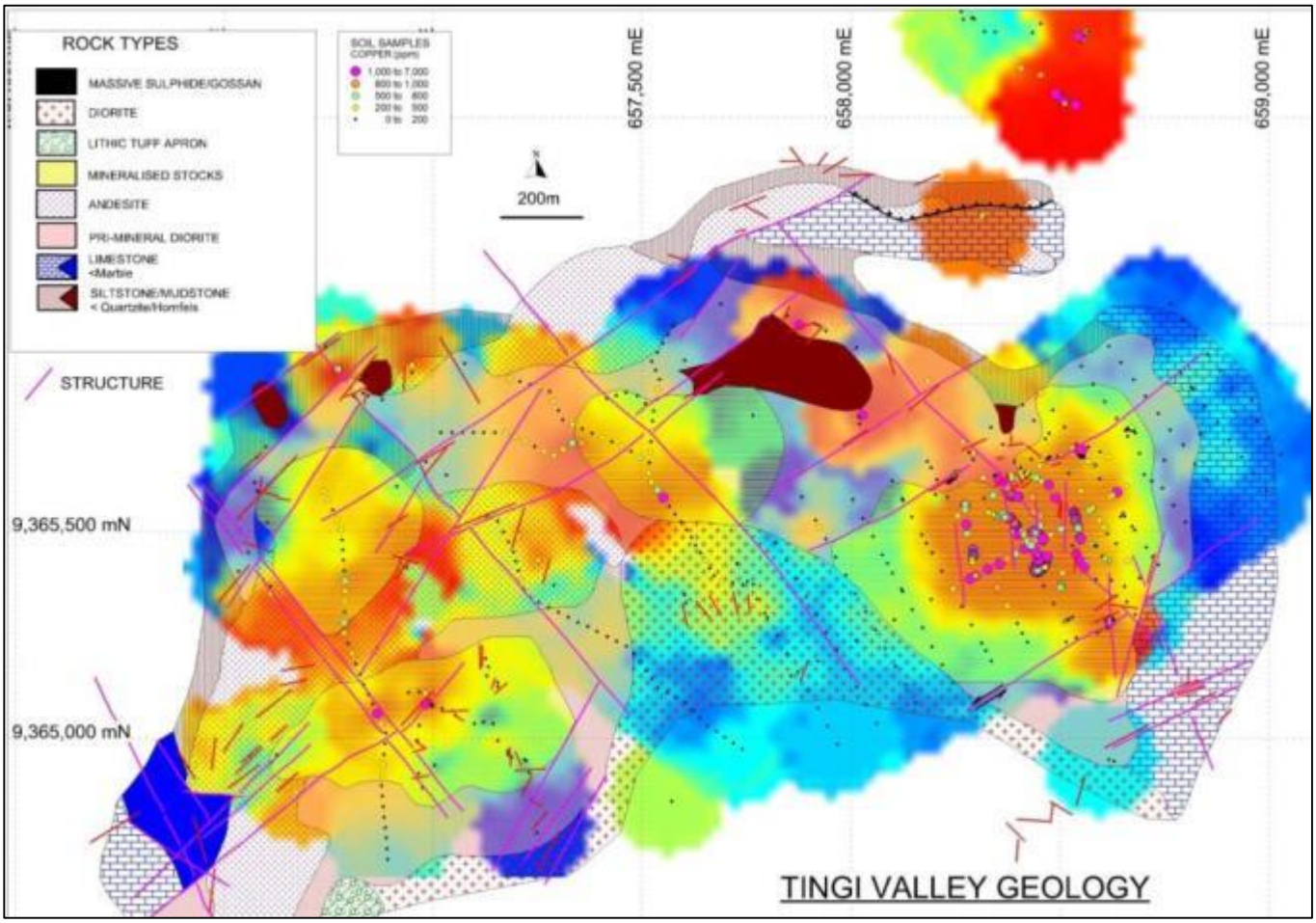

LEGEND
UNALTERED
ARGILLIC
INTERMEDIATE ARGILLIC
CALC-SILICATE
CONTACT METAMORPHOSED
PHYLLIC
POTASSIC
PROPYLITIC
STRUCTURE
SOIL SAMPLES
GOLD (ppm)
200m
657,500 mE
658,000 mE
659,000 mE
9,365,500 mN
9,365,000 mN
TINGI VALLEY ALTERATION (GOLD GEOCHEMISTRY)


SOIL SAMPLES
GOLD (ppm)
0.1 to 5.18
0.08 to 0.1
0.05 to 0.08
0.03 to 0.05
0.01 to 0.03
0 to 0.01
TINGI VALLEY PROSPECT
9,366,500 mN
9,366,000 mN
9,365,500 mN
9,365,000 mN
656,000 mE
656,500 mE
657,000 mE
657,500 mE
658,000 mE
658,500 mE
659,000 mE


SOIL SAMPLES
ZINC (ppm)
2,000 to 88,000
1,000 to 2,000
500 to 1,000
200 to 500
0 to 200
TINGI VALLEY PROSPECT
9,366,500 mN
9,366,000 mN
9,365,500 mN
9,365,000 mN
656,000 mE
656,500 mE
657,000 mE
657,500 mE
658,000 mE
658,500 mE
659,000 mE


SOIL SAMPLES
SILVER (ppm)
3 to 58
1 to 3
0.5 to 1
0.2 to 0.5
0 to 0.2
TINGI VALLEY PROSPECT
9,366,500 mN
9,366,000 mN
9,365,500 mN
9,365,000 mN
656,000 mE
656,500 mE
657,000 mE
657,500 mE
658,000 mE
658,500 mE
659,000 mE


SOIL SAMPLES
ARSENIC (ppm)
100 to 1,490
50 to 100
20 to 50
5 to 20
0 to 5
TINGI VALLEY PROSPECT
9,366,500 mN
9,366,000 mN
9,365,500 mN
9,365,000 mN
656,000 mE
656,500 mE
657,000 mE
657,500 mE
658,000 mE
658,500 mE
659,000 mE


ROCK TYPES
MASSIVE SULPHIDE/GOSSAN
DIORITE
LITHIC TUFF APRON
MINERALISED STOCKS
ANDESITE
PRE-MINERAL DIORITE
LIMESTONE
<Marble
SILTSTONE/MUDSTONE
< Quartzite/Hornfels
SOIL SAMPLES
COPPER (ppm)
1,000 to 7,000
600 to 1,000
500 to 600
200 to 500
0 to 200
STRUCTURE
200m
657,500 mE
658,000 mE
659,000 mE
9,365,500 mN
9,365,000 mN
TINGI VALLEY GEOLOGY

The Tingi Valley Prospect is strikingly similar in tectonic setting, size, geology and mineralisation to the Ok Tedi porphyry copper-gold deposit. The main difference is the level of erosion; Tingi Valley porphyry system is less eroded than Ok Tedi and therefore almost totally preserved.

Exploration targets are:

- Porphyry style copper-Gold mineralisation (in Angali and Andiria Creeks).
- Skarn Gold —Base metal on the intrusive margins with the limestone.
- Epithermal higher grade gold + silver mineralisation.
- Breccia hosted base metal stockwork veining (at Hogo Creek).
- NE-SW fault controlled massive epidote-pyrite, massive pyrite and massive magnetite-pyrite mineralisation (at Angali Creek, Hogo Creek and Magnetite Creek).

Carson-Pratt Exploration

In 2003, Carson-Pratt took 23 rock chip samples in Tambara Creek. No visible gold was observed from panned concentrate. A total of 32 rock samples were taken in the Tingi Creek and geological mapping (Figure 3) was completed which distinguished Hornblende Diorite, Quartzite and breccia.

The Tingi Intrusive Complex is exposed in a 4 sq.km area, the intrusives are obscured to the south by Darai Limestone. The complex can be described as porphyritic andesites/diorites and microdiorites emplaced as stocks, sills and dykes.

Sulphide mineralisation is widespread at Tingi and alteration phases (Figures 4 and 5) include:

- Early potassic overprinted by pervasive chlorite and sericite alteration
- Pervasive sericite alteration
- Intense sericite-clay alteration associated with fault zones
- Pervasive phyllic to chlorite alteration is very strong and overprints all other alteration
- Magnetite alteration associated with chlorite alteration
- Secondary biotite development (potassic alteration) at the contact with quartzite

Approximately 700m along Hogo Creek was traversed and sampled, where siltstone and limestone have been intruded by diorite stock and dykes. The main styles of mineralisation observed included fault-controlled massive sulphide (pyrite lens of 5m x 2m x 15m), epidote-pyrite mineralisation and breccia hosted base metal stockworking. Best rock sample results include 1.1g/t gold + 2600ppm copper + 2930ppm lead + 8.8% zinc, 3.72g/t gold +1.55% zinc + 2530ppm lead. Channel sampling along strike of Jerry's skarn returned an averaged assay for 20 non-continuous channel samples of 1.18g/t gold. Massive sulphide as pyrite is developed along the contact between siltstone and intrusive.

More modest gold (0.1-0.5g/t gold and 1000-3600ppm copper) in feldspar porphyry are present at several bodies centred around the old Kennecott Camp.

Carson-Pratt labelled "Magnetite Creek" where they discovered an outcrop of massive magnetite-pyrite (Jerry's Skarn), >6m thick, 30m strike length + additional 50m in gossan outcrop to the southwest. A total of 15 x 2m channel samples were taken with best results of the 2m continuous chip sampling showing 28m of 0.78 g/t gold including 2m of 4.36g/t gold and 2m of 2.58g/t gold.

Mapping and sampling was completed at Andiria Creek where pyrite, epidote and magnetite mineralisation occurs in veins and as disseminations in the groundmass. Mapping and rock sampling was completed along Angali Creek and its tributaries. Hapialu Creek was traversed at the contact of Andesite and Limestone where Andesite was propylitically altered with pyrite. No rock samples were taken.

During 2004, Carson-Pratt focussed their exploration field work on Hogo Creek and Angali Creek area where they completed grid based geological mapping and soil sampling at 50m interval, plus relevant 2m channel samples. They also mapped and sampled Camp, Breccia, Magnetite, and Kungi Creeks.

The 'Landslide' was sampled and was chalcopyrite-bornite-covellite rich within biotite-altered Feldspar Hornblende Porphyry in the main Landslide outcrop with best results of 1845ppm copper and 0.47g/t gold. Chalcocite was mapped in a small outcrop to the north.

Structures

- Northwest - developed in the formation of the fold belt and are parallel to the structural grain of the country.
- Northeast – Deep penetrating Arc normal and reactivated several times for the emplacement of Ok Tedi, Porgera and Mt Kare.
- North/South – Host porphyry style and base metal mineralisation.

Carson-Pratt Conclusions

P. Goldner's recommendation to further investigate the intrusive/ limestone contact in the upper Tambara and Tingi Creeks (and Angali and Kungi Creeks) for possible gold veining should be followed up.

G. Corbett's recommendation is that "continued exploration should focus upon detailed geological mapping and attempt to more clearly delineate the structural control to copper-gold mineralisation. One anticipates that adequate outcrop might occur within creeks and this could be enhanced by limited contour trenching. Mineralised veins in porphyry systems commonly occur as packages of sheeted quartz veins which can be mapped and projected between creek exposures for continued investigation. Geological modelling should attempt to clearly define the extent of mineralised intrusions."

Clarke concludes in the 2004 Annual Report, that "the north east trending fault controlled gold-base metal mineralisation may be skarn related. The fact that it was not detected suggests that it is a narrow discrete body. Nevertheless, it still represents an attractive target with potential for high grade gold-copper mineralisation". Exploration should track down the sources of the skarn and gossan floats found to date. The location of Kennecott's 3.3 g/t gold channel sample near the Hogo-Angali Creek junction needs to be re-located.

C.Meyer describes their 30 g/t gold sample as being "andesite porphyry containing disseminated and vein pyrite". The outcrops of andesite in Andiria and Siki Creeks need to be examined to try find the source of this sample. The Siki-Angali ridge needs to be sampled to confirm Kennecott's 90m of 2.14 g/t gold in soils. The mapping and sampling of Siki Creek, especially above its junction with the Wai Dia, needs to be completed.

Baia and Cecelia Projects

The Baia and Cecelia project areas were most recently held by Barrick Gold, who considered the Fold Thrust belt to be the best place to explore in PNG (see their plan on regional mineralisation endowment). The projects were discovered as anomalous copper and gold in stream sediment and surface float / outcrop rock chip samples.

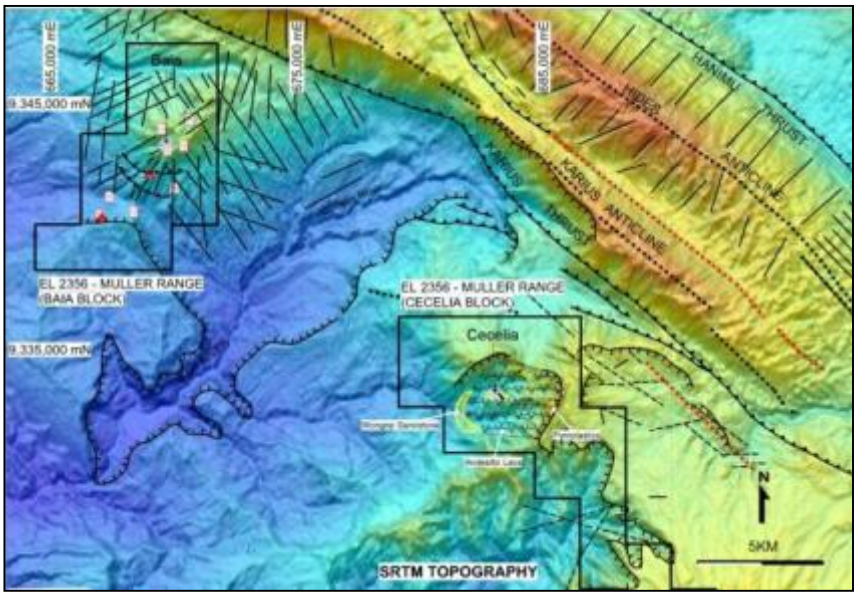
The primary targets for Frontier are shallow buried porphyry copper- molybdenum- gold mineralisation +higher grade skarns and epithermal gold. Both areas are close (for PNG) to infrastructure such as the Hides Power Station and roads. The PNG Mining act requires relinquishment of 50% of an EL's area before the end of Year 2. FNT has initiated this process and will retain 3 non-contiguous project areas (Tingi, Baia & Cecilia/Mt Sisa).

The Baia Project is a >4 sq km porphyry system, with the correct geochemical, geological and structural characteristics that strongly warrants exploratory drilling.

- **Baia has a large copper - gold - molybdenum in soil anomaly and seven copper- molybdenum anomalous skarn targets that are defined by magnetic anomalies at the limestone /intrusive contact.**
- The project is located on the Porgera Mine - Mt Kare Transfer Structure which reputedly controls fracturing and mineralisation. It is about 50km south of Harmony's excellent Kili Teke porphyry copper -gold discovery.
- Copper in soil geochemistry demonstrates a distinct cohesive anomaly that is about 900m long north- south and about 600m wide east -west. There are three smaller, but still large, copper anomalies that are about 500m long and up to 200m wide, associated with skarns.
- Zinc and lead soil geochemistry at Baia demonstrates a typical zinc/ lead halo around a 1,000m diameter core to the porphyry copper system, which is approximately coincident with the outer margins of the copper anomaly. The zinc/ lead anomaly has a width of about 500m and an outer annulus diameter of about 2,200m.
- Dominant alteration is propylitic, with structurally controlled phyllic and patchy un-mineralised potassic.
- Regional airborne magnetics show peripheral magnetic anomalies related to intrusives. The prospect is located on a topographic high in a major ENE trending fault zone/ transfer structure (as per the OK Tedi Mine located to the WNW).

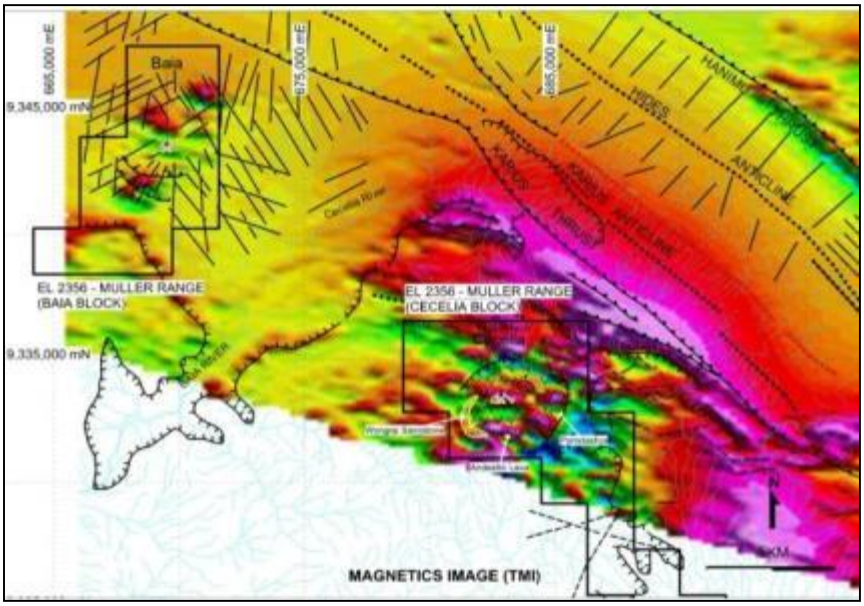
Baia Project

Barrick confirmed Baia as a mineralised porphyry system dominated by propylitic and structurally controlled phyllic alteration. It has patchy un-mineralised potassic alteration which is related to potassium 'equivalent' radiometric anomalies over the potassic altered mapped diorite.



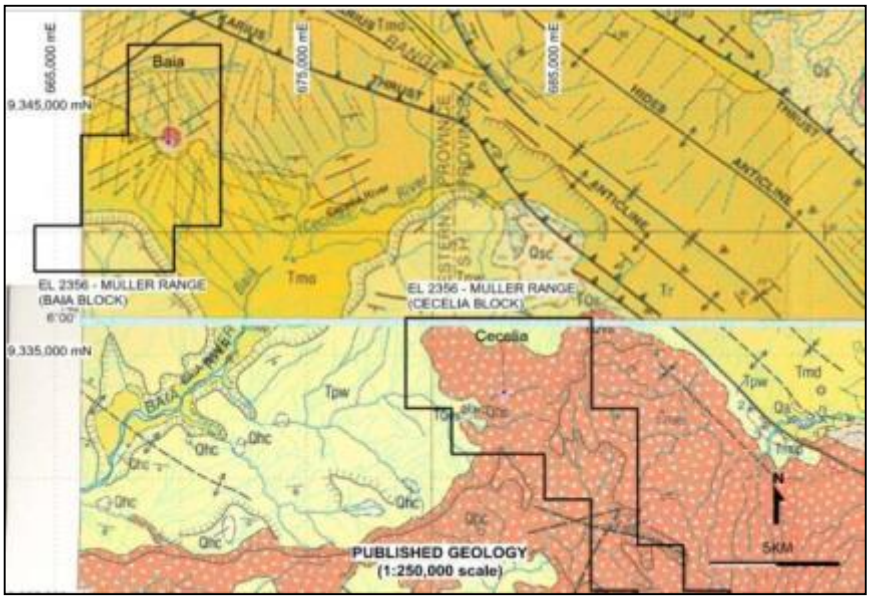
Ridge and Spur soil sampling results completed by Barrick show anomalous copper associated with the central diorite intrusive. Anomalous gold in rock samples also occur within the central diorite. Anomalous copper in soils also occurs along the margins of a feldspar porphyry 1km further to the southwest.

Anomalous lead + zinc in soil samples occur as an outer halo surrounding the anomalous copper in soil samples related to the central diorite. The lead and zinc halo is indicative of mineralisation relatively close to the heat source/intrusive.



Diorite is located within a volcanic centre on a topographic high which has intruded Limestone with an adjacent Hornblende Rich Porphyry mapped on its northern margin.

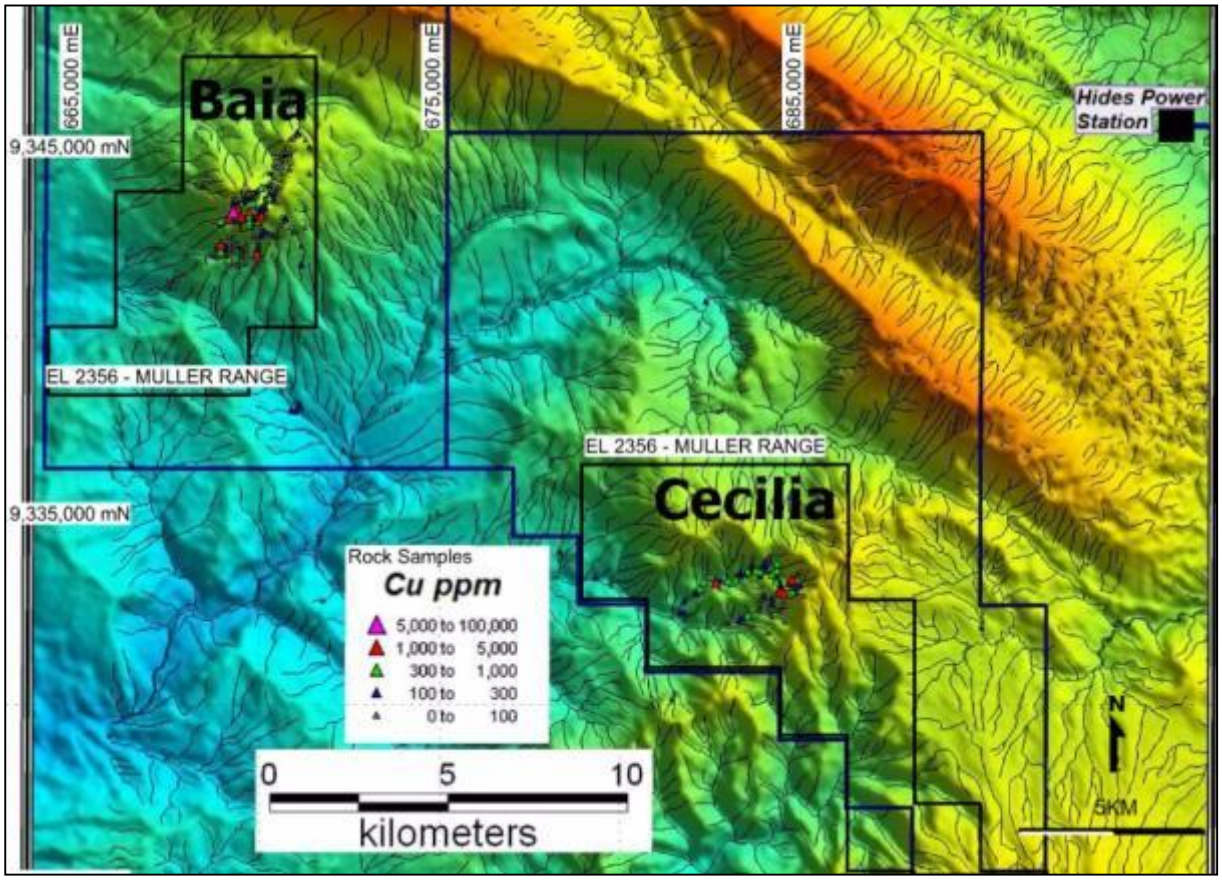
According to Barrick, magnetic anomalies peripheral to the central diorite are related to intrusives of hornblende porphyry stocks and sills. There is a distinct dipolar magnetic anomaly related to hornblende porphyry along the northern contact with the central diorite.

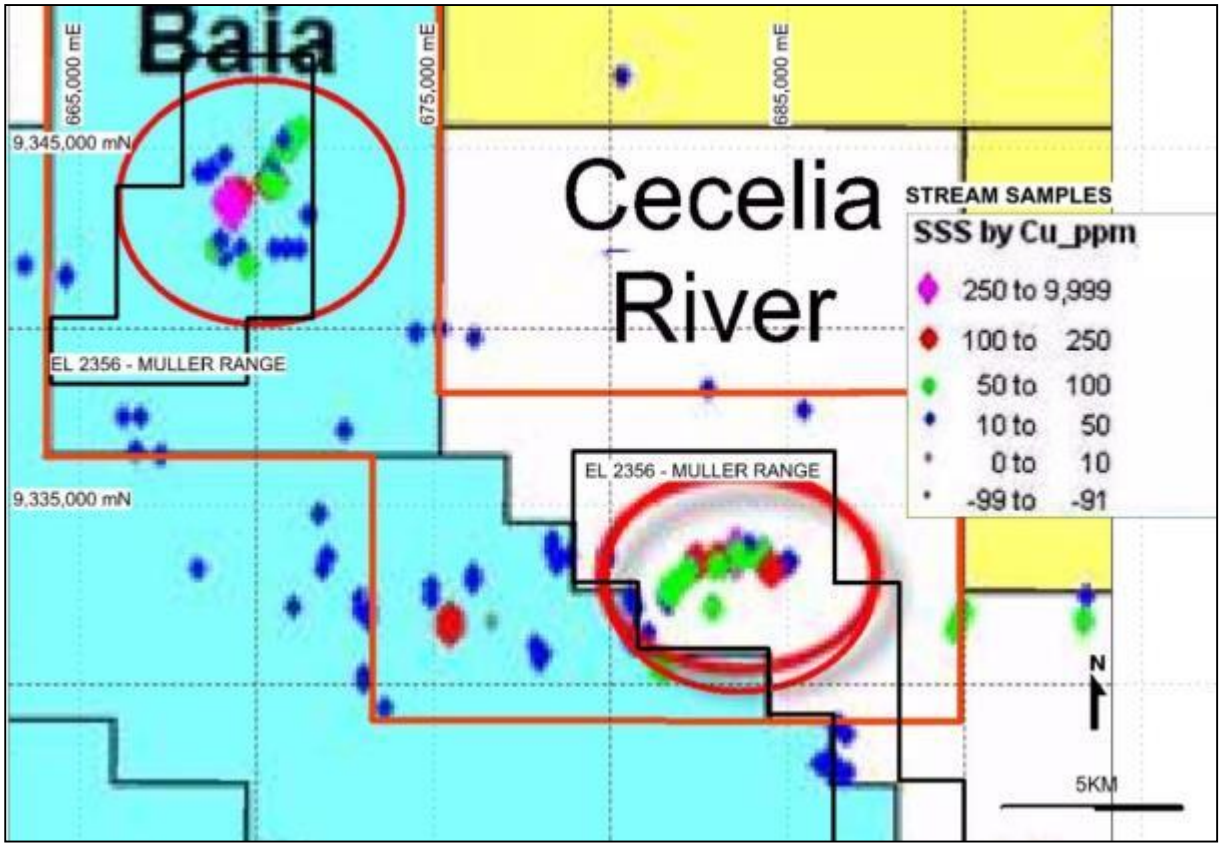


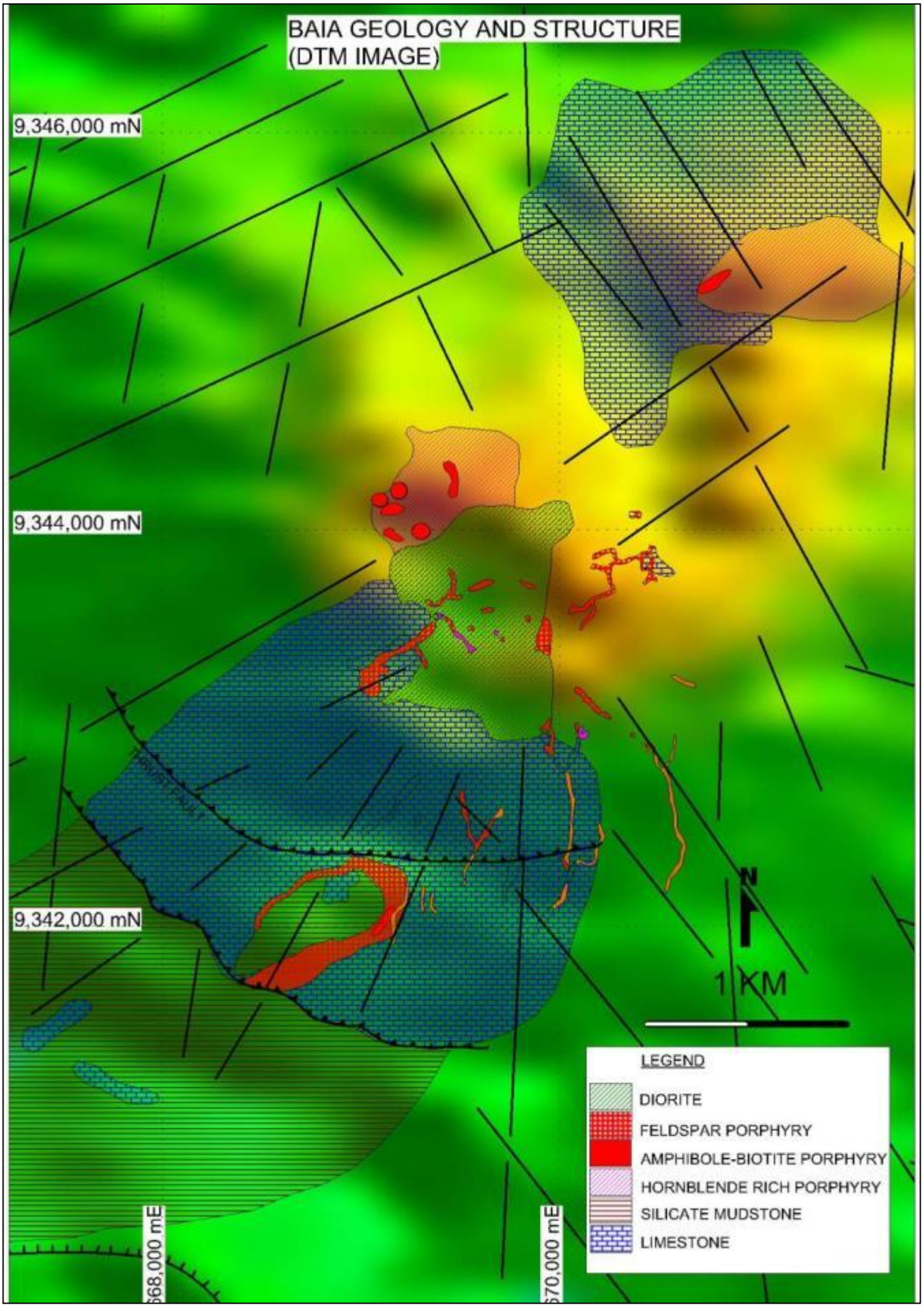
A total of seven skarn targets (BSK01 to 07) have been identified which are related to near surface magnetic bodies at the contact between limestone and intrusive.

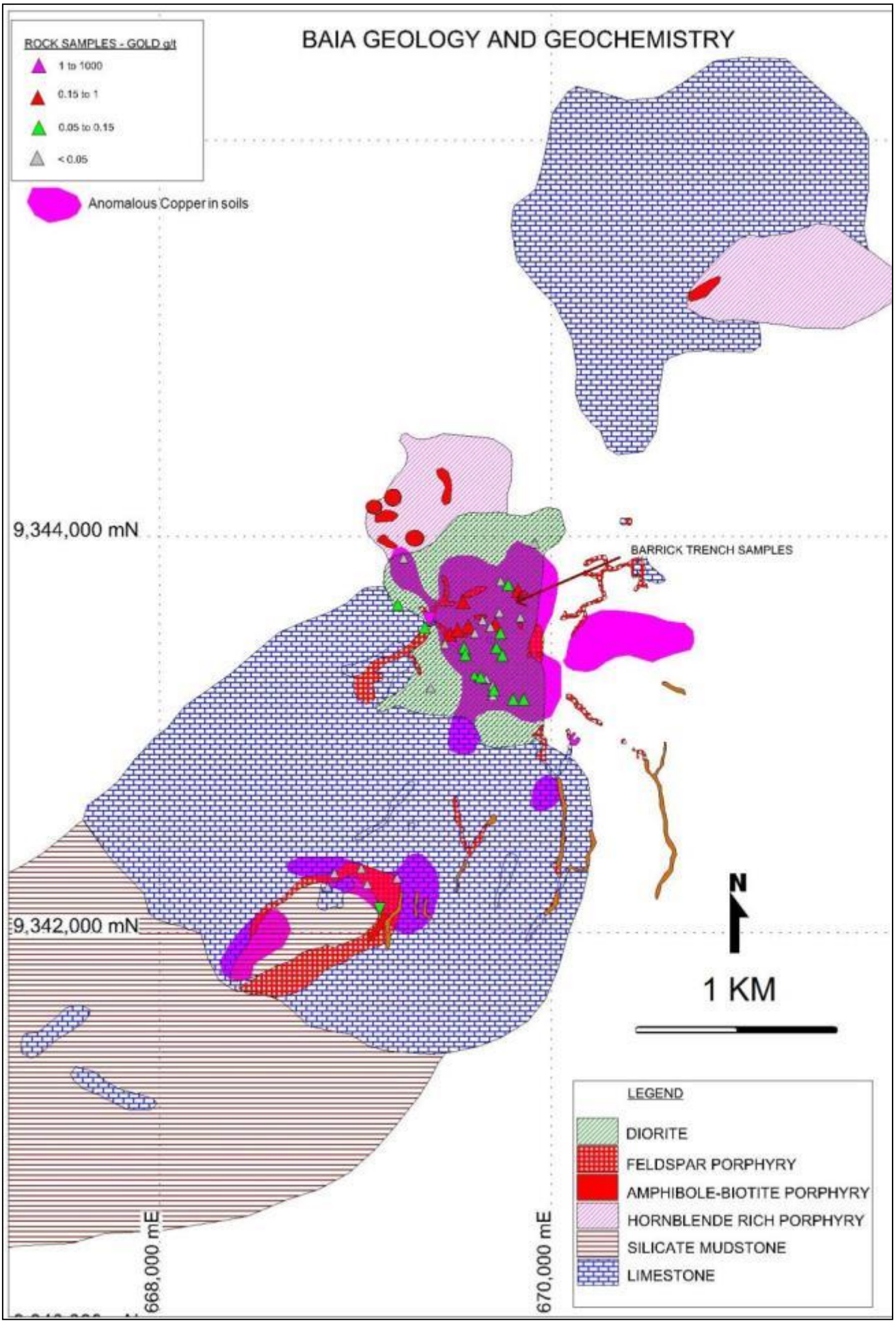
Barrick describe an ENE structural corridor which controls fracturing and copper-molybdenum-gold mineralisation at Baia and believe the primary drill targets to be buried porphyry and skarn mineralisation.

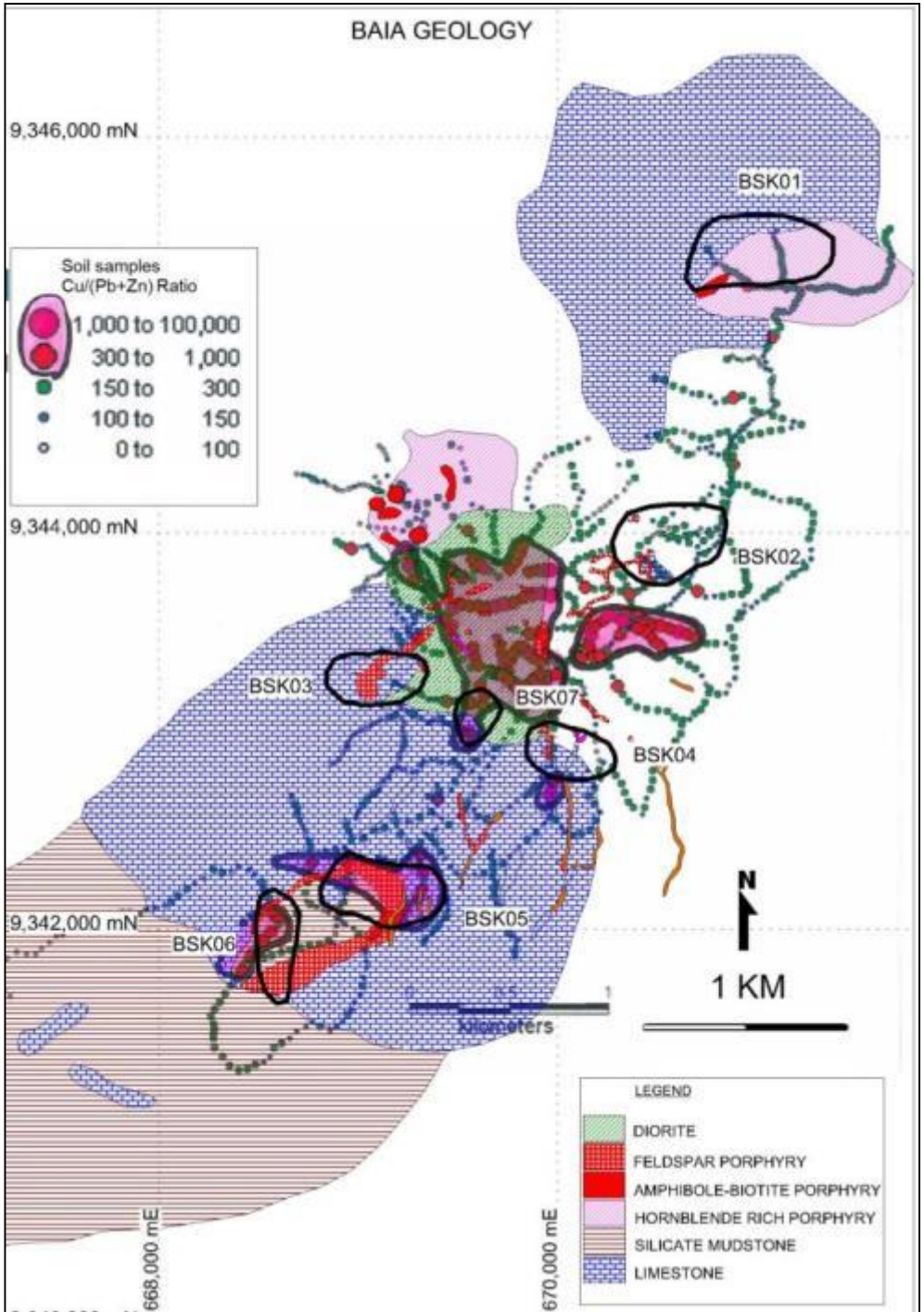
A higher resolution helicopter magnetic survey would help define skarn and porphyry drill targets and a ground 3DIP survey would better define sulphide related mineralisation, however, the soil geochemistry is adequate to initiate drilling on.

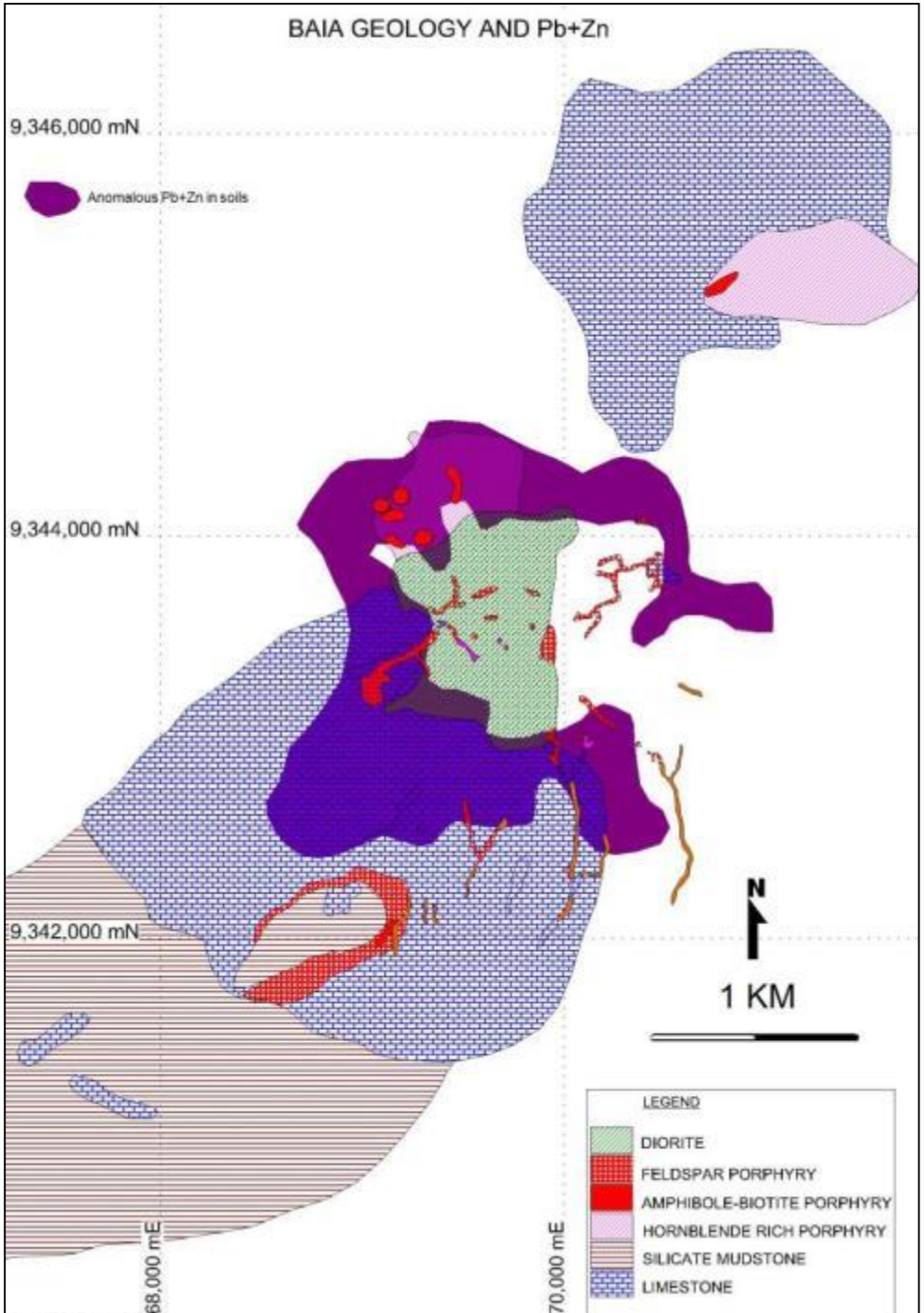

665,000 mE
675,000 mE
685,000 mE
Baia
Hides Power Station
9,345,000 mN
EL 2356 - MULLER RANGE
EL 2356 - MULLER RANGE
Cecilia
9,335,000 mN
Rock Samples
Cu ppm
5,000 to 100,000
1,000 to 5,000
300 to 1,000
100 to 300
0 to 100
0
5
10
kilometers
N
5KM

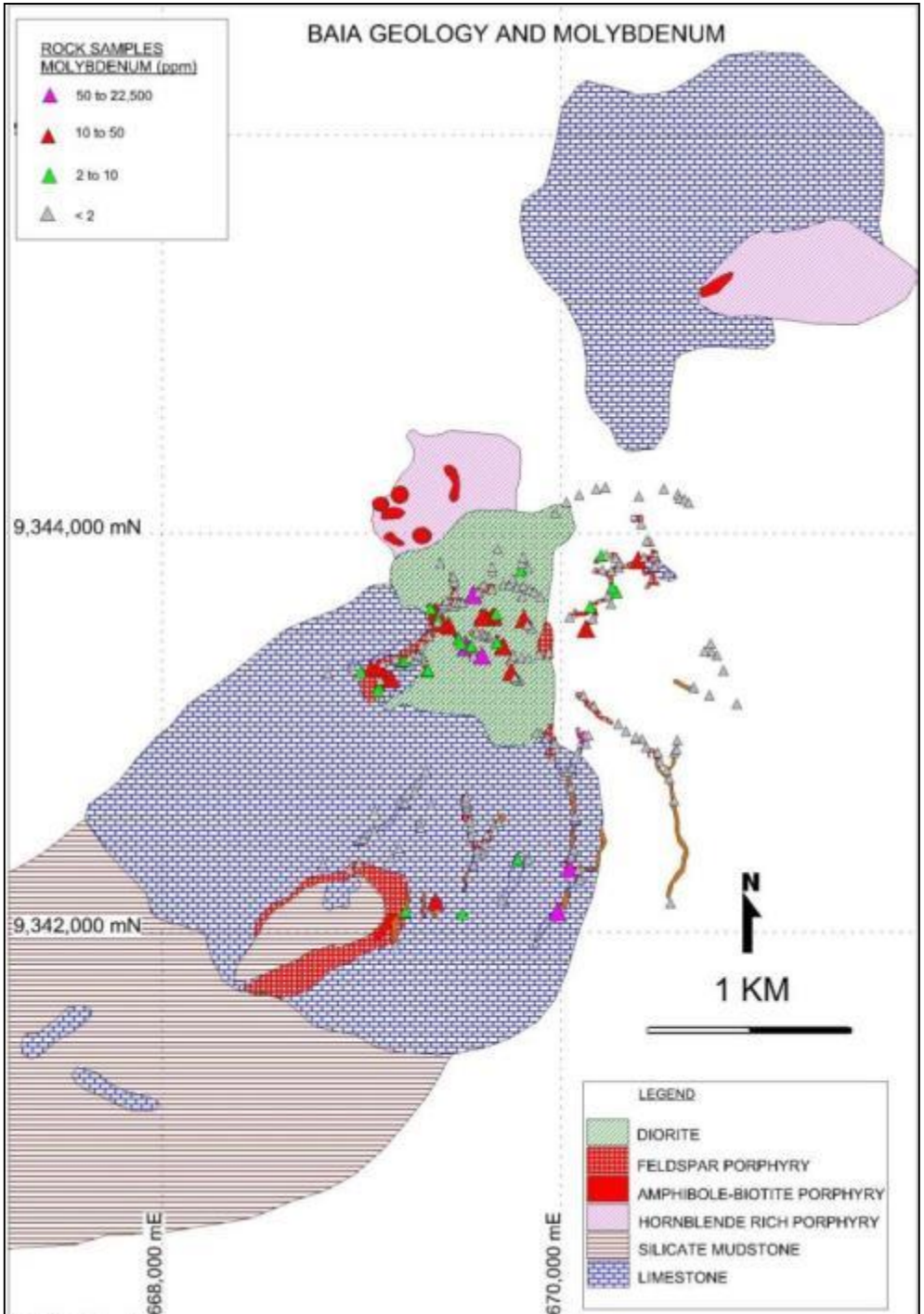

Baia
665,000 mE
675,000 mE
685,000 mE
9,345,000 mN
Cecelia River
STREAM SAMPLES
SSS by Cu_ppm
250 to 9,999
100 to 250
50 to 100
10 to 50
0 to 10
-99 to -91
EL 2356 - MULLER RANGE
EL 2356 - MULLER RANGE
9,335,000 mN
N
5KM

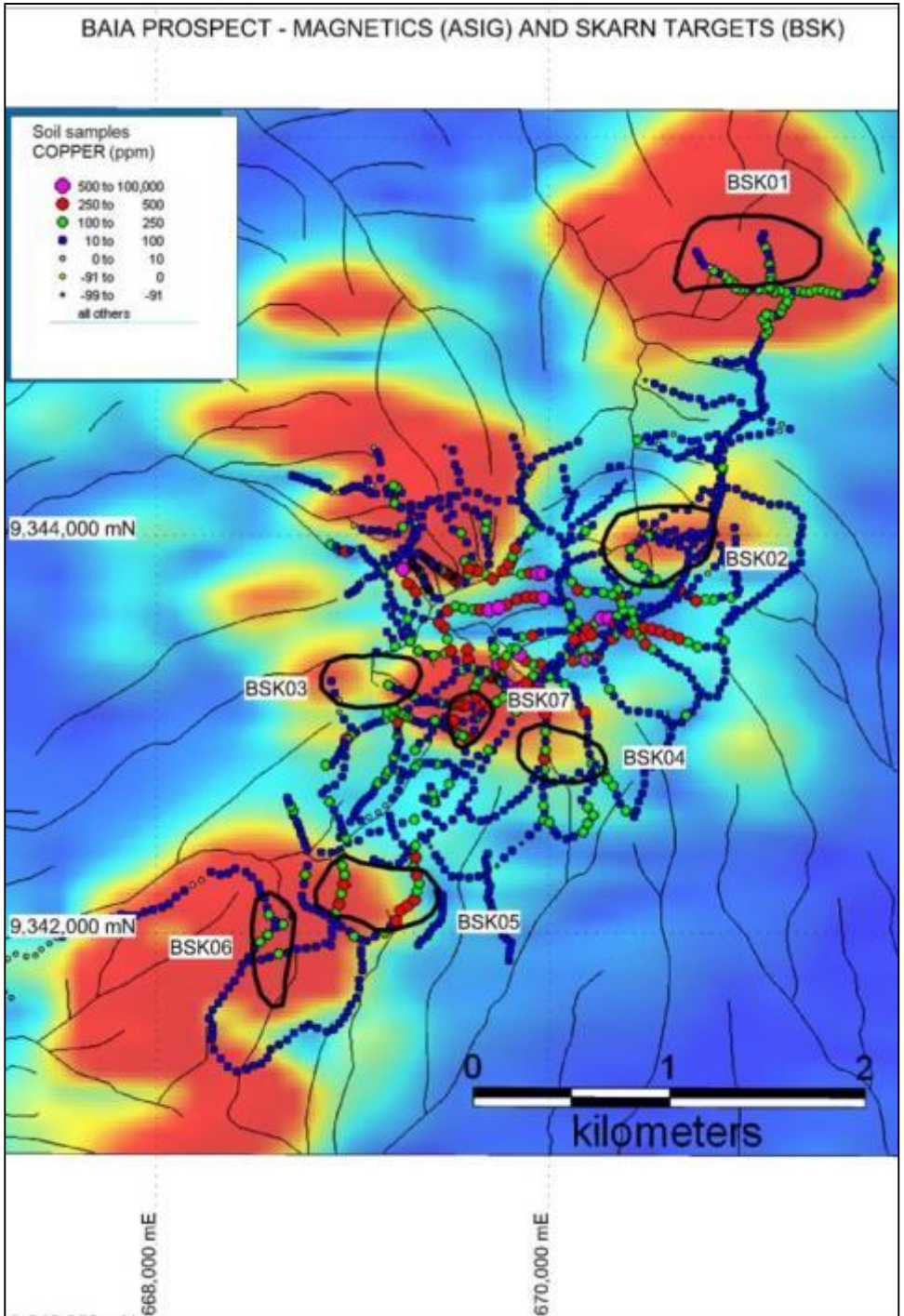

BAIA GEOLOGY AND STRUCTURE
(DTM IMAGE)
9,346,000 mN
9,344,000 mN
9,342,000 mN
N
1 KM
LEGEND
DIORITE
FELDSPAR PORPHYRY
AMPHIBOLE-BIOTITE PORPHYRY
HORNBLENDE RICH PORPHYRY
SILICATE MUDSTONE
LIMESTONE
568,000 mE
570,000 mE

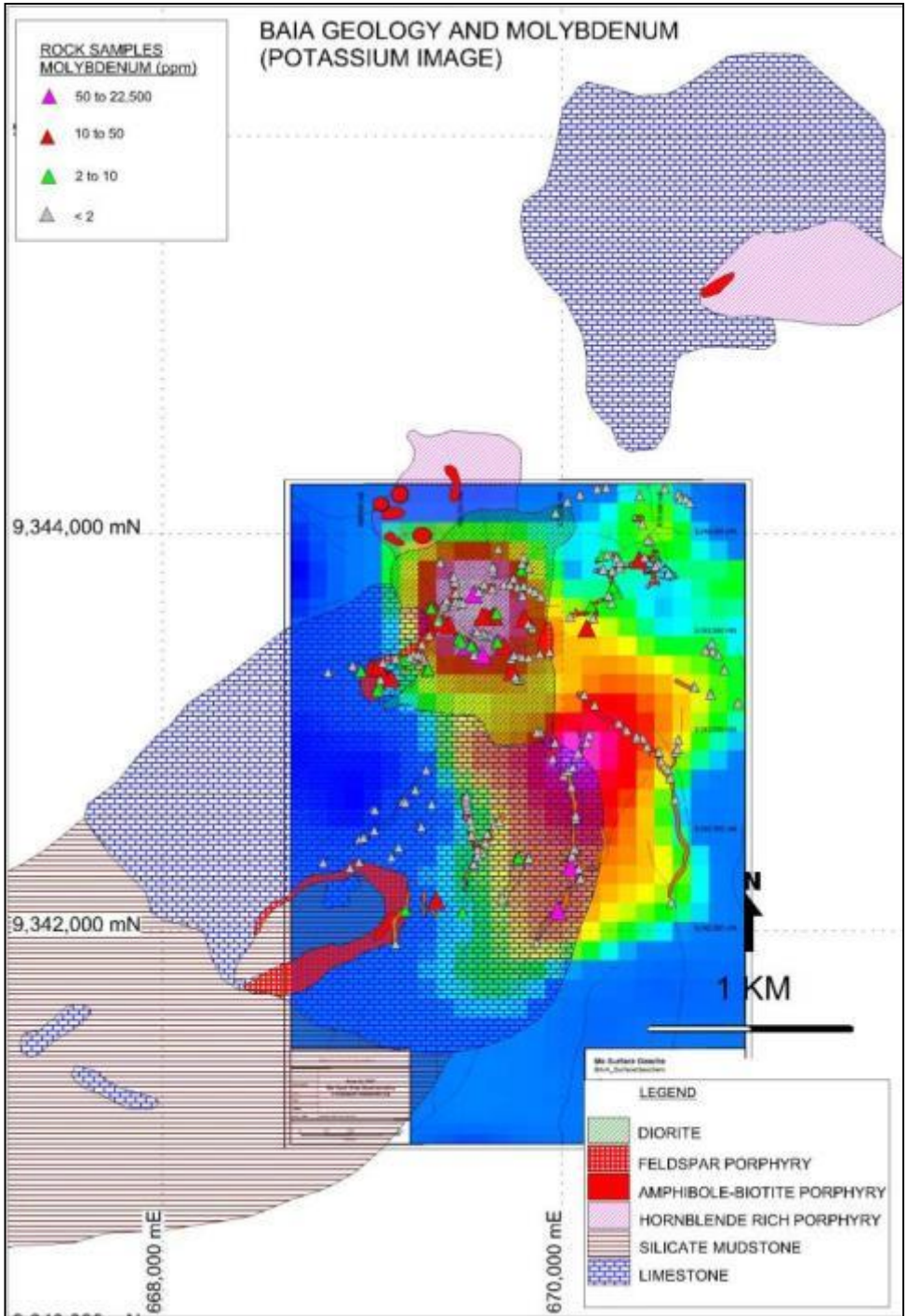

BAIA GEOLOGY AND GEOCHEMISTRY
ROCK SAMPLES - GOLD g/t
1 to 1000
0.15 to 1
0.05 to 0.15
< 0.05
Anomalous Copper in soils
9,344,000 mN
BARRICK TRENCH SAMPLES
9,342,000 mN
N
1 KM
LEGEND
DIORITE
FELDSPAR PORPHYRY
AMPHIBOLE-BIOTITE PORPHYRY
HORNBLENDE RICH PORPHYRY
SILICATE MUDSTONE
LIMESTONE
668,000 mE
670,000 mE

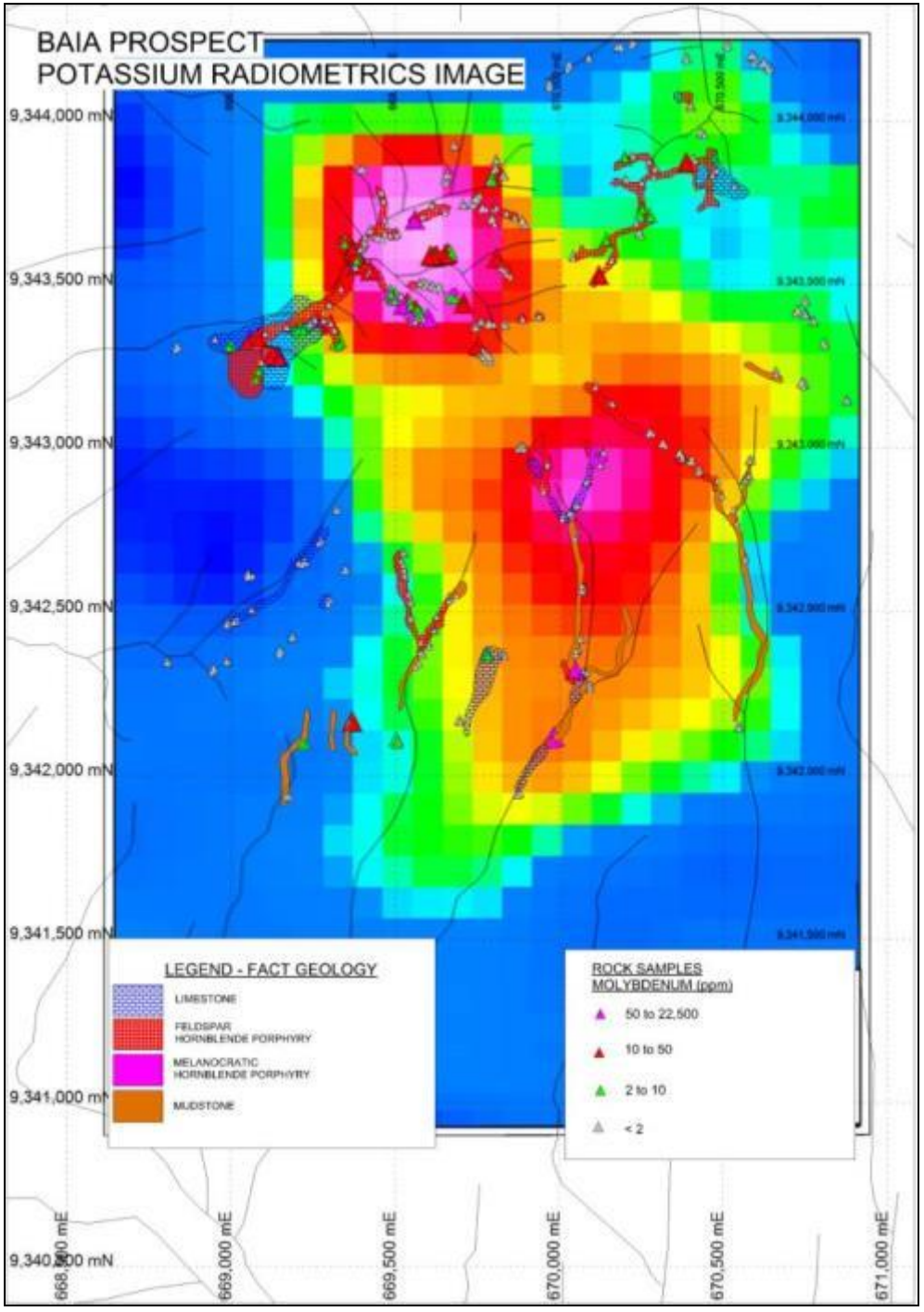

BAIA GEOLOGY
9,346,000 mN
9,344,000 mN
9,342,000 mN
BSK01
BSK02
BSK03
BSK04
BSK05
BSK06
BSK07
Soil samples
Cu/(Pb+Zn) Ratio
1,000 to 100,000
300 to 1,000
150 to 300
100 to 150
0 to 100
N
1 KM
Kilometers
668,000 mE
670,000 mE
LEGEND
DIORITE
FELDSPAR PORPHYRY
AMPHIBOLE-BIOTITE PORPHYRY
HORNBLENDE RICH PORPHYRY
SILICATE MUDSTONE
LIMESTONE


BAIA GEOLOGY AND Pb+Zn
9,346,000 mN
9,344,000 mN
9,342,000 mN
Anomalous Pb+Zn in soils
N
1 KM
668,000 mE
670,000 mE
LEGEND
DIORITE
FELDSPAR PORPHYRY
AMPHIBOLE-BIOTITE PORPHYRY
HORNBLENDE RICH PORPHYRY
SILICATE MUDSTONE
LIMESTONE


BAIA GEOLOGY AND MOLYBDENUM
ROCK SAMPLES
MOLYBDENUM (ppm)
50 to 22,500
10 to 50
2 to 10
< 2
9,344,000 mN
9,342,000 mN
668,000 mE
670,000 mE
N
1 KM
LEGEND
DIORITE
FELDSPAR PORPHYRY
AMPHIBOLE-BIOTITE PORPHYRY
HORNBLENDE RICH PORPHYRY
SILICATE MUDSTONE
LIMESTONE


BAIA PROSPECT - MAGNETICS (ASIG) AND SKARN TARGETS (BSK)
Soil samples
COPPER (ppm)
500 to 100,000
250 to 500
100 to 250
10 to 100
0 to 10
-91 to 0
-99 to -91
all others
BSK01
BSK02
BSK03
BSK04
BSK05
BSK06
BSK07
9,344,000 mN
9,342,000 mN
668,000 mE
670,000 mE
0
1
2
kilometers


ROCK SAMPLES
MOLYBDENUM (ppm)
50 to 22,500
10 to 50
2 to 10
< 2
BAIA GEOLOGY AND MOLYBDENUM
(POTASSIUM IMAGE)
9,344,000 mN
9,342,000 mN
N
1 KM
LEGEND
DIORITE
FELDSPAR PORPHYRY
AMPHIBOLE-BIOTITE PORPHYRY
HORNBLENDE RICH PORPHYRY
SILICATE MUDSTONE
LIMESTONE
668,000 mE
670,000 mE


BAIA PROSPECT
POTASSIUM RADIOMETRICS IMAGE
9,344,000 mN
9,343,500 mN
9,343,000 mN
9,342,500 mN
9,342,000 mN
9,341,500 mN
9,341,000 mN
9,340,500 mN
LEGEND - FACT GEOLOGY
LIMESTONE
FELDSPAR HORNBLENDE PORPHYRY
MELANOCRATIC HORNBLENDE PORPHYRY
MUDSTONE
ROCK SAMPLES
MOLYBDENUM (ppm)
50 to 22,500
10 to 50
2 to 10
< 2
668,000 mE
669,000 mE
669,500 mE
670,000 mE
670,500 mE
671,000 mE

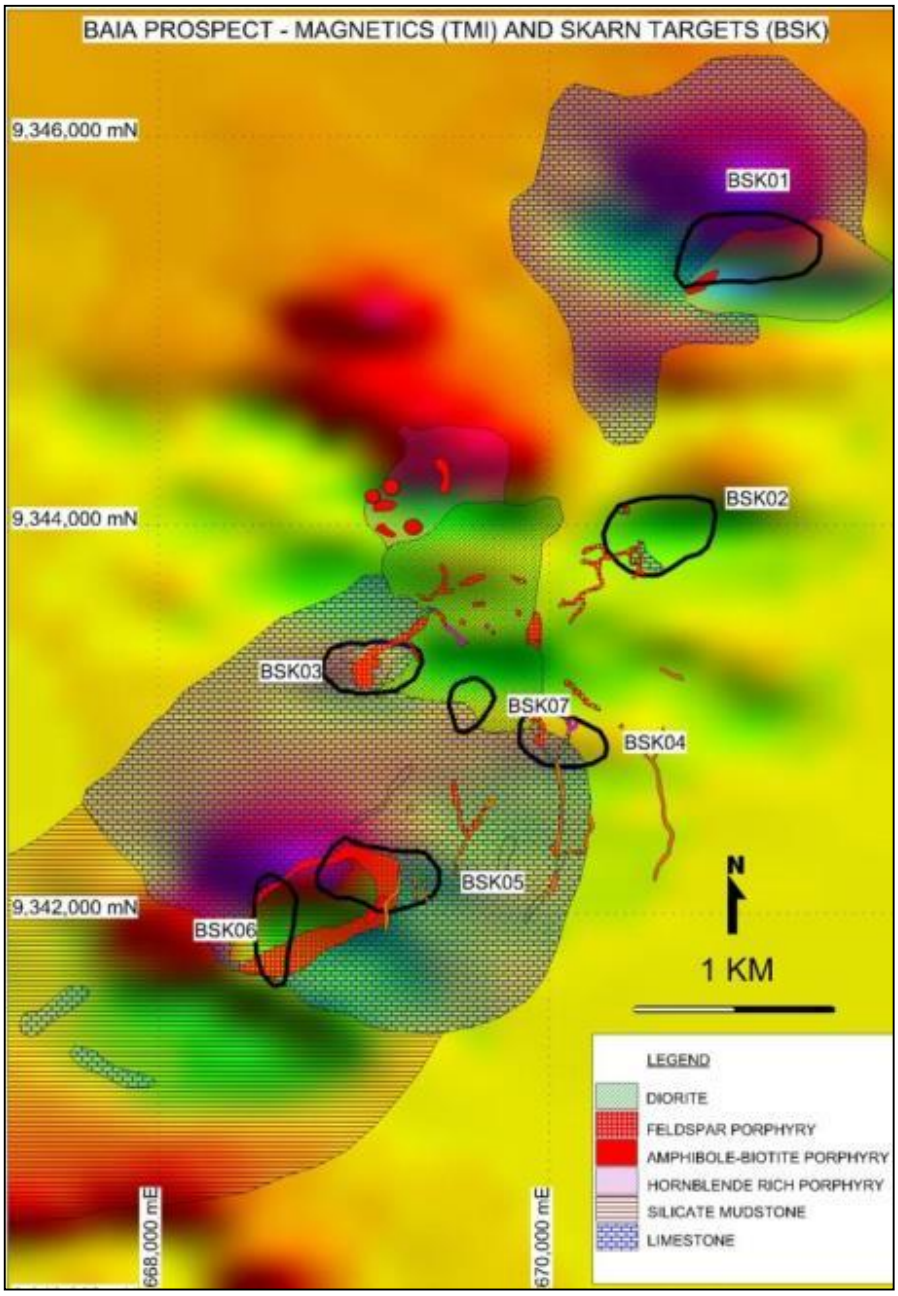
Baia Skarn Targets:

BSK01 – This 700m x 300m (approx. 22 Ha) target area occurs within a strong large near surface magnetic anomaly on the contact between hornblende rich porphyry and limestone. Minor anomalous copper in soil samples occur within the porphyry intrusive.

BSK02 – A 17 Ha target coincident with a near surface magnetic anomaly and an anomalous molybdenum in rock sample. Feldspar hornblende porphyry in contact with limestone has been mapped within this target area.

BSK03 – Four anomalous molybdenum (10 to 50ppm) in rock samples occur within this 11 Ha target. A small dipolar magnetic anomaly occurs over the contact between fact mapped limestone and feldspar hornblende porphyry.

BSK04 – A 9 Ha target over the contact between limestone and feldspar hornblende porphyry associated with a weak magnetic anomaly.



BSK05 – A 16 Ha target area associated with anomalous copper in soils and at the contact between limestone and feldspar porphyry. This intrusive complex is about 1km southwest of the central diorite and associated with a distinct dipolar magnetic anomaly.

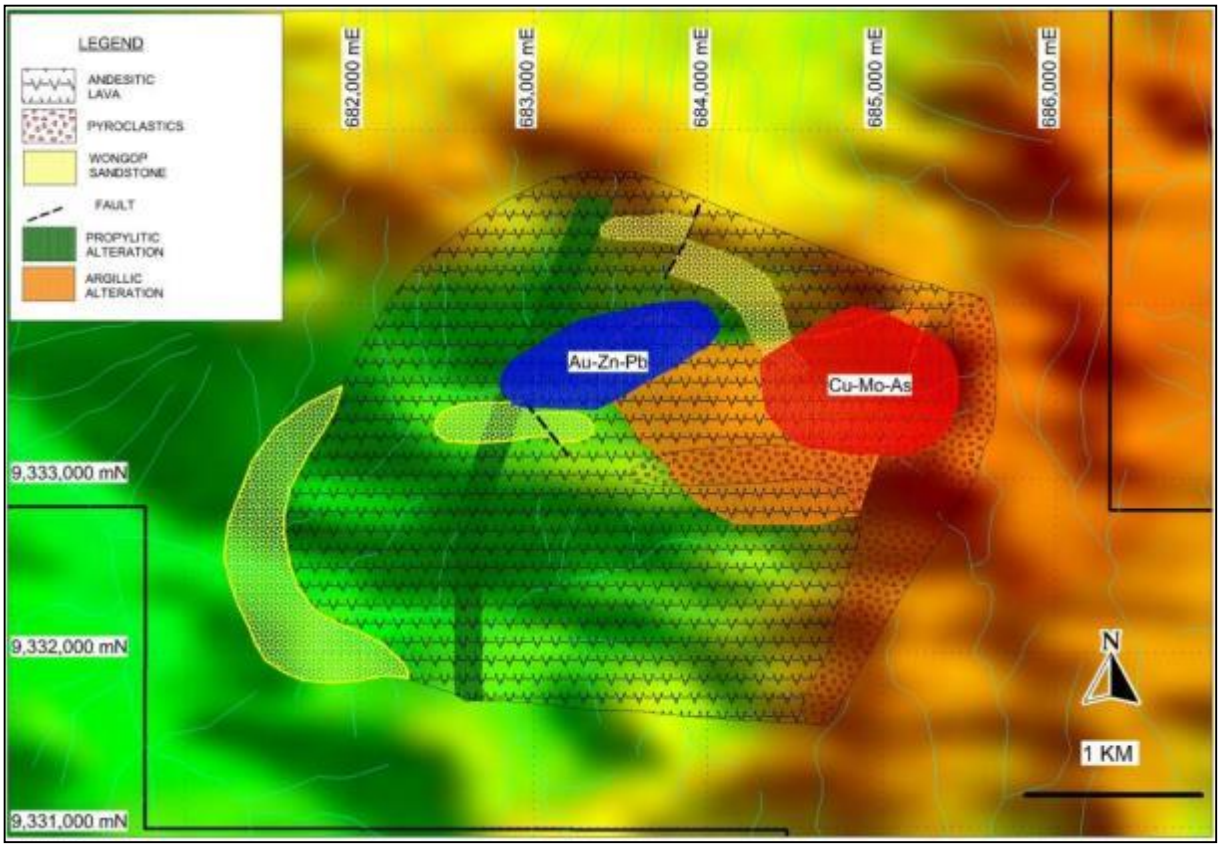
BSK06 – This 9Ha area is elongated north-south along anomalous copper in soil samples and covering the magnetic contact between limestone and feldspar porphyry.

BSK07 – A 4 Ha target area of anomalous copper in soils on the contact between limestone and diorite on the southern edge of a large near surface magnetic anomaly.

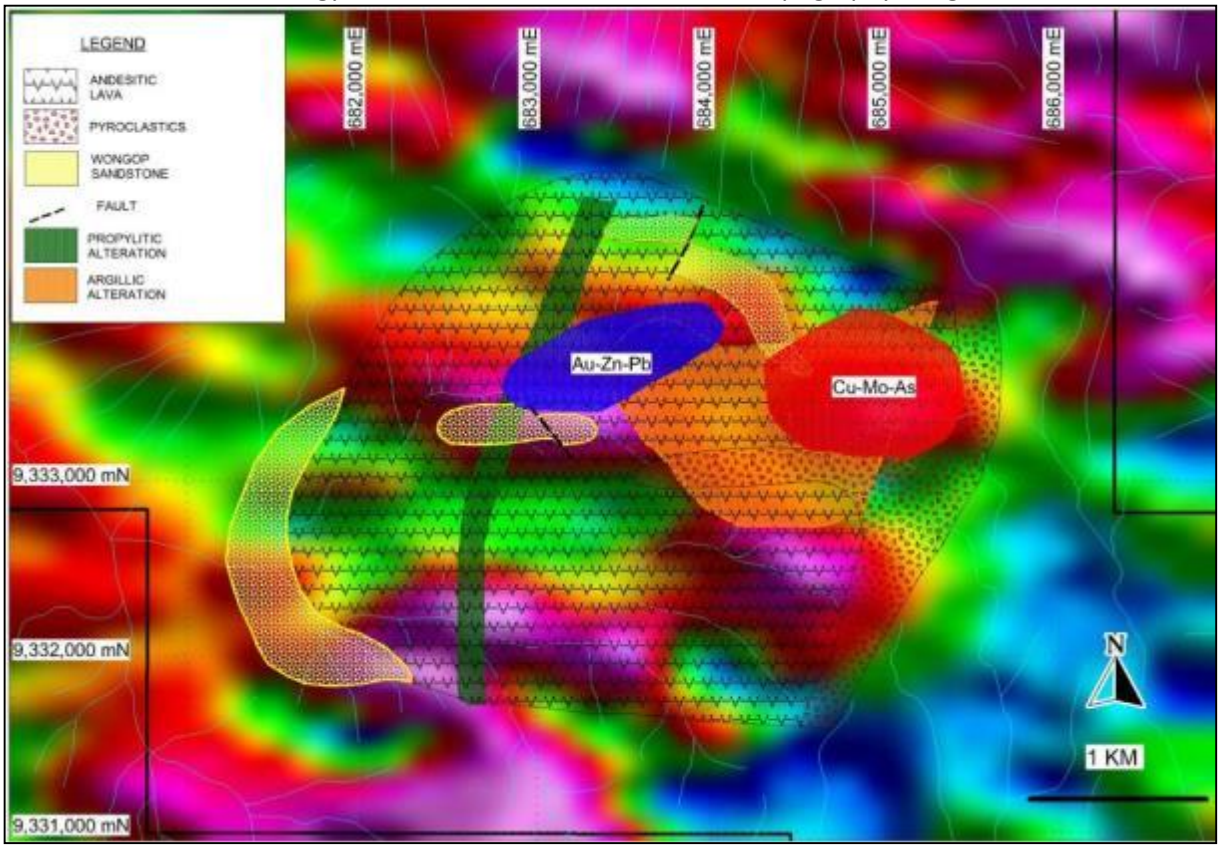
Cecilia Prospect

- **The Cecilia Prospect can be rapidly advanced to drill testing with additional exploration.; it requires substantial exploration to evaluate its epithermal gold prospectivity.**
- **The mineralised zone is about 2.5km long, initially being ENE gold-zinc-lead anomalism that transitions through an argillic alteration zone to copper molybdenum - arsenic anomalism (each being >1,000m long with argillic displaced to the south).**
- Cecilia has high sulphidation epithermal gold type advanced argillic alteration, with vuggy quartz - alunite- pyrophyllite, plus strong argillic and propylitic alteration, which has been covered by a recent agglomerate

- Stream sediment geochemistry >250ppm copper and altered rock chip samples returned 0.616g/t gold and 0.12 g/t gold + 710ppm copper.
- Intrusive outcrop up to 0.62% copper with chalcopyrite and bornite in the upper reaches of the Project area and altered granodiorite float of 0.18% copper.
- Pebble dykes are common, indicating a probable buried porphyry copper-gold-molybdenum target.



Geology, Alteration and Mineralisation on Topography Image



Geology, Alteration and Mineralisation on Magnetics (TMI) Image

CORPORATE

The Share Purchase Plan (**SPP**) announced on 17th June 2016 closed on Thursday, 14 July 2016 with applications for 6,830,015 shares totalling $204,900.

The timetable to complete the Share Purchase Plan is:

Share Purchase Plan allocation announcement	19 July 2016
Lodge Appendix 3B, Issue of new shares under the Share Purchase Plan	21 July 2016
Dispatch of holding statements/ confirmation advices	26 July 2016
Quotation commences	27 July 2016

The Shareholders who participated in the capital raising are thanked very much for their support and encouragement.

FRONTIER RESOURCES LTD

P.A.McNeil, M.Sc., MAIG
Chairman and Managing Director

Competent Person Statement:

The information in this report that relates to Exploration Results is based on information compiled by, or compiled under the supervision of Peter A. McNeil - Member of the Aust. Inst. of Geoscientists. Peter McNeil is the Managing Director of Frontier Resources, who consults to the Company. Peter McNeil has sufficient experience which is relevant to the type of mineralisation and type of deposit under consideration to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code of Reporting Exploration Results, Mineral Resources and Ore Resources. Peter McNeil consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

Frontier Resources Ltd Exploration Licence Information

	Licence No.	Date From	Date To	Ownership	Area (SQ KM)	Lat. Sub Blocks
Bulago River*	EL 1595	7/07/2014	6/07/2016	100% Frontier Gold PNG Ltd	100	30
Muller Range	EL 2356	31/12/2015	30/12/2017	100% Frontier Copper PNG Ltd	187	56
* Under renewal					**287**	**SQ KM**

NB: The Papua New Guinea Mining Act of 1992 stipulates that ELs are granted for renewable 2 year Terms (subject to Work and Financial Commitments) and the PNG Government maintains the right to purchase up to 30% project equity at "Sunk Cost" if/when a Mining Lease is granted.

The following information is provided to comply with the JORC Code (2012) requirements for the reporting of exploration trenching results for Exploration Licence 1595 in Papua New Guinea.

JORC CODE 2012			
Section 1 -- Sampling Techniques and Data			
Criteria		**Explanation**	**Commentary**
Sampling techniques	o	Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down whole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.	As noted herein
	o	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Supervised by Exploration Manager
	o	Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 11m samples from which 3 kg was pulverised to produce a 30g charge for fire assay') In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.	
Drilling techniques	o	Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	As noted herein.
Drill sample recovery	o	Method of recording and assessing core and chip sample recoveries and results assessed	Linear arithmetic
	o	Measures taken to maximise sample recovery and ensure representative nature of the samples.	As noted herein.
	o	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	No
Logging	o	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	Yes
	o	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	As noted herein.
	o	The total length and percentage of the relevant intersections logged	All
Sub-sampling techniques and sample preparation	o	If core, whether cut or sawn and whether quarter, half or all core taken.	Quarter core sampled
	o	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	NA
	o	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	Appropriate
	o	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Supervised by Exploration Manager
	o	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate /second-half sampling.	Supervised by Exploration Manager
	o	Whether sample sizes are appropriate to the grain size of the material being sampled.	Supervised by Exploration Manager
Quality of assay data and laboratory tests	o	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	Appropriate. Quarter diamond blade cut drill core was 50 gm fire assayed for gold +40 element ICP with total 4 acid digestion Acceptable accuracy levels established
	o	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	As noted herein.
Verification of sampling and assaying	o	The verification of significant intersections by either independent or alternative company personnel.	All by J.Kirakar and K.Igara
	o	The use of twinned holes.	Nil
	o	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	As noted herein.
	o	Discuss any adjustments to assay data.	None
Location of data points	o	Accuracy + quality of surveys used to locate drill holes (collar + down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	NA
	o o	Specification of the grid system used. Quality and adequacy of topographic control.	Map datum is AGD 066. 40m contours - 1:100,000 plans, 20m -SRTM contours.
Data spacing and distribution	o	Data spacing for reporting of Exploration Results.	As noted herein and refer to any attached plans for details.
	o	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied	Yes
	o	Whether sample compositing has been applied.	No

Orientation of data in relation to geological structure	o	Whether the orientation of sampling achieves unbiased sampling of possible structures to the extent this is known, considering the deposit type.	If and as stated in text.
	o	If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported.	If and as stated in text
Sample security	o	The measures taken to ensure sample security	Normal baggage-freight procedures
Audits or reviews	o	The results of any audits or reviews of sampling techniques and data.	No specific audits or reviews of sampling techniques and data have been undertaken.

Section 2 -- Reporting of Exploration Results

Criteria		Explanation	Commentary
Tenure	o	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	AS noted herein
Exploration done by other parties	o	Acknowledgment and appraisal of exploration by other parties.	Exploration in the region was initiated in the late 1960s as part of a PNG porphyry copper deposit search. It was explored for gold initially in the mid 1980's.
Geology	o	Deposit type, geological setting and style of mineralisation.	Gold intrusive -epithermal related targets, porphyry copper-gold - molybdenum and higher grade gold -silver-zinc-lead skarns.
Drill hole information	o	A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:	Drilling underway and Information tabulated herein.
		Easting and northing of the drill hole collar	Information noted herein.
		Elevation or RL (Reduced Level- elevation above sea level in metres) of the drill hole collar	Information noted herein.
		Dip and azimuth of the hole	Information noted herein.
		Down hole length and interception depth	Information noted herein.
		Hole length	Information noted herein.
	o	If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	Not applicable
Data aggregation methods	o	In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.	Tables of results included show data aggregation if applied.
		Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail	Is this occurs, it is stated in the text.
	o	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalent values are reported.
Relationship between mineralisation widths & intercept lengths	o	These relationships are particularly important in the reporting of Exploration Results.	Moderately understood
	o o	If the geometry of the mineralisation with respect to drill hole angle is known, its nature should be reported. If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').	Reported
Diagrams	o	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	Appropriate maps, sections and tabulations of intercepts are included.
Balanced reporting	o	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	Comprehensive reporting of Exploration Results has been previously completed and released.
Other substantive exploration data	o	Other exploration data, if meaningful and material should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples - size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances	All meaningful exploration data has been included in this and previous releases.
Further work	o o	The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Future work is dependent on a capital raising to be undertaken in mid-2016. Appropriate plans will be included, as possible in a later release documenting approved future work programs.