

**PHONE** +61 (8) 9486 4036 **ABN** 96 095 684 389 EMAIL
pmcneil@frontierresources.com.au
WEBSITE
www.frontierresources.com.au

**ASX: FNT** 

## **ELA 2513 Kol Mountains - Information Summary**

Frontier Resources Limited (**Frontier**) is pleased to announce summary information regarding ELA 2513, located in the Kol Mountains, between Wide and Open Bays in West and East New Britain Provinces, Papua New Guinea. Access to the area is good with logging tracks to the north end of the EL / Bukuam Prospect.

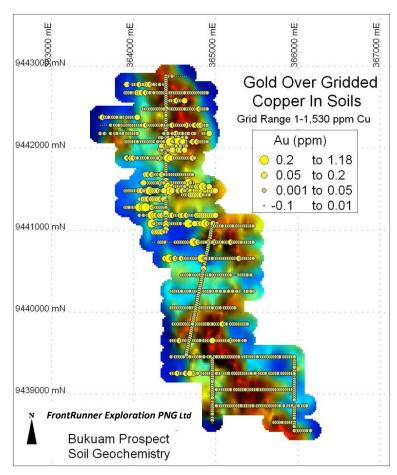
The Kol Mountains ELA is prospective for porphyry copper, gold - silver -zinc skarn and /or epithermal gold deposits. The area contains the Bukuam porphyry copper/molybdenum/gold/zinc soil anomalies and the Esis porphyry occurrence, which are situated about 14km opposite each other on the flanks of the Esis-Sai granitoid complex.

**Bukuam** is in a 5.5km x 1.2km copper in stream sediment anomaly with an open ended, 4.8km long base and precious metal soil anomaly. Trenching returned 205m at 1.9 g/t gold (including 5m at 13.1 g/t gold) and 70m at 1.7 g/t gold. Limited diamond drilling on skarns returned 6m at 2.2g/t gold + 9.5 g/t silver + 1.2% zinc.

The soil assays are still open to the north and the south, with some probable width extensions to the east. The copper soil anomaly in the southern section of the grid is higher in overall tenor than the northern section, with 10 assays reporting >0.1% copper.

The length of the Bukuam mineralised system in soils reflects high prospectivity for the discovery of a 'World Class' copper - molybdenum (+/-) gold deposit.

Esis had fifteen diamond core holes drilled in 2012 by the Frontier / OTML JV for a total of 7,590.9m. Results included 238m grading 0.37% copper (from 3m to 241m) in hole NBE001, 184m grading 0.30% copper (from 2m to 186m) in hole NBE002, 199m grading 0.28% copper (from 0m to 199m) in hole NBE003 and 306.8m grading 0.28% copper (from 18m to 324.8m) in hole NBE005.



Multiple zones of copper mineralisation have been shown to extend over a +1,100m strike length in drill holes. The copper anomalism is open in all directions with porphyry copper mineralisation demonstrated over a +750m strike length between mineralised intercepts in drill holes NBE002 and 006.

The copper mineralisation is open at depth at +700m vertically below surface in multiple zones including NBE001, which terminated in 0.41% copper. Hole NBE007 was terminated with 233.8m grading 0.20% copper to 602.7m, also showing mineralisation to the west of the long section line (60-degree inclination). The mineralisation is open to the east with holes including Hole NBE004 - terminated in 0.38% copper at 719.9m (60-degree inclination).

There are signatures of porphyry style alteration and the mineralised breccias in NBE015 suggest these structures are possible conduits that tap into a larger mineralising porphyry system at depth.

## **KOL MOUNTAINS - ELA 2513 SUMMARY**

The Kol Mountains ELA is prospective for porphyry copper, gold - silver -zinc skarn and /or epithermal gold deposits. The area contains the Esis porphyry occurrence and the Bukuam porphyry copper, molybdenum, gold and zinc soil anomalies, which are situated about 14km opposite each other on the flanks of the Esis-Sai granitoid complex.

New Britain forms part of the volcanic island arc system that developed during the Palaeogene period. Intrusive porphyry copper-gold and high-level epithermal gold deposits are affiliated with similar island arc systems elsewhere in Papua New Guinea. The ELA covers a total area of approximately 123 km², located about 100km southeast of Rabaul straddling the East and West New Britain Provinces of Papua New Guinea.

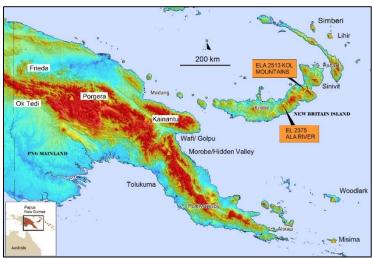
The stratigraphy of the Gazelle Peninsula of New Britain is dominated by pre-Miocene sequence which consists of the Baining Volcanics. This sequence is intruded by acid to basic intrusive rocks of late Oligocene. This extrusive-intrusive sequence is confined to the north and is host to a number of copper-gold occurrences.

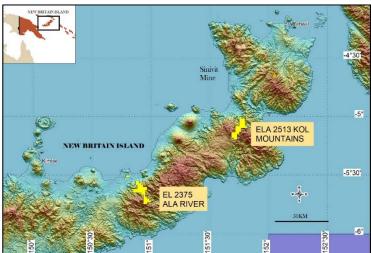
The Merai Volcanics occur to the southwest and consist of tuff, andesite breccia, conglomerate and limestone. The Mio-Pliocene sequence is dominated

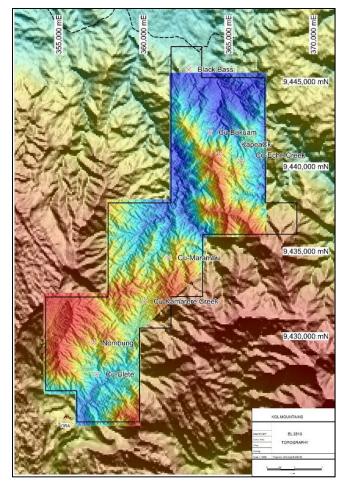
by the reefal Yalam Limestone, unconformably overlain by the Nengmutka Volcanics. These volcanics which host the Wild Dog (Sinivit) epithermal gold deposit, are composed of fluvial and pyroclastic-epiclastic sediments interbedded with pyroclastic flow deposits and andesites. These volcanics have been deposited in a caldera related environment.

The Sinivit Formation is dominated by volcaniclastic sandstone and siltstone with minor conglomerate and limestone. These are both marine and terrestrial intercaldera sequences associated with the Nengmutka, Keravat and Sikut Calderas. The main structural features in the region include the Baining Mountain Horst and Graben Zone and the spatially related caldera systems. The Wide Bay Fault system parallels the Baining Mountain Structural Zone.

The tenement contains at least three target types/ areas of interest, being porphyry copper at Esis and Bukuam, high grade gold and base metals in skarns at Bukuam and highlevel, epithermal and include the Esis-Ulete porphyry copper deposit (located to the south), the Kamarere and the Nombung anomalies. The Nombung anomaly is situated around Nombung and Ulete creeks and the Esis River to the south. The Bukuam Prospect occurs in the head waters of Sai River and lies within the NW-SE striking Wide Bay Fault Zone (WBFZ). The Sai River drains through Open Bay to the Bismarck Sea.







#### PREVIOUS EXPLORATION

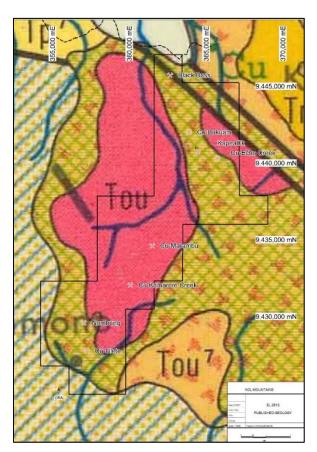
BHP and CRA carried out extensive work in the area between the late 1960s to late 1980's in the Bukuam zinc-Cu-gold skarn area and the Esis Prospects. These prospects had very limited drill testing prior to the Frontier/OTML JV.

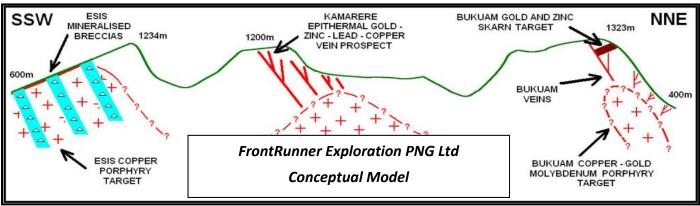
The Bukuam Prospect contains high surface gold values within a mineralised silicate-sulphide skarn body, which is situated adjacent to the upper Oligocene Esis-Sai intrusive granitoid complex. Trenching returned 205m at 1.9 g/t gold (including 5m at 13.1 g/t gold) and 70m at 1.7 g/t gold from two different zones. Results from the diamond drilling returned a best intercept of 6m at 2.2g/t gold + 9.5 g/t silver + 1.2% zinc.

The Esis-Ulete porphyry copper deposit occurs within mineralised quartz-diorite breccias on the western flanks of the Esis-Sai granitoid complex.

Frontier and OTML JV drilled fifteen diamond core holes at Esis for a total of 7,590.9m and multiple zones of copper mineralisation have been shown to extend over a +1,100m strike length in drill holes and the mineralisation is open in all directions (along strike N and S, across the width from E to W and at depth).

Porphyry copper mineralisation was demonstrated over a +750m strike length between mineralisation in drill holes NBE002 & 006.





## Drill results include:

- ◆ 238m grading 0.37% copper (from 3m to 241m) in hole NBE001.
- ◆ 184m grading 0.30% copper (from 2m to 186m) in hole NBE002.
- ♦ 199m grading 0.28% copper (from 0m to 199m) in hole NBE003.
- ♦ 274.2m of 0.25% copper (from 4m to 278.2m), plus 18m of 0.30% copper from 691m to 709m in NBE004.
- ♦ 306.8m grading 0.28% copper (from 18m to 324.8m) in hole NBE005.
- 232.5m grading 0.27% copper (from 3.5m to 236.0m) in hole NBE006.
- ◆ 138.0m grading 0.23% copper (from 0m to 138m), plus 233.8m grading 0.20% copper (from 368.9m to 602.7m EOH) in hole NBE007.

The copper mineralisation is open at depth (+700m vertically below surface) in multiple zones.

- ♦ Hole NBE001 was terminated in 0.41% copper at 697.6m (drilled vertically).
- ♣ Hole NBE007 was terminated with 233.8m grading 0.20% copper to 602.7m, also showing mineralisation to the west of the long section line (60-degree inclination).

The mineralisation is open to the east.

- Hole NBE004 was terminated in 0.38% copper at 719.9m (60-degree inclination).
- ♦ Hole NBE005 was terminated in 0.21% copper at 598.5m (60-degree inclination).

Hole NBE006 was terminated in 14.3m grading 0.23% copper at 598.3m (60-degree inclination) with elevated molybdenum (82 ppm compared to the hole average of 25 ppm) suggesting slightly different mineralisation.

A 402m wide copper mineralised zone was intersected in NBE015 from surface and hosted primarily in andesite, basalt and siliceous breccias that are intruded by a series of felsic quartz porphyry dykes similar to NBE012. Mineralisation is dominantly pyrite-chalcopyrite and occurs as veins and along fractures in the volcanics whilst it tends to occur as disseminations within chloritised, hornfelsed and phyllic altered matrices of mineralised siliceous breccias. Alteration is dominantly phyllic, characterised by quartz-sericite-chlorite.

There are signatures of porphyry style alteration and the mineralised breccias in NBE015 suggests these structures are possible conduits that tap into a larger mineralising porphyry system at depth.

Aeroquest UTS flew an airborne geophysics acquisition; the survey commenced on the 25th June 2010 and was completed on the 22nd July 2010. Line were run North - South with a 50m line spacing and a sensor height of 30m, delivering, magnetic intensity, topography and radiometric data. The MIRA Geoscience report, inversion model, radiometric images from Aeroquest are included below. A Lidar Survey was completed in November 2012.

## **BUKUAM PROSPECT**

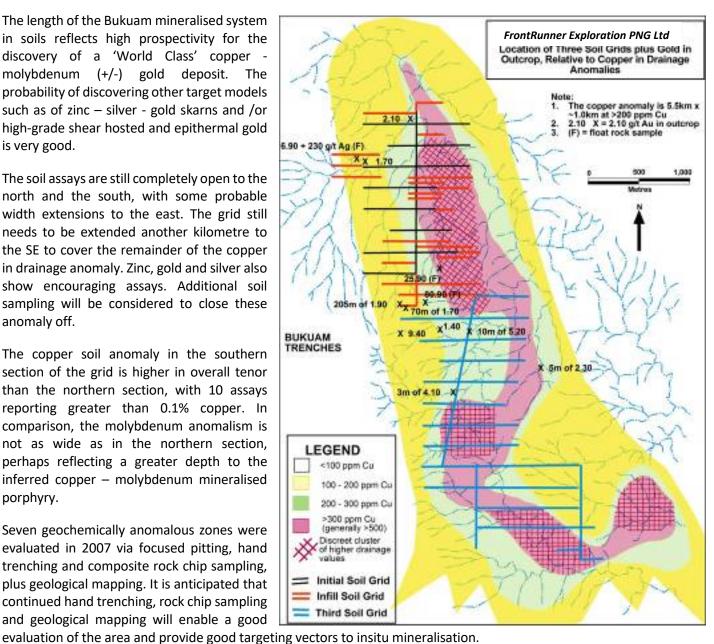
Bukuam is located in a 5.5km x 1.2km copper in stream sediment anomaly in East New Britain. It consists of an open ended, 4.8km long multi-element soil anomaly (copper + coincident molybdenum + lesser gold and silver). The anomalies are cohesive and contiguous, with mostly coincident geochemistry along most of its length.

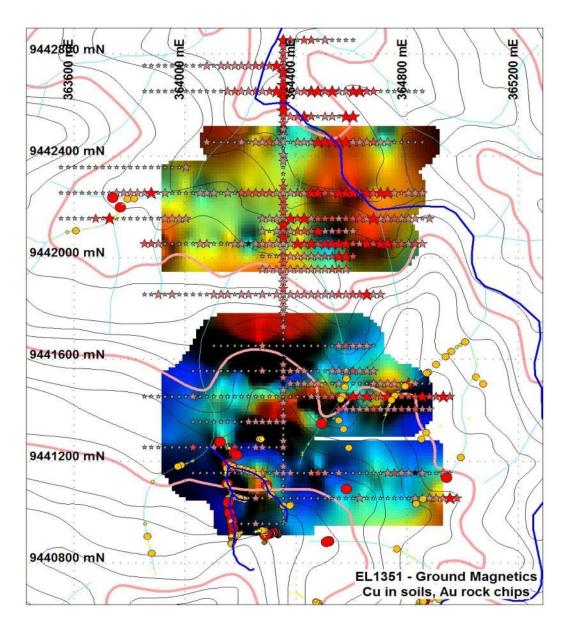
The length of the Bukuam mineralised system in soils reflects high prospectivity for the discovery of a 'World Class' copper molybdenum (+/-) gold deposit. probability of discovering other target models such as of zinc - silver - gold skarns and /or high-grade shear hosted and epithermal gold is very good.

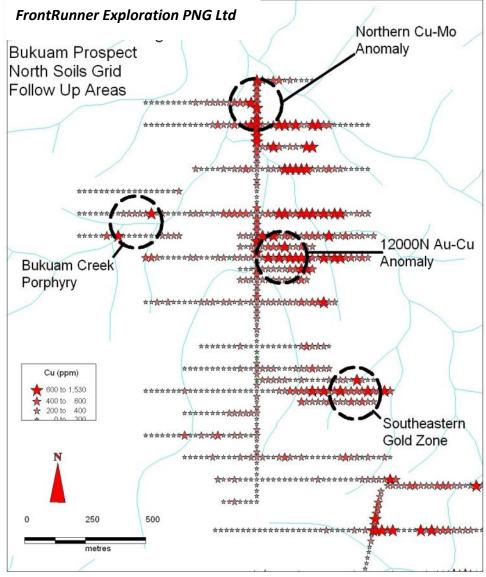
The soil assays are still completely open to the north and the south, with some probable width extensions to the east. The grid still needs to be extended another kilometre to the SE to cover the remainder of the copper in drainage anomaly. Zinc, gold and silver also show encouraging assays. Additional soil sampling will be considered to close these anomaly off.

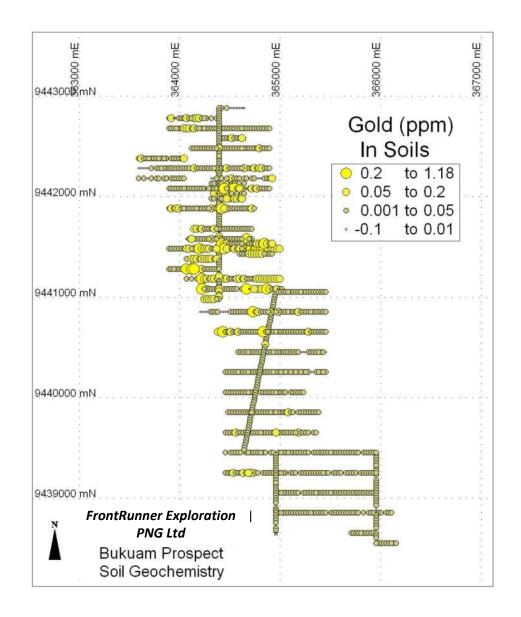
The copper soil anomaly in the southern section of the grid is higher in overall tenor than the northern section, with 10 assays reporting greater than 0.1% copper. In comparison, the molybdenum anomalism is not as wide as in the northern section, perhaps reflecting a greater depth to the inferred copper - molybdenum mineralised porphyry.

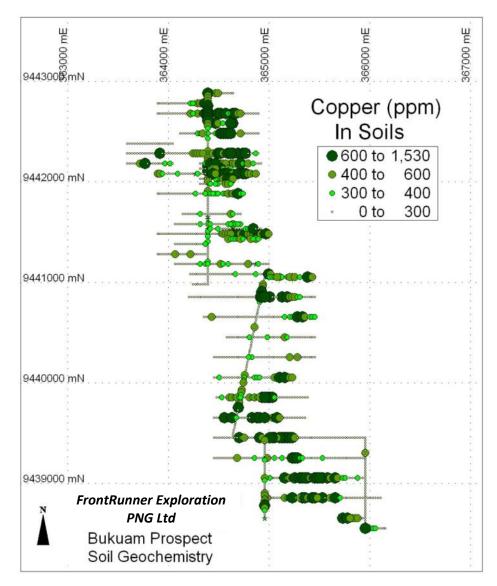
Seven geochemically anomalous zones were evaluated in 2007 via focused pitting, hand trenching and composite rock chip sampling, plus geological mapping. It is anticipated that continued hand trenching, rock chip sampling and geological mapping will enable a good

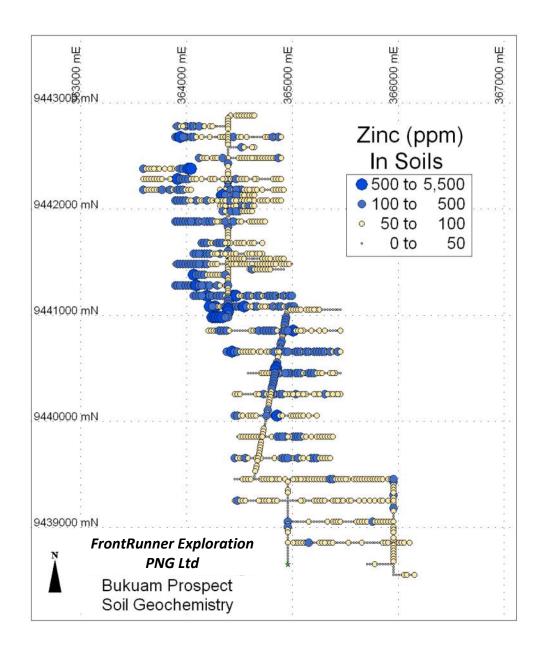


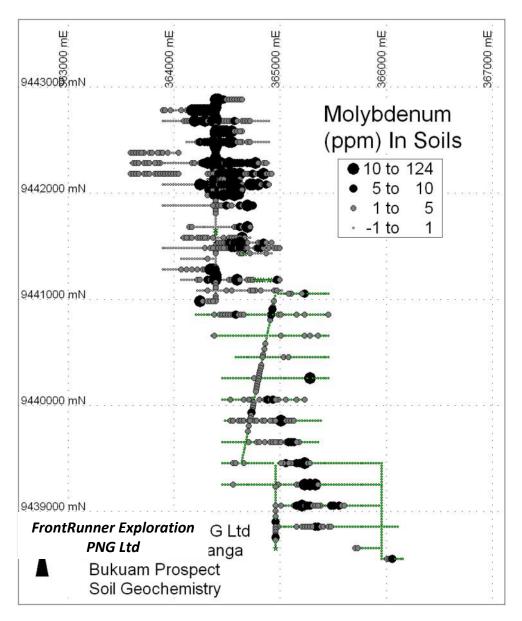


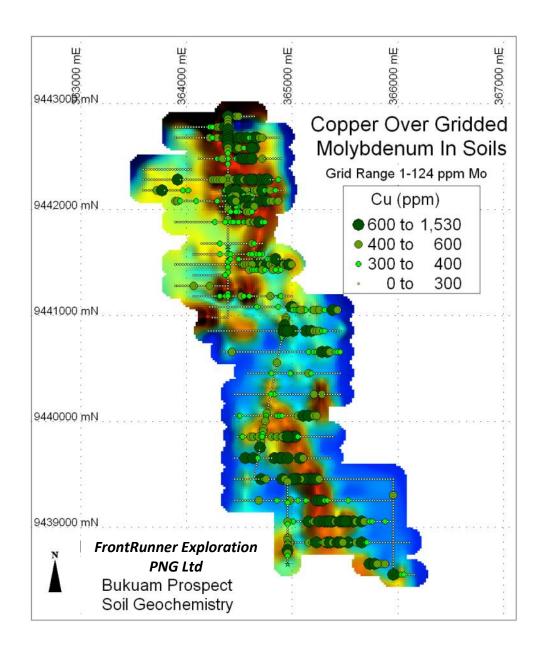


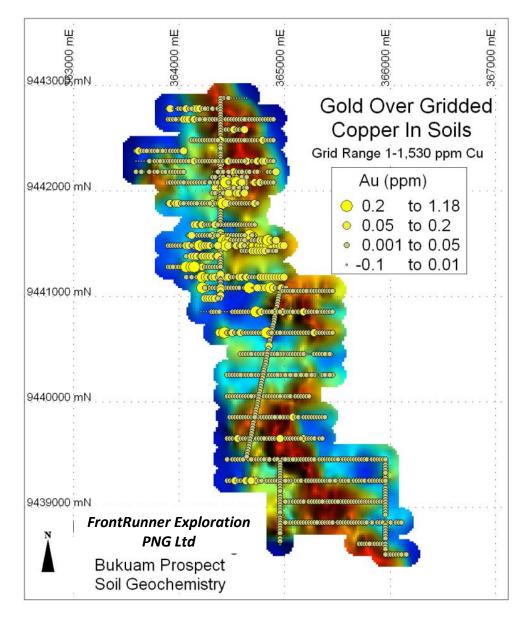


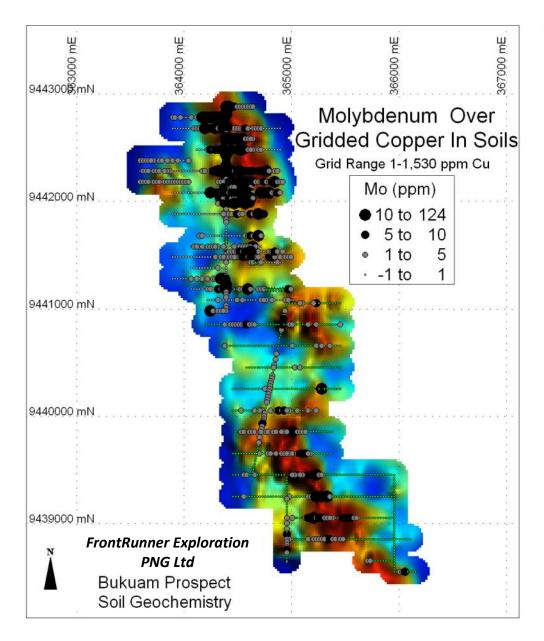


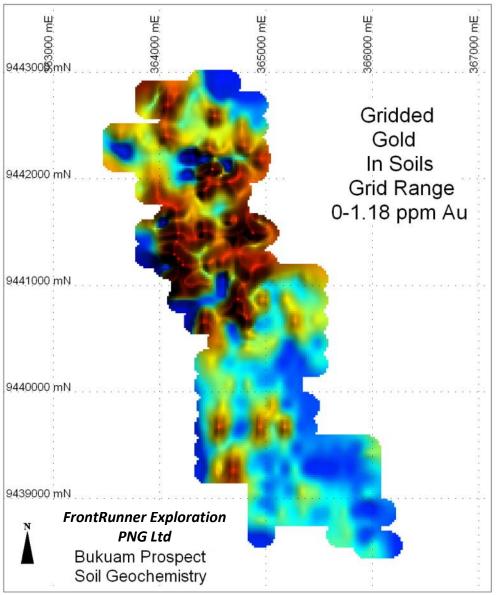


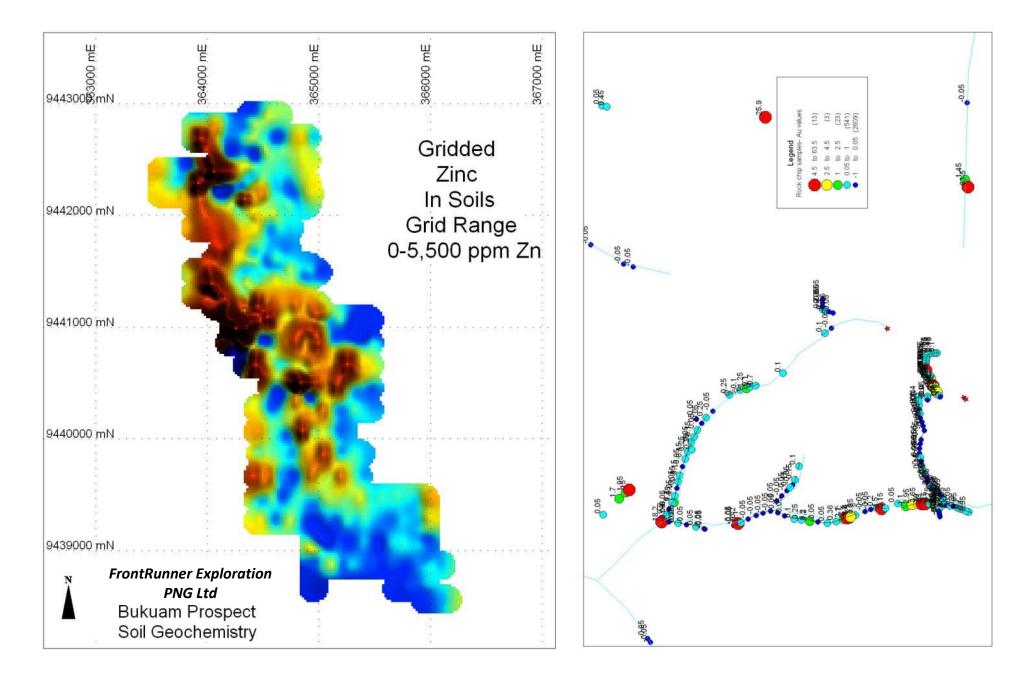


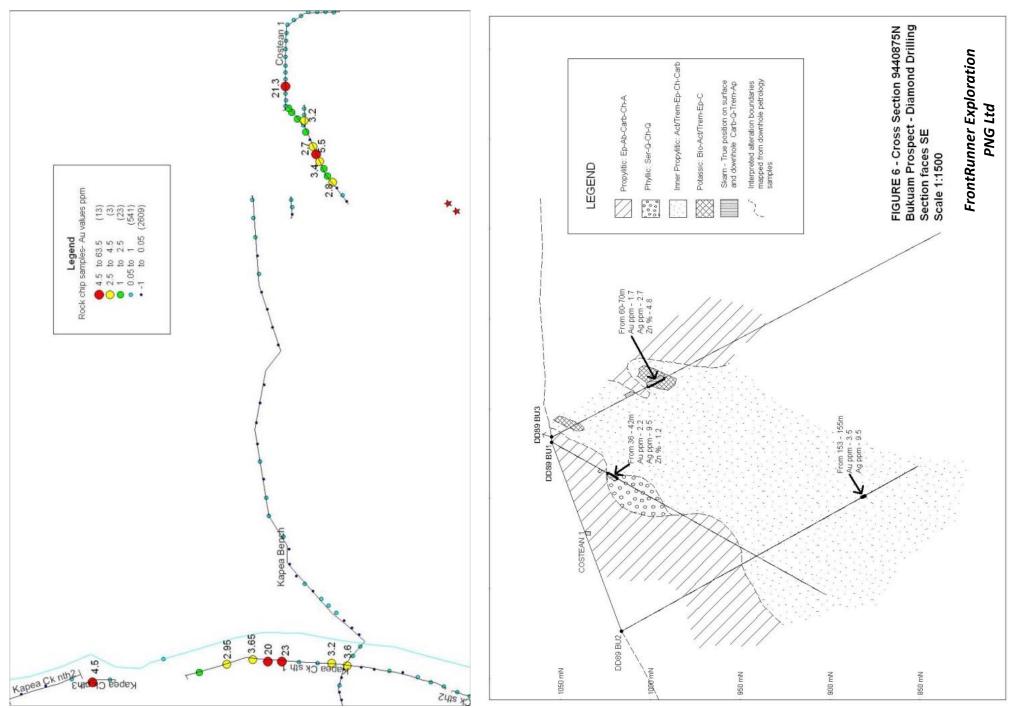












Drill cross section through the Bukuam Prospect showing the alteration facies and gold intercepts.

## Location of Drill Holes at the Bukuam Prospect (from Price, 1989)

Hole No	Orientation	Depth	Easting (m)	Northing (m)	R.L. (m)
DD89BU1	-60º 030º	176.70m	9936	19932	1055
DD89BU2	-60º /210º	190.80m	10004	20011	1016
DD89BU3	-60º/250º	250.15m	9934	19931	1055

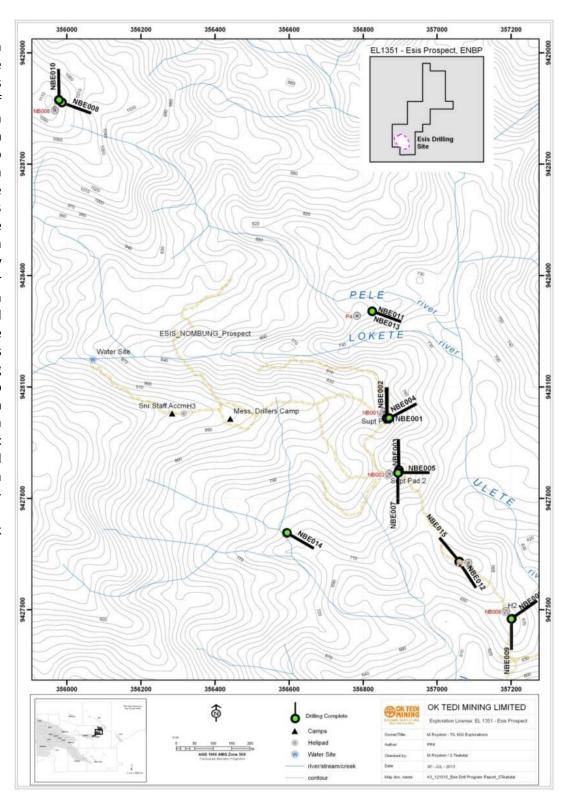
Results of drilling at the Bukuam Prospect

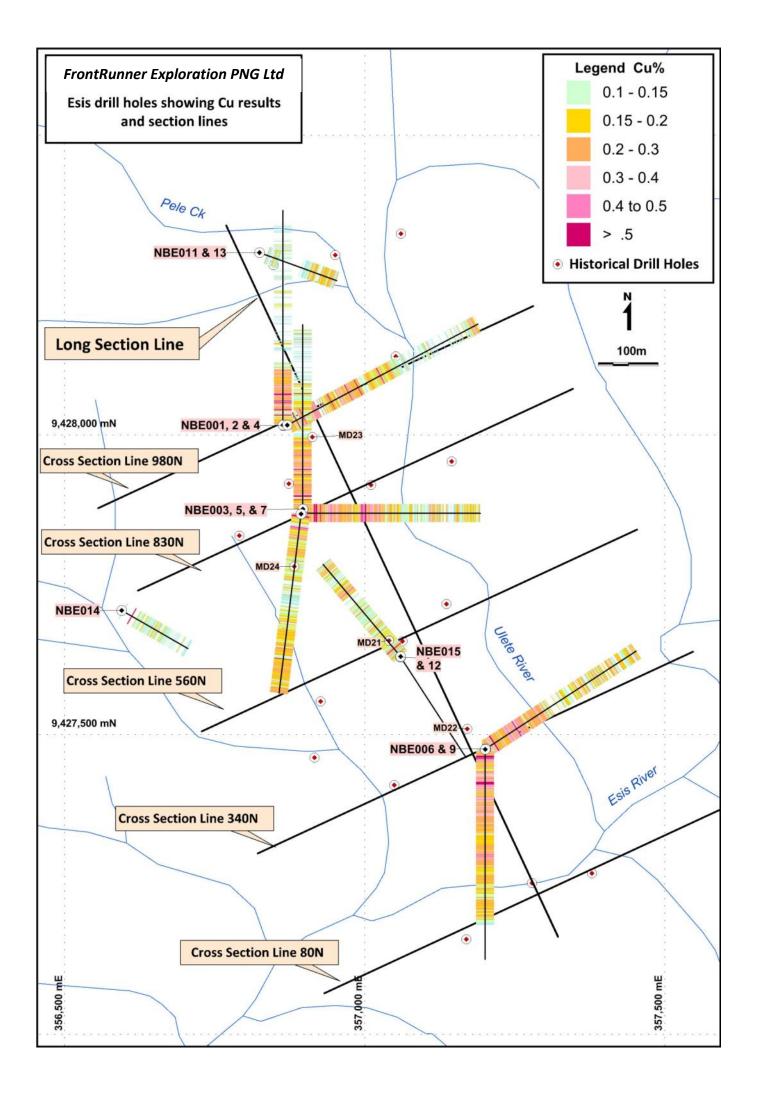
Hole No	From & To	Interval	gold (ppm)	silver (ppm)	zinc%	Comment
	(m)	(m)				
DD89BU1	36-42	6	2.2	9.5	1.2	Coarse sph-py-mt skarn
DD89BU2	153-155	2	3.5	9.5	-	(0.25m) py-qtz-clay breccia zone
DD89BU3	60-70	10	1.7	2.7	4.8	skarn

## **Esis Project**

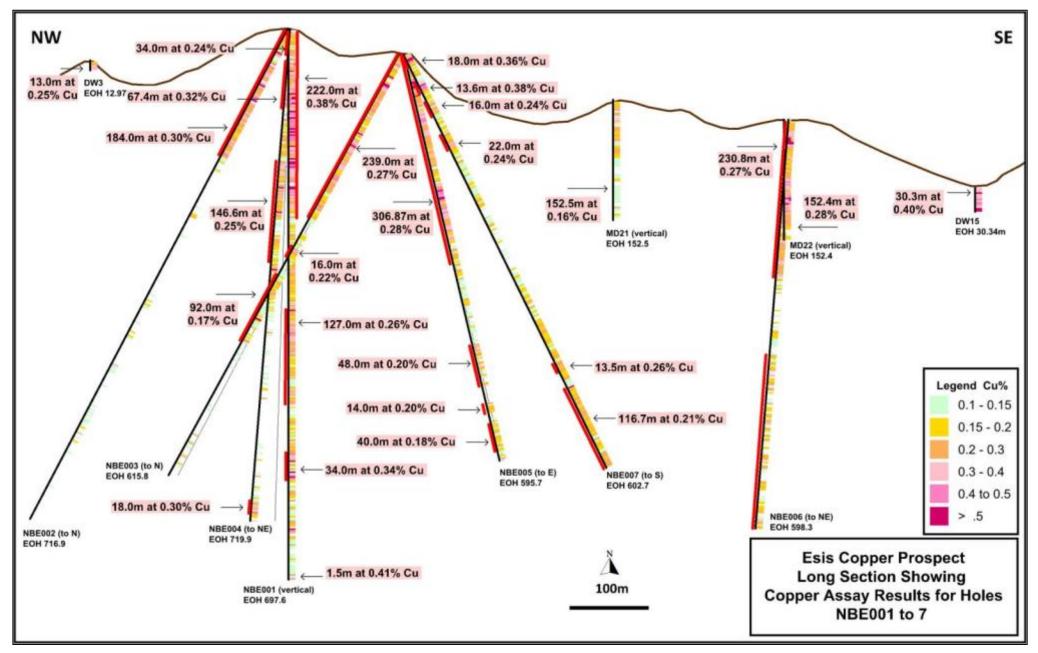
The long section displaying copper in the drill holes demonstrates the consistency mineralisation between holes and the open nature of the anomaly to the east, north, south and at depth. There appears to be at least 3 zones of moderate grade mineralisation copper that are separated by grade lower copper intervals both horizontally and vertically (as seen in the long section and cross sections). Further drilling warranted investigate the depth extent of potassium feldspar-biotite potassic alteration and silicification with associated strong pyritechalcopyritemolybdenite stockwork mineralisation

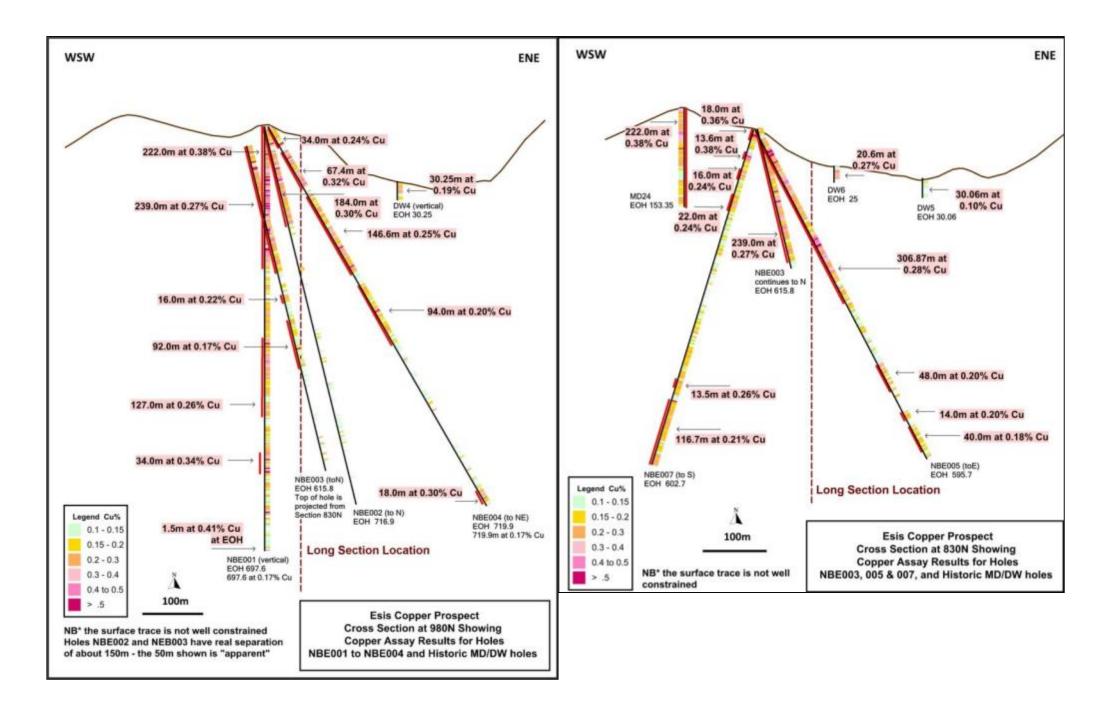
intersected in NBE014.

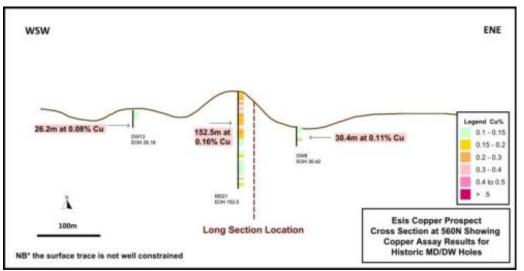


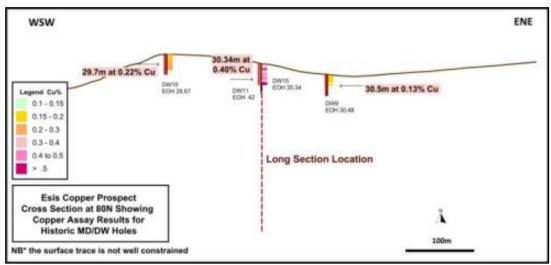


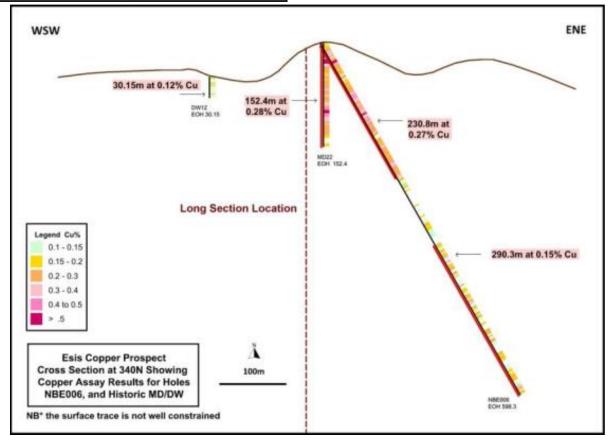
Refer to the Long Section + Cross Sections and drill hole weighted assay tables for information/ results and to visualise the orientation of the copper mineralisation. The location of the drill holes is shown on an oblique Google Earth image looking northerly (NNE).

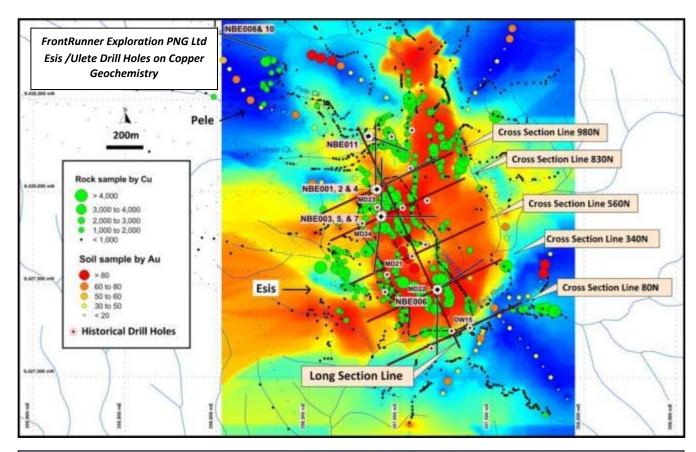














Assay results from holes NBE001 through NBE015 drilled at the Esis porphyry copper Prospect, ELA 2513 - Kol Mountains by the Ok Tedi Mining Ltd (OTML) - Frontier Resources Ltd Joint Venture on former EL 1351 are detailed below.

The long section shows that the mineralisation in the upper zone is relatively contiguous near surface between all the holes drilled to date. Various cross sections showing the downhole mineralisation. Drill hole locations at Esis/Ulete are also plotted on surface copper geochemistry, with lines showing the location of the long and cross sections. A Google Earth image shows the location of the various drill holes on an oblique image looking northerly (NNE).

The intercepts of significance are defined herein by a 0.15% copper cut-off, with higher grade zones generally defined

by a 0.3% copper cut-off. The results for each hole contain no particularly significant gold mineralisation and as such it is not reported here. The molybdenum is reported so its variation can be noted in context of genetic porphyry copper models, not because it has any particular possible economic value at Esis.

The JV diamond drill holes in varying orientations have achieved a better understanding of the geology with respect to lithology, mineralisation and alteration and will lead to the initial production of a coherent 3D model.

The long section displaying copper in the drill holes demonstrates the consistency of mineralisation between holes and the open nature of the anomaly to the east, south and at depth.

There appears to be at least 3 zones of moderate grade copper mineralisation that are separated by lower grade copper intervals both horizontally and vertically (as seen in the long section and cross sections).

Hole NBE 001: Was designed as a vertical twin of MD23, drilled by BHP in 1974. MD23 reported an average of 0.39% copper from surface to its final depth at 152.6m. Mineralisation in NBE001 occurs from the surface in highly fractured, and oxidised, clay altered diorite down to about 230m and into competent quartz diorite which continued to end of hole at 697.6m. It occurs as chalcopyrite disseminations in a stockwork of micro fractures and as disseminated chalcopyrite and minor molybdenum in association with silica alteration. The latter is hosted in steeply dipping quartz feldspar porphyry dykes.

An itercept of 228m grading 0.37% from 0m to 228m. The hole was terminated in 0.41% copper mineralisation. Potassic alteration, characterised by magnetite and biotite increased with depth.

**Hole NBE 002:** Was designed to extend geological knowledge to the north of NBE001 and it was continued to depth on the basis that NBE001 terminated in strong mineralisation at the depth limits of the drill rig.

Lithologies consists of fractured clay altered diorite from surface to approximately 189m, grading into a competent quartz-diorite cross cut by steeply dipping quartz veins (to 641.9m). A 20m late volcanic breccia dyke cross cuts the quartz veined diorite units and then continues to the end of hole.

Hole NBE002 contains two discrete individual intercepts for a 184m intercept grading 0.30% copper (from 2m to 186m downhole). The hole was successful in defining a northern limit to mineralisation and identifying new bounding geological units and controls on mineralisation at depth.

Chalcopyrite is hosted in stock work and micro fractures as observed in NBE001. Biotite and magnetite increased with depth similar to NBE001.

**Hole NBE 003:** Was designed to cut across NBE001 (crossed at 307m down-hole depth in NBE001), and continued to be drilled to depth for geology and define the

	Drill Hole NBE001 Weighted Assay Results							
From (m)		To (m)	Intercept (m)	Copper (%)	Moly (ppm)			
Entire Hole	0.0	697.6	110.6	0.17	15			
	0	66.1	66.1	0.27	17			
Plus	66.1	228.0	161.9	0.41	57			
Plus	228.0	350.0	122.0	0.18	18			
Plus	350.0	477.0	127.0	0.26	11			
Plus	477.0	537.0	60.0	0.18	7			
Plus	537.0	571.0	34.0	0.34	3			
Plus	571.0	697.6	126.6	0.16	14			

## **Drill Hole NBE002 Weighted Assay Results**

From (m)		To (m)	Intercept (m)	Copper (%)	Moly (ppm)
Entire Hole	0.0	716.9	716.90	0.13	14
	2.0	186.0	184.0	0.30	19
Incl.	30.1	38.1	8.0	0.40	7
Plus	48.1	54.1	6.0	0.67	3
Plus	74.1	83.6	9.5	0.57	7
Plus	97.6	107.6	10.0	0.37	5

### **Drill Hole NBE003 Weighted Assay Results**

From		To Intercept Co		Copper	Moly
(r	n)	(m)	(m)	(%)	(ppm)
Entire Hole	0.0	0.0 606.8 606.8 0.18		0.18	25
	0.0	239.0	239.0	0.27	35
Plus	239.0	283.0	44.0	0.11	18
Plus	283.0	299.0	16.0	0.22	46
Plus	299.0	329.0	30.0	0.11	37
Plus	329.0	421.0	92.0	0.17	15
Plus	421.0	553.0	132.0	0.07	12
Plus	553.0	599.0	46.0	0.12	23
Plus	599.0	606.8	7.8	0.05	15

northerly extension of the lower mineralised zone of NBE001. It was drilled from the same pad as NBE005 and NBE007. The geology is consistent down hole with NBE001 & 002 (with the exception of a zone of quartz porphyry in the top of the hole that may extend east).

Lithology consists of fractured clay altered diorite (considered an oxidised cap) from surface to approximately 199m passing through a zone of quartz porphyry (115m to 161m) and into a fine grained mafic diorite, ending short of the quartz diorite found at the end of holes NBE001 /002.

There are two mineralised zones, separated by 10m of internal dilution which together produce a weighted average copper mineralisation intercept at 0.27% copper from 0m to 239m down hole at 0.15% cut-off. Consistent with NBE001, chalcopyrite is hosted in stockwork and micro fractures. However, unlike NBE001, no significant quartz-feldspar porphyry dykes were intercepted below 184m.

Hole NBE 004: Was designed to test the eastern extension of copper mineralisation intersected in NBE001 and NBE002. Lithologies down hole consist predominantly of variably altered diorite (within oxidised cap to 131.6m) alternating with quartz diorite at depth, which then continues to the end of hole.

Mineralisation is typically chalcopyrite occurring as disseminations in quartz stockwork as well as coating and infilling micro fractures. Discrete zones of mineralisation occur within the upper part, with two zones averaging at 111.5m grading 0.27% copper and 146.6m grading 0.25% copper occurring at 4m and 131.6m respectively.

Copper mineralisation is open to the east and at depth with the hole terminated in 0.38% copper (at the limit of the rig's capacity).

Down hole, the geology is consistent with NBE001 & 2 with the exception of a zone of quartz porphyry zone in the top of the hole that is similar to NBE003. The hole comes into quartz diorite much earlier than found in NBE001 & 2, delineating variation in geology to the northeast.

Hole NBE 005: Was drilled to test the eastern extent of anomalism from a southern location on the same pad as NBE003 and NBE007. Down hole, the geology is consistent with NBE001 & 2 being predominantly variably altered diorite. Several zones of mineralisation are present with the main one occurring from 18 – 324.8m averaging at 0.28% copper.

Three other intercepts occur below 306.8m, one being 48m grading 0.20 % copper from 424m down hole.

NBE005 confirmed that the copper anomalism remains open to the east and at depth with the hole producing an intercept of 0.23 % copper over 3.5m from 590m down hole to end of hole.

Drill Hole NBE004 Weighted Assay Results					
Fro		To (m)	Intercept (m)	Copper (%)	Moly (ppm)
Entire Hole	0.0	719.9	719.9	0.17	25
	0.0	4.0	4.0	0.02	21
Plus	4.0	38.0	34.0	0.24	9
Plus	38.0	48.1	10.1	0.09	17
Plus	48.1	115.5	67.4	0.32	53
Plus	115.5	131.6	16.1	0.06	70
Plus	131.6	278.2	146.6	0.25	63
Plus	278.2	301.0	22.8	0.09	32
Plus	301.0	395.0	94.0	0.20	23
Plus	395.0	453.0	58.0	0.12	2
Plus	453.0	503.0	50.0	0.07	1
Plus	503.0	561.0	58.0	0.10	2
Plus	561.0	669.0	108.0	0.07	2
Plus	669.0	719.9	50.9	0.19	5
Incl.	691.0	709.0	18.0	0.30	6
	Drill	Hole NBE00	)5 Weighte	d Assay Res	ults

				•	
Fro (n		To (m)	Intercept (m)	Copper (%)	Moly (ppm)
Entire Hole	0.0	593.5	593.5	0.21	23
	0.0	18.0	18.0	0.14	11
Plus	18.0	324.8	306.8	0.28	30
Incl.	36	50	14	0.49	5
Plus	324.8	424.0	99.2	0.12	11
Plus	424.0	472.0	48.0	0.20	23
Plus	472.0	510.0	38.0	0.09	11
Plus	510.0	524.0	14.0	0.20	20
Plus	524.0	540.0	16.0	0.09	28
Plus	540.0	580.0	40.0	0.18	16
Plus	580.0	590.0	10.0	0.12	19
Plus	590.0	593.5	3.5	0.23	4

Although the quartz stockwork appears to be largely unmineralised, it is inferred that a number of phases of quartz veining may be present of which one may be mineralised. Mineralisation appears to be overprinted by phyllic alteration, which in turn, is overprinted by a late stage anhydrite- carbonate-clay-pyrite event.

Being mostly diorite, however, it failed to reach the quartz diorite or pass through the zone of quartz porphyry. The hole stopped early due to drilling conditions.

Hole NBE 006: Was designed to follow up on results from historic hole MD22 that was terminated in 0.27% copper at 152.4m depth vertically.

Hole NBE006 was a scissor drill hole from the historic MD22 pad targeted to investigate the possible extension of the mineralisation to the east, as inferred from historic surface geochemical anomalies coupled observations made from recent results from drill holes NBE001 and NBE002.

Hole NBE006 is at the lowest RL point of the system in the project drilled to date and notably molybdenum content is increasing.

The collar i	is located	in the	southeast and	the	consistent
THE COMMIT	is located		Journeuse and	CITC	COMBISCOM

The collar is located in the southeast and the consistent
upper large copper intercepts (the first 200m+ in the holes) deliver an apparent continuous mineralisation length of
630m as by collar distance, and a length of ~760m at ~200m depth in the holes (as defined between NBE002 and
NREQUES. This is still open to the south and north, and perpendicularly to the East and West plus at depth

From

0.0

3.5

16.0

86.0

236.0

308.0

396.0

528.0

581.0

incl. 356.0

Entire

Hole

Incl.

and

Plus

Plus

Incl.

Plus

Incl.

upper large copper intercepts (the first 200m+ in the holes) deliver an apparent continuous mineralisation length of
630m as by collar distance, and a length of ~760m at ~200m depth in the holes (as defined between NBE002 and
NBE006). This is still open to the south and north, and perpendicularly to the East and West plus at depth.

Coring started from an oxidised, brecciated zone with dominant magnetite-pyrite- chalcopyrite in matrix that extends 50 metres from the surface. Minor barren andesitic to diorite dykes and sills cut through the extensive intrusive breccia zone locally. The dykes post-date mineralisation and locally destroy or degrade existing hydrothermal alteration and mineralisation.

The intrusive breccia zone consists of mineralised and unmineralised clasts of various composition and sizes. Quartz feldspar diorite, with associated porphyry clasts, is dominant with minor fine grained diorite and andesite. Mineralisation in the breccia is erratic and presumed to be associated with magnetite, as clasts and disseminations at lower levels are encouraging for continuing exploration.

Down hole, the geology is consistent with the other holes drilled at Esis. With the top of the hole being diorite passing into quartz porphyry into quartz diorite back into diorite, there are some minor un-mineralised crosscutting dykes present. The hole terminated 100m early due to drilling conditions. Copper mineralisation in the main intercept is in fractured clay altered diorite and intrusive breccias with varying amounts of magnetite, quartz, chalcopyrite and various alteration types.

Multiple mineralised zones are present; the upper part of the hole is defined by one zone, 232.5m grading 0.27% copper (from 3.5m). Below this main intercept there is a broad continuous zone of weaker mineralisation from 308m to EOH (averaging 0.15 % copper) and contains nine intercepts > 0.2 % copper.

Hole NBE 007: Was drilled on the same pad as NBE003 and NBE005 and was designed to test the historically identified quartz porphyry and encouraging surface grades to the south. Mineralisation occurs in multiple zones. This is the first hole with a moderate variation from the upper 200m strong mineralised zone as reported in holes NBE001 to NBE006. The variation consists of 4 discreet upper intercepts in the top 200m (contained within a 0.19 % copper broad weaker anomaly from surface to 236m). Also, present is a broad zone from 436m (averaging 0.21% copper) to EOH, that contains multiple discrete intercepts. The hole terminated 100m early due to drilling conditions.

The core is strongly weathered to 112m passing into fresh diorite with discrete zones of quartz porphyry and quartz

	Drill Hole NBE007 Weighted Assay Results						
	om n)	To (m)	Intercept (m)	Copper (%)	Moly (ppm)		
Entire Hole	0.0	602.7	602.7	0.17	11		
	0	138	138	0.23	13		
Incl.	0.0	12.0	12.0	0.43	8		
Plus	12.0	40.4	28.4	0.17	16		
Plus	40.4	52.0	11.6	0.41	14		
Plus	52.0	116.0	64.0	0.18	15		
Plus	116.0	138.0	22.0	0.24	8		
	138.0	224.0	86.0	0.14	8		
	224.0	320.0	96.0	0.10	4		
	320.0	436.0	116.0	0.16	12		
	436.0	602.7	166.7	0.21	15		

**Drill Hole NBE006 Weighted Assay Results** 

(m)

598.3

236.0

38.0

150.0

308.0

528.0

396.0

446.0

598.3

592.0

Intercept

(m)

598.3

232.5

22.0

64.0

72.0

220.0

40.0

16.0

70.3

11.0

(%)

0.19

0.27

0.35

0.34

0.07

0.14

0.19

0.23

0.17

0.24

(ppm)

25

21

19

21

15

25

24

49

50

117

diorite. Breccias – stock-work occurs in multiple instances and copper mineralization generally consists of chalcopyrite ± trace bornite from near surface; minor-trace molybdenite from 112m. Pyrrhotite is recorded as the dominant mineral from 555m. There are multiple small un-mineralised crosscutting dykes. Alteration is typically clay at surface passing to potassium feldspar with increasing biotite. Gypsum/anhydrite alteration is strong between 238 to 433m.

From 524m strong quartz stock-working is pervasive.

Hole NBE 008: Was a Phase 2 hole drilled to 602.6m to target known copper mineralisation in the Pele area. Hole NBE009 delivers multiple mineralised intercepts, the most notable being an extensive 576.6m grading 0.25% copper (0.1% cut-off) from 2.4m to 579m down hole. This long intercept contains higher grade zones of significance such as 14m grading 0.57% copper (from 21m), 18m grading 0.47% copper (from 107m) and 10m of 0.41% copper (from 349m). Refer to Table 1 for NBE009 weighted assay averages and Table 4 for all other results to date.

NBE009 was drilled on the same Pad as NBE006 and was designed to test southern extension of the mineralization. Weathering is predominant to 45m and copper mineralisation occurs in micro-fractures and fine disseminations. Gold is slightly elevated but is still considered insignificant with respect to a possible economic contribution. The assay results demonstrate the copper mineralisation is still open to the south.

**Hole NBE 009:** Was drilled to 700.2m on the same pad as NBE006, a Phase 1 hole targeting the southern extension to

Esis.

**Hole NBE 010:** Was a Phase 2 drilled to 307.0m on the same pad as NBE008, to target copper mineralisation in the Pele area.

**Hole NBE 011:** Was abandoned at 55.4m due to drilling issues. It is a Phase 1 hole targeting the northern extension to Esis.

**Hole NBE 012:** Was a phase 1 infill hole that was terminated at 400.0m.

**NBE 013:** Was drilled at the north end of Esis, was orientated to the east-south-east and designed to test the northern extension of the mineralisation as observed in surface samples. The top of hole in the margins of the main anomaly as defined by drilling to date is coincident with the relatively non-mineralised core in the lower part of NBE002:

The mineralisation at depth in NBE013 indicates the system is still open to the East. The hole was shortened from the original planned depth based on geology being intercepted. Mineralisation is weaker compared to other holes drilled at Esis due to the host rock being a volcanic unit that is less permeable.

Weathering is predominant to ~34m. The lithology is typically fine grained strongly magnetic amygdaloidal andesite possibly of the Baining Volcanics. The alteration passes from clay/ chlorite into propylitic/phyllic, there is overprinting hornfelsed alteration with localised veins of pyrite and quartz sometimes with carbonate; from 290m strong anhydrite is noted. A series of 4 faults are noted in the andesite, from 289m.

**NBE014**: Was drilled to the west of NBE003, 5 & 7. Was designed to test the western extension of the anomaly, strong mineralisation was expected to be intercepted from below 250m, inferred from mineralized outcrop in a creek.

Drill Hole NBE009 Weighted Assay Results							
Intercept Length		Copper Average	From (m)	To (m)	Cutoff Grade		
Longest =	576.6m	0.25%	2.4	579.0	0.1%		
Incl.	274m	0.30%	7.0	281.0	0.2%		
plus	72m	0.28%	315.0	387.0	0.2%		
Incl.	14m	0.57%	21.0	35.0	0.4%		
and	4m	0.43%	95.0	99.0	0.4%		
and	18m	0.47%	107.0	125.0	0.4%		
Incl.	10m	0.41%	349.0	359.0	0.4%		
and	28m	0.21%	419.0	447.0	0.2%		
and	4m	0.29%	463.0	467.0	0.2%		
and	56m	0.20%	501.0	557.0	0.1-0.2%		

Hole ID	from (m)	to (m)	Length (m)	Cu (%)	Cut off	
NBE013	31.7	42.0	10.3	0.15	0.1	
	58.0	76.0	18.0	0.14	0.1	
	196.0	324.3	128.3	0.16	0.1	
including	224.0	234.0	10.0	0.21	0.2	
also	258.0	280.0	22.0	0.21	0.2	
also	292.0	308.0	16.0	0.21	0.2	
also	316.0	320.0	4.0	0.27	0.2	
whole hole a	verage		324.3	0.10	NA	
NBE014	37.4	40.4	3.0	0.57	0.4	
	56.0	75.4	19.4	0.12	0.1	
	84.0	190.0	106.0	0.12	0.1	
	226.0	230.0	4.0	0.14	0.1	
whole hole a	verage		255.0	0.09	NA	
NBE015	7.0	234.0	227.0	0.15	0.1	
including	11.0	40.0	29.0	0.21	0.2	
also	126.0	134.0	8.0	0.21	0.2	
also	196.0	200.0	4.0	0.25	0.2	
	246.0	252.0	6.0	0.11	0.1	
	264.0	402.2	138.2	0.16	0.1	
including	266.0	306.0	40.0	0.23	0.2	
also	370.0	390.0	20.0	0.21	0.2	
whole hole a	verage		402.2	0.15	NA	

Severe drilling problems resulted in early termination; subsequently it only penetrated the Baining Volcanic unit from surface and failed to reach the predicted zone at depth. The weaker mineralisation in the volcanic unit is considered to be a result of the relatively impermeable nature of the host unit.

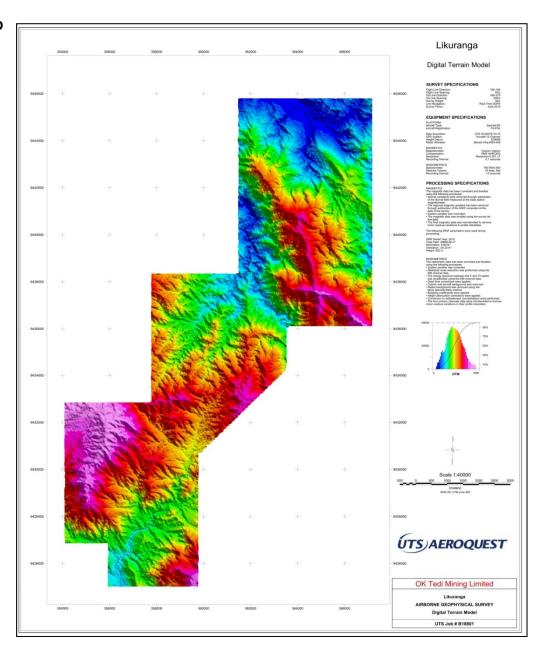
The core is strongly fractured fine-grained amygdaloidal andesite of the Baining Volcanics unit. Alteration varies from chloritic to phyllic/ propylitic with hornfelsed (Quartz, biotite, carbonate) overprinting from 40m increasing in intensity to the end of the hole (225m). Mineralisation is typically Pyrite throughout, occurrences of minor chalcopyrite, and Molybdenite is noted on fracture surfaces and small veinlets.

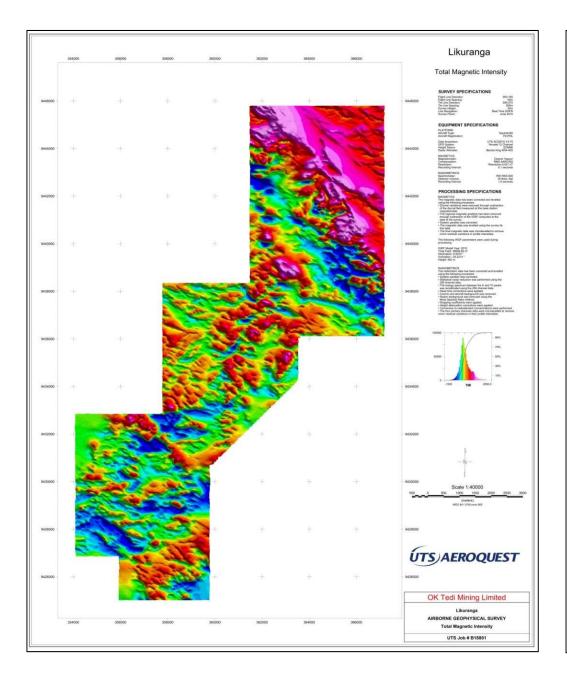
**NBE015:** Is one of two holes designed to test the mineralisation anomaly continuity between drill-holes NBE005, 6 and 7, located near historic short vertical drill hole MD2, it was orientated to the north. At 283m down hole it passes within 106m of NBE007, and mineralisation value are comparable between the two holes at this depth. The mineralisation is slightly weaker in the upper (plus) 200m, when compared to the NBE007. The results are considered encouraging, and the hole further develops the geological model.

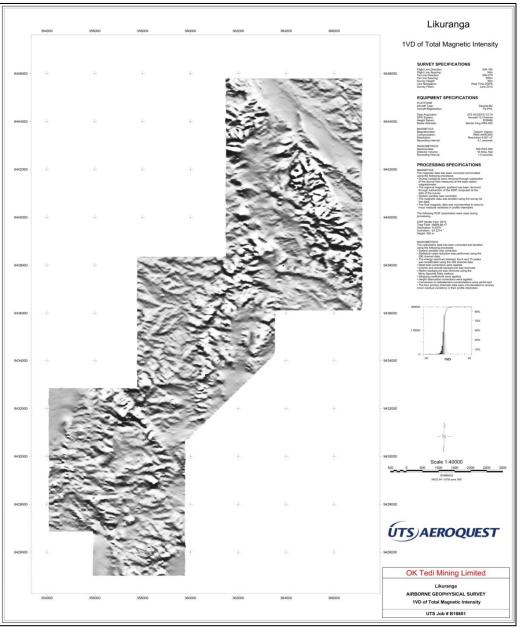
The core is strongly weathered to 28.6m, and consisting of andesite to ~334m, passing to quartz porphyry dyke and passes into diorite, at 380m an aphanitic andesite (probably Baining Volcanics) is encountered. Mineralisation is dominantly pyrite-chalcopyrite and occurs as veins and along fractures in the volcanic rocks, whilst it tends to occur as disseminations within chloritised, hornfelsed and phyllic altered matrices of mineralised siliceous breccias. Alteration is dominantly phyllic, characterised by quartz-sericite-chlorite. A hornfels alteration overprint with increasing intensity with depth is noted from 134m.

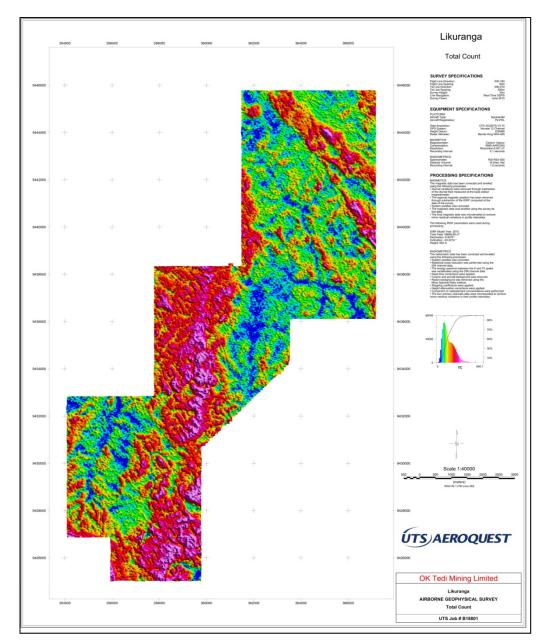
Reference datum is AMG Zone 56, AGD 66.

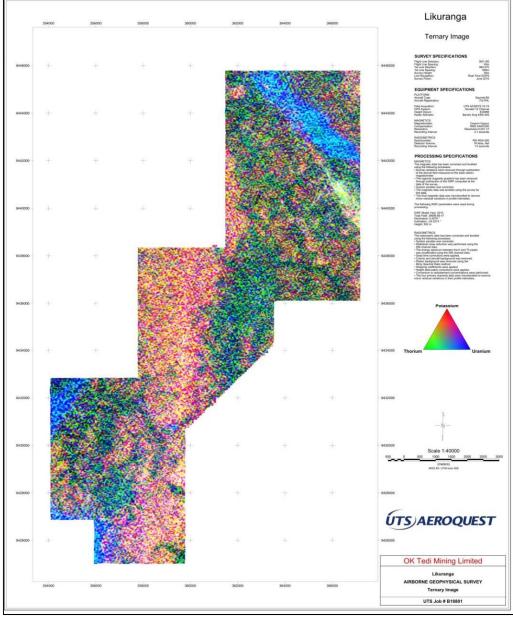
# AEROMAGNETIC DATA AND MODELLING

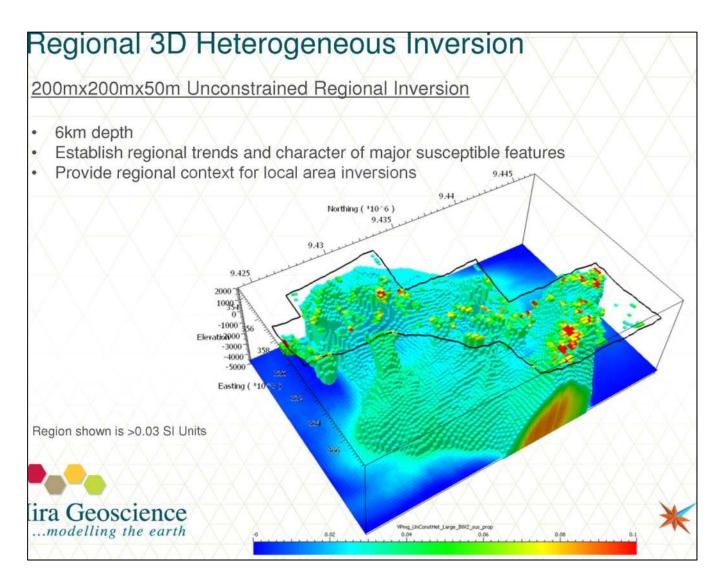


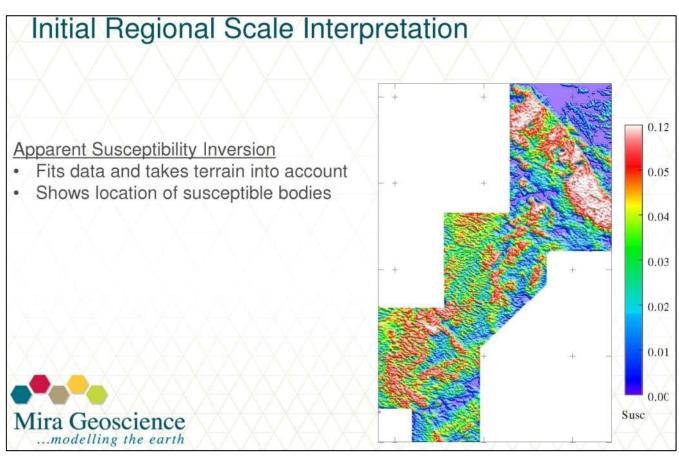


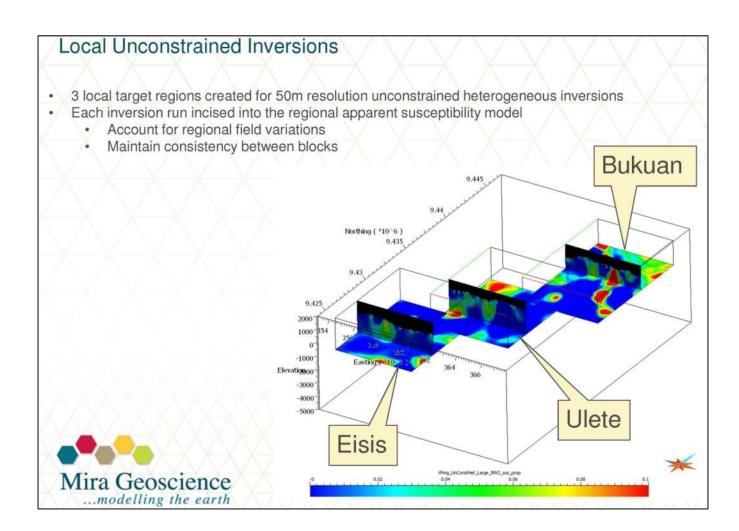


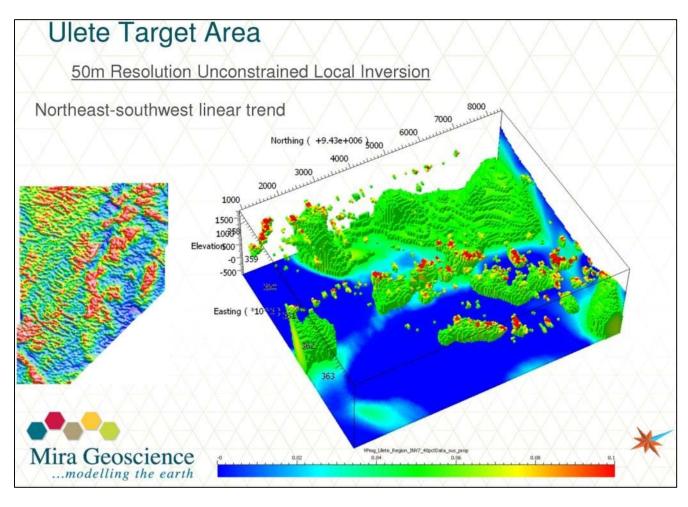


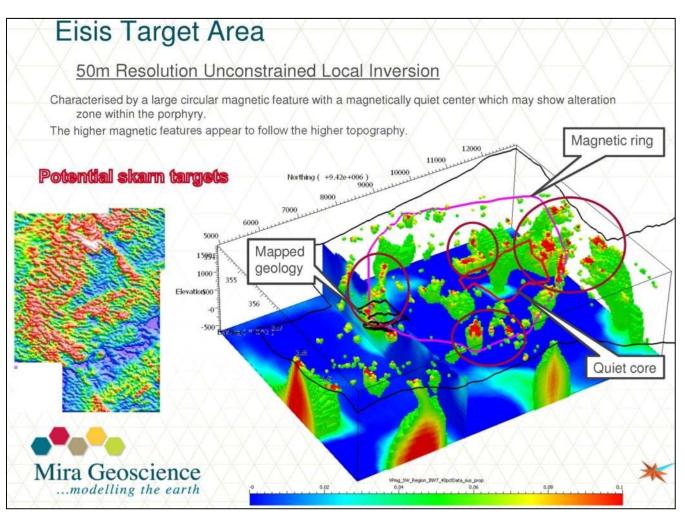


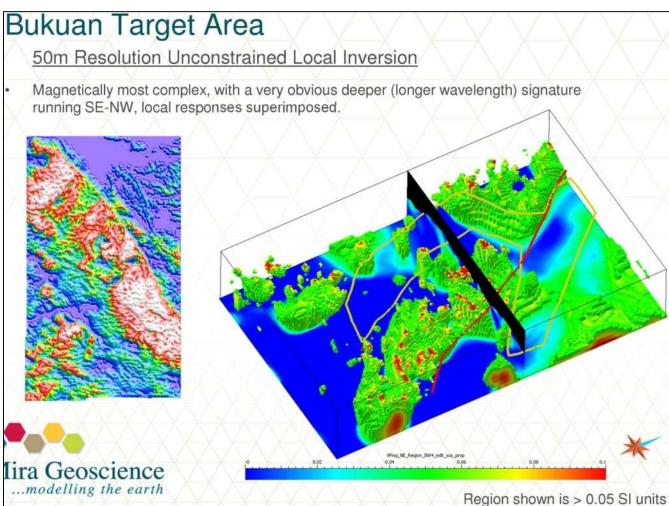












For additional information relating Frontier, please visit the website at www.frontierresources.com.au

## FRONTIER RESOURCES LTD

P.A. McNeil, M.Sc., MAIG

St MAN

Chairman and Managing Director

#### **Competent Person Statement:**

The information in this report that relates to Exploration Results is based on information compiled by Peter A. McNeil - Member of the Aust. Inst. of Geoscientists. Peter McNeil is the Chairman/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.

#### **JORC CODE 2012**

## Frontier's historical and data from 2004 to 2014 and preceding historical info is presented herein.

#### SECTION 1 -- SAMPLING TECHNIQUES AND DATA

#### SAMPLING TECHNIQUES

#### Measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.

The Senior Geologist was generally onsite for the entire Exploration program. The staff are professional with individual decades of experience and they always attempt to conduct the programs according to well established exploration best practice /norms. Additional information is provided below.

#### **DRILLING TECHNIQUES**

The holes at Uasilau and Pelepuna were drilled using PQTT, HQTT and NQTT as conditions required.

#### MEASURES TAKEN TO MAXIMISE SAMPLE RECOVERY AND ENSURE REPRESENTATIVE NATURE OF THE SAMPLES

Downhole sample recovery was maximised by the drillers utilising appropriate downhole drilling consumables at the appropriate times to 'consolidate' or hold the rock together.

## 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.

Historical results are quoted; however, recovery was normally excellent at >95% overall. Where there is core loss, there is no apparent relationship between recovery and grade. No sample bias appears to have occurred due to loss of fine material when this did occur.

## 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

Historical results are quoted. The core has not been geologically and geotechnically logged in sufficient detail to support appropriate Mineral Resource estimation, mining and metallurgical studies.

## Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.

Historical results are quoted. The core was preliminarily logged and marked up for sampling (normally on a 1m or 2m basis, depending on the Exploration Managers estimate of the intervals' mineralisation potential), measured for recovery and photographed. After being cut and sampled the remaining 1/2 core was geologically and geotechnically logged in detail.

## The total length and percentage of the relevant intersections logged

Historical results are quoted. 100% of the core was logged, but not necessarily sampled unless it was noted to be megascopically mineralised / veined or brecciated by the Exploration Manager or Site Supervisor.

## SUB-SAMPLING TECHNIQUES AND SAMPLE PREPARATION

## If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.

Historical results are quoted. Core samples were obtained from the drilling and utilised, so this is not applicable. Outcrop rock samples were collected from the surface and were wet or dry depending on the prevailing weather conditions.

## $For all \ sample \ types, the \ nature, \ quality \ and \ appropriateness \ of \ the \ sample \ preparation \ technique.$

Historical results are quoted. The whole core was appropriately diamond saw cut to half core to ensure representativeness relative to any structural /mineralisation orientations. The quarter core was then put into consecutively numbered calico bags for analysis.

## 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.

Historical results are quoted. Half core was cut to ensure representativeness relative to any structural /mineralisation orientations. No second quarter core sample analyses were generally undertaken.

### Whether sample sizes are appropriate to the grain size of the material being sampled.

Historical results are quoted. The sample size is appropriate for the exploratory phase of work and allows residual samples to be available for use for comparative assaying and later metallurgical testing. Additional assaying is normally undertaken on the same pulp of very high grade samples to ensure their quoted assay accuracy prior to release.

## QUALITY OF ASSAY DATA AND LABORATORY TESTS

## The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.

Historical results are quoted. All analyses were appropriately requested relative to the target type and expected assay ranges.

Sample Preparation for core and rocks was by drying, crushing to 6 mm and pulverizing to 75 µm on a 3.0 kg or less sample weight.

Gold was generally determined by fire assay, using lead collection technique with a 50-gram sample charge weight. Detection limits: 0.01-10,000 g/t

Acceptable levels of accuracy and precision were established. Industry standard reference samples were introduced into the sample sequence every 20 samples as a check on the laboratory. Blanks and duplicates were introduced occasionally and no external laboratory checks were undertaken.

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.

These machines were not utilised historically and the laboratory is accredited and has its own internal procedures and parameters to ensure representative readings are made and reported.

#### VERIFICATION OF SAMPLING AND ASSAYING

The verification of significant intersections by either independent or alternative company personnel.

Historical results are quoted.

#### The use of twinned holes

No holes were twinned as this is unnecessary at this stage of exploration drilling and metallurgical samples were not required.

Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.

Historical results are quoted.

#### Any adjustments to assay data.

Historical results are quoted.

ACCURACY + QUALITY OF SURVEYS USED TO LOCATE DRILL HOLES (COLLAR + DOWN-HOLE SURVEYS), TRENCHES, MINE WORKINGS AND OTHER LOCATIONS USED IN MINERAL RESOURCE ESTIMATION

No Mineral Resource has been estimated.

#### Specification of the grid system used.

Map datum is AGD 066 and PNG is covered by 1:100,000 topographic plans that have 40m contour intervals. DTM plans from SRTM or aeromagnetics have 10m contour intervals.

#### Quality and adequacy of topographic control

Topographic control is determined by handheld GPS and/or tape and compass surveying and is adequate at this stage of exploration.

## DATA SPACING AND DISTRIBUTION

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.

No Mineral Resource has been estimated.

#### Whether sample compositing has been applied.

Historical results are quoted.

#### ORIENTATION OF DATA IN RELATION TO GEOLOGICAL STRUCTURE

Whether the orientation of sampling achieves unbiased sampling of possible structures to the extent this is known, considering the deposit type. Historical results are quoted.

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.

Historical results are quoted.

#### SAMPLE SECURITY

The measures taken to ensure sample security

Historical results are quoted.

#### **AUDITS OR REVIEWS**

Historical results are quoted.

## **SECTION 2 -- REPORTING OF EXPLORATION RESULTS**

#### **TENURE**

## 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.

Exploration Licences are subject to the Papua New Guinea Mining Act of 1992. Tenure is secure if the EL holder complies with the agreed work and expenditure programs. Terms are renewable 2 year periods that are subject to a Wardens Court Hearing to ascertain the landowners attitude toward the exploration and evaluation by the Mining Advisory Council.

#### **EXPLORATION DONE BY OTHERS**

Exploration completed by previous explorers is being documented herein.

## GEOLOGY

### Deposit type, geological setting and style of mineralisation.

Targets on all properties are intrusive and epithermal related gold, plus porphyry copper-gold - molybdenum.

#### DRILL HOLE INFORMATION

A summary of all information material to the understanding of the exploration results

## DATA AGGREGATION METHODS

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

Historical results are quoted.

The assumptions used for any reporting of metal equivalent values should be clearly stated.

No metal equivalent values reported.

### RELATIONSHIP BETWEEN MINERALISATION WIDTHS and INTERCEPT LENGTHS

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.

Historical results are quoted.

BALANCED REPORTING - 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.

Frontier Resources Ltd Exploration Licence Information										
Licence Name	Number	Date From	Date To	Ownership	Area (SQ KM)	Lat. Sub Blocks				
Bulago	EL 1595	7/07/2016	6/7/2018	100% Frontier Gold PNG Ltd	100	30				
Muller	EL 2356	31/12/2015	30/12/2017	100% Frontier Copper PNG Ltd	187	56				
Andewa	EL 2461	15/11/2016	14/11/2018	90.1% *Frontier Copper PNG Ltd	147	44				
Ala	EL 2375	14/12/2015	13/12/2017	100% *Frontier Copper PNG Ltd	143	43				
	577	SQ KM								
Sewatupwa	ELA 2476	Application only		90.1% *Frontier Copper PNG Ltd	436	131				
Lavu	ELA 2477	Application only		90.1% *Frontier Copper PNG Ltd	839	252				
Gazelle	ELA 2529	Application only		90.1% *Frontier Copper PNG Ltd	703	211				
Tolukuma	ELA 2531	Application only		90.1% *Frontier Copper PNG Ltd	433	130				
Kol	ELA 2513	Application only		100% *Frontier Copper PNG Ltd	123	37				
Total EL Applications					2,534	SQ KM				
NB: Subject to 9.9% carried interest to be apoproved by shareholders to P. McNeil The PNG Mining Act. 1992 stipulates that Ets are granted for renewable 2 year Terms (subject to Work and Financial Commitments) and the PNG Government maintains the right to purchase up to 3 05% project equity at "Sunk Cost" iffywhen a										

All Exploration assay results are comprehensively reported.

## OTHER SUBSTANTIVE EXPLORATION DATA

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 Exploration work undertaken has been comprehensively reported as possible.

## **FURTHER WORK**

The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).

Future work is not discussed in the text, as the program is to be determined.

Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.

Plans and sections are included as possible, that highlight the areas of possible extensions to mineralisation and show the main geological interpretations.