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# **TECHNICAL REPORT – QUARTER ENDED 30TH SEPTEMBER 2013**

Frontier Resources Ltd is an innovative and socially responsible junior mineral explorer. The Company is focussed on a highly prospective portfolio of Exploration Licences (ELs) in Papua New Guinea (Figure 1). The ELs host porphyry copper+/- gold +/-molybdenum, porphyry gold and epithermal gold prospects.

The Company has a 100% interest in 9 Exploration Licences plus a 50% interest in 3 ELs + 2 ELAs that are highly prospective for the discovery and delineation of porphyry copper+/- gold +/molybdenum, porphyry gold and epithermal gold deposits.

- Ok Tedi Mining Ltd (OTML) withdrew from 2 Joint Ventures with Frontier on 5 Exploration  $\geq$ Licenses (ELs) during the Quarter, after spending approximately US\$28million on the JV tenements over the past 3 years and completing substantial drilling on 3 Exploration Licenses.
- $\succ$ The 50%-50% contributing Joint Venture with Quintessential Resources Ltd did not undertake any field work, however, the reconnaissance exploration soil and rock sampling conducted over the 'Bullseye' RTP aeromagnetic target and circular topographic feature (located at a major structural intersection with a gold + silver in drainage anomaly) was reported.
  - A consistent and strong NE trending arsenic + uranium (and weak silver + antimony + zinc + 0 molybdenum + tellurium + very weak and spotty gold) in soil anomaly correlates very well with the actual river (named Au River Middle Branch), moderately with lower titanium (<0.6%) soils and excellently with a major crustal level NE trending structural zone that has created a triangular and topographically subdued valley, with 'recent' and covering carbonaceous siltstone /sandstone rocks. Grid based soil sampling was completed over the entire grid, but only the western half (174 samples) were analysed. One 52m long trench was completed with 13 samples (in the SW of the grid area) and a further 32 rock samples were collected. All samples were analysed for gold + 44 elements.
  - Aster satellite imagery interpretation was also completed and it has provided useful 0 information and alteration anomalies to evaluate for copper and gold mineralisation.
- A very brief geological /geochemical reconnaissance exploration program was conducted in late 2012 at Mt Schrader-EL 1951 and an initial interpretation of the system is presented. Six of the eight float rocks collected were above detection limit, with gold to a peak of 0.35 g/t.
  - Rock float sample 8 was of a metavolcanic with abundant malachite (secondary copper 0 mineral) and it returned >5% copper (the sample was not further analysed) + 0.35 g/t gold + 14.3 g/t silver.
  - The general Schrader area historic drainage geochemistry exhibits a larger region of copper 0 anomalism and a larger region of weak gold anomalism than identified at Andewa. Andewa's gold anomaly is higher tenor, perhaps because it has been more extensively sampled in known anomalous areas, whereas Schrader has been lightly sampled everywhere.



## **OK TEDI MINING LIMITED JOINT VENTURES**

Ok Tedi Mining Ltd (OTML) has withdrawn from 2 Joint Ventures with Frontier on 5 Exploration Licenses (ELs) after spending approximately US\$28million on the JV tenements over the past 3 years, completing substantial drilling on 3 Exploration Licenses.

The ELs remain 100% owned by Frontier and must be returned in "Good Standing" in regard of pro-rated annual expenditure and work commitments required by the PNG Mineral Resource Authority.

The exploration potential of ALL 5 ELs remains excellent, with multiple untested drilling targets on each EL. For example:

- The very high grade surface gold at Bulago (Suguma Prospect) was not adequately drill tested, as the 'planned' intercept was at 200m vertically below the surface exposure. This is not how Frontier would have tested it and is far too deep for an initial evaluation of high grade gold.
- No ground based exploration was completed at the Central New Britain EL at all (only expensive aeromagnetics and a Lidar topographic survey), yet it has 4 excellent porphyry targets.
- OTML recently supplied Frontier with "all the data" and this will now be evaluated to determine what information remains to be announced (ex: Wasi drilling and East New Britain exploration results).
- New Joint Venture partners will be sought for all Frontier's tenements, as possible.

#### Background

Frontier entered into 2 farm–in joint ventures with Ok Tedi Mining Limited (OTML) on 3 Exploration Licenses and 2 EL Applications in Papua New Guinea on 26th May 2010 (the ELAs were subsequently granted). Terms were: OTML's total earn-in was US\$60 million over 6 years (consisting of US\$12 million/project), Frontier was then deferred carried to completion of any Bankable Feasibility Study on each tenement, with a 42% (dilutable) interest in the Bulago and Leonard Schultz ELs and a 19.9% interest (non-dilutable) in the Likuruanga, Central and East New Britain ELs.

Ok Tedi Mining Ltd recommended in late July to its 63.4% owner, the Papua New Guinea Sustainable Development Program Limited (PNGSDPL), that it withdraw from both Frontier Joint Ventures. The PNGSDPL requested a meeting with Frontier to enable it to discuss the Joint Ventures and remaining exploration potential to better evaluate its 'future'. Frontier directors met with the PNGSDPL in early August, discussed the possibilities and submitted a proposal in relation to the Joint Ventures and exploration in PNG.

Frontier was subsequently informed that PNGSDPL accepted OTML's recommendation to withdraw.

## GASMATA - EL 2057 (Frontier 50%/Quintessential 50%)

Targets are porphyry copper (gold) + skarn related mineralisation, porphyry gold and high /low sulphidation epithermal gold deposits, that could occur within the lightly explored volcanics and/or under limestone 'cover' rocks at/near major structural intersections that could have acted as mineralising conduits.

The program confirmed that a moderate iron + titanium and weak copper mineralised intrusive is present in the NW sector of the EL and the soil anomalism, alteration and presence of the intrusive confirms the possibility for locating copper and/or gold mineralisation at the Bullseye Prospect, at 2 other 'bullseye' aeromagnetic targets or elsewhere within the EL. The titanium mineral needs to be confirmed and is likely to be titanate (sphene) associated with magnetite rich intrusives and of no commercial value, but it could provide a mineralising source in proximal major and peripheral structures.



A consistent and strong NE trending arsenic + uranium (and weak silver + antimony + zinc + molybdenum + tellurium + very weak and spotty gold) in soil anomaly correlates very well with the actual river (named Au River Middle Branch), moderately with lower titanium (<0.6%) soils and excellently with a major crustal level NE trending structural zone that has created a triangular and topographically subdued valley, with 'recent' and covering carbonaceous siltstone /sandstone rocks.

Arsenic, antimony and uranium are 'pathfinders' or proxies, are more mobile than gold and are used ' to try to see through' cover rocks. The arsenic anomaly in the structural zone is about 6 times background and the uranium anomaly is about 30 times (local grid) background (refer to Table 1 for soil assay information). Arsenic is also anomalous in soils on the south side of the grid, correlating to the southern part of the Bullseye aeromagnetic RTP anomaly and lower (but still strong) iron and titanium. Copper values are relatively low but it correlates well with high titanium and iron zones and silver has a variable correlation, with both the intrusive and the structural Zone.

On the western soil line, the northern 3 samples were collected over a 112m distance and all were very weakly gold anomalous (to maximums of 0.06 g/t + 0.3 g/t silver + 294 ppm copper + 0.8% titanium + 5 ppm arsenic). Weak tellurium anomalies were also noted in rock samples further to the south.

The 1:250,000 geological plan shows the NW region of the EL consisting of volcanics, with rocks in the far NE and topographically subdued sector being 'Qc' - Quaternary colluvium (more recent cover rocks). Recent cover material can BLOCK geochemical responses from underlying gold mineralisation, so the relatively weak, but consistent NE trending arsenic, uranium, antimony and gold in soil anomalies correlate very well with the obvious NE structural zone. The iron-titanium intrusion producing the RTP geophysical anomaly correlates well to reconnaissance mapped weathered granodiorite/coarse diorite.

| EL 2057 - Gasmata Bullseye Prospect Anomalous Soil Assay Information |            |                         |                        |                         |                     |                               |  |  |
|--|------------|-------------------------|------------------------|-------------------------|---------------------|-------------------------------|--|--|
| Element  | Peak Assay | Number<br>of<br>Samples | Anomalous<br>Threshold | Number<br>of<br>Samples | Higher<br>Threshold | Approx.<br>Grid<br>Background |  |  |
| Gold   | 0.04g/t    | 18                      | 0.01g/t                | 7                       | 0.02g/t             | bdl                           |  |  |
| Copper   | 280ppm     | 26                      | 150ppm                 | 7                       | 200ppm              | 100ppm                        |  |  |
| Silver   | 1.0 g/t    | 38                      | 0.2g/t                 | 8                       | 0.3g/t              | 0.03g/t                       |  |  |
| Molybdenum   | 70ppm      | 39                      | 2ppm                   | 15                      | 3ppm                | 1ppm                          |  |  |
| Zinc   | 257ppm     | 65                      | 150ppm                 | 9                       | 200ppm              | 140ppm                        |  |  |
| Arsenic  | 136ppm     | 60                      | 10ppm                  | 9                       | 50ppm               | 4ppm                          |  |  |
| Uranium  | 20ppm      | 25                      | 5ppm                   | 10                      | 10ppm               | 0.3ppm                        |  |  |
| Antimony   | 5ppm       | 18                      | 1ppm                   | 6                       | 2ppm                | 0.1ppm                        |  |  |
| Iron   | 14.40%     | 25                      | 11.90%                 | 9                       | 13%                 | 7%                            |  |  |
| Titanium   | 1.57%      | 50                      | 1.00%                  | 13                      | 1.20%               | 0.6%                          |  |  |
| Vanadium   | 558ppm     | 37                      | 350ppm                 | 19                      | 400ppm              | 190ppm                        |  |  |

The maximum trench assays were 0.01 g/t gold, 20ppm arsenic, 224 ppm copper, 1.17% titanium, 13% iron, 514 ppm vanadium and 5ppm antimony. Increasing copper and arsenic grades in trench correlate moderately with the strongest iron and titanium zones. There was no uranium anomaly and very low molybdenum in the trench assays.

The 1VD aeromagnetic plan shows that the intrusion has significant depth extent and as such the structural zone could have mineralisation over a significant vertical interval if the system is 'pregnant' enough. Future work will evaluate the NE trending structural/ geochemical Zone with additional soil geochemistry and hand trenching and reconnaissance.











|           |            |  |                   | Referen        | ce  |
|-----------|------------|--|-------------------|----------------|---|
|           | QUATERNARY | PLEISTOCENE<br>TO HOLOCENE                     | Kimbe Volcanics   | Qa<br>De<br>Ok | Gravel, sand, silt, clay: alluvium<br>Calcarenite, calcilutite, calcirudite, calcareous sandstone, siltstone,<br>mudstone, conglomerate: raised coral reefs and lagoons<br>Basaltic to rhyolitic pyroclastics, principally ash, lapilli, scoria and rubble,<br>andesite, basalt, dacite, rhyolite extrusives, hypabyssal intrusives |
| CAINOZOIC | [          |  | Kaplura Beds      | Tpk            | Semi-consolidated massive to well-bedded acid tuffaceous sandstone, siltstone and<br>conglomerate, tuff, volcanolithic conglomerate, calcareous sediments, limestone  |
|           | +          |  | Mungu Volcanics   | Tpm            | Dacite, rhyodacite, andesite, pumiceous tuff  |
|           |            | PLIOCENE                                       | Johanna Beds      | Трј            | Soft calcareous sillstone, sandstone, mudstone, conglomerate,<br>limestone, shelly pumiceous sillstone  |
|           |            |  | Toki Andesite     | Tpt            | Porphyritic hornblende andesite and microdiorite  |
|           | TIARY      | UPPER MIOCENE<br>TO PLIOCENE                   | Sai Beds          | Tps            | Soft calcareous siltstone and mudstone, calcilutite, bioclastic limestone   |
|           | TER        | MIOCENE<br>upper Te and Tf *                   | Yalam Limestone   | Ттү            | Compact or porous massive to well-bedded bioclastic limestone,<br>chalk, calcareous siltstone and mudstone; minor calcirudite   |
|           |            |  | Merai Volcanics   | Tom            | Massive to well-bedded, moderately indurated volcanic breccia, conglomerate,<br>sandstone and siltstone, tuff; minor basic lava and limestone   |
|           |            | UPPER OLIGOCENE                                | Kapuluk Volcanics | Tak            | Massive to well-bedded, moderately indurated volcanic breccia, maroon tuff,<br>lapilli tuff, volcanic sandstone, siltstone and conglomerate, basic<br>to intermediate lavas and hypabyssal rocks; minor limestone   |
|           |            |  |                   | Toi            | Tonalite, gabbro, diorite, granodiorite, adamellite, monzonite,<br>mangerite; related porphyries and microplutonic rocks<br>Intrusive breccias and pyroclastic rocks  |
|           |            | UPPER EOCENE<br>Tb*<br>* Tertiary letter stage | Baining Volcanics | Tab            | Massive to well-bedded indurated and strongly-jointed volcanic breccia,<br>conglomerate, sandstone and siltstone, basic to intermediate lavas<br>and hypabyssal rocks, tuff; minor limestone  |







## ANDEWA PROJECT Mt Schrader Reconnaissance

A very brief geological /geochemical reconnaissance exploration program was conducted in late 2012 at Mt Schrader-EL 1951 and an initial interpretation of the system is presented.

The Mt. Schrader stratovolcano is located 28 km west of Andewa and it has a number of topographic 'amphitheatre' anomalies that have previously been very lightly explored. The digital terrain model (DTM) clearly shows the Schrader crater area, and the major NNE trending and deeply incised river valley that runs along a major NNE trending 'cross-island' structure. The small and rapid exploration program consisted of geochemical stream sediment and limited outcrop /float sampling in this main (Ugurisi) Creek.

Six of the eight float rocks collected were above detection limit, with gold to a peak of 0.35 g/t. Rock float sample 8 was of a metavolcanic with abundant malachite (secondary copper mineral) and it returned >5% copper (the sample was not further analysed) + 0.35 g/t gold + 14.3 g/t silver.

The 5 sq km drainage upstream of rock 8 was targeted as a high priority area due to structural intersections similar to the Andewa -Ehgin mineralised site and it will be further explored when possible. Interestingly, there is no associated anomalous drainage geochemistry. Plans are included below.

The general Schrader area historic drainage geochemistry exhibits a larger region of copper anomalism and a larger region of weak gold anomalism than identified at Andewa. Andewa's gold anomaly is higher tenor, perhaps because it has been more extensively sampled in known anomalous areas, whereas Schrader has been lightly sampled everywhere.

Silver is slightly more extensive at Schrader and an 11 g/t result close to the coast is of similar tenor to the 14 g/t silver result that defined the Komsen gold system in drainage. Most other silver anomalies are low tenor but another interesting one occurs to the NE of Andewa. None of these silver anomalies have been followed up except Komsen.

The zinc drainage anomalism at Schrader is also generally higher tenor and more widely distributed with a significant area of anomalism in the NW sector of the EL. Arsenic and mercury anomalies are comparable in size and barium is elevated over a much larger region at Schrader. Arsenic anomalism at Andewa is >100ppm in the gold anomalous zones and it defines them well.



EL Digital terrain model of the area surveyed by aeromagnetics/radiometrics.



Image of Total Magnetic Intensity Reduced to the Pole (RTP).



Image of area flown with aeromagnetics showing drainages, drainage linears and interpreted major structures (NNE-SSW, NE-SW, ESE-WNW to E-W, N-S and NW-SE).



























Two significant gold stream sediment anomalies occur at Borei Creek and Ugurisi River within the Schrader Crater along with a separate area of panned concentrate anomalism. Copper in rock samples (530 ppm Cu and 1020 ppm As) occurs at the Yepmaling Creek Prospect. Alteration zones were identified at Yep and Aour (outside the Schrader Crater). Strong mercury anomalies associated with hydrothermal breccias occur in the Yep amphitheatre, but have no associated gold.

Mineralisation that may have migrated up and precipitated within previously structurally prepared and/or permeable zones of weakness including:

- the strong mercury anomalies associated with the hydrothermal breccias and
- the arsenic-rich, alteration haloes of dacite domes in the Yep Amphitheatre.

Sample numbers from the reconnaissance program are plotted on a 100,000 topographic base plan, showing the type of sample collected at specific locations along with gold, copper, arsenic, zinc, lead and silver plans respectively, showing the assay results.

## CORPORATE

#### **Capital Raising**

Frontier issued a prospectus for an entitlement issue of one (1) fully paid New Share for every eight (8) Shares held by Australian and New Zealand resident shareholders at 5:00 pm on the record date of 26 September 2013 at an issue price of \$0.007 per Share to raise up to \$266,000.

The Prospectus relating to this issue has been lodged with the Australian Securities and Investments Commission and ASX and is available on the ASX website for inspection. The timetable for the issue is set out below:

| Lodgement of Prospectus with the ASIC  | 16 September 2013 |
|--|-------------------|
| Lodgement of Prospectus & Appendix 3B with ASX                               | 16 September 2013 |
| Notice sent to security holders  | 18 September 2013 |
| Ex date  | 20 September 2013 |
| Record Date for determining Entitlements                                     | 26 September 2013 |
| Prospectus despatched to Shareholders & Company announces despatch completed | 2 October 2013    |
| Closing Date*  | 18 October 2013   |
| Securities quoted on a deferred settlement basis                             | 21 October 2013   |
| ASX notified of under subscriptions  | 22 October 2013   |
| Issue Date   | 25 October 2013   |
| Quotation of New Shares issued under the Offer*                              | 28 October 2013   |

## TIMETABLE AND IMPORTANT DATES\*

\* The Directors may extend the Closing Date by giving at least 6 Business Days notice to ASX prior to the Closing Date. As such the date the New Shares are expected to commence trading on ASX may vary.

The capital structure of the Company on completion of the issue will be as follows:

| Shares  | Number       |
|---|--------------|
| Share currently on issue  | 304,046,682  |
| Shares offered pursuant to the Entitlement Issue                      | 38,000,000   |
| <b>Total Shares on issue</b> * Assumes the offer is fully subscribed. | 342,046,682* |

'Significant' ASX announcements released subsequent to the last quarterly report were:

18 September 2013 Non-Renounceable Entitlement Issue
12th September 2013 Ok Tedi Mining Ltd to withdraw from 2 Joint Ventures
21st August 2013 Soil assays show a +2km long ne trending mineralised fault zone at "Au River" - Gasmata (strongly arsenic/uranium anomalous + weak gold, silver, zinc, antimony, molybdenum & tellurium) on the NW margin of a 2 sq km weakly copper mineralised intrusive
2nd August 2013 Mt Schrader reconnaissance demonstrates high grade copper in float rock (>5%)

gold + arsenic in pan concentrate and stream sediment drainage samples and potentially a bigger mineralising system than at Andewa

For additional information relating to Frontier Resources and/ or its projects, please refer to previous quarterly reports, ASX releases and visit the Company's website at www.frontierresources.com.au.

FRONTIER RESOURCES LTD

At MYKY

P.A.McNeil, M.Sc. CHAIRMAN / MANAGING DIRECTOR

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 -B.Sc., M.Sc. and Member of the Aust. Inst. of Geoscientists. Peter McNeil is the Managing Director of Frontier Resources and consults to the Frontier Resources Ltd. 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.