



# Niuminco Group Limited

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## **QUARTERLY ACTIVITIES REPORT DECEMBER QUARTER 2016**

### **HIGHLIGHTS AND SIGNIFICANT EVENTS**

- **High grade intercepts from the 6 shallow hole drilling program completed at the Enterprise vein system confirm a further potential source of high grade material to feed the upgraded processing circuit.**
- **Edie Creek production for the Quarter was 901.9 grams (29 ounces) of gold and 778grams ( 25 ounces) of silver for sales of AUD\$44,653 (PGK105,477).**
- **Highest monthly volume of ore processed in December since recommencement of processing in 2014, with 578 tonnes of wet ore processed at an average rate of 19.3 tonnes/day.**
- **Closing in October of a Share Purchase Plan and “Top Up Placement” facility underwritten by Patersons Securities Limited which raised \$900,000 after issue costs.**
- **Production in the quarter was adversely impacted by mine development work, installation and testing of a new cyclone and equipment downtime.**
- **Niuminco has commenced taking delivery and installation of critical new infrastructure to significantly increase throughput and consistency of operations.**

# PAPUA NEW GUINEA PROPERTIES

## Edie Creek Mine Mining and Production Update

**Production for the period 1 October to 31 December, 2016 was 901.9g (29 ounces) of gold and 778g (25 ounces) of silver for total sales of AUD\$44,653 (PGK105,477).**

A total of 1,031 wet tonnes of ore was processed at an average grade of 0.9 grams per processed tonne of ore. Plant and equipment downtime, mine development work and low average ore grades resulted in sales of AUD\$44,653 (PGK105,477).

At the Surmans vein system significant further development work was undertaken to access high-grade ore. Both the grade and quantity of ore mined and processed was negatively impacted by lengthy downtime for repairs on one excavator, downtime on the concentrator plant for repairs plus installation and testing of the new cyclone, and the ongoing development work at Surman's and Karuka.

As outlined previously, our immediate short term strategy is to achieve consistent, increased mining and processing throughput of 40 to 60 tonnes per day with ready access to known high-grade ore bodies. In line with this, a number of critical items of mining plant and processing equipment were purchased during the quarter with delivery taken of a new tip truck and two vibrating feeders. Delivery of the other items, including a roller crusher, 5 tph ball mill, concentrator and a 6 tonne excavator are scheduled over the coming weeks.

At current gold prices and exchange rates the current operating cost break-even production level at Edie Creek is approximately 2580 grams (83 ounces) of gold per month.

Upon the arrival and implementation of all the new mining equipment and processing infrastructure, Niuminco is confident of achieving this production level.

### **DRILLING AT EDIE CREEK**

The 6 hole diamond core drilling program at the Enterprise vein system at Edie Creek was completed during the quarter, confirming a further potential source of high grade material to feed an upgraded processing circuit (refer ASX Release of 7 December, 2016).

Assay results on the six completed drill holes EDD019, EDD020, EDD021, EDD022, EDD022a (not sampled) and EDD023 were as follows:

**Each of the holes contained a higher grade vein section conforming to the predicted west- dipping vein model:**

- **EDD 019 intersected 5.4m @ 2.97g/t Au and 94g/t Ag from 8m depth, including:**
  - **2m @ 6.89g/t Au and 195g/t Ag from 10m.**
- **EDD 022 intersected 1.0m @ 13.4g/t Au and 473g/t Ag from 32m and 3.0m @ 4.61g/t Au and 100.3g/t Ag from 38m, including:**
  - **1.0m @ 8.98g/t Au and 88.5g/t Ag from 38m.**
- **EDD 020 intersected 9m @ 1.07g/t Au and 62g/t Ag from 12m, including:**
  - **1m @ 4.06g/t Au and 21g/t Ag from 13m.**

- **EDD 021 intersected 3.4m @ 2.03g/t Au and 143g/t Ag from 35m, including**
  - **2.1m @ 3.04g/t gold and 167g/t Ag from 35m.**
- **EDD 023 intersected 4.4m @ 1.66g/t Au from 43.4m and 0.30m @ 6.07g/t Au from 53.5m ( a footwall remnant), including:**
  - **1.4m @ 3.2g/t Au from 43.4m.**

However, despite using HQ drill rods and appropriate drilling techniques, the fractured ground and cavernous veins resulted in the Enterprise drilling yielding less than 50% core recovery of the oxidised veins and an inferred large gold loss.

Therefore, given the repeated confirmation of the vein grade and continuity and the nature of the ground, Niuminco's geological team of Professor Ian Plimer, John Nethery and Lewis Koesi agreed that whilst it was not possible to obtain a JORC resource for this system, it will however be added as a potential source of high grade material for feeding the upgraded processing circuit.

The Enterprise vein has a strike length of at least 500 metres, a true width of 1.0m to 1.5 m and being continuous to, and open at, a depth of 60 metres.

*Figure1: Niuminco drill rig and team drilling hole EDD 024 at the Karuka/Enterprise stockwork and diatreme.*







*Figure2: Niuminco drill rig and team drilling the Enterprise vein system*

Niuminco has now completed the first drill-hole EDD 024 of the planned 10 hole drilling program of the potential bulk-tonnage Karuka -Enterprise stock-work and diatreme zone.

This target has a strong gold anomaly defined by 1,366 continuous chip samples of weathered rock outcrop in trenches over a cumulative length of 2,732m, which averaged 0.53g/t (refer ASX Releases of 29 April 2013 and 1 July 2013). This sampling was confined to a broadly elliptical shaped zone with dimensions of at least 600m by 300m. Whether or not this strong gold response is due to near-surface supergene enrichment ( that may decrease at depth), or alternatively represents a surface leached zone from which grade increases with depth to the base of oxidation is unknown, and can only be tested by drilling.

The Company expects the assays from this first hole in the coming days and they will be released as they come to hand.

Figure 3 below highlights the proximity of the drilling at the Karuka-Enterprise stock-work and diatreme zone to the Edie Creek mining operations and processing infrastructure.

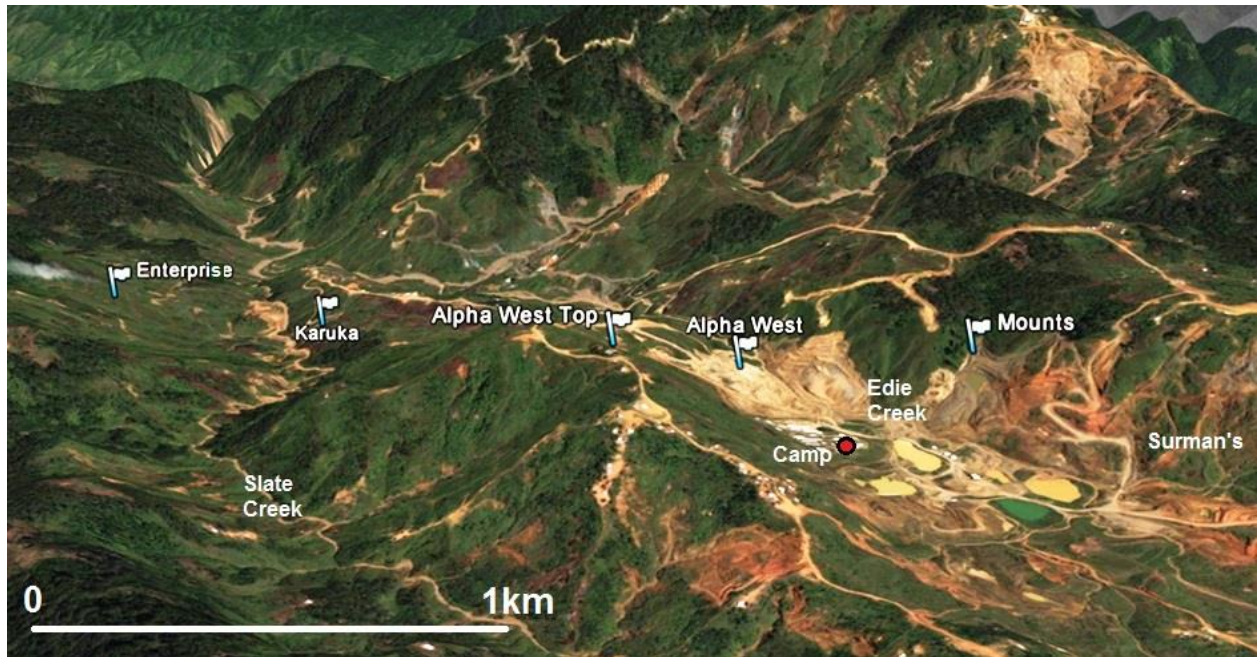


Figure3: Edie Creek oblique Google Earth view showing location of infrastructure, vein systems and main targets.

## Bolobip and May River Exploration Licences

Planning for the upcoming exploration programs continued during the Quarter for both the highly prospective May River and Bolobip exploration licences (EL1441 and EL1438 respectively), including finalizing quotes for camp repair works and transportation of the drilling rig and equipment.

The Company expects to mobilize a drill rig to Bolobip in February.

## TNT MINES LIMITED

Niuminco Group Limited owns 72.54% of and manages, TNT Mines Limited (TNT). TNT holds a suite of advanced exploration areas in northern Tasmania prospective for tin and tungsten.

During the Quarter drilling commenced on the 10 hole drilling program at EL 27/2004 (the "Aberfoyle-Rossarden-Royal George" tenement).

An extension of licence was also granted for this tenement for a further 12 months to 26 November, 2017.

The first hole, LDD 001 was completed at a depth of 193 metres and the second hole, LDD 002 was at a depth of 126m at the end of the Quarter, and was completed at a depth of 190.1 metres.. Assay results are currently awaited. A sheeted quartz vein system with visible cassiterite and wolframite was intersected in hole LDD 001.

## CORPORATE

A "Share Purchase Plan" with a "Top Up Placement" facility, underwritten by Patersons Securities Limited was completed in October, raising \$900,000 after issue costs.

Subsequent to the close of the Quarter a further \$550,000 (net of issue costs) was raised through a share placement managed by Patersons Securities Limited.

The Board and Management will continue to advance and, where ever possible, accelerate the Group's Papua New Guinea and TNT Mines Limited projects.

The resource drilling program is continuing on TNT Mines' Aberfoyle tenement in Tasmania whilst in PNG management continues to focus on increasing the quantity of ore mined and processed, and the gold/silver recovered at Edie Creek as well as rapidly advancing the highly prospective Bolobip and May River projects.

The Company plans to continue the current drilling programs at Edie Creek and in Tasmania, commence drilling its targets at Bolobip and take delivery of, and install the balance of the new plant and equipment at Edie Creek during the current quarter.



Mark Ohlsson  
Company Secretary  
31 January, 2017

The information in this report that relates to exploration results is based on Information reviewed by John Nethery (BSc Dip Ed.) who is a Fellow of the Australasian Institute of Mining and Metallurgy (Chartered Professional) and a Fellow of the Australian Institute of Geoscientists. Mr Nethery has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. He consents to the inclusion in the report of the matters based on this information in the form and context in which it appears.

## SCHEDULE OF TENEMENTS

Permit Type	Permit Number	Location	Held Via	Beneficial %	Agreement Type
<b>NIUMINCO GROUP LIMITED – PAPUA NEW GUINEA ASSETS</b>					
Exploration licence	EL 1438	Bolobip	Niuminco (ND) Limited	100	
Exploration licence appl'n	ELA 2363	Hotmin	Niuminco (ND) Limited	100	
Exploration licence	EL 2365	Ama	Niuminco (ND) Limited	100	
Exploration licence appl'n	ELA 2364	Wameimin	Niuminco (ND) Limited	100	
Exploration licence	EL 2362	Fagobip	Niuminco (ND) Limited	100	
Exploration licence	EL 1441	May River	Niuminco (ND) Limited	100	
Mining lease	ML 144	Edie Creek	Niuminco Edie Creek Limited	83	Joint venture
Mining lease	ML 380	Edie Creek	Niuminco Edie Creek Limited	83	Joint venture
Mining lease	ML 384-392	Edie Creek	Niuminco Edie Creek Limited	83	Joint venture
Mining lease	ML 402-410	Edie Creek	Niuminco Edie Creek Limited	83	Joint venture
Mining lease	ML 444-446	Edie Creek	Niuminco Edie Creek Limited	83	Joint venture
Mining lease	ML 462	Edie Creek	Niuminco Edie Creek Limited	83	Joint venture
<b>TNT MINES LIMITED – TASMANIAN ASSETS*</b>					
Exploration licence	EL27/2004	Aberfoyle Storeys Creek Royal George	TNT Mines Limited	100	
Retention licence	RL2/2009	Great Pyramid	TNT Mines Limited	100	

\* Niuminco Group Limited has a 72.54% interest in TNT Mines Limited.

# JORC Code, 2012 Edition – Table 1 report to accompany ASX release Jan 2017.

## Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul style="list-style-type: none"> <li>• <i>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</i></li> <li>• <i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></li> <li>• <i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></li> <li>• <i>In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g 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 (eg submarine nodules) may warrant disclosure of detailed information.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Sampling reported for Edie Creek is for ½ PQ, HQ or NQ diameter diamond drill core.</li> <li>• Holes were generally steeply dipping (&gt;60°)</li> <li>• Hole azimuths were generally planned to perpendicularly intercept, or intersect at a high angle, any known or inferred veins, mineralized zones or structural trends.</li> <li>• Sampling was done on sawn half core.</li> <li>• Consistency of sampling method was maintained by reference to a written protocol.</li> <li>• Sampling method is considered appropriate for vein style epithermal gold mineralisation.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>• <i>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).</i></li> </ul>	<ul style="list-style-type: none"> <li>• All holes drilled by Niuminco are triple tube diamond core. Holes were drilled using HQ size core. The core was un-oriented.</li> </ul>



Criteria	JORC Code explanation	Commentary
<i>Drill sample recovery</i>	<ul style="list-style-type: none"> <li>• <i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> <li>• <i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Recoveries recorded on a drill run and sample length basis.</li> <li>• There were some zones of poor recovery in near surface leached and oxidized zones and in intensely altered shear zones.</li> <li>• Overall recovery is acceptable but needs improvement. Most holes average 85% recovery. Recovery in the fresh mineralized zones averages 65%, recovery in oxidised mineralisation is 55%.</li> <li>• Could be grade loss with low recovery in fine gold in wad.</li> </ul>
<i>Logging</i>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li>• <i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All holes were geologically and geotechnically logged to a detail and standard appropriate for mineral resource estimation.</li> <li>• The logs are qualitative/semi-quantitative and record lithology, alteration, mineralogy, mineralization, weathering, strength, fracture numbers and their orientations and other relevant features of the core.</li> <li>• All core recovered is logged</li> </ul>
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"> <li>• <i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li>• <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li> <li>• <i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> <li>• <i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Samples are taken by cutting the core in half using a diamond saw.</li> <li>• No non-core samples were taken.</li> <li>• Samples were taken based on geological observations of changes in mineral intensity or type.</li> <li>• Sampling protocol is documented with a flow sheet.</li> <li>• Half core samples bagged and dispatched to Intertek Lae/Townsville for crushing, grinding and assay.</li> <li>• All sampling methods and sample sizes are deemed to be appropriate and are similar to sampling protocols used on epithermal gold deposits.</li> </ul>
<i>Quality of assay data and</i>	<ul style="list-style-type: none"> <li>• <i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li>• <i>For geophysical tools, spectrometers, handheld XRF</i></li> </ul>	<ul style="list-style-type: none"> <li>• All drill core samples were assayed using a 50g fire assay for Au, Screen Fire Assay of suspected coarse grained gold sections and ICP method for Ag and other elements.</li> <li>• The gold is determined by fire assay by using lead</li> </ul>

Criteria	JORC Code explanation	Commentary
laboratory tests	<p><i>instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</i></p> <ul style="list-style-type: none"> <li>• <i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i></li> </ul>	<p>collection technique with a 50 gram sample charge weight.</p> <ul style="list-style-type: none"> <li>• Assaying carried out by Intertek Lae/Townsville, an accredited lab.</li> <li>• QAQC program involved standards submitted to the laboratory. No lab check carried out to date as the program has only recently started. Outcomes indicate acceptable precision and no obvious bias.</li> </ul>
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Significant intersections have been verified by the Competent Person and the Edie Creek mine geologists</li> <li>• There were no twinned holes.</li> <li>• Niuminco has a series of written protocols relating to sampling, logging, data entry, data checking and data storage</li> <li>• There have been no adjustments to the assay data.</li> </ul>
Location of data points	<ul style="list-style-type: none"> <li>• <i>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</i></li> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Drillhole collars were located by theodolite survey. Drill collar elevations were also calculated from the theodolite survey conducted by Niuminco over the Edie Creek Mining Leases area.</li> <li>• Expected accuracy is +/-0.1 m for northing and easting and +/-0.1 m for elevation coordinates</li> <li>• WGS84, zone 56S for local GPS work.</li> <li>•</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>	<ul style="list-style-type: none"> <li>• This is the first hole of a proposed 10 hole program on the Enterprise – Karuka stockwork zone.</li> <li>• Drilling in this report is of a scout nature and did not follow regular spacing or azimuth.</li> <li>• Downhole sampling is dependent upon intensity of mineralisation.</li> <li>• Compositing has not been applied.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li>• <i>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 material.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Drilling orientation is believed appropriate with no bias. Where some control to mineralisation distribution is suggested, the drill hole is oriented to perpendicular to the controlling feature.</li> <li>• Where multiple structures of unequal proportions or grade are identified, the drillhole is oriented perpendicular to the higher grade structure</li> <li>• Where multiple structures of equal proportions or grade</li> </ul>

Criteria	JORC Code explanation	Commentary
		are identified, the drillhole is oriented to bisect each structure at the highest possible angle.
Sample security	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>Chain of custody is managed by Niuminco. Samples are collected and stored on site by Niuminco personnel. Half core samples are shipped directly to Intertek Lae by mine courier. Tracking sheets track the progress of sample batches.</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>No audits or reviews have been carried out at this stage.</li> </ul>

## Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The results reported relate to exploration carried out within Mining Lease Number 462. This is one of the contiguous Mining Leases held by Niuminco collectively known as the Edie Creek Leases. They are ML, 144, 380, 384 - 392, 402 - 410, 444 - 446 &amp; 462. The Leases are issued under the Authority of the PNG Mining Act (1992).</li> <li>Niuminco holds an 83% interest in the ML's. Mincor holds 17%.</li> <li>A royalty on production of Kina10/oz up to 20,000oz and Kina5/oz is payable to Barrick. (2.5 Kina are approximately equal to 1\$Aus).</li> <li>The tenements are in good standing and no known impediments exist.</li> </ul>

