22 March 2016

2015 Mineral Resource and Ore Reserve Statements

Following are the statements of Mineral Resources and Ore Reserves for Ramu Nickel Mine as at 31 December 2015, reported under The JORC Code, 2012 Edition.

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ASX Code: HIG
PoMSox Code: HIG
Shares on Issue: 928 million
Performance Rights: 29.8 million

Directors
Ken MacDonald, Chairman
John Gooding, Managing Director
Mike Carroll
Dan Wood
Bart Philemon

Management
Craig Lennon, CFO & Co.Sec
Larry Queen, Chief Geologist
Peter Jolly, GM Projects
Ron Gawi, GM Port Moresby
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About Highlands Pacific Limited
Highlands Pacific is a PNG incorporated and registered mining and exploration company listed on the ASX and POMSoX exchanges. Its major assets are interests in the producing US$2.1bn Ramu nickel cobalt mine and the Frieda River copper gold project; with exploration in progress in the Star Mountains. Highlands also has exploration tenements at on Normanby Island (Sewa Bay).

Star Mountains Prospects*
The Star Mountains exploration tenements, which include Nong River EL1312, Mt Scorpion EL1781, Munbil EL2001 and Tifalmin EL1392, are located approximately 20km north of the Ok Tedi mine, in the West Sepik Province, PNG. They lie within the highly prospective New Guinean Orogenic Belt, which hosts the Grasberg, Ok Tedi, Porgera and Hidden Valley mines, as well as the Frieda deposit. The joint venture with partner Anglo American substantiates the world class potential and has enabled an extensive exploration program to be commenced in 2015.

Ramu Nickel Cobalt Mine
The producing Ramu nickel cobalt mine is located 75km west of the provincial capital of Madang, PNG. Highlands 8.56% interest in Ramu will increase to 11.3% at no cost to Highlands after repayment of its share of the project debt. Highlands also has an option to acquire an additional 9.25% interest in Ramu at fair market value, which could increase the company's interest in the mine to 20.55%, if the option is exercised.

Frieda River Copper/Gold Project*
The Frieda River copper gold project is located 175kms north-west of the Porgera gold mine and 75km north-east of the Ok Tedi mine. Highlands has a 20% interest in the project and PanAust 80%. PanAust will be responsible for 100% of the costs incurred by the Frieda River Joint Venture to finalise the definitive feasibility study for PanAust's development concept and will appoint and fund the cost of an independent expert to provide a peer review. PanAust will also be responsible for 100% of the costs to maintain the Frieda River project site, assets and community relations programmes up to the point in time of lodgment of the Mining Lease or Special Mining Lease application.

* Subject to the right of the Independent State of Papua New Guinea to acquire up to a 30% equity interest in any mining development in the country.

HIGHLANDS PACIFIC LIMITED (HPL) & RAMU NICO MANAGEMENT (MCC) LIMITED

Update Resources of the Ramu Nickel-Cobalt Operation, PNG

Prepared Febuary 2015

Prepared by L D Queen- Highlands Pacific Limited (HPL) with assistance from the geologists and engineers of Ramu NiCo Management (MCC) Limited

2015

MADANG OFFICE P.O BOX 1229 MADANG PNG

Contents

1 Introduction

This update of the Ramu Nickel-cobalt Resource, Papua New Guinea provides a snapshot of the estimated resource remaining for the Ramu nickel cobalt laterite as of December 31st 2015. The report was prepared by Lawrence Queen Chief Geologist of Highlands Pacific Limited.

2 Ramu Resource Summary

A single cut-off grade of 0.5% Nickel was used to define ore and waste, this collates well with the laterite layers and naturally defines the overburden.

A summary of the information used in the December 2015 Ramu Resource estimate update is as follows:

The Ramu Nickel-Cobalt Deposit, (Figure 1) is divided up into three Resource Blocks, the Kurumbukari (KBK), Ramu West (RW) and the Greater Ramu (GR) (Figure 2, Figure 3, original 1999 Resource outline). This division is based on the Resource category each has been assigned. Kurumbukari and Ramu West are of the Measured and Indicated Resource Categories and Greater Ramu is in the Inferred Category this culminated in a JORC compliant (2012) table "Table 1 Checklist of Assessment and Reporting Criteria" located at the back of this report. Only the Kurumbukari Resource Block has undergone depletion from mining activities since the Resource Update from December 2014. There has been no increase in Resources.

The Ramu Deposit's geological setting is typical of tropical nickel-cobalt laterite deposits, and highlighted in the idealized section in Figure 4. The Deposit sits above a bedrock comprised of ultramafic dunite with minor harzburgite and pyroxenite. The nickel-cobalt mineralization is related to the weathering of the bedrock. The bedrock itself is not ore with typical grades near the mineralization of 0.2% nickel. At Ramu the laterite rocktypes are often called layers. In descending order, the first layer, the overburden is made up of a humic layer and then red coloured limonite these are below 0.5% nickel, underlying this is the mineralization, starting with the yellow limonite (sometimes referred to as limonite) this has the most thicknesses out of all the rock types. The saprolite is next followed by two classes of rocky saprolite, these are termed R1 and R2. R1, the upper rocky saprolite layer is with on average approximately 30% rock. R2, the lower rocky saprolite layer is greater and has on average 60% rock. These rock percentages were determined by measuring volume and weight of rock in the core and interpolation of the rock percentages were constrained by the GPR hard surface. R1 is proving its mine ability during mining but only small amounts of R2 rock type have as yet been mined.

All three Ramu Resource Blocks are contiguous with each other and the Deposit is broad with dimensions of 8 km (northwest) by 5 km (north east), (AGD 66 grid). Elevations of the mineralization follow the undulating nature of the topography and the depths vary but the typical thickness of the layers is shown in Figure 4.

Sampling of the deposit was done using diamond drilling, for the Kurumbukari and Ramu West Resource Blocks NQ and HQ triple tube was used. At every fourth hole, two more holes were drilled, one for Geology reference and the second for metallurgical purposes. All the sampling holes were logged and the whole core was taken to the assay laboratory for assay. However, in the case of The Greater Ramu Resource Block, sampling is from a mix of historical drilling dating back to 1962 when the deposit was first discovered and is a mix of auger and some diamond drilling, most of this drilling is known to have penetrated the limonite but not the saprolite or rocky saprolite layers. All holes were shallow and drilled in a vertical orientation, and as a result no down-hole surveys were done.

Ten percent of samples were sent to outside laboratories for QAQC purposes. However, the quality of the Greater Ramu Resource Block is unknown. A four acid digest was performed for an AAS flame read for the Kurumbukari Block (KBK) and Ramu West with a detection limit of 25ppm for Ni and Co. For the Greater Ramu historical data the methods are believed to be based on AAS. During assaying blanks, standards and duplicates were used at a rate of 1:10. Samples were pulverized to 85% passing 75 microns and a 25gm charge was used for assaying.

Domaining was done by making use of two hard surfaces, the topographic and the Ground penetrating radar (GPR). GPR was done on a 100m by 2m grid and identified the top of rocky saprolite layer. The other layers were termed soft layers and were determined from geological logging of the laterite rock types and assay results. The overburden was classed by the nickel lower cut off of 0.5% nickel, with up two 2m of below 0.5% counted as ore near the overburden- limonite contact if the average was above 0.5% nickel. Thicknesses of rock types were reduced to percentages of limonite and then interpolated between the hard surfaces. GPR was conducted at KBK and RW but not GR. Greater Ramu used a linear interpolation of rock types between holes.

After the domaining and thickness interpolation process the database was back flagged with the interpolated rock types to enable composites to be drawn from it. One composite was made for each rock type in each hole. If in the rare event of a rock type not being logged a thickness of 0.01 metres was given to facilitate the modeling method which is discussed in the next paragraph. The assay data regardless of the rock type all have a very low coefficient of variation without any outlier tails, nickel has a pseudo normal distribution and cobalt is skewed to the left compared to a normal distribution. As a result no top cutting of assay results was warranted. Within a particular rock type no bimodal populations of assay data were seen.

Omni-directional variograms and Ordinary Kriging were used to estimate grades in each layer. Domains show remarkably little variation, all directions have long ranges in all directions. Nickel (Ni) does not represent any significant horizontal anisotropies, and it has a longer range and a larger nugget effect in the saprolite than in the limonite. Cobalt (Co) in limonite has a slightly shorter range than Ni. Ranges vary between 100 and 200 metres, and most of the actual variability is believed to be vertical. Elements modeled were Ni, Co and Mg. Density was estimated using 1,550 measurements taken at KBK, at RW and GR the density data is not available, each layer has been assigned the equivalent mean bulk density from the KBK resource block.

Three block models were made for each of the Resource Blocks. They have a block size of 25 x 25 metres in the north and east directions and variable thickness based on the rock type thickness that was interpolated as described above. The Resources have been estimated using the gridded seam technique and grade was interpolated using ordinary kriging. There was no subcelling. All interpolations were constrained by the particular rock type. The validation of the block model shows good correlation of the input data to the estimated grades.

The Ramu mineralized domains have demonstrated sufficient continuity in both geological and grade continuity to support the definition of Mineral Resources and Reserves, and the classification applied under the JORC code (2012 edition). The following classification scheme is considered conservative, from 100 m drill grid centres and down limonite and saprolite resources can safely be considered measured and the upper rocky saprolite (R1) considered indicated. The area thus classified is known as the Kurumbukari area. In the 100-200 m centre areas, the limonite and saprolite resources are downgraded to indicated, and the upper rocky saprolite inferred. Small portions of the deposit with a lesser drilling density but ‘enclaved’ in areas with 200m centres are also included in this category. The area of this classification is Ramu West. All other areas/ horizons where the mineralized layers are present are considered inferred (Greater Ramu and the lower rocky saprolite, R2).

The original data is comprehensive in its coverage of the mineralization and does not favor or misrepresent in-situ mineralization. The definition of rock types and their mineralization is based on a high level of geological understanding producing a robust model of mineralized domains. The model has been confirmed by several phases of infill drilling which have all strongly supported the interpretations. Mining activities have also confirmed the model.

During the preparation and reporting of the model in 1999 MRDI Mineral Resources Development Incorporated’s Dominique M. Francois-Bongarcon, carried out several sites visits as the competent person to inspect the work and area. This latest JORC 2012 compliant update using the original model has Lawrence D Queen Chief Geologist of Highlands Pacific Limited acting as the Competent Person who has been intimately involved with the original Resource and subsequent feasibility studies and paid many site visits during construction and the commencement of mining activities.

No assumptions have been made as to mining methods other than that they will be open cut. Assumptions were made as to the mine-ability of the rocky saprolite with the generation of an upper and lower rocky saprolite layers, the expectation is that the upper rocky saprolite will be mined in its entirety and the lower rocky saprolite will in some cases be mineable.

Competent Person’s Statement

The information in this report that relates to Ramu Mineral Resources is based on information compiled by Lawrence Queen, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Queen is a full-time employee of Highlands Pacific and has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which 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'. Mr Queen consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

3 Identified Mineral Resource – Ramu

The identified mineral Resource as of the 31 December 2015 is presented in Table 1 below. Only depletion from mining activities has occurred, there has been no addition to the Ramu Resources in the 2015 year.

Table 1: Identified Mineral Resource – Ramu Nickel Cobalt Project

		31-Dec-15	
Kurumbukari			
Category	MTonnes	Ni %	Co %
Measured	36	0.89	0.1
Indicated	7	1.4	0.1
Inferred	4	1.2	0.1
Total	**46**	**1.0**	**0.1**
Ramu West			
Indicated	17	0.8	0.1
Inferrred	3	1.5	0.2
Total	**20**	**0.9**	**0.1**
Greater Ramu			
Inferred	60	1	0.1
Global Total	**126**	**1**	**0.1**

- Note: The Lower cut off of 0.5% Ni used to define the downhole limit of the overburden.
- Because of rounding summation calculations may not add up to totals.

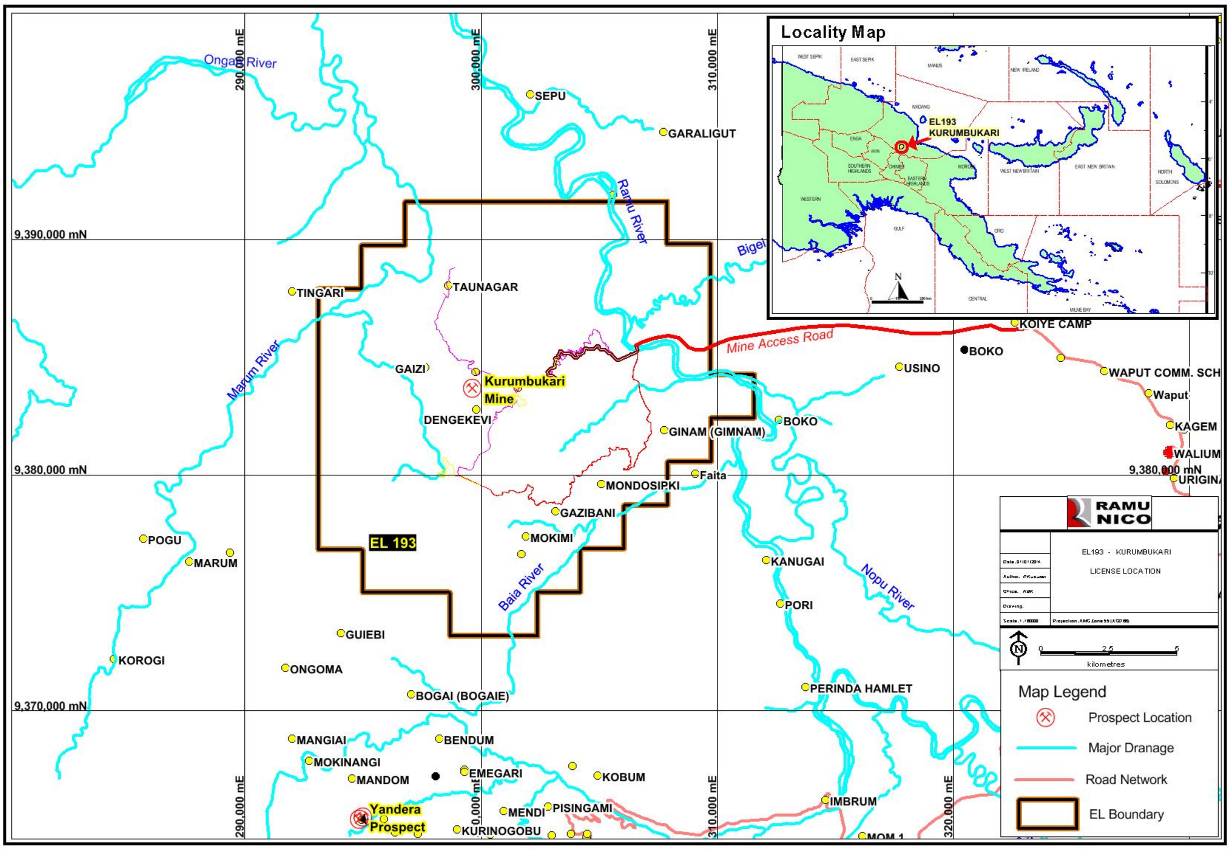

Figure 1: Ramu Nickel Cobalt project location map

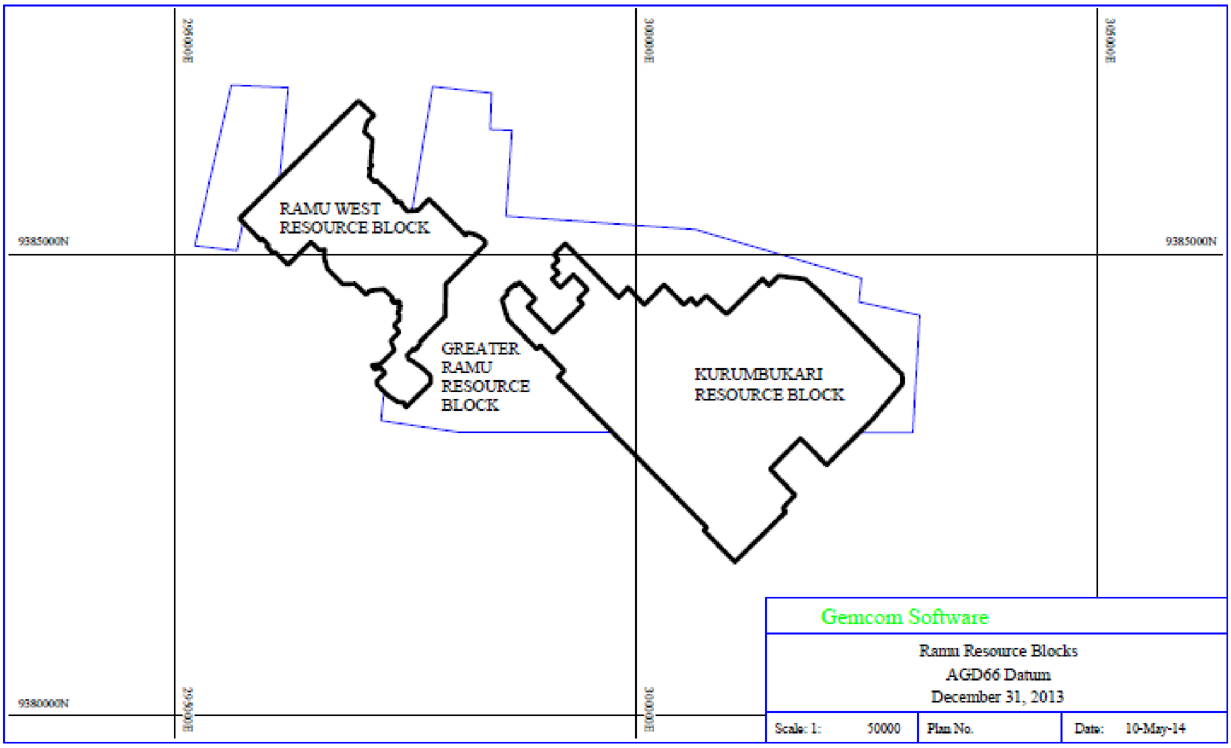

Figure 2: The 2015 Ramu Resource Block outline

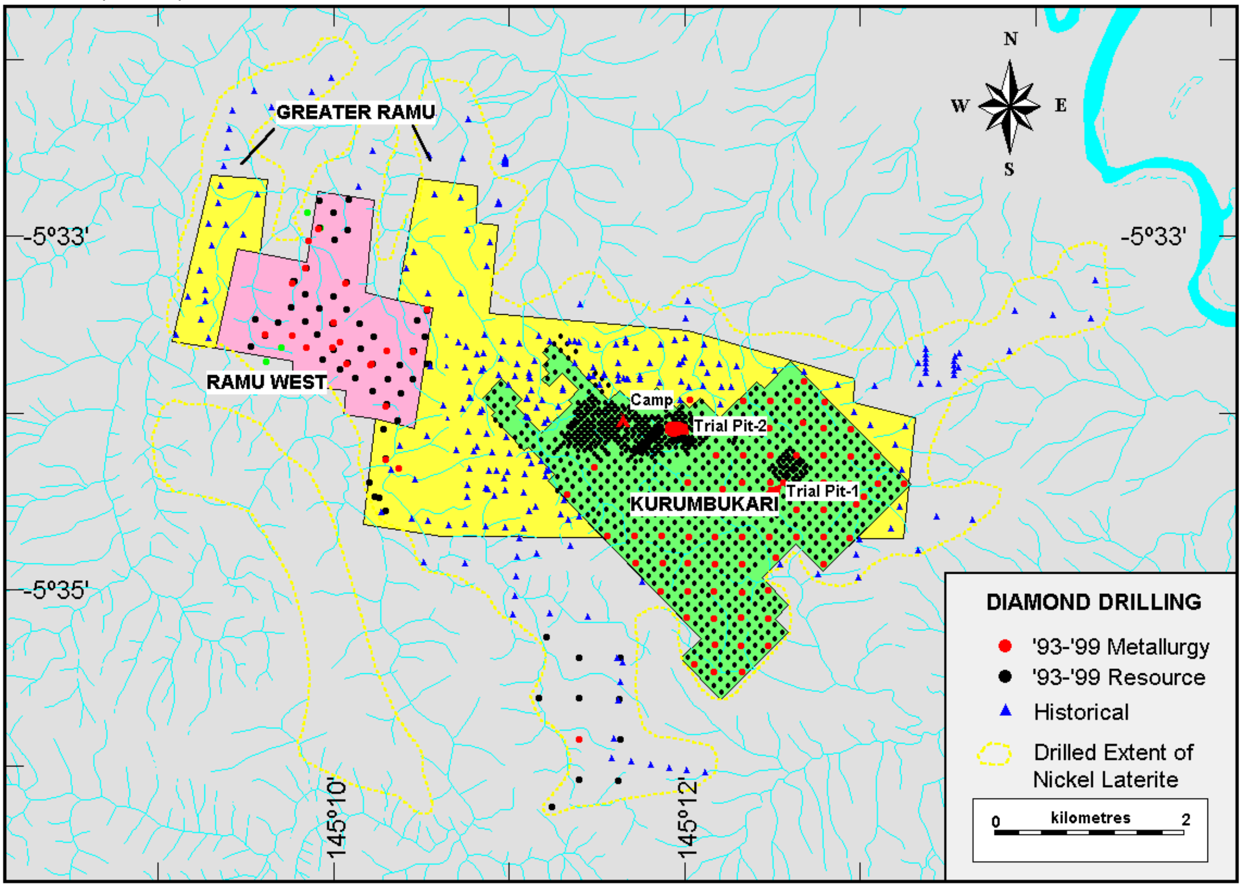

Figure 3 The 1999 Ramu Nickel-Cobalt Deposit Resource Block outline with drill locations

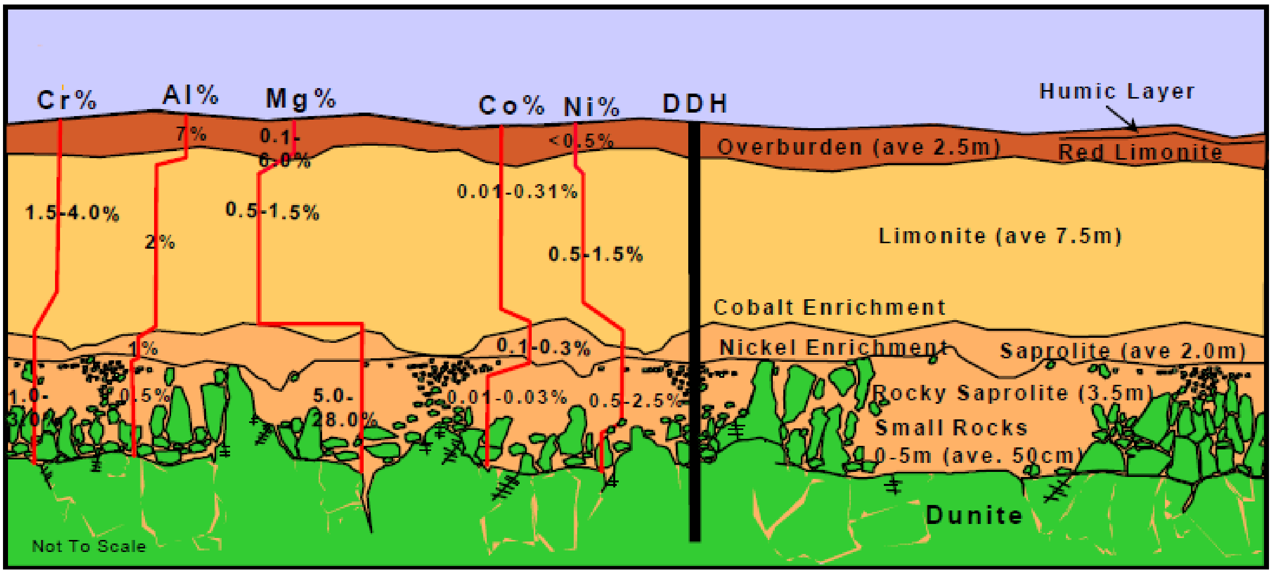

Figure 4: Ramu Laterite Profile

4 ANNEXURE: Mine Reconciliation

4.1 Reconciliation of Mineral Resource to production

For the period 1 January 2015 to December 2015 the mined dry tonnes derived from Production excluding rock (>2mm) versus the Ore Resource were as follows: (Table 2).

Table 2: Ore Resource Mined versus production

Category	MTonnes (-3mm material)	Ni%	Co%	Tonnes Ni	Tonnes Co
Resource Model Estimate	2,889,118	1.0	0.12	28,891	3466
KBK Actual	2,784,000	1.1	0.11	31,111	3,009
Variance	-105,118	0.1	-0.01	2220	-457
Variance (%)	-3.6%	-10%	-10%	7.7%	-13%

Reconciliation between the Annual production and the Resource model continues to be very good. The reconciliation on the tonnes of better than 5% is excellent considering the uncertainly regarding the amount of rock in the rocky saprolite.

4.2 Sterilization of Resource due to process plant and related structures

4.2.1 Introduction:

The sterilisation of the Resource is similar to last year and has been exerted from the 2013 Resource Report. The only change was to item 3 below the small chromite tailings site was cleared of tailings and mining commenced underneath it. The chromite tailings area has now been included in the Resource and has been depleted due to mining. Sterilization of areas was done by using Perimeter files that were created around the areas where the Ore Resource is trapped and sterilised. Partial percent estimations were done using the perimeter file of each item in the Resource model and are listed within brackets below. Only the KBK Resource Block has these barriers to mining:

1. Washing plant site (pp_wp)
2. 66kva power towers across the Resource area (pp_powt)
3. A small chromite tailings disposal site (pp_crtai). NOW INCLUDED IN THE RESOURCE and depleted due to mining in the 2015 year.
4. The chromite removal plant site. (pp_cr)

4.2.2 Results:

The Table 3 below lists the ore and overburden for each area and Figure 5 shows the areas. For all barrier areas the grand total of overburden was 333,964t and for all classes of the Ore Resource for all areas excluding the chromite tailings site discussed in the previous section was 771,226t @1.06% Ni rock free.

Note: All density values in the ensuing tables are on an insitu dry bulk density of material basis. Dry bulk density is defined as the dry weight of material per unit volume of material.

Table 3: Ore Resource sterilised summary table

	Layer	Volume (m3)	Tonnes	Ni (%)	Co (ppm)	Mg (%)	Al (%)	Density (DBD)	Volrock (%)
Chromite Removal plant	**Overburden**	64	70	0.46	642.09	0.00	0	1.09	0.00
	saprolite	17,717	15,494	1.01	1351.40	2.89	0	0.88	0.00
	Laterite	77	64	0.92	1174.00	0.48	0	0.83	0.00
	Upper Rocky Saprolite (R1)	10,008	6,953	1.38	954.76	6.46	0	0.70	20.30
	Lower Rocky Saprolite (R2)	5,913	2,696	1.26	471.35	14.18	0	0.46	46.99
	Grand Total	33,781	25,276	1.14	1146.02	5.06	0	0.78	10.60
Chromite tailings site	**Overburden**	1,639	2,054	0.35	342.19	0.00	0	1.25	0
	saprolite	7,881	4,355	1.23	1448.57	2.38	0	0.57	0.00
	Laterite	39,958	38,769	0.99	1295.08	0.47	0	0.97	1.00
	Upper Rocky Saprolite (R1)	2,195	1,257	1.32	1105.85	5.22	0	0.58	24.41
	Lower Rocky Saprolite (R2)	3,692	994	1.43	502.32	12.41	0	0.28	62.76
	Grand Total	55,364	47,429	1.00	1246.27	1.00	0	0.92	2.78
Power tower footprint	**Overburden**	68,893	81,797	0.33	313.41	0.00	0	1.19	0.00
	saprolite	50,963	37,818	1.14	1395.75	2.03	0	0.75	0.00
	Laterite	102,803	104,923	0.84	952.14	0.39	0	1.03	0.04
	Upper Rocky Saprolite (R1)	57,859	30,225	1.35	1037.74	4.66	0	0.55	30.74
	Lower Rocky Saprolite (R2)	29,028	7,500	1.19	514.23	11.76	0	0.28	65.77
	Grand Total	309,547	262,263	0.79	814.24	1.32	0	0.96	5.44
Washing Plant site	**Overburden**	208,199	250,043	0.35	286.70	0.00	0	1.20	0.00
	saprolite	232,656	169,098	1.12	1497.99	1.86	0	0.74	0.00
	Laterite	232,843	255,559	0.85	941.63	0.46	0	1.10	0.07
	Upper Rocky Saprolite (R1)	212,592	116,818	1.39	1203.25	5.22	0	0.56	25.04
	Lower Rocky Saprolite (R2)	87,269	24,078	1.44	511.05	11.16	0	0.29	61.74
	Grand Total	973,559	815,596	0.85	880.95	1.61	0	0.95	5.43
Grand total	**Overburden**	278,795	333,964	0.35	293.66	-	-	1.20	-
	saprolite	309,217	226,765	1.12	1,469.97	1.77	-	0.75	-
	Laterite	375,681	399,315	0.86	978.74	0.44	-	1.07	0.15
	Upper Rocky Saprolite (R1)	282,654	155,253	1.38	1,159.11	4.88	-	0.56	25.93
	Lower Rocky Saprolite (R2)	125,902	35,268	1.37	508.45	10.50	-	0.30	61.50
	Ore total	1,093,454	816,601	1.05	1,129.14	2.09	-	0.85	7.66

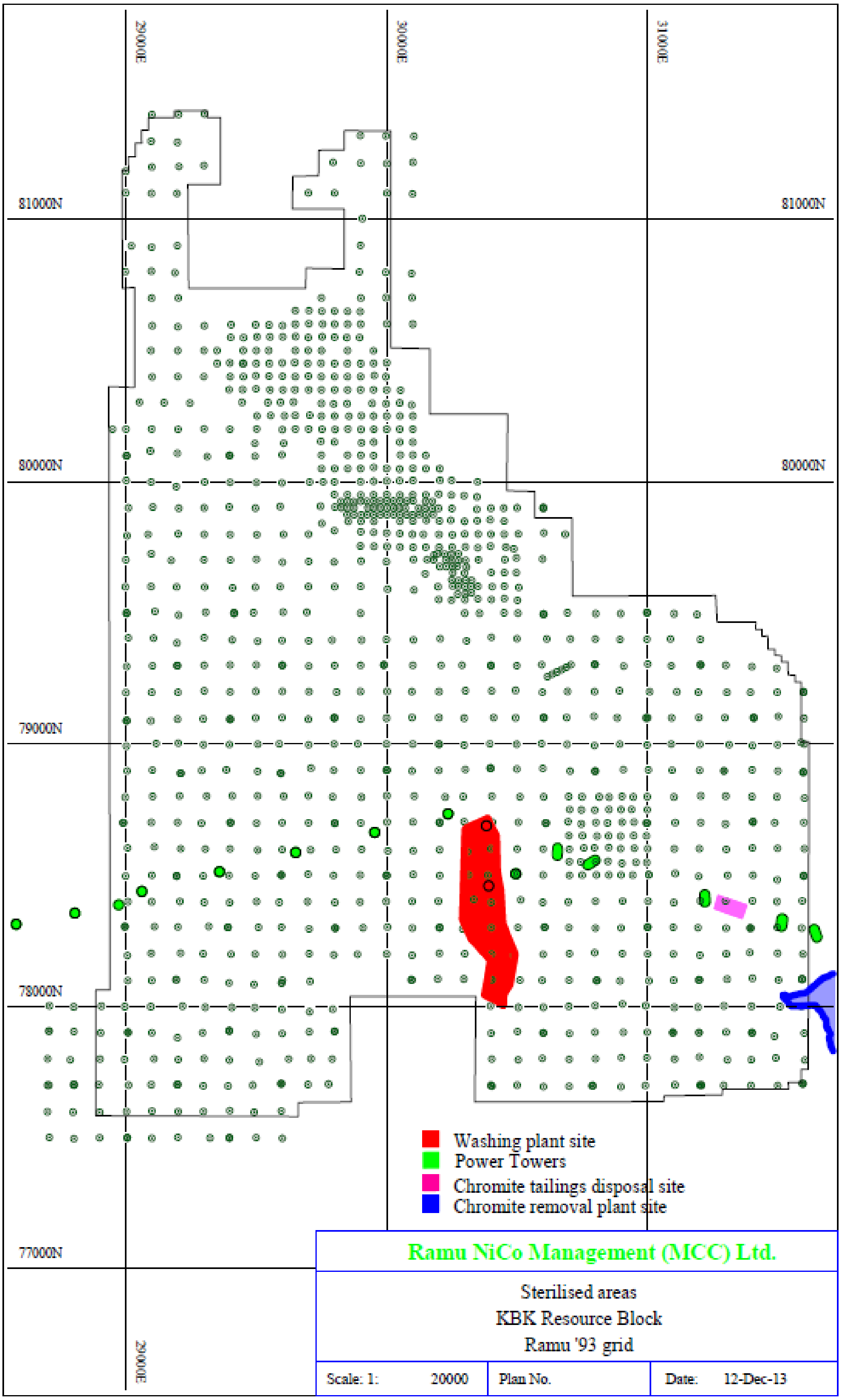

Figure 5: Sterilised Resource areas

4.3 Identified Mineral Resources – Kurumbukari Block depleted

Surpac mining software was used calculate the Project to date as at the end of December 2015 Ore Resource depleted within the disturbed, red shaded mining areas shown in Figure 6. Only the KBK Resource Block was depleted. A void model was created of the Mine site's routine, monthly consecutive topographic surveys since December 2014 up until the December 2015 survey. The surveying uses a RTK GPS survey instrument. The Ramu mine site staff are well advised to survey finished mining areas prior to backfilling instead of mixing surveying of both the cut and fill during their end of work period volume surveys.

The project to date depletion of the Ramu Resource at the end of December 2015 from mining activity is presented in Table 4 below:

Calculating rock tonnes was done for 'upper and lower rocky saprolite' by multiplying the rock volume percent by the total volume in the block and then multiplying this product by a density of 3.35 for dunite-bedrock. This is reported in the Resource table.

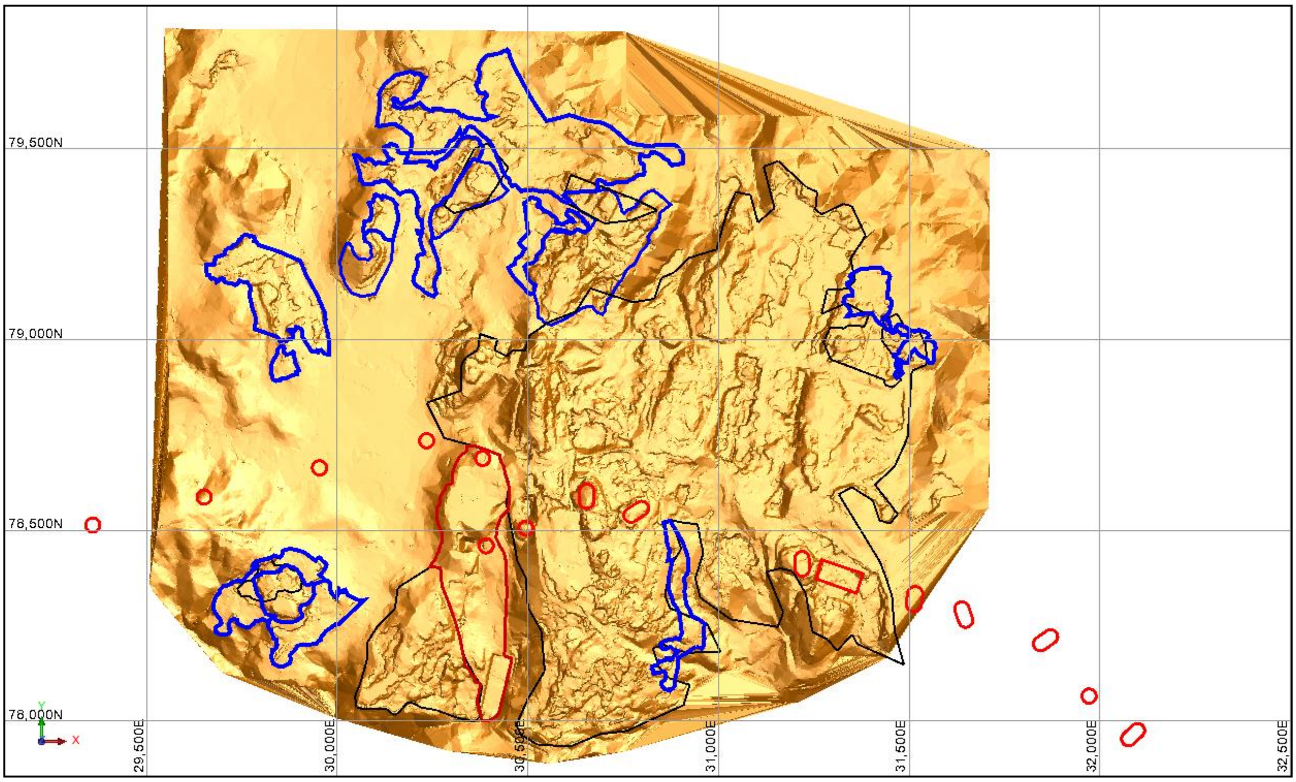

Figure 6: JORC Resource areas depleted by mining activities (Ramu '93 grid)

Table 4: 2015 Depletion of KBK Resource Block from mining activities by Resource Category

Category	***MTonnes***	***Ni%***	***Co%***
Measured	2,335,190	0.94	0.12
Indicated	368,483	1.43	0.11
Inferred	185,445	1.37	0.05
Total	2,889,118	1.0	0.12

The Following section is provided to ensure compliance with the JORC (2012) requirements for the reporting of the Mineral Resources estimates for the Ramu Nickel-Cobalt deposits on mining tenement Special Mining Lease, SML/8:

5 JORC Code, 2012 Edition – Table 1 Kurumbukari, Ramu West and Greater Ramu Resource Blocks

5.1 Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *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.*	• Kurumbukari Resource (KBKK) Block- Primary sample interval is 1 metre except at saprolite/rocky saprolite interface, which is geologically determined. The sample database comprises 22,145 samples of which 12,609 are within ore. • KBK - The resource estimate is based on 972 diamond drill holes totaling 20,096m. Maximum drill spacing is 100m x 100m • The Kurumbukari site was drilled by using three portable drill rigs with NQ core diameter. It was drilled at 100m centres. The central area has been drilled at 50m centres with two smaller areas drilled at 25 m centres. At every drilling site out of four a metallurgical and geological are drilled the geological hole was kept in its entirely. The entire core was processed. Drill holes are all have vertical dip to suit the flat lying nature of the laterite ore body. • KBK- The drilling work took place in two phases. Phase 1 commenced in October 1993 and ended in July 1994 under Highlands Pacific Limited (HLP, which was then called Highland Gold Properties Ltd HGP). During this phase a total of 384 HQ geochemical and 25 PQ metallurgical holes have been done. Both tungsten and diamond bits were used in each hole. Hole depth averaged 26 m. An FMC mounted, top drive, Longyear 38 rig was utilised in the program. The holes were drilled using a PQ/HQ using a tungsten bit until a boulder or harder material is encountered. The tungsten bit was pushed down using the rod weight with minimum amount of rotation. Water and polymer were used in minimum quantities. When boulders were encountered, the tungsten bit was replaced by a diamond bit which was then used until the completion of the hole. • KBK - The second phase of drilling was conducted by HPL from 1996 to 1997 to produce all the drilling within the Kurumbukari Resource block. • Ramu West is nominally 200m x 200m sampling from diamond drilling pre 1990 shallow vertical holes as a result no down hole surveys were. Sample intervals were primarily 1 metre and adjusted at the boundaries of different rock types. There were 1093 samples of which 681 were within ore.. Resulting in 58 diamond drillholes being used to interpolate the thickness and grade. • Greater Ramu - There are 184 holes within the Greater Ramu boundary of which 113 are auger holes and the remainder are diamond. Nominal drilling spacing is 400 metres x 400 metres. • Greater Ramu- The above drilling was part of the original drilling and was completed between 1970 and 1982. During this period the larger Kurumbukari area was drilled on a 400 x 400 m grid with local areas of 200 x 200 m infill drilling. A total of 1,098 auger holes, 207 diamond holes and 39 pits were completed in this phase. Greater Ramu -Drill spacing in the Greater Ramu Area is 400 m by 400 m. Figure 1 shows the drill hole collar locations for this area. Drill collars in the Greater Ramu Area were picked up by a qualified surveyor using an electronic distance measuring machine (EDM). Topographic survey data outside of the KBK Resource Block is patchy and of questionable reliability.
	• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of*	• KBK- All surveys were EDM surveys based on three GPS measurement stations. Topographic data was built by Highlands Pacific based on survey points as well as drill hole collar elevations. Collar elevations were compared to a topographic map, on five metre intervals from a model without the collar elevations, no unacceptable differences found. Although it was found that new recent holes drilled for grade control infill

Criteria	JORC Code explanation	Commentary
	any measurement tools or systems used.	purposes in 2008 onwards were found to not always match the original Resource drilling hole elevations in close proximity. So in these areas used the new recent RTK GPS survey and the new collars and new topographic surface was used. The KBK Resource model blocks were adjusted up or down to match with the 2008 topographic surface. This is approximately 10% of the total KBK Resource area was adjusted and the blocks that fell outside the new topographic area were left unchanged. • In both the KBK and Ramu West (RW) Resource areas no downhole surveys were done as holes were all drilled in a vertical orientation and are very short. There were no structural controls to the mineralization so orientating the core was not warranted. • At the time no certified standards were commercially available for nickel-cobalt laterite deposits. Highlands Pacific Limited (HPL) made several in house standards that were sent to 6 outside laboratories to characterize the mean values and the standard deviations of the standards. Standards and blank samples were inserted into the sample sequences in accordance to Highlands Pacific QAQC procedures. Primary and duplicate samples, standards and blank samples assaying was undertaken by the primary Laboratory- Astrolabe Pty Ltd. (This was HPL's in house company Laboratory which has since closed) with 10% of all samples checked by external commercial laboratory ALS in Brisbane, Australia.
	• *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (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.*	• All NQ diamond drilling. The entire core was submitted for assay. There is a ' Core sample protocols' document including a flow diagram. Termination of a hole based on the last 1.5m of bedrock or the last 3m comprising greater than 50% rocks of more than 15cm each. Samples intervals are nominally 1m lengths and are shortened at strong geological contacts. Core is photographed prior to the sampling. Sample weight recorded. Samples of red limonite and yellow limonite are prepared for drying directly from the trays for 12hours at 950C. for Saprolite and rocky Saprolite processing. Sample is weighed. Using 10 mesh brass sieve a -10 and +10 mesh fraction is produced the fraction is allowed to soak in a water bath in the sieve prior to agitation this is done gently without force by a gloved hand. The +10 while wet volume measured by water displacement. The sample rejoins the general protocol at the crushing point. The -10 fraction together with the water from the water bath will be placed in filter press and the water evacuated, transferred to sample tray and dried before weighing. 500gm prepared assay standard included after last sample of every fourth hole. At Astrolabe sample preparation weighed and dried again jaw crusher -12mm entire then fed to secondary -6mm crusher. The LM5 is run for 3-4 minutes with a maximum of 5kg. while in the pulveriser bowl 250gm is taken by 10gm numerous scoops from the pulverized samples. Samples ending in 9 have a second 250gm split that is sent to ALS in Brisbane for Ni and Co assay. • For KBK Resource area nickel and cobalt were determined by four acid digest with flame AAS determination to a detection limit of 25ppm. The acids used were HF Hydrofluoric, HCL Hydrochloric, Nitric, perchloric • Assays undertaken by Astrolabe Pty Ltd with 10% of all samples checked by external commercial laboratories in Australia Mainly ALS in Brisbane. • In all cases the nickel- cobalt laterite mineralisation is broad and continuous. •
Drilling techniques	• *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).*	• The Kurumbukari site was drilled by using three portable drill rigs with NQ core diameter. It was drilled at 100m centres with the central area being drilled at 50m centres with two smaller areas drilled at 25 m centres. At every drilling site out of four a metallurgical and geological hole were drilled and the geological hole was stored in it's entirely. The entire sample core was processed. Drill holes all have a vertical orientation to suit the flat lying nature of the laterite ore body. Core was not orientated because holes were shallow and vertical. Triple tube was used and core was NQ and HQ. Holes were drilled with a tungsten bit for the non-rocky portion of the core and switched to a diamond bit for the rocky saprolite. The rigs were man portable rigs custom made by Edson RP-70 in Indonesia. The holes from May 1997 to the end of HPL drilling were drilled in NQ. Drilled by United Pacific Drilling Ltd. • The KBK resource estimate is based on 972 diamond drill holes totaling 20,096m. • The Ramu West Resource Block is based on pre-1990 diamond drilling with a nominal

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td></td><td>drill spacing of 200m by 200m. A total of 58 holes were used to interpolate the layer thicknesses and grades.</td></tr>
<tr><td>Drill sample recovery</td><td>Method of recording and assessing core and chip sample recoveries and results assessed.
Measures taken to maximize sample recovery and ensure representative nature of the samples.
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.</td><td>Recoveries were measured at the drill site. Hole depth was determined by the driller counting and measuring core barrels. The ‘true’ depth was marked on blocks and put in the core box at the end of each run. Recoveries are the length of the recovered core/ by true drilled length. (Note- the holes were prone to partial collapse if the driller pulled the bit up from the bottom of the hole at the end of a core run. A small amount of laterite would fall to the bottom of the hole and then be recovered in the next run. This material was unconsolidated and easy to recognize so it was removed from the core tray by the rig geologist before the core was measured or sampled.
Core recoveries were assessed with all types giving 85% of full recovery except for rocky saprolite where recoveries fell below 75% due to the difficulty of drilling a material comprising hard rock in a very soft matrix. The nickel in the sample does not preferentially increased or decreased by the recovery, plus the whole core was taken for analysis
Core Recovery by Drilling Technique
<table>
<tr><td>Drill Method</td><td>Carbide Bit</td><td>Diamond Core</td></tr>
<tr><td>Average Recovery</td><td>93%</td><td>87%</td></tr>
<tr><td>Percentage of Program</td><td>42%</td><td>58%</td></tr>
</table>
Recoveries in limonite and saprolite zones are possibly overestimated due to the tendency to compress extra material from in front of the drill bit annulus into the core barrel due to rod pressure on the drilling face. On removal from the drill barrel this material expands giving the impression of higher recoveries. Table 2.7 shows the core recovery break down by mineralisation.
Core Recovery by Mineralisation Domain
<table>
<tr><td>Lithology</td><td>Recovery %</td></tr>
<tr><td>Overburden</td><td>91</td></tr>
<tr><td>Limonite</td><td>95</td></tr>
<tr><td>Saprolite</td><td>91</td></tr>
<tr><td>Rocky saprolite</td><td>78</td></tr>
</table></td></tr>
<tr><td>Logging</td><td>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.
Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.
The total length and percentage of the relevant intersections logged.</td><td>All the core was logged geologically but geotechnical logging was not conducted for mineralization purposes as there is no structural control to the mineralization. Later on after the Resource drilling geotechnical holes were conducted to check on ground conditions for the processing plants. For every four holes drilled two more holes were drilled for geological metallurgical studies. The geological hole remained in storage for references purposes. Only the lateritic material is considered ore, once the drill hole intercepts bedrock nickel grade falls off dramatically. There are no pit walls expected for the deposit as all the lateritic material is continuous and will be mined.
The logging is both qualitative and quantitative in nature including records of lithology, (ore layer type), mineralogy, textures, oxidation state and colour. Visual estimates of percentages of key minerals associated with nickel mineralization and their appearance and percent weight of rock in each sample the corresponding rock volume as a percent. All core was photographed. As supporting evidence but not used in the Resource calculation large trial pits were mined and the geology logged and documented
All holes drilled were logged</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.*	• All the core was taken for assaying
	• *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*	• No non-coring drilling was done
	• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*	• Samples intervals are nominally 1m lengths and are shortened at strong geological contacts. Core was photographed prior to the sampling. Sample weight was recorded. Samples of red limonite and yellow limonite are prepared for by drying directly from the trays for 12hours at 950C. For Saprolite and rocky Saprolite sample processing, the sample was weighed. Then using a 10 mesh brass sieve, the -10 and +10 mesh fractions were produced. The +10 fraction was allowed to soak in a water bath in the sieve prior to agitation this was done gently without force by a gloved hand. The +10 while wet the volume was measured by water displacement. The sample rejoins the general protocol at the crushing point. The -10 fraction together with the water from the water bath was placed in a filter press and the water evacuated, transferred to sample trays and dried before weighing. 500gm of sample was prepared for assay and a standard was included after last sample of every fourth hole. At Astrolabe analytical pty ltd the sample was weighed and dried again and submitted to a jaw crusher -12mm then fed to secondary -6mm crusher. The LM5 is run for 3-4 minutes with a maximum of 5kg. while in the pulveriser bowl 250gm is taken by 10gm numerous scoops from the pulverized samples. Samples ending in 9 have a second 250gm split that is sent to ALS in Brisbane for Ni and Co assay. • Nickel and cobalt were determined by four acid digest with flame AAS determination to a detection limit of 25ppm.
	• *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.* *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• Assays were undertaken by Astrolabe Pty Ltd with 10% of all samples checked by external commercial laboratories in Australia mainly ALS in Brisbane • Sample sizes are considered appropriate as the whole of the NQ core was submitted for assay
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.*	• At Kurumbukari resource area nickel and cobalt were determined by four acid digest with flame AAS determination to a detection limit of 25ppm. Assays were undertaken by Astrolabe Pty Ltd with 10% of all samples checked by external commercial laboratories at ALS in Australia. The assaying Technique was considered total as the four acids are well known to digest all materials. Bias was discovered and corrected to modeled grades, once improved and corrected where needed, after compiling the results of blind check assay and standard re-submittals, the QAQC program allowed MRDI (Highlands Pacific Limited consultant) to identify and study a number of assaying biases for Al, Mg and Mn. As a result, and in order to eliminated non-conservative errors of unknown origin, MRDI and Highlands Pacific Limited applied the following corrections applied to the corresponding grades after their modeling: corrected Al%=1.10*(Al%+0.48), Corrected Mg%=Mg%+0.5, Corrected Mn%=1.17*Mn%. These corrections were obtained using regression techniques after eliminating obvious outliers. The Resource estimate approved by MRDI include these corrections.

Criteria	JORC Code explanation	Commentary
	• *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.*	• The thickness of the rock-free portion of the laterite (overburden, limonite and saprolite) is controlled by a combination of drill hole data and a ground penetrating radar (GPR) survey. The GPR survey covers 85% of the Kurumbukari and Ramu West areas at a nominal grid of 2m by 100m. Thickness of the rocky saprolite is a linear interpolation between holes. The use of GPR was truthed against drillhole data and outcrop where these were available and found to be most effective.
	• *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.*	• The QAQC program at Ramu is limited to the Astrolabe internal QAQC program, which includes, for each assay batch of 40 assays: 2 random check assays 2 custom standards One blank For 1 sample in 10, a pulp sent to ALS in Brisbane for check assaying. In addition, Astrolabe subscribed to a voluntary check program from Ganett, in which unknown standards are received monthly for assaying and upon receipt of results by Ganett, a performance assessment report is issued to Astrolabe. One of the added advantages of this program is its blindness aspect with respect to the laboratory personnel. It was in MRDI's opinion that the sampling and QAQC procedures at HPL and Astrolabe are now reaching a level of depth, detail and scrutiny that place them above industry standards. The quality and reliability of the data used in the resource modeling exercise at Ramu have been properly characterized and controlled, biases detected and corrected, reproducibility established and maintained. •
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.*	• All the way through the resource drilling program and the modeling stages Mineral Resources Development, Inc. ("MRDI") audited and assessed the work including core and examinations of cross sections and core photographs. Larry D Queen also verified the intersections. The intersection data is given in Annexure 1.
	• *The use of twinned holes.*	• Every four hole that was drilled was twinned with a geological reference hole and metallurgy all holes were logged geology corresponds well in each hole. The whole core sample was submitted for assay. Metallurgy holes were bulked to carryout metallurgy studies the grades of Ni and Co have good correlation with the drill hole assay holes.
	• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*	• The core was logged on site and sample intervals were finalized at the core yard logs were on paper and were entered into a Microsoft Access .mdb relational database. Validation was done during data entry, hole coordinates were compared to survey collar coordinates and log sheet and drill plods and nominal collar coordinates. Total hole depths were checked against original logging data and drill plods. Sample_id's were checked against the original on the logging sheets.
	• *Discuss any adjustment to assay data.*	• No adjustment of assay data were made

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td rowspan="3">Location of data points</td><td>• 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.</td><td>• No down hole surveys were done as the holes were all vertical, shallow and in soft material. All holes were surveyed and all surveys were EDM surveys based on three GPS measurement stations.</td></tr>
<tr><td>• Specification of the grid system used.</td><td>• The grid system used was the Ramu ’93 grid system this is transformed from AGD 66 grid as described below:
<table>
<tr><th colspan="7">Grid conversion</th></tr>
<tr><th rowspan="2">ID</th><th colspan="3">AGD 66</th><th colspan="3">RAMU 93</th></tr>
<tr><th>North</th><th>East</th><th>Elevation</th><th>North</th><th>East</th><th>Elevation</th></tr>
<tr><td>PSM31155</td><td>9379921.998</td><td>298748.214</td><td>803.618</td><td>77977.493</td><td>26006.445</td><td>837.768</td></tr>
<tr><td>PSM31253</td><td>9384181.880</td><td>299966.780</td><td>685.620</td><td>80151.652</td><td>29867.084</td><td>719.770</td></tr>
<tr><td>STN10</td><td>9383823.360</td><td>300069.905</td><td>691.591</td><td>79824.123</td><td>29688.490</td><td>725.741</td></tr>
<tr><td>PSM31156</td><td>9386107.802</td><td>304818.807</td><td>243.740</td><td>78111.899</td><td>34672.367</td><td>277.890</td></tr>
</table></td></tr>
<tr><td>• Quality and adequacy of topographic control.</td><td>• The upper surface is based on a detailed ground survey with more than 20, 000 spot heights using the same EDM survey system as the hole surveys. In order to verify both the adequacy of this topographic model and the collar surveys, MRDI initially examined a plot of the photogrammetric topography over-plotted with drill hole collar elevations. Unfortunately, at Ramu, due to the thick and variable vegetation cover, the photogrammetric topography model is not precise enough to perform such verification efficiently, and regionalized differences of up to 30m are not rare. At MRDI’s request, Highlands Pacific therefore also plotted a topographic map, on five metre intervals, from a model built without using the collar elevations, and over-plotted it with the drill hole collar elevations. MRDI examined the resulting map in detail, hole per hole, and found no unacceptable differences except for two collar elevation typographic mistakes in the computer database which were immediately corrected by Highlands Pacific. Later in 2008 during grade control drilling it was found using an RTK GPS instrument surveying of grade control collars and topographic survey that there were discrepancies with some of the Resource drill hole levels. The proportion of the Resource blocks in the grade control area have been adjusted to match the most recent topographic survey by the MCC company which is currently operating the mine. This adjustment is solely within the KBR resource block area
• At Ramu west, -the diamond holes are shallow and vertical no down hole surveys were done. The northing and easting of the collar co-ordinates are considered accurate but the elevation of the collars was done by matching to contours at 10m intervals from aerial photos and would need to be surveyed with GPS instrument to be suitable for detailed mine planning.
• Ramu West - wherever possible the collars were located on the ground off a surveyed grid. At drill hole completion the collars were picked up by a qualified surveyor using an electronic distance measuring machine (EDM)..</td></tr>
<tr><td rowspan="2">Data spacing and distribution</td><td>• Data spacing for reporting of Exploration Results.</td><td>• The resource estimate is based on 972 diamond drill holes totaling 20,096m. Maximum drill spacing is 100m x 100m.
• The Ramu West Block - Holes were drilled on 200m x 200m spacing</td></tr>
<tr><td>• 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.</td><td>• The data and distribution is sufficient to demonstrate spatial and grade continuity of the mineralized horizons to support the definition of Inferred/Indicated Mineral Resources under the 2012 JORC code
• Ramu west- the primary sample interval is 1m the sample database comprises 1,093 samples of which 681 are within ore. The spacing is 200m x 200m and their area is suitable classified as an Indicated Resource.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
	• *Whether sample compositing has been applied.*	• Samples were composited by ore type for the grade estimation. • The primary sample interval is 1 metre. There is some adjustment made to the sample interval at the boundaries between rock types.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	• All the holes were drilled with a vertical dip so the grid is immaterial, however, the Ramu '93 grid broadly runs grid north along the long axis of the plateaus of the mountain ranges. There were no structures that controlled mineralization. The nickel laterite layers are flat lying in there orientation.
	• *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.*	• Diamond drilling confirmed that drilling the orientation did not introduce any bias regarding the orientation of the lateritic units. • The orientation of the samples was vertical this is ideal as the rock types are layered and drape at the same orientation of the topography. • Ground penetrating radar totaling 60 line kilometers at 100 by 2 m grid was used for KBK Resource estimate as a hard surface this is described detail below in the 'Estimating and Reporting of Mineral Resources' section. It gave a hard boundary for the top of rocky saprolite. The boundary truth tested well when compared to geological log data down hole and coupled with the Topographic surface was used as a hard boundary for thickness interpolation.
Sample security	• *The measures taken to ensure sample security.*	• Detailed protocols for sample security are well documented in Highlands Pacific Limited's "Ramu Project core sample protocols" all data are recorded every step of the way to maintain integrity of the results through the process.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• A series of audits verifications were carried out by Mineral Resources Development Inc. (MRDI) during the drilling phase with audits of both drilling sampling sample processing assay verifications and model strategies and checks that culminated in the HIGHLANDS PACIFIC LIMITED (HPL) COMPETENT PERSON REPORT ON THE RESOURCES OF THE RAMU NICKEL/COBALT PROJECT, PNG prepared in October 1998, prepared by Dominique M. Francois-Bongarcon MINERAL RESOURCES DEVELOPMENT San Mateo, California, USA. Larry D Queen, Chief Geologist of Highlands Pacific Limited is Acting as Competent Qualified Person for this JORC 2012 update report. Mr Queen has visited the Site many times and has carried out several audits and during the Resource drilling stages and also during the feasibility studies and into the mining activities. Also the China ENFI Engineering Corporation have done audits and investigations in there 2 reports titled "Ramu Nickel- Laterite Project Papua New Guinea Feasibility Study Report" of 2005 and then the Revised version of 2007.

5.2 Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *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.*	• The Ramu project area consist of one Exploration License "EL193" which surrounds the Special Mining License "SML 8". The Kurumbukari and Ramu West Resource Blocks Resource block lie entirely within SML8. The current registered holder of these tenements on behalf of a Joint Venture arrangement is Ramu. Ramu NiCo Management (MCC) Limited comprising MCC Ramu NiCo Limited (MCC) (RNML 85%), Ramu Nickel Limited (RNL 8.56%, this is the subsidiary of Highlands Pacific Limited), Mineral Resources Ramu Limited (MRRL 3.94%) and Mineral Resources Madang Limited (MRML 2.5%). Ramu Nickel Joint Venture (RNJV) was founded in 2004. Ramu NiCo Management (MCC) Ltd (RNML) was appointed by the RNJV as the manager for the construction and operation of the Project. MCC Ramu is a joint venture of four companies; namely MCC China (61%), Jinchuan Nonferrous Metal Co. (13%), Jien Nickel Industries Co.(13%) and Jiuquan Iron & Steel Co.(13%). Jinchuan and Jien are the largest and second largest nickel producers in China. Jiuquan is the third largest stainless steel producer in China. The operation consists of four component sites; Kurumbukari mine site (SML8 and

Criteria	JORC Code explanation	Commentary
		EL193); Pipeline route; Basamuk process site; and Rai Coast limestone mining operations.
	• *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.*	• The tenements are all in good standing
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• There is a long exploration history since the nickel discovery by Australian Bureau of Mineral Resources in 1962. The Drill holes used in the Resource estimate of KBK and RW are the most recent Nord Limited on its own completed the RW diamond drilling from the late 1980's to 1990. Under a joint venture agreement between Nord and Highlands Pacific Limited, Nord partially drilled out the KBK block with diamond drilling until 1993, whence Highlands Pacific Limited explored and managed further diamond drilling on the KBK resource area and the ground penetrating radar, Resource Estimation and feasibility study until the Joint venture was struck with MCC in 2004. MCC did a small amount of check holes, (that corresponded to HPL drilling), their own Resource model and feasibility studies, constructed the processing plant and started mining in early 2011. The KBK Resource estimate is entirely base on 972 diamond drill holes totaling 20,096m. maximum drill spacing is 100x100m. The RW estimate is based on a drill spacing of 100x 100 m, a total of 69 holes were used to interpolate the layer thickness and grades there are 56 holes inside the RW boundary there are 1,644 samples at nominally 1m with 1,033 being in ore.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The deposit is called a "Tropical Nickel – Cobalt laterite Deposit". The distribution of the laterite profile is influenced by the Ramu-Markham Graben Fault. Movement along this fault has resulted in the uplifting of the Ramu area to form a plateau landscape which in turn has promoted the laterisation process. The idealized laterite profile at Ramu is described from the surface down as follow: -Humic layer. -Red limonite - Predominantly overburden with low nickel and cobalt grades. The humic and red limonite layers together comprise an average thickness of 2.5 metres as overburden. -Yellow limonite - The limonite ore has elevated levels of nickel and cobalt. This horizon hosts the bulk of the known nickel and cobalt resource, and averages 7.5 metres thick. -Saprolite - The saprolite is enriched in nickel and cobalt, and has an average thickness of 2.0 metres -Rocky saprolite - This horizon contains varying quantities of weathered dunite boulders in a saprolite matrix and is 3.5 metres in average thickness. -Bedrock - Comprises unltramafic dunite with minor harzburgite and pyroxenite The principle ore minerals identified in the Ramu deposit include goethite, asbolan and garnierite. Goethite is found as ochre- coloured, porous, cryptocrystalline, needle-like matrix in the limonite and saprolite zones of the laterite. The average nickel grade contained within the goethite structure has been measured at 1.6 percent nickel in the limonite zone and 2.9 percent nickel in the saprolite zone. Asbolan occurs as bluish black dendrites and fracture coatings throughout the laterite profile. In the limonite zone, the asbolan assays 8.4% cobalt and 5.2 percent nickel and, in the saprolite zone, it assays 5.6 percent cobalt and 15.1 percent nickel. Garnierite, or nickeliferous serpentine is found at deeper levels in the deposit in the alkaline weathering zone, generally at the base of the limonite horizon and in the saprolite and rocky saprolite zones. Chromite, in non-economic quantities, occurs as a residual mineral and has been concentrated in shallower levels by mechanical processes.

Criteria	JORC Code explanation	Commentary
		The formation of the laterite profile results from the decomposition and leaching of the constituent ferromagnesium minerals in the ultramafic bedrock. A tropical climate with monsoonal rainfall and atmospheric carbon dioxide assists the lateritisation process. Local fault structures within the license area have focused the laterite forming processes resulting in a thicker profile in areas of more dense fracturing and faulting. The Ramu Ore Resource is divided up into three Resource blocks, Kurumbukari, Ramu West and the Greater Ramu Resource Blocks
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* • *easting and northing of the drill hole collar* • *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* • *dip and azimuth of the hole* • *down hole length and interception depth* • *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• Refer to annexure 1 in the body of the text.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*	• During reporting of exploration no top cuts to elements were used. A cutoff grade of 0.5% Nickel was used. Most samples taken from diamond drilling were nominally 1m intervals and these were length weight averaged and these were reported for each of the laterite rock types. Ore is defined as being above 0.5% nickel grade and below this grade forms the overburden. For the rocky saprolite layers only the saprolite component of the sample was assigned. The rock component is treated as waste material and is assumed to be removed by the mine site process facility.
	• *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.*	• High grade aggregations were not reported.
	• *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• No metal equivalent values were used for reporting exploration results

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the 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 (eg 'down hole length, true width not known').*	• The orientation of the drilling was vertical and the geometry of the mineralization is well known. The laterite rock types are gently undulating and have similar orientation to the topographic surface and drape over the bedrock. The rock types vary in thickness and these thickness and typical grade occurrences are summarized in Figure 2. Vertical orientated drilling is the ideal orientation.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Maps of the drill hole area, collar location plans and an idealized section are presented in figure 1 and figure 2
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.*	• All results are 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.*	• Ground penetrating radar was substantially used and should be reported here as in many cases it was used to determine thickness of the material layers. The thickness of the rock-free portion of the laterite (overburden, limonite and saprolite) is controlled by a combination of drill hole data and a ground penetrating radar survey (GPR). The GPR survey covers 85% of the Kurumbukari area at a nominal grid of 2m by 100m. the thickness of the rocky saprolite is a linear interpolation between holes. • The rocky saprolite tonnage and grade have been estimated by a -2mm rock free material as this is more accurately reflects the potential feed to the proposed beneficiation plant. The tonnage and grade of the rocky saprolite have been estimated from drill hole intercepts, which have been disaggregated into a -2mm and +2mm (rock) fractions which in turn have been weighed and assayed separately. • Metallurgical test work has shown that the grade of the resource may be upgraded by using gravity techniques to remove the barren chromite and fine rock fragments of the in-situ resource. • The lower boundary of the rocky saprolite is determined by either the first 1.5m boulder intersected or a 3metre intersection of greater than 50% or the volume of the intercept being rock. • Dry in-situ density is estimated from a database of 1550 measurements. MRDI recommended comparative studies using various methods after implementation and there results analysed, all observerable differences were and the Vernier method was retained as the most reliable. In conclusion, MRDI believes the densities used in the modeling to be the best available. • Two trial mining pits were dug in 1997 to gain an understanding of mining requirements, obtain bulk samples for metallurgical test work and to gather additional

Criteria	JORC Code explanation	Commentary
		geological information. • MRDI also examined the more recently acquired AL and/or AL203 grades (covering approximately 20% of the sample data). As was expected, they do indicate the sporadic presence of aluminous dykes, but their frequency is low, as confirmed by the logging. These dykes are not considered to have any significant impact on the resource estimates. • During the KBK drilling 1,550 samples were tested for Dry insitu density. No density samples were taken at RW. The Vernier method of density measurement was found to be the most accurate
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	• No further Resource drilling work is planned at Kurumbukari • The Ramu West Block needs more drilling and sampling to upgrade the rocky saprolite from the Inferred classification. Also ground penetrating radar (GPR) would increase the accuracy of the rock type thickness between drill holes. The drilling would need to infill the existing drilling, and expand along the edges north and south. Dry bulk density tests are needed and metallurgy/ bulk sampling needs to be done. • At Greater Ramu diamond drilling needs to be done to upgrade Resources from the inferred category. Also significant twinning of old holes needs be done to verify their soundness. There is potential to increase resources substantial in all directions. Also ground penetrating radar would improve accuracy and drill hole samples for metallurgy purposes are needed. Dry bulk density tests are required.
	• *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Drilling north and south of Ramu West block boundary and also within the Ramu West Block, Figure.

5.3 Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	• Many measures were taken including reviews by Mineral Resources Development Incorporated (MRDI). MRDI examined in detail the topographic data used in the modeling of the resource, and found the topographic model is adequate for resource modeling and mine planning. The densities and the part of the database for which manual transcriptions of assays had occurred. Errors are minimal or non-existent, and that the quality of the database is at or above industry standards. And MS Access database. Validation protocols are described in Section 1. In summary MRDI audited and verified the following: • Data entry of data especially assay data from Laboratory • The topographic model and collar surveys for adequacy and for modeling and mine planning • Astrolabes' grade assaying on-going test results. • Grade Cross sections of drill hole assays, geological interpretation, estimation zones, block model grades and resource classification codes at the proper, same scale. • Plan views of block model, with drill hole pierce point assays and rock types and estimation zones. • Variograghy study backup notes, as well as exploratory data analysis (stats) printouts/report. • Resource reporting software. • All grade estimation parameter and run files • Ground penetrating radar derived profiles
	• *Data validation*	• Validation of the data include checks for overlapping intervals, missing survey data,

	procedures used.	missing incorrectly recorded assay data, missing lithological data and missing collars. Data for KBK and RW are stored in separate databases
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	• Many site visits were undertaken at the time of the original Resource estimate and the this 2012 Resource update. During the time of the original Resource drilling and estimation, site visits took place on August 30 to September 1, 1997 and included a visit to the preparation and assay laboratory. Successive visits to HPL's Brisbane offices followed on November 18-21, 1997, and February 9-13, June 24-July 3, July 18-21 and October 5-9, 1998. D. Francois-Bongarcon of Mineral Resources Development Incorporated (MRDI) was closely associated with modeling issues and decisions. The reports of the successive visits are attached in the appendices B to E of the Highlands pacific Limited (HPL) Competent Persons Report on the Resources of the Ramu Nickel/Cobalt Project, PNG 1999, prepared by D. Francois-Bongarcon (MRDI). • Post the original Resource Estimation report mentioned in the last Paragraph Larry Queen of Highlands Pacific Limited the qualified person of this JORC 2012 compliant update has visited the site numerous times and witnessed ongoing mining and processing activities of the Ramu Laterite nickel/cobalt Project.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	• There is strong confidence in the geological interpretation of the lateritic layers (rock types) of the orebody . The upper layers, especially the limonite layer are usually continuous, at least in their presence/absence. The absence of the limonite layer is never fortuitous or unexpected, but always due to erosion, and therefore confined to well identified geographic areas. The grades including cobalt, are usually continuous and show little lateral variability. The ground penetrating radar(GPR) data was collected over Kurumbukari (KBK) Resource Block of the deposit, so that the local behavior of the layers (i.e. between drill holes) is usually well known. However at Ramu West (RW) Resource area because of funding and time constraints, GPR was not used and a linear interpretation between drill hole rock types is done.
	• *Nature of the data used and of any assumptions made.*	• For KBK Assay data, geological logging, outcrop mapping, two trial pits mapping and channel sampling and GPR have been used to interpret the geology. MRDI examined each interpreted GPR line, and compared them to the interpretation of the Top of Rocky Saprolite (TORS) Contact in the corresponding drill logs. As expected from the test lines, the matching is virtually perfect wherever drill hole exist to calibrate the profile interpretation. GPR has not been undertaken at RW
	• *The effect, if any, of alternative interpretations on Mineral Resource estimation.*	• As discussed above GPR as used at the KBK resource area coupled with drilling data has proved to be an accurate method to delineate the rock types. Where it has not been used a linear interpolation of rock types between drill holes was used such as at RW resource area which is only an approximate method.
	• *The use of geology in guiding and controlling Mineral Resource estimation.*	• The grade and lithological interpretations forms the basis for the modeling. Grades have all been estimated constraining within the lateritic layers (rock types).
	• *The factors affecting continuity both of grade and geology.*	• As explained in the first point the Grade and geological continuity are remarkably continuous and well known. At the KBK Resource Block the deposit drilling includes significant portions of 50 and 25 metre grids, so that the local behavior of grades is well known. Both the bedrock and laterite geologies are very uniform on the entire property, as a result even in areas of wide spaced drilling of i.e. 300 to 400m centres with nickel resources could reasonable considered at least indicated.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• The Kurumbukari and Ramu West Resource blocks form the north and south areas of the measured and indicated Resource surrounded by the "Greater Ramu Resource Block". It is characterized by having ultramafic rocks of dunite sometimes hazburgite and pyroxinite underlying it. In plan the KBK block is approximately 4 by 4km north-south and in the east-west directions. The RW block is approximately 2 by 2km in the north-south, east-west directions (Ramu '93 grid). The laterite profile mineralization varies in thickness from centimeters up to 30m. The overburden is from 20cm to 20m in thickness. Overburden is thickest in the gullies and valleys and thinnest on the plateau portions of the orebody. Please refer to figure 1 and 2 for the average typical grades and thicknesses of the mineralization. The laterite profile averages 15m in thickness with maximum of 59 metres.

Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	• Both KBK and RW Resource area use the gridded seam modeling technique making use of the Micro Lynx software. This was based on the layer-type geometry of the laterite deposit and the fairly limited vertical extension of each identified layer/rock type in the alteration profile, especially when compared to the probable bench height (in the order of 6 to 8m). Because of the general lack of correlation between grades and thicknesses and of the variations of thickness at small to medium scale, it was decided that grades should be interpolated directly from layer composite grades, with no length-weighting. • Thickness modeling for the KBK and Ramu West Resource area underwent the following process: the various layers relevant to the modeling were delineated using 'hard profiles' (i.e. the topographic surface and the Ground Penetrating Radar (GPR) Top of Rocky Saprolite (TORS) Contact), and 'soft profiles' (i.e. the Overburden/Limonite, Limonite/Saprolite and Rocky Saprolite /Bedrock contacts, and the Co and Ni Interpolation zones). • Kriging plans- Kurumbukari Block-Grades were interpolated by ordinary kriging - search radius of 160m in limonite, 250m in saprolite. – Minimum number of composites set at 2, maximum at 25 seam cells 25 x 25m (to get a good definition of contact surfaces. Ramu West Block-Grades were interpolated by ordinary kriging. Due to wider spaced drilling the search radius was set at 400 m for all layers. – Minimum number of composites set at 2, maximum at 25 seam cells 25 x 25m • Variography- MRDI examined the variography and found it satisfactory. Ni does not seem to present any significant horizontal anisotropies, and that it has a longer range and a larger nugget effect in the saprolite than in the limonite. CO in the limonite has a slightly shorter range than Ni. Ranges vary between 100 and 200 metres, and most of the actual variability is believed to be vertical. Because of this omni-directional horizontal variograms were modeled and used for each layer. • Ramu West-The limonite and saprolite resources have been estimated using the gridded seam technique, with a cell dimension of 25 x25 metres. Grade was interpolated using ordinary kriging using omni directional horizontal semi-variograms. • Ramu West-Grade, thickness and rock content data for the rocky saprolite in this area is incomplete compared to the data from the Kurumbukari resource block. The tonnages of rocky saprolite resource have been estimated as a percentage of the limonite and saprolite. The grades and rock content of the rocky saprolite are assumed to be the same as for the Kurumbukari Resource Block. • Ramu West-The thickness of the limonite and saprolite is a linear interpolation between holes. • Ramu West-No upper cutoff was used. Maximum grade (lithology composite) is 2.12% nickel and 0.57% cobalt. • Kurumbukari block –no upper cut off was used. Maximum grade (lithology composite) is 3.44% Ni and 0.91% Co
	• *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.*	• In 2008 to 2010 a series of close spaced 25 x 25 m spaced drill infilling (but not duplicating the Resource drill holes) were drilled these were combined with the Resource drilling and then modeled using inverse distance squared. The detail is presented annexure 2 and shows good correlation and supports the validity of the Resource model. There is limited production data available that also confirms the appropriateness of the Resource model. • Recently in 2005 and then Revised in 2007 the China Enfi Engineering Corporation, Beijing, China, a company in the MCC group re-estimated the Resource using the Highlands Resource drill hole data. There global estimation was very close to HPL's estimation. However the thickness interpolations used a different methodology and Enfi reported differences in the topographic surface and the GPR surface (these are classed as hard surfaces and scaling of the thickness of other layers is made between the hard surfaces in the HPL computations). During recent work in 2008 and 2010 when surveying the topographic surface during close spaced grade control drilling discrepancies were found between some of the collar elevations of the Resource drilling compared to the topographic pickup. The variation was not systematic and many drill holes matched the current topographic pickup but other collars were above or below the current topographic surface. Any survey is hampered by dense jungle in the area. However the area of recent survey is only about 15% of KBK surface area. And the JORC model blocks estimated and reported by HPL were adjusted in elevation to match the new topographic survey in this update. In the first place no effort was made by ENFI to duplicate the HPL estimate methodology, rather a different methodology was used to interpolate layer thicknesses. At the time of Enfi's report in 2007 they had not conducted or reported any additional ground survey pickup work, it is unknown how Enfi came to their conclusions that there were topographic errors and then suggest in turn that the ground penetrating radar was erroneous without doing any check surveying or check GPR work. Since the mid to late 1990's GPR has been used by many

		companies in nickel laterite exploration and grade control work and coupled with drilling presents, a robust means of defining many of the laterite layers from drill hole to drill hole. Because of lack of supporting evidence Enfi's re-estimate was disregarded. The HPL Ramu estimation is a robust, JORC compliant, well documented and reported estimate and is considered to represent the Ramu nickel cobalt mineralization, (post adjustment of model block elevations based on the recent 2008-2015 topographic pickups which amounted to 20% of the KBK Resource block area) and has been used in this update.
	• *The assumptions made regarding recovery of by-products.*	• All through the drilling and modelling process and then entering into mining operations the nickel and cobalt metals have had all the economic value placed on them. Although care has been taken to produce good grades of Chromite concentrate suitable for marketing and a bagging facility has been built for bagging the concentrate (at close proximity to the Mine site) to date no Chromite Concentrate has been sold. • Chromium (Cr) was assayed for in bulk sample using four acid digest it is not a total fusion method and is not strictly comparable to Chromite (Cr_2O_3)
	• *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).*	• The most significant deleterious element for the Ramu nickel/ cobalt laterite mineralization are magnesium concentrations as high magnesium consumes excessive acid during processing in the High Pressure Acid Leach system (HPAL). Aluminium is elevated (above 7% Al) in the overburden which was thought to be removed prior to mining and was only generally assayed for about 20% of all samples this was not enough to estimate Al values in the model. However, during close spaced drilling for grade control purposes Al has been routinely assayed and modeled providing a chemical indication coupled with the nickel grade (<0.5% Nickel) as to the overburden limonite contact. During mining overburden Al grade estimates are needed for use if dilution occurs. Noted here there was a bias correction to modeled grades derived from the QAQC program which allowed MRDI to identify and study a number of assaying biases for Al, Mg and Mn. As a result, and in order to eliminate non-conservative errors of unknown origin, MRDI recommended the following corrections be applied to the corresponding grades after their modeling: Corrected Al%= 1.10* (Al%+0.48). Corrected Mg%=Mg%+0.5. Corrected Mn%= 1.17*Mn%. These corrections were obtained using regression techniques after eliminating outliers. The resources estimate approved by MRDI include these corrections. Estimates were made by HPL of aluminum grade from composites per lithologic unit, (made for metallurgical use) after the above corrections were made. metallurgical composites also gave information about the chromium grade but this was not modeled and remains indicative (see figure 2). Mg grade is highest in the rocky saprolite. Is lowest in the Limonite and increases with depth. It is important to blend the ore during mining to present a feed that minimizes Mg variation and gives the Mg grade within bounds needed by the High Pressure Acid Leach plant (HPAL) to gain maximum nickel recovery and the lowest cost.
	• *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.*	• Because a 2-dimensional seam method was used for grade modeling by rock type using variable length rock type composites. It was important to verify that grade and thickness could reasonably be considered non-correlated. This was verified for Ni and Co and Mg. the rock type thickness has a variogram close to a pure nugget effect allowing grade and thickness to modeled separately. Model blocks are 25m x 25m and are of variable thickness depending on the interpolated thickness of the rock type. The average sample size is 1m but at the contacts between the ore layers sampling was confined to an individual layer rather than sampling across layers. The blocks had variable thicknesses for each rock type depending on the interpolation of roctype thickness discussed elsewhere. A single composite for each rocktype downhole was generated for the modeling process. For each hole there is a single composite value for each layer this is the essence of a gridded seam model. Drilling was 100x 100m and a 25 x25 m block spacing was a quarter of the sample spacing. This worked well but produced some thick blocks that
	• *Any assumptions behind modelling of selective mining units.*	• No selective mining units were assumed in this estimate.
	• *Any assumptions about*	• No strong correlations were found between the grade variables. However there are

	Mg%	Al%
Overburden	1.10	9.47
Limonite	0.88	2.51
Saprolite	4.04	1.80
Upper rocky saprolite	6.20	1.37
Lower rocky saprolite	11.95	1.12

	correlation between variables.	interesting rocktype correlation and trends. (See figure 2) Mg increases with depth until bedrock where Mg grades are high and no more ore. Mg is lowest in the Limonite layer at 0.88% and highest in the lower rocky saprolite layer 11.95% Ni also increases with depth, limonite 0.9% Ni, lower rocky saprolite,rock free portion 1.30%. Cobalt is highest in the Saprolite and lower in the limonite and rocky saprolite. Aluminum is highest in the overburden and coupled with Ni below the 0.5% nickel defines the overburden.
	• *Description of how the geological interpretation was used to control the resource estimates.*	• Rock type layers were used to constrain the estimate for Mg%, Al% where assays were available. Density values were remarkably consistent within rock types and were constrained by them as well. The various layers relevant to the modeling were delineated using 'hard profiles' (i.e. the topgraphic surface and the ground penetrating radar (GPR) Top of Rocky Spaprolite (TORS) contact), and 'soft profiles' (i.e. the Overburden/Limonite, Limonite/Saprolite and Rocky Saprolite/Bedrock contacts, and the cobalt interpolation Zones). Hard Profiles - Two models have been built into the grade models prior to the drill hole interpolation phase (thus they were called 'hard' as opposed to interpolated or 'soft'): The Topographic Surface: it was derived by kriging (Surfer software) from collar elevations complemented by a large set of additional survey points, all based on EDM surveys aligned on three GPS measurement stations. Due to software limitations, this was re-sampled a 12.5 metre centres, and remodeled into the grade model. At the time MRDI checked that the re-sampling of the surface on a coarser grid did not affect the model in any significant way. The GPR Top of Rocky Saprolite (TORS) Contact: A complete GPR survey of the entire Kurumbukari Resource Block was undertaken on 100m spaced lines, on one metre centre. The TORS was then interpolated using kriging (Surfers software). 'Soft' Profiles these use the hard layers after thickness interpolations and are modified so as to match to the hard profiles such are the Overburden/Limonite, Limonite saprolite and Rocky Saprolite/Bedrock contacts. The overburden/Limonite and Limonite/Saprolite contacts are derived from the drill holes by the following method: (1) the limonite thickness is interpolated into the model 25 square cells. (2) the Overburden and Saprolite drill hole thickness are expressed as percentages of the Limonite thickness in each drill hole, and these percentages interpolated, then re-converted to absolute thickness (3) Finally, the three thicknesses (Overburden, Limonite and Saprolite) are commonly scaled in each cell to exactly match the total three-layer thickness between the two hard surfaces. Locally for a small percentage of drill holes where the TORS does not match the GPR profiles, this may result in a vertical displacement of the layers as logged in the drill holes. The issue was reviewed in detail by MRDI, and the adopted methodology was found to be the best and most reasonable course of action. The interpolation was performed by kriging with no nugget effect. This overall thickness interpolation methodology was designed based on the observation that the Limonite layer is the least likely to 'pitch out', and therefore could serve as a 'reference' layer. As a consequence, it was desirable to avoid the possible interpolation artefacts that could result from the scaling to the total hard thickness, especially undue pinching of the limonite layer could result from the always imperfect projection of particularly small Overburden and/or Saprolite thickness. Examination of the laterization profile in the test pits shows that the layers, except in the places for Overburden, do drape around the highs and lows of the bedrock undulations, further justifying this methodological decision. **Rocky Saprolite/Bedrock Contact** The Rocky Saprolite/Bedrock contact was relevant to the estimation of the Inferred Resources in the Lower Rocky Saprolite layer (LRS). In places, it was possible to interpret it, from the GPR data, this interpretation, where it exists, showed that in general, the contact tends to mimic the undulations of the TORS contact. Because of this contact was estimated by interpolationg the thickness of the LRS. Rocky Saprolite is important as it has the highest nickel grade and it is proving upgradeable by screening off of the rock material, and all elements were separately assayed for two distinct size fractions: -2mm (upgraded ore) and +2mm. Also the core recovery showed a marked decrease in the upper rocky saprolite layer, less consolidated portion of rocky layer, core data in the rocky saprolite layer are subject to two types of interpretation: (a) optimistic; the missing portions of the core area assumed to be made of same material as the remainder of it; pessimistic: the missing portions are assumed entirely made of rock (i.e. barren). However, data on the Rocky Saprolite rock percentage in weight in eight test pits and in the corresponding centre drill holes, strongly suggest that only the more optimistic, saprolite loss option seems to be supported by observation. The layer may not be entirely mineable, due to the presence of sizable rock boulders and pinnacles, and possibly not entirely treatable (from metallurgical point of view) due to its increasing magnesium content at depth. As a result, the following methodology was used: (1) a Rocky Saprolite Mineable Limit (RSML), base on both Mg content and rock percentage, has been established in each drill hole in order to define a soft contact in the model. The thickness down to this

		contact is to be interpolated. (2) the bedrock as logged (defined as either the beginning of the first full metre of rock, or of the first three meters containing at least 50% rock). Is to be interpolated from its absolute elevation in drill holes , and any inconsistency with the RSML or the GPR TORS edited and resolved. (3) Within the two Rocky Saprolite sub-layer thus produced , Upper Rocky Saprolite (URS)and Lower Rocky Saprolite (LRS), the weight and 'grade times weight' product are to be interpolated for each one of the two size fractions, so as to derive properly weighted grade estimates. Where core is lost, the weight of the upgraded ore will be realistically corrected assuming saprolite core losses. • The URS estimates of ore tonnes and grades were classified as Indicated resources at Kurumbukari that had drill centres of 100m x 100m and GPR and the LRS inferred because of uncertainty of ore recovery. At Ramu west where drill centres were nominally 200m x 200m URS was classed as inferred and LRS was not reported in the Resource and Limonite and Saprolite Resources were reported as indicated. • Grades have been estimated constraining within each of the lateritic layers.
	• *Discussion of basis for using or not using grade cutting or capping.*	• At the KBK Block no upper cut was used. Maximum grade (lithology composite) is 3.44% Ni and 0.91% Co. At RW no upper cut was used maximum grade (lithological composite) was 2.12% Ni and 0.57% Co. Raw nickel values from drilling results have a pseudo normal distribution for all the laterite rock types and tails evenly to its highest value without disintegrating or being isolated from the body of the values making top cutting unjustified. Cobalt is skewed to the left but its highest values in the drill hole database are not isolated from the body of values so top cutting was not justified.
	• *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• The Grade model and seam model were verified by examining maps of estimated Ni and CO grades and thicknesses in the modeled seams for Limonite, Saprolite, and Rocky Saprolites, on which the drill hole data composites were posted. Cross sections of the various profiles were also examined, - the Ni grade was generally found to be over-smoothed, probably due to too large a nugget effect in the models of variogram used to interpolate the grade. However since there is no lateral mining selectivity involved in the future exploitation, the smoothing has no significant effect on the resource estimates. Only large scale mine planning would be affected, but the smoothing is not severe as to invalidate such exercises. – Co grade model was found reasonable, locally and globally, in each rock-type. – the thickness was reasonably interpolated. They are spotty and to a large extent their spottiness is a reflection of the GPR digitized contact. The methodology used to interpolate the thickness tends to propagate that spottiness, and create additional artifact 'bull's eyes' in the thickness maps. These are only cosmetic, and MRDI recommends smoothing the thickness maps where needed. • Ramu West- was verified using the same procedures. • Reconciliations have been undertaken where Mining has taken place from the Kurumbukari Block and is presented in Annexure 2. Also reconciliation of the Resource estimate to the close space drilling area was also undertaken both reconciliations support the Resource estimate. A table of statistics for the grade control data values and the coincident Resource drill holes are also presented in annexure 2.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• The tonnages are estimated on a dry tonnes basis.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• No upper cut was used. A lower cut of 0.5% Ni is used to define the downhole limit of the overburden. Up to 2m of internal waste is included in resource blocks if, when averaged with the immediately adjacent intersections, the nickel grade exceeds the lower cutoff grade. The overburden below 0.5% Ni is a natural cut off the overburden also aluminum grade is elevated in the overburden so together Ni and Al define overburden often the overburden is red in colour below the humic layer but this is not always the case.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable*	• Because of the over smoothing of Ni in the model, there was assumption of there being no lateral mining selectivity involved in the future exploitation, then the smoothing had no significant effect on the resource estimates. Only large scale mine planning would be affected, but the smoothing is not severe as to invalidate such exercises. • No effect of dilution was factored into the model however, during the later stages of the Resource drilling program dilution of the ore material during mining was considered resulting in the assaying of samples for Al % which is elevated in the overburden layer. Dilutiion and its grades are expected to be built into the next mining Reserve. During mining activity all the close spaced drill holes were assayed for AL and this coupled with

	prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	Ni below 0.5% was used to define the overburden rocktype. • On the KBK Block, in depleting the model there were sterilized areas where the processing plants, offices and workshops are located, power towers are unlikely to be moved so ore sterilized below these as well. There has been sterilization of some ore that has been backfilled over by chromite tailings and by rock backfill. There are some areas mined to their entirety to the base of URS and many partially mined areas. Mining activity in many cases to increase tonnages has so far avoided much of the rocky saprolite areas and also inadvertently mined overburden and mined overburden on purpose to give blending material to control the Mg concentration in the ore. • The assumption made in before mining of large mining benches has not occurred. Maximum bench heights during actual mining have been up to 4 metres. The model was depleted using Surpac's partial percent estimation giving a partial percent of blocks below the end of period close off topographic service digital terrain model. The Resource model is also used in routine mine planning with the aid of partial percentage estimation. However there is still some inaccuracy of grades as the large blocks vary in grade vertically with Ni and Mg generally increasing with depth. For large parcels of ore and all rock types mined in their entirety the grade is accurate, but conversely not so accurate over short time frames and if partial blocks are mined. • Mining at the Ramu Ni-Co operation from the KBK block is going on and ramping up as the nickel-cobalt High Pressure Acid Leach plant at Basamuk refinery increases its capacity towards full production as it works through its production bottle necks. So far the slow point has been the HPAL plant and mining has been able to meet all its needs
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• For KBK Resource block Metallurgy diamond drill holes only for Metallurgy were done 1 in every 4 on a 100m x 100m spacing. The main metallurgical criticality of the Resource was how to treat ore with rock in it. Early on the metallurgical test work showed that the grade of the resource may be upgraded by using gravity techniques to remove the barren chromite and fine rock fragments of the in-situ resource. Another point was the rocky saprolite tonnage and grade have been estimated for a -2mm rock free material as this more accurately reflects the potential feed to the proposed beneficiation plant. The tonnage and grade of the rocky saprolite have been estimated from the drill hole intercepts that have been disaggregated into a -2mm and +2mm (rock) fractions which in turn have been weighed and assayed separately. The inclusion of a portion of the rocky saprolite resources in the indicated resource category was studied in detail, this is called the upper rocky saprolite (URS) layer. Only the rock free portion of rocky saprolite is considered as a Resource. At KBK it is has been given an Indicated Resource category. At Ramu West drill centres are 200 x 200metres and all the rocky saprolite Resources are given Inferred Resource status.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts*	• All the overburden material lies on top of the ore and is non toxic other than it can be a source of sediment run off into the environment. The sediment run off coats and clogs up creeks and streams and discolors river water, suspended solids can block light into the river affecting plant and fish life leading to decreased oxygen in the water. Sediment ponds and dams are built near the mine to catch any sediment run off and allow settling in the dam and later once full the dam is cleaned out. Sediment run off is being controlled by only clearing just enough land of vegetation ahead of mining so as not to constrain the mining plan but minimize the area of cleared land. Rehabilitation of the land should be done as soon as possible and must include physical controls such as bunding and others to minimize erosion and water velocity. During the resource drilling and modeling the main environmental concerns were compensation for trees that were removed and land usage fees to pay for access and further negotiations with landholders for future mining purposes. During mining there has been increased sediment runoff that the mining personnel have now begun to control with small catchments and diversions. However, recent clearing of the forested area in the mining path has been logistically difficult with logging contractors undertrained and equipped plus a bush fire which destroyed some of timber for felling. These problems have all helped to turn the mining department into a conscious, active environmental entity. Two major settling ponds are in place now and a plan of sediment settling ponds has been designed with installation of these scheduled to be done when the mining path travels through the area.

<table>
<tr><td></td><td>should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.</td><td></td></tr>
<tr><td>Bulk density</td><td>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</td><td>Densities were determined after comparative studies using various methods were implemented and their results analysed, all the observable differences were explained and the vernier method was retained as the most reliable. In conclusion. For the KBK Resource Block, dry in-situ density is estimated from a database of 1,550 measurements. Whereas at Ramu West and the Greater Ramu Resource Block density data is not available and each layer was assigned the equivalent mean bulk density from the Kurumbukari Mine Block.</td></tr>
<tr><td></td><td>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.</td><td>At the KBK Resource Block, vernier density determinations were undertaken as well as a number of sand replacement determinations in the vicinity of one of the test pits. The vernier determinations, available for each sample interval, were finally selected by HPL for the density modeling and tonnage calculations. This decision is supported by the following reasons:
The study of QQ-plots shows that the vernier densities are more consistent with the 1994 density data (which cover mostly the western part of the KBK deposit)
Although paired data are not available, the sand-replacement method did confirm the average vernier densities in Limonite and Saprolite much better than the Shelby densities, with the vernier densities slightly lower than sand-replacement densities:
<table>
<tr><th></th><th>Limonite (g/cm3)</th><th>Saprolite (g/cm3)</th></tr>
<tr><td>VERNIER:</td><td>0.95</td><td>0.73</td></tr>
<tr><td>SAND_REP.:</td><td>0.97</td><td>0.75</td></tr>
<tr><td>SHELBY:</td><td>0.84</td><td>0.71</td></tr>
</table>
At Ramu West, bulk density data is not available from inside this area. Each layer has been assigned the equivalent mean bulk density from the Kurumbukari Mine Block.</td></tr>
<tr><td></td><td>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</td><td>The bulk density of a rock type are remarkably consistent within the rock type. For the KBK Resource Block Dry in-situ density is interpolated from a database of 1,550 measurements by ordinary kriging constrained within each layer similar. The density interpolations were constrained by each rock type. They were interpolated with inverse distance squared methods. Results of the density interpolations are consistent with the original density data
At Ramu West, bulk density data is not available from inside this area. Each layer has been assigned the equivalent mean bulk density from the Kurumbukari Mine Block.</td></tr>
<tr><td>Classification</td><td>The basis for the classification of the Mineral Resources into varying confidence categories.</td><td>From the 100m drill grid centres and down the limonite and saprolite resource are measured, and the upper rocky saprolite, given its other factors of uncertainty, indicated, this was verified by MRDI by kriging a block representing one year of production in the 25m drilling grid area, from the four 100m grid that could be extracted from the 25m grid, and quantifying the variations of the estimated average Ni grades to the more reliable estimated based on the 25m grid. A variation of +/-3 percent at the 90% confidence interval was found, showing that at 100m centres, the resource should be considered measured, and that even somewhat larger grids would yield measured resources. The area is the Kurumbukari block (Figure 1)
Ramu West classification- In the 100-200 m centre areas, the limonite and saprolite resources are downgraded (compared to the Kurumbukari Block) to indicated, and the upper rocky saprolite to inferred. Small portions of the deposit with a lesser drilling density but ‘enclaved’ in areas with 200m centres should also be included in the same categories..</td></tr>
<tr><td></td><td>Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of</td><td>The input data is comprehensive in its coverage of the mineralization and does not favour or misrepresent in-situ mineralization. Geological controls are well understood and the definitions of mineralized zones are based on a high level of geological understanding producing a robust model of mineralized domains. The model has been confirmed by infill drilling and mining activities which support the interpretation. The validation of the block model shows good correlation of the input data to the estimated</td></tr>
</table>

	input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	grades.
	• *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• The Mineral Resources estimate appropriately reflects the view of the Competent Person.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• All factors of the primary Resource estimate and process were carefully reviewed by Dominique M. Francois-Bongarcon of Mineral Resources Development Incorporated (MRDI) from the Resource drilling, assay Laboratory continuously through the modeling process. After verification of the final seam model by examining maps of the estimated Ni and Co grades and thickness in the modeled seams for Limonite, Saprolites and Rocky Saprolites on which the drill hole data composites were posted and cross sections of the various profiles were also examined, MRDI remarked that the Ni grade was generally found to be over-smoothed, probably due to the large nugget effect in the models of the variogram used to interpolate the grade. However since there is no lateral mining selectivity involved in the future exploitation, the smoothing has no significant effect on the resource estimates. Only large scale mine planning would be affected, but the smoothing is not so severe as to invalidate such exercises. The Co grade was found to be reasonable, locally and globally, in each rock-type. Thickness was reasonably interpolated. • For this JORC 2015 update Larry Queen is the Competent Person and has verified the Resource depletion compared to actual production and checked the comparison of grade control models versus JORC model.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	• The relative accuracy of the Mineral Resource estimate is reflected in the reporting of the Mineral Resources to a Measured, Indicated and Inferred classification as per the guidelines of the 2012 JORC code. This has been covered in the 'classification' above.
	• *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.*	• The statement relates to global estimates of tonnes and grade.

- *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*

- This is discussed in annexure 2. There has been good correlation with mining depletion.

Project to Date Ramu Reconciliation					
Production	Tonnes	Ni	Co	Mg	Comments
Dry tonne in slurry to BSK	4,165,846	1.03	984.89	2.25	
Chromite removed	123,611				
Chromite and dry tonne	4,289,457	1.00	984.89	2.25	Ni grade prior to removal of 2.88% chromite PTD
Resource Depletion	4,188,310	1.02	1148.83	1.35	
Variation of Resource	102.4%	97.8%	85.7%	167.2%	Above or below Resource

- A comparison of the complete grade control model of the ‘Year 3 drilling area’ against the same Resource area gave was above in Limonite tonnes. This is discussed in detail in annexure 4.3 above. A review of the original Ramu Resource Report, Resources of the Ramu Nickel / Cobalt Project, PNG 1999, under 6.1.5 Model Verifications, Exploratory Data Analysis it says “ The thickness statistics compare relatively well except for Limonite, where the model average thickness (4.71m) is 25 percent smaller than in the composite data”. The effects of this are expected to occur during mining where more tonnes of ore material will be mined with slightly lower overall nickel grade.

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Report

Ramu Nico Ore Reserve Estimate 2015
Ramu Nico Management (MCC) Limited

AMC Project 315055
21 March 2016

21 March 2016

Ramu Nickel Mine Open pit Ore Reserve Estimate Update

The following tables detail the open pit Ore Reserve estimate update for the Ramu nickel-cobalt laterite mine completed in February 2016. The Ore Reserve estimates are reported below the end-of-December 2015 open pit mined surface.

The significant figures in these tables are intended to reflect the estimation accuracy.

Table 1 shows the Ore Reserve estimate by classification.

Table 1 December 2015 Ramu open pit Ore Reserve by classification

Reserve Classification	Ore Tonnes (Mt)	Ni%	Co%	Rock +2mm (Mt)
Proven	31	0.9	0.1	–
Probable	20	1.0	0.1	9
Total	**51**	**1.0**	**0.1**	**9**

Notes:
1. Totals may not equal the sum of the component parts due to rounding adjustments.
2. Ore tonnes (dry) represent the -2 mm economic portion of resource mineralization. Rock represents an estimate of oversize material (+2 mm) that includes low-grade rocks and rock fragments that occur in the rocky saprolite mineralized zone and are considered as internal waste. The rock will be removed by a simple screening process prior to beneficiation. Accordingly, the ore tonnage is reported after initial screening prior to the beneficiation plant.
3. The Ore Reserve estimate was made using metal prices of US$17,764/t nickel and US$26,448/t cobalt.
4. Cut-off grade is variable and equates to 0.58% nickel equivalent, including credit for recovered cobalt metal.

The estimated split of reserves by Ramu mining area is set out in Table 2.

Table 2 Estimated split of Ore Reserves by Ramu mining area

Reserve Classification	Ore Tonnes (Mt)	Ni%	Co%	Rock +2mm (Mt)
Kurumbukari				
Proven	31	0.9	0.1	–
Probable	6	1.3	0.1	9
Total Kurumbukari	**37**	**1.0**	**0.1**	**9**
Ramu West				
Proven	–	–	–	–
Probable	14	0.9	0.1	–
Total Ramu West	**14**	**0.9**	**0.1**	**–**

Notes:
1. Totals may not equal the sum of the component parts due to rounding adjustments.
2. Ore tonnes (dry) represent the -2 mm economic portion of resource mineralization. Rock represents an estimate of oversize material (+2 mm) that includes low-grade rocks and rock fragments that occur in the rocky saprolite mineralized zone and are considered as internal waste. The rock will be removed by a simple screening process prior to beneficiation. Accordingly, the ore tonnage is reported after initial screening prior to the beneficiation plant.
3. The Ore Reserve estimate was made using metal prices of US$17,764/t nickel and US$26,448/t cobalt.
4. Cut-off grade is variable and equates to 0.58% nickel equivalent, including credit for recovered cobalt metal.

Commissioning of the Ramu mine and processing plants began in April 2012, with ramp-up of production continuing through to 2015. The 2014 Ore Reserve, reported in Highlands Pacific Limited's 2014 Annual Report, was based on the Modifying Factors defined by the Competent Person from historical production, long-term mine plans, and corporate projects at that time. The 2014 Ore Reserve is shown in Table 3 to allow comparison with the 2015 Ore Reserve.

Table 3 December 2014 Ramu open pit Ore Reserve by classification

Reserve Classification	Ore Tonnes (Mt)	Ni%	Co%	Rock +2mm (Mt)
Proven	33	0.9	0.1	–
Probable	20	1.0	0.1	11
Total	**53**	**1.0**	**0.1**	**11**

Notes:
1. Totals may not equal the sum of the component parts due to rounding adjustments.
2. Ore tonnes (dry) represent the -2 mm economic portion of resource mineralization. Rock represents an estimate of oversize material (+2 mm) that includes low-grade rocks and rock fragments that occur in the rocky saprolite mineralized zone and are considered as internal waste. The rock will be removed by a simple screening process prior to beneficiation. Accordingly, the ore tonnage is reported after initial screening prior to the beneficiation plant.
3. The Ore Reserve estimate was made using metal prices of US$19,636/t nickel and US$29,820/t cobalt.
4. Cut-off grade was variable and equated to 0.63% nickel equivalent, including credit for recovered cobalt metal.

The updated Ore Reserve estimate shows a decrease in ore tonnes and contained metal when compared to the 2014 Ore Reserve, principally due to reserve depletion from mining in the Kurumbukari (KBK) open pit, and partly offset by additional Ore Reserves due to a decrease in the cut-off grade. A summary of the major changes from the 2014 estimate to the 2015 estimate is outlined below.

Table 4 Summary of major changes

Category	Ore Tonnes (Mt)
Mining depletion in KBK	–2.4
In-pit backfill sterilisation of resources in KBK	–0.3
Decrease in Ramu West cut-off grade	0.2
Decrease in KBK cut-off grade	0.5
Total	**–2.0**

Notes:
1. Total differences between Table 1 and 3 may not equal these major changes due to rounding adjustments.

Depletion

- Kurumbukari open pit mined areas have been depleted to the end-of-month survey shell as at 31 December 2015.

Sterilization

- In-pit backfill and rehabilitation in the Kurumbukari open pit mined area has buried and sterilized unmined reserve, as defined by survey.

Decrease in Ramu West nickel cut-off grade

- Ramu West deposit is sensitive to changes in nickel cut-off grade. The decrease in the nickel cut-off grade caused by factors discussed below resulted in an increase to the Ore Reserve tonnage.
- Decrease in KBK nickel cut-off grade.
- The decrease in the nickel cut-off grade caused by factors discussed below resulted in an increase to the Ore Reserve tonnage.

Metallurgical factors

- Mine and process plant commissioning started in April 2012. Ongoing improvements to production performance during 2015 and improvement plans continue to support the process plant throughput rate assumption of 100% nameplate nickel capacity (equivalent to 3.25 Mtpa dry refinery feed), unchanged from the 2014 Ore Reserve estimate.
- Forecast processing operating costs decreased from US$84/t to US$68/t refinery feed (dry tonnes delivered in slurry), due to increased production rate.

- Forecast nickel metal recovery decreased from 88.3% assumed for the 2014 Ore Reserve estimate to 86.8%, and forecast cobalt metal recovery increased from 70.4% used for the 2014 Ore Reserve estimate to 72.4%, based on processing plant performance.

Metal prices

- The cut-off grade is variable per ore block in the Ore Reserve model. The average cut-off grade is approximately 0.58% nickel equivalent, including credit for cobalt metal, based on revised production rates and operating costs, processing recoveries, and metal prices. The cut-off grade was previously 0.63% nickel equivalent.
- The metal prices used to determine the cut-off grade were decreased from US$19,636/t nickel and US$29,820/t cobalt to US$17,764/t nickel and US$26,448/t cobalt.
- Payability of the metal produced in final products has increased from 55% for cobalt assumed for the 2014 Ore Reserve estimate, to 60% for cobalt for the 2015 Ore Reserve estimate, based on sales terms achieved during 2015, and projected changes for the life of the mine. Payability for nickel was unchanged at 75%.

Mining factors

- There were no changes to the mining methodology.
- Forecast mining operating costs average US$2.74/t (wet).

For the purpose of forming a view on the appropriate nickel and cobalt prices to use to determine the cut-off grade, AMC has had regard to the long-term metal price assumptions provided by Highlands Pacific Limited, historical spot prices, current forward prices, and consensus price forecasts compiled by Consensus Economics Inc., “Energy & Metals Consensus Forecasts” dated 14 December 2015.

Given the volatility in commodity markets, the current levels of commodity prices relative to historical long-run prices, and the widely varying views of industry analysts, assumptions regarding future metal prices are inherently subject to considerable uncertainty. It should be noted that the value of the mineral assets could vary materially based on changes in commodity price expectations.

An attribution similar to that shown below should accompany any formal reporting of the Ore Reserve estimates detailed in this letter.

Competent Person’s Statement

The information in this report that relates to Ore Reserves is based upon information compiled by Mr Patrick Smith, who is a Chartered Professional (Mining) and Member of the Australasian Institute of Mining and Metallurgy, and an RPEQ. Mr Smith is a full-time employee of AMC Consultants Pty Ltd and has sufficient experience relevant to the style of mineralization and type of deposit under consideration 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 (JORC Code)”. Mr Smith has consented to the inclusion in the report of the matters based on this information in the form and context in which it appears.

Qualifications

AMC is a firm of mineral industry consultants whose activities include the estimation of Mineral Resources and Ore Reserves for public reporting. In these assignments, AMC and its sub consultants act as an independent party.

AMC has carried out a number of technical consulting assignments for Ramu NiCo Management (MCC) Limited (Ramu NiCo) in the period 2013 to 2015. In carrying out these consulting assignments, AMC has acted as an independent party and has no business relationship with Ramu NiCo other than the carrying out of individual consulting assignments as engaged.

The Ramu mine and Basamuk process plant is a joint venture between Highlands Pacific Limited (8.56%), the PNG Government and Landowners (6.44%) and Ramu Nico (85%). Metallurgical Corporation of China Limited holds a 61% interest in Ramu NiCo, with the remaining 39% held by a number of other Chinese entities.

While some employees of AMC may have small direct or beneficial shareholdings in Metallurgical Corporation of China Limited or Highlands Pacific Limited, neither AMC nor the contributors to this report nor members of their immediate families have any interests that could be reasonably construed to affect their independence. AMC has no pecuniary interest, association or employment relationship with these listed entities.

This document and the conclusions in it are effective at 31 December 2015. Those conclusions may change in the future with changes in relevant metal prices, exploration and other technical developments in regard to the operation, Mineral Resource and exploration tenements and the market for mineral properties. This document may not be relied on by any party than Ramu NiCo, its officers and employees.

Principal Mining Engineer / Managing Director

Appendix A
JORC Code Table 1

1 JORC Code, 2012 Edition – Table 1 report template

1.1 Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in Section 1, and where relevant in Sections 2 and 3, also apply to this Section.)

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve. Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	The Mineral Resource estimates for the Kurumbukari and Ramu West deposits at Ramu in Papua New Guinea (PNG), on which these Ore Reserves are based, are detailed in the 2015 Ramu Nickel Resource Statement released to the ASX concurrently with this Ore Reserve estimate and are detailed in Sections 1 to 3 of this Table 1. The Mineral Resource estimates referenced above are inclusive of the Ore Reserves.
Site visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case.	The Competent Person conducted a site visit from 12 to 14 January 2016, and reviewed the mining and processing operation at Kurumbukari. N/A
Study status	The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves. The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.	The Ramu Nickel Resource is currently being mined by open pit methods, with operating contracts and arrangements in place. An owner-mining open pit excavation methodology has been applied in determining these Ore Reserves. Previous studies include the Feasibility Study (February 2007) on which the project was established. This Ore Reserve estimate follows from the estimate of the 2014 Mineral Resources. Pit optimizations were conducted to define economic pit shells and form the pit design boundaries. The optimization confirmed current operating pit areas are contained within the resultant optimization pit shell.
Cut-off parameters	The basis of the cut-off grade(s) or quality parameters applied.	A 0.5% nickel cut-off grade was applied for modelling of mineralization and reporting of Mineral Resources. A variable nickel equivalent cut-off (including credit for cobalt metal) of approximately 0.58% nickel has been applied in reporting of Ore Reserves. The primary assumptions used to generate the cut-off grade include: • Ni price of US$17,764/t nickel. • Co price of US$26,448/t cobalt • CIF insurance of 2% net smelter revenue. • Royalty of 2% net smelter revenue. Payable revenue based on sale of mixed hydroxide product (MHP) at 75% of nickel price and 60% of cobalt price. A forecast process recovery for Ni and Co that is variable based on feed grades and is derived from a fixed tail calculation. Metallurgical recoveries of 86.8% nickel and 72.4% cobalt are assumed. A process cost (inclusive of site overheads and administration) that is variable depending on material type and equates to US$68 per dry tonne refinery feed and freight cost of US$45 per dry tonne of product.
Mining factors or assumptions	The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimization or by preliminary or detailed design).	The Ramu deposit is currently mined by open pit methods and this method has been assumed as the basis for these Ore Reserves. The multiple open pits use truck-and-excavator operations. The mineralization stated within this Ore Reserve is located entirely within Special Mining Lease SML 8 (Kurumbukari and Ramu West). Due to the relatively shallow nature of the open pits, the pit slope angle is not critical for pit design or optimization. A 45 degree overall slope angle was assumed for pit optimization.

Criteria	JORC Code explanation	Commentary
	The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc. The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling. The major assumptions made and Mineral Resource model used for pit and stope optimization (if appropriate). The mining dilution factors used. The mining recovery factors used. Any minimum mining widths used. The manner in which Inferred Mineral Resources are utilized in mining studies and the sensitivity of the outcome to their inclusion. The infrastructure requirements of the selected mining methods.	The 2015 Mineral Resource models were used for pit optimization as detailed below. The Mineral Resource has been interpreted using a cut-off of 0.5% nickel and has no application of mining dilution. Dilution in the Ore Reserves was applied by dilution skins on overburden contact (0.25 m) and road construction material (20% of road thickness). Ore loss and mining recovery factors in the Ore Reserves were applied by ore loss skins on overburden (0.5 m) and rocky saprolite contact (0.25 m) and the application of an overall 95% mining tonnage recovery factor assuming that some areas of the deposit are not mined due to topography, narrow ore zone widths, and permanent access roads. The mining recovery factor includes an allowance for minimum mining width. The pit optimization process used Measured and Indicated Mineral Resource material. Inferred material occurs in mineralization zones beneath the reserve material and is treated as waste within these Ore Reserves. General infrastructure at Ramu is already established and no significant additional capital is anticipated. Allowance for sustaining capital has been included in the cost models, basis of design and the optimization.
Metallurgical factors or assumptions	The metallurgical process proposed and the appropriateness of that process to the style of mineralization. Whether the metallurgical process is well-tested technology or novel in nature. The nature, amount and representativeness of metallurgical testwork undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied. Any assumptions or allowances made for deleterious elements. The existence of any bulk sample or pilot scale testwork and the degree to which such samples are considered representative of the orebody as a whole. For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?	The Kurumbukari washing plant and beneficiation plant, and Basamuk refinery have been processing the Ramu mineralization for approximately 2.5 years. The +2 mm sized fraction of the ore is removed by simple screening processes and the -2 mm mineralization is currently treated in the refinery at rates in the order of 2.6 Mtpa dry feed. The processing method is appropriate for the mineralogy that presents in the orebody, a lateritic nickel-cobalt ore, which is processed using traditional high-pressure acid leach and precipitation to produce an intermediate product (mixed hydroxide precipitate or MHP) that is sold to smelters. The recovery for nickel and cobalt is variable and derived from a fixed tail calculation and is based on operational results and metallurgical testwork conducted during the feasibility study. Metallurgical recoveries of 86.8% nickel and 72.4% cobalt are assumed. Refinery operating cost includes cost allowances for aluminium and magnesium content in the ore. The processing plants are operational. The MHP produced at Basamuk refinery is specified in off-take agreements.
Environmental	The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterization and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.	The mineralization that is the subject of this Mineral Resource is located within Special Mining Lease SML 8 (Kurumbukari and Ramu West). There are no Native Title interests, nor are there any other historical or environmental issues considered material to this Ore Reserve. Ramu is an approved and operating mine and processing facility and the relevant environmental and mine closure plans are in place. Waste dumping requirements and areas, along with subsea tailings disposal have been planned, regulatory approved and in operation.
Infrastructure	The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.	General infrastructure at Kurumbukari and Basamuk is in place and there are currently no further large capital items planned. Options to increase washing plant throughput are under consideration and minor capital items may be required. Existing infrastructure includes: Ore screening plant, beneficiation plant, ore slurry pipeline, and refinery processing plant, and associated maintenance and storage facilities. Mobile equipment operations and maintenance facilities. Administration and security facilities. Electricity generation and distribution systems, and water supply and storage facilities.

Criteria	JORC Code explanation	Commentary
		Subsea tailings disposal system.
Costs	The derivation of, or assumptions made, regarding projected capital costs in the study. The methodology used to estimate operating costs. Allowances made for the content of deleterious elements. The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co-products. The source of exchange rates used in the study. Derivation of transportation charges. The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc. The allowances made for royalties payable, both Government and private.	Allowance has been made for sustaining capital. No further expansionary capital costs have been included as it is assumed that the current infrastructure is adequate and will be maintained for the life of asset. The operating costs are underpinned by operating budgets and historical costs, which are converted to life-of-mine unit costs for the optimization. The mining costs are material type dependent and average US$2.74 per wet tonne. The processing cost of US$68 per dry tonne refinery feed is derived from a 3.25 Mtpa processing rate scenario and inclusive of each stage of processing, and the technical services and general and administrative costs. For the purpose of forming a view on the appropriate nickel and cobalt prices to use to determine the cut-off grade, AMC has had regard to the long-term metal price assumptions provided by Highlands Pacific Limited, historical spot prices, current forward prices, and consensus price forecasts compiled by Consensus Economics Inc., "Energy & Metals Consensus Forecasts" dated 14 December 2015 The metal price assumptions are US$17,764/t nickel and US$26,448/t cobalt. All costs are supplied, applied and reported in United States dollars (USD). The product is sold CIF – Cost, Insurance and Freight (named port of destination). A freight cost of US$45 per dry tonne of MHP is applied, supplied by MCC. Transport costs for slurry delivery by pipeline to the refinery, and port handling at the refinery are included in the total processing operating cost. The MHP produced at Basamuk refinery is specified in off-take agreements. This details the percentage price payable. A 2% Papua New Guinea Government royalty is included in the cost assumptions.
Revenue factors	The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc. The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	Revenue assumptions were provided by MCC and HPL from operating experience and corporate forecasts. Metal prices were provided by HPL from operating experience and corporate forecasts.
Market assessment	The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future. A customer and competitor analysis along with the identification of likely market windows for the product. Price and volume forecasts and the basis for these forecasts. For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.	Ramu has in place offtake agreements for MHP. MCC relies upon advisory sources when assessing future trends and factors influencing supply and demand. The Ore Reserve estimate has been completed on the basis that all product can be sold. Ramu is an operating asset and has established relationships with customers and market acceptance for its product. The Ore Reserve estimate has been completed on the assumption that all product can be sold, based on MCC and advisory forecasts. MHP from Ramu is an established product.
Economic	The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc. NPV ranges and sensitivity to variations in the significant assumptions and inputs.	The discount rate adopted for the optimization and economic analysis is 10%, based on MCC corporate forecasts. Whittle shells are utilized to determine the range of pit shells for various revenue factors. Operational ramp-up from commissioning is ongoing. The operational costs are continuously improving but are based on the current performance plus production improvements from defined enhancement projects.
Social	The status of agreements with key stakeholders and matters leading to social licence to operate.	Ramu has undertaken considerable community consultation in association with local, provincial, and federal PNG government communication resulting in a licence to operate under the relevant licences.

Criteria	JORC Code explanation	Commentary
		Ramu participates in regular community meetings that assist with the communication of mine development, community feedback, and thus the ongoing social licence to operate.
Other	To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves: Any identified material naturally occurring risks. The status of material legal agreements and marketing arrangements. The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.	There are no material naturally occurring risks to be documented. Legal and marketing agreements associated with the sale of MHP are in place through the off-take agreements. The Mine Lease is currently in good standing. Ramu is an approved and operating mine and the relevant environmental and mine closure plans are in place. Waste dumping requirements and areas, along with subsea tailings disposal, have been planned, have regulatory approval and are in operation. Future approvals will be required to allow the full extraction of the Ore Reserve.
Classification	The basis for the classification of the Ore Reserves into varying confidence categories. Whether the result appropriately reflects the Competent Person's view of the deposit. The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).	The Ore Reserve is classified as Proved and Probable in accordance with the 2012 JORC Code, corresponding to the resource classifications of Measured and Indicated. Inferred Mineral Resources were treated as waste in the Ore Reserve estimate. The Ramu project continues to optimize performance. Like all Ore Reserve statements, it contains both risk and opportunities. The Competent Person feels that the statement provides a reasonable balance and is consistent with industry practice and the intent of the 2012 JORC Code. No Probable Ore Reserves are derived from Measured Mineral Resources.
Audits or reviews	The results of any audits or reviews of Ore Reserve estimates.	No audits conducted.
Discussion of relative accuracy/ confidence	Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage. It is recognized that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Mine and process plant were commissioned in April 2012. Production ramp-up is ongoing and, although nameplate production capacity (3.25 Mtpa dry refinery feed) has not yet been consistently achieved, the Competent Person feels that MCC has demonstrated through ramp-up achieved to date that it will be achieved. Production constraints are primarily at the start of the process, such as maintaining a consistently high mining production and washing plant feed rate, rather than downstream processing at the refinery. Production rates are continuously improving and defined enhancement projects are in progress. The Competent Person feels that operations will continue and improvements in performance will occur over time as the operation achieves steady-state operation. The Ore Reserve estimate was based on 100% nameplate capacity (3.25 Mtpa) as there are reasonable expectations at the time of reporting that this level of production can be achieved. Statistical checks and reconciliation are done on a continuous basis. Mining reconciliation for initial processing of 4.2 Mt gave a satisfactory result of 102% tonnes and 98% nickel grade. The modifying factors that are most critical to the operation are: • Nickel price. • Metallurgical recoveries. • Production rates and operational costs.

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