RAMU NICKEL COBALT PROJECT

Located in Madang Province – Papua New Guinea

NI 43-101 TECHNICAL REPORT

Report Prepared for

Conic Metals Corp

Effective Date of Technical Report: 25 October 2019
Effective Date of Mineral Resources: 31 December 2017
Effective Date of Mineral Reserves: 31 December 2017

Report Prepared by

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Level 9, 80 Mount Street, North Sydney, New South Wales 2060, Australia

DATE AND SIGNATURE PAGE

This report entitled "Ramu Nickel Cobalt Operations, located in Madang Province – Papua New Guinea, NI 43-101 Technical Report" dated 25 October 2019 was prepared and signed by the following:

"Qingping Deng" (signed)
Qingping Deng,
BS, MS and PhD, CPG AIPG, RM MMSA

"Peter D. Ingham" (signed)
Peter D. Ingham,
MSc, BSc, FAusIMM, MIMMM, CEng,

"Roland Nice" (signed)
Roland Nice,
BSc, FAusIMM, Life MCIM, MAIME, MIEAust, Chartered Engineer

"Adrian Brett" (signed)
Adrian Brett,
BSc (Hon), MSc, M Envir. Law, FAusIMM

BEHRE DOLBEAR AUSTRALIA PTY LIMITED
"Peter D. Ingham" (signed)
Name: Peter D Ingham
Title: General Manager Mining

CERTIFICATE OF QUALIFICATION

I, Qingping Deng, BS, MS and PhD, CPG AIPG, RM MMSA, do hereby certify that:

1. I am a Director of Behre Dolbear Australia Pty Limited ("BDA") of Level 9, 80 Mount Street, North Sydney, NSW 2060, Australia.

2. The Degrees that I hold which are relevant to this work are a Bachelor of Science in Exploration Geology from the Central-South Institute of Mining and Metallurgy in China in 1981, a Master of Science in Economic Geology from the Central-South Institute of Mining and Metallurgy in China in 1984, and a Ph.D. in Economic Geology from the University of Texas at El Paso in the USA in 1991.

3. I am a Certified Professional Geologist (CPG-10515) of the American Institute of Professional Geologists ("AIPG") and Registered Member (785284RM) of the Society for Mining, Metallurgy, and Exploration, Inc. ("MMSA").

4. I have worked as a geologist and resource/reserve specialist for a total of 35 years since my graduation from university.

5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.

6. I am responsible for the Sections 1.3 Geology and Mineralisation, 1.4 Mineral Resources, 1.5 Mineral Reserves, 1.9 Recommendations (partial), 7 Ramu Geological Setting and Mineralisation, 8 Deposit Types, 9 Exploration, 10 Drilling, 11 Sample Preparation, Analysis and Security, 12 Data Verification, 14 Mineral Resource Estimates, 15 Mineral Reserve Estimates, 24.2 Mine Life and Exploration Potential (partial), 25 Interpretation and Conclusions (partial) and 26 Recommendations (partial) of the "Ramu Nickel Cobalt Project, Located in Madang Province – Papua New Guinea, NI 43-101 Technical Report" dated 25 October 2019 (the "Technical Report"). I conducted a personal inspection of the Ramu mine and refinery site on 5th and 6th February 2019, and Ramu mine from 11th to 13th June 2019 and reviewed the geology, exploration, database collection, Mineral Resource and Mineral Reserve estimation, mining and processing operations and related aspects.

7. As at the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

8. I am independent of Conic Metals Corp in accordance with Section 1.5 of NI 43-101 and have not had any prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101 and Form 43-101F1, and the sections of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.

10. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them of the Technical Report for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.

Dated 25 October 2019

"Qingping Deng" (signed)

Signature of Qualified Person

Qingping Deng
Director – BDA

CERTIFICATE OF QUALIFICATION

I, Peter D. Ingham, MSc, BSc, FAusIMM, MIMMM, CEng, do hereby certify that:

1. I am General Manager Mining of Behre Dolbear Australia Pty Limited ("BDA") of Level 9, 80 Mount Street, North Sydney, NSW 2060, Australia.

2. I graduated with a Bachelor of Science degree in Mining from Leeds University, England in 1975 and a Master of Science degree in Mineral Production Management from Imperial College of Science and Technology in 1980.

3. I am a Fellow of the Australasian Institute of Mining and Metallurgy.

4. I have worked as a mining engineer for a total of 42 years since my graduation from university and I have particular expertise in open pit and underground mining including mine planning, Mineral Reserve preparation and independent review of Mineral Reserves.

5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.

6. I oversaw and am responsible for reviews of the Mining History, Infrastructure, Taxes and Royalties (Sections 1.2, 18 and 19) and I am responsible for the Mineral Reserves, Mining, and Production sections; specifically Sections 1.1, 1.7, 1.8, 1.9 (partial), 2, 3, 5, 15, 16, 21 (Production and Mine Operating Costs), 22, 23, 24 (excluding 24.2 Mine Life and Exploration Potential), 25 Interpretation and Conclusions (partial) and 26 Recommendations (partial), of the "Ramu Nickel Cobalt Project, Located in Madang Province - Papua New Guinea, NI 43-101 Technical Report" dated 25 October 2019 (the "Technical Report"), and am responsible for the overall preparation of the report. I conducted personal inspections of the Ramu site on 5th and 6th February 2019 and reviewed the mining operations, infrastructure and related aspects.

7. As at the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

8 I am independent of Conic Metals Corp in accordance with Section 1.5 of NI 43-101 and have not had any prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101 and Form 43-101F1, and the sections of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.

10. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them of the Technical Report for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.

Dated 25 October 2019

"Peter D. Ingham" (signed)

Signature of Qualified Person

Peter D. Ingham
General Manager Mining - BDA

CERTIFICATE OF QUALIFICATION

I, Roland Nice, BSc, FAusIMM, Life MCIM, MAIME, MIEAust, Chartered Engineer, do hereby certify that:

1. I am a Senior Associate of Behre Dolbear Australia Pty Limited ("BDA") of Level 9, 80 Mount Street, North Sydney, NSW 2060, Australia.

2. The Degrees that I hold which are relevant to this work are a Bachelor of Science in Metallurgical Engineering from Queens University of Kingston, Canada in 1966.

3. I am a Fellow of the Australasian Institute of Mining and Metallurgy, a Life Member of The Canadian Institute of Mining and Metallurgy, a Member of the Society for Mining, Metallurgy and Exploration, and a Member of Engineers Australia and a Chartered Engineer of the Chemical College.

4. I have worked as a Metallurgical Engineer for a total of 53 years since my graduation from university.

5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.

6. I am responsible for the Mineral Processing and Metallurgical Testing, Process Plant and Life of Mine Plan (Capital Costs and Operating Costs) sections (specifically Sections 1.6, 13, 17, 19.1, 21 incorporating beneficiation and process plant operating costs) and relevant portions of Section 25 of the Ramu Nickel-Cobalt Project, Located in Madang Province, Papua New Guinea– NI 43-101 Technical Report" dated 25 October 2019 (the "Technical Report"). I conducted a personal inspection of the Ramu mine and refinery site on 5th and 6th February 2019 and reviewed the processing operations and related aspects.

7. As at the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

8. I am independent of Conic Metals Corp in accordance with Section 1.5 of NI 43-101 and have not had any prior involvement with the property that is the subject of the Technical Report.

9. I have read NI 43-101 and Form 43-101F1, and the sections of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.

10. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them of the Technical Report for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.

Dated 25 October 2019

"Roland Nice" (signed)

Signature of Qualified Person

Roland Nice
Senior Associate – BDA

CERTIFICATE OF QUALIFICATION

I, Adrian Brett, BSc (Hon), MSc, MEnvir. Law, FAusIMM, do hereby certify that:

1. I am a Senior Associate of Behre Dolbear Australia Pty Limited ("BDA") of Level 9, 80 Mount Street, North Sydney, NSW 2060, Australia.

2. The Degrees that I hold which are relevant to this work are a Bachelor of Science in Geology with Honours from the University of New England, Armidale in 1972, a Master of Geological Science (Engineering Geology) from Macquarie University, Sydney in 1980 and a Master of Environmental and Local Government Law from Macquarie University, Sydney in 1995.

3. I am a Fellow of the Australasian Institute of Mining and Metallurgy.

4. I have worked as an environmental scientist for a total of 31 years since my graduation from university.

5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.

6. I am responsible for Section 4 – Property Description and Location, Section 5 – Accessibility, Climate, Local Resources, Infrastructure and Physiography, Section 20 – Environmental Studies, Permitting and Social or Community Impacts of the "Ramu Nickel Cobalt Project, Located in Madang Province – Papua New Guinea, NI 43-101 Technical Report" dated 25 October 2019 (the "Technical Report"). I conducted personal inspections of the Ramu site on 5^{th} and 6^{th} February 2019 and reviewed the environmental, infrastructure and related aspects of the operation

7. As at the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

8. I am independent of Conic Metals Corp in accordance with Section 1.5 of NI 43-101.

9. I have read NI 43-101 and Form 43-101F1, and the sections of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.

10. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them of the Technical Report for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.

Dated 25 October 2019

"Adrian Brett" (signed)

Signature of Qualified Person

Adrian Brett
Senior Associate – BDA

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1 SUMMARY

1.1 Description and Location

The Ramu Nickel Cobalt Project ("the project", as defined below) is located in Madang Province on the north coast of Papua New Guinea ("PNG") (Figure 1). The project comprises the Kurumbukari ("KBK") mine and beneficiation plant, located on the Kurumbukari plateau, in the foothills of the Bismarck Ranges, 600-800 metres ("m") above sea level and 75 kilometres ("km") to the southwest of the provincial capital of Madang, and the Basamuk processing plant located on the coast, approximately 55km southeast of Madang. The KBK mine is at latitude 5° 34′ S and longitude 145° 13′ E and the Basamuk refinery is at latitude 5° 32′ S and longitude 145° 8′ E. Beneficiated ore is pumped from the mine as a slurry to the plant via a 135km pipeline. The Basamuk plant produces a mixed nickel-cobalt hydroxide product ("MHP").

Conic Metals Corp. ("Conic Metals or the "Company") has commissioned Behre Dolbear Australia Pty Limited ("BDA") to undertake the preparation of this independent technical report in connection with the recent acquisition of an interest in the Ramu Nickel Cobalt Project in Papua New Guinea ("the Ramu NiCo Project" or "the project") in compliance with the Canadian Securities Administrators' National Instrument 43-101 - Standards of Disclosure for Mineral Projects ("NI 43-101"). BDA is the Australian subsidiary of Behre Dolbear and Company Inc., which has offices or agencies in Beijing, Chicago, Denver, Guadalajara, Hong Kong, London, New York, Toronto, Vancouver, Santiago and Sydney. This report is substantively the same report as the NI 43 101 report prepared for Cobalt 27 Capital Corp ("Cobalt 27") for Ramu nickel cobalt project dated 19 July 2019.

1.2 Ownership

The project is a joint venture between MCC Ramu, which has 85% ownership and is the operator of the project, and Ramu Nickel Limited ("RNL"), a wholly owned subsidiary of Highlands Pacific Limited ("Highlands") with an 8.56% interest, and Mineral Resources Madang Limited and Mineral Resources Ramu Limited which hold 2.5% and 3.94% interest respectively, and which are both subsidiaries of Mineral Resource Development Corporation ("MRDC"). MRDC is a PNG Government entity which holds the government and landowners' interests. Highlands is a wholly-owned subsidiary of Cobalt 27 following completion of a Scheme of Arrangement in May 2019. In October 2019 Conic Metals, through a corporate transaction, acquired ownership of Highlands from Cobalt 27. MCC Ramu is wholly owned by MCC-JJJ Mining whose shareholders are the Metallurgical Corporation of China Limited ("MCC") with 67.02%, Jilin Jien Nickel Industry Limited (13%), Jiuquan Iron and Steel (Group) Limited (13%) and Jinchuan Group Limited (6.98%).

1.3 Geology and Mineralization

The Ramu deposit is a typical tropical nickel-cobalt laterite deposit. The deposit was historically divided into three contiguous resource blocks, Kurumbukari (KBK), Ramu West, and Greater Ramu, primarily based on degree of exploration and drilling density. The area of the deposit covered by exploration drilling is around 25 square kilometres ("km^2"); however, the mineralisation potentially covers a much larger area where underlying dunite has been mapped. The deposit lies above a bedrock comprised of ultramafic intrusives of dunite with minor harzburgite and pyroxenite. The nickel-cobalt laterite mineralisation is related to the weathering and leaching of the ultramafic bedrock in a tropical environment and consists of distinct layers of weathered lateritic material as summarised in Table 1.1. From the surface down, these defined laterite layers are the overburden ("O"), limonite ("L"), saprolite ("S"), upper rocky saprolite ("R1") and the lower rocky saprolite ("R2"). The rock-free saprolite interface between S and R1 was defined from a combination of geological logging of drill core and ground penetrating radar ("GPR") surveys. The limonite and saprolite layers are the primary ore horizons in the deposit. The upper rocky saprolite has been shown to be mineable, however, only a portion of the lower rocky saprolite has been mined as run-of-mine ("ROM") ore.

Conic Metals Corp.

PNG Projects and Exploration Tenements

Figure 1

LOCATION PLAN

BDA - 206/01 (April 2019)

Behre Dolbear Australia Pty Ltd

Table 1.1

Summary of the Laterite Layers of the Ramu Deposit Area

Rock Type	Description	Thickness (m)
Overburden (O)	Including the upper humic layer and the lower red limonite overburden; generally contains low nickel (<0.5% Ni) and cobalt grades; stripped as waste before mining the lower ore layers	0.7-48m averaging 4.5m
Limonite (L)	Yellow limonite ore; hosts the bulk of the nickel-cobalt resource	0.3-19m averaging 4.6m
Saprolite (S)	Enriched in nickel and cobalt; the top of the saprolite marks the boundary between acidic weathering and alkaline weathering conditions in the profile	0.4-13m averaging 3.9m
Rocky Saprolite (R1)	Contains less than 30% (averaging 17% by volume) dunite boulders in a saprolite host; enriched in nickel but not in cobalt	0.4-21m averaging 2.8m
Rocky Saprolite (R2)	Contains greater than 30% (averaging 51% by volume) dunite boulders in a saprolite host; enriched in nickel but not in cobalt	0.3-13m averaging 2.7m
Bedrock	Typically dunite with minor harzburgite and pyroxenite	

The depth profile of the laterite mineralisation averages approximately 14m, but varies locally as a result of active erosion by streams and gullies. The principal ore minerals at Ramu are goethite, asbolan and garnierite. Chromite is present in the deposit as a residual mineral and is recovered as a by-product by gravity separation methods from the ROM ore wash plant at the mine site.

Assay data shows that nickel is generally depleted (less than 0.5% Ni) in the overburden layer (including the humic and red limonite horizons), but is enriched in the yellow limonite and saprolite layers, including the rocky saprolite R1 and R2. Cobalt is generally depleted in the overburden layer, is enriched in the saprolite layer and generally not enriched in the rocky saprolite. Magnesium in the original rock was mostly leached out in the humic layer and the limonite layers, but only partially leached out in the saprolite layers. Aluminium is strongly enriched in the humic layer and the red limonite layer, slightly enriched in the yellow limonite layer, and not enriched in the saprolite layers from the original rock. Chromium occurring as residual chromite is generally enriched in the limonite layers and slightly enriched in the saprolite layers from the original rock. Iron is generally enriched in the limonite layers and slightly enriched in the saprolite layers from the original rock.

1.4 Mineral Resources

The Mineral Resource and Mineral Reserve estimates for the Ramu nickel and cobalt deposit have been carried out under the guidelines of the Australasian JORC Code by Competent Persons as defined by those guidelines. The JORC Code guidelines are compatible with the requirements of NI 43-101 in this regard.

Of the three historical contiguous resource blocks in the Ramu deposit, the KBK and Ramu West Blocks contain Measured and Indicated resources and the Greater Ramu Block contains only Inferred resources. The KBK and Greater Ramu resource models were developed in 1998 by Highlands under the guidance from Mineral Resources Development, Inc. ("MRDI") based in San Mateo, California, USA (Dr Francois-Bongarcon of MRDI was the Competent Person) for the 1998 Feasibility Study. The resource model remained unchanged (apart from allowing for mining depletion) for the 2007 Feasibility Study and the December 2013, December 2014, December 2015 and December 2016 resource estimate updates. The resource model for Ramu West was updated in 2001 by Highlands (Mr. Larry Queen, Chief Geologist of Highlands, was the Competent Person) based on additional exploration data and remained unchanged as of the end of 2017. The 2017 drilling expanded the original KBK Block to the southwest and to the northwest. Current reported Mineral Resources were based on a pit limit dated 31 December 2017 and were updated by Sinomine Resources Exploration Co., Ltd. ("Sinomine") based in Beijing, China based on additional drilling work completed in 2017 (Mr Zhang Xueshu was the Competent Person for the 2017 resource estimate update). As the 2017 drilling extended the original KBK Block to the northwest into the original Greater Ramu Block and to the southwest into an area with no previous drilling, the 31 December 2017 resource estimate update was reported for the entire Ramu deposit area, with no separation into the three original resource blocks. Mineral Resources for the 31 December 2017 update are summarised in Tables 1.2.

Table 1.2

Ramu Mineral Resources – 31 December 2017

Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %
Measured	34	0.9	0.1
Indicated	42	0.9	0.1
Measured + Indicated	76	0.9	0.1
Inferred	60	1.0	0.1

Note: resources at a cut off of 0.5% Ni; resources are inclusive of reserves; the figures may not add exactly due to rounding; resources do not include the +2mm rock fragments in the rocky saprolite layers; Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability; the Mineral Resources are classified according to the 2014 CIM Definition Standards

Resources include limonite, saprolite and rocky saprolite (R1 and R2) mineralisation at a cut off of 0.5% Ni. The rocky saprolites includes rock-free material less than -2mm in size. The +2mm rock material in the rocky saprolites is considered as in-resource waste. The lower boundary of the lower rocky saprolite (R2) is determined by either the first 1.5m boulder intersected or a 3m intersection with greater than 50% of the volume of the intercept being rock.

Micro Lynx software using a gridded seam modelling technique was used for the original Highlands/MRDI resource model created for the 1998 Feasibility Study as well as the 2001 Highlands Ramu West Block resource estimate update. Grade estimation for that model was carried out using omni-directional variography and ordinary kriging ("OK") with grade values interpolated into 25 x 25m seam blocks for the KBK Block and Ramu West Block. Grade estimation for the Greater Ramu Block was carried out using the inverse distance squared ("ID^2") method. Bulk density values for the KBK Block were estimated using the ID^2 interpolation method. Average bulk density for each laterite layers in the KBK Block was assigned to the respective laterite layers for the Ramu West Block and the Greater Ramu Block as there were no systematic bulk density measurements for these two resource blocks at that time. The Micro Lynx gridded seam model was converted into Surpac mining software in 2012; and Surpac has then been used to update the resource estimate from December 2013. A new digital terrain model ("DTM") developed by MCC Ramu was utilised which enabled an allowance to be made for mining depletion. For the December 2017 resource estimate update, the KBK Block was expanded to the northwest into the original Greater Ramu Block and to the southwest into an area with no previous drilling; the ID^2 interpolation method and the traditional polygonal method on plans were used for grade estimation for the newly drilled areas.

In the KBK Block, the limonite and saprolite are categorised as Measured resources, the upper rocky saprolite as Indicated, and the lower rocky saprolite as Inferred as the block was drilled at a spacing of 100 x 100m. In the Ramu West Block, the limonite and saprolite are categorised as Indicated resource, and the upper rocky saprolite and lower rocky saprolite as Inferred, reflecting the wider drill hole spacing of 200 x 200m. The entire resource in the Greater Ramu Block is categorised as Inferred due to the wide 400 x 400m hole spacing. For the December 2017 resource estimate update, the additional drilled area around the original KBK Block with a drilling density of 100 x 100m was classified as Indicated (limonite, saprolite and upper rock saprolite) and Inferred (lower rocky saprolite).

As the resource estimate for the Ramu deposit does not include the +2mm rock boulders, it should be compared in production reconciliations with the dry tonnage data from the slurry produced post the wash plant at the mine site after the rocky material has been removed, not with the dry tonnage of the ROM ore. As chromite concentrate produced by the wash plant represents a significant percentage (generally +5%) of the -2mm portion of the ROM ore, this material should also be considered in production reconciliations.

BDA's Mineral Resource Qualified Person for this NI 43-101 report, Dr Qingping Deng, considers the Measured, Indicated and Inferred Mineral Resource estimates as of the end of 2017 are an appropriate representation of the in-situ mineralisation for the area that had been drilled at that time and are suitable for use in mine planning and Mineral Reserve estimation of the project. The 2017 year-end Mineral Resource estimates by Sinomine are the latest Mineral Resource estimates available to BDA's review, therefore, they are considered as the current Mineral Resource estimates for the Ramu deposit. As there are significant areas underlain by the ultramafic dunite surrounding the area that had been drilled at the end of 2017, there is significant exploration potential within the current exploration licence area as well as outside the current exploration licence area, and it is anticipated that the total resource will increase significantly when additional drilling is conducted.

1.5 Mineral Reserves

The Mineral Reserve estimation for the Ramu nickel and cobalt deposit has been updated a number of times since the 1998 and 2007 feasibility studies. AMC Consultants Pty Ltd ("AMC") based in Brisbane, Australia completed the 2013, 2014 and 2015 year-end Mineral Reserve estimate updates for the deposit. The AMC 2015 year-end Mineral Reserve estimate update includes a detailed report as to how the update was performed. In following years, the Mineral Reserve estimate update was performed by China Nonferrous Engineering and Research Institute ("ENFI") in 2016 and Sinomine in 2017.

The 2015 year-end Mineral Reserves for KBK Block and the Ramu West Block of the Ramu deposit were estimated by AMC based on the Surpac gridded seam resource model produced by Mr Queen of Highlands in 2012 and the 2015 year-end pit survey for the Ramu mine. Mine planning models were developed in Datamine Studio software from the Surpac resource models from Highlands and pit optimisations were conducted using Whittle 4X pit optimisation software. The operating costs, processing recoveries, production rate assumptions and other pit optimisation parameters were generally based on actual operating performance during or at the end of 2015. Mineral Reserves contained within pit shells produced by Whittle 4X pit optimisation were summarised. The Mineral Reserves were categorised as Proven and Probable from Measured and Indicated resources in accordance with the 2014 CIM Definition Standards. Inferred resources were treated as waste in the Mineral Reserve estimate.

The year-end mineral reserve estimate update for the Ramu deposit was performed by ENFI in 2016 and Sinomine in 2017. Sinomine conducted Whittle pit optimisation or manual pit design for the areas drilled in 2017 using updated economic and other pit optimisation parameters. Sinomine updated the Mineral Reserve estimates to the end of 2017 from the 2016 estimate by subtracting the mining depletion in 2017 and adding any new reserves defined by the 2017 drilling. Table 1.3 lists Sinomine's Mineral Reserve estimates for the Ramu deposit as of the end of 2017.

Table 1.3

Ramu Mineral Reserves – 31 December 2017

Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %
Proven	24	0.9	0.1
Probable	33	0.9	0.1
Total	**56**	**0.9**	**0.1**

Note: Mineral Reserves at a cut-off grade of 0.5% Ni, which is not materially different from the 0.58% nickel equivalent cut-off grade used in the previous year; reserves are included in resources; the figures may not add exactly due to rounding; reserves do not include the +2mm rock fragments in the rocky saprolite layers; the Mineral Reserves are classified according to the 2014 CIM Definition Standards

BDA's Mineral Reserve Qualified Person for this NI 43-101 report, Mr Peter Ingham, considers that AMC's 2015 open pit design based on Whittle open pit optimisation for the KBK Block and the Ramu West Block, and Sinomine's 2017 open pit designs for the newly drilled areas in 2017 are generally reasonable considering this is a large scale very shallow deposit. The mining ore loss factors and mining dilution factors used for the Mineral Reserve estimates appear reasonable based on the production reconciliation. Overall BDA's Qualified Person considers the Proven and Probable Mineral Reserves as of the end of 2017 are an appropriate representation of the recoverable tonnes and grade at that time and are suitable for use in mine planning and financial modelling of the project. The 2017 year-end Mineral Reserve estimates by Sinomine are the latest Mineral Reserve estimates available to BDA's review, therefore, they are considered as the current Mineral Reserve estimates for the Ramu deposit. As the Ramu mine is an established mining operation, the Mineral Reserve estimates take into account mining, metallurgical, infrastructure, permitting, and other relevant factors.

1.6 Operations

Mining Operations

The Kurumbukari (KBK) owner-mining operation utilizes conventional open-pit mining methods. MCC carries out all mining operations with a fleet of excavators and trucks along with other ancillary equipment to support the mining fleet. After an initial trial period, hydro-sluicing, using hydraulic water jets, was introduced in 2016 as a second form of extraction where the geometry was suitable; hydro-sluicing has accounted for around 30% of production since its introduction.

After the initial logging of the trees by specialised teams, the humus/topsoil and overburden are generally removed by bulldozers; excavator and truck haulage are used if the quantities are significant. The topsoil is temporarily stockpiled on the mining area, and then excavated and hauled to the mining area boundary and stockpiled for later mining rehabilitation reclaim. Overburden is excavated with small-scale excavators and hauled in articulated six-wheel dump trucks. Overburden is either placed directly into pit voids, backfilling the old mining areas in preparation for mining rehabilitation, or stockpiled at the mining area boundaries for later reclaim.

Limonite, saprolite, and rocky saprolite ore are excavated and hauled to either one of the four ore bins at the wash plant or placed on the run of mine ("ROM") pad for later reclaim. Excavation from multiple mining areas, being a combination of different pit locations and different stratigraphic layers within the pits, ensures that the ore feed is a blend of these different ore types; a key goal is consistency in the average grades of nickel, cobalt, magnesium, and aluminium metals in plant feed.

Large rocks or boulders are identified at the working face in the pit and excluded from the ore to be loaded on trucks. Only the smaller- sized rocks (<0.35 m) pass through the grizzly apertures at the washing plant so excavators operate on the ROM pad as a final step in the ore sorting process. The excavator operators scalp the larger rocks from the top of the grizzly screens to prevent blockages. Oversize rocks are stockpiled on the ROM pad for later reclaim and back-haulage to the mining area, either for disposal into the pit void or for road construction.

Mine Site Wash Plant and Beneficiation Plant

The feed to the wash plant comes from both conventional excavator and truck mining and from hydraulic mining. The KBK mine site plant flowsheet comprises a de-agglomeration or wash plant, with four separate lines, each comprising a feed bin with grizzly, apron feeder and rotating drum scrubber. The scrubber washes and screens the ore, with the coarse material rejected at the end of the scrubber, while intermediate sized pebbles are fed to two logwashers operating in parallel. The fines are further screened and sent to the beneficiation plant. The hydraulic mining material is pumped directly to the screens.

The fines from the wash plant including the fines from the hydraulic mining are pumped to the Beneficiation Plant. The main purpose of the Beneficiation Plant is to remove the high amount of chromite mineral from the slurry. Chromite is a very abrasive mineral and is quite harmful to steel pipelines. The Beneficiation Plant comprises a receiving storage tank from which the slurry is pumped to the plant. The first step is to separate the slimes using two banks or clusters of hydrocyclones. The oversize material is sent to two banks of spiral concentrators which separate the coarse chromite from the Ni-Co bearing fines. The coarse chromite-rich concentrates are sent to two banks of 26 shaking tables each to remove chromite. The table concentrates containing more than 80% of the chromite in the feed slurry are sent to a magnetic separator which separates a high grade chromite product or concentrate and a lower grade "middlings" product. The high grade chromite concentrate is filtered and stockpiled for sale.

The non-chromite streams from the spirals and tables are sent to a grinding mill to be reduced to a size distribution. The ground slurry is thickened to recover water for re-use in the wash plant and hydraulic mining, and the slurry is pumped via a pipeline to the hydrometallurgical plant at Basamuk Bay.

The KBK plant commenced operation in 2012 and experienced a number of issues during ramp up and early operation, however these have been systematically resolved. The KBK plant is designed to treat around 4.6 million tonnes per annum ("Mtpa") of dry ore (nominally around 8Mtpa of wet ore) at a 41% moisture level from the mine.

The feed to the wash plant has averaged about 6Mtpa for the past two years with feed to the Basamuk plant averaging 3.66Mtpa. Metal production for 2017 and 2018 has been at or slightly in excess of design (107% and 108% respectively); monthly production in 2016 was close to design, but three months of production were lost due to a major plant incident. BDA considers that the ramp-up period was completed in 2015, and considers that the plant should be capable of design 3.6Mtpa production in the future years of operation.

Basamuk Refinery

Following washing, scrubbing, screening and beneficiation, the ore is transported from the mine site via a 135km slurry pipeline to the Basamuk refinery, located approximately 75km east of Madang (Figure 1). The Basamuk plant is designed to produce annually approximately 78,000 tonnes ("t") (dry) of mixed nickel-cobalt hydroxide product (MHP) containing around 32,600t Ni and 3,300t Co.

The refinery flow-sheet comprises several discrete processes including high pressure acid leaching ("HPAL"), slurry pre-neutralisation ("PN"), counter current decantation ("CCD"), thickening, scrubbing, iron and aluminium removal, Ni-Co precipitation and neutralisation of the residue.

Concentrate from KBK arrives at the Basamuk site and the slurry is stored in tanks prior to being thickened and then pumped to the HPAL feed storage tanks. The plant incorporates three HPAL trains (autoclaves). Each HPAL line is made up of three pre-heat vessels, the autoclave and three heat recovery/pressure let-down or "flash" vessels. The discharge from the third pre-heat vessel is pumped using two positive displacement ("PD") pumps into the autoclave. Each PD pump is capable of pumping full capacity but normally operates at half rate. Each pump has its own discharge line into the autoclave. Steam and acid are added to the autoclave to raise the temperature to 250°C at a pressure of about 43 bars (4,300 kilo-Pascal or about 623 pounds per square inch). Each autoclave is lined with high quality titanium alloy to counter acidic degradation and to protect against abrasion and is equipped with seven compartments and seven agitators for a total residence time of about 60 minutes.

The discharge from the autoclave heat recovery vessels is sent to a pre-neutralisation circuit where limestone is added to reduce the free acid ("FA") and also precipitate some iron and aluminium. After the PN circuit the slurry is treated in a series of seven 36m diameter counter-current decantation (CCD) thickeners with slurry feeding forward and thickener overflow or liquor feeding counter-current.

The slurry from CCD7 is sent to tailings neutralisation while the liquor from CCD1 is sent for further Fe and Al removal by precipitation using limestone slurry. Once the metals are precipitated, the slurry is thickened with the underflow solids sent for filtering. The filtered solids are sent to the tailings disposal circuit while the filtrate joins the first stage thickener overflow for a second neutralisation stage. The second stage discharge is thickened, with solids returned to PN for re-leaching of any Ni and Co, with the thickener overflow liquor sent to the first stage of Ni/Co precipitation.

The first Ni/Co precipitation step uses sodium hydroxide to precipitate the Ni and Co as hydroxides, with the resultant slurry thickened. The underflow solids containing the mixed hydroxide product (MHP) are filtered and the solids packaged in one tonne ("1t") bags. The MHP grades typically 38% Ni and 3.5% Co with moisture at greater than 60%. A second stage Ni/Co precipitation step uses burned lime to neutralise the MHP thickener overflow with the slurry thickened. Thickener underflow solids are returned to PN for re-leach, while thickener overflow is recycled to the CCD circuit.

Tailings neutralisation is accomplished in a series of agitated tanks, with lime slurry added to the waste pulp to raise the pH to over 7. The neutralised tailings slurry is discharged using deep sea tailings placement ("DSTP"). The project has an approved deep sea tailings discharge system which has a twenty year life, currently considered sufficient for the LOM.

The plant has a two-train acid-making facility as well as a limestone processing plant for making the key reagents used in producing the mixed hydroxide product.

The Basamuk Ni/Co extraction and recovery plant has been operating at design capacity and conditions over the past three years following ramp up. HPAL extractions average about 94% for Ni and 95% for Co with overall plant recoveries of 87% Ni (target 89%) and 87% Co (target 88%).

1.7 Life of Mine Production, Capital and Operating Costs

BDA has developed a LOM cash flow forecast model for the Ramu Nickel Cobalt Operations using only Proven Mineral Reserves and Probable Mineral Reserves. Over the life of mine (LOM) of 14 years from 2019, Ramu projects that 52.3Mt of ore will be processed to produce 428 thousand tonnes ("kt") of nickel and 47kt of cobalt in MHP. The LOM capital costs are projected to total United States dollars ("US$") 206 million ("M"), for sustaining capital. Projected operating costs over the LOM are generally typical of actual operating costs.

1.8 Development Potential

BDA considers that there is significant additional resource/reserve potential at Ramu:

- The currently drilled area for defining Mineral Resources is about 25km^2, which is only a portion of the total Mining Licence (SML 8) area of 54.4km^2. The mining licence is surrounded by the much larger Exploration Licence (EL 2579) with an area of 194.95km^2. The laterite nickel and cobalt mineralisation is generally continuous above the weathered and leached dunite except in areas with significant erosion. Additional drilling outside the current drilled area is likely to increase the Mineral Resources, and potentially add to the Ramu Mineral Reserves.
- In addition to the Measured and Indicated resources, there are significant Inferred resources in the current Ramu resource estimate. Additional infill drilling could upgrade at least a portion of the Inferred resource to Measured and Indicated status, which could potentially be included in future reserves with further mine planning.

1.9 Conclusions

The geology and mineralisation controls at Ramu are reasonably understood, based on extensive exploration drilling in the area and mining operation since 2012. The laterite mineralisation remains open laterally in almost all the directions as the underlying dunite covers a much larger area than covered by the current drilling; this represents a significant additional exploration potential in the areas surrounding the currently defined Mineral Resources.

The Mineral Resource estimates for the Ramu nickel and cobalt deposit have been carried out under the guidelines of the Australasian JORC Code by Competent Persons as defined by those guidelines. The JORC Code guidelines are compatible with the requirements of NI 43-101 in this regard.

The quality control procedures and results for the Phases 3 and 4 Highlands Gold Properties Pty Limited ("HGP")/Highlands drilling programs were audited by the Competent Person, Dr Francois-Bongarcon of MRDI, for the 1998 Feasibility Study resource estimate. In his October 1998 report, Dr Francois-Bongarcon stated that "*it is MRDI's opinion that the sampling and QA-QC procedures at HPL (Highlands Pacific Limited) and Astrolabe are now reaching a level of depth, detail and scrutiny that places them above industry standards. The quality and reliability of the data used in the resource modelling exercise at Ramu have been properly characterised and controlled, biases detected and corrected, reproducibility established and maintained*". BDA's Qualified Person for this NI43-101 report, Dr Qingping Deng, concurs with the MRDI conclusion based on review of the historical technical reports produced by MRDI and the 1998 Feasibility Study report.

The Competent Person for the 2017 Sinomine resource estimate update was Mr Zhang Xueshu, Chief Geologist of Sinomine. The Sinomine 2017 resource estimate update report stated that the QA/QC results for the 2017 drilling meet the production needs of the mine. However, BDA considers that there is some room for improvement for the quality controls for the 2017 drilling programmes. BDA recommends that certified assay standards and external check assays could be used for quality control of the assay results produced by the Ramu assay laboratory.

As the assays for the 2017 drilling programs represent only a small portion of the overall assays used for the 2017 resource estimate update, BDA's Qualified Person considers that the overall database quality for the 2017 resource estimate update is generally acceptable for generating a Mineral Resource estimate update under both the 2012 Australasian JORC Code and 2016 Canadian NI43-101 as amended in 2016.

The 2017 year-end Mineral Resources and Mineral Reserves were prepared by Sinomine by deducting the production depletion during 2017 and adding the Mineral Resource and Mineral Reserve additions from the newly drilled areas in 2017 to the Mineral Resource and Mineral Reserve estimates at the end of the previous year. Although Sinomine has not provided any details as to how these calculations were performed, BDA considers the overall results are reasonable and potentially somewhat conservative based on available data.

Overall, BDA's Qualified Person considers the Measured, Indicated and Inferred Mineral Resource estimates as of the end of 2017 are an appropriate representation of the in-situ mineralisation for the area that had been drilled at that time and are suitable for use in mine planning and Mineral Reserve estimation of the project. The 2017 year-end Mineral Resource estimates by Sinomine are the latest Mineral Resource estimates available to BDA's review, therefore, they are considered as the current Mineral Resource estimates for the Ramu deposit. As there are significant areas underlain by the ultramafic dunite surrounding the area that had been drilled at the end of 2017, there is significant exploration potential within the current exploration licence area as well as outside the current exploration licence area, and it is likely that the total Mineral Resource will increase significantly when additional drilling is conducted.

BDA's Qualified Person also considers that the Proven and Probable Mineral Reserves as of the end of 2017 are an appropriate representation of the recoverable tonnes and grade at that time and are suitable for use in mine planning and financial modelling of the project. The 2017 year-end Mineral Reserve estimates by Sinomine are the latest Mineral Reserve estimates available to BDA's review, therefore, they are considered as the current Mineral Reserve estimates for the Ramu deposit. As the Ramu mine is an established mining operation, the Mineral Reserve estimates take into account mining, metallurgical, infrastructure, permitting, and other relevant factors.

BDA's Qualified Person considers that the overall risk level of the Mineral Resource and Mineral Reserve estimates as of the end of 2017 is low.

1.10 Recommendations

The increase in the proportion of production coming from hydro-sluicing requires a change in the way mine planning, Mineral Reserve estimation and production reporting is undertaken. A comprehensive set of mining and processing costs and metal recoveries should be completed for the Mineral Reserve estimate where hydro-sluicing is planned. It is recommended that a full reconciliation of Ni and Co metal contents across the whole mining stream be completed in the future.

BDA recommends that certified assay standards and external check assays could be used for improving the quality control of the assay results produced by the Ramu assay laboratory. The laboratory could also be checked by external standard associations to ensure the assay procedures and results meet latest industry requirements.

2 INTRODUCTION

On 2 January 2019 Highlands Pacific Limited (Highlands) announced it had entered a Scheme Implementation Agreement with Cobalt 27 under which Cobalt 27 agreed to acquire all the shares in Highlands. Highlands has an 8.56% interest in the Ramu project, which was beneficially owned by Cobalt 27. In October 2019 Conic Metals through a corporate transaction acquired beneficial ownership of Highlands from Cobalt 27.

The project is a joint venture between MCC Ramu, which has 85% ownership and is the operator of the project, and Ramu Nickel Limited, a wholly owned subsidiary of Highlands, with an 8.56% interest, and Mineral Resources Madang Limited and Mineral Resources Ramu Limited which hold 2.5% and 3.94% interest respectively, and which are both subsidiaries of Mineral Resource Development Corporation (MRDC). MRDC is a PNG Government entity which holds the government and landowners' interests. MCC Ramu is wholly owned by MCC-JJJ Mining whose shareholders are the Metallurgical Corporation of China Limited (MCC) with 67.02%, Jilin Jien Nickel Industry Limited (13%), Jiuquan Iron and Steel (Group) Limited (13%) and Jinchuan Group Limited (6.98%).

Conic Metals has commissioned BDA to undertake the preparation of this independent technical report of the Mineral Resources and Mineral Reserves of Ramu nickel cobalt project, which had previously been prepared for Cobalt 27 with an effective date of 19 July 2019, in accordance with the requirements of NI 43-101 and in accordance with the Company's obligations as a reporting issuer in Canada. This report is substantively the same report as the NI 43 101 report prepared for Cobalt 27 for Ramu nickel cobalt project.

This report has been prepared in accordance with NI 43-101 and the Mineral Resource and Mineral Reserve classifications adopted by the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Council, as amended. The Mineral Resource and Mineral Reserve reporting and classifications are also consistent with the December 2012 "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (the "JORC Code"), as prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy ("AusIMM"), the Australian Institute of Geoscientists ("AIG"), and the Minerals Council of Australia.

This report complies with disclosure and reporting requirements set forth in NI 43-101, Companion Policy 43-101CP, and Form 43-101F1 and is in accordance with the 2015 "Code for the Technical Assessment and Valuation of Mineral Assets and Securities for Independent Expert Reports" (the "VALMIN Code") as adopted by the AusIMM. The satisfaction of requirements under both the JORC and VALMIN Codes is binding upon those authors who are members of either the AusIMM or AIG.

All monetary amounts expressed in this report are in US dollars (US$) unless otherwise stated.

The principal sources of information and data on the Ramu deposit are Mineral Resource reports prepared by Sinomine Resource Exploration Co., Ltd. (Sinomine) and the internal reports of MCC, together with historic reports prepared by Highlands and its consultants. The following consultants are the principal contributors to the preparation of this report.

Dr Qingping Deng, Director, BDA – consulting geologist with over 35 years' experience in the mining industry, with particular expertise in resource assessment and modelling. Dr. Deng visited the site in February 2019 and May 2019, reviewing geological domaining and data input to the Mineral Resource estimation process. Dr Deng also visited Sinomine Offices in Beijing during May 2019 to review the resource models.

Mr. Peter Ingham, General Manager Mining, BDA – mining engineer with more than 40 years' experience in the mining industry, with particular expertise in open pit and underground mining including mine planning, Mineral Reserve preparation and independent review of Mineral Reserves. During Mr. Ingham's site visits in February 2019, he reviewed the surface mining operations and related aspects of the operation.

Mr. Roland Nice, Senior Associate, BDA – metallurgical engineer with over 50 years' experience in the mining industry, with particular expertise in mineral processing, including experience in gravity processing, dense media separation, flotation, and high pressure acid leaching. During Mr. Nice's site visit in February 2019, he reviewed the processing operations and related aspects of the operation.

Mr. Adrian Brett, Senior Associate, BDA – environmental and regulatory specialist with over 31 years of experience in the mining industry, with particular expertise in environmental management and regulatory matters, including water management, tailings management, mine closure and land reclamation. During Mr. Brett's site visit in February 2019, he reviewed both environmental aspects of both the surface mining and refinery operations and related regulatory aspects of the operation

3 RELIANCE ON OTHER EXPERTS

The authors of this report are not qualified to comment on nickel and cobalt marketing and metal prices and accordingly have relied, and believe they have reasonable basis to rely, upon the representations and judgements of Mr Martin Vydra, P. Eng, Conic Metals (market studies) and Craig Lennon, Highlands (Contracts) (see Section 19 - Market Studies and Contracts).

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Ramu nickel cobalt project is located in Madang Province on the north coast of Papua New Guinea (PNG). The project comprises the Kurumbukari (KBK) mine and beneficiation plant, located on the Kurumbukari plateau, in the foothills of the Bismarck Ranges, 600-800m above sea level and 75km to the southwest of the provincial capital of Madang, and the Basamuk processing plant located on the coast, approximately 55km southeast of Madang. The KBK mine is at latitude 5° 34′ S and longitude 145° 13′ E and the Basamuk refinery is at latitude 5° 32′ S and longitude 145° 8′ E. Beneficiated ore is pumped from the mine as a slurry to the plant via a 135km pipeline.

4.2 Mineral Tenure

The Ramu nickel deposit is covered by Exploration Licence EL 2579 (formerly EL 193) and Special Mining Lease SML 8 (Figure 2). ELs have a two-year renewal period. Highlands holds through Ramu Nickel Limited an 8.56% equity interest in SML 8 and EL 2579, together with other licences listed in Table 4.1 are part of the assets of the Joint Venture (see Figure 2). The SML, EL and other tenements cover the project's mineral deposits and project infrastructure corridors. Under the terms of an amending agreement (known as the Project Way Forward Agreement) under the Ramu Joint Venture Master agreement, upon repayment by both Highlands and MRDC of their project debts, Highland's interest in the SML and Els will increase to 11.3%.

Table 4.1

Ramu Nickel Project Tenement Details as at 31 January 2019

Licence	PNG Province	Start Date	Expiry Date	Status	Highlands Interest (%)
SML 8	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
ML 149	Madang	26/7/2000	10/10/2020	Current	Ramu Nickel Limited (8.56%)
LMP 42	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
LMP 43	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
LMP 44	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
LMP 45	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
LMP 46	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
LMP 47	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
LMP 48	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
LMP 49	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
ME 75	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
ME 77	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
ME 78	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
ME 79	Madang	26/7/2000	25/7/2040	Current	Ramu Nickel Limited (8.56%)
EL 2579 (was 193)	Madang	25/2/2019	24/2/2021	Current	Ramu Nickel Limited (8.56%)
EL 2376	Madang	26/5/2016	25/5/2018	Under Renewal	Ramu Nickel Limited (8.56%)

Notes: LMP denotes Lease for Mining Purpose, SML denotes Special Mining Lease, ML denotes Mining Lease and ME denotes Mining Easement

Mining Tenements in Papua New Guinea

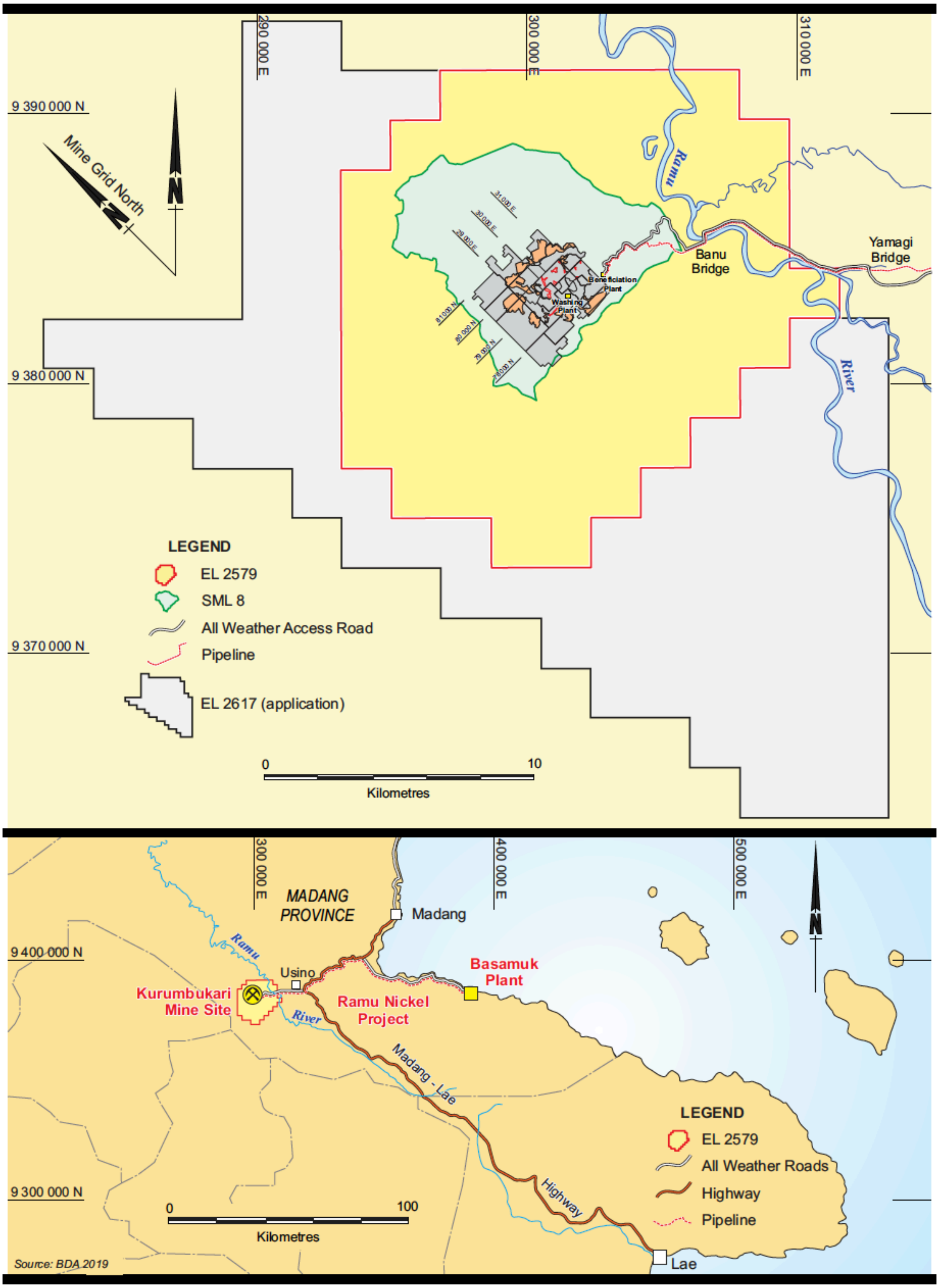
Tenements are issued by the PNG Mining Minister on recommendation from the Mining Advisory Council ("MAC") under the Mining Act 1992. The Head of State, acting on advice from the National Executive Council issues the Special Mining Lease whilst the Minister for Mining issues the other types of licences.

Exploration Licence

An exploration licence may be granted for a term not exceeding two years, which may be extended for periods not exceeding two years. The area of land in respect of which an exploration licence may be granted shall be no more than 750 sub-blocks (one sub-block = 3.41km^2).

Mining Lease

A mining lease is generally issued for small to medium scale alluvial and hard rock mining operations. A mining lease may be granted for a term not exceeding 20 years, which may be extended for periods not exceeding 10 years. The area of land in respect of which a mining lease shall be granted shall be not more than 60km^2.



Conic Metals Corp. *Ramu Nickel Project*

Figure 2 **SITE LAYOUT PLAN**

BDA - 206/01 (April 2019) Behre Dolbear Australia Pty Ltd

Special Mining Lease

A Special Mining Lease is generally issued to the EL holder for large scale mining operations. The EL holder must also be a party to a Mining Development Contract with the state. A SML may be granted for a term not exceeding 40 years, which may be extended for periods not exceeding 20 years. Before the grant of a SML, the Minister is required to convene a development forum to consider the views of the persons and authorities whom the Minister believes will be affected by the grant of the SML.

Lease for Mining Purpose

A Lease for Mining Purposes ("LMP") may be granted in connection with mining operations conducted or planned to be conducted by the applicant for one or more of the following purposes: the construction of buildings and other improvements; operating plant, machinery and equipment; the installation of a treatment plant and the treatment of minerals therein; the deposit of tailings or waste; housing and other infrastructure required in connection with mining or treatment operations; transport facilities including roads, airstrips and ports; any other purpose ancillary to mining or treatment operations or to any of the preceding purposes which may be approved by the Minister.

Mining Easement

A mining easement may be granted in connection with mining, treatment or ancillary operations conducted by the applicant for the purpose of constructing and operating one or more of the following facilities: a road, an aerial ropeway, a power transmission line, a pipeline, a conveyor system, a bridge or tunnel, a waterway, or any other facility ancillary to mining or treatment or ancillary operations in connection with any of the preceding purposes which may be approved by the Minister.

4.3 Other Surrounding Mineral Tenements

The only surrounding tenement adjacent to the project is exploration tenement application (EL2617) which MCC Ramu NiCo Ltd was not successful in securing on behalf of the joint venture partners and is now held by a third party company, Cheroh Mining PNG Limited, and borders the southwest of the project. The next nearest tenement is an exploration tenement (Yandera Cu Mo Au project) approximately 20km from EL 2617.

4.4 Royalties

Royalties comprise a Mineral Resources Authority ("MRA") levy of 0.25% of sales revenue and a nickel royalty of 1.25% of sales revenue after deducting the refining costs. The MRA Levy will shortly increase to 0.5% of free-on-board ("FOB") sales revenue based on the legislative changes announced by the PNG Government in February 2018.

Based on the Ramu project payments during the past four years (2013-2017), it has been assumed a nickel royalty of 2% of FOB sales revenue will be payable after deducting the refining costs.

4.5 Access

Access is along the highway between Madang and the port city of Lae, which is called the Madang – Lae Highway. The nearest government station is Usino and the nearest large village is Danagari, some 2km from the mining area. The Mine is accessible by an all-weather road to Usino and linked to Madang via the Madang-Lae Highway.

There is an 8km mine access road to Banu Bridge connecting the mine to the national road and a 7km logging road from Banu Bridge to Yamagi Bridge marking the beginning of the sealed national road.

The refinery is located on the coast of Basamuk Bay, 55km to the southeast of Madang city. The distance between the mine and refinery is about 90km and the slurry pipeline route from the mine to the refinery is about 135km.

4.6 Permits

The two main PNG National Government agencies relevant to the Project are the MRA, which administers the Mining Act 1992 and the Mining (Safety) Act 1977 (Mining Safety Act), and the Conservation and Environment Protection Authority ("CEPA"), which is responsible for the Environment Act 2000 (Environment Act).

Conservation and Environment Protection Authority

The CEPA administers the Environment Act, the primary legislative instrument governing all aspects of the environment in relation to resource development activities.

The Ramu project is operated under the *Environment Act 2000*.

The Kurumbukari mine and beneficiation plant and the Basamuk processing plant are operated by MCC Ramu under Environment Permits WD-L3(115) and WE-L3(85) issued by the Independent State of Papua New Guinea under Section 65 of the Environment Act 2000.

The key Environmental Approval for the project is the Environmental Plan Approval issued under the Environmental Planning Act 1978 in March 2000 by the Minister for Environment and Conservation and Operational Environmental Monitoring Plan ("OEMP").

The operations permits are WD-L3(115) which covers all works within SML 8, all LMPs, MEs and ML 149. Permit WE-L3(85) covers the extraction and use of water resources within SML 8, all LMPs, MEs and ML 149. Both of these permits were issued on 1 January 2004 for a term of 50 years, and various amendments have been made to the initial permits issued. Permit WD-L3(115) also approves the discharge of waste streams into the environment from the various premises, including air emissions and tailings discharge via the Deep Sea Tailings Pipeline (DSTP).

Both the mine and processing plant are operated under various environment protection management sub-plans which are consolidated in the Environmental Management Plan, including air emissions, noise, water, chemical spill and control, dust control, erosion and sediment control, water resources, and progressive rehabilitation. Other socio-economic management plans include cultural, historical and archaeological heritage, and social and economic management.

Various environmental monitoring and reporting programs are conducted across the mine site and processing plant areas which are a requirement stipulated under the environmental permits. A key monitoring program is SO_2 emissions from the processing plant exhaust stacks. SO_2 monitoring programs include on-line monitoring (ie. in-stack) which are reported regularly to CEPA. Other programs include ground-level SO_2 monitoring, daily SO_2 monitoring for confined area access and manual SO_2 sampling and analysis.

The monitoring plan as per the Environmental Permit includes the following requirements:

a) stream flows, tide and current patterns (sediment dispersal)
b) meteorology
c) fresh and marine water quality
d) biological tissue (metal content) – shallow, reef and deep water fishes, shell fish, sea grass
e) nearshore sedimentation rates
f) coral reef (sediment cover)
g) ocean floor sediments (metal and particle size distribution)
h) ground level concentration of air emission levels
i) noise levels
j) control and sampling sites
k) sampling protocols (quality control/quality assurance)
l) sampling frequency

MCC Ramu is required to conduct inspection of the Deep Sea Tailings Pipeline (DSTP) on an annual basis. This is performed using a Remotely Operated Vehicle ("ROV") external visual inspection of the DSTP at the Basamuk Bay Refinery. The purpose of this visual inspection is to identify the integrity of the pipeline to ensure its effective tailings discharge at the 152m below sea level outfall. The latest inspection confirmed that there was no identified evidence of damage, cracks or tailings leakage observed on the tailings pipeline at the time of inspection and the tailings discharge at 152m depth appears to be unobstructed and was flowing freely at the time of inspection.

A 5-year marine environment monitoring program is also a requirement under the operating permit. The first marine monitoring program was completed in 2018; preliminary results indicate no adverse effects findings on fish tissue samples and that metals are at background levels.

The reporting requirement as per the Environmental Permit, is that a quarterly Environmental Performance Report shall be submitted each quarter which shall include the following;

a) raw data (analysis by certified laboratories) from the environmental monitoring programs
b) interpretation of raw data
c) incidence of non-compliance and reasons
d) status of compliance with the Waste Management Plan and other conditions of the permit
e) records of environmental monitoring programs.

4.7 Environmental Liabilities

Kurumbukari Mine Area

A key environmental risk and potential liability at the mining area relates to the control of sediment within the mining areas to ensure sediment derived from mining is contained within the mine area and not discharged to the surrounding environment. BDA is of the opinion that the control of sediment within the mining area is well understood by management and that suitable sediment containment structures are being deployed as mining is progressed.

Progressive rehabilitation has commenced in some areas which are now available for landscaping and revegetation.

BDA is not aware that a Mine Closure and Rehabilitation Plan has yet been completed for the mine site at this early stage of mining at Kurumbukari. However, BDA recommends an allowance of mine closure and rehabilitation obligation cost estimate of US$8.25M based on approximately US$5,000 per hectare ("ha") (for an area of 1,600ha).

Basamuk Bay Process Plant Area

The key environmental risk and potential liability at the Basamuk Bay Process Plant facility and surrounding area is the control of SO_2 emissions from the process plant exhaust stacks. To ensure continued regulatory compliance, SO_2 monitoring programs include on-line (ie. in-stack) monitoring, together with other programs which include ground-level SO_2 monitoring, daily SO_2 monitoring for confined area access and manual SO_2 sampling and analysis.

BDA is not aware that a Plant Site Closure and Infrastructure Clearance Plan has yet been completed for the process plant infrastructure, including the deep sea tailings deposition infrastructure. However, BDA recommends a plant closure and infrastructure clearance works obligation cost estimate of US$25M based on approximately US$25/$m^2$ for collapse, demolish and removal of the various sections of the plant and infrastructure.

A further key risk and potential liability is the integrity and operability of the offshore deep sea tailings disposal infrastructure. To ensure continued integrity annual visual inspection of the pipeline is conducted by remotely operated submersible vehicle to ensure continuing effective tailings discharge at the 152m below sea level outfall. The latest inspection confirmed that there was no identified evidence of damage, cracks or tailings leakage observed on the tailings pipeline at the time of inspection and the tailings discharge at 152m depth appears to be unobstructed and was flowing freely at the time of inspection.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Topography, Elevation and Vegetation

The Kurumbukari mine site is located in the hilly region of the Bismarck Range with an elevation of 700m above sea level; the site is predominately covered by rain forest. The Basamuk refinery site is located in the less undulating Basamuk hilly area with an elevation of 5m to 60m above sea level.

The yearly average rainfall in the area varies from 4,500mm at the mine site to 3,520mm at the refinery. Both areas are impacted by a tropical climate. The dry season lasts from May to October and the wet season is from November to April.

5.2 Access to the Property

The Mine is accessible by an all-weather road to Usino and linked to Madang via the Madang/Lae Highway.

Connecting the mine to the national road is an 8km long mine access road to Banu Bridge and a 7km logging road from Banu Bridge to Yamagi Bridge marking the beginning of the sealed national road.

5.3 Local Resources

The Ramu nickel cobalt project employs approximately 1,500 personnel, comprising PNG nationals and expatriates. The PNG nationals are predominantly local and live in the nearby villages. The other nationals and the expatriates travel to Madang predominantly by air and are bussed to each site via the national and local roads, described above; the two operational sites provide accommodation for all non-local employees. MCC also has an administrative office in the city of Madang. The sites can also be accessed by helicopter from Madang Airport.

Ramu project surface rights are sufficient for mining and refining operations; the mineral tenements held and controlled by the Joint Venture are covered in Section 4.2 – Mineral Tenure.

5.4 Infrastructure

Kurumbukari Mine

The Kurumbukari mine and beneficiation plant are established operations and the site is provided with appropriate infrastructure, with suitable road access, power and water. Accommodation is also established for the workforce.

Water is sourced from the nearby Gagaiyo River, with a capacity of 48,000 cubic metres (“m^3”) per day, and power is generated at site by six generators with a combined capacity of 30 megawatts (“MW”).

Waste from the mine is deposited back into the mined out areas and rehabilitated. The beneficiation plant produces a chromium concentrate which is transported from the mine by road transport and shipped to the buyers. Excess chromium concentrate to available sales contracts is deposited back into the mine area and encapsulated. Detailed descriptions of the beneficiation plant at Kurumbukari mine is provided in Section 17 - Recovery Methods.

Slurry Pipeline

The nickel cobalt product from the mine in the form of a slurry is piped from Kurumbukari mine to the Basamuk refinery by pipeline approximately 135km, with a drop in elevation of about 680m. The majority of the pipeline has been buried and has road access for ease of checking and maintenance.

Basamuk Refinery

The process plant at Basamuk has established water and power infrastructure along with workforce accommodation. Water is sourced from the nearby Yaganon River and from six large diameter wells with capacity around 24,000m^3 per day; power is generated at site by eight generators with a combined capacity of 54MW which use heavy fuel oil (“HFO”).

Adjacent to the plant site are wharf facilities that can handle ships up to 50,000dwt. The wharf is equipped with three 25t portal cranes. Goods handling at the wharf includes handling of bulk cargo, general cargo, oil products and a few containers as well as loading and unloading of special or large-sized equipment.

Sulphur is imported from overseas sources to supply the two double-catalysis double-adsorption sulphur burning acid plants. Each plant has a capacity of 500ktpa sulphuric acid. Sufficient dry sulphur storage has been provided at the port and sufficient acid storage has been provided at the plant area. Steam is a by-product of the acid plants and is used throughout the plant for various uses including HPAL. Currently there is no co-generation of power from the acid plants. Extra steam is provided from two 45t steam boilers fired by fuel oil.

Limestone is mined at a quarry near the Basamuk plant. The limestone is transported to the plant with a large storage capacity to accommodate wet season quarrying delays. The limestone is reclaimed and crushed in a two-stage jaw and cone crushing circuit with the fines sent to a grinding mill circuit for further size reduction and slurrying ready for use in the plant. Initially, it was intended to burn some of the limestone in a rotary kiln to produce the burned lime necessary for downstream processing, however, the limestone quality was inadequate and it was decided to import burned lime in bags. The burned lime is slurried and stored ready for use.

Detailed descriptions of the Basamuk refinery is provided in Section 17 - Recovery Methods.

Environment and Deep Sea Tailings Disposal System

The project has an approved deep sea tailings (DSTP) disposal system. Based on advice from international experts received during the feasibility study and permitting stages, it was decided to dispose of the tailings from the operation into the 1,500m deep sea canyons to the north of the refinery, as this represented the most appropriate and safe method of disposal. Reasons for this decision include the fact that the area has among the highest rainfalls in the region and land-based tailing storage could be disturbed in a highly active volcanic and high-rainfall region while also impinging on agriculture and landholder customary land.

6 HISTORY

6.1 History

The Ramu deposit was discovered in 1962 by the Australian Bureau of Mineral Resources. Highlands Gold Properties Pty Limited (“HGP”) first undertook work in the area in 1989/90, and in 1992, assumed the management of the current joint venture. Further historical detail of exploration is set out in Section 9 Exploration.

An intensive period of geological exploration and engineering led to a prefeasibility study and in 1996 the Ramu Nickel Joint Venture was established to prepare a bankable feasibility study. Highlands Pacific Limited purchased HGP’s interest in April 1997 and prepared the 1998 feasibility study but project development did not progress.

In 2000 the project was granted its SML and in 2005 MCC joined the joint venture taking a 61% interest with Highlands share reducing to 8.56% and the PNG Government and landowners (through the holding company MRDC) 6.44% with the remaining 39% held by a number of other Chinese entities. MCC prepared a feasibility study in 2007 for the Ramu project and commenced construction in 2008, financed by MCC. In 2009 MCC increased its stake in the project to 67%.

6.2 Recent History

The mine and refinery began commissioning and ramp up in 2012. Ramp-up of the HPAL refinery was related to the ability of the mine to produce at required levels. Ramp-up of the HPAL refinery was initially restricted by the ability of the mine to produce ore feed at the required levels. Overall the ramp up took an extended period of time to reach the nominal capacity of 31,150tpa of nickel and 3,300tpa of cobalt. An incident at the refinery in 2016 necessitated an operational shutdown for three months resulting in lower production during that period but in the last two years, the refinery has exceeded the design capacity, producing an average of approximately 90,000tpa of MHP containing 35,000t of nickel and 3,300t of cobalt.

A summary of the seven years of ore and MHP production at the Ramu project is shown in Table 6.1.

Table 6.1

Nickel and Cobalt Production History

Item	Units	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
Ore Mined	Mt (wet)	1.547	3.482	5.949	6.105	3.876	5.523	6.350
Ore Processed	Mt (dry)	0.816	1.253	2.273	2.784	2.270	3.601	3.719
Ore Grade	Ni (%)	0.98	1.00	1.06	1.12	1.13	1.09	1.10
Ore Grade	Co (%)	0.09	0.09	0.10	0.11	0.11	0.11	0.10
MHP Produced	t (dry)	13,777	29,736	57,360	65,286	57,824	89,947	92,258
Contained Ni	t	5,283	11,369	20,987	25,581	22,269	34,666	35,355
Contained Co	t	469	1,013	2,134	2,505	2,191	3,308	3,275

In 2018 MCC Ramu announced plans for a US$1.5B capital expansion to double the existing production capacity. It is proposed that plant throughput will increase to around 8.3Mtpa (dry-basis) and that metal production will increase to approximately 65,800tpa of contained nickel and 6,550tpa of contained cobalt. Approvals for the expansion will be required from the various government agencies and by the various landowner groups at the two sites and along the slurry pipeline route. MCC Ramu has indicated that preparation of engineering designs for the expansion has commenced; an expansion feasibility study has been prepared by China ENFI Engineering Corporation (“ENFI”).

Given that the expansion has not yet received full approval by the government agencies and the various landowner groups, BDA has limited the life of mine production to current levels, details in Section 21.0 – Life of Mine Production, Capital and Operating Costs.

7 RAMU GEOLOGICAL SETTING AND MINERALISATION

7.1 Regional Geology

Papua New Guinea is located at the junction of the Eurasian Plate, the Indo-Australian Plate and the Pacific Plate. Since the Late Cretaceous Epoch, Papua New Guinea has experienced a complex tectonic evolution; the convergence, collision, subduction, decoupling, spreading and other tectonic processes of different plates formed the tectonic units characterised by the Southern Craton, the Central Papua New Guinea Orogenic Belt and the Northern Island-Arc Belt, producing important mineral resources, such as porphyry and epithermal/hydrothermal copper-gold deposits. Subsequent weathering of areas of ultramafic rocks has led to the formation of lateritic nickel-cobalt deposits.

The Ramu laterite nickel-cobalt deposit is located on the northern margin of the New Guinea Thrust Zone in the Central New Guinea Orogenic Belt (Figure 3). The outcropping rocks in this zone consist of the Tertiary Marum Basic Belt mafic and ultramafic intrusive rocks; dunite with minor harzburgite and pyroxenite occur in the central portion of this belt which is the main source for the lateritic nickel-cobalt mineralisation at Ramu (Figure 4).

The Marum Basic Belt is a northwest-southeast-trending zone. Intrusives in this zone include two main rock types, i.e., (1) mafic hypersthene-augite gabbro, intercalated with some norite, anorthosite and gabbro pegmatite dikes, distributed in the northwest and southeast of the Ramu deposit area; (2) ultramafic rocks consisting of mostly dunite with minor harzburgite and pyroxenite, distributed in the Ramu deposit area. These ultramafic rocks occur on a series of highland platforms, forming the landform with horst characteristics and surrounded by faults. Lateritic deposit containing nickel and cobalt mineralisation has developed over the dunite with minor harzburgite and pyroxenite in the central portion of the Marum Basic Belt.

The Marum Basic Belt is truncated by the northwest-trending Bundi fault zone in the southwest and the Ramu-Markham fault zone in the northeast, respectively. The vertical displacement along the Ramu-Markham fault has been measured at around 400m. In the Ramu deposit area, a series of plateaus have been developed in parallel to this fault.

The primary strata exposed northeast of the Ramu deposit area are Pleistocene and Holocene river sediments. Both banks of the Ramu river comprise Holocene river alluviums.

7.2 Local Geology

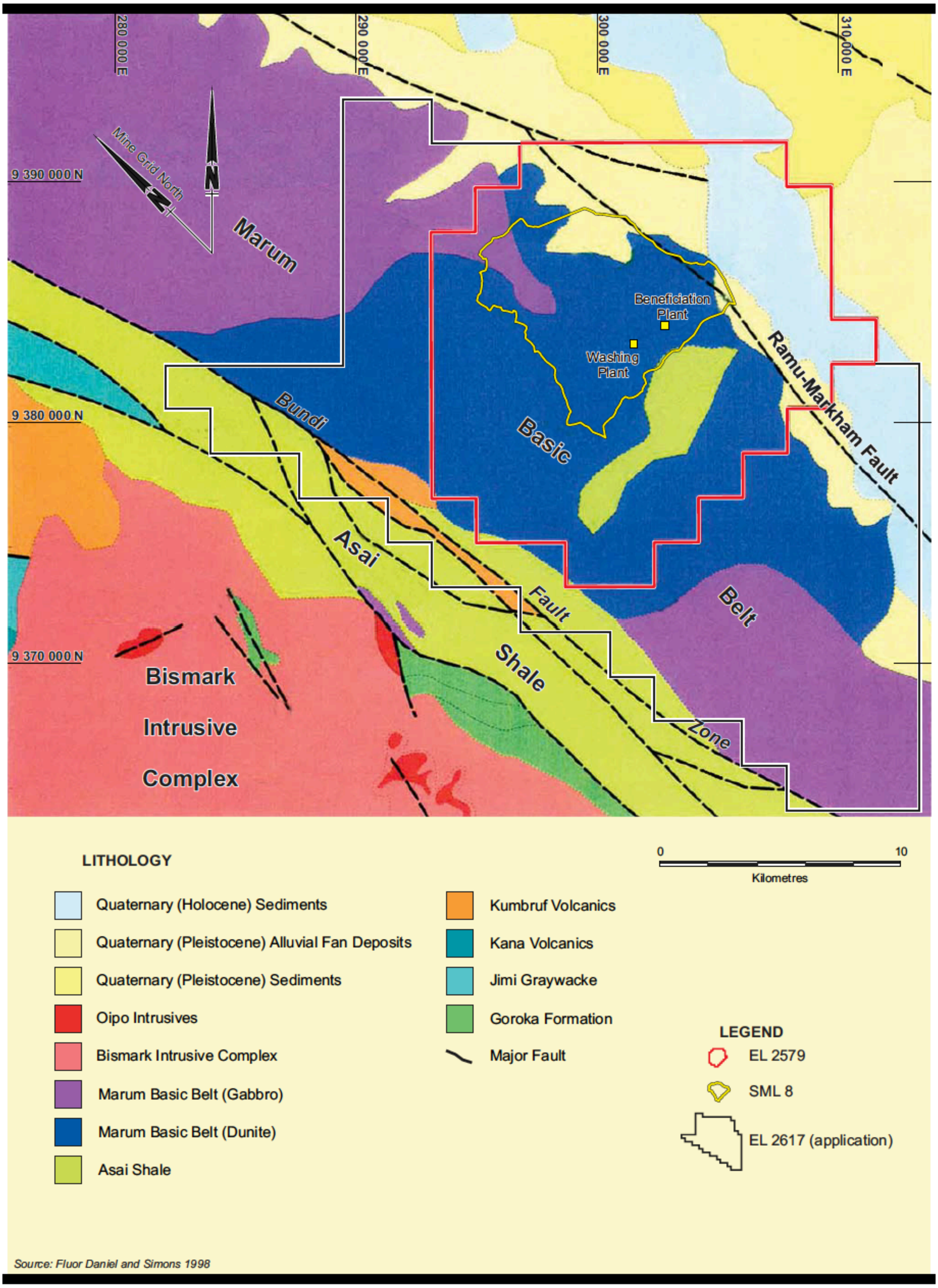
Ultramafic intrusive rocks outcropping in the area and underlying the lateritic deposits are mostly dunite with minor amount of harzburgite and pyroxenite. Dunite is generally grayish green to yellowish green, medium to coarse grained. The primary mineral (85-98%) in the rock is olivine, a magnesium iron silicate mineral with the formula $(Mg,Fe)_2SiO_4$ and commonly occurring as a yellow-green subhedral mineral; other secondary minerals include serpentine, talc and chromite, comprising the remaining 2-15% of the rock. Chromite is the most common accessory mineral; it occurs within the fresh dunite as disseminations, laminae, and very rarely as clusters. Chromite is highly resistant to weathering and is found disseminated throughout the laterite profile. The ultramafic intrusive rocks weather readily, which has contributed to the development of the lateritic deposits at surface. In the weathering process in a tropical environment, most ferromagnesian minerals in the ultramafic rocks will decompose, some of the components, such as magnesium and silica will be gradually leached out and some other components, such as nickel, cobalt, chromium, aluminium and iron will not be leached or only be partially leached and will become relatively enriched.

The lateritic deposits developed above the ultramafic intrusive rocks are strongly layered. Based on information from drilling, outcrops and mined areas, the lateritic deposit is divided into six layers, from top to bottom, the humic layer (Q), red limonite (O), yellow limonite (L), saprolite (S), upper rocky saprolite (R1) and the lower rocky saprolite (R2). The humic layer and red limonite sometimes are combined as the overburden (O). Figure 5 (1) is east-west cross section showing the distribution of the six laterite layers along the topography and Figure 5 (2) is a generalised laterite profile in the Ramu deposit area showing the distribution of lateritic layers and concentration variation of some metals in the laterite profile. Figure 6 provides core tray photographs of the various layers. Table 7.1 is a summary of the laterite layers of the Ramu deposit area.

Conic Metals Corp. PNG Projects and Exploration Tenements

Figure 3 **TECTONIC LOCATION OF THE RAMU DEPOSIT**

BDA - 206/01 (April 2019) Behre Dolbear Australia Pty Ltd



Conic Metals Corp. *Ramu Nickel Project*

Figure 4

REGIONAL GEOLOGY MAP OF THE RAMU DEPOSIT AREA

BDA - 206/01 (April 2019)

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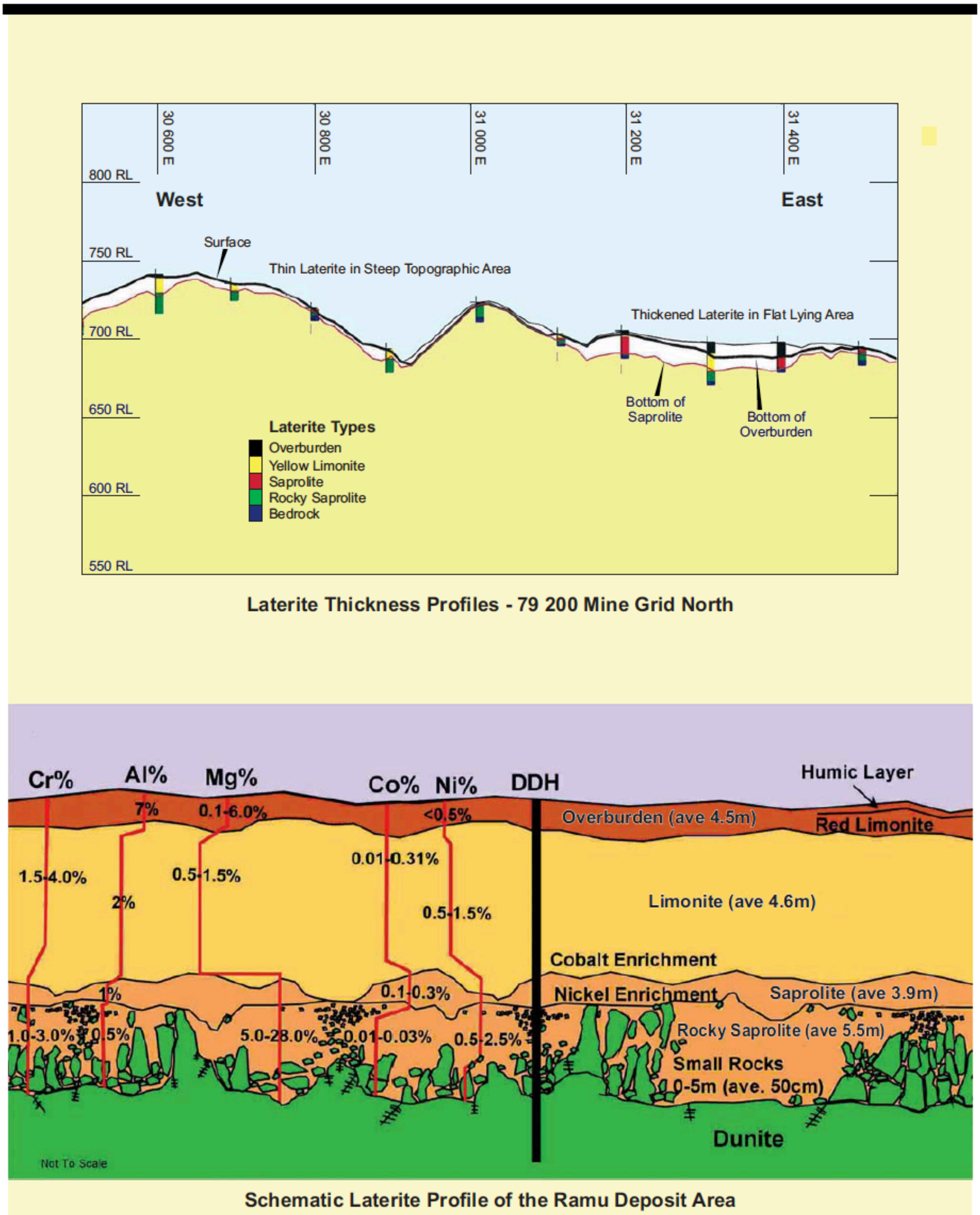

Source: Fluor Daniel and Simons 1998

Conic Metals Corp.

Ramu Nickel Project

Figure 5

LATERITE PROFILES

BDA - 206/01 (April 2019)

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Table 7.1
Summary of the Laterite Layers of the Ramu Deposit Area

Rock Type	Description	Thickness (m)
Overburden (O)	Including the upper humic layer and the lower red limonite overburden; generally contains low nickel (<0.5% Ni) and cobalt grades; stripped as waste before mining the lower ore layers	0.7-48m averaging 4.5m
Limonite (L)	Yellow limonite ore; hosts the bulk of the nickel-cobalt resource	0.3-19m averaging 4.6m
Saprolite (S)	Enriched in nickel and cobalt; the top of the saprolite marks the boundary between acidic weathering and alkaline weathering conditions in the profile	0.4-13m averaging 3.9m
Rocky Saprolite - (R1)	Contains less than 30% (averaging 17% by volume) dunite boulders in a saprolite host; enriched in nickel but not in cobalt	0.4-21m averaging 2.8m
Rocky Saprolite - (R2)	Contains greater than 30% (averaging 51% by volume) dunite boulders in a saprolite host; enriched in nickel but not in cobalt	0.3-13m averaging 2.7m
Bedrock	Typically dunite with minor harzburgite and pyroxenite	

The humic layer (Q) is a humic soil with black, dark brown or grayish brown colour. Plant roots can be found in this layer, which is primarily comprised of clays, colloidal goethite, olivine fragments and sandy chromite. Goethite occurs locally in bands. The vegetation coverage rate in the mining area is almost 100%. This layer occurs at low-lying places in the deposit area and its thickness is generally 0.2-1.1m. The humic layer is depleted in nickel and cobalt relative to the underlying limonite zones but is anomalous when compared to average soils. The nickel content in this layer is generally lower than the resource cut-off grade of 0.5% Ni.

The red limonite (O) is brownish red to maroon in colour, and is primarily comprised of clays, goethite, olivine fragments, chromite, talc, gibbsite and some minor amounts of other minerals. This layer forms the main cover of the mining area and it shows a gradual transition from the overlying humic layer to the underlying yellow limonite. The thickness of this layer generally varies between 0.5m to 47m, with an average of 4.4m. The nickel and magnesium grades in this layer are generally low, but locally the nickel grade can be above the resource cut-off grade of 0.5% Ni. The aluminium content is generally higher than 5%.

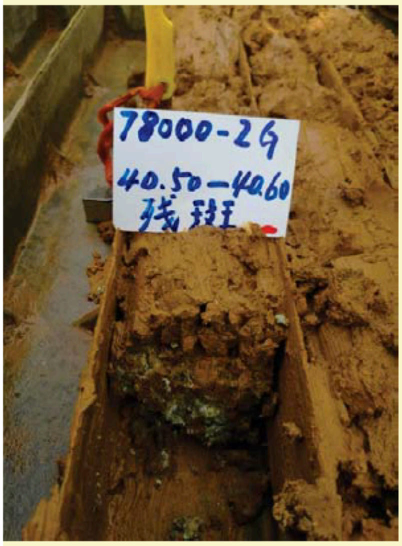
The yellow limonite (L) is grayish yellow, brownish yellow to brown in colour and is primarily comprised of clays, limonite, goethite, and gibbsite, talc, chalcedonite, asbolan (cobaltiferous manganese wad) and chromite. There are characteristic asbolan and manganese striations or dendrites and fracture coatings throughout the horizon. Chromite grains occur throughout the zone and are not necessarily restricted to planar surfaces. This layer shows a gradual transition with the underlying saprolite. It sometimes outcrops at mountain ridges and the steeper slope sections. The thickness of the layer is generally from 0.3m to 19m, averaging 4.6m. This layer host the bulk of the nickel and cobalt mineralisation in the saprolite deposit. Its nickel grade is generally above the resource cut-off of 0.5% Ni.

The saprolite (S) is an altered product of the underlying bedrock and is light grayish green and brown in colour; it is primarily comprised of clays, goethite, chromite, talc, gibbsite, iddingsite, asbolan, serpentine (including garnierite), chalcedonite and quartz. This horizon generally contains no bedrock boulders and occasionally outcrops over small areas. Its thickness generally ranges from 0.4m to 13m and averages 3.9m. The most outstanding characteristics of the saprolite lie in its preserved original texture of the protolith and crystal structure of the original minerals. The top of the saprolite marks the boundary between acidic weathering conditions above and alkaline weathering conditions beneath in the profile. This layer is one of the main ore-bearing horizons in the deposit area; compared with the yellow limonite above, it is significantly enriched both in nickel and cobalt. Magnesium content is also higher in this layer when compared with the yellow limonite above.

The rocky saprolite (R) contains some serpentinised dunite boulders in a saprolite matrix similar to the overlying saprolite layer. The top of the rocky saprolite is defined in the drill logging protocol as the first 150mm of dunite rock intercepted in the hole. Its top surface has been well defined by ground penetrating radar (GPR). Based on the relative abundance of the boulders, it is divided into the upper rocky saprolite (R1, with boulder volume content less than 30%) and the lower rocky saprolite (R2, with boulder volume content greater than 30%). The boulder content of the upper rocky saprolite (R1) generally ranges from 4% to 30%, averaging approximately 17%, with a boulder size commonly 5-50cm. The R1 thickness generally ranges from 0.4 to 21m, averaging 2.8m. The boulder content of the lower rocky saprolite (R2) generally ranges from 30% to over 90%, averaging approximately 51%, with a boulder size commonly 5-50cm. The R2 thickness generally ranges from 0.3 to 13m, averaging 2.7m. The rocky saprolite is also one of the main ore-bearing layers in the deposit. Compared with the yellow limonite (L), nickel is still enriched but cobalt is not. The lower boundary of the lower rocky saprolite (R2) is determined by either the first 1.5m boulder intersected or a 3m intersection with greater than 50% of the volume of the intercept being rock.

Humic Layer and Red Limonite

Yellow Limonite and Saprolite



Upper Rocky Saprolite

Source: Sinomine Resource Exploration Co., Ltd. 2018

Lower Rocky Saprolite and Bedrock

Conic Metals Corp. *Ramu Nickel Project*

Figure 6 **CORE PHOTOS SHOWING DIFFERENT LATERITE LAYERS IN THE RAMU DEPOSIT AREA**

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7.3 Mineralisation

The Ramu laterite nickel and cobalt deposit occurs in the weathering crust of ultramafic intrusive rocks, mostly dunite. The deposit above the dunite bedrock is divided into six laterite layers, from top to bottom, the humic layer (Q), the red limonite (O), the yellow limonite (L), the saprolite (S), the upper rocky saprolite (R1) and the lower rocky saprolite (R2).

Nickel grade is less than 0.5% in the humic layer, and is generally less than 0.5%, but occasionally above 0.5%, in the red limonite. These two layers are generally considered as overburden for mining and are stripped off before mining the lower mineralised laterite layers, including yellow limonite, saprolite, upper rocky saprolite and lower rocky saprolite. The nickel grade in the lower mineralised layers averages approximately 1.0%, and the cobalt grade averages approximately 0.1%.

The distribution of each relevant element in the laterite profile shows different patterns. The nickel and magnesium grades generally increase from top to bottom; but at the bottom of the lower rock saprolite, nickel grades reduce but magnesium grades still increase. The aluminium grade reduces with the increasing depth as it is a residual component in the weathering and leaching process. Nickel is apparently enriched in both saprolite and rocky saprolite, but cobalt is only enriched in the saprolite.

The principal 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 highest concentrations of goethite occur in the yellow limonite. Goethite-silica, goethite-smectite and other goethite-clay mixtures dominate the matrix of these zones. The average nickel grade contained within the goethite structure has been measured by electron microprobe analyses at 1.6% Ni in the limonite zone and 2.9% Ni in the saprolite zone.

Asbolan occurs as bluish black dendrites and fracture coatings throughout the laterite profile. It has a range of compositions containing elemental mixtures of cobalt, nickel, manganese and aluminium. In the limonite zone, asbolan assays by electron microprobe analysis at 8.4% Co and 5.2% Ni, and in the saprolite zone, it assays 5.6% Co and 15.1% Ni.

Garnierite, or nickeliferous serpentine, is an apple green mineral 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 rock saprolite zones. The most common occurrence of this mineral is as one to ten centimetre wide veins, as fracture infillings and in the weathered rind of bedrock boulders. Garnierite may also occur as infill with serpentine in calcic magnesite breccia. Garnierite displays a range of compositions based on the proportions of serpentine, talc and lizardite minerals. From analysis of 14 samples, lizardite contains an average of 1.2% Ni.

The distribution of the laterite layers is generally controlled by topography. The laterite layers dip at angles generally between 10° to 35°, consistent with the topography dip angles. All laterite layers in the deposit vary significantly in thickness because of the topographic control and erosion.

Based on the MgO content, the weathering crust lateritic nickel and cobalt ore is divided into the iron ore type when MgO<10%, the ferromagnesian ore type when MgO content ranges from 10% to 20%, and magnesium ore type when MgO>20%. The average MgO content in the O, L and S layers is less than 10%, and therefore these zones belong to the iron ore type; the average MgO content in the R1 layer is approximately 18%, therefore it belongs to the ferromagnesian ore type; and the MgO content in the R2 layer is approximately 20.4%, and therefore it belongs to the magnesium ore type.

7.4 Conclusions

The geology and mineralisation controls at Ramu are reasonably well understood, based on extensive exploration drilling in the area and mining operation since 2012. The drilling-controlled laterite mineralisation remains open laterally in almost all the directions as the underlying dunite covers a much larger area than the current drilling; this represents a significant additional exploration potential in the areas surrounding the currently defined Mineral Resources.

8 DEPOSIT TYPES

The Ramu deposit is a typical laterite nickel and cobalt deposit formed by weathering and leaching of the original ultramafic intrusive rocks, mostly dunite with small amount of harzburgite and pyroxenite in a tropical climate with large amounts of rainwater, saturated with atmospheric carbon dioxide, and a local monsoonal rainfall pattern. When the ultramafic rocks are subject to strong weathering, olivine, augite and other ferromagnesian silicate minerals rich in nickel, cobalt and other elements will decompose; the released SiO_2 is progressively removed by ground and/or surface water in the form of colloid or siliceous acid, and the ferrous iron is oxidised to ferric iron and converted into hydroxides and oxides, such as lepidocrocite, goethite and hydrohematite, and left in situ. Nickel, cobalt and other elements are absorbed by the clays in the saprolite, or directly precipitated from the colloidal solution, or enriched in secondary nickel silicate minerals, consequently forming a lateritic nickel-cobalt deposit within the weathering crust. At Ramu, nickel and cobalt have been enriched from a background of around 0.3% Ni and 0.01% Co in the ultramafic bedrock up to grades averaging 0.9% Ni and 0.1% Co in the laterite profile.

The lateritisation process reduces the volume and density of the parent material and enhances the concentration of nickel, cobalt and chromium in the profile.

Lateritic profiles form most commonly on ferromagnesian rich rocks such as dunite, harzburgite, peridotite and pyroxenite which form the basement for the Ramu deposit area. These ultramafic rocks contain more than 80% of mafic minerals and are consequently high in iron and magnesium

Structural controls are significant at a local level in the Ramu nickel and cobalt laterite. Faults and fractures provide permeable zones for the advancement of weathering. Further, these zones act as conduits for the introduction of fluids or the draining of fluids which flush away the soluble products of weathering and alteration. Strongly fractured zones will weather more rapidly and focus the flow of draining waters.

Chemically, acidic conditions prevail in the limonite zone while alkaline conditions dominate in the saprolite and bedrock zones. The top of the water table generally marks the transition from acidic to alkaline conditions. This chemical interface fluctuates with changes in the ground water level resulting from periods of high or low rainfall.

The more soluble mineral species are found at the base of the laterite profile with the more resistant or insoluble minerals occurring close to the surface.

9 EXPLORATION

The Ramu deposit was discovered in 1962 by the Australian Bureau of Mineral Resources. Since that time, there have been periods of intense investigation by several groups centred on the potential for economic exploitation of the nickel, cobalt and chromite content of the laterite.

International Nickel Southern Exploration Limited ("INSEL"), an exploration division of the International Nickel Company held an exploration title between 1963 and 1965. INSEL augered 72 holes and dug 115 pits over $23km^2$.

Metals Exploration N.L. ("Metals X") subsequently took control of the title and sunk an additional l4 test pits.

Carpentaria Exploration Company Ltd ("CEC"), on invitation from Metals X, assessed the available data and concluded that the saprolite resource had been inadequately explored to justify development based on current nickel extraction technology and the deposit's mineralogy and grades.

Subsequently, a small PNG-based group, Eastern Pacific Mines Pty Limited ("EPM"), gained control of the title from Metals X and invited CEC to joint venture the property. CEC became operator of the joint venture and solely funded exploration from 1971 to 1978.

CEC conducted a program of work including surface sampling, drilling more than 250 hand auger holes, 22 percussion and 72 diamond drill holes, bulk sampling from two bulldozer trenches and metallurgical testwork. Data generated included lithological mapping, assays for nickel, cobalt, iron and chromium, estimates of lateral variability of grade, bulk densities and size distribution of rocks in the laterite profile.

CEC concluded that the deposit was not viable at that time.

In 1978, Nord Resources Corporation ("Nord") became the operator of the project by entering into a joint venture agreement with CEC. Nord continued exploration drilling using both auger and diamond techniques. By the end of 1980, 129 pits, 1,081 auger holes and about 200 diamond holes had been sunk into the nickel-cobalt deposit.

Nord subsequently carried out an evaluation of the Danagari alluvial chromite resource. This resource was estimated in 1987 to contain 4.1 million cubic metres of material at an average recovery of $60kg/m^3$ of chromite concentrate. The chromite concentrate was of low grade metallurgical quality averaging 42% Cr_2O_3, 29% FeO, 16% Al_2O_3, and 1.5% SiO_2. The chrome to iron ratio was 1.3:1 which, together with the other grade attributes, indicated a potential only for a chemical grade product. No further work was undertaken.

In response to an improvement in the world nickel market, Nord re-commenced exploration of the Kurumbukari nickel-cobalt resource in 1989/90. At this time HGP purchased CEC's interests in the Ramu Joint Venture and elected to fund a diamond drilling and augering program managed by Nord. The drilling was designed to evaluate the area termed Ramu Central, for its high grade (greater than 1.5% Ni equivalent) potential.

The program comprised 1,160m of diamond drilling in 67 holes, 406m in 60 auger holes, 528m in 70 auger pre-collar holes and 155m from 7 bulldozer trenches. The diamond drill holes were drilled on a 150 x 150m grid. The grid was in-filled by the auger drilling.

In 1992 a re-negotiation of the joint venture agreement resulted in HGP increasing its interest to 60% by taking over the management of project and sole funding Kina 5.0M of exploration expenditure. In 1993, HGP commenced an intensive period of exploration, which included 56.5km of GPR survey (used to detect the top surface of the rocky saprolite), the drilling of 389 resource HQ diamond drill holes and 25 metallurgical PQ diamond drill holes totalling 10,200m, together with extensive metallurgical test work.

Other activities undertaken concurrently with the drilling program included environmental monitoring, socio-economic studies, hydrological considerations, pitting to determine bulk density and limited re-sampling of drill core.

In April 1997, Highlands Pacific Limited purchased HGP's interest in the project. In the same year, as part of the feasibility study compiled by Fluor Daniel and Simons, a drilling program was commenced to upgrade the quality of the resource estimate for the greater Ramu area by drilling on a 100 x 100m grid. This grid covered Ramu Central, Ramu East and Ramu Central Extended, a total of 7.2km^2; all of these areas were referred to as the KBK Block in the feasibility study resource estimation. Up to the end of July 1998, a total of 474 drill holes were completed for a total of 9,681m of NQ core. In addition, 13 diamond drill holes and 25 auger holes were drilled at Ramu South. Drilling was also carried out on close spacing on a 50 x 50m grid over a 300 x 300m local area and on a 25 x 25m spacing locally to test the variability within the orebody.

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 geological information.

Based on the drilling and sampling information to date, Highlands, under the guidance of MRDI, completed a resource estimate for the Ramu deposit in October 1998 as part of the 1998 Feasibility Study for the project.

The distribution of drill holes and metallurgical holes completed for the Ramu deposit before 1999 is shown in Figure 7. Primarily based on the drilling density, the drilled area of the Ramu deposit was historically divided into three resource blocks, KBK, Ramu West and Greater Ramu. Boundaries for each resource block are also shown in Figure 7.

Highlands completed a further 88 diamond drill holes and 29.9km of GPR survey for the Ramu West Block in 1999; these holes were used to replace the previous CEC holes in this area as Highlands believed that the assay quality of the CEC holes were questionable. Highlands maintained the drilling density of 200 x 200m for the holes in the area. The 1999 Highlands drill holes were not used for the 1998 Highlands/MRDI feasibility study resource estimate. Highlands completed a resource estimate update for the Ramu West Block in 2001 based on the new drilling and the new GPR survey data, as well as an updated topographic survey in the area and using a technique similar to the 1998 Highlands/MRDI resource model.

After a six year hiatus, MCC entered into the joint venture in 2005 by providing financing and undertaking construction of the project. In February 2007, China Nonferrous Engineering and Research Institute ("ENFI") completed a revised feasibility study of the Ramu project for MCC. Since then, MCC has conducted several infill grade control drilling programs using Chinese exploration contractors to support the construction and production. Construction commenced in 2008 and the mine and refinery began commissioning and ramp up in 2012.

Sinomine completed a 450 diamond drill hole program (6,052m) at a nominal drill spacing of 25 x 25m to support the first year production in the KBK Block from April 2007 to December 2007. At the same time, a detailed 1:500 topographic survey was carried out for a 0.48km^2 area and a 0.28km^2 area.

Sinomine continued the drilling for the second year production in the KBK Block from September 2007 to May 2009. A total of 549 diamond holes with a total length of 8,382m were completed at a nominal drill spacing of 25 x 25m. Detailed topographic survey at a scale of 1:500 was conducted for a 0.32km^2 area and a 0.36km^2 area.

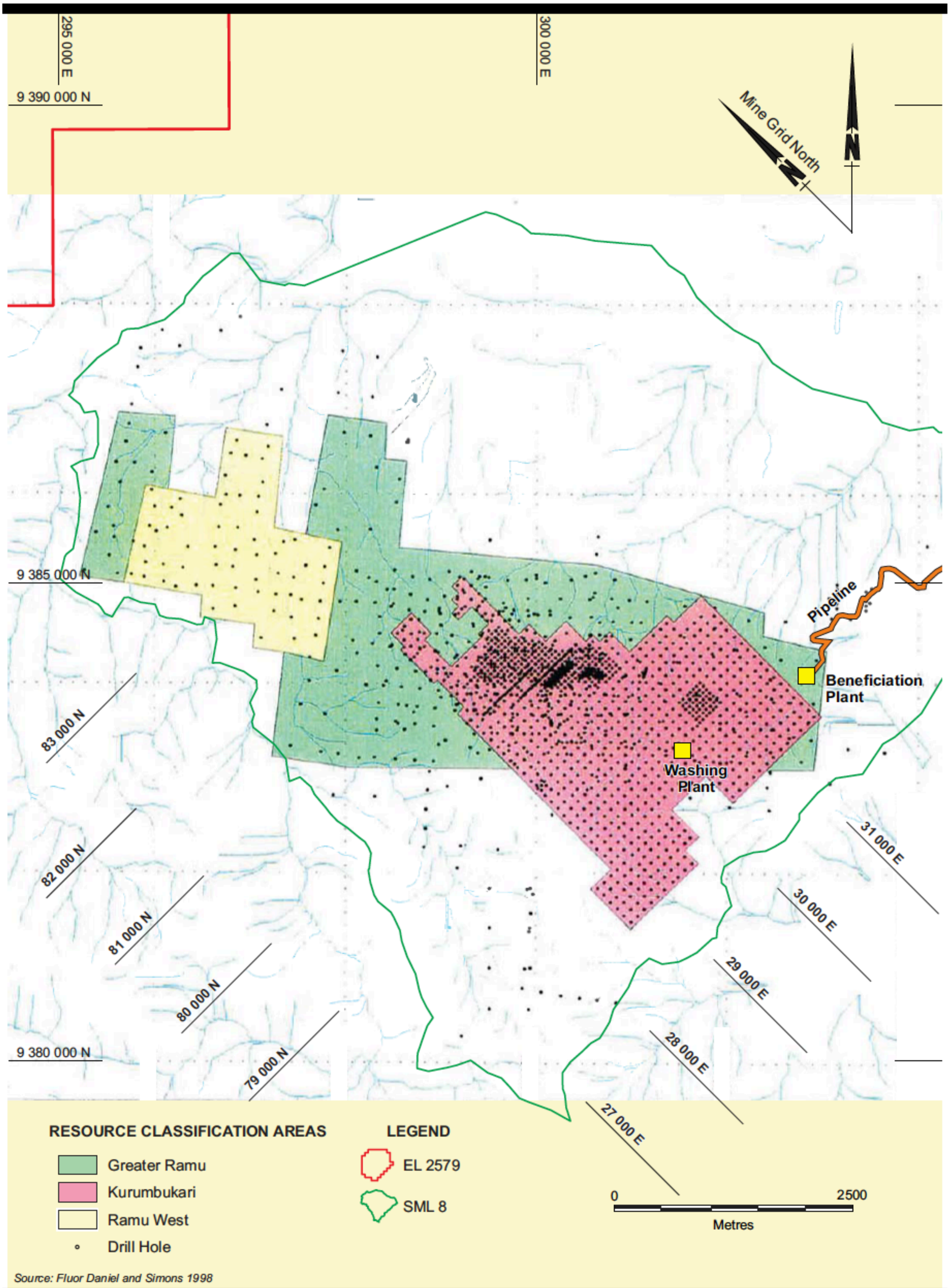
Production infill drilling in 2013 was conducted by Hubei Geological Survey Institute of Coal ("Hubei Coal") to better define the Mineral Resources in a 1.8555km^2 periphery area of the KBK Block at a nominal drill spacing of 50 x 50m. A total of 780 diamond holes were drilled in this area.

From March 2015 to March 2016, Hubei Coal conducted infill production drilling for the northeastern area of the KBK Block and some local areas of the adjacent Greater Ramu Block at a nominal drill spacing of 50 x 50m. A total of 490 diamond holes with a total drilled length of 5,683m were competed in this period. The area drilled in the Greater Ramu Block was approximately 0.66km^2.

Production infill drilling was conducted by Hubei Coal in 2016 for the south and the north of the KBK Block and an area in the adjacent Greater Ramu Block at nominal drill spacing from 50 x 50m (1.46km^2), 100 x 100m (0.44km^2) to 200 x 200m (0.301km^2). A total of 668 diamond holes with a total drilled length of 9,729m were completed in this period.

The 2017 drilling was conducted by both Sinomine and Hubei Coal. Sinomine conducted exploration drilling in the west side of the KBK Block over a 4.1km^2 area at a nominal drill spacing of 100 x 100m. A total of 363 diamond holes with a total drilled length of 5,125m were completed in this area. This extended the resource estimation into a previously covered area. Hubei Coal conducted 50 x 50m infill drilling for an area of 1.6km^2 located in the northwest and southwest of the KBK Block. A total of 702 diamond drill holes with a total drilled length of 9,026m were completed in these areas. This extended the Measured/Indicated Mineral Resource estimate into the previous Greater Ramu Block with only Inferred Mineral Resources estimated.

The infill production drilling from 2007 to 2016 was generally used for ore grade control purpose only and was not used to update the Ramu resource estimate. However, a QA/QC program was carried out for the 2017 drilling, and the drilling results were used to update the resources and reserves of the Ramu deposit area. Figure 8 shows the 2017 Sinomine and Hubei Coal drilling areas for the Ramu deposit area; these drill holes have been used to define the current Mineral Resources and Mineral Reserves for the Ramu deposit.



Conic Metals Corp. *Ramu Nickel Project*

Figure 7 **DISTRIBUTION OF PRE-1999 DRILL HOLES FOR THE RAMU DEPOSIT**

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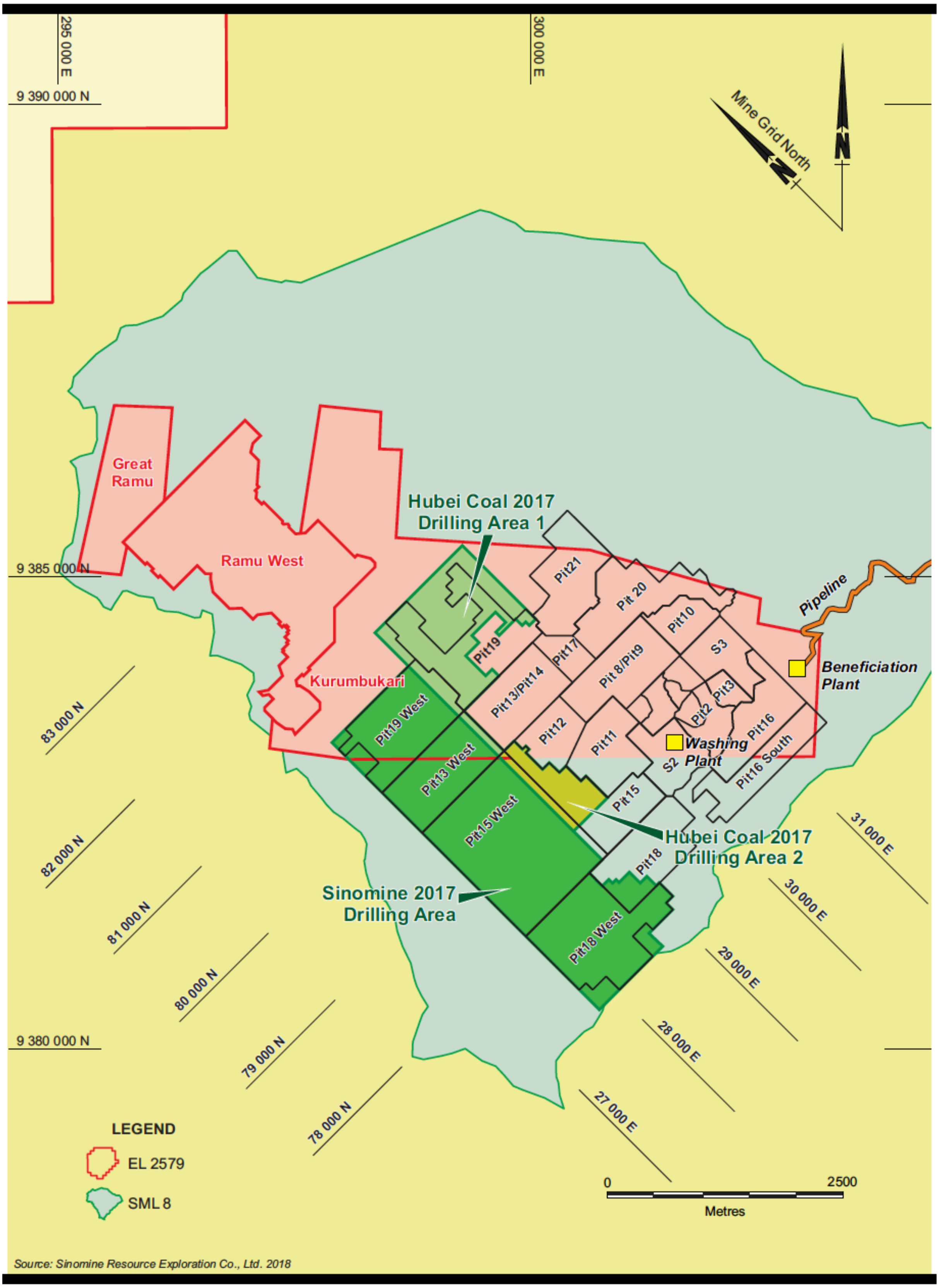

Conic Metals Corp.

Ramu Nickel Project

Figure 8

2017 SINOMINE AND HUBEI COAL DRILLING AREAS FOR THE RAMU PROJECT

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10 DRILLING

10.1 Drilling Programs

In the 1998 feasibility study report for the Ramu project, the pre-1999 historical exploration drilling was divided into four phases:

Phase 1 drilling was carried out between 1970 and 1982 by CEC. During this period the global Ramu area was drilled on a 400 x 400m grid with local areas of 200 x 200m infill drilling. A total of 1,098 auger holes, 207 diamond holes and 39 pits were completed. This phase of drilling was designed more to test the limits of the laterite mineralisation rather than to produce a resource estimate.

Phase 2 drilling was carried out in 1990 by Nord and comprised 67 diamond drill holes (1,160m), 72 auger holes (406m), 70 auger pre-collars (528m) and 7 bulldozer trenches (155m). All of the drilling was within the KBK Block. This phase of drilling was basically designed to improve the quality of the resource estimate in the "best" area found in the Phase 1 program. Almost all of the work carried at this time falls within the KBK Block. However, none of the Phase 2 drilling results were used in the 1998 feasibility resource estimate as HGP/Highlands completed sufficient drill holes for the KBK Block in the Phases 3 and 4 drilling.

Phase 3 drilling was conducted from October 1993 to July 1994 by HGP. A total of 384 HQ geochemical holes (10,210m) and 25 PQ metallurgical holes were drilled. Both tungsten and diamond bits were used. Hole depth averaged 26m. An FMC mounted, top drive, Longyear 38 rig was utilised in the program. The holes were drilled using a PQ/HQ tungsten bit until a dunite boulder or harder material was 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 dunite boulders were encountered, the tungsten bit was replaced by a diamond bit which was then used until the completion of the hole.

Phase 4 drilling was carried out from May 1997 to July 1998 by Highlands, which purchased HGP's interest in the project in April 1997. A total of 591 NQ geochemical holes (9,845m), 69 metallurgical holes (1,099m), and 69 geological record holes (1,209m) were drilled. Average hole depth was 16m. Both tungsten and diamond bits were used to drill these holes in the same manner as for the Phase 3 drilling. The Phase 4 drilling was carried out using three man-portable Edson rigs. These rigs can be broken down and the pieces are then moved from site to site by a team of 10 men. These rigs performed well completing an average of one hole a day for the entire program.

BDA notes that the drilling statistics (including the number of drill holes and the total drilled length) in the four drilling phases described above are slightly different from the drilling statistics described in the previous Exploration History section in this report as the information used was derived from two different chapters of the 1998 Feasibility Study report. BDA has not attempted to reconcile these differences.

After the 1998 feasibility study, Highlands completed a further 88 diamond drill holes and 29.9km of GPR survey for the Ramu West Block in 1999 in order to replace the less reliable, previous CEC holes in this resource block. Highlands completed a resource estimate update for the Ramu West Block in 2001 based on the new drilling and the new GPR survey data as well as an updated topographic survey in the area.

Since MCC became the majority shareholder and operator of the Ramu project in 2005, production ore control infill drilling programs were conducted over a number of phases in 2007, 2009, 2013, 2015 and 2016 using Chinese drilling contractors. This drilling was generally conducted within the KBK Block but some of the drilling also covered some adjacent areas. The results of these drilling programs were not used for Mineral Resource estimate updates under the Australasian JORC Code, therefore, these ore control infill drilling programs will not be discussed further in this report.

In 2017, Sinomine and Hubei Coal conducted drilling programs for MCC Ramu in the Ramu deposit area. Sinomine conducted exploration drilling on the southwest side of the KBK zone covering a 4.1km^2 area at a nominal drill spacing of 100 x 100m. A portion of the drilling area overlaps the Greater Ramu Block area. A total of 363 diamond holes with a total drilled length of 5,125m were completed in this area. Chinese-made portable XY-1 drill rigs were used for the drilling. Tungsten and diamond bits were used as for the historical Phases 3 and 4 HGP/Highlands drill holes, with tungsten bits used for the upper soft laterite layers drilling in dry conditions and diamond bits used for the rocky saprolites and bedrock. Drill hole diameter was from 110mm (slightly smaller than PQ) at the top to 91mm (slightly smaller than HQ) at the bottom. After drilling, the hole was backfilled by clays and a wooden post was inserted in the drill hole collar and a plastic wrapped paper tag was attached to the post and marked with drill hole number, depth, and completion date. It appears that the paper tag as well as the wooden post are reasonably long lasting in this tropical environment. The Sinomine drilling will materially increase the Mineral Resources for both the KBK Block and the entire Ramu deposit area as the total drilled area was expanded.

Also in 2017, Hubei Coal conducted 50 x 50m infill drilling over an area of 1.6km^2 located in the northwest and southwest of the KBK Block. A total of 702 diamond drill holes with a total drilled length of 9,026m were completed. This will extend the Measured/Indicated resource estimate into the previous Greater Ramu Block where previously only Inferred Resources were estimated. The drilling techniques used by Hubei Coal and core recoveries were generally similar to that for the 2017 Sinomine drilling.

All of the drill holes for the Ramu project were drilled vertically as they were short holes used to penetrate sub-horizontal laterite horizons.

Details of the drilling technologies and core recoveries as well as sampling, logging, sample preparation and analysis, and QA/QC procedures are generally not available for pre-HGP drill holes and they will not be discussed further in this report.

For the 1998 Feasibility Study, resource models were constructed by Highlands under the guidance of MRDI using different databases for the different resource blocks. The KBK Block was well drilled by HGP/Highlands in the Phases 3 and 4 drilling with a nominal drill spacing ranging from 25 x 25m, 50 x 50m to 100 x 100m, therefore, only the 972 HGP/Highlands diamond holes (with a total drilled length of 20,096m) were used for the resource estimation and the resource estimates were classified as Measured, Indicated and Inferred. Resource estimates for the Ramu West Block were based on 56 pre-1991 CEC diamond holes at a nominal drill spacing of 200 x 200m, and the resource estimates were classified as Indicated and Inferred. Resource estimates for the Greater Ramu Block were based on historical drill holes (45 diamond holes and 113 auger holes) at a nominal drill spacing of 400 x 400m, and the resource estimates were all classified as Inferred.

In 2001 Highlands updated the Ramu West Block resource estimates based only on re-drilled diamond holes drilled by Highlands in 1999 at the same nominal drill spacing of 200 x 200m as the previous CEC holes, and the resource estimates were classified as Indicated and Inferred.

In 2018, Sinomine completed a resource estimate update for MCC Ramu based on 363 Sinomine 2017 diamond holes drilled to the southwest of the KBK Block at a nominal drill spacing of 100 x 100m and 702 Hubei Coal diamond holes drilled towards the northwest and southwest sides of the KBK Block at a nominal drill spacing of 50 x 50m. The resource estimates in the newly drilled areas were classified as Measured, Indicated and Inferred.

10.2 Drill Core Recoveries

For the HGP/Highlands Phases 3 and 4 drilling, average core recovery was 89% for the tungsten bit drilling and 72% for the diamond bit drilling. The recovery for the diamond bit drilling was relatively poor as it was mostly drilling the rocky saprolite units which consist of hard dunite boulders and very soft saprolite matrix. Average core recoveries for different laterite layers are also listed in Table 10.1.

Table 10.1

HGP/Highlands Core Recovery by Laterite Layers

Laterite Layer	Average Core Recovery
Overburden	84%
Limonite	90%
Saprolite	86%
Upper Rocky Saprolite	74%
Lower Rocky Saprolite	71%

Highlands' comparison shows no significant correlation between core recovery and nickel and cobalt grades in the limonite and saprolite, and Highlands concluded there was no theoretical reason that lower core recoveries would bias the nickel and cobalt grades, with which BDA concurs.

For the 2017 Sinomine drilling, MCC Ramu's requirement for core recovery was no less than 80% for the humic layer, red limonite, yellow limonite, saprolite and upper rock saprolite and no less than 75% for the lower rock saprolite. The actual drill hole average core recoveries ranged from 85% to 100%, averaging 94%, and the average recovery by laterite layer ranged from 87% to 98% (Table 10.2).

Table 10.2

2017 Sinomine Core Recovery by Laterite Layers

Laterite Layer	MCC Ramu Requirement	Average Actual Core Recovery
Humic Layer	>80%	94%
Red Limonite	>80%	98%
Yellow Limonite	>80%	98%
Saprolite	>80%	96%
Upper Rocky Saprolite	>80%	93%
Lower Rocky Saprolite	>75%	87%

10.3 Drill Hole Surveys

For the 1998 Feasibility Study, drill hole collar locations for the HGP/Highlands Phases 3 and 4 drilling in the KBK Block were surveyed by a qualified surveyor using an electronic distance measuring instrument ("EDM"). The survey results were checked on sections and plans to ensure consistency between drill hole collar locations and topography. Drill hole collar locations for earlier drilling in the Ramu West and Greater Ramu Blocks were also surveyed by qualified surveyors.

A digital terrain model for the KBK Block was developed from a survey database comprising over 23,000 spot heights and surveyed drill hole collars. A local rotated metric grid system, RAMU93, in which grid north is approximately 325^{o} relative to true north in Australian Map Grid 1966 was used for the KBK Block. Topography survey data outside the KBK Block was patchy and of questionable reliability. In these areas, the topography model was based on a digital 10m contour map developed from 1:100,000 Skai Piksa air photographs flown in 1973. Absolute accuracy of this contour map was believed to be about ±27m horizontal and ±17m vertical. The grid system for this data is Australian Map Grid 1966. All drill hole collars outside the KBK Block have been adjusted so that the collar elevation matches the 10m contour digital terrain model.

The RAMU93 grid system was used for the 2017 drilling. For the Sinomine drilling area, a 1:1000 scale topography map for an area of 2.96km^2 was surveyed; and drill hole collar locations were also surveyed after drilling. GPS-RTK was generally used to set the control points, and total stations were used to survey the drill hole collar locations and topographic points as it is difficult to use GPS-RTK in the dense vegetation area. South CASS9.2 mapping software was used to compile the topography map. Drill hole collars for the Hubei Coal drilling were surveyed basically in the same way.

No down hole surveys were conducted for any drill holes in the Ramu deposit area as these drill holes are all vertical short holes with an average drill hole depth of around 20m.

10.4 Logging

All drill cores were logged by rig geologists. Logging was generally taken place on site when a drill hole was just completed. The rig geologist ensured the drillers have placed the core in order in the appropriate core box. The geologist checked and recorded the drill round ticket information, core recovery, core geology description (including but not limited to lithology, colour, weathering, minerals present, and structure), appropriate engineering information and determine the preliminary laterite layer separation points. Each box of core was photographed separately prior to sampling; the hole number and start and end of each core box were clearly labelled for inclusion in the photo; the core box generally filled the entire photo as much as practical.

A drill hole was generally designed to penetrate all the laterite layers and stop in the bedrock. The rig geologist was also responsible to determine the termination point of a drill hole. The standard criteria for termination of a hole was at least 1.5m of relatively fresh bedrock or a 3m intersection with greater than 50% of the volume of the intercept being rock was penetrated.

10.5 Sampling Method and Approach

A nominal sample length of 1m was used for all drilling; sample length might be less than or more than 1m at the contact of different laterite layers. For the overburden, limonite and saprolite layers, half core samples (HGP Phase 3 drilling, Sinomine 2017 drilling and Hubei Coal 2017 drilling) or entire core samples (Highlands Phase 4 drilling) were taken. For half core sampling a sharp plastic knife was used to cut the soft laterite core in the middle to separate the core into two halves; one half was used for assay and another half was retained at site and later discarded. For the upper rocky saprolite and lower rocky saprolite, the entire core was sampled.

Samples for assay were put into self-sealed plastic bags and weighed with wet sample weight recorded; the sample tag for each sample bag was filled and checked to ensure the data corresponded to the sample register form. Approximately 6 to 8 samples were packed into one woven bag; the exterior of the woven bag was marked with the drill hole number and sample numbers with a permanent marker. The woven bags were transported to the sample preparation room by the drilling crew.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Sample Preparation

In the sample preparation room, overburden, limonite and saprolite samples were dried in an oven with temperature set at 95° C (±10° C) for at least 10 to 14 hours to dry the sample for assay but to avoid driving off any water of crystallisation. If, during subsequent preparation, samples showed any indication of abnormal moisture content they were returned to the oven for further drying. Following drying the samples were jaw crushed or crushed with a wooden rolling pin if necessary and pulverised to -200 mesh in a ring grinder.

The rocky saprolite samples were separated by wet screening into a -2mm saprolite fraction and +2mm rock fraction. These fractions were dried and weighed to determine the dry rock fraction weight percentage of the sample; a dry volume percentage of the rock fraction was then calculated according to the density of weathered dunite. The saprolite fraction of the sample was jaw crushed or crushed with a wooden rolling pin if necessary and pulverised to -200 mesh in a ring grinder. A 100g sample for assay and a 100g duplicate sample were separated from the pulverized sample and put into paper bags. The paper bags were labelled with the sample number.

Sample preparation was carried out by trained employees of the company or drilling contractor in the site sample preparation room following set sample preparation procedures.

Appropriate security measures were undertaken by establishing a chain of sample responsibility to ensure there was no error in sample transportation and submittal.

11.2 Analysis

Phases 3 and 4 Drilling for the 1998 Feasibility study

For the 1998 Feasibility Study, sample preparation and assaying for the HGP/Highlands Phases 3 and 4 drilling were conducted by the company-owned commercial assay laboratory, Astrolabe Pty Limited ("Astrolabe"), located in the town of Madang in Papua New Guinea. The laboratory was registered with the Papua New Guinea Laboratory Scheme, with accreditation awarded under NATA requirements

A 0.2g split was taken from each pulverized sample for analysis and digested using a combined mixture of nitric, perchloric and hydrofluoric acids with a hydrochloric acid leach. Solutions were made up to 100ml in a volumetric flask and analysed using AAS and a C_2H_2 flame for nickel, cobalt and magnesium. The detection limit for all three elements was 25ppm.

2017 Sinomine and Hubei Coal Drilling

For the 2017 drilling programs, sample preparation was performed by the drilling contractor in a sample preparation room located at Ramu and sample chemical analysis was performed by the Ramu mine testing laboratory. A 0.1g split was taken from each pulverized sample for analysis and digested using a combined mixture of hydrochloric, nitric, hydrofluoric and perchloric acids. Sample grades for nickel, cobalt, magnesium, aluminium, iron, manganese and scandium were determined by an ICP-OES (inductively coupled plasma - optical emission spectrometer) instrument (Varian 700-ES). The detection limit of this Varian 700-ES was 5g/L for nickel and 13g/L for cobalt. The measurement grade range of the instrument was 0.02-10.0%, which satisfied the sample grade distribution for Ramu.

BDA understands that there is no certification of any kind for the Ramu mine assay laboratory to date, but it has been routinely conducting all assays for drilling and production since the mine started operation in 2012.

11.3 Bulk Density Determination

Phases 3 and 4 Drilling for the 1998 Feasibility Study

For the 1998 Feasibility Study, bulk density and moisture content were determined from collected core samples for HGP/Highlands Phases 3 and 4 drilling.

Bulk densities were determined during the Phase 3 program using 8cm lengths of HQ core. The samples were collected at the drill site and immediately wrapped in re-sealable plastic bags to prevent moisture loss. The usual practice was to do one set of determinations per hole with two sets commonly done in cases where the profile was developed over greater depth. A total of 628 moisture content and bulk density measurements were made during the Phase 3 drilling program. Determination was carried out by Astrolabe. The moisture content was determined by drying the sample under controlled oven conditions at 95° C until the weight stabilised over three consecutive weighing which indicates the removal of all moisture extractable at that temperature. The determined average moisture content was 38% for overburden, 48% for limonite and 50% for saprolite.

Bulk density samples were wrapped in aluminium foil prior to being dried under conditions described above and sample volume was determined using the water displacement method. The wet bulk density and dry bulk density can be calculated from the sample wet weight, sample dry weight and sample volume. The determined average dry bulk density was 1.27 tonnes per cubic metre ("t/m^3") for the overburden (97 samples), 1.04t/m^3 for limonite (423 samples) and 1.00t/m^3 for saprolite (96 samples).

For the same rock type, there was a negative correlation between moisture content and dry bulk density. This is because moisture occupies void spaces and the amount of void space within a sample is inversely related to the dry bulk density.

The bulk density determination method for the Phase 4 drilling was modified from the method used for Phase 3 drilling. Instead of using the water displacement method, which requires wrapping the sample in foil and immersing in water to determine the sample volume, the sample was trimmed at right angles to the core axis and the volume calculated by measuring the sample length and diameter with a Vernier Calliper. Average dry bulk density determined by this method was 1.20t/m^3 for overburden (258 samples), 0.95t/m^3 for limonite (309 samples) and 0.73t/m^3 for saprolite (222 samples).

The Shelby tube method was also used to determine the dry bulk density for Phase 4 drilling. A Shelby tube is essentially a thin-walled pipe that is gently forced into the soil at the bottom of a drill hole. The pipe is driven into the soil to depth of about 20 to 25cm. When the tube is retrieved the sample stays in the pipe. Having relatively thin walls the sample is said to be approximately 98% undisturbed. Average dry bulk density determined by the Shelby tube method was 1.05t/m^3 for overburden (5 samples), 0.84t/m^3 for limonite (39 samples) and 0.71t/m^3 for saprolite (14 samples).

2017 Sinomine and Hubei Coal Drilling

Bulk density was determined from 1m long drill core samples with core recovery of 100%. The core diameter was 7cm, therefore, the volume of a sample was 3,846.5cm^3. The sample wet weight and dry weight were measured by an electronic scale, and the sample wet bulk density and dry bulk density were calculated. The average dry bulk density determined by Sinomine in 2017 was 1.13t/m^3 for overburden (20 samples), 0.97t/m^3 for limonite (64 samples) and 0.84t/m^3 for saprolite (74 samples).

The moisture content of a sample was determined by the wet weight and dry weight of the sample. The average moisture content determined by Sinomine in 2017 was 36.4% for overburden (20 samples), 42.4% for limonite (64 samples), 46.3% for saprolite (74 samples), 40.9% for upper rocky saprolite (84 samples) and 27.9% for lower rocky saprolite (55 samples).

11.4 Rock Percentage Determination for Rocky Saprolites

The rocky saprolite samples were screened to separate the fine interstitial saprolite from the coarser and lower grade rocky material. By drying and weighing each fraction separately the dry rock weight percentage and the dry saprolite weight percentage were determined.

The fine interstitial saprolite material (-2mm fraction) should have a dry bulk density roughly the same as the overlying saprolite (averaging 0.8t/m^3). Measurements made during the Phase 4 drilling program indicated the rock portion of the rocky saprolite (+2mm fraction) had an average bulk density of 3t/m^3 (3.068t/m^3 was used for the 2017 drilling). The dry volume percentage of the rock in the rocky saprolite were calculated from the dry rock weight percentage and the average dry rock bulk density. The remaining volume was assumed to be all saprolite, which had a dry bulk density similar to the overlying saprolite.

It is important to determine the volume percentages of +2mm rock material and the -2mm saprolite material as only the -2mm saprolite material is included in the Mineral Resource and Mineral Reserve estimates and the +2mm rock material is considered as waste in the resource/reserve estimates for the Ramu mine.

11.5 QA/QC

Phases 3 and 4 Drilling for the 1998 Feasibility study

With each batch of up to 40 drill core samples, 5 internal quality control samples consisting of one blank, two sample replicates and two internal standards were submitted. The quality control samples were weighed, digested and determined in the same manner as the drill core assay samples.

The internal standards were bulk standards, made from Ramu deposit material to be matrix matched with the samples being processed. The standards were checked and characterised by submitting them to Australian laboratories. The characterisation tests were repeated at various times to validate the standards. Initial sample reports obtained after AAS determination list the internal quality control results against expected values with warning limits set to allow management to accept or reject the batch.

In most cases, the AAS results were captured directly by the computer database software, however, due to AAS equipment downtime, some batches had results printed then hand entered into the database software. Independent auditing of the hand entered results revealed an error rate of 0.3%, which was considered as a high database quality in the mining industry.

The quality control results were plotted against expected values over time with warning and action limits attached to enable management to detect trends with respect to accuracy and implement remedial action where necessary.

In addition to the internal quality control procedures, approximately 8% of all analysed samples were also sent to Australian Laboratory Services ("ALS") in Brisbane, Australia for check analysis. To ensure a random nature of sample type, all samples with sample number ending in 9 were selected for check analysis. The external check samples were analysed by ALS 102 method (nitric, perchloric and hydrofluoric acid digest with perchloric leach and AAS finish) for nickel and cobalt, and by ALS 276 method (sodium peroxide fusion followed by hydrochloric acid dissolution with an ICP-AES finish) for magnesium. A total of 1,819 samples were check analysed for nickel, cobalt and magnesium representing roughly 8% of the total samples.

Tables 11.1 and 11.2 and Figure 9 show the comparison of the ALS external check analysis results and the Astrolabe original analysis results. The correlation between the two laboratories for both nickel and cobalt is good. The mean and median of the ALS external check assays for both nickel and cobalt are reasonably close or slightly higher than the original Astrolabe assays, indicating that there was no positive bias for either nickel or cobalt grades in the original Astrolabe results.

Table 11.1

External Check Assays for Nickel: ALS vs. Astrolabe

Laboratory	Total Population			>/= 0.5% Ni		
	Number	Mean (%Ni)	Median (%Ni)	Number	Mean (%Ni)	Median (%Ni)
Astrolabe	1,707	0.81	0.77	1,189	1.02	0.95
ALS	1,667	0.92	0.79	1,156	1.04	0.95
Correlation Coefficient		0.96			0.93	

Table 11.2

External Check Assays for Cobalt: ALS vs. Astrolabe

Laboratory	Total Population			>/= 0.05% Co		
	Number	Mean (%Co)	Median (%Co)	Number	Mean (%Co)	Median (%Co)
Astrolabe	1,706	0.06	0.04	717	0.12	0.09
ALS	1,625	0.07	0.04	749	0.12	0.10
Correlation Coefficient		0.96			0.96	

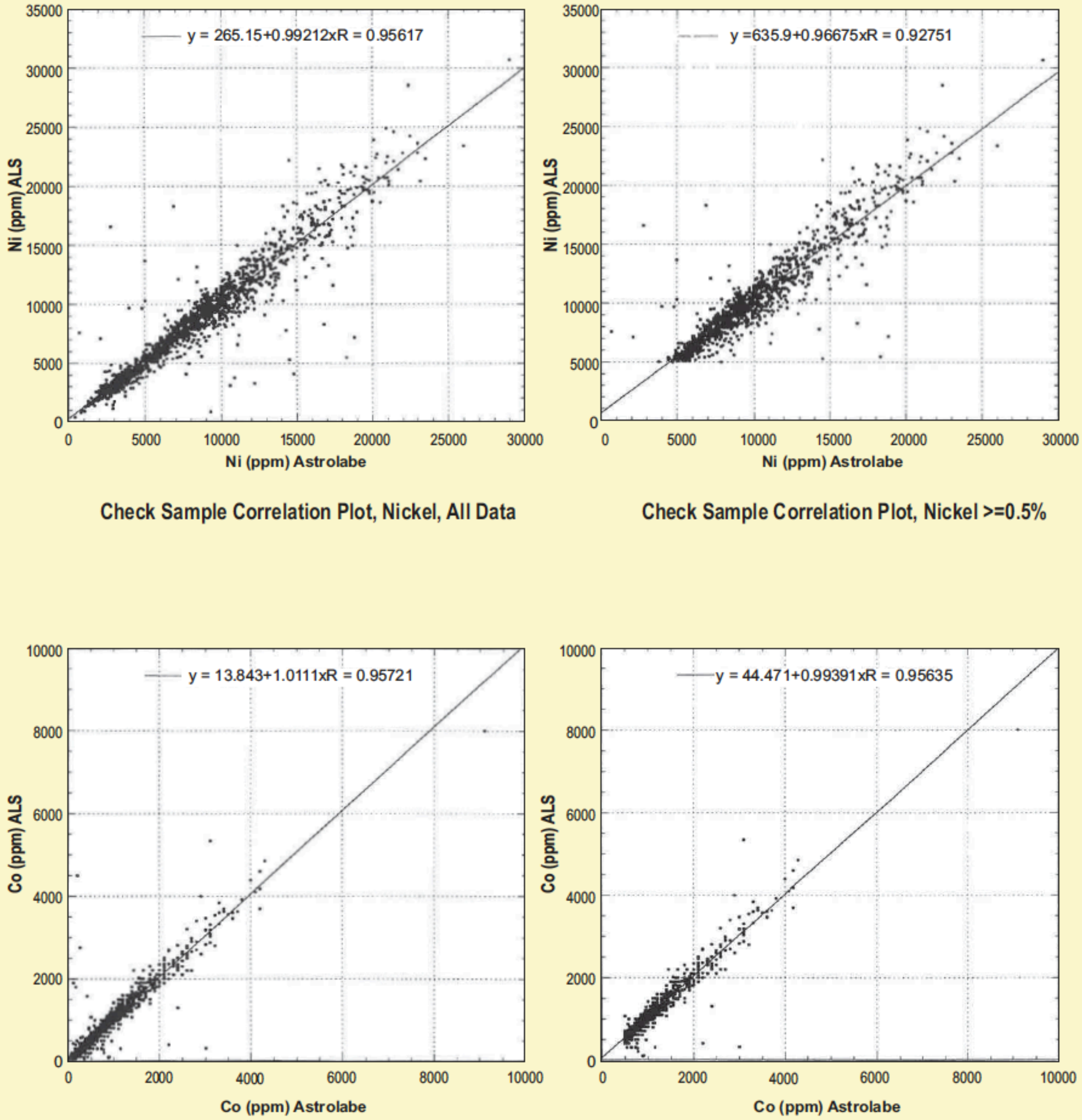
2017 Sinomine and Hubei Coal Drilling

The internal quality control procedure for the 2017 Sinomine and Hubei Coal drilling includes replicate samples, standard samples and blank samples.

Replicate samples were collected from the -200 mesh pulp duplicate samples of the assayed samples; Standard samples were collected from duplicate samples of the analysed samples by the mine assay laboratory in 2016; blank samples were from a limestone quarry for the Basamuk smelter.

The sample numbers ending with zero were retained for internal quality control samples. The higher grade standards, lower grade standards, replicates and blacks were inserted into the samples prepared for assaying by a quality control geologist. The grades of the internal quality control samples were blind to the mine assay laboratory.

The relative deviations of the replicate assay results were compared with the allowable limit of relative deviation. A replicate assay was considered acceptable if its relative deviation was smaller than the allowable limit of relative deviation. Table 11.3 shows that the acceptable rate was 96% for Ni and 94% for Co, indicating the internal assay precision was quite good for the two major metals in the assay results. Assay acceptable rate for Al, Fe and Mn were also reasonable. However, assay acceptable rate was only 53% for Mg and 40% for Sc, indicating a poor internal assay precision for these elements.



Check Sample Correlation Plot, Nickel, All Data

Check Sample Correlation Plot, Nickel >=0.5%

Check Sample Correlation Plot, Cobalt, All Assays

Check Sample Correlation Plot, Cobalt >=0.05%

Source: Fluor Daniel and Simons 1998

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Ramu Nickel Project

Figure 9

SCAT PLOTS FOR ALS CHECK ASSAYS AND ASTROLABE ORIGINAL ASSAYS

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Table 11.3

Acceptable Rate for Replicate Assays

Assayed Metal	Ni	Co	Mg	Al	Fe	Mn	Sc
Acceptable Replicate Assay Number	135	132	74	129	113	136	56
Total Replicate Assay Number	140	140	140	140	140	140	140
Acceptable Rate (%)	96%	94%	53%	92%	81%	97%	40%

The standard sample assay results were analysed in the same way as the replicate assay results. Tables 11.4 and 11.5 lists the acceptable rates for higher grade standard assays and lower grade standard assays, respectively. These results show that the acceptable rate was generally low. BDA notes that the so-called assay standards used by Sinomine and Hubei Coal are not certified assay standards independently prepared by a specialist laboratory as normally used in the mining industry; rather, they were just replicate samples collected from assayed samples of the previous year. BDA considers the low acceptable rates should be further investigated and that MCC Ramu could consider adopting new independently certified assay standards using the Ramu deposit material, similar to the assay standards used by HGP/Highlands in their Phases 3 and 4 drilling.

Table 11.4

Acceptable Rate for Higher Grade Standard Assays (Ni>1.05%)

Assayed Metal	Ni	Co	Mg	Al	Fe	Mn	Sc
Acceptable Standard Assay Number	32	57	6	36	12	48	12
Total Standard Assay Number	71	71	71	71	71	71	71
Acceptable Rate (%)	45%	80%	8%	51%	17%	68%	17%

Table 11.5

Acceptable Rate for Lower Grade Standard Assays (Ni<0.6%)

Assayed Metal	Ni	Co	Mg	Al	Fe	Mn	Sc
Acceptable Standard Assay Number	21	16	3	1	8	23	0
Total Standard Assay Number	40	40	40	40	40	40	40
Acceptable Rate (%)	53%	40%	8%	3%	20%	58%	0%

Assay results for the 112 limestone blank samples showed that Ni grades were ≤0.02% and Co grades were ≤0.004%, indicating that there was generally limited cross contamination during the sample preparation process.

There were no external check assay programs for the 2017 drilling.

11.6 Qualified Person's Opinion and Conclusions

The Mineral Resource estimates for the Ramu nickel and cobalt deposit have been carried out under the guidelines of the Australasian JORC Code by Competent Persons as defined by those guidelines. The JORC Code guidelines are compatible with the requirements of NI 43-101 in this regard.

The quality control procedures and results for the Phases 3 and 4 HGP/Highlands drilling programs were audited by the Competent Person, Dr Francois-Bongarcon of MRDI, for the 1998 Feasibility Study resource estimate. In his October 1998 report he stated that "it is MRDI's opinion that the sampling and QA-QC procedures at HPL (Highlands Pacific Limited) and Astrolabe are now reaching a level of depth, detail and scrutiny that places them above industry standards. The quality and reliability of the data used in the resource modelling exercise at Ramu have been properly characterised and controlled, biases detected and corrected, reproducibility established and maintained." BDA's Qualified Person for this NI43-101 report, Dr Qingping Deng, concurs with the MRDI conclusion based on review of the historical technical reports produced by MRDI and the 1998 Feasibility Study report.

The Competent Person for the 2017 Sinomine Mineral Resource estimate update was Mr Zhang Xueshu, Chief Geologist of Sinomine. The Sinomine 2017 Mineral resource estimate update report stated that the QA/QC results for the 2017 drilling meet the production needs of the mine. However, BDA considers that there is some room for improvement for the quality controls for the 2017 drilling programmes. BDA recommends that independently certified assay standards and external check assays could be used for quality control of the assay results produced by the Ramu assay laboratory. The laboratory could also be checked by external standard associations to ensure the assay procedures and results meets industry standards. As the assays for the 2017 drilling programs represent only a small portion of the overall assays used for the 2017 resource estimate update, BDA's Qualified Person considers that the overall database quality for the 2017 resource estimate update remains generally acceptable for generating a Mineral Resource estimate update under both the 2012 Australasian JORC Code and 2011 Canadian NI43-101.

12 DATA VERIFICATION

12.1 QA/QC

Dr Francois-Bongarcon of MRDI was the Competent Person for the 1998 Feasibility Study resource estimate for the Ramu nickel and cobalt deposit. He conducted a site visit to the Ramu project site from 30 August to 1 September 1997. This trip also included a visit to the sample preparation and assay laboratory. Successive visits to Highlands' Brisbane offices followed on 10-21 November 1997, and 9-13 February, 24 June-3 July, 18-21 July and 5-9 October 1998. Dr Francois-Bangarcon reviewed the geology, drilling, sampling, sample preparation and analysis, density determination, and QA/QC programs, and conducted an audit of the Ramu deposit drilling and sampling database; he provided a number of recommendations to Highlands based on his site visits and review of the project database, which were mostly taken up by Highlands. Dr Francois-Bongarcon's final conclusion was that the sampling and QA-QC procedures at Highlands's Ramu project and Astrolabe laboratory were above industry standards.

Mr Zhang Xueshu, Chief Geologist of Sinomine, was the Competent Person for the 2017 Ramu deposit resource estimate update. Sinomine was engaged by MCC Ramu to conduct field exploration work, including drilling, sampling, sample preparation and topography survey and drill hole collar location survey, and prepare a JORC-compliant resource estimate update and a report based on the exploration work in 2017. Mr Zhang took part in the field exploration work by Sinomine in 2017.

BDA's Qualified Person, Dr Qingping Deng, visited Highlands' Ramu property on 5th and 6th February 2019 and 11th to 13th June 2019. He reviewed the drilling, sampling, sample preparation and analysis, QA/QC programs, Mineral Resource and Mineral Reserve estimation, the mining, processing and smelting operations of the Ramu nickel and cobalt mine. Dr Deng also made a visit to Sinomine's Beijing office in China from 20th to 22nd May 2019 to discuss Sinomine's 2017 Mineral Resource estimate update report.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Kurumbukari De-Agglomeration Plant and Beneficiation Plant Process Development

Summary

The Ramu NiCo processing plants have been in operation since 2012. Background data on the development of the Ramu NiCo processing plants is limited other than what is provided in the report "Ramu Nickel Project Papua New Guinea, Feasibility Study (Revised)'written by China Nonferrous Engineering and Research Institute (ENFI) dated February 2007. An initial pre-Feasibility Study ("PFS") was completed in 1996. A "bankable" Feasibility Study was completed in 1998 by Fluor Daniel Corporation ("Fluor") assisted by its subsidiary, Simons Engineering and Consulting Incorporated ("SEC"). Some preliminary engineering was started in 1999 with Kvaerner Engineering ("Kvaerner") but was suspended in 2000.

The 2007 ENFI report states that the JV conducted a series of laboratory-based tests and continuous tests (such as mineralogical studies and de-agglomeration tests); metallurgical tests and slurry rheology studies were also undertaken.

ROM Ore Preparation (Beneficiation) Testwork

The beneficiation plant as constructed comprises two plants; the first treats Run-of-Mine (ROM) material to remove boulders and coarse material, thereby upgrading the material sent to second chromite removal plant; subsequently the pulp is thickened prior to transport via pipeline to the Basamuk hydrometallurgical plant.

Mineralogical studies were undertaken and, while no detailed reports are available, ENFI has summarised the conclusions:

- Ni in limonite and saprolite occurs mainly in the goethite, with 90% of the Ni in limonite goethite and 55% in the saprolite goethite
- associated Co is contained in the asbolan and manganese minerals
- associated chromium is recoverable as coarse-grained chromite
- basic gangue minerals such as magnesite are closely related to the chromite and forsterite and reducing Cr from 2.2% in ROM material to 0.5% in pressure leach feed significantly reduces the acid consumption.

The Canadian based laboratory of SGS Lakefield, now known as SGS Canada Inc. ("SGS Lakefield") conducted screen analyses of the limonite and saprolite samples as summarised in Table 13.1. The table reports sizes from 3.35mm and below on the basis that the chromite removal plant treats this size distribution.

Table 13.1

Screen Analyses of Ramu Samples

Size micron (µm)	Limonite SAG5-7		Saprolite SAG10/1	
	Oversize %	Cumulative Oversize %	Oversize %	Cumulative Oversize %
3,350	0.16	0.16	6.47	6.47
850	0.37	0.53	2.42	8.89
150	5.60	6.13	13.08	21.97
53	4.15	10.28	9.49	31.46
38	1.79	12.07	3.07	34.53
-38	87.93	100.0	65.47	100.0

Another laboratory, Amdel Laboratories ("Amdel"), in Adelaide, South Australia undertook some size-by-size analyses of three saprolite samples in 1997. Table 13.2 summarises these results. It is noted that these samples differ somewhat, both in the grade of the various elements as well as the distribution. However, there are some general consistencies:

- nickel distribution in the coarse +3.35mm material ranges from 4.9% to 16.1%
- cobalt distribution in the coarse +3.35mm material ranges from 3.1% to 14.5%
- chromium distribution in the coarse +3.35mm material ranges from 4.1% to 19.0%
- sample "A" is the sample that reports these higher distributions
- the majority of the MgO reports to the coarse material
- most of the iron and alumina reports to the finer sizes
- much of the silica reports to the coarse +3.35mm material.

It is noted that no description regarding the source of these samples is given. The results of the three samples tested by Amdel vary significantly and, as such, cannot be considered "representative" of the deposit being mined.

However, the data, while variable, does support the use of a washing and scrubbing pre-concentration plant. The size separations adopted in the plant design are supported by these size-by-size distributions.

Table 13.2

Size-by-Size Analyses of Ramu Saprolite Samples (1997)

Sample		Grade							Distribution						
Size µm	Mass %	Ni %	Co %	Cr %	Fe %	MgO %	SiO_2 %	Al_2O_3 %	Ni %	Co %	Cr %	Fe %	MgO %	SiO_2 %	Al_2O_3 %
Rocky Saprolite Sample "A"															
+3,350	50.2	0.36	0.015	0.4	6.9	44.8	40.4	0.5	16.1	14.5	19.0	15.7	91.6	70.7	10.6
-3,350 + 500	4.8	0.97	0.052	5.5	22.0	10.1	23.4	7.2	4.2	4.8	22.7	4.8	2.0	4.0	15.5
-500 + 300	3.2	1.05	0.095	6.9	20.8	11.3	21.3	5.7	3.0	5.8	19.2	3.0	1.5	2.4	8.0
-300 + 150	4.2	1.69	0.205	4.9	24.6	9.3	22.7	4.9	6.5	16.7	18.1	4.7	1.6	3.3	9.1
-150+53	6.4	2.22	0.235	2.1	33.8	4.7	20.3	3.4	13.0	29.2	11.9	9.8	1.2	4.6	9.8
-53	31.2	2.02	0.048	0.3	44.2	1.7	13.9	3.4	57.2	28.9	9.1	62.1	2.2	15.1	46.9
Feed	**100**	**1.10**	**0.052**	**1.1**	**22.2**	**24.6**	**28.7**	**2.3**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Rocky Saprolite Sample "C"															
+3,350	19.6	0.38	0.01	0.4	6.6	43.6	41.3	0.7	5.6	3.8	4.9	4.5	66.5	30.5	3.8
-3,350 + 500	4.7	0.74	0.74	4.9	13.7	17.1	34.7	6.2	2.6	3.3	15.8	2.3	6.3	6.3	8.2
-500 + 300	3.3	0.87	0.115	8.2	16.6	14.2	26.7	6.3	2.2	5.1	18.4	1.9	3.6	3.3	5.8
-300 + 150	5.5	1.26	0.210	6.5	19.3	11.1	28.8	5.3	5.3	15.7	24.3	3.7	4.7	6.0	8.1
-150+53	11.4	1.47	0.195	2.7	24.7	5.9	33.8	3.7	12.8	30.4	20.7	9.9	5.3	14.6	11.7
-53	55.5	1.69	0.055	0.4	39.6	3.2	18.7	4.0	71.5	41.8	16.0	77.6	13.7	39.3	62.4
Feed	**100**	**1.31**	**0.073**	**1.5**	**28.3**	**12.9**	**26.4**	**3.6**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Rocky Saprolite Sample "D"															
+3,350	13.0	0.35	0.03	0.6	9.8	42.0	37.6	1.5	4.9	3.1	4.1	3.8	83.0	34.7	2.1
-3,350 + 500	5.1	0.54	0.23	7.1	20.4	5.3	9.6	10.8	2.9	9.1	20.8	3.0	4.0	3.5	6.0
-500 + 300	3.3	0.66	0.305	7.8	20.5	4.9	9.7	10.3	2.4	7.9	15.1	2.0	2.4	2.3	3.8
-300 + 150	5.2	1.02	0.485	7.4	24.0	3.7	9.6	10.7	5.8	19.6	22.1	3.7	2.9	3.5	6.1
-150+53	7.9	1.17	0.480	4.5	33.4	2.2	10.4	9.4	10.1	29.6	20.5	7.8	2.6	5.8	8.2
-53	65.6	1.03	0.060	0.5	41.1	0.5	10.8	10.2	73.9	30.7	17.3	79.7	5.1	50.2	73.9
Feed	**100**	**0.91**	**0.128**	**1.7**	**33.8**	**6.6**	**14.1**	**9.1**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

In addition, Amdel conducted a continuous de-agglomeration test in 1997 and evaluated scrubbing four samples from the Ramu deposit. The detailed results are not available but the ENFI summary states:

- it is necessary to include both scrubbing and agitation in the first stage of de-agglomeration
- using a second stage of scrubbing included the use of high-density rubber balls to intensify the scrubbing action
- waste rock rejection occurred with the +3mm size fraction
- about 75% to 90% of the Ni is distributed to the -300µmsize fraction
- in order to make the slurry suitable for transport to the Basamuk plant, the coarser concentrates should be ground; testwork indicated that grinding the final product would require a Ball Mill Work Index ("BWi") of 13.3 kilowatt hours per tonne ("kWh/t").

Chromium Separation

As can be seen in Table 13.2, the Cr content is significant. The initial objective regarding the removal of the chromite is related to the high wear incidence in the pipeline that transports the slurry from the KBK plant to the Basamuk plant. However, it is noted in the Production Capacity Improvement Proposal published by ENFI in December 2016 that the chromium six ion ("Cr^{6+}") affects product quality thus requiring treatment with sulphur dioxide gas to reduce the Cr^{6+} to Cr^{4+}.

Nord Resources Corporation, the project owner prior to Highlands, undertook testwork to treat the fines and remove as much chromite as possible into a saleable chromite concentrate. Detailed results are not available but a summary of the results of the testwork indicated that by incorporating de-sliming, gravity separation scrubbing and magnetic separation, a chromite concentrate with greater than 30% Cr and low iron content could be produced, with a Cr recovery to that concentrate of about 74%. It was also determined that about 80% of the chromite ultimately reports to the -53µm size fraction.

In 1995 a Canadian company, Canadian Mineral Technologies ("CMT"), completed some continuous Cr separation tests that confirmed that the use of classification and gravity separation unit operations would achieve removal of the Cr, working with a size distribution of -45µm.

In 1997 to 1998 SGS Lakefield conducted some systematic pilot plant beneficiation tests. These tests were conducted on both limonite and saprolite samples for the purpose of optimising the ore preparation operations as well as providing samples for thickening tests, grindability tests and chromite quality evaluation. No information is given regarding sample source and representivity, other than the comment that "test samples taken from the test pits have a certain representativeness". Other findings were:

- classification was improved by using two-stage in series hydrocyclones
- combined spiral separation followed by shaking table concentration for cleaning produced a quality Cr concentrate at about 35% Cr with recoveries of 57% to 87%
- the BWi was measured at 12.7kWh/t
- thickener testwork indicated that underflow density could be raised to about 33% solids with water ("w/w"), and the flocculant addition rate could be reduced to about 75g/t using a high-rate thickener unit.

It should be noted that some thickener testwork conducted in 2004 by Eimco Limited technicians using the ENFI laboratory facilities further reduced flocculant addition rates.

Confirmation of Wash Plant and Beneficiation Plant Performance

It has been noted in the previous paragraphs that detailed testwork results have not been available for review. Nevertheless, summaries of the results were provided and the design of the wash or de-agglomeration plant and the beneficiation plant was based on parameters supported by the testwork results. Table 13.3 illustrates the performance of the KBK operations to the end of calendar year 2018 compared with design. By taking into consideration a 3-4 year "ramp-up" period, de-agglomeration and beneficiation plants are now performing close to the original design and close to the annual forecast from 2019 onwards; feed to the hydrometallurgical refinery at Basamuk has exceeded the design and forecast.

Table 13.3

Kurumbukari Operation - Comparison of Design and Budget Parameters with Actual Production – 2012 to 2018

Parameter	Units	Design	2012	2013	2014	2015	2016	2017	2018	Budget
Feed to Basamuk Plant	Mt/a	**3.210**	-	1.252	2.373	2.784	2.270	3.601	3.719	**3.400**
Ni	%	**1.09**	1.01	1.02	1.05	1.12	1.13	1.09	1.11	**1.08**
Co	%	**0.11**	0.09	0.10	010	0.11	0.11	0.11	0.10	**0.12**
Chromite Concentrate	kt	**200.0**	18.0	32.7	32.0	51.4	52.8	90.1	92.1	**95.4**

It should be noted that the design of the de-agglomeration plant has incorporated initial boulder washer or scrubbing followed by intermediate size (-50mm) log washing scrubbing. Screen sizes have remained the same and all +3mm material is ultimately rejected as waste product.

The chromite recovery or beneficiation plant has been built generally according to the 2007 design although magnetic separation techniques have been applied to improve chromite concentrate grades.

Slurry Pipeline Kurumbukari to Basamuk

The decision was made to locate the concentrate refinery on the coast about 75km southwest from Madang. After some deliberation it was decided to transport the concentrate from the beneficiation plant using a pipeline. The main advantages that influenced the decision to utilise a slurry pipeline were essentially quicker construction time, lower capital costs and higher capacity compared with road transport. Lower operating costs related to lower energy costs, less labour required, easier maintenance and the use of automatic control were factors as well, together with minimising the impact of weather.

To assist design of the slurry pipeline a Canadian company, Saskatchewan Research Council ("SRC"), was commissioned to provide relevant test data. SRC undertook a number of ring pipeline tests at 26.2mm diameter and 53.1mm diameter. A slurry mix of limonite and saprolite (ratio 2:1) was tested at varying slurry pulp densities. An Australian company CMPS&F (later merged with GHD Engineers) prepared a summary test report using the data from SRC.

The data from the CMPS&F/SRC testwork report was used by Fluor Daniel to produce a report "Feasibility Study Report of Ramu Nickel-Laterite Slurry Pipeline". The design parameters included a nominal flow rate at 430t/h (dry) at a bulk density of 3.6-3.9t/m^3, a pipeline length of 135km, starting at an elevation of 706m dropping to 25m at Basamuk, with the last 44km relatively level and near sea level. The pipeline diameter was set at 500mm and it was planned to have a pump station at KBK and a second station about 85km from KBK.

Kvaerner used the CMPS&F/SRC report and commissioned a sub-contractor Paterson & Cooke Consulting Engineers Pty Ltd to evaluate the report and look at pipeline options. More recent (around 2007) work was conducted by Tsinghua University examining slurry rheology and testing continuously through ring pipelines of 100mm, 150mm and 200mm diameter pipes to provide further information for the engineering design.

The 2007 ENFI Feasibility Study accepted the Kvaerner design of pumping at 32% solids w/w through an API grade X70 pipeline with external diameter of 508mm using two stage pumping. Positive displacement diaphragm pumps were recommended for this service.

It should be noted that the pipeline that was ultimately installed is 610mm diameter and the slurry is pumped using a single station of four centrifugal pumps in series. The slurry underflow from the two product thickeners is between 15% and 19% solids w/w. Performance of the pipeline to-date has proven the ability to transport the concentrate in excess of design to Basamuk from KBK.

13.2 Basamuk Hydrometallurgical Plant

Summary

Over the history of recovering nickel and cobalt from lateritic ore, there have been a number of processes developed, including smelting and the use of hydrometallurgical processes. The various feasibility studies conducted by previous owners in 1996 and 1998 and the preliminary engineering conducted in 2001 all opted for the use of high pressure acid leaching (“HPAL”) of the ore followed by purification and ultimately production of the two metals using electrowinning (“EW”) to produce finished metal for market. Subsequent to this historical work, the 2007 ENFI Feasibility Study opted to use HPAL and ultimately produce a mixed nickel/cobalt sulphide.

The plant that is currently operating has modified the final product to a mixed nickel/cobalt hydroxide (MHP).

HPAL Testwork

The initial testwork was conducted in Australia by Hydrometallurgy Research Laboratories (“HRL”), located in Brisbane. The testwork was predominantly bench-scale as well as some “discontinuous” pilot plant studies.

During 1997 and 1998, continuous pilot plant studies were conducted by Lakefield Research Ltd in Canada and Hazen Research Inc. (“Hazen”) in Golden, Colorado USA. Each laboratory was provided about 6.5t of a mixed limonite/saprolite sample at a 2:1 ratio of limonite:saprolite. Both laboratories conducted beneficiation, HPAL CCD thickening and Fe/Al removal tests while Lakefield also conducted Ni/Co precipitation tests as well as solvent extraction (“SX”) and EW tests. Lakefield also looked at cobalt carbonate precipitation options.

For the HPAL tests, Lakefield used a 3.2L autoclave with four compartments while Hazen used a 3.7L vessel with six compartments. They both operated at 250°C with pressures at 3,100 to 3,300kilopascals (“kPa”) and retention times were 50-60 minutes. Hazen operated continuously for about 35days at a utilisation of 95%.

The samples were taken from exploration drill holes in different areas of the deposit; no further details are available. Acid consumption ranged from 200kg/t to 310kg/t of material (dry). The mixed sample had grades of 0.96% Ni and 0.09% Co while the saprolite graded 1.45% Ni and 0.11% Co with the limonite at 0.93% Ni and 0.09% Co. HPAL extractions averaged 95.4% for Ni and 92.0% for Co.

After the removal of the Fe and Al, the resultant solution was then used to test precipitation of the nickel and cobalt using three different precipitants, magnesia, sodium hydroxide and lime. All three reagents proved successful but the hydroxide product was quite fine, suggesting settling and filtration would be difficult. The magnesia testwork indicated precipitation efficiencies of 95% for Ni and 97% for Co.

In 1999/2000 a series of batch tests were undertaken to:

- preheat slurry to examine autoclave volume reduction
- thicken the slurry prior to HPAL
- ammonia leach the Ni/Co hydroxide
- recovery of Co from Ni raffinate.

In addition; other tests were conducted to:

- test separate drill holes for HPAL response (variability tests)
- test ammonia, sulphur dioxide (“SO2”) ammonia distillation and pressure leaching of cobalt sulphide
- test the use of Cyanex 272 for Ni and Co SX
- test heat capacity of a number of process solution flows
- corrosion testing the materials of construction
- demonstrate thickener settling.

ENFI has stated that “generally speaking, the experimental investigations completed previously are aimed mainly at process route for producing electrowon (EW) nickel/cobalt”. ENFI also concludes “except local details, the test results can meet requirements for engineering design”.

ENFI contended in the 2007 Feasibility Study that the production of EW products was not practicable given the project location and thus opted for an intermediate product such as a sulphide or a hydroxide.

Because of costs and process complexity, ENFI decided to proceed in the Feasibility Study with the production of an intermediate mixed Ni/Co product. ENFI made the observation that no testwork was conducted on Ni/Co sulphide production. The production of a mixed hydroxide was rejected due to a perceived low market demand at the time as well as the previously mentioned problem of fine precipitate particle size distribution. The 2007 Feasibility Study by ENFI mentions that the design of the mixed Ni/Co sulphide product precipitation process was based on the experience of other operators such as Murrin Murrin and Moa Bay using hydrogen sulphide.

The final determination for the plant design was to produce a mixed hydroxide precipitation product. The problems with the fine particle size distribution have been resolved by the use of recycled "seeding" and the market concern has been eliminated as there is a good demand for hydroxide products to be used in the electric battery production industry.

Confirmation of Design with Plant Performance To-Date

Table 13.4 summarises the HPAL refinery plant performance compared to Feasibility Study design and the forward budget prepared by the company.

Table 13.4

Basamuk Plant Operation - Comparison of Design and Budget Parameters with Actual Production – 2012 to 2018

Parameter	Units	Design	2012	2013	2014	2015	2016	2017	2018	Budget
Feed to Basamuk Plant	Mtpa	**3.210**	-	1.252	2.373	2.784	2.270	3.601	3.719	**3.400**
Ni	%	**1.09**	1.01	1.02	1.05	1.12	1.13	1.09	1.11	**1.08**
Co	%	**0.11**	0.09	0.10	010	0.11	0.11	0.11	0.10	**0.12**
Overall Recovery										
Ni	%	**92.0**	-	93.8	87.7	83.3	87.1	88.0	87.0	**89.0**
Co	%	**89.0**	-	92.3	90.2	83.3	86.2	86.6	86.0	**82.0**
MHP Shipped (wet)	kt	**73.4***	43.8	103.6	180.2	179.0	153.9	237.4	241.1	**220.5**
MHP Shipped (dry)	kt	**58.8***	13.8	29.7	57.4	65.3	57.3	80.9	92.3	**83.8**
Moisture	%	**20.0***	68.5	71.3	68.1	63.5	62.4	63.2	61.7	**62.0**
Ni Grade	%	**55.0***	38.3	40.4	36.6	39.2	38.5	38.5	38.3	**39.0**
Co Grade	%	**5.5***	3.4	3.8	3.7	3.8	3.8	3.7	3.6	**3.8**
Ni Contained	t	**32,334**	5,283	12,023	20,986	25,582	22,268	34,666	35,355	**32,681**
Co Contained	t	**3,257**	469	1,126	2,133	2,505	2,190	3,308	3,275	**3,346**

**2007 Feasibility Study based on mixed sulphide production; the authors would note that mixed sulphide and mixed hydroxide are materially different intermediates and therefore moisture, Ni grade and Co grade cannot be directly compared*

As can be seen from Table 13.4, the Basamuk plant took approximately four years to ramp up to design but from 2017 has exceeded budget. It should be noted that there was a significant incident on-site in 2016 that necessitated a full shutdown for three months; that obviously affected production dramatically during that period.

The change to MHP rather than a mixed sulphide product has not affected overall nickel and cobalt output. The HPAL and hydrometallurgical recovery plant has, since 2017, performed better than the 2007 Feasibility Study forecasts.

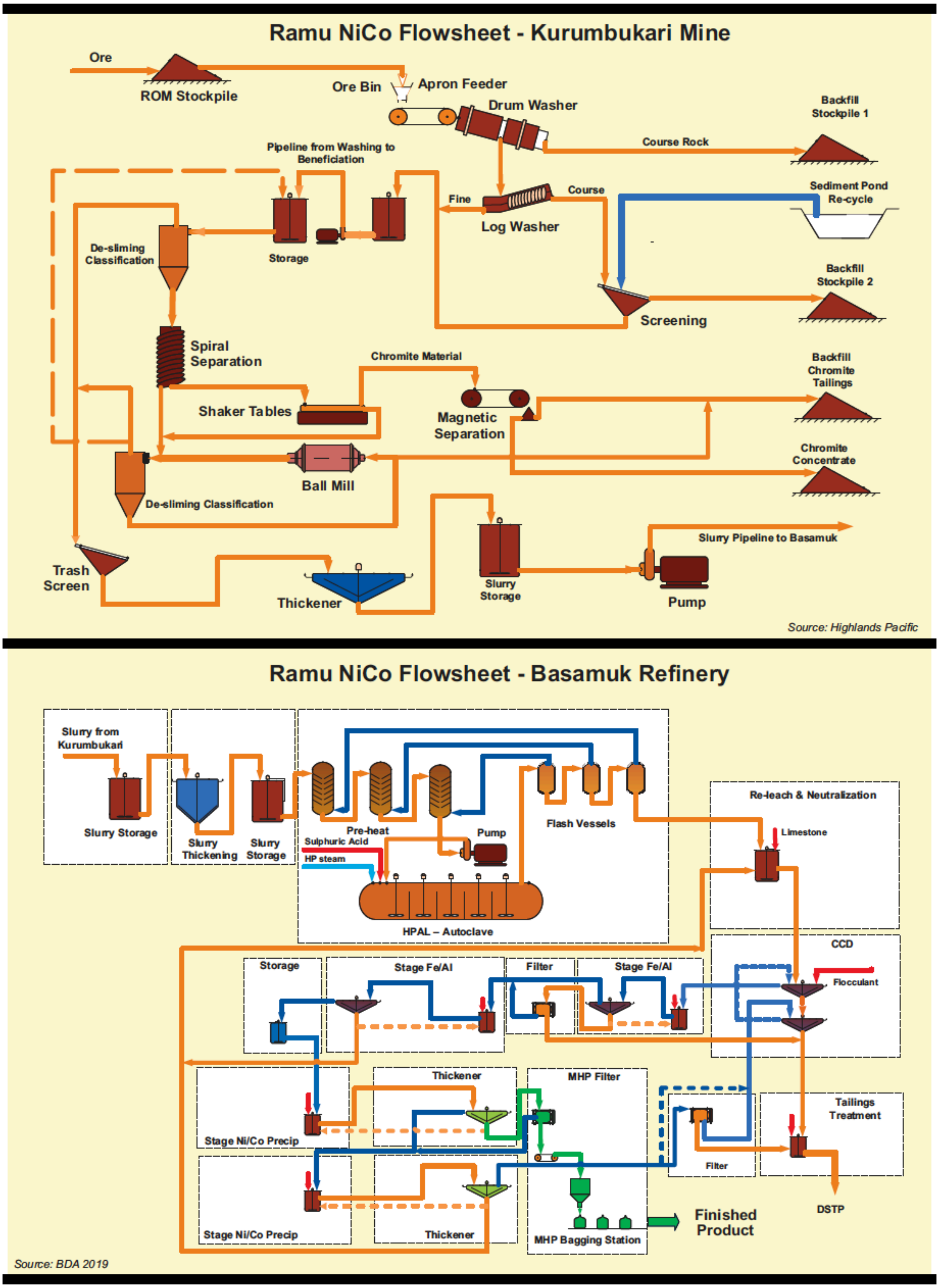
The operation of the two plants, the beneficiation plant at Kurumbukari and the hydrometallurgical plant at Basamuk is discussed below.

Mine Site Wash Plant and Beneficiation Plant

The feed to the wash plant comes from both conventional excavator and truck mining and from hydraulic mining. The KBK mine site plant flowsheet is shown in Figure 10 and comprises a de-agglomeration or wash plant, with four separate lines, each comprising a feed bin with grizzly, apron feeder and rotating drum scrubber followed by a log washer and the requisite screening facilities.

The scrubber washes and screens the ore, with the coarse material rejected as waste at the end of the scrubber, while intermediate sized pebbles are fed to two logwashers operating in parallel. The logwasher overflow or "fines" are sent to the beneficiation plant while the coarse material is then further screened. The hydraulic mining material is pumped directly to the screens.

The fines from the wash plant including the fines from the hydraulic mining, are pumped to the Beneficiation Plant. The main purpose of the Beneficiation Plant is to remove the high amount of chromite mineral from the slurry. Chromite is a very abrasive mineral and is quite harmful to steel pipelines. The Beneficiation Plant (Figure 10) comprises a receiving storage tank from which the slurry is pumped to the plant. The first step is to separate the "slimes" material using two banks or clusters of hydrocyclones. This material is then sent to two banks of spiral concentrators that separate the coarse chromite from the Ni/Co bearing fines.



Conic Metals Corp. *Ramu Nickel Project*

Figure 10 **PROCESS FLOWSHEETS**

BDA - 206/01 (April 2019) Behre Dolbear Australia Pty Ltd

The coarse chromite-rich concentrates are sent to two banks of 26 shaking tables each to remove chromite. The table concentrates containing more than 80% of the chromite in the feed slurry are sent to a magnetic separator which separates a high grade chromite product or concentrate and a lower grade "middlings" product. The high grade chromite concentrate is filtered and stockpiled for sale.

The non-chromite streams from the spirals and tables are sent to a grinding mill to be reduced in size distribution. The ground slurry is thickened to recover water for re-use in the wash plant and hydraulic mining, and the slurry is pumped via a pipeline to the hydrometallurgical plant at Basamuk Bay.

The KBK plant commenced operation in 2012 and experienced a number of issues during ramp up and early operation, however these have been systematically resolved. The KBK plant is designed to treat around 4.6Mtpa of dry ore (nominally around 8Mtpa of wet ore) at a 41% moisture level from the mine to provide 3.2Mpta (dry) feed to the Basamuk plant.

The feed to the wash plant has averaged about 6Mtpa for the past two years with feed to the Basamuk plant averaging 3.66Mtpa. Metal production for 2017 and 2018 has been at or slightly in excess of design (107% and 108% respectively); monthly production in 2016 was close to design, but three months of production were lost due to a major plant incident. BDA considers that the ramp-up period was completed in 2015, and considers that the plant should be capable of design 3.6Mtpa production in the future years of operation.

Basamuk Refinery

Following washing, scrubbing, screening and beneficiation, the ore is transported from the mine site via a 135km slurry pipeline to the Basamuk refinery, located approximately 75km east of Madang (Figure 1). The Basamuk plant is designed to produce annually approximately 78,000t (dry) of mixed nickel-cobalt hydroxide product (MHP) containing around 32,600t Ni and 3,300t Co.

The refinery flow-sheet (Figure 10) comprises several discrete processes including high pressure acid leaching (HPAL), slurry pre-neutralisation (PN), counter current decantation (CCD) thickening, scrubbing, iron and aluminium removal, Ni-Co precipitation and neutralisation of the residue prior to disposal.

Ore from KBK arrives at the Basamuk site at high pressure which has to be dissipated using a series of orifice plates. Once the slurry energy has been reduced, the slurry is stored in tanks prior to being thickened and then pumped to the HPAL feed storage tanks. The plant incorporates three HPAL trains (autoclaves). Each HPAL line is made up of three pre-heat vessels, the autoclave and three heat recovery/pressure let-down or "flash" vessels. The discharge from the third pre-heat vessel is pumped using two positive displacement (PD) pumps into the autoclave. Each PD pump is capable of pumping full capacity but normally operates at half rate. Each pump has its own discharge line into the autoclave. Steam and acid are added to the autoclave to raise the temperature to 250°C at a pressure of about 43 bars (4,300kPa or about 623 pounds per square inch). Each autoclave is lined with high quality titanium alloy to counter acidic degradation and to protect against abrasion and is equipped with multiple compartments and agitators for a residence time of about 1 hour.

The discharge from the autoclave heat recovery vessels is sent to a pre-neutralisation circuit where limestone is added to reduce the free acid (FA) and also precipitate some iron and aluminium. After the PN circuit the slurry is treated in a series of seven 36m diameter counter-current decantation (CCD) thickeners with slurry feeding forward and thickener overflow or liquor feeding counter-current.

The slurry from CCD 7 is sent to tailings neutralisation while the liquor from CCD1 is sent for further Fe and Al removal by precipitation using limestone slurry. Once the metals are precipitated the slurry is thickened with the underflow solids sent for filtering. The filtered solids are sent to the tailings disposal circuit while the filtrate joins the first stage thickener overflow for a second neutralisation stage. The second stage discharge is thickened, with solids returned to PN for re-leaching of any Ni and Co with the thickener overflow liquor sent to the first stage of Ni/Co precipitation.

The first Ni/Co precipitation step uses sodium hydroxide to precipitate the Ni and Co as hydroxides with the resultant slurry thickened. The underflow solids containing the mixed hydroxide product (MHP) are filtered and the solids packaged in 1t bags. The MHP grades about 38% Ni and 3.5% Co with moisture at greater than 60%. A second stage Ni/Co precipitation step uses burned lime with the slurry thickened. Thickener underflow solids are returned to PN for re-leach.

Tailings neutralisation is accomplished in a series of agitated tanks with lime slurry added to the waste pulp to raise the pH to over 7. The neutralised tailings slurry is discharged using deep sea tailings placement (DSTP). The project has an approved deep sea tailings discharge system which has a twenty year life, currently considered sufficient for the LOM.

The plant has a two-train acid-making facility as well as a limestone processing plant for making the key reagents used in producing the mixed hydroxide product.

The Basamuk Ni/Co extraction and recovery plant has been operating well over the past three years following ramp up. HPAL extractions average about 94% for Ni and 95% for Co with overall plant recoveries of 87% Ni (target 89%) and 86% Co (target 82%).

Each plant has its own analytical laboratory used primarily for process plant control although mining samples are also analysed at the KBK laboratory. Most of the analyses are undertaken using AAS and XRF techniques; some wet laboratory analysis is also used.

The KBK operation uses no process reagents while the Basumuk operation uses a number of reagents all requiring handling, storage and distribution facilities.

14 MINERAL RESOURCE ESTIMATES

14.1 Resource Estimates for 1998 Feasibility Study

Resource estimates for the 1998 Feasibility Study were developed by a Highlands geologist under the guidance of Dr Francois-Bongarcon of MRDI. Resource estimation was conducted by using a gridded seam model with a horizontal block size of 25 x 25m and Micro Lynx software.

Resource Blocks

For the purpose of resource estimation, the Ramu deposit was divided into three resource blocks, primarily based on drilling density: the KBK Block (7.2km^2), the Ramu West Block (3km^2) and the Greater Ramu Block (7.9km^2).

The KBK Block was defined by an area with a nominal drill spacing of 100 x 100m with local drill spacing at 50 x 50m and 25 x 25m (Figure 7). The block boundary was not defined by geology, topography, or any other objective criteria to provide limits to the potentially mineable laterite mineralisation, and the KBK Block area therefore represents only a small portion of the potential nickel-cobalt laterite resource within EL 2579 (formerly EL 193). Mineral Resources in the block were estimated using only the HGP/Highlands Phases 3 and 4 drilling diamond holes up to the end of July 1998. The database for resource estimation of the block consists of 972 diamond drill holes with a total drilled length of 20,096m and 22,145 samples with nickel, cobalt and magnesium assays. Bulk density was determined from 1,550 drill core measurements and 12 sand replacement measurements collected from test pits.

The Ramu West Block was defined by an area west of the KBK Block with a nominal drill spacing of 200 x 200m (Figure 7). This area was not drilled by HGP/Highlands; but was drilled by diamond holes by CEC in the Phase 1 program. A total of 69 holes were used to interpolate the overburden, limonite and saprolite thickness and grades with 56 diamond holes inside the Ramu West boundary. The sample database comprised 1,644 samples of which 1,033 were in the mineralised layers.

The Greater Ramu Block was defined by areas around the KBK Block and Ramu West Block with a nominal drill spacing of 400 x 400m (Figure 7). This block was drilled by previous operators of the property and no detailed analysis was carried out on quality of the database. However, based on broad comparison between the drilling results obtained by HGP/Highlands and the earlier drilling in the KBK Block, MRDI and Highlands were confident this drilling was more than adequate for an "Inferred" resource estimate. The database used for the resource estimate for the block consisted of 45 diamond drill holes and 113 auger holes. A total of 1,600 samples were assayed for nickel, cobalt and magnesium.

Ground Penetrating Radar

Ground Penetrating Radar (GPR) survey results were used to define the top surface of the upper rocky saprolite in resource estimation for the KBK Block. The 25m and 50m spaced drilling carried out in the Phase 3 program in the KBK Block demonstrated that while nickel and cobalt grades could be adequately modelled from a 100 x 100m drilling grid, the thickness of rock-free and rocky laterites varied greatly over distances as short as 25m. Because the geological controls on thickness of the laterite were not well understood, modelling of the individual layers between drill holes could only be done by linear interpolation of the layer thickness or the elevation of the top and bottom of the layer. Either of these interpolation methods seemed to produce a reasonable estimate if the drill grid was around 50 x 50m. Therefore, GPR survey was selected to define the top surface of the upper rocky saprolite and control the total thickness of rock-free laterite above the rocky saprolites.

GPR utilises the transmission of high-frequency electromagnetic radio ("radar") pulses into the ground to map subsurface structure. A pulse of radar energy is created by a dipole transmitter antenna element which is placed on the ground. The electromagnetic pulse produced by the transmitter propagates downward into the ground, where portions of it are reflected back to a receiver element by subsurface horizons. Radar reflections are generated wherever the downwards propagating pulse encounters a sharp change in the electrical impedance of the subsurface.

In the Ramu deposit, the primary geological properties which were found to most significantly affect electrical impedance in the laterite profile were those associated with changes in water saturation, along with variations in media porosity and permeability. Water content has a strong effect on the dielectric constant of soils, affecting the electrical component of impedance. Variations in porosity and grain size are also contributors to this effect. The red and yellow limonite are porous media with low bound water content, and are thus characterised by relatively high radar wave velocities. Saprolite consists of a higher water content, with large amount of bound water in its constituent clay minerals, and thus has a very low velocity. Rocky saprolite generally has a low water content, and is therefore significantly different in electrical properties from saprolite. As a result, the rocky saprolite horizon provided an ideal reflector for radar waves. It was noted that increases in free pore water content within the red and yellow limonite due to frequent torrential rain showers had no noticeable effect on data quality.

Although it was hoped that each of the boundaries between the laterite layers could be detected by GPR, to date only the top of the rocky saprolite ("TRS") had been consistently mapped at Ramu. The TRS is marked by a sharp rise in the unweathered rock content. The laterite layers above the TRS contain only rare isolated cobbles. Once the rocky saprolite is encountered, the rock content rapidly rises to roughly 30% by volume. It is the contrast between the rock-free material and rocky material that the GPR has proved most able to map.

Although in general the correlation between the GPR and drill hole determinations of the depth to TRS is good, problems are known to occur under certain conditions. In almost all cases observed in the Ramu area if there was a significant difference between depth to TRS by GPR and depth to TRS by drill hole, the depth to TRS by GPR was the lesser value. Therefore, using the GPR data to constrain the total thickness of the rock-free portion of the laterite will result in a relatively conservative estimate of the volume of the rock-free laterite.

Three causes were identified for "shallowing" in the GPR: (1) where the TRS is more than 30m deep as the radar signal dies out through absorption by ground material and is converted into heat at this maximum penetration depth; (2) where, due to the difficulty in drilling inhomogeneous ground, the drill hole did not pick up any of the rocks which define the TRS. Given that the footprint of the GPR at depth of 15m is around a metre square this could be expected to be a fairly common case. This was probably the main cause for discrepancies of less than 3m; (3) where there is local presence of silica veining but there were generally only isolated occurrences.

Over most of the area in the KBK Block, the TRS was modelled from a 100m line spacing GPR survey with point spacing of 2m in the survey lines. The GPR survey covered approximately 85% of the KBK Block area.

Domain Model

The gridded seam model used for resource estimation assumes that the deposit consists of relatively flat lying, layer-cake type domains in which, at any point in the model area, all domains are always present and are laterally continuous. For the Ramu deposit, five domains had been defined: overburden (including humic layer and red limonite), limonite, saprolite, upper rocky saprolite and lower rocky saprolite. If any of the five layers was not present in a drill hole, due to erosion or poor development of the profile, the missing domain was inserted into the model as a very thin (1cm) layer in between the existing layers. In the model, the hanging wall and footwall to the mineralisation envelope were defined by the top of the limonite and the base of the lower rocky saprolite, respectively.

For the KBK Block, the topography was controlled by a digital terrain model generated from ground survey of more than 20,000 points. The areal extent of the mineralisation envelope was defined by a boundary where the majority of the holes were 100 x 100m. In order to check short range variability, the grid was locally drilled down to 50 x 50m and 25 x 25m. The TRS surface was controlled by the 100m spaced GPR survey lines as discussed previously.

In the domain modelling, the overburden domain was distinguished from the underlying limonite domain using an assay cutoff of 0.5% Ni. The cutoff grade was determined on the basis of geological continuity, a definite statistical division in the nickel assay population (to be discussed later in this report) and an in-house economic scoping study. The limonite-saprolite boundary was defined using an indicative 1% Mg content, as in most cases the transition from limonite to saprolite is marked by a distinct and rapid elevation in the Mg grade from less than 1% to over 1%.

The rocky saprolite is a composite of varying quantities of weathered ultramafic rock material and softer, interstitial saprolite. In the HGP/Highlands drill holes, rock was defined as material greater than 2mm in diameter. The rock weight percentage is determined from the screening program for the rocky saprolite and the rock volume percentage was calculated from the rock weight percentage and the assumed average rock bulk density.

The bottom of the rocky saprolite was defined by the first 1.5m of solid rock or the bottom of the first three continuous metres that average more than 50% rock by volume. Obviously, this definition could produce rather different interpreted thickness of rocky saprolite over short distances due to high variability in perceived rock content as the drill hole passes through or misses boulders.

The rocky saprolite was separated into an upper rocky saprolite and a lower rocky saprolite. The boundary between the two layers was handpicked in each drill hole based on the nickel and magnesium grade variation and rock weight percent. In most holes, the magnesium and rock content will rise sharply at roughly (within 1m) the same depth that the nickel grade starts to drop. These criteria therefore served to divide an upper rocky saprolite with relatively low magnesium (in -2mm fraction) and rock content and high nickel grades (in -2mm fraction), from a lower rocky saprolite characterised by higher magnesium (in -2mm fraction) and rock content and low nickel grades (in -2mm fraction).

The division subdivided the rocky saprolite into domains of roughly equal volume but were markedly different in their nickel, magnesium and rock content.

For the domain surface modelling, two deterministic surfaces, i.e. the topography derived from surveying and the TRS defined by drill holes and GPR surveys, were used as controls on other four surfaces (bottom of overburden, bottom of limonite, bottom of upper rocky saprolite and bottom of lower rocky saprolite).

The method used to model the surfaces was as follows:

1. The topography survey data was kriged to derive a 12.5 x12.5m grid model of the topography surface.
2. The location corrected GPR digital thickness information was kriged to derive a 12.5 x 12.5m grid model for the bottom of the rock-free laterite.
3. Limonite thickness data from the drill holes was used to produce a linear interpretation model (triangular interpolation) of the limonite thickness over the entire deposit.
4. Overburden and saprolite thicknesses in the drill holes were expressed as a percentage of the limonite thickness and these percentages were then interpolated over the entire deposit using a linear interpolation model.
5. The rock-free laterite thickness defined by GPR was compared on a grid point basis with the limonite thickness model. At points where the limonite was thicker than the rock-free laterite thickness defined by GPR, the limonite thickness was made equal to the rock-free laterite thickness defined by GPR. The corresponding overburden and saprolite thicknesses were reduced to 0.001m. This has the effect of making the limonite fill the rock-free-laterite thickness defined by GPR at these points.
6. Using the overburden and saprolite percentages, thickness models were produced for the overburden and saprolite.
7. All three models were then rescaled so that the total thickness matches the rock-free laterite thickness defined by GPR.
8. The thicknesses for each layer were then subtracted from the topography model to produce an elevation model for the bottom of each layer.

Areas without GPR data were modelled in exactly the same way except that steps 5 and 7 were skipped.

Assay Statistics

Table 14.1 lists the length weighted global assay data statistics for nickel, cobalt, magnesium and aluminium. It can be seen that nickel, cobalt and magnesium assays were available for most of the samples. Figure 11 shows the histograms for global raw assay data for nickel and cobalt.

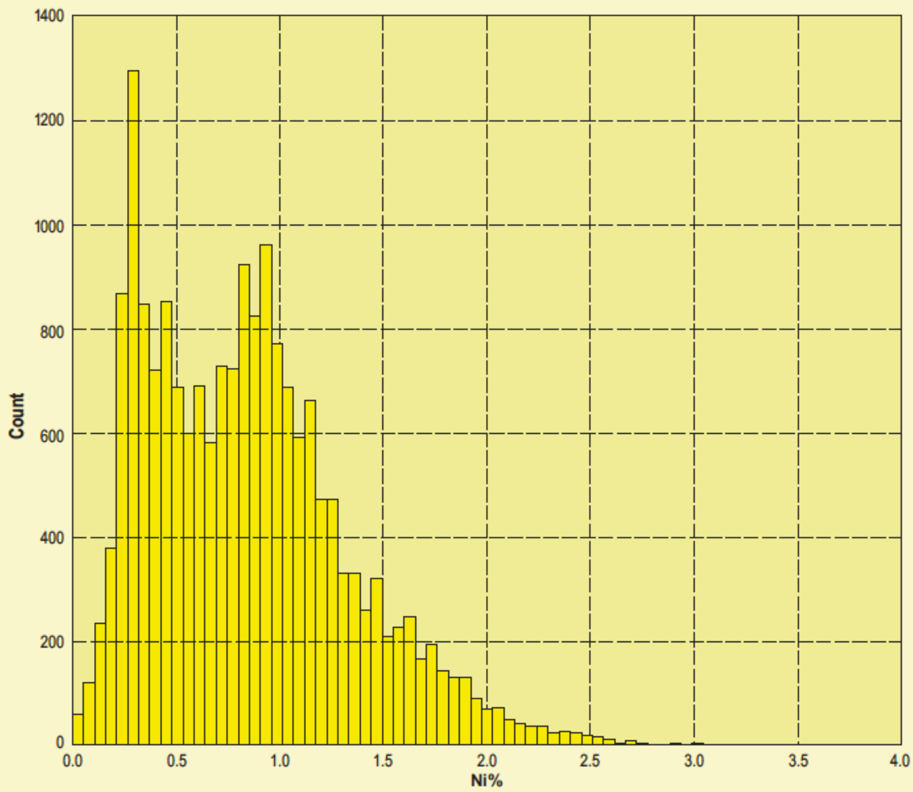
Table 14.1

Global Raw Assay Data Summary Statistics

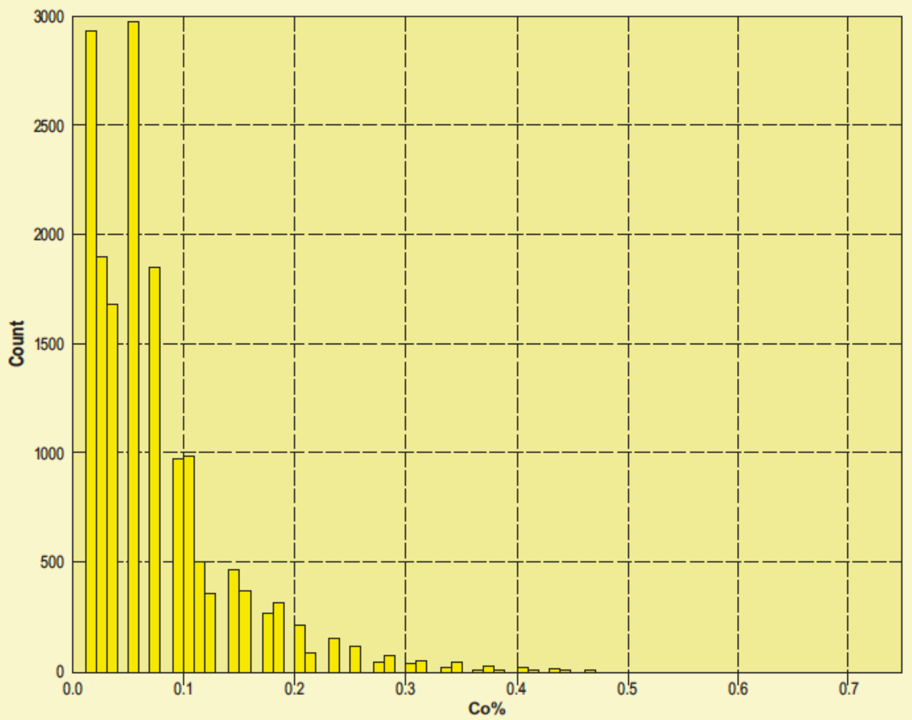
Variable	Ni	Co	Mg	Al
Number of Samples	19,057	19,041	15,220	820
Minimum (%)	0.01	0.01	0.01	0.06
Maximum (%)	7.7	2.1	48.5	14.8
Mean (%)	0.85	0.07	4.31	1.81
Median (%)	0.80	0.05	0.75	1.81
Standard Deviation	0.50	0.07	6.32	1.86
Coefficient of Variation	0.58	1.00	1.41	1.02

The global distribution of the raw nickel assays was distinctly bimodal (Figure 11 (1)) with a separation of population at around 0.45% Ni. The lower population, which had a mode of around 0.3% Ni, representing some 12% of the samples, was generally found to be composed of assays within the overburden. The upper population, which had a mode about 0.9% Ni, represented the mineralised domains of limonite, saprolite and rocky saprolite. This bimodal character of the global nickel data along with analysis of the down hole behaviour of the nickel grades were used to establish the 0.5% Ni cutoff that separates the overburden from the yellow limonite.

In contrast to nickel, cobalt was characterised by a larger spread of values with a distinct positive skew indicative of a Poisson distribution (Figure 11 (2)). This reflect the physical distribution of the cobalt in the deposit as concentrations along minute fractures and veinlets giving a majority of low grades or “misses” and a minority of “hits” or values far above the mean. The coefficient of variation for global cobalt assay population was high compared to nickel, further indicating the heterogeneous nature of the cobalt distribution.



1. Histogram of Global Nickel Assays



2. Histogram of Global Cobalt Assays

Source: Fluor Daniel and Simons 1998

Conic Metals Corp. *Ramu Nickel Project*

Figure 11 **HISTOGRAMS OF THE GLOBAL RAW ASSAYS**

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Table 14.2 lists the summary statistics of the one metre raw samples in the overburden, limonite, saprolite, upper rocky saprolite and lower rocky saprolite domains.

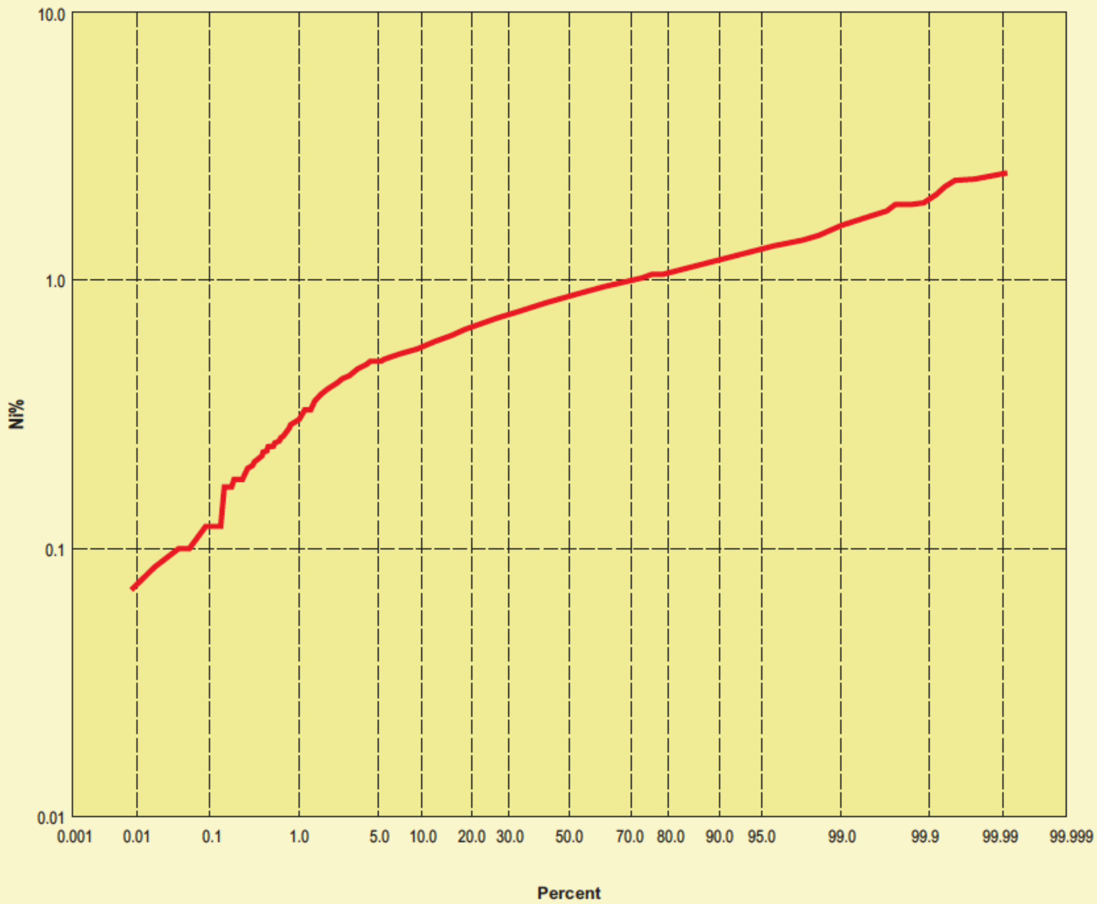
Table 14.2

Raw Assay Data Summary Statistics by Domain

Variable	Overburden				Limonite			
	Ni	Co	Mg	Dry BD	Ni	Co	Mg	Dry BD
Number of Samples	2,342	2,340	2,305	355	6,013	6,011	5,808	732
Minimum (%)	0.01	0.01	0.01	0.65	0.07	0.01	0.01	0.45
Maximum (%)	1.70	0.74	28.9	1.84	2.52	1.35	41.3	1.84
Median (%)	0.34	0.03	0.23	1.22	0.88	0.08	0.28	0.99
Mean (%)	0.34	0.03	0.51	1.22	0.88	0.10	0.41	1.00
Standard Deviation	0.17	0.03	1.40	0.19	0.26	0.08	0.86	0.22
Coefficient of Variation	0.50	1.00	2.70	0.15	0.29	0.80	2.10	0.22
Variable	**Saprolite**				**Upper Rocky Saprolite**			
	Ni	**Co**	**Mg**	**Dry BD**	**Ni**	**Co**	**Mg**	**Rock Vol%**
Number of Samples	1,795	1,794	1,702	318	1,734	1,732	1,649	1,655
Minimum (%)	0.12	0.01	0.01	0.40	0.01	0.01	0.01	0
Maximum (%)	3.80	2.10	27.9	1.58	5.10	0.62	29.7	100
Median (%)	1.01	0.10	1.58	0.75	1.34	0.07	4.39	53
Mean (%)	1.05	0.13	3.72	0.81	1.34	0.10	6.12	55
Standard Deviation	0.36	0.09	5.89	0.23	0.58	0.07	6.62	31
Coefficient of Variation	0.34	0.69	1.58	0.28	0.43	0.70	1.08	0.56
Variable	**Lower Rocky Saprolite**							
	Ni	**Co**	**Mg**	**Rock Vol%**				
Number of Samples	1,349	1,349	1,279	1,341				
Minimum (%)	0.07	0.01	0.05	1				
Maximum (%)	5.17	0.42	30.1	100				
Median (%)	1.28	0.04	11.4	78				
Mean (%)	1.27	0.05	11.6	81				
Standard Deviation	0.58	0.03	5.00	81				
Coefficient of Variation	0.46	0.60	0.43	0.20				

Some 6,013 assay samples were collected from the limonite domain, 65% of which were clustered within plus or minus one standard deviation from the mean. A probability plot of the same data was linear above about 0.5% Ni (Figure 12). This is suggestive of a single continuous real population from 0.5% to around the 2% nickel level. Less than 0.5% of the assay values exceeded 2% Ni. The population below 0.5% Ni accounted for about 5% of the samples. This lower grade population probably represented a transition zone between the overburden and the limonite.

For the purpose of modelling, data were composited over domain intervals such that the grade of the domain intercepted in a drill hole was calculated from a length-weighted average of the individual sample intervals. Summary statistics for the domain composites are shown in Table 14.3.



Probability Plot of Nickel Assays from One Metre Limonite Samples

Source: Fluor Daniel and Simons 1998

Conic Metals Corp.

Ramu Nickel Project

Figure 12

PROBABILITY PLOT OF NICKEL ASSAYS FROM ONE METRE LIMONITE SAMPLES

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Table 14.3

Domain Composite Data Summary Statistics

	Overburden				Limonite			
Variable	**Ni**	**Co**	**Mg**		**Ni**	**Co**	**Mg**	
Number of Samples	493	493	482		863	863	819	
Minimum (%)	0.04	0.004	0.04		0.44	0.01	0.02	
Maximum (%)	1.11	0.59	19.3		1.46	0.33	7.90	
Mean (%)	0.36	0.04	0.67		0.88	0.10	0.42	
Standard Deviation	0.15	0.03	1.71		0.17	0.04	0.38	
Coefficient of Variation	0.41	0.75	2.50		0.19	0.40	0.90	
	Saprolite				**Upper Rocky Saprolite**			
Variable	**Ni**	**Co**	**Mg**	**Dry BD**	**Ni**	**Co**	**Mg**	**Rock Vol%**
Number of Samples	629	629	599		487	486	459	477
Minimum (%)	0.35	0.01	0.06		0.11	0.02	0.13	0.50
Maximum (%)	2.11	0.91	43.3		3.30	0.40	40.6	100
Mean (%)	1.09	0.14	4.03		1.36	0.10	5.64	53.5
Standard Deviation	0.32	0.08	5.03		0.43	0.06	4.80	22.5
Coefficient of Variation	0.29	0.57	1.20		0.32	0.60	0.85	0.42
	Lower Rocky Saprolite							
Variable	**Ni**	**Co**	**Mg**	**Rock Vol%**				
Number of Samples	394	394	366	394				
Minimum (%)	0.20	0.01	3.00	25				
Maximum (%)	3.44	0.25	28.9	100				
Mean (%)	1.32	0.05	11.4	82.6				
Standard Deviation	0.49	0.03	3.56	11.7				
Coefficient of Variation	0.37	0.60	0.31	0.14				

Semi-Variogram Analysis

Within the KBK Block area domain composites were used to determine the variography of the elements in each domain. A series of experimental variograms were calculated in the horizontal plane at 10 degree increments, for composite data within each of the lithological domains. In order to eliminate the effects of drill hole clustering the semi-variograms were calculated using only data from the 25 x 25m spaced drill holes using centred lags at a spacing of 25m.

In most cases, reasonable variograms could be produced.

For nickel, the relative nugget effect was high, reflecting both a lack of close spaced drilling and the very low sill. All the variograms were modelled using a single structure spherical model. In general, the more robust variograms were found to be oriented in the grid north-south, east-west directions with ranges for nickel and cobalt varying from 125m to over 200m. Minor anisotropy was detected in the nickel variograms for overburden and saprolite found in the N-S and E-W directions. The Omni-Directional Variogram parameters were summarised in Table 14.4 and used for block grade estimation.

Table 14.4

Omni-Directional Variogram Parameters

Domain	Parameter	Nickel	Cobalt	Magnesium
Overburden	Nugget	0.026	0.0005	NA
	Sill	0.23	0.0045	NA
	Range	260m	340m	NA
	Relative Nugget	11%	11%	NA
Limonite	Nugget	0.028	0.0010	0.06
	Sill	0.031	0.0014	0.08
	Range	150m	300m	315m
	Relative Nugget	90%	71%	75%
Saprolite	Nugget	0.072	0.0043	12
	Sill	0.087	0.0045	65
	Range	335m	240m	175m
	Relative Nugget	77%	95%	18%
Upper Rocky Saprolite	Nugget	0.11	0.002	12.6
	Sill	0.20	0.003	64
	Range	265m	160m	175m
	Relative Nugget	54%	66%	19%

Gridded Seam Model Definition

Mineral Resources in the KBK, Ramu West and Greater Ramu Blocks were estimated using a gridded seam model. The models are in the rotated Ramu grid coordinates. Table 14.5 shows the details of the gridded seam cell sizes and model limits for the three resource blocks.

Table 14.5

Gridded Seam Model Definition for the Ramu Deposit

Resource Block	Parameter	North	East
KBK	Block Size	25m	25m
	Origin (Centroid)	77,600m	28,900m
	Number of Blocks	153	109
Ramu West	Block Size	25m	25m
	Origin (Centroid)	81,500m	27,500m
	Number of Blocks	102	92
Greater Ramu	Block Size	25m	25m
	Origin (Centroid)	NA	NA
	Number of Blocks	NA	NA

Note: NA = not available

Bulk Density Model

Block bulk density for the overburden, limonite and saprolite layers in the KBK Block was interpolated by the inverse distance squared method using the Phases 3 and 4 bulk density determination data.

Because of the lack of bulk density data in the Ramu West and Greater Ramu Blocks, average bulk densities for each of the laterite layers in the KBK Block (Table 14.6) were assigned to the respective layers in the Ramu West and Greater Ramu Blocks. As the geology for all the three resource blocks was considered similar, this assignment was considered reasonable until bulk density data becomes available in these two later resource blocks.

Table 14.6

Dry Bulk Densities used for the Ramu West and Greater Ramu Blocks

Laterite Layer	Dry Bulk Density (t/m^3)
Overburden	1.20
Limonite	0.95
Saprolite	0.80
Rocky Saprolite (-2mm fraction)	0.80

Grade Estimation

Block grades for nickel, cobalt and magnesium were estimated by the ordinary kriging technique using the seam composites and variogram parameters developed for the KBK Block. Search radius was 160m in limonite and 250m in saprolite. The number of composites used was from 2 to 25.

Block grades in the Ramu West Block were also estimated by the ordinary kriging technique. The omni-directional variogram parameters developed in the KBK Block were also used for the Ramu West Block.

Block grades in the Greater Ramu Block were estimated by the inverse distance squared technique.

Table 14.7 lists the model block grades summary statistics for the KBK Block.

Table 14.7

Ordinary Kriging Model Block Grades Summary Statistics for the KBK Block

Parameter	Overburden			Limonite		
	Ni%	Co	Mg%	Ni%	Co	Mg%
Number of Blocks	11,080	11,080	NA	11,080	11,080	11,080
Minimum	0.11	0.01	NA	0.67	0.06	0.03
Maximum	0.92	0.12	NA	1.07	0.15	7.73
Median	0.38	0.04	NA			
Mean	0.38	0.04	NA	0.88	0.12	0.41
Standard Deviation	0.10	0.03	NA	0.06	0.01	0.21
Coefficient of Variation	0.26	1.25	NA	0.07	0.83	0.51
Parameter	**Saprolite**			**Upper Rocky Saprolite**		
	Ni%	**Co**	**Mg%**	**Ni%**	**Co**	**Mg%**
Number of Blocks	11,080	11,080	11,080	11,080	11,080	11,080
Minimum	0.80	0.11	0.22	0.76	0.06	1.50
Maximum	1.34	0.19	27.8	2.13	0.16	22.2
Median						
Mean	1.10	0.14	3.85	1.37	0.10	5.64
Standard Deviation	0.09	0.01	2.46	0.16	0.01	2.10
Coefficient of Variation	0.08	0.71	0.63	0.11	0.10	0.37
Parameter	**Lower Rocky Saprolite**					
	Ni%	**Co**	**Mg%**			
Number of Blocks	11,080	11,080	11,080			
Minimum	0.25	0.03	6.45			
Maximum	3.21	0.10	20.7			
Median						
Mean	1.25	0.05	11.3			
Standard Deviation	0.25	0.005	1.75			
Coefficient of Variation	0.20	0.10	0.15			

Model Verification

An inverse distance squared grade model was also produced for the KBK Block to verify the ordinary kriging grade model. On a global basis, both techniques gave substantially the same grade estimate. The average grade difference between the kriged model and the inverse distance squared model was about one percent. This level of difference is less than the estimated analytical accuracy.

Seam block maps with estimated nickel and cobalt grades and thickness and the original drill hole seam composites in the limonite, saprolite and rocky saprolites were examined. Cross sections of the various profiles were also examined.

Examination of the model block summary statistics and plan maps of the grades showed that the kriged model was more smoothed than the inverse distance squared model. The kriged nickel grades were generally found to be over smoothed, probably due to the high relative nugget in the variogram model. However, since there is no lateral mining selectivity involved in the mining exploitation, the smoothing has no significant effect on the resource or reserve estimates.

The cobalt grade model was found to be reasonable, locally and globally, in each laterite layer.

The thicknesses were reasonably interpolated, although somewhat variable; to a large extent, this was a reflection of the variability of the GPR digital contact.

Resource Classification

The resource classification plan was developed jointly by MRDI and Highlands:

- *Areas where the drill spacing does not exceed 100 x 100m:* the limonite and saprolite were classified as Measured; the upper rocky saprolite was classified as Indicated; and the lower rocky saprolite was classified as Inferred.
- *Areas where the drill spacing is between 100 x 100m and 200 x 200m:* the limonite and saprolite were classified as Indicated, and the rocky saprolites were classified as Inferred.
- *Areas where the drill spacing was between 200 x 200m and 400 x 400m:* all were classified as Inferred.

Resource Statement

Table 14.8 summarises the 1998 feasibility study resource estimates for the Ramu deposit. BDA's review indicates that these resource estimates were reasonable representations of the in-situ nickel cobalt mineralisation based on drilling completed to that date.

Table 14.8

1998 Feasibility Study Mineral Resource Estimates for the Ramu Deposit

The KBK Block												
Laterite Layer	**Measured**			**Indicated**			**Measured+Indicated**			**Inferred**		
	Mt	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**
Limonite	31.7	0.87	0.10				31.7	0.87	0.10			
saprolite	10.7	1.07	0.14				10.7	1.07	0.14			
Upper Rocky Saprolite (rock free -2mm)				7.2	1.36	0.10	7.2	1.36	0.10	4.2	1.20	0.05
Lower Rocky Saprolite (rocks +2mm)				12.8			12.8			22.5		
Total (rock free)	42.4	0.93	0.11	7.2	1.36	0.10	49.6	0.98	0.11	4.2	1.20	0.05

The Ramu West Block												
Laterite Layer	**Measured**			**Indicated**			**Measured+Indicated**			**Inferred**		
	Mt	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**
Limonite				20.9	0.96	0.11	20.9	0.96	0.11			
saprolite				1.7	1.16	0.16	1.7	1.16	0.16			
Upper Rocky Saprolite (rock free -2mm)										5.9	1.30	0.07
Lower Rocky Saprolite (rocks +2mm)										18		
Total (rock free)				22.6	0.98	0.11	22.6	0.98	0.11	5.9	1.30	0.07

The Greater Ramu Block												
Laterite Layer	**Measured**			**Indicated**			**Measured+Indicated**			**Inferred**		
	Mt	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**
Limonite										37	0.88	0.10
saprolite										12	1.07	0.14
Upper Rocky Saprolite (rock free -2mm)										12	1.30	0.08
Lower Rocky Saprolite (rocks +2mm)										37		
Total (rock free)										61	1.00	0.10

Total Ramu Deposit												
Laterite Layer	**Measured**			**Indicated**			**Measured+Indicated**			**Inferred**		
	Mt	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**	**Mt**	**Ni %**	**Co %**
Limonite	31.7	0.87	0.10	20.9	0.96	0.11	52.6	0.91	0.10	37	0.88	0.10
saprolite	10.7	1.07	0.14	1.7	1.16	0.16	12.4	1.08	0.14	12	1.07	0.14
Upper Rocky Saprolite (rock free -2mm)				7.2	1.36	0.10	7.2	1.36	0.10	22	1.28	0.07
Lower Rocky Saprolite (rocks +2mm)				12.8			12.8			77.5		
Total (rock free)	42.4	0.93	0.11	29.8	1.07	0.11	72.2	0.99	0.11	71	1.04	0.10

Notes: resources at a cut off of 0.5% Ni; resources are inclusive of reserves; the figures may not add exactly due to rounding; resources do not include the +2mm rock fragments in the rocky saprolite layers; Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability; the Mineral Resources are classified according to the 2014 CIM Definition Standards

14.2 Highlands' Resource Estimate Updates from 2001 to 2015

After the 1998 feasibility study, Highlands completed a further 88 diamond drill holes and 29.9km of GPR survey for the Ramu West Block in 1999 in order to replace the less reliable, previous CEC holes in this resource block. Nominal drill spacing was 200 x 200m, which was the same as for the previous drilling.

Highlands completed a resource estimate update for the Ramu West Block in 2001 using only the new Highlands diamond drill holes. The TRS surface was modelled by the new GPR survey data. Grade estimation procedure and parameters, including the variogram parameters, were basically the same as that used for the 1998 feasibility study. The Competent Person for this resource estimate updated was Mr Lawrence Queen, Chief Geologist of Highlands.

Table 14.9

Highlands 2001 Resource Estimate Update for the Ramu West Block

Resource Category	Mt	Ni %	Co %
Measured			
Indicated	17	0.9	0.1
Measured + Indicated	**17**	**0.9**	**0.1**
Inferred	3	1.5	0.2

Notes: resources at a cut off of 0.5% Ni; resources are inclusive of reserves; the figures may not add exactly due to rounding; resources do not include the +2mm rock fragments in the rocky saprolite layers; Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability; the Mineral Resources are classified according to the 2014 CIM Definition Standards

Comparing with the 1998 Feasibility Study resource estimates for the Ramu West Block, the 2001 Highlands resource estimate update was approximately 30% lower in tonnage and slightly lower for the nickel grade in the Indicated resource, reflecting the laterite volume restriction produced by the GPR survey data and the correction of the possible higher nickel grade bias in the original CEC drilling database.

In 2012, Mr Queen of Highlands converted the gridded seam resource model from Micro Lynx software system to Surpac mining software system. The tonnage and grades of the converted model in Surpac were basically the same as those reported using the Micro Lynx software.

The Ramu nickel and cobalt mine started mining operation in 2012. Mr Queen, Chief Geologist of Highlands and also the Competent Person, conducted annual resource estimate updates at the end of 2013, 2014 and 2015. As there was no additional drilling for resource estimate updates, the resource model was not changed for these year-end resource estimate updates. The year-end pit maps were provided by MCC Ramu. The resources contained between the year-end pit map and the year-end pit map of the previous year were considered as the resources consumed by mine production in the year and were removed from the year-end in-situ resource statement. Resources under the washing plant, the chromite removal plant, power towers, and any other permanent buildings were sterilized and removed from the year-end resource statement.

Mr Queen also compiled production reconciliation for these three years based on the production data provided by MCC Ramu, including the dry ore production tonnage with nickel and cobalt grade in the slurry sent to the Basamuk smelter and the tonnage of the chromite concentrate production. As the mine production from 2013 to 2015 all came from the KBK Block, the reconciliation was basically for the resource model of the KBK Block. Table 14.10 shows the production reconciliation between the mining consumed Measured and Indicated resources from the 2012 Surpac gridded seam model and the dry ore production in slurry and chromite concentrates from 2013 to 2015.

It can be seen that, compared with the consumed Measured and Indicated resource estimates, the actual production overall was 2.4% higher in tonnage, 1.8% lower in nickel grade, 16.7% lower in cobalt grade and 70.3% higher in magnesium grade. Considering the mining dilution factor of 3% and mining loss factor of 5% selected for mine planning, the tonnage and nickel grade reconciled well. However, the cobalt grade was over-estimated by approximately 15% and the magnesium grade under estimated by approximately 70%. BDA considers that the significant grade difference for cobalt and magnesium should be further investigated. Considering the production grades were determined by the Ramu mine laboratory the differences for the cobalt and magnesium grades could partially relate to the assay accuracy of the Ramu mine assay laboratory.

Similar production reconciliation was not conducted for the 2016, 2017 and 2018 production. MCC Ramu provided BDA with a global reconciliation from 2012 to October 2018 during BDA's site visit in February 2019. However, the reconciliation was based on a different resource basis, therefore, it will not be discussed further in this report.

Table 14.10

2013-2015 Production Reconciliation for the Ramu Mine

Year	Item	Kilo Tonnes	Ni %	Co %	Mg %
2013	Dry ore in slurry to smelter	1,893	1.00	0.091	2.50
	Chromite concentrate	92			
	Dry ore and chromite	1,984	0.95	0.087	2.38
	Resource consumed	2,109	1.03	0.114	1.32
	Variation from resource	94.1%	92.6%	76.2%	180.6%
2014	Dry ore in slurry to smelter	2,273	1.06	0.104	2.47
	Chromite concentrate	32			
	Dry ore and chromite	2,305	1.05	0.103	2.44
	Resource consumed	2,079	1.01	0.115	1.38
	Variation from resource	110.9%	103.5%	89.3%	176.5%
2015	Dry ore in slurry to smelter	4,166	1.03	0.098	2.25
	Chromite concentrate	124			
	Dry ore and chromite	4,289	1.00	0.096	2.19
	Resource consumed	4,188	1.02	0.115	1.35
	Variation from resource	102.4%	98.1%	83.3%	161.9%
Total	Dry ore in slurry to smelter	8,332	1.03	0.098	2.37
	Chromite concentrate	247			
	Dry ore and chromite	8,579	1.00	0.096	2.30
	Resource consumed	8,377	1.02	0.115	1.35
	Variation from resource	102.4%	98.2%	83.3%	170.3%

14.3 Resource Estimate Updates in 2016 and 2017

The 2016 year-end resource estimate update was performed by ENFI. The resource model used for the resource estimate update was basically the same as the 2012 Highlands Surpac gridded seam model. Production consumed resource in the year was removed from the in-situ resource statement at the end of the previous year. Table 14.11 lists the in-situ Mineral Resource estimates for the Ramu deposit at the end of 2016 as estimated by ENFI.

Table 14.11

Ramu Mineral Resources - 31 December 2016

Deposit	Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %
KBK	Measured	37	0.9	0.1
	Indicated	5	1.3	0.1
	Measured + Indicated	**42**	**0.9**	**0.1**
	Inferred	2	1.2	0.1
Ramu West	Indicated	17	0.9	0.1
	Inferred	3	1.5	0.2
Greater Ramu	Inferred	60	1.0	0.1
Total	Measured	37	0.9	0.1
	Indicated	22	1.0	0.1
	Measured + Indicated	**59**	**0.9**	**0.1**
	Inferred	65	1.0	0.1

Note: resources at a cut off of 0.5% Ni; resources are inclusive of reserves; figures may not add exactly due to rounding; resources do not include the +2mm rock fragments in the rocky saprolite layers; resources exclude depletion from mining from 31 December 2016; Mineral Resources that are not mineral reserves do not have demonstrated economic viability; the Mineral Resources are classified according to the 2014 CIM Definition Standards

The 2017 year-end resource estimate update was performed by Sinomine. In addition to Mineral Resources consumed by mine production, there were also significant additions generated by new resource definition drilling conducted during the year.

Two parties, Sinomine and Hubei Coal, conducted resource definition drilling for MCC Ramu in 2017. Sinomine conducted exploration drilling in the southwest side of the KBK Block covering a 4.1km^2 area at a nominal drill spacing of 100 x 100m. A portion of the drilled area overlaps the Greater Ramu Block area. A total of 363 diamond holes with a total drilled length of 5,125m were completed in this area.

Hubei Coal conducted 50 x 50m infill drilling for two areas totalling 1.6km^2 located in the northwest and southwest sides of the KBK Block. A total of 702 diamond drill holes with a total drilled length of 9,026m were completed in this area.

Sinomine and Hubei Coal conducted resource estimation separately for the area drilled by each party.

Surpac mining software was used for Sinomine's resource estimation for the 4.1km^2 area drilled by Sinomine in 2017. A block model with a parent block size of 25 x 25 x 1m (North x East x Elevation) and sub block size of 12.5 x 12.55 x 0.5m was defined for the drilled area. Topography used was a combination of the 1:1000 topographic survey result for 2.96km^2 conducted in 2017 by Sinomine and the 1:2000 topographic survey for the remaining area conducted by Highlands, around 2007. Dry bulk density was based on the core sample measurements completed by Sinomine in 2017. The average dry bulk density used was 1.13t/m^3 for overburden, 0.97t/m^3 for limonite, 0.84t/m^3 for saprolite, 0.92t/m^3 for upper rocky saprolite (boulder-containing) and 1.61t/m^3 for the lower rocky saprolite (boulder containing). The inverse distance squared method was used for grade estimation. A three-pass procedure was used for grade estimation with search radius changed from 120m, to 240m to 360m. The number of composites used for each block ranged from 3 to 15 for the first pass and 1 to 15 for the second and the third pass. The model blocks estimated by the first pass were classified as Indicated and the model blocks estimated by the second and the third passes were classified as Inferred. Table 14.12 summarises Sinomine's Mineral Resource estimates for the Sinomine 2017 drilling area.

Table 14.12

Sinomine Mineral Resource Estimates for the Sinomine 2017 Drilling Area

Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %
Measured			
Indicated	19	0.7	0.1
Measured + Indicated	**19**	**0.7**	**0.1**
Inferred	6.6	0.8	0.1

Note: resources at a cut off of 0.5% Ni; resources are inclusive of reserves; figures may not add exactly due to rounding; resources do not include the +2mm rock fragments in the rocky saprolite layers; Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability; the Mineral Resources are classified according to the 2014 CIM Definition Standards

Hubei Coal's resource estimation for the area drilled by Hubei Coal in 2017 was conducted by a traditional polygonal method on plan maps. Resource classification was based on drill spacing. The area with a drill spacing of 50 x 50m was classified as Measured; the area with a drill spacing of 100 x 100 m was classified as Indicated; and the area with a drill spacing more than 100 x 100m was classified as Inferred. Table 14.13 summarises Hubei Coal's Mineral Resource estimates for the Hubei Coal 2017 drilling area.

Table 14.13

Hubei Coal Mineral Resource Estimates for the Hubei Coal 2017 Drilling Area

Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %
Measured	10	0.9	0.1
Indicated	1.4	1.1	0.1
Measured + Indicated	**11.4**	**0.9**	**0.1**
Inferred	0.5	0.9	0.1

Note: resources at a cut off of 0.5% Ni; resources are inclusive of reserves; figures may not add exactly due to rounding; resources do not include the +2mm rock fragments in the rocky saprolite layers; Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability; the Mineral Resources are classified according to the 2014 CIM Definition Standards

Sinomine produced a summary for the 2017 year-end in-situ Mineral Resource statement by adding the new Sinomine and Hubei Coal resource estimates for the 2017 drilled areas and deducting the 4.3Mt of consumed resources between the 2016 year-end pit limits and the 2017 year-end pit limits (Figure 13) and the original resource estimates within the 2017 drilling areas. Table 14.14 lists the 2017 year-end in-situ Mineral Resource estimates for the Ramu deposit. As the new drilling in 2017 crossed the boundaries between the three originally defined resource blocks and also expanded the overall drilled areas, the 2017 year-end in-situ Mineral Resource summary is reported only for the entire Ramu deposit area. Mr Zhang Xueshu, Chief Geologist of Sinomine, is the Competent Person for the 2017 year-end Ramu deposit Mineral Resource estimate update.

Table 14.14

Ramu Mineral Resources - 31 December 2017

Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %
Measured	34	0.9	0.1
Indicated	42	0.9	0.1
Measured + Indicated	**76**	**0.9**	**0.1**
Inferred	60	1.0	0.1

Note: resources at a cut off of 0.5% Ni; resources are inclusive of reserves; the figures may not add exactly due to rounding; resources do not include the +2mm rock fragments in the rocky saprolite layers; Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability; the Mineral Resources are classified according to the 2014 CIM Definition Standards

Sinomine's 2017 year-end in-situ resource calculation was based on the 2016 year-end resource statement from ENFI, the resources increased by 2017 drilling and the resources consumed by the 2017 production, however, the calculation process was not described in detail in the Sinomine report. BDA considers that it is likely that the 2017 resource statement in Table 14.14 has under estimated the in-situ resources as of 31 December 2017, therefore, the Mineral Resource statement could be somewhat conservative.

Overall, BDA's Mineral Resource Qualified Person for this NI43-101 report, Dr Qingping Deng, considers the Measured, Indicated and Inferred Mineral Resource estimates as of the end of 2017 are an appropriate representation of the in-situ mineralisation for the area that had been drilled at that time and are suitable for use in mine planning and Mineral Reserve estimation of the project. The 2017 year-end Mineral Resource estimates by Sinomine are the latest Mineral Resource estimates available to BDA's review, therefore, they are considered as the current Mineral Resource estimates for the Ramu deposit. As there are significant areas underlain by the ultramafic dunite surrounding the area that had been drilled at the end of 2017, there is significant exploration potential within the current exploration licence area as well as outside the current exploration licence area, and the total Mineral Resource is likely to increase significantly when additional drilling is conducted.

ADDITIONAL REQUIREMENTS FOR ADVANCED PROPERTY TECHNICAL REPORTS

15 MINERAL RESERVE ESTIMATES

The Mineral Reserve estimation for the Ramu nickel and cobalt deposit has been updated a number of times since the 1998 and 2007 Feasibility Studies. AMC Consultants Pty Ltd (AMC) based in Brisbane, Australia completed the 2013, 2014 and 2015 year-end Mineral Reserve estimate update for the deposit. The AMC 2015 year-end Mineral Reserve estimate update includes a detailed report for how the update was performed. Following that, the Mineral Reserve estimate update was performed by ENFI in 2016 and Sinomine in 2017. Unfortunately, no detailed report was available to BDA for the 2016 ENFI update and the 2017 Sinomine update. The 2015 AMC Mineral Reserve estimate update will be used as the basis for Mineral Reserve estimation for the Ramu deposit in this report, though the 2016 and 2017 updates are also reported.

15.1 Qualified Persons Responsible for Mineral Reserves

The Mineral Reserve estimates for the Ramu nickel and cobalt deposit have been carried out under the guidelines of the JORC Code by Competent Persons as defined by those guidelines. The JORC Code guidelines are compatible with the requirements of NI 43-101 in this regard.

The Competent Person for the 2015 AMC Mineral Reserve estimate update was Mr Patrick Smith, a full-time employee of AMC, who conducted a site visit to the project site from 11 to 15 January 2016 to review the mining and processing operation at KBK.

Mr Gao Xiang, a part-time employee of Sinomine was the Competent Person for the 2017 Sinomine Mineral Reserve estimate update for the Ramu deposit; Mr Xiang did not conduct a site visit and relied on the understanding and findings from the Ramu mining operation obtained during site visits by Sinomine's Mineral Resource Competent Person, Mr Zhang Xueshu.

Mr Peter Ingham of BDA, a Qualified Person under NI 43-101, has visited the Ramu mining and refining operations on 4-5 February 2019 and reviewed the Ramu Mineral Reserves process and determined that the assumptions and parameters used in the preparation of the Mineral Reserves are appropriate, and that the Mineral Reserves statement fairly represents the Mineral Reserves at Ramu project. For the purposes of this independent technical report, Mr Ingham is the Qualified Person responsible for the Ramu project Mineral Reserves reporting and is independent of Conic Metals, Highlands, and MCC Ramu. Mr Ingham is a mining engineer with over 40 years' experience in the mining industry, with particular expertise in open pit and underground mining including mine planning, Mineral Reserve preparation and independent review of Mineral Reserves.

15.2 Basis of Mineral Reserves Classification

In accordance with the 2014 CIM Definition Standards, Proven and Probable Mineral Reserves are derived from Measured and Indicated Mineral Resources, respectively, once it has been shown that those Mineral Resources can be extracted at a profit, and mining, metallurgical, engineering and cost studies have been completed, and legal and environmental aspects confirmed. Inferred Mineral Resources cannot be converted to Mineral Reserves.

15.3 The 2015 AMC Mineral Reserve Estimate

The 2015 year-end Mineral Reserves for KBK Block and the Ramu West Block of the Ramu deposit were estimated by AMC based on the Surpac gridded seam resource model produced Mr Queen of Highlands in 2012 and the 2015 year end pit survey for the Ramu mine. Mine planning models were developed in Datamine Studio software from the Surpac resource models from Highlands and pit optimisations were conducted using Whittle 4X pit optimisation software.

The key assumptions and optimisation parameters utilised by AMC are summarised as follows:

- US$17,764/t nickel (US$8.00/lb) and US$26,488/t cobalt (US$12.00/lb) metal prices
- mixed hydroxide product (MHP) sales at 75% of nickel and 60% of cobalt price
- metallurgical recoveries of 86.8% nickel (including a washing plant recovery of 97.5% and a refinery recovery of 89%) and 72.4% cobalt (including a washing plant recovery of 87.3% and a refinery recovery of 83.2%)
- processing rate of 2.35Mtpa (dry) refinery feed, which at average nickel grades corresponds to 100% of nameplate nickel metal production capacity
- processing cost (inclusive of administration costs) was variable depending on material type and averaged US$68/t (dry) refinery feed
- mining cost was variable depending on material type, and averages US$2.74 per wet tonne
- the royalty to the PNG government and local landowners was 2% of NSR

- a freight cost used was US$45/t dry MHP product
- geotechnical parameters were not critical for these large-scale shallow open pits, so a 45^o overall slope angle was used in pit optimisation
- all tonnes quoted were dry tonnes unless otherwise specified
- 2015 year end pit survey was used to determine the mining depletion
- a mining ore loss factor and a mining dilution factor based on ore loss and dilution skins on ore contacts were applied.

These operating costs, processing recoveries, production rate assumptions and other parameters were generally based on those achieved in operations during or at the end of 2015.

A variable cut-off grade was calculated for each ore block in the Datamine mine planning model. AMC calculated an average nickel cut-off grade of approximately 0.65% Ni and a 'nickel equivalent cut-off grade' (including credit for cobalt metal) of approximately 0.58% Ni, based on revised production rates and operating costs, processing recoveries, and metal prices.

The nickel cutoff grade considering credit for recovered cobalt metal was 0.63% Ni for the previous year's Mineral Reserve estimate update because of a lower production rate, lower recoveries and higher operating costs in the previous year. The decrease in cut-off grade resulted in some increase in Mineral Reserve tonnage for the KBK Block and Ramu West Block.

Figure 13 shows the open pit outlines as defined by the Whittle 4X pit optimisation for the KBK Block and the Ramu West Block. Mineral Reserves contained within pit shells produced by Whittle 4X pit optimisation are summarised in Table 15.1. The Mineral Reserves were categorised as Proven and Probable from Measured and Indicated resources in accordance with the 2014 CIM Definition Standards. Inferred resources were treated as waste in the Mineral Reserve estimate.

Table 15.1

AMC's 2015 Year-End Mineral Reserve Estimates for the Ramu Deposit

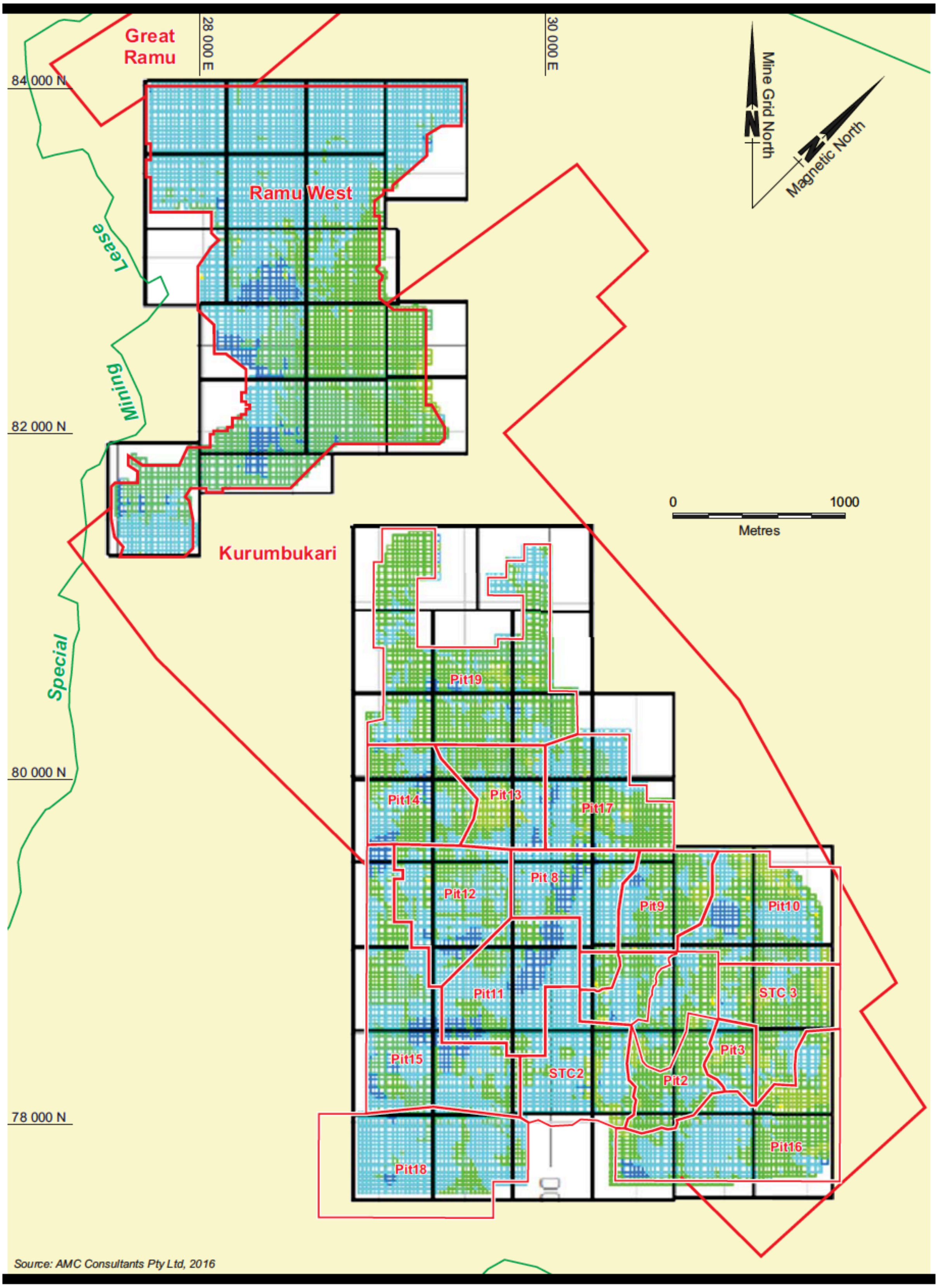
Block	Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %	Rock +2mm Mt
KBK	Proven	31	0.9	0.1	
	Probable	6	1.3	0.1	9
	Total	**37**	**1.0**	**0.1**	**9**
Ramu West	Proven				
	Probable	14	0.9	0.1	
	Total	**14**	**0.9**	**0.1**	
Total	Proven	31	0.9	0.1	
	Probable	20	1.0	0.1	9
	Total	**51**	**1.0**	**0.1**	**9**

Note: Mineral Reserves at a variable cut off based on material type, averaging 0.58% nickel, considering credit for recovered cobalt metal; reserves are included in resources; figures may not add exactly due to rounding; reserves do not include the +2mm rock fragments in the rocky saprolite layers; the Mineral Reserves are classified according to the 2014 CIM Definition Standards

Based on the resource tonnage curves, BDA notes that there are negligible blocks with Ni grades between 0.5% and 0.7% for the KBK Block resource model and only a very small percentage of the blocks with Ni grade located between 0.5% and 0.58% within the Whittle pit shell limits. Therefore, BDA considers that the Mineral Reserve cut-off grade of 0.58% nickel considering credit for recovered cobalt metal is not materially different from the 0.5% Ni resource cut-off grade.

15.4 Mineral Reserve Estimate Updates in 2016 and 2017

The 2016 year-end Mineral Reserve estimate update for the Ramu deposit was performed by ENFI. Although the details of how ENFI prepared the Mineral Reserve estimate update are not included in its report, it appears to BDA that ENFI did not perform a new pit optimisation exercise and the update was conducted merely by depleting the Mineral Reserve based on the mining operations in 2016 from the open pit designs produced by AMC in the previous year. The cut-off grade of 0.58% nickel considering credit for recovered cobalt metal used for the 2016 year-end Mineral Reserves was retained. Table 15.2 lists the 2016 year-end Mineral Reserve estimates for the Ramu deposit as determined by ENFI.



Conic Metals Corp. *Ramu Nickel Project*

Figure 13 **OPEN PIT OUTLINES FOR KBK AND RAMU WEST DEFINED BY PIT OPTIMISATION**

BDA - 206/01 (April 2019) Behre Dolbear Australia Pty Ltd

Table 15.2

ENFI 2016 Year-end Mineral Reserve Estimates for the Ramu Deposit

Block	Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %	Rock +2mm Mt
KBK	Proven	29	0.9	0.1	
	Probable	6	1.3	0.1	9
	Total	**35**	**1.0**	**0.1**	**9**
Ramu West	Proven				
	Probable	14	0.9	0.1	
	Total	**14**	**0.9**	**0.1**	
Total	Proven	29	0.9	0.1	
	Probable	20	1.0	0.1	9
	Total	**49**	**1.0**	**0.1**	**9**

Note: Mineral Reserves at a variable cut off based on material type, averaging of 0.58% nickel equivalent, including credit for recovered cobalt metal; reserves are included in resources; figures may not add exactly due to rounding; reserves do not include the +2mm rock fragments in the rocky saprolite layers; the Mineral Reserves are classified according to the 2014 CIM Definition Standards

Sinomine prepared the 2017 year-end Mineral Reserve estimate update for the Ramu deposit but only conducted Mineral Reserve estimates for the areas drilled by Sinomine and Hubei Coal in 2017. A Whittle pit optimisation was completed for the area drilled by Sinomine using the block model developed by Sinomine and the economic and pit design parameters listed in Table 15.3.

Table 15.3

Economic and Pit Design Parameters used for Sinomine 2017 Pit Optimisation

Item	Parameter
Production Rate	3.56Mtpa refinery feed
Nickel Price	US$12,000/t (US$5.44/lb)
Cobalt Price	US$48,501/t (US$22.00/lb)
MHP Ni Payability	75%
MHP Co Payability	68%
Mining Cost	US$15.3/t dry refinery feed
Processing and Refining Cost	US$48.36/t dry refinery feed
Mining Ore Loss Factor	5%
Mining Dilution Factor	3%
Washing Ni Recovery	98%
Washing Co Recovery	91.91%
Refining Ni Recovery	89%
Refining Co Recovery	88%
Overall Pit Slope Angle	33°

Sinomine did not calculate a cut-off grade for the 2017 Mineral Reserve estimate update; the resource cut-off grade of 0.5% Ni was used for the Mineral Reserve summary. Considering the lower processing and refining cost and higher cobalt recoveries and MHP payability compared with the parameters used in AMC's 2015 reserve estimate update, the Mineral Reserve cut off should be somewhat lower than the 0.58% nickel considering credit for recovered cobalt metal for 2015. Also, there are negligible blocks in the resource model with a nickel grade between 0.50% and 0.58%, therefore, BDA considers that using a cut-off grade of 0.5% Ni is not materially different from using a cut off of 0.58% nickel considering credit for recovered cobalt metal in Mineral Reserve estimation for the Ramu deposit.

An open pit was manually designed on plan maps for the areas drilled by Hubei Coal in 2017 in order to define the Mineral Reserves.

BDA notes that Sinomine did not conduct a pit optimisation exercise for the entire Ramu deposit area in 2017. BDA assumes that the AMC 2015 open pit designs for the KBK Block and the Ramu West Block were also used for the 2017 year-end Mineral Reserve estimate update.

Mineral Reserve estimates for the newly drilled area in 2017 are summarised in Table 15.4.

Table 15.4

Sinomine Mineral Reserve Estimates for the Newly Drilled Areas in 2017

Area	Tonnage Mt	Nickel Grade %	Cobalt Grade %
Sinomine 2017 Drilled Area	15.35	0.8	0.09
Hubei Coal 2017 Drilled Area 1	6.48	1.0	0.12
Hubei Coal 2017 Drilled Area 2	3.00	0.9	0.11
Total	**24.82**	**0.9**	**0.10**

Note: Mineral Reserves at a cut-off grade of 0.5% Ni, which is not materially different from the 0.58% nickel equivalent cut-off grade used in the previous year; reserves are included in resources; the figures may not add exactly due to rounding; reserves do not include the +2mm rock fragments in the rocky saprolite layers; no separation of Proven and Probable reserves was made in Sinomine's statement

Sinomine updated the Mineral Reserve estimates to the end of 2017 from the previous year's estimates by subtracting the reserve depletion in 2017 and adding the new Mineral Reserves defined by the 2017 drilling. Table 15.5 lists Sinomine's Mineral Reserve estimates for the Ramu deposit as of the end of 2017.

Table 15.5

Ramu Mineral Reserves – 31 December 2017

Category	Tonnage Mt	Nickel Grade %	Cobalt Grade %
Proved	24	0.9	0.1
Probable	33	0.9	0.1
Total	**56**	**0.9**	**0.1**

Note: Mineral Reserves at a cut-off grade of 0.5% Ni, which is not materially different from the 0.58% nickel equivalent cut-off grade used in the previous year; reserves are included in resources; the figures may not add exactly due to rounding; reserves do not include the +2mm rock fragments in the rocky saprolite layers; the Mineral Reserves are classified according to the 2014 CIM Definition Standards

Sinomine's 2017 year-end Mineral Reserve calculation was based on the 2016 year-end Mineral Reserve statement from ENFI, the Mineral Reserve increased by 2017 drilling and Mineral Reserves consumed by the 2017 production, however, the calculation process was not described in details in the Sinomine report. BDA considers that it is likely that the 2017 Mineral Reserve statement in Table 15.5 has under estimated the Mineral Reserves as of 31 December 2017, therefore, the Mineral Reserve statement could be somewhat conservative.

BDA's Mineral Reserve Qualified Person, Mr Peter Ingham, considers that AMC 2015 open pit design using Whittle open pit optimisation for the KBK Block and the Ramu West Block, and Sinomine 2017 open pit designs for the newly drilled areas in 2017 are generally reasonable, considering this is a large scale very shallow deposit. The mining ore loss factors and mining dilution factors used for the Mineral Reserve estimates appear reasonable based on the production reconciliation. BDA's Qualified Person considers the Proven and Probable Mineral Reserves as of end of 2017 are an appropriate representation of the recoverable tonnes and grade at that time and are suitable for use in mine planning and financial modelling of the project. The 2017 year-end Mineral Reserve estimates by Sinomine are the latest Mineral Reserve estimates available to BDA's review, therefore, they are considered as the current Mineral Reserve estimates for the Ramu deposit. As the Ramu mine is an established mining operation, the Mineral Reserve estimates take into account mining, metallurgical, infrastructure, permitting, and other relevant factors.

16 MINING METHODS

16.1 Mining Operations

The Kurumbukari (KBK) owner-mining operation utilizes conventional open-pit mining methods. MCC carries out all mining operations with a fleet of excavators and trucks along with other ancillary equipment to support the mining fleet. After an initial trial period, hydro-sluicing, using hydraulic water jets, was introduced in 2016 as a second form of extraction where the geometry was suitable; hydro-sluicing has accounted for around 30% of production since its introduction.

The hydraulic water jets dislodge and transport fine material from the mining face, down an inclined drainage channel to a collection point, where it is pumped directly to the wash plant for transfer to the beneficiation plant.

After the initial logging of the trees by specialised teams, the humus/topsoil and overburden are generally removed by bulldozers; excavator and truck haulage are used if the quantities are significant. The topsoil is temporarily stockpiled on the mining area, and then excavated and hauled to the mining area boundary and stockpiled for later mining rehabilitation reclaim. Overburden is excavated with small-scale excavators and hauled in articulated six-wheel dump trucks. Overburden is either placed directly into pit voids, backfilling the old mining areas in preparation for mining rehabilitation, or stockpiled at the mining area boundaries for later reclaim.

Limonite, saprolite, and rocky saprolite ore are excavated and hauled to either one of the four ore bins at the washing plant or placed on the run of mine (ROM) pad for later reclaim. Excavation from multiple mining areas, being a combination of different pit locations and different stratigraphic layers within the pits, ensures that the ore feed is a blend of these different ore types; a key goal is consistency in the average grades of nickel, cobalt, magnesium, and aluminium in the plant feed.

Large rocks or boulders are identified at the working face in the pit and excluded from the ore to be loaded on trucks. Only the smaller-sized rocks (<0.35m) pass through the grizzly apertures at the washing plant so excavators operate on the ROM pad as a final step in the ore sorting process. The excavator operators scalp the larger rocks from the top of the grizzly screens to prevent blockages. Oversize rocks are stockpiled on the ROM pad for later reclaim and back-haulage to the mining area, either for disposal into the pit void or for road construction.

Hydro-sluicing was introduced as a low-cost innovative mining solution, focused on sluicing the -2mm limonite and saprolite ore. Mining areas are selected for hydro-sluicing based on taking advantage of the natural floor gradient. Hydro-sluicing with multiple water cannons located along the mining face is assisted by an excavator to maintain access to -2mm ore by removing rocks from the mining face or pit floor. The material from the hydro-sluicing is pumped to the washing plant for screening and then pumped with the ore slurry from the washing plant to the beneficiation plant.

Ore fed through the grizzlies is wet screened to remove oversize material and any remnant tree root or other organic matter. The undersize material is generally fine clay, and this clay slurry is pumped to the beneficiation plant.

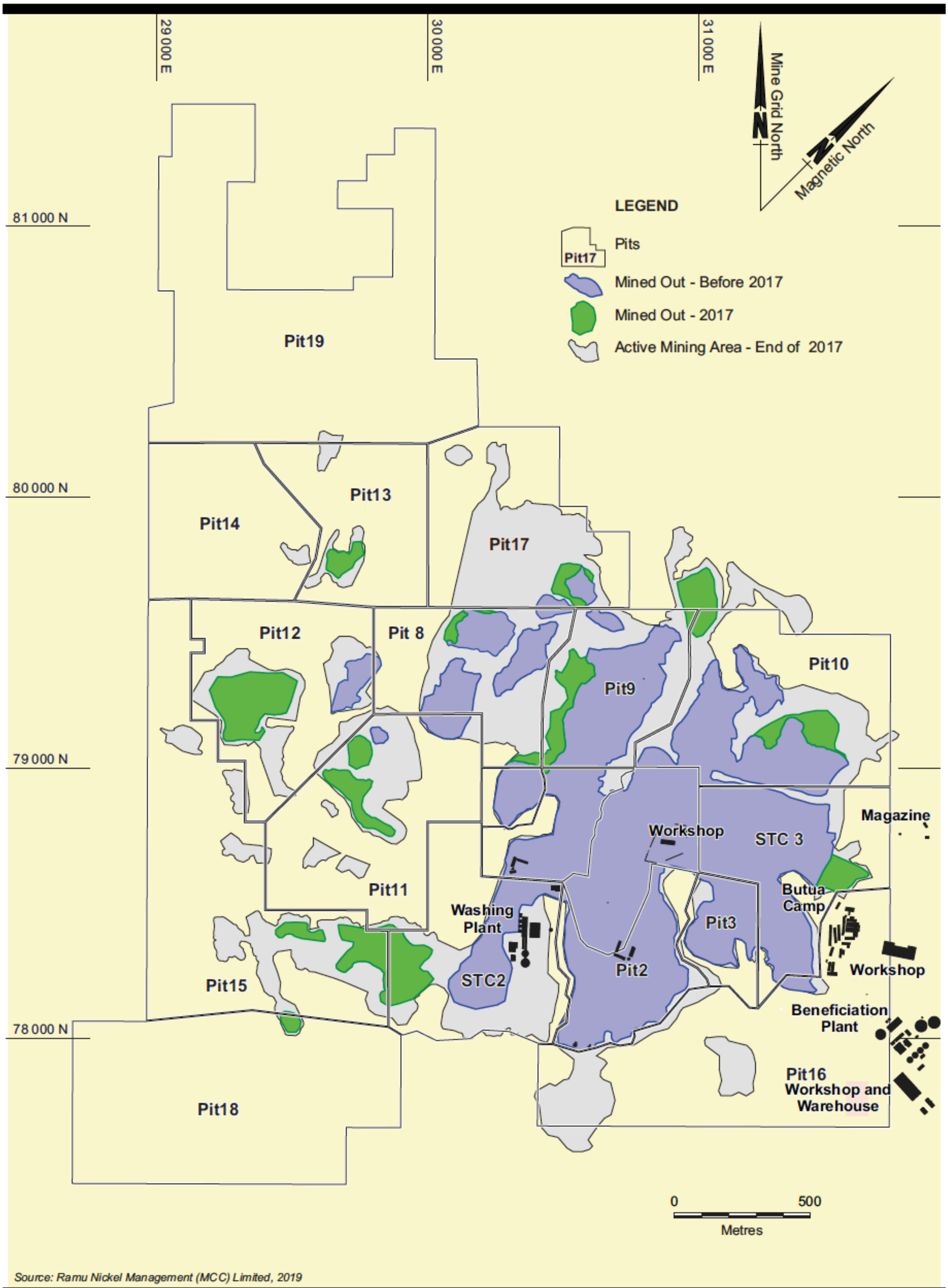
Mining Fleet

The mining fleet at KBK mine has multiple 20-30t hydraulic excavators and Volvo 35-40t articulated haul trucks with ancillary equipment including dozers and front end loaders. There are two workshops on site to carry out routine maintenance checks and planned and breakdown maintenance.

16.2 Mine Planning

The mine designs include Measured and Indicated Mineral Resources, but also include a quantity of Inferred Mineral Resources that lie within the ‘pit’ shells; the Inferred Mineral Resources are not included in the Mineral Reserve estimation but may be mined as ore if infill grade control sampling confirms an economic grade.

The project has a nominal 15-year mine life based on the current Mineral Reserves, with potential to extend the pits as and when additional reserves are defined. The mine plan is prepared for the short term, while the long term mine plans include all resources. Extraction is progressing from the central area where the washing (de-agglomeration) plant is located. The mining operation at the end of 2017 is shown in Figure 14. Two pit areas are generally set aside for hydro sluicing. BDA considers that the proposed mine production schedule is reasonably achievable and realistic. Recent mining operations have met the requirements of the refinery which has been operating at between 104-108% of design capacity. Mining is progressing out from the washing plant.



Conic Metals Corp. *Ramu Nickel Project*

Figure 14 **KURUMBUKARI MINE SITE LAYOUT**

BDA - 206/01 (April 2019) Behre Dolbear Australia Pty Ltd

The planned average annual mining rate is around 7.9Mtpa (wet) of total material, with mining including ore (limonite and saprolite), waste and topsoil stripping and stockpiling, as well as materials re-handling to the plant and rehabilitation. The total project comprises mining approximately 56Mt of Proven and Probable Mineral Reserves grading 0.9% Ni and 0.1% Co. The ore tonnage estimated by MCC Ramu represents the -2mm economic portion of resource mineralisation and is reported after the initial screening, ie. ore available to feed the beneficiation plant. The rocky material greater than 2mm that occurs in the rocky saprolite mineralised zone, is excavated and hauled from the mine, but is considered internal waste and is removed in the washing plant prior to beneficiation.

Mine scheduling is based on the reserve block model grades which provide data for initial grade control and delivery of the target blend of material to the plant.

For annual mine production rates over the life of mine reference should be made to Table 21.1, Section 21 – Life of Mine Production, Capital and Operating Costs.

16.3 Geotechnical and Hydrological

The geotechnical parameters assumed for the design and operation of large-scale shallow open pits is generally not critical to the overall Mineral Reserve calculation. The parameters used by Sinomine with respect to mine working faces included bench heights of 5-10m with bench slope angles of 65° along a working width of 40-50m. The definition of slope angle at the perimeters of each mine area is not well presented but BDA considers an assumption of an average slope angle of 45° to be reasonable for the Mineral Reserve estimate.

The hydrological issues for the mine are principally in respect of the high rainfall, and ensuring appropriate site drainage and management of sediment. MCC has prepared a system for recycling site water for hydro-sluicing but is awaiting the necessary governmental approvals for the use of recycling.

16.4 Production Reconciliation

A production reconciliation in 2013, 2014 and 2015 is provided in Section 14.2 of this report. More recent production reconciliation data has not been made available to BDA.

16.5 Mineral Resources to Mineral Reserves Conversion Factors

Sinomine has adopted a tonnage factor of approximately 98% and a grade factor of approximately 97% for the ore feeding the washing plant. These factors imply 3% dilution and 95% mining recovery. The available reconciliation data (Table 14.10) suggests these modifying factors are reasonable.

In practice, the pit-based grade control processes that define ore feed to the plant at the time of mining are anticipated to result in the total recovery of the tonnage in the Mineral Resource model that is depleted by mining activity, at the grade of those tonnes depleted from the Mineral Resource model. There is however always some degree of uncertainty, dilution or mining losses, at the upper limonite boundary and in terms of the ore recovery within the rocky saprolite, depending on the actual extent of fine and coarse material. Considering the material mined and the different mining methods (excavator/truck and hydraulic sluicing), it is not possible to determine the recovery and dilution factors to a high degree of accuracy; the reconciliation to date suggests that there may be some variation in factors across the mine area, but overall, based on the reconciliation data, the assumed recovery and dilution factors appear appropriate.

17 RECOVERY METHODS

17.1 Introduction

As noted in Section 13 – Mineral Processing and Metallurgical Testing, the Ramu NiCo project incorporates two processing plants at the KBK site, the wash plant located adjacent to the open pits and the beneficiation plant located about 1.5km from the wash plant. A third processing plant, the Basamuk refinery, is located about 135km from KBK on the coast about 75km southeast of Madang.

The two KBK plants treat the mined ore to first remove coarse (+3mm) material as waste and then treat the -3mm material to remove chromite before sending the nickel-cobalt rich concentrate to the Basamuk plant. The Basamuk plant treats the concentrate to produce a mixed nickel-cobalt hydroxide product (MHP) which grades about 39% Ni and 3.8% Co.

For the requirements for water, energy and processing reference should be made to Section 5 – Accessibility, Climate, Local Resources, Infrastructure and Physiography.

Ramu NiCo considers the detailed design of the three processing plants to be commercially sensitive and the description below is restricted to generalities. However, BDA has inspected the plants, has had access to recent production reports and has been provided with information on the plant upgrades which are planned so that plant production can be progressively increased. BDA considers that the two KBK processing plants have the capability to produce the required tonnages of ore feed to the Basamuk hydrometallurgical plant and the Basamuk plant can treat the ore to produce the budgeted amount of MHP annually.

17.2 Washing Plant

The first stage in treating the mined ore requires washing the feed material to remove coarse, barren rocks. The wash plant comprises four identical trains in parallel. The first stage in each train is the ore bin that receives the ‘as mined’ material from the trucks. Ore is moved from the bin using an apron feeder into a rotary drum washer which has internal weirs to retard the flow and water sprays to wash the ore. At the discharge end of each drum there is a screen that removes material smaller than 50mm; the coarse +50mm material discharges onto a common conveyor and out onto a stockpile, from where it is transferred by front-end-loaders (“FELs”) and trucks to be used as road metal and backfill. The -50mm material drops into two parallel logwashers for further scrubbing. The logwasher is a piece of equipment that is effectively an inclined trough fitted with a rotating screw that moves the coarse material up to a discharge point; water is sprayed into the logwasher to create a slurry that overflows the lower end of the unit into pumps that send the -3mm to the beneficiation plant. The coarse material discharges to a common conveyor and thence to a bank of three vibrating screens which separate the -3mm to the undersize which then joins the other -3mm material to be pumped to the beneficiation plant. The +3mm material is conveyed to a stockpile to be also removed as waste by the FEL/truck fleet. The hydraulically mined material is pumped from the mine to the bank of vibrating screens to also separate the -3mm material for beneficiation.

Process water is provided from the nearby river and is also recycled from the beneficiation plant. Electrical power for the wash plant is reticulated from the six-unit diesel power generation plant located adjacent to the beneficiation plant.

The wash plant with the four trains is designed to process about 7.5Mtpa of wet ore or about 4.1Mtpa of dry ore. About 15% of the material is rejected to waste. The 2018 production details report 6.35Mt of wet ore treated resulting in 3.72Mt (dry) of feed to the Basamuk plant or about 58.5% of the wet feed material. Ramu has budgeted that 7.5Mtpa wet ore will be fed in future years with 4.11Mtpa (55%) being the dry ore feed to the wash plant.

17.3 Beneficiation Plant

The purpose of the beneficiation plant is to remove chromite from the ore feed to be pumped to the Basamuk plant and to produce a chromite concentrate for sale. The beneficiation plant receives the -3mm slurry from the wash plant in two large 10m diameter tanks. The plant comprises two identical trains, each with a 10m diameter feed storage tank from which the slurry is pumped through a bank of hydrocyclones. The hydrocyclone overflow, or “slimes” at a size distribution of -53µm is pumped over a trash screen and then to the product thickener. The coarser +53µm to -3mm hydrocyclone underflow is fed to a bank of 13 triple-start spiral concentrators. The tailings, or overflow from the spirals containing the lighter material is fed to the desliming hydrocyclones; the heavier product is forwarded to a bank of 26 shaking tables that further concentrates the heavier chromite particles as feed to a spiral classifier to remove fugitive “slimes”, with the spiral underflow, or coarse material, sent to one of two common magnetic separators. The magnetic separators remove the free chromite particles from the lower quality material which will be discharged as a tailing product backfill into the pits. The chromite product is stockpiled and then trucked to a loading area about 5km downhill from the processing plant. The chromite product is reclaimed by a FEL into highway haulage trucks which transport the material to Lae for shipment to market.

The lighter material from the spirals and from the shaking tables is pumped to a bank of hydrocyclones set to separate the slurry to be pumped to the Basamuk refinery. The hydrocyclone underflow which is the coarse material is ground in a standard ball mill to reduce all material to suitable size.

The ground and separated material is screened to remove any "trash" and then thickened in large settling thickener. The thickener underflow at 15% to 19% solids w/w is stored in one of four 30m diameter storage tanks, and is then pumped over 135km to the Basamuk plant at about 1,600 cubic metres per hour ("1,600m^3/h").

17.4 Basamuk Refinery

Slurry Receipt

The slurry pumped from the KBK plant to Basamuk refinery at grades of approximately 1.08% Ni and 0.12% Co. The slurry can be discharged into receiving storage tanks, from which the slurry is pumped to a thickener to allow solids density to increase to greater than 30% solids w/w.

High Pressure Acid Leach (HPAL)

The thickened underflow slurry is pumped to a slurry storage tank for each of the three HPAL circuits. Each HPAL circuit comprises a high-pressure autoclave which has three stages of pre-heat vessels and respective pumping and three stages of heat recovery (flash) vessels, all interconnected. Slurry is pumped from the storage vessel into the first pre-heat vessel along with heat that has "flashed" from the third or low temperature flash vessel. The heated slurry is then pumped using a conventional centrifugal slurry pump to the second stage of pre-heat where the second stage flash gases are directed to heat the slurry even further. The slurry from second stage pre-heat is pumped to the third pre-heat stage using three centrifugal pumps in series along with gases from the first or high temperature flash stage. The slurry from the third stage preheat vessel at around 200°C is then pumped into the autoclave using a high-pressure positive displacement pump. Each autoclave is equipped with two pumps, each with its own discharge into the autoclave and capable of pumping full throughput but generally operating in parallel at about 50% capacity, to provide circuit redundancy.

The autoclaves are designed to operate at a temperature of about 250°C and pressures of about 43 bar or 4,300kPa. High-pressure steam is injected into the autoclave to raise the pressures to 4,300kPa. Each autoclave is lined with a high quality titanium and has multiple compartments, each equipped with agitators. Slurry residence time is about 60 minutes per autoclave. Sulphuric acid is injected into the autoclave at a rate required to achieve target extraction of greater than 95% for nickel and cobalt.

Partial Neutralisation (PN)

The slurry discharge from the third flash vessel has a high level of free acid (FA) which must be partially neutralised to allow the further downstream processing to recover the nickel and cobalt values. Neutralisation is undertaken using locally sourced limestone and the FA is effectively reduced to a low level. Compressed air is added to assist oxidisation of ferrous iron (Fe^{2+}) to ferric iron (Fe^{3+}) which will precipitate into the slurry. The air also removes minor CO_2 build-up in the slurry flow. The PN circuit is made up of multiple agitated vessels into which the limestone slurry is injected and tanks can be by-passed for maintenance if necessary. The neutralisation time should be greater than 90 minutes and is affected by other recycle streams from the second stage of Fe and Al removal as well as the second stage of Ni and Co precipitation. The reported neutralisation time ranges from 3 to 4 hours.

Counter-Current Decantation (CCD)

The neutralised slurry is fed to a seven-stage series of thickeners where the slurry continues in a forward direction from CCD1 down to CCD7; the CCD thicker overflows are pumped counter-current to the slurry flows. The final solids product from CCD7 is sent to residue neutralisation before discharge as a final tailings product. Process control has been set up to ensure that the underflow solids density is controlled at about 45% solids w/w prior to discharge to tailings neutralisation to ensure the maximum recovery of Ni and Co into the overflow liquor. The overflow from CCD1 contains all the recoverable Ni and Co in solution, which is then fed to the Fe and Al precipitation circuit.

To aid settling, a flocculant or settling agent is added to the CCD thickener feed flows; to assist metal recovery, a high wash ratio is provided. To allow the 36m diameter thickeners to perform efficiently, the feed to the thickener feed well is equipped with an eduction system to increase the feed solids dilution. Flocculant is added to each CCD thickener to assist settling. The extra demand for aqueous is satisfied by recycling the second-stage Ni/Co precipitation circuit thickener overflow.

Iron and Aluminium Removal

Prior to recovering the two main metals, Ni and Co, it is necessary to reduce the amount of iron and aluminium in the liquor. Ramu undertakes this in multi stages of precipitation in order to reduce the amount of Ni and Co co-precipitation. The operating scenario relates to maximising the precipitation of the Fe and Al while keeping the Ni and Co precipitation to a minimum; higher pH allows better removal of Fe/Al but more Ni and Co will also precipitate. The first stage of Fe/Al precipitation entails addition of limestone to the liquor to raise the pH and allowing the reaction time to be about six hours using at least six tanks.

The objective in the first stage is to remove up to 80% of the Al and 60% of the Fe while minimizing Ni/Co precipitation. The resultant slurry is thickened in a single thickener unit with the thickener underflow sent to a plate-and-frame filter. The filter cake is repulped using barren liquor and the slurry is pumped to tailings neutralisation. In order to maximise the Fe precipitation compressed air is injected into the reaction vessels to further oxidise the Fe^{2+} to Fe^{3+}. The thickener underflow density is controlled at about 35% to 40% solids w/w.

The thickener overflow and the filtrate from the filter is then fed to the second stage Fe/Al precipitation circuit. More limestone is added to allow the pH to rise which requires about four hours and four reaction vessels. The second stage Fe/Al precipitation slurry is then thickened to remove the precipitated solids. Air is added as in the first stage precipitation and seeding is also used if necessary to maintain the thickener underflow density. The solids from the second stage thickener are pumped to the PN circuit for re-leach of the co-precipitated Ni and Co. The overflow from the thickener is fed to the Ni/Co precipitation circuits.

Nickel and Cobalt Precipitation

The liquor from the Fe/Al precipitation circuits is treated in a further precipitation circuit using sodium hydroxide to precipitate a mixed hydroxide product (MHP). The Ni/Co precipitation takes place in two stages. The reactor discharge is fed to a thickener, with the thickener overflow fed to the second stage circuit while the underflow is split as seed and as product. The product stream feeds a filter, with the filtrate also sent to the second stage circuit. The filter cake is discharged into a storage bin from which the material is packaged into one tonne bags ready for shipment to the market.

The second stage of Ni/Co precipitation is effectively a means to ensure that overall metal recovery is maximised.

Tailings Treatment

Tailings treatment is straightforward and requires neutralisation before the slurry is discharged to the DSTP. The circuit comprises a bank of five reactors and slaked lime is added to the slurry to bring pH to over 8.0. Once neutralised the slurry is pumped to the DSTP station where it is then discharged.

Plant Reagent Supply

There principal reagents consumed in the Basamuk plant are listed below:

1. *Sulphuric Acid* is the main reagent consumed in the HPAL process. The consumption rate is about 900ktpa of acid. Ramu has installed two acid plants that burn elemental sulphur to produce greater than 98.5% sulphuric acid. The plants are double catalysis and double adsorption units. The sulphur is purchased on the open market and can be delivered from a variety of sources such as North America or the Middle Eastern Gulf. The production of acid produces a significant amount of high-pressure steam as well as low pressure steam. The high-pressure steam is used for HPAL heating and the low pressure steam is used throughout the plant. Power co-generation has not been considered, as most of the steam is consumed in the process.
2. *Limestone and lime* are also reagents with high overall consumption rates. Limestone is mined at a quarry near the Basamuk plant and is transported to the plant with a large stockpile storage capacity to accommodate wet season quarrying delays. The limestone is reclaimed and crushed in a two-stage jaw and cone crushing circuit with the fines sent to a grinding mill circuit for further size reduction and slurrying ready for use in the plant.
3. *Flocculants* comprise a significant component of reagent requirements.
4. *Other reagents and consumables* are brought in as required and comprise grinding balls for the limestone mill, burned lime, platinum catalyst for the acid plants and sodium hydroxide for Ni/Co first stage precipitation.

Plant Ancillary Services

There are a number of ancillary plants necessary for the operation of the Basamuk plant:

1. *Auxiliary steam* production is necessary to augment steam required for the HPAL units if acid plant steam is insufficient. Two 245t steam boilers have been installed and operate burning mostly residual oils collected throughout the operation.

2. *Compressed air supply* is conventional utilising conventional air compressors producing high pressure air for use throughout the plant including the air injection in the neutralisation and precipitation steps for ferrous to ferric oxidation.

17.5 Production Capacity

Production from the KBK plant is dependent upon the ability of the Basamuk plant to take feed. In the initial couple of years, both plants were experiencing ramp-up and the Ramu experience was similar to a number of other lateritic nickel/cobalt operations, taking some time to achieve design throughput and product output. The KBK plant took approximately four years to ramp up to the planned throughput, though the ramp-up was interrupted in 2016 because of an incident at the Basamuk plant which forced a three-month shutdown. If the KBK plant had operated for the full year in 2016, it is estimated it would have produced in the order of 30,000t of product, or 90% of budget. In years 2017 and 2018, output exceeded budget by 6% and 9% respectively. Chromite production has slowly increased but remains slightly below target, however this is related to ore grade and is not material to the plant performance.

Table 17.1 summarises the annual production data for the KBK plant and the product sent to Basamuk.

Table 17.1

Ramu Wash and Beneficiation Plants Production – 2012 to 2018

Parameter	Units	2012	2013	2014	2015	2016	2017	2018	Annual Forecast
Wash Plant Feed	Wet Mt	0.973	-	5.949	6.105	3.876	5.523	6.350	**7.477**
Beneficiation Product*	Dry Mt	-	1.252	2.273	2.784	2.270	3.601	3.719	**3.400**
Nickel	%	1.01	1.02	1.05	1.12	1.13	1.09	1.11	**1.08**
Cobalt	%	0.09	0.10	0.10	0.11	0.11	0.11	0.10	**0.12**
Chromite Production	Dry kt	18.0	32.7	32.0	51.4	52.8	90.1	92.1	**95.4**

*Note: *Beneficiation plant product is Basamuk plant feed; Annual Forecast relate to design parameters*

Table 17.2 summarises the MHP production on an annual basis since commissioning. Ni production has exceeded the annual budget in 2017 and 2018.

Table 17.2

Ramu Basamuk Plant MHP Production – 2012 to 2018

Parameter	Units	2012	2013	2014	2015	2016	2017	2018	Annual Budget
MHP	Wet t	43,772	103,615	180,170	178,977	153,899	237,445	241,133	**220,518**
Moisture	%	68.5	71.3	68.1	63.5	62.4	62.1	61.7	**62.0**
MHP	Dry t	13,783	29,736	57,415	65,286	57,824	89,947	92,258	**83,797**
Nickel	%	38.3	40.4	36.6	39.2	38.5	38.5	38.3	**39.0**
Contained Ni	Dry t	5,283	12,023	20,986	25,582	22,268	34,666	35,355	**32,681**
Cobalt	%	3.4	3.79	3.72	3.84	3.79	3.68	3.59	**3.8**
Contained Co	Dry t	469	1,126	2,133	2,505	2,190	3,308	3,275	**3,346**
Nickel Recovery*	%	-	93.8	87.7	82.3	87.1	88.0	87.0	**89.0**
Cobalt Recovery*	%	-	92.3	90.2	83.3	86.2	86.6	86.0	**82.0**

*Note: *Recoveries based on overall recovery from Basamuk plant based on KBK feed material; Annual Budget relates to design parameters*

One of the main parameters that affects the production rates and overall operability of the two plants is equipment availability and utilisation. The KBK wash plant has been designed with four trains, which ensures that a reasonable amount of material is always being sent to the beneficiation plant. Storage capacity of beneficiated material is substantial, with four large storage vessels, allowing a reasonably steady flow of feed slurry to the Basamuk plant. The beneficiation plant has little rotating equipment, with the principal equipment being pumps, the one grinding mill and a conveyor. These items have been reasonably well maintained with beneficiated product to Basamuk exceeding design parameters over the past two years.

The Basamuk plant is a complex hydrometallurgical processing plant consisting of interdependent unit operations. Ramu has installed interstage storage as this is critical in reducing impact from a temporary shutdown of a circuit either upstream or downstream. Also, most circuits have surplus capacity, such that one tank could be taken off-line without affecting circuit performance. Each autoclave has two feed pumps, allowing production to continue with one pump down. The installation of two acid plants allows continuous operation for reasonable periods with one acid plant down. The design operating time for the HPAL plant is 7,500 hours/year or 85.6% of the time. HPAL plants generally operate continuously until a circuit shutdown is required. Past practice has evolved from shutdowns every eight months to now experiencing a shutdown at about every twelve months. By good management, scheduling of shutdowns has improved as well as incorporating acid plant shutdowns which are scheduled for 12 month intervals.

18 PROJECT INFRASTRUCTURE

Project infrastructure for the Ramu nickel cobalt project is described in Section 5 – Accessibility, Climate, Local Resources, Infrastructure and Physiography and reference should be made to this section.

19 MARKET STUDIES AND CONTRACTS

In relation to market studies, BDA does not consider itself to be a commodity market expert and the following comments are provided as general information. BDA sourced its nickel market information from the Nickel Institute, CRU Group and Macquarie Bank and historical nickel price data from InfoMine.com. Similarly, cobalt market information was sources from the Cobalt Institute, CRU Group and Macquarie Bank and historical cobalt price data from InfoMine.com.

19.1 Nickel

There are many different nickel ores requiring a variety of techniques to extract the nickel. Nickel-containing ores are currently mined in more than 25 countries worldwide.

Currently, 70% of annual nickel production is used in the manufacture of stainless steel, 9% in non-ferro alloys, 9% in alloy steels and castings, 8% in plating, 3% in batteries and 1% in other uses (Source: The Nickel Institute, May 2019).

Demand for nickel from the global stainless-steel industry was particularly strong during the first half of 2018. This rate of demand growth reflected both the synchronised strength of global economic activity (for the first time in years developed and developing economies were expanding simultaneously) and the ramping up of Indonesian stainless-steel production. Demand from stainless steel mills was supplemented by steady consumption growth for nickel in the non-stainless and battery sectors.

The second half of 2018 saw primary nickel demand from the global stainless-steel industry fall well below that of 1H 2018. The downturn in demand growth has been less severe for the non-stainless sector.

Overall, primary nickel demand grew by about 5.8% year-on-year for 2018. Given the drop in stainless-steel sector growth in H2 2018, annual growth was split more-or-less evenly between the stainless steel and non-stainless sectors.

Declining nickel stockpiles, the rapidly growing nickel use in batteries and ongoing strong demand from stainless steel production is expected to continue to support nickel prices. Further, the lack of supply growth, excluding nickel pig iron (NPI), is expected to maintain large and persistent deficits despite strong overall growth in nickel pig iron production as producers in Indonesia bring on substantial new capacity.

The LME closing nickel price in late April 2019 was US$12,350/t (US$5.60/lb). The 52-week low price was US$10,640/t (US$4.81/lb) and high price was US$15,740/t (US$7.14/lb). (Source: InfoMine.com)

19.2 Cobalt

Cobalt is widely scattered in the earth's crust and is found in a variety of different ore types in several countries. Cobalt is normally associated as a by-product of copper or nickel mining operations but is also extracted alone from Moroccan and some Canadian arsenide ores. Around 55% of the world cobalt production comes from the mining of nickel ores. (Source: The Cobalt Institute, May 2019)

Cobalt is classed as a critical raw material by the European Union due to being both an essential mineral in industry and in alternative energy systems, and due to the risk associated with supply originating from the politically unstable Democratic Republic of Congo ("DRC").

Some 29% of global refined cobalt production is in metallic form and used as a raw material in both metallurgical (alloys and specialty steels) and chemical applications (cobalt compounds). The remaining 71% of production comes in chemical form (as oxides or salts) used as raw materials for various downstream chemical applications.

Less than 10% of global mined production is currently refined within the same country and the majority of refiners are dependent on the import of cobalt-bearing refinery feed. Chinese production accounted for 66% of global refined cobalt output in 2018. The availability of cobalt recovered from recycling (e.g. alloy and battery scraps, spent catalyst etc.) has increased significantly in recent years and is currently estimated to contribute between 6-8% of refinery feedstock supplies.

Whereas 2017 saw the strongest demand growth recorded since 2010 (growing just over 8% compared to 2016), overall demand for refined cobalt grew at a slightly lower pace in 2018. Total refined and mined cobalt production reached an estimated 114,000t and 136,000t in 2018, up 9% and 12% respectively. Contributory factors include the start-up of Glencore's Katanga project and ERG's Roan Tailings Reclamation Project and meaningful expansions at other Chinese-owned mines in the DRC. Global refined cobalt consumption increased 6.6% in 2018 to just over 111,000t, placing the refined cobalt market in a small oversupply. (Source: CRU Cobalt Market Outlook, February 2018, CRU Cobalt Cost Study, March 2018)

After reaching a twelve-year low in December 2015, the cobalt price staged a steady, uninterrupted recovery over the course of 2016, supported by a gradual strengthening of market fundamentals. By year-end, market sentiment had shifted from conservative optimism to outright bullishness, resulting in a cobalt market bull run that was unprecedented in strength and duration. By 25th April 2018, the cobalt price peaked at US$43.70/lb, an increase of 375% since the start of 2016.

Bullish market sentiment fuelled by expectations of electric vehicle demand, reduced metal supply and strong demand from both consumers and speculators were the major driving force behind the price rise. However, after peaking in April 2018, the rally quickly lost momentum as market sentiment started to turn, particularly in China. It soon became evident to market participants that the market had overreacted on speculation and expectations rather than on actual fundamentals. This in turn prompted a sharp downward correction which, barring a brief stabilization during the third quarter, caused the cobalt price to lose close to US$25/lb. or some 57% of its value by the end of January 2019.

In late April 2019, the price of 99.8% cobalt was trading at US$15.76/lb (US$34,745/t). The 52-week low price was US$13.15/lb (US$29,780/t) and high price was US$41.73/lb (US$92,000/t). (Source: InfoMine.com)

19.3 Contracts

The Ramu Joint Venture operates under a series of joint venture agreements, namely:

- Framework Agreement, dated 10 February 2004
- Master Agreement, dated 30 March 2005
- Joint Venture Agreement, dated 20 October 2005
- Clarification Agreement, dated 19 February 2015
- Deed of Variation, dated 21 May 2018
- Project Way Forward Agreement, dated 28 December 2018

BDA has been provided access to all of these agreements and considers them to contain standard joint venture terms for the operation of the Ramu project.

Highlands, through its wholly owned company, Ramu Nickel Limited (RNL), is entitled to market and sell its respective share of product from the Ramu Joint Venture. However, Highlands has chosen to enter into the Sales Agency Agreement, dated 21 December 2018, with MCC Ramu NiCo Limited (as Sales Agent).

BDA considers the terms of the Sales Agency Agreement to be in accordance with standard industry practice.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1 Environmental Considerations

The relevant PNG environment legislation under which the Ramu project is operated is the *Environment Act 2000*.

The Kurumbukari mine and beneficiation plant and Basamuk processing plant are operated by MCC Ramu under various Environment Permits issued by the Independent State of Papua New Guinea under Section 65 of the Environment Act 2000.

The key Environmental Approval for the project is the Environmental Plan Approval issued under the Environmental Planning Act 1978 in March 2000 by the Minister for Environment and Conservation.

The operations permits are WD-L3(115) which covers all works within SML8, all LMPs, MEs and ML149. Permit WE-L3(85) covers the extraction and use of water resources within SML8, all LMPs, MEs and ML149. Both of these permits were issued on 1 January 2004 for a term of 50 years, and various amendments have been made to the initial permits issued. Permit WD-L3(115) also approves the discharge of waste streams into the environment from the various premises, including air emissions and tailings discharge via the Deep Sea Tailings Pipeline (DSTP).

Both the mine and processing plant are operated under various environment protection management plans including air emissions, noise, water, chemical spill and control, dust control, erosion and sediment control, water resources, and progressive rehabilitation. Other socio-economic management plans include cultural, historical and archaeological heritage, and social and economic management.

Various environmental monitoring and reporting programs are conducted across the mine site and processing plant areas which are a requirement stipulated under the environmental permits. A key monitoring program is SO_2 emissions from the processing plant exhaust stacks. SO_2 monitoring programs include on-line (ie. in-stack) which are reported regularly to CEPA (PNG Conservation and Environment Protection Authority). Other programs include ground-level SO_2 monitoring, daily SO_2 monitoring for confined area access and manual SO_2 sampling and analysis.

MCC Ramu is required to conduct inspection of the DSTP on an annual basis. This is performed using a Remotely Operated Vehicle ("ROV") external visual inspection of the tailings pipeline at the Basamuk Bay Refinery. The purpose of this visual inspection is to identify the integrity of the pipeline to ensure its effective tailings discharge at the 152m below sea level outfall. The latest inspection confirmed that there was no identified evidence of damage, cracks or tailings leakage observed on the tailings pipeline at the time of inspection and the tailings discharge at 152m appears to be unobstructed and was flowing freely at the time of inspection.

A 5-year marine environment monitoring program is also a requirement under the operating permit. The first marine monitoring program was completed in 2018; preliminary results indicate no adverse effects findings on fish tissue samples and that metals are at background levels.

20.2 Social/Landholder Compensation

The PNG Mining Act 1992 provides for compensation to be paid by the holders of mining leases to the landholders for all loss or damage suffered, or foreseen to be suffered. The Water Resources Act also provides for certain compensation to be paid in certain circumstances to persons with an interest in land, where that interest is compromised.

To facilitate these compensation requirements, MCC Ramu has an executed Lands and Environment Compensation Agreement in place, dated 7 January 2000. This agreement is registered under Section 156 (6) of the Mining Act dated 24 February 2000. This Land and Environment Compensation Agreement remains valid and the various landholders groups are paid compensation on the terms and conditions set out in the agreement. Highlands advises that the Compensation Agreement is currently being reviewed.

21 LIFE OF MINE PRODUCTION, CAPITAL AND OPERATING COSTS

21.1 Life of Mine Production Plan

Table 21.1 provides a forecast production schedule based on the Proven and Probable Mineral Reserves contained within the current mining areas. The forecast has used the December 2017 Mineral Reserves depleted for the 2018 production of 3.71Mt transferred by pipeline and treated at the Basamuk Process Plant. Mine development progresses across the mine area with preliminary tree logging, humus removal and overburden before ore mining commences. The mine schedule sets out the overall material moved each year and the output of ore from the washing plant to the beneficiation plant. The product of the beneficiation plant is fed to the refinery via the slurry pipeline and has been scheduled at 3.6Mtpa which is slightly higher than the budget rate but is in line with the last two years production rates.

Table 21.1

Forecast Production Schedule

Period	Material Mined (Wet Mt)	Ore Beneficiated (Dry Mt)	Ore Grade (% Ni)	Ore Grade (% Co)	Ore Processed (Dry Mt)	MHP Production (Dry kt)	Nickel Production (kt)	Cobalt Production (Dry kt)
2019	8.52	3.79	0.97	0.11	3.60	83.6	32.6	3.6
2020	8.52	3.79	0.97	0.11	3.60	83.6	32.6	3.6
2021	8.52	3.79	0.95	0.11	3.60	82.0	32.0	3.5
2022	8.52	3.79	0.95	0.11	3.60	82.0	32.0	3.5
2023	8.52	3.79	0.92	0.10	3.60	79.6	31.0	3.4
2024	8.52	3.79	0.92	0.10	3.60	79.6	31.0	3.4
2025	8.52	3.79	0.92	0.10	3.60	79.6	31.0	3.4
2026	8.52	3.79	0.92	0.10	3.60	79.6	31.0	3.4
2027	8.52	3.79	0.92	0.10	3.60	79.6	31.0	3.4
2028	8.52	3.79	0.89	0.10	3.60	77.2	30.1	3.4
2029	8.52	3.79	0.89	0.10	3.60	77.2	30.1	3.3
2030	8.52	3.79	0.89	0.10	3.60	77.2	30.1	3.3
2031	8.52	3.79	0.87	0.10	3.60	75.6	29.5	3.3
2032	6.87	3.05	0.87	0.10	2.90	60.9	23.8	2.6
Total	117.67	52.33	0.92	0.10	49.70	1,097.1	427.9	47.5

The mining schedule set out in Table 21.1 incorporates the mining of 117.7Mt of wet material including overburden removal and the production of 52Mt of dry ore (assuming approximately 45% moisture), and a chromite concentrate, produced from the KBK beneficiation plant.

The LOM plan is based on an annualised treatment rate through the Basamuk refinery of around 3.6Mtpa of ore. Annual beneficiated grades feeding the Basamuk plant over the LOM are projected to average 0.97% Ni and 0.11% Co; the ore grade is upgraded from the initial feed grade due to the removal of the chromite concentrate.

The projected metallurgical performance over the LOM reflects the results from experience to date. Nickel recovery is projected to average 89%; cobalt recovery is projected at 88%. Both metal recoveries are considered reasonable based on current performance. Nickel production in MHP is projected to be approximately 31,000tpa at full production; cobalt production is projected to be 3,400tpa.

Ramu is progressing with exploration drilling to expand the Mineral Reserves; further opportunities exist to either increase production as recently announced or extend mine life with additional drilling, as the mineralisation extends beyond the current Mineral Reserves with significant potential to further expand the Mineral Resources with additional drilling.

21.2 Capital and Operating Costs

Capital Costs

Capital cost estimates for Ramu essentially cover sustaining and replacement capital (Table 21.2). The three year cyclical nature of the estimate reflects the expected major work on the refinery plant. BDA's provision for mine closure, as detailed in Section 4.7, has been included in the cost estimate in the last year of production of US$55M including escalation (US$33M excluding escalation).

Table 21.2

Ramu Sustaining Capital Cost Estimate - Actuals 2015-2018 and Life of Mine 2019-2032

	Unit	2019	2020	2021	2022	2023	2024	2025	2026	27-32	Total
Sustaining Capital	US$M	5	21	5	6	23	6	6	26	108	206

Note: capital costs are nominal and incorporate escalation

BDA has reviewed the Ramu provisional estimates and these values recognise the status of the project and the projected accuracy of the estimates; BDA has also included an allowance for closure costs (see Section 3.17).

Operating Costs

Table 21.3 shows the actual costs for the Ramu project for the last three years, 2016-2018, split into mining and processing costs. The unit site operating cost over the last three years has averaged US$66/t of ore processed at the refinery.

Table 21.3

Ramu Operating Cost Estimate – Actuals 2016-2018

Item	Unit	2016	2017	2018
Operating Costs				
Mining	US$M	44.8	54.3	63.9
Processing	US$M	118.2	159.8	190.3
Total Site Operating Costs	*US$M*	*163.0*	*214.1*	*254.2*
Unit Costs				
Mining	US$/t	19.73	15.08	17.18
Processing	US$/t	52.06	44.38	51.16
Total Site Operating Costs	*US$/t*	*71.79*	*59.46*	*68.34*

Note: all site unit operating costs are given in terms of per tonne of ore processed at the refinery

A summary of the estimated LOM operating costs is shown in Table 21.4 showing total cost, and unit cost for ore and MHP; these are compared with the combined operating costs for the last two years, 2017 and 2018. The forecast costs are in real 2019 dollar terms operating costs and have been escalated.

Table 21.4

Projected LOM Operating Costs

Activity	Actual (2017+2018)			Annual Projection		
	US$M	US$/t Ore	US$/t MHP	US$M	US$/t Ore	US$/t MHP
Mine Costs	118.20	16.15	649	50.53	14.86	603
Processing Cost	350.08	47.82	1,921	144.19	42.41	1,721
Total Site Operating Costs	**468.28**	**63.97**	**2,570**	**194.72**	**57.27**	**2,324**

The costs, prepared by Highlands, are based on experience to date and are generally consistent with conventional open pit mining standards in PNG and with local labour rates. The equipment costs and performance are based on site experience project to date, reflecting the actual local conditions. Mining costs include the extraction of ore with either conventional mining using excavators and trucks or by hydro-sluicing; the costs also include the beneficiation of the ore at KBK including the removal of the chromite in a separate concentrate. The estimated cost is approximately US$14.90/t of dry ore processed for the LOM without escalation (or US$20.20/t of dry ore processed for the LOM including escalation). The projected mining unit costs are lower than recent historical costs. The mining costs are sensitive to changes in fuel costs, which represent around 27% of the mining cost, and to maintenance costs. The costs assume around 23% of the ore is hydro-sluiced; an increase in this proportion could potentially lower the operating costs of the KBK operations. Mining costs for conventional mining could rise above the mine operating cost estimate (Table 21.4) as the mining area becomes further from the washing (de-agglomeration) plant but increasing hydro sluicing could offset these increases.

Processing costs at the Basamuk refinery have been estimated at US$42.41/t over the LOM without escalation (or US$53.68/t including escalation over the LOM). These costs are most sensitive to acid consumption, sulphur prices and power plant fuel prices. The estimated processing costs are comparable to those achieved on the project to date, adjusted for known variances, although the 2018 unit processing costs were somewhat higher at US$51.20/t treated. One variable is the frequency of autoclave shutdowns and, to some extent, acid plant shutdowns. The trend at the Basamuk plant has been to extend autoclave shutdowns from eight months to approaching twelve months, thus allowing some reduction in shutdown maintenance costs.

Combined general and administration costs have been allocated to KBK and BSK at 30% and 70% respectively in the financial model.

Overall, the operating cost estimates appear generally reasonable; BDA considers the operating cost estimates to be accurate to ±10-15%, as would be anticipated for an existing operation.

22 ECONOMIC ANALYSIS

As MCC is a "producing issuer", as defined in NI 43-101, the Ramu mine and processing plants are in production and this Technical Report does not include a material expansion of current production, an economic analysis for Ramu is not a requirement for this Technical Report.

23 ADJACENT PROPERTIES

Ramu nickel cobalt project is the only major nickel cobalt deposit of its type in the western portion of the Madang Province of PNG.

Yandera Mining Company ("Yandera") holds an exploration tenement (EL1335) approximately 25km southwest of the Ramu SML. A copper, molybdenum and gold resource has been identified by Yandera within the 72 sub blocks.

As the tenement does not contain any reported nickel cobalt Mineral Resources the tenement is not considered to be relevant to this assessment.

24 OTHER RELEVANT DATA AND INFORMATION

24.1 Joint Venture Structure

Details of the joint venture that owns and operates the Ramu nickel cobalt project; including the structure of the various company interests is set out in Figure 15.

The project is an unincorporated joint venture between MCC Ramu NiCo Limited (85%); Ramu Nickel Ltd (RNL) (8.56%), a subsidiary of Highland Pacific Ltd which is wholly-owned by Conic Metals, and Mineral Resources Madang Ltd (MRML) (2.5%) and Mineral Resources Ramu Ltd (MRRL) (3.94%) two subsidiaries of Mineral Resource Development Corporation (MRDC) on behalf of PNG government and landowner interests. Ramu NiCo Management (MCC) Limited, as the Manager of the project appointed by all joint venture parties, is responsible for the operation of the project.

MCC Ramu NiCo Limited is wholly-owned by MCC-JJJ Mining (“MCC-JJJ”), whose shareholders include China Metallurgical Group Corporation (MCC), a Fortune 500 company and three of the largest enterprises in the Chinese nickel and stainless steel industry, namely Jinchuan Group Limited (“JinChuan”), Jilin Jien Nickel Industry Limited (“JIEN”), and Jiuquan Iron & Steel (Group) Limited(“JISCO”).

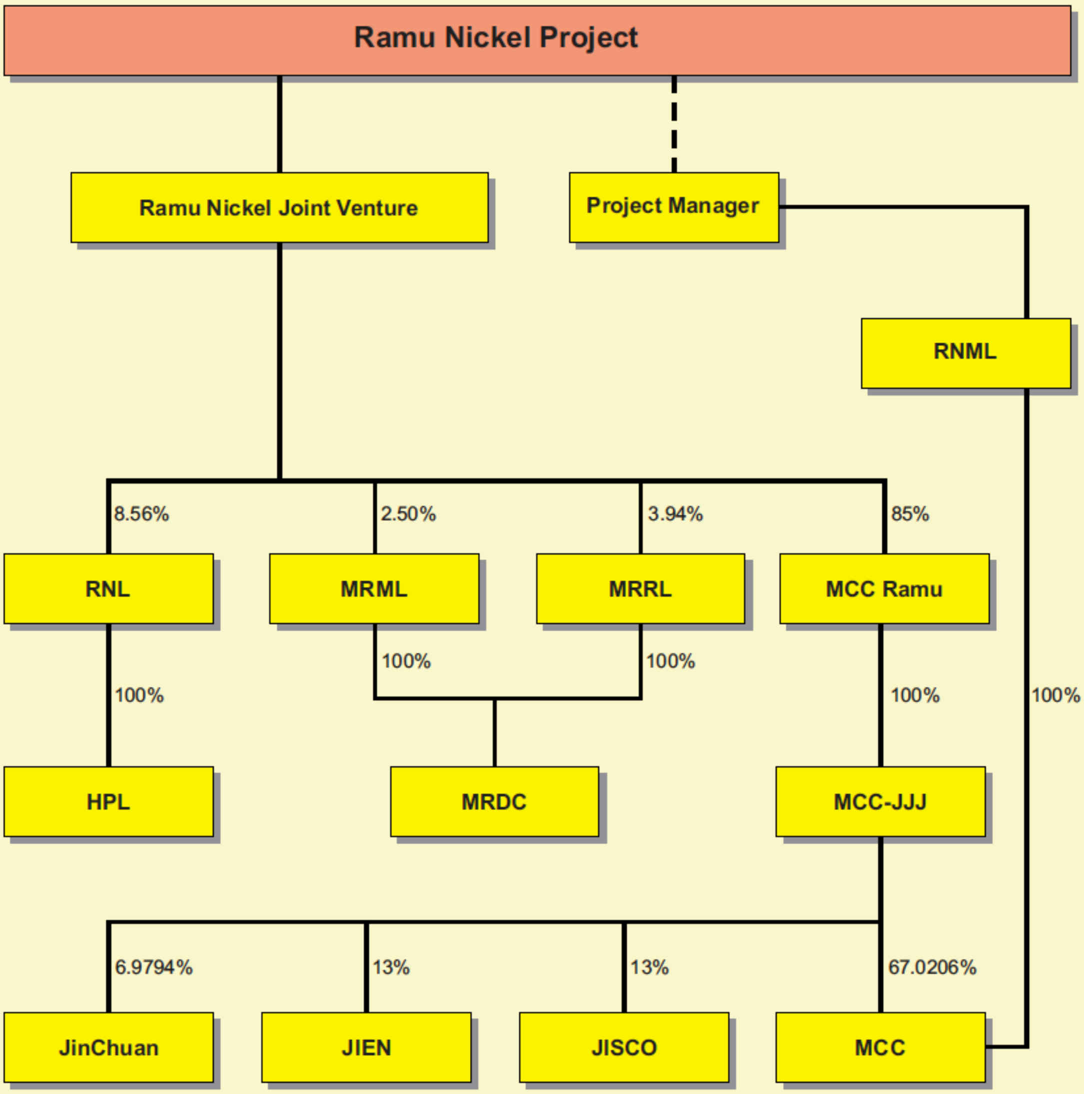
24.2 Mine Life and Exploration Potential

The Ramu nickel cobalt project has a LOM plan for 14 years treating 3.6Mtpa of ore.

There is significant potential for conversion of currently defined Inferred Mineral Resources (to Measured and Indicated status) and to increase the overall Mineral Resources by further exploration drilling, specifically:

- from existing Inferred Mineral Resources in the Greater Ramu Block where drill spacing was only around 400 x 400m at the end of 2017
- from further exploration surrounding the area that had been drilled at the end of 2017, both within the existing tenements as well as within the expanded exploration licence area that is being applied for by MCC Ramu.

This report has been prepared in connection with the current project’s nickel and cobalt Mineral Resources and Mineral Reserves; no capital is required to be spent in relation to the current Mineral Resources and Mineral Reserves, and therefore discussion in relation to a payback period is not relevant.



Source: Ramu Nickel Management (MCC) Limited, 2019

Conic Metals Corp.

Ramu Nickel Project

Figure 15

**RAMU NICKEL COBALT PROJECT
JOINT VENTURE OWNERSHIP**

BDA - 206/01 (April 2019)

Behre Dolbear Australia Pty Ltd

24.3 Glossary

Term/Abbreviation	Description
AAS	Atomic Absorption Spectroscopy
AIG	Australian Institute of Geoscientists
Al_2O_3	Aluminium Oxide (also called Alumina)
ALS	Australian Laboratory Services
AMC	AMC Consultants Pty Ltd
Astrolabe	Astrolabe Pty Ltd
AusIMM	Australasian Institute of Mining and Metallurgy
BMK	Basamuk
bcm	Bank Cubic Metre (in situ volume)
BDA	Behre Dolbear Australia Pty Limited
BWi	Ball Mill Work Index
CCD	Counter Current Decantation
CEC	Carpentaria Exploration Company Ltd
CEPA	PNG Conservation and Environment Protection Authority
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CMT	Canadian Mineral Technologies
Co	Cobalt
Cobalt 27	Cobalt 27 Capital Corp.
Conic Metals	Conic Metals Corp
Cr	Chromium
Cr_2O_3	Chromium Oxide
csv	File name - comma-separated values
DRC	Democratic Republic of Congo
DSTP	Deep Sea Tailings Placement
DTM	Digital Terrain Model
dwt	Dead Weight Tonnes
EDM	Electronic Distance Measuring Instrument
EL	Exploration Licence
ENFI	China ENFI Engineering Corporation
EPM	Eastern Pacific Mines Pty Limited
EW	Electrowin
FA	Free Acid
FEL	Front End Loader
Fluor	Fluor Daniel Corporation
FOB	Free On Board
GPR	Ground Penetrating Radar Survey
ha	Hectare
Hazen	Hazen Research Inc.
HFO	Heavy Fuel Oil
HGP	Highlands Gold Properties Pty Limited
Highlands	Highlands Pacific Limited
HPAL	High Pressure Acid Leaching
HRL	Hydrometallurgy Research Laboratories
ID^2	Inverse Distance Squared
INSEL	International Nickel Southern Exploration Limited
JIEN	Jilin Jien Nickel Industry Limited
JinChuan	Jinchuan Group Limited
JISCO	Jiuquan Iron & Steel (Group) Limited
JORC Code	Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
KBK	Kurumbukari
km	Kilometre
kg	Kilogram
km^2	Square Kilometre
kt	Thousand Tonnes
kW	Kilowatt
Kvaerner	Kvaerner Engineering
L	Litre
LMP	Lease for Mining Purpose
LOM	Life of Mine
m	Metre
M	Million
m^3	Cubic Metre
m^3 /hr	Cubic Metres Per Hour
MCC	Metallurgical Corporation of China Limited
MCC-JJJ	MCC-JJJ Mining
ME	Mining Easement
Metals	Metals Exploration N.L.
µm	Micron (m x 10-6)
MgO	Magnesium Oxide
MHP	Mixed nickel-cobalt hydroxide product/precipitate
ML	Mining Lease

Term/Abbreviation	Description
MRA	Mineral Resources Authority
MRDC	Mineral Resource Development Corporation
MRDI	Mineral Resource Development, Inc.
Mtpa	Million Tonnes Per Annum
NI 43-101	National Instrument 43-101
Ni	Nickel
Nord	Nord Resources Corporation
NPV	Net Present Value
OEMP	Operational Environmental Monitoring Plan
OK	Ordinary Kriging
PD	Positive Displacement
PFS	Pre-Feasibility Study
PN	Pre-neutralisation
PNG	Papua New Guinea
QA/QC	Quality Assurance/ Quality Control
RC	Reverse Circulation
RNL	Ramu Nickel Limited
ROM	Run of Mine
ROV	Remotely Operated Vehicle
SEC	Simons Engineering and Consulting Incorporated
SG	Specific Gravity
SiO_2	Silicon Oxide
Sinomine	Sinomine Resource Exploration Co., Ltd
SML	Special Mining Lease
SO_2	Sulphur Dioxide
SRC	Saskatchewan Research Council
SX	Solvent Extraction
t	Tonne
t/m^3	Tonnes per Cubic Metre
tpa	Tonnes Per Annum
tph	Tonnes Per Hour
TRS	Top Of Rocky Saprolite
US$	United States Dollar
VALMIN Code	Code for the Technical Assessment and Valuation of Mineral Assets and Securities for Independent Expert Reports
XRF	X-Ray Fluorescence

25 INTERPRETATION AND CONCLUSIONS

The geology and mineralisation controls at Ramu are reasonably understood, based on extensive exploration drilling in the area and mining operation since 2012. The laterite mineralisation remains open laterally in almost all the directions as the underlying dunite covers a much larger area than covered by the current drilling; this represents a significant additional exploration potential in the areas surrounding the currently defined Mineral Resources.

The Mineral Resource estimates for the Ramu nickel and cobalt deposit have been carried out under the guidelines of the Australasian JORC Code by Competent Persons as defined by those guidelines. The JORC Code guidelines are compatible with the requirements of NI 43-101 in this regard.

The quality control procedures and results for the Phases 3 and 4 HGP/Highlands drilling programs were audited by the Competent Person, Dr Francois-Bongarcon of MRDI, for the 1998 Feasibility Study resource estimate. In his October 1998 report Dr Francois-Bongarcon stated that "*it is MRDI's opinion that the sampling and QA-QC procedures at HPL (Highlands Pacific Limited) and Astrolabe are now reaching a level of depth, detail and scrutiny that places them above industry standards. The quality and reliability of the data used in the resource modelling exercise at Ramu have been properly characterised and controlled, biases detected and corrected, reproducibility established and maintained.*" BDA's Qualified Person for this NI43-101 report, Dr Qingping Deng, concurs with the MRDI conclusion based on review of the historical technical reports produced by MRDI and the 1998 Feasibility Study report.

The Competent Person for the 2017 Sinomine resource estimate update was Mr Zhang Xueshu, Chief Geologist of Sinomine. The Sinomine 2017 resource estimate update report stated that the QA/QC results for the 2017 drilling meet the production needs of the mine. However, BDA considers that there is some room for improvement for the quality controls for the 2017 drilling programmes. BDA recommends that certified assay standards and external check assays could be used for quality control of the assay results produced by the Ramu assay laboratory.

As the assays for the 2017 drilling programs represent only a small portion of the overall assays used for the 2017 resource estimate update, BDA's Qualified Person considers that the overall database quality for the 2017 resource estimate update is generally acceptable for generating a Mineral Resource estimate update under both the 2012 Australasian JORC Code and 2011 Canadian NI43-101 as amended in 2016.

The 2017 year-end Mineral Resources and Mineral Reserves were prepared by Sinomine by deducting the production depletion during 2017 and adding the Mineral Resource and Mineral Reserve additions from the newly drilled areas in 2017 to the Mineral Resource and Mineral Reserve estimates at the end of the previous year. Although Sinomine has not provided any details as to how these calculations were performed, BDA considers the overall results are reasonable and potentially somewhat conservative based on available data.

Overall, BDA's Qualified Person considers the Measured, Indicated and Inferred Mineral Resource estimates as of the end of 2017 are an appropriate representation of the in-situ mineralisation for the area that had been drilled at that time and are suitable for use in mine planning and Mineral Reserve estimation of the project. The 2017 year-end Mineral Resource estimates by Sinomine are the latest Mineral Resource estimates available to BDA's review, therefore, they are considered as the current Mineral Resource estimates for the Ramu deposit. As there are significant areas underlain by the ultramafic dunite surrounding the area that had been drilled at the end of 2017, there is significant exploration potential within the current exploration licence area as well as outside the current exploration licence area, and it is likely that the total Mineral Resource will increase significantly when additional drilling is conducted.

BDA's Qualified Person also considers that the Proven and Probable Mineral Reserves as of the end of 2017 are an appropriate representation of the recoverable tonnes and grade at that time and are suitable for use in mine planning and financial modelling of the project. The 2017 year-end Mineral Reserve estimates by Sinomine are the latest Mineral Reserve estimates available to BDA's review, therefore, they are considered as the current Mineral Reserve estimates for the Ramu deposit. As the Ramu mine is an established mining operation, the Mineral Reserve estimates take into account mining, metallurgical, infrastructure, permitting, and other relevant factors.

BDA's Qualified Person considers that the overall risk level of the Mineral Resource and Mineral Reserve estimates as of the end of 2017 is low.

26 RECOMMENDATIONS

The increase in the proportion of production coming from hydro-sluicing requires a change in the way mine planning, Mineral Reserve estimation and production reporting is undertaken. A comprehensive set of mining and processing costs and metal recoveries should be completed for the Mineral Reserve estimate where hydro-sluicing is planned. It is recommended that a full reconciliation of Ni and Co metal contents across the whole mining stream be completed in the future.

BDA recommends that certified assay standards and external check assays could be used for improving the quality control of the assay results produced by the Ramu assay laboratory. The laboratory could also be checked by external standard associations to ensure the assay procedures and results meet latest industry requirements.

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