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PANAUST

COMPANY ANNOUNCEMENT
27 November 2017

Frieda River Copper-Gold Project
Mineral Resource update for the Nena copper-gold deposit

PanAust Limited (PanAust), as manager of the Frieda River Joint Venture, is pleased to announce an updated Mineral Resource estimate for the Nena copper-gold deposit (Nena) in Papua New Guinea (PNG). The Nena deposit is located approximately five kilometres (km) north-west of the Horse-Ivaal-Trukai, Ekwai and Koki (HITEK) copper-gold deposits that form the basis for the Frieda River Copper-Gold Project feasibility study.

Nena is a copper-gold high-sulphidation epithermal deposit associated with the nearby HITEK porphyry-style mineralisation. The Nena deposit is divided into two zones, a sulphide zone and an outcropping highly weathered gold cap zone.

- The Nena sulphide Mineral Resource contains an estimated combined Indicated and Inferred Mineral Resource of 52 million tonnes (Mt) at a grade of 2.13% copper and 0.63 grams per tonne (g/t) gold (Table 1).
- The Nena gold cap Mineral Resource contains an estimated combined Indicated and Inferred Mineral Resource of 20Mt at a grade of 1.32g/t gold (Table 2).

Table 1: Nena sulphide Mineral Resource 2017

Classification	Tonnes (Mt)	Copper (%)	Gold (g/t)	Arsenic (ppm)	Antimony (ppm)
Measured	-	-	-	-	-
Indicated	35	2.35	0.79	2,500	160
M+I subtotal	**35**	**2.35**	**0.79**	**2,500**	**160**
Inferred	17	1.68	0.29	1,200	80
M+I+I total	**52**	**2.13**	**0.63**	**2,000**	**130**

Mineral Resource notes:
Copper cut-off grade 0.3% (total copper)
The Mineral Resource is reported on a 100% ownership basis
Totals may include minor discrepancies due to rounding.

Table 2: Nena gold cap Mineral Resource 2017

Classification	Tonnes (Mt)	Copper (%)	Gold (g/t)	Arsenic (ppm)	Antimony (ppm)
Measured	-	-	-	-	-
Indicated	11	0.07	1.35	3,000	230
M+I subtotal	**11**	**0.07**	**1.35**	**3,000**	**230**
Inferred	10	0.06	1.28	2,100	170
M+I+I total	**20**	**0.06**	**1.32**	**2,600**	**200**

Mineral Resource notes:

Gold cut-off grade 0.5g/t with an upper copper grade limit of 0.3%

This Mineral Resource is reported on a 100% ownership basis

Totals may include minor discrepancies due to rounding.

The Mineral Resource estimate is based on data from 211 diamond core drill holes totalling approximately 46,900 metres (m) and builds on the work performed by previous owners of the Frieda River Copper-Gold Project. Two additional variables (iron and sulphide sulphur) have been incorporated in the estimate to allow metallurgical modelling.

The Nena sulphide Mineral Resource supersedes the previous estimate prepared by Glencore-Xstrata. The Nena gold cap Mineral Resource estimate is newly reported.

Frieda River Copper-Gold Project

The Frieda River Copper-Gold Project is held by the Frieda River Joint Venture, an unincorporated joint venture between Frieda River Limited (FRL), a wholly owned subsidiary of PanAust, and Highlands Frieda Limited, a wholly owned subsidiary of Highlands Pacific Limited (Highlands). Frieda River Limited manages the Project and holds an 80 per cent interest; Highlands holds the remaining 20 per cent interest.

The deposits of the Frieda River Copper-Gold Project, including the Nena deposit, together represent one of the largest undeveloped copper-gold deposits in the world.

Strategic development opportunity

The Nena Mineral Resource offers a strategic development opportunity to increase the value of the Frieda River Copper-Gold Project. The Nena deposit is located in close vicinity to the HITEK copper-gold deposits that were the subject of the 2016 feasibility study. The facilities and infrastructure required to develop the HITEK deposits will also facilitate the exploitation of the Nena Mineral Resource. Nena is therefore envisaged as an additional mining and processing operation that would be developed after the HITEK deposits commence production.

The depth, distribution and nature of the Nena mineralisation favours a staged development approach. The deposit is amenable to open-pit mining with the potential for underground mining at depth. Open-pit mining would initially extract the near surface gold cap mineralisation to expose the sulphide rich portion of the deposit. Gold recovery by leaching methods will be considered for this first development stage. Mining and processing of the more complex sulphide Mineral Resource is contemplated as the second development stage. Under this concept a new flotation and hydrometallurgical plant would integrate with the processing circuit established to treat the Nena gold cap mineralisation.

Future work program

The current drill coverage indicates that extensions to the Nena deposit are unlikely and there are no immediate plans for further exploration or resource definition work. However recent geophysical re-interpretation has identified multiple buried high sulphidation epithermal targets. A porphyry style deposit to the north of Nena has also been proposed as an exploration concept.

Future desktop studies will be undertaken to assess the most appropriate approach to mining and processing mineralisation from the Nena deposit.

For further information contact:

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Forward-Looking Statements

This announcement includes certain 'Forward-Looking Statements'. All statements, other than statements of historical fact, included herein, including without limitation, statements regarding forecast production performances, potential mineralisation, exploration results and future expansion plans and development objectives of PanAust Limited are forward-looking statements that involve various risks and uncertainties. There can be no assurance that such statements will prove to be accurate and actual results and future events.

Competent Person Statements

Mineral Resources

The data in this report that relate to Mineral Resources for Nena are based on information reviewed by Mr Shaun Versace who is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM).

Mr Versace is a full time employee of PanAust Limited. Mr Versace has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.

Mr Versace consents to the inclusion of the Mineral Resources in the form and context in which they appear.

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Competent Person's Consent Form

Pursuant to the requirements of Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

Report name

Nena Mineral Resource Estimate 2017

(Insert name or heading of Report to be publicly released) ('Report')

Frieda River Limited

(Insert name of company releasing the Report)

Nena

(Insert name of the deposit to which the Report refers)

November 2017

(Date of Report)

Statement

I/We,

Mr Shaun Nicholas Versace

confirm that I am the Competent Person for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code, 2012 Edition, having five years experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member of *The Australasian Institute of Mining and Metallurgy*.
- I have reviewed the Report to which this Consent Statement applies.

I am a full time employee of

PanAust Limited

And have been engaged to prepare the documentation for

Nena

on which the Report is based, for the period ended

November 2017

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.
I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Targets, Exploration Results and Mineral Resources.

Consent

I consent to the release of the Report and this Consent Statement by the directors of:

Frieda River Limited

[signature]

Signature of Competent Person:

21/11/2017

Date:

Member Australasian Institute of Mining and Metallurgy

Professional Membership:
(insert organisation name)

111474

Membership Number:

[signature]

Signature of Witness:

James Carpenter, Brisbane, Australia

Print Witness Name and Residence:

Section 1: Sampling techniques and data

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes or hand-held XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.*	The nature of the sampling at the Nena copper-gold deposit (Nena) was from diamond core drilling with core diameters of PQ (~83mm), HQ (~61mm) or NQ (~47mm). Drilling was undertaken from 1969 to 2011 and consists of a total of 250 drill holes for a total of 54,107m of core and percussion drilling. The standard drill sample interval was 2m regardless of core diameter. The 2m assay interval was cut in half lengthways using a diamond blade core saw prior to sample preparation and analysis. Samples were prepared on site at the Frieda River base camp and analysed at laboratories in Madang, PNG and Townsville, Australia. Bulk density and moisture content measurements were taken using a wax sealed immersion technique on 0.1m length whole core samples. A total of 7,123 density samples were tested across a range of rock types, alterations and depths. There is potential for a positive density bias arising from selecting only competent core for testing. The drilling is split into five phases (1a, 1b, 2, 3, 4) based on the year drilled, the nature and quality of the sampling and the assay techniques used. The phases cover the following intervals and number of drill holes: • Phase 1a, 1972 to 1983. 8 holes with 0 used for the Mineral Resource estimate (estimate) due to quality assurance and quality control (QAQC) concerns

Criteria	JORC Code explanation	Commentary
		• Phase 1b, 1976 to 1982, 27 holes with 0 used for the estimate due to QAQC concerns • Phase 2, 1993 to 1997. 159 holes used for the estimate • Phase 3, 1998 to 1999. 12 holes with 8 used for the estimate • Phase 4, 2002 to 2011. 44 holes used for the estimate
	• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*	A heterogeneity study was performed on Nena core samples in 1994. The study forms the basis of the sampling protocol. The protocol determined the subsample particle sizes and weights in such a way that the resulting aliquot was representative. Effective sampling equipment that was fit for purpose was used to prepare the samples. The equipment included ovens, Jacques, rolls and Boyd crushers, rotating sample dividers and riffle splitters and LM5 pulverising mills. Particle size checks were performed on a regular basis. Crushed and pulp stage duplicates were collected on a regular basis and the results analysed to confirm sample representivity. Drill collar positions were surveyed and checked using improved survey methods over the years. FRL has not independently checked the collar locations at Nena but has checked collar locations at the nearby HITEK porphyry deposits which were drilled in the same phases of drilling and surveyed by the same surveyors. The result of the collar checks at HITEK showed that the original and checked location had a difference of less than 1m. Down hole surveys using a single shot Eastman camera were taken approximately every 50m down hole for Phase 2 to 4 drilling between 1993 and 2011. The films were checked and no issues detected. Down hole surveys were not undertaken for Phase 1a holes a practice that was common at the time. This represents an

Criteria	JORC Code explanation	Commentary
		element of uncertainty that resulted in removal of these drill holes from the data used for that Mineral Resource estimate. Original laboratory assay files were checked against the assay values used for the Mineral Resource estimate and no issues were detected.
	• *Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1m samples from which 3kg was pulverised to produce a 30g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.*	Sample preparation was originally performed in a dedicated laboratory facility on site using experienced staff sourced through Astrolabe in Madang. The drill core was marked into 2m intervals, photographed, logged, sawn and dried in a wood fired oven. The temperature of the oven was kept below 115°C to prevent loss of volatile native elements. A two stage primary crushing circuit reduced the fragment size to less than 5mm. A LM5 ring mill pulveriser was used to pulverise the sample to -150 mesh. Each 2m sample produced 8 to 10 kilogram (kg) of material. A 1kg subsample was riffle split and despatched to Astrolabe's laboratory. The 9kg reject sample was stored on site. A duplicate sample was collected for every tenth regular sample and analysed at Astrolabe. Astrolabe pulverised the 1kg sample to -200 mesh and took a 250g split for assay. Phase 4 drilling, between 2002 and 2011 (17% of data) followed earlier protocols with the exception of a Boyd crusher being introduced to crush the sample to - 2mm in a single step. The crushed material was subsampled using an integrated rotating sample divider. The 3.5kg crushed subsample was pulverised and 200g taken for assay.
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other*	All holes used in the Nena Mineral Resource estimate were drilled by diamond core using a triple tube barrel. The core sample was pumped from the barrel. The core sizes were PQ3 (83 millimetres (mm) core diameter), HQ3 (61mm) or NQ3 (47mm). The core is not oriented because the highly brecciated nature of the deposit makes orienting the core difficult.

Criteria	JORC Code explanation	Commentary
	type, whether core is oriented and if so, by what method, etc.).	
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.*	For all samples the core recovery averaged 91%. For mineralised core the average was 95%. Core recoveries was recorded by measuring the length of core on a run-by-run basis and on a per sample basis. Core loss was assessed by the logging geologist at the time of drilling to determine if it was genuine core loss or a void.
	• *Measures taken to maximise sample recovery and ensure representative nature of the samples.*	Triple tube wireline drilling was employed for Phase 2 to 4 drill holes (1993 to 2011). The core was pumped out of the barrel before being put into pre-marked core trays. Core trays were sealed and transported from the rig site by helicopter for processing at a dedicated facility.
	• *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	Scatter plots of copper grade versus core recovery indicate lower grades at lower core recoveries. This effect was most likely due to low core recoveries in friable alluvium and highly oxidised material where naturally low copper grades occur.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	Core handling, photography and geological and geotechnical logging procedures are well developed and have been performed to a high standard. Visual logging codes for geology are validated from multiple sources of data including geochemistry, sequential copper and sulphur assays. All drill core from Phase 2 (1993) and onwards has been systematically logged using standard procedures. Efforts to standardise geological description have been made which include relogging and recoding historical logs. The logging codes were based on those introduced by Cyprus-Amax Minerals in 1998 and have been used continuously since, providing consistency.

Criteria	JORC Code explanation	Commentary
		Most of the core was stored at the Nena camp and has undergone significant oxidation due to the nature of the rocks and the humid tropical environment. The oxidation makes it difficult to relog the core.
	• *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.* • *The total length and percentage of the relevant intersections logged.*	Logging was both qualitative and quantitative. The lithology, weathering and alteration were logged qualitatively. The mineralisation, geotechnical, structural and some aspects of petrology were logged quantitatively. 100% of the core was logged and photographed although only Phase 4 holes (2002 onwards) have digital core photographs. The remaining photographs are print and are stored in a facility located in Brisbane, Australia.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.*	All samples have been sawn in half lengthways with a diamond saw.
	• *If non-core, whether riffled, tube sampled, rotary split, etc. And whether sampled wet or dry.*	All samples used to inform the Mineral Resource estimate were diamond core samples.
	• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*	The nature, quality and appropriateness of the sample preparation technique for the geochemical assays have been separately verified by Xstrata in 2013 and FRL in 2015 and 2016 as being appropriate.
	• *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*	The quality of the sub-sampling procedure was ensured by adopting the recommendations from a heterogeneity study performed by Dr F Pitard on samples collected from the Nena deposit. This involved ensuring the sub-sample grain size and mass was sufficient to keep the theoretical sampling error below an acceptable limit.

Criteria	JORC Code explanation	Commentary
	• *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.*	The orientation of the drill holes was such that it cut across the main geological structure that formed the deposit. Twin drill holes have been drilled. Second half sampling has not been performed because it was considered desirable to retain as much core as possible for future test work. Duplicates were submitted to check for errors arising from the sampling process. No material errors were detected.
	• *Whether sample sizes are appropriate to the grain size of the material being sampled.*	The sample sizes are considered appropriate for the grain sizes at each stage of the subsampling process, supported by the heterogeneity study.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	All assays apart from gold were by aqua regia digest and either atomic absorption spectroscopy (AAS) or inductively coupled plasma – optical emission spectroscopy (ICP-OES). This technique is considered appropriate for the copper, silver, arsenic, antimony, lead, zinc and other minor and deleterious elements. Gold was assayed by a fire assay with a 50g sample charge. Fire assays are widely accepted as an appropriate total gold determination technique.
	• *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.*	No hand held geophysical tools have been used to assess the drill samples at Nena.
	• *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether*	All samples analysed have been subjected to the QAQC protocols of the analysed laboratory. This included use of standards, blanks and duplicates. External

Criteria	JORC Code explanation	Commentary
	acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	(second) laboratory checks were also performed. No bias was determined in each case. Acceptable levels of accuracy have been established for Phase 4 (2002 to 2011) samples by the use of company submitted standards. Acceptable levels of precision have been established by the use of duplicates and blanks.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.*	FRL staff reviewed the best preserved Nena core in 2015 and 2016 and found the logging to be adequate. Visual inspection of the mineralisation was consistent with the assay results.
	• *The use of twinned holes.*	5% of the Phase 2 drill holes (1993 to 1997) were twinned using holes drilled in Phase 4 (2002 – 2011). The Phase 2 drilling comprises 80% of the data. The twin drill hole analysis did not identify any material issues.
	• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*	Original logs are stored in a secure facility in Brisbane, Australia. Some information (down hole surveys, drill reports) was held at site (Frieda River base camp, PNG). Original hand written logs have been entered into digital logs and stored on a commercial grade geological database. The geological database used rules to validate the data on entry, including libraries, limits of detection/upper limits and checks on total length of logging versus drilled depth. The geology logs were based on a standard set of codes. Ongoing electronic data security is maintained though digital locking of completed drill hole data. Object tracking is used to identify the 'who, what and when' of any digital changes.
	• *Discuss any adjustment to assay data.*	There have been no recorded instances of adjusting assay data except to correct for errors.

Criteria	JORC Code explanation	Commentary
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	The drill holes were surveyed using laser theodolite and EDM or Total Station in closed traverses or using differential Global Positioning System (GPS) receiver. Accuracy of the collar positions is estimated to be better than 1m. Collars are cross-referenced to the relevant survey documents which are scanned into a digital archive.
	• *Specification of the grid system used.*	PNG94, the gazetted national system of Papua New Guinea. Height defined relative to mean sea level at Aitape, PNG.
	• *Quality and adequacy of topographic control.*	The entire deposit has full topographic coverage using a high quality method. Topography has been measured using a LiDAR survey with ground survey control points. There are no standing bodies of water that may affect the topography surface over the deposit.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.*	There are no Exploration Results being reported.
	• *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.*	The Nena deposit was been drilled on a 45m x 45m grid in the most intensely drilled portion of the deposit. This spacing is considered necessary for an Indicated classification. The widest spacing is approximately 100m x 100m which is considered necessary for Inferred classification. Drill sections are oriented 050° from True North (TN). There are minor local variations in spacing caused by constraints on drill pad locations in mountainous terrain.
	• *Whether sample compositing has been applied.*	The composite length (computed composite) is 2m. Most samples (~95%) are 2m in length. The remainder are composited to 2m with breaks on the domain boundaries. A minimum composite length of 0.5m is used for the estimate. This filter removes 62 composites out of 20,348 composites.

Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The orientation of sampling was aligned perpendicular to the main axis of the deposit. This orientation achieves an unbiased sample. The drill holes were typically oriented to the south-east at 220° to 240° and dip between -50° and -60°. Approximately 15% of the drill holes were drilled in the opposite azimuth or on a different orientation to test for bias arising from drilling in a single orientation or any barren intrusives striking parallel to the drill grid. No bias or barren intrusives were detected.
	• *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	The drilling orientation is approximately perpendicular to the orientation of the key mineralising structure. This is the appropriate orientation for the deposit.
Sample security	• *The measures taken to ensure sample security.*	A chain of custody was maintained by the use of commercial grade tamper proof security tags for transport of the samples between site and laboratory for Phase 4 samples. Assay results were imported directly into a digital database and the original assay certificates kept as either hard copy (Phase 2) or digitally. The sample security measures of the Phase 2 samples are unknown. The use of twin drilling to test the Phase 2 samples is appropriate to verify the results from this phase of drilling.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	There has been no external audits of the Nena sampling techniques and data other than those employed by the laboratories themselves.

Section 2: Reporting of exploration results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The Nena deposit is located in the northern foothills of Central Range in western PNG, in Sandaun Province, at approximately latitude 4.699 south, longitude 141.763 east, ~700m above sea level. The area is remote from roads and facilities and is only accessible by air. Nena is located entirely within Exploration License No. 58 (EL58) which covers an area of 150.6km^2. FRL is the manager of the Frieda River Joint Venture with the participants holding interests in EL58 representing their interests in the joint venture. FRL holds an 80% interest in EL58, with Highlands Frieda Limited (a subsidiary of Highlands Pacific Limited) holding the remaining 20%.
	• *The security of the tenure held at the time of reporting along with any known impediments to obtaining a Licence to operate in the area.*	EL58 is securely held with a renewed submitted in August 2017. There are no known impediments to obtaining a Mining Licence to operate in the area.

Criteria	JORC Code explanation	Commentary
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	Exploration drilling has been undertaken in the Frieda River area since 1969. • Exploration was first carried out by Mount Isa Mines Ltd in 1968 and subsequently by Sumitomo Metal Mining Co Ltd and Mount Isa Mines Ltd between 1974 and 1987. • Highlands Gold Ltd completed drill hole campaigns between 1993 and 1997. • Cyprus-Amax Minerals entered into a joint venture agreement with Highlands Pacific Ltd and OMRO Frieda and completed drill programs between 1998 and 1999. • In 2002, Highlands Pacific Ltd entered into joint venture agreement with Noranda Pacific and OMRO Frieda Co Ltd which led to further drilling at Nena. • In 2005, Noranda Pacific Ltd merged with Falconbridge and Xstrata entered the Project through acquisition of Falconbridge in 2006. Xstrata performed extensive drill campaigns with a focus on nearby porphyry copper-gold deposits within EL58.
Geology	• *Deposit type, geological setting and style of mineralisation.*	Nena is a copper-gold high sulphidation epithermal deposit associated with nearby porphyry-style mineralisation. The deposit is hosted within the Frieda River Igneous Complex (FRIC). The FRIC is considered to be the remains of a single stratovolcano and consists of diorites and andesites of Island-arc affinity. Two styles of mineralisation are recognised at Nena, being the gold cap and sulphide mineralisation. The gold cap mineralisation is the outcropping totally oxidised remnant of the underlying copper gold sulphide mineralisation.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of all holes*	A total of 250 diamond core and percussion drill holes (54,107m) were drilled at Nena between 1969 and 2005. Drill holes were removed from the estimate data due to unreliable collar surveys, no down hole surveys or where holes were drilled

Criteria	JORC Code explanation	Commentary
		for metallurgical purposes. This left 211 (46,854m) drill holes that were used for the estimate. A table of the drill hole collars and orientations are included as an appendix to the Mineral Resource report.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.*	No grade truncations have been applied.
	• *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.*	No aggregation methods have been applied to any results being reported.
	• *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	No metal equivalent values have been used.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.*	The mineralisation is hosted within a large silica rich brecciated zone of hundreds of metres scale. The sample interval is two metres. The sampling intervals are considered appropriate to determine the geological and grade continuity and provide adequate resolution on domain boundaries.

Criteria	JORC Code explanation	Commentary
	• *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').*	The deposit has a north-west trending steeply dipping geometry. Drill holes are drilled perpendicular to the main geometry.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	Maps and section views are included in the main body of the report.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	There are no Exploration Results being reported with this Mineral Resource estimate.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test*	Temperature zonation determined from copper mineral species indicate the high temperature zone of Nena is the north end of the deposit. This implies that the source of the mineralising fluids lies to the north of, or under the north end, of the Nena deposit. The likely source of mineralising fluids is a porphyry. The existence of the source porphyry has not been tested by drilling and is an exploration concept only.

Criteria	JORC Code explanation	Commentary
	results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	A large number of airborne and ground geophysical surveys have been performed over the Nena area. A Dighem airborne electromagnetic survey indicated that there are no outcropping Nena style deposits within the FRIC. Induced polarisation surveys have been carried out to identify any buried deposits. The results of recent reinterpretation have identified geophysical targets that are identified in an appendix to the Mineral Resource report. Metallurgical test work has been performed on the Nena deposit. The results show that the sulphide portion of deposit is amenable to processing by the Albion Process.
Further work	• *The nature and scale of planned further work.* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas.*	There are no immediate plans to perform further geological work on the Nena deposit. There are several recommendations should future work be performed: • Perform whole tray bulk density tests to check if a bias exists in the wax coated immersion test results. • Explore for the source of Nena mineralisation, most likely to the north, as indicated by vectoring from temperature zonation within the Nena copper sulphides. • Perform gold cyanide solubility tests in the gold cap. • Orient future drill holes to test the location of the outer limits of the deposit.

Section 3: Estimation and reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	Geology logs and assay certificates were imported directly into the geological database. Internal checks of the analytical database consistency were made in 2015, 2016 and 2017 by FRL staff. Spot checks on assay certificates were performed along with checking the top 50 assay values and other outlier values. Down hole surveys were checked by identifying successive measurements that deviate >5° in dip or >10° in azimuth. The hard copy drill hole information and scanned copies are well organised and considered to be in acceptable condition. The storage of this information is considered appropriate.
	• *Data validation procedures used.*	Internal database checks include correcting primary key violations, object tracking and a suite of drill hole checks including overlapping intervals.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	Members of the Competent Person's team, consultant Mr Leaman and Mr Carpenter of FRL, conducted site visits in 2015 and 2016. The Nena core was inspected and a helicopter overflight of the deposit was performed in order to observe outcrops. No issues were detected.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	The interpretation is based on factual observations of the drill core fitting with the identified deposit type. Previous Mineral Resource estimates have similar geological interpretations. The confidence in the margin, or outer limit, of the deposit is dependent on the drill hole spacing and orientation in relation to the contact. In locations where the margin is parallel to the drilling the margin has been placed mid-way between drill holes. Where the boundary is uncertain an Inferred classification has been assigned to the Mineral Resource blocks.

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	• *Nature of the data used and of any assumptions made.*	The drill hole data is taken from triple tube diamond drill core oriented perpendicular to the strike of the deposit on a 45m x 45m to 100m x 100m spacing dipping -50° to 220°. The geological logging and geochemical assays have been used as a basis for the interpretation. It is assumed that Nena has a similar pattern of alteration and mineralisation to other high sulphidation epithermal deposits.
	• *The effect, if any, of alternative interpretations on Mineral Resource estimation.*	An alternative to the accepted interpretation of the deposit is that there are no hard grade boundaries. The effect of using this alternative interpretation would increase the tonnes and decrease the grade of the estimate and results in a copper metal increase in the order of 25%.
	• *The use of geology in guiding and controlling Mineral Resource estimation.*	A combination of lithology, alteration, weathering and structural features form the basis for the Mineral Resource estimate. The outer boundaries are 'hard' based on rapid grade changes including those due to faulting. Barren post mineralisation intrusives have been modelled using a 'hard' boundary. Internal boundaries for the sulphide, gold cap and density estimates are 'semi-soft', meaning that samples from the other side of the boundary are available to inform block estimates on the opposite side of the boundary, but only to a certain distance. This distance is between 10m to 20m depending on the variable being estimated.
	• *The factors affecting continuity both of grade and geology.*	The factors affecting continuity of grade and geology include alteration, faulting, weathering and the presence of barren intrusives. Each factor has been considered during the modelling.

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Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	The deposit is outcropping, fusiform in shape, 1,440m long and 250m wide trending to the north-west. The gold cap outcrops on the north-eastern side of the ridge with a thickness between 10m to 80m. The sulphide domains are found 50m to 150m below the surface and have a thickness of 50m to 200m. The deepest sulphides are found at a maximum depth of 250m below surface.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	The Mineral Resource estimate for Nena was estimated using established geostatistical techniques following comprehensive statistical and exploratory data analysis. The evaluation of appropriate geological groupings for combination into statistical estimation populations was undertaken through the iterative statistical definition of estimation domains. Two metre down hole composites truncated at estimation domain boundaries have been used for the estimation. A minimum of 0.5m in length was required for a composite. Three dimensional experimental variograms were generated and modelled. The variogram models were validated by the 'leave-one-out' technique for the highest grade domains. Block grade interpolation was carried out using three-pass ordinary kriging and ordinary cokriging in parent blocks of 20m x 20m x 10m down to regular sub-blocks of 5m x 5m x 5m. Minor element variables were estimated by inverse distance weighting (power of 2). No direct grade capping was performed. A restricted search distance was applied to high grade samples to limit their influence (called the High Yield limit in the Vulcan software) on modelling and estimation.

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	• *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.*	A check estimate for copper was performed using an inverse distance weighted method. The ordinary kriged estimate, inverse distance weighted estimate and declustered composite data were compared in swath plots. No issues were detected. The copper metal content is similar to earlier estimates prepared by previous tenement holders based on the same data set. The Nena deposit has not been mined in the past so reconciliation with production data is not possible.
	• *The assumptions made regarding recovery of by-products.*	No by-products are assumed to be recovered. Copper and gold are considered co-products.
	• *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).*	The arsenic, antimony and sulphur are estimated by ordinary kriging. The iron and sulphide sulphur is estimated by ordinary cokriging. The zinc, lead and tellurium is estimated by inverse distance weighting (power of 2).
	• *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.*	The parent block size is 20m x 20m x 15m. The majority of the deposit is drilled on a 45m x 45m grid. The parent block size can sub-block down to 5m x 5m x 5m to provide adequate resolution along domain boundaries. The rotated ellipsoid search extends out to a maximum distance of 100m along strike for copper and gold and declustering is achieved by forcing the estimate to use multiple drill holes.
	• *Any assumptions behind modelling of selective mining units.*	No assumptions have been made on the selective mining unit. No adjustments have been made to the estimate for selective mining units.
	• *Any assumptions about correlation between variables.*	Iron and total sulphur, and sulphide sulphur and total sulphur, have a strong linear correlation ($r > 0.9$). This has led to cokriging of the relatively sparse iron and sulphide sulphur samples along with total sulphur into the sulphide domains. The correlation between copper and gold is low ($r < 0.2$).

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	• *Description of how the geological interpretation was used to control the resource estimates.*	A 'hard' estimation boundary was used to control the outer limit of the estimate based on a material step change in grade across the contact. A 'semi-soft' boundary was used where the geological interpretation indicated a distinct but not sharp change in grade over a certain distance. Internal boundaries inside the sulphide domain were 'semi-soft' boundaries based on the interpreted mineralising process.
	• *Discussion of basis for using or not using grade cutting or capping.*	No capping or cutting of grades was performed. Grade outlier restricted searches were applied to the copper, gold, arsenic, antimony, sulphur and iron elements. The restriction required that any sample above a certain grade within the domain would only be visible to blocks within a relatively small search radius. This restriction was mainly to limit high grade smearing.
	• *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	Estimate and sample statistics were compared and no material discrepancies were noted. Visual checks between drill hole data and the block model values were performed and no anomalies were detected. Swath plots of the copper, gold, arsenic, antimony and density indicated no issues. There is no reconciliation data available for Nena as there has been no mining.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	Tonnages are reported on a dry bulk basis.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	The sulphide Mineral Resource uses a 0.3% copper cut-off based on a step change in copper grades from 0.1% to 0.6% copper at the outer margin of the deposit. The gold cap Mineral Resource uses a 0.5g/t gold cut-off for blocks with less than 0.3% copper. These cut-offs are based on an approximate economic grade for open cut mining. The use of the upper 0.3% copper limit for gold cap is based on the gold

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		cap being highly leached of copper which makes processing by cyanide extraction feasible.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	An open-pit mining method is assumed to be suitable for this deposit due to its shallow nature. Previous holders of the Nena tenement have also determined that an open-pit mining method is appropriate. The potential for underground mining also exists and has been the subject of high level studies (AMDAD, 2008 and Runge, 2012).
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation*	Metallurgical test work over several phases has been completed on core samples from Nena. The results have established a technically feasible processing method using cyanide extraction for the gold cap and a flotation and hydrometallurgical process for the sulphide. Sequential copper test results show low levels of cyanide soluble copper in the gold cap indicating amenability to cyanide extraction of gold.

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	of the basis of the metallurgical assumptions made.	
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfield project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	The Mineral Resource estimate assumes that waste and process residue will be stored subaqueously in a facility that will be built as part of the Frieda River Project. This approach prevents the formation of acid rock drainage. It is assumed that environmental controls planned for the Frieda River Copper-Gold Project will be applied to the extraction of the Nena deposit.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	Dry bulk density was determined by 7,123 tests from drill hole core samples sourced across the deposit. The method was an oven dry wax coated weight in air, weight in water method on 0.1m competent pieces of core. Selecting only competent pieces of core may cause a bias as the friable or fractured material may have a lower bulk density. This bias is assumed to be immaterial for the Nena Mineral Resource estimate.

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	• *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.*	The oven dry wax coated weight in air, weight in water method adequately accounts for void spaces when determining dry bulk density. Selecting only competent pieces of core may cause a bias as the friable or fractured material may have a lower bulk density. This bias is assumed to be immaterial for the Nena Mineral Resource estimate.
	• *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	Bulk density is determined from actual measurements and estimated into the block model by ordinary kriging. Blocks that were not estimated due to a lack of tests were assigned a default value based on averages of density tests from areas with the same weathering and lithology.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.*	The Mineral Resource classification is assigned using a combination of rules, estimation pass and solid triangulations. Alluvium was classified no higher than Inferred due to core recovery concerns and the difficulty in drilling the broken ground. The estimation passes were used to ensure the Mineral Resource had estimated values for copper, gold, arsenic and antimony. An assigned density was considered acceptable for Inferred but not higher classifications. The passes and associated estimation quality indicators were then used to create the Indicated and Inferred triangulations. A buffer zone of 100m around the interpreted block fault has an Inferred classification to reflect the uncertainty in the position of the fault. The blocks at the deposit's margin are classified as Inferred where the mineralisation contact is not closely defined between adjacent drill holes.
	• *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values,*	The quality, quantity and appropriateness of the drilling and assaying at Nena is adequate to support Indicated and Inferred Mineral Resources. The copper, gold, arsenic, antimony, density, sulphur, iron and minor element estimates are based on samples from adequately spaced drill holes to support the classifications.

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	quality, quantity and distribution of the data).	
	• *Whether the result appropriately reflects the Competent Person's view of the deposit.*	The results reflect the view of the Competent Person.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	H&SC performed a review of the Nena data and initial geological modelling prior to the final Mineral Resource estimate. Several recommendations from the H&SC review were incorporated into the final estimate. H&SC were of the opinion that the FRL estimate for Nena was overly conservative by up to 25% copper metal content. They believed the 'true' estimate lies somewhere between the Mineral Resource estimate and the H&SC estimate. FRL has compared this Mineral Resource estimate to previous Mineral Resource estimates and found that four out of five estimates are similar in total contained metal. The fifth estimate, H&SC, contains significantly higher amounts of copper metal.
Discussion of relative accuracy/confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the*	In the experience of the Competent Person the following levels of relative accuracy apply: • Indicated Mineral Resource: ± 20% grade and tonnes at a 95% confidence interval for a three month production interval • Inferred Mineral Resource: ± 50% grade and tonnes at a 95% confidence interval for a three month production interval

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	factors that could affect the relative accuracy and confidence of the estimate.	
	• *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.*	The Nena Mineral Resource estimate is a global estimate with no change of support.
	• *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	The Nena deposit is undeveloped and has no production data.