Quantified Strategies

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Competent Person's Consent Form

Pursuant to the requirements of ASX Listing Rule 5.6 and clause 9 of the 2012 JORC Code (Written Consent Statement)

Report Description

Bougainville Copper Limited Annual Report

Bougainville Copper Limited

Panguna

16 March 2021

Statement 1

I, **Daniel Hastings** 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 or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list promulgated by ASX from time to time.
- I have reviewed the Report to which this Consent Statement applies.
- I am a consultant working for Quantified Strategies Pty Ltd and have been engaged by Bougainville Copper Limited to prepare the documentation for the Panguna Deposit on which the Report is based, for the period ended 31 December 2020.
- 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 Mineral Resources for the period ending 31 December 2020.

I consent to the release of the Report and this Consent Statement by the directors of Bougainville Copper Limited.

Daniel Hastings
Member AusIMM 301925
Principal Consultant
Quantified Strategies Pty Ltd

16 March 2021

Statement 2

I, **Gerald Clark** 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 2012 JORC Code, having five years' experience which is relevant 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 or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list promulgated by ASX from time to time.

- I have reviewed the Report to which this Consent Statement applies.

- I am a consultant working for Gerald Clark – Consultant Geologist and have on behalf of Bougainville Copper Limited prepared the documentation on which the Report is based.

- 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 Mineral Resources for the annual period ended 31 December 2020.

I consent to the release of the Report and this Consent Statement by the directors of Bougainville Copper Limited.

Gerald Clark
Member AusIMM 102687
Consultant Geologist

16 March 2021

Mineral Resource Statement

In 2012, Bougainville Copper Limited (BCL) prepared an OMS (order of magnitude study) to evaluate the technical and financial viability of re-opening the Panguna mine. As part of the OMS a revised Mineral Resource was reported in accordance with the JORC code (2012). The 2012 Mineral Resource was estimated using geological, mine planning and production data archived in 1989. The archived data sets (including 80,778m of diamond drilling, 4,700m of underground sampling and production blast hole sampling) were reviewed and validated in 2012 by Rio Tinto and ex-BCL staff.

During the operating period, the geological block model underestimated the copper production by approximately five per cent. This low bias was principally attributed to the drill spacing being too wide to sufficiently sample relatively narrow high-grade zones within the ore body, and to material lost during the diamond drilling process. Although the bias has been identified, at this stage no upgrade has been applied to the remaining Mineral Resource. No additional geological data was collected from the deposit as part of the 2012 OMS, although potential remediation, redevelopment, mining, and processing assumptions were updated.

The 31 December 2020 Mineral Resource is unchanged from the 31 December 2019 Mineral Resource. Technical studies supporting the statement are unchanged and remain current. The potential economic viability of the project has been confirmed by a recent evaluation update.

BCL lodged an application for a 5-year extension of EL01 with the Autonomous Bougainville Government Department of Mineral and Energy Resources (ABG-DoMER) in July 2016. In January 2018 BCL received a notice from ABG-DoMER of a decision to refuse the grant of BCL's application for extension of EL01. In April 2018, BCL was granted leave in the PNG National Court to seek a Judicial Review of the renewal application process. The grant of leave operates as a stay of the decision to not extend the term of EL01, pending final determination of the Judicial Review. As the application remains unresolved, the exploration licence is deemed to continue until a determination by the court or reconsideration by the ABG. A Judicial Review of the renewal application process for EL01 is expected to proceed in 2021.

The Bougainville Mining Act 2015 states that until a decision is made on an exploration licence extension application, the term of the exploration licence is deemed to be extended. As a result, EL01 remains extant.

The Mineral Resource is reported as DFO (direct feed ore) above a 0.24 per cent copper cut-off grade and PCS (pre-concentrate screening) above cut off grades of 0.16 per cent to 0.20 per cent copper within a confining conceptual pit design based on conventional truck and shovel mining operations at 100 million tonnes per year and a potential 60 million tonnes per year processing rate.

Panguna Mineral Resources

	As at December 31, 2019					**As at December 31, 2020**				
	Tonnes (Mt)	Cu Grade (%)	Au Grade (g/t)	Cu (Mt)	Au (Moz)	Tonnes (Mt)	Cu Grade (%)	Au Grade (g/t)	Cu (Mt)	Au (Moz)
Measured	0	-	-	-	-	0	-	-	-	-
Indicated	1,538	0.30	0.33	4.6	16.1	1,538	0.30	0.33	4.6	16.1
Inferred	300	0.3	0.4	0.7	3.2	300	0.3	0.4	0.7	3.2
Total	**1,838**	**0.30**	**0.34**	**5.3**	**19.3**	**1,838**	**0.30**	**0.34**	**5.3**	**19.3**

Competent person statement

The information presented in this release relates to Mineral Resources determined for the Panguna project and contains details of mineralisation that has a reasonable prospect of being economically extracted in the future, but which is not yet classified as Proved or Probable Ore Reserves. This material is defined as a Mineral Resource under the JORC code (2012). Estimates of such material are based largely on geological information with only preliminary consideration of mining, economic and other factors. While in the judgement of the Competent Person there are realistic expectations that all or part of the Mineral Resources will eventually become Proved or Probable Ore Reserves, there is no guarantee that this will occur as the result depends on further technical and economic studies, prevailing economic conditions in the future, and legal and social considerations.

The information in this statement that relates to Mineral Resources is based on information compiled by Mr Daniel Hastings and Mr Gerald Clark who are members of the Australasian Institute of Mining and Metallurgy. Mr Hastings is an independent geological consultant and Mr Clark is an independent geological consultant. Mr Hastings and Mr Clark have experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity which they have undertaken to qualify as a competent person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves'. Mr Hastings and Mr Clark both consent to the inclusion in the press release of the matters based on their information in the form and context in which it appears.

PANGUNA (JORC Code, 2012 Edition – Table 1 report)

The following table provides a summary of important assessment and reporting criteria used at Panguna for the reporting of Mineral Resources in accordance with the Table 1 checklist in *The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition)*.

Section 1 Sampling Techniques and Data

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

Criteria	Commentary
Sampling techniques	• No fundamental Mineral Resource data has been collected from the deposit since the suspension of operations in 1989. • Whole core samples of nominal length 3 m were taken for analysis.
Drilling techniques	• Diamond drilling was undertaken using PQ, HQ, NQ and minor BQ diamond core. • There was a mix of standard and triple-tube coring.
Drill sample recovery	• Some sample recovery data recovered from data archives; assessment of available data completed. • No recovery-grade relationship has been identified, but a sampling bias (towards under-estimation) due to loss of fines and has been documented (described below). • Triple-tube drilling and improved mud systems were utilised to combat loss of fines. • Drillers placed core marks and geologists measured up, modifying/correcting runs where required.
Logging	• Detailed logging sample by sample. • Core photos taken but not recovered from data archives • Geologists marked sample intervals, nominally 3m but less for rock type changes, major fault zones, broken core, and poor recovery.
Sub-sampling techniques and sample preparation	• Whole core submitted for assay. • Sample preparation procedures were developed for BCL by sampling expert. • Duplicate core samples (riffle-split sample of whole-core crushed to 90% passing -3mm) taken at a rate of 1 in 10 samples for check assaying and checking sample preparation. • Representative samples of core approximately 0.15 m long were frequently taken for bulk density determination by standard water submersion method. Because of the fractured and porous nature of the rock, the samples were taped or waxed.
Quality of assay data and laboratory tests	• All primary assaying completed in an on-site laboratory. Copper assay determined by aqua regia digest and atomic absorption spectrometry. Gold determined by aqua regia/ methyl isobutyl ketone digest and atomic absorption spectrometry as show in the table below.

Criteria	Commentary

Element	Method Summary	Detection Limit
Cu, Pb, Co, Ni	The sample was digested with aqua regia and evaporated to dryness. The digest was taken up in 1:1 hydrochloric acid, warmed to dissolve the salts and diluted to 50mL. After settling assay was determined by atomic absorption spectrometry (Purnell, 1977).	Cu: 0.001%
Ag	The sample was digested with perchloric acid. After cooling, the salts are dissolved in water. Mercuric nitrate was added to overcome chloride interference. After diluting the solution was filtered and assayed by atomic absorption spectrometry. Non-atomic absorption was corrected for (Purnell, 1980).	0.1ppm
Au	The sample was digested with aqua regia and evaporated to dryness. The salts are dissolved in dilute hydrochloric acid and solids filtered off. An aliquot of the filtrate was extracted with methyl isobutyl ketone (MIBK). The aqueous layer was removed and the organic phase extracted with dilute hydrochloric acid to remove iron. Gold extracted into MIBK was determined by atomic absorption spectrometry (Meier, 1977).	0.02ppm

- Assay quality assurance and control (QAQC) techniques applied during the initial Mineral Resource definition program mainly consisted of internal and external check assaying and comparisons with bulk underground samples.
- Limited documentation pertaining to QAQC techniques and results from 1970 recovered from data archives. Documentary evidence suggests that check assaying continued to be used to verify results throughout drilling campaigns.
- The first check assay tests to be done externally were carried out to check the accuracy of sample preparation and assaying. Pre-mining, a series of 30 core samples, selected from the oxidised, secondary, and primary zones were prepared in duplicate, and assayed by three different analytical laboratories.

Oxidised Zone (Arithmetic Mean of 9 Assays)		
Laboratory	**1st Sample**	**Duplicate**
	Cu (%)	**Cu (%)**
Kalgoorlie School of Mines	1.32	1.40
R. J. Gluyas, Adelaide	1.33	1.33
Zinc Corporation (by titration) 1.38 1,36	1.38	1.36
Zinc Corporation (by atomic absorption)	1.38	1.37

Criteria	Commentary

Secondary Zone (Arithmetic Mean of 9 Assays)		
Laboratory	**1st Sample**	**Duplicate**
	Cu (%)	**Cu (%)**
Kalgoorlie School of Mines	2.68	2.70
R.J, Gluyas, Adelaide	2.7	2.73
Zinc Corporation (by titration)	2.78	2.75
Zinc Corporation (by atomic absorption)	2.81	2.80

Primary Zone (Arithmetic Mean of 12 Assays)		
Laboratory	**1st Sample**	**Duplicate**
	Cu (%)	**Cu (%)**
Kalgoorlie School of Mines	1.23	1.23
R. J. Gluyas, Adelaide	1.36	1.24
Zinc Corporation (by titration)	1.27	1.27
Zinc Corporation (by atomic absorption)	1.26	1.22

- After August 1968, approximately one drill core sample in every twenty was check assayed for copper at an independent laboratory in Australia. Of the 722 umpire results 558 were ≥0.20 per cent copper. Of these assay pairs 63 per cent had an absolute relative difference (as a percentage of the original Panguna assay) of ≤ 4 per cent, 26.5 per cent 4-8 per cent and 10.5 per cent showed >8 per cent absolute relative difference.
- Where there were differences between the umpire and original assays, there was a tendency for the umpire assays to be higher.
- Any original samples that differed appreciably from subsequent umpire check assays were re-assayed at Panguna and, except for one or two cases, agreed with the original Panguna assay to within prescribed limits.
- From the late 1970s Bulk Density was determined using a water submersion method that accounted for absorbed water in porous and friable rocks developed at Hamersley Iron (McKenzie, undated).
- The total number of samples analysed for Bulk Density is not known due to an incomplete raw database.

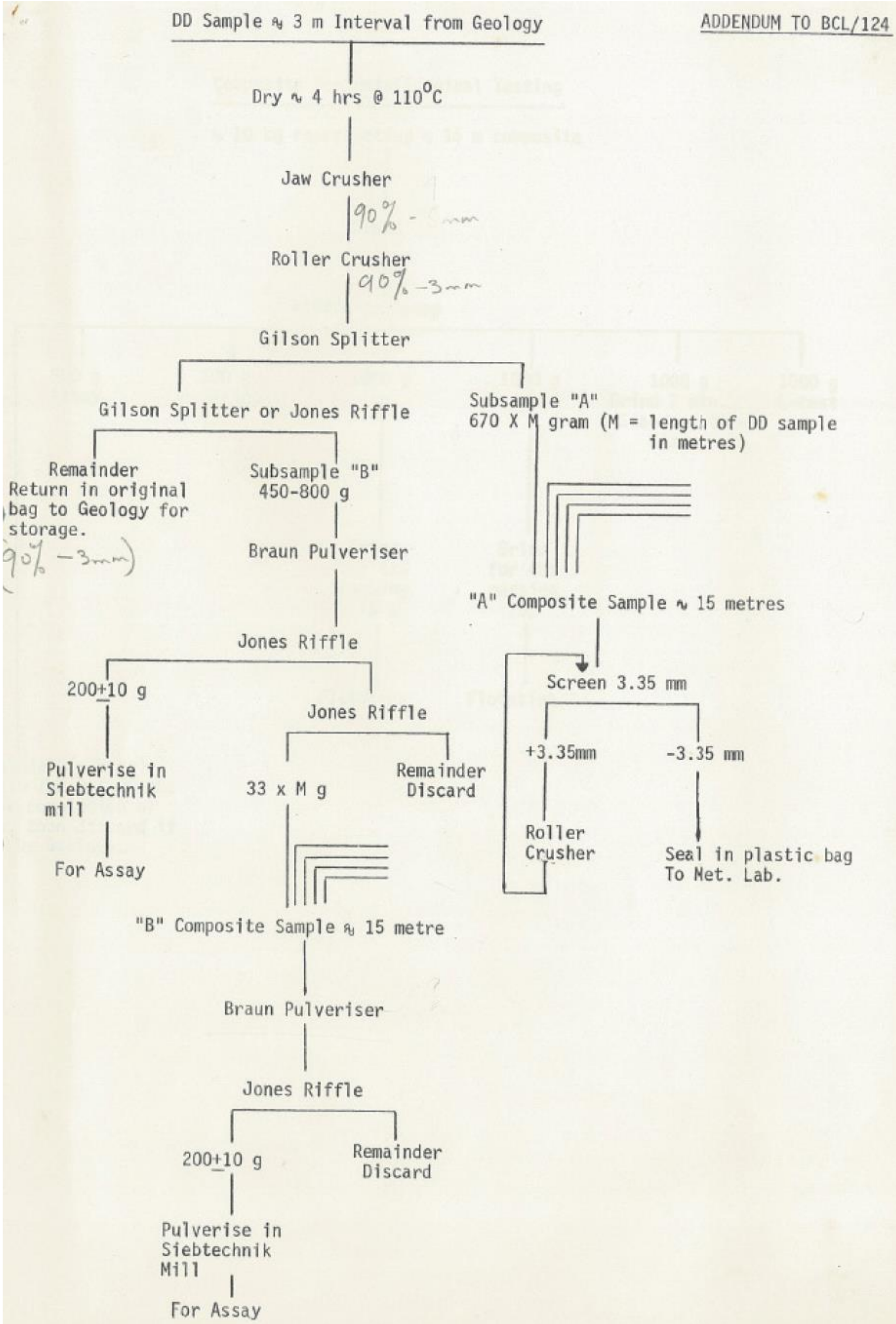
Verification of sampling and assaying

- Duplicate core samples taken at a rate of 1 in 10 samples for check assaying and checking sample preparation.
- Internal and external check assaying used to verify assays.
- Holes twinned in the oxide and transition zone mainly to test for sulphide oxidation rate in response to lower than expected flotation recovery.
- No twinned holes were drilled specifically to assess grade repeatability and continuity. There are several instances where two or more holes intersected while drilling.
- Reconciliation of blast hole and metallurgical plant data with the Reserve model, indicated that the copper and gold drill hole samples database is biased towards under-estimation in several key domains due to a combination of the following:
  - mineralisation loss during core loss
  - core loss (minor)
  - vertical drill holes failing to intersect sufficient sub-vertical mineralised fractures and veins
  - drill hole spacing too wide

<table>
<tr><th>Criteria</th><th>Commentary</th></tr>
<tr><td></td><td>

- variable diamond drill hole core size

- Limited documentation pertaining to sample preparation techniques and results recovered from data archives. The sheet below shows the site diamond drill core sample preparation flowsheet (Birnbaum, 1977).



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<tr><td>Location of data points</td><td>

- Drill hole collars surveyed using a theodolite. Early exploration holes downhole surveyed by Tropari directional surveying instrument and acid etching.
- BCL holes down-hole surveyed by Tropari and multi-shot down-hole camera.

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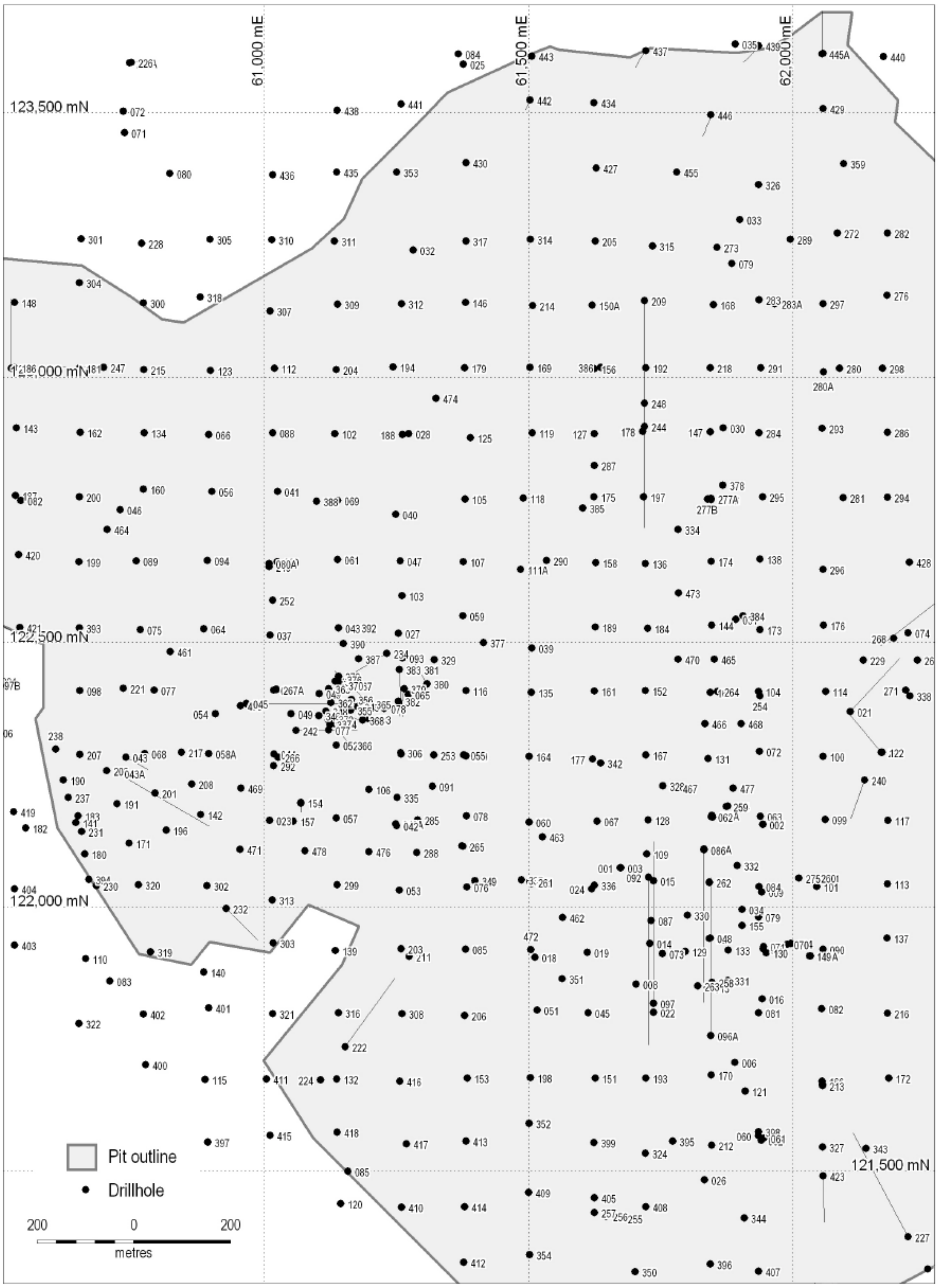
</table>

Criteria	Commentary
	• Of the 614 drill holes, only 25 collar coordinates could not be located; however, drilling records suggest that these holes were not used directly for resource estimation and no other data associated with these holes was available.  • Detailed satellite digital elevation model generated over project area as part of the 2012 Order of Magnitude Study.
Data spacing and distribution	• Diamond drilling was completed on a regular 122 m x 122 m grid – combined with 17 years of production history, sufficient to define Indicated and Inferred Mineral Resources. • Initial diamond core drilling of the 0.3 per cent copper contour comprised 253 holes for 80,778 m. This phase of drilling was completed in 1969 prior to

Criteria	Commentary
	commencement of mining in 1972. Adits, crosscuts and rises totalling 4,700m were excavated. Approximately 3,700 m of these underground excavations were pre-drilled and sampled. Further in-pit and extension drilling was carried out up to the cessation of operations in 1989. • Sampling interval usually 3 m unless there was a change of core size, poor recovery, or retention of core for records. • A representative 3m sample was retained every 60 m. • A 0.1 m bulk density sample collected approximately every 10 m. • Approximately 0.5 kilogram per m of core sampled for metallurgical testing.
Orientation of data in relation to geological structure	• Drilling is predominantly vertical, and mineralisation has a sub-vertical component. The copper and gold drill hole samples database is biased towards underestimation due in part to vertical drill holes failing to intersect sufficient sub-vertical mineralised fractures and veins
Sample security	• All primary assaying completed in an on-site laboratory.
Audits or reviews	• Sampling techniques and data were verified during 2008 Order of Magnitude study. • The data were reviewed and validated in 2012 by Rio Tinto and ex-BCL staff.

Section 2 Reporting of Exploration Results

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

Criteria	Commentary
Mineral tenement and land tenure status	• Under the Mining Act of the Independent State of Papua New Guinea, the Company holds 100 per cent interest in leases: SML1, LMP B9, B6, B8, B7, B2, B10, B3; and prospecting authorities: Exploration Licenses 1, 2, 3, 4, 5, 6, 7A and 7B on Bougainville Island. • The Bougainville Mining Act 2015 (Mining Act) came into force on 1 April 2015. Under the Mining Act, Bougainville Copper Ltd (BCL) was deemed to have held an exploration licence (EL01) over the area of the Panguna mine Special Mining Lease held as at 8 September 2014 for a period of two years. Pursuant to the Mining Act 2015, BCL lodged an application for a 5-year extension of EL01 with the Autonomous Bougainville Government Department of Mineral and Energy Resources (ABG-DoMER) on 5th July 2016. ABG-DoMER commenced processing the application in October 2017 which included a Wardens hearing in December 2017. • On 16 January 2018 BCL received a notice from ABG-DoMER Mining Registrar of a decision by the Bougainville Executive Council to refuse the grant of BCL's application for extension of the exploration licence EL1 for the following reasons: 1. The required majority consent of the landowners was not evident during the Mining Wardens hearing and shows Bougainville Copper does not have the social licence to operate the mine. 2. The reopening of the Panguna Mine is a divisive issue and has the potential to adversely affect the ABG's preparation for the conduct of the referendum given that it was Bougainville Copper's past operation of Panguna Mine that ignited the Bougainville Crisis which resulted in the loss of about 20,000 lives. Hence, it is in Bougainville's best interest to maintain peace and unity.

Criteria	Commentary
	• The company commenced an action on 25 January 2018 in the National Court of Papua New Guinea seeking leave for a Judicial Review of the renewal application process. • Leave for a Judicial review was granted 10 April 2018. The grant of leave shall also operate as a stay of the defendants (ABG-DoMER) decision made on 16 January 2018 pending final determination of the Substantive Judicial Review Application or an earlier order of the court. • Section 101(3) of the Bougainville Mining Act 2015 states that until a decision is made on an extension application of an exploration licence, the term of the exploration licence is deemed to be extended. The National Court's stay of the ABG-DoMERs' decision to refuse BCL's extension of EL01, means there has been no decision on BCL's extension application. Thus BCL's exploration licence over EL1 is deemed to be extended until the determination of the judicial review application. • ABG-DoMER gave notice on 13th April 2018 (Gazette GN No 24/2018) declaring a designated mining reserve over the area of the former Panguna Special Mining Lease, EL1, stating Section 66 (1) of the Bougainville Mining Act 2015 and that the Bougainville Executive Council, having sought advice from the Bougainville Mining Advisory Council, and following debate in the Bougainville House of Representatives. The designation of a mining reserve does not affect the status of EL1, as a reservation under Section 66 of the Bougainville Mining Act 2015 has no effect on: o A tenement granted prior to the date of the reservation. o An application for a grant of a tenement registered prior to the date of the reservation. • On 22 August 2018 Panguna Minerals Limited (formerly named Central Me'ekamui Exploration Limited was joined as seventh defendant to the Leave for a Judicial Review proceedings. Panguna Minerals Limited is a company 50 per cent owned by the Special Mining Lease Osikaiyang Landowner Association and Central Exploration Pty Ltd (which is 69 per cent owned by RTG Mining Inc.) ▪ BCL filed an application for leave to appeal the joinder decision on 1 October 2018 in the PNG Supreme Court which was dismissed on 7th March 2019. ▪ BCL requested that its application for leave to appeal the joinder be further considered by a three-judge bench of the Supreme Court which was heard on 24th June 2019. On 7th February 2020, the application was refused, however it is noted that the difficulty of the question was reflected in the fact that the members of the bench were split as to the proper outcome. ▪ Panguna Minerals Limited will now be a defendant to the Judicial Review proceeding, and its (PML's) activities will be given due scrutiny. • Bougainville Copper Ltd remains confident of the tenement position, and believe the court proceedings will uphold the Company's rights. • The Judicial Review of the renewal application process for EL1 is expected to proceed in 2021. • Bougainville Copper Limited, while adhering to the requirements of the Bougainville Mining Act 2015, also recognises and maintains the tenements in accordance with the PNG National Legislation and the Bougainville Copper Agreement.

Criteria	Commentary
Exploration done by other parties	• CRA Exploration was granted authority to prospect over an area including the Panguna deposit in 1963. • Initial diamond core drilling of the 0.3 per cent copper contour at an approximate spacing of 122 m (400 feet) and comprised 253 holes for 80,778m. This phase of drilling was completed in 1969 prior to commencement of mining in 1972. • Additional drilling during operations was undertaken as summarised in the table below.

Year	Metres	Comments
1965-1969	80,778	CRA Panguna resource evaluation drilling, prefix BVP. Most holes used in
1972-1989	67,868	BCL Panguna pit, prefix BVP. Most holes used in the resource block model and included 15 holes drilled beside evaluation holes (twinned) to determine if the orebody was oxidizing on exposure – early flotation was lower than expected
1972	111	Pit groundwater testing on south pit
1973	1,137	Holes twinned to original holes to test for sulphide oxidation rate
1974	2,306	North-east pit grid infill holes, some twinned holes
1975	1,290	Drill grid infill holes
1976	2,876	Drill grid infill holes
1977	5,378	North pit extension drilling
1978	3,346	North pit extension drilling
1979	2,714	Drainage tunnel location drilling
1980	3,118	Deep pit drilling, 5 holes to sea level
1981	2,399	Deep pit drilling, 2 holes to sea level
1982	3,458	Drainage shaft and deep pit drilling
1983	6,860	Mainly in pit drilling for drainage shaft location.
1984	8,634	Mainly drilled in low grade PA in south-west pit for ore beneficiation study
1985	6,794	Mainly drilled in low grade PA in south-west pit and north pit for ore
1986	5,451	Mainly drilled in low grade BD – KD in north pit for ore beneficiation study
1987	4,959	Mainly drilled in low grade BD – KD in north pit for ore beneficiation study
1988	5,464	In-fill holes where data considered sparse after resource block model update
1989	1,573	In-fill holes where data considered sparse after resource block model update

Criteria	Commentary
Geology	The following is after Collier et al 2011 • The Panguna orebody is a porphyry copper/gold deposit in Miocene andesites and Pliocene intrusive rocks. The major host rock is Panguna Andesite and has been intruded by diorites and granodiorites. The mineralisation occurs primarily in two forms, (1) vein infill or coating, associated with fracture and joint planes, and (2) dissemination in the rock. • The hydrothermal system containing the copper and gold mineralisation is located on the southern edge of the 4 km wide Kawerong Quartz Diorite intrusive complex. • The other major rock types are biotite diorite (BD), leucocratic quartz diorite (LD), biotite granodiorite (BG), and Kawerong quartz diorite (KD) (Clark, 1990; Lewis, 1987; Macnamara, 1973; Baumer and Fraser, 1975). • Breccias with granodioritic, porphyritic or very little matrix, are common within the intrusive complex and on the margins where breccias were

Criteria	Commentary
	first mapped. • Breccias have been mapped in biotite diorite, biotite granodiorite, leucocratic quartz diorite, Panguna andesite and within other breccias. They have been emplaced over a wide range of time and igneous activity and have various relations to the hydrothermal system. In most breccias potassic alteration and copper-gold correlations hold. Mapping has confirmed the correlation of copper and gold values with breccia zones (Clark, 1990). • Potassic alteration is recognised as being most closely related to copper and gold mineralisation. It is best developed in areas of better than 0.5 per cent copper, particularly in Panguna andesite, biotite diorite and leucocratic quartz diorite, and was defined by the presence of biotite and/or potassium feldspar. • Propylitic alteration becomes dominant at grades less than about 0.3 per cent copper where it is defined by the dominance of chlorite over biotite, and usually by pyrite exceeding chalcopyrite. • Argillic alteration is widespread but usually not strongly developed in the intrusive rocks, and overprints potassic and propylitic alteration. It was characterised by the presence of clay minerals and frequently by minor disseminated pyrite. • Phyllic alteration occurs irregularly within the Panguna system. It is defined by the dominance of sericite, silica and pyrite, and overprints other alteration in all rock types, particularly on through-going joints. Mining performed immediately prior to the suspension of operations exposed an area of intense phyllic alteration in the north-east of the system, coincident with a large bulge in the western pebble dyke. This alteration presented mining problems due to unpredictable softening, hardening, and joint cementing over an area of 200 by 250 m. The alteration phase appears to pre- and postdate the intrusion of the pebble dyke, but pre-dates sparse veins of lead and zinc mineralisation. • In all mineralised rock types, chalcopyrite is the dominant primary copper mineral, associated in places with some bornite, and a little molybdenite and silver. Magnetite occurs as an alteration product due to the biotitisation of andesite and as a primary mineral in quartz veins. • Pyrite is widely distributed, but, when intimately associated with the copper mineralization, appears to vary antipathetically with it. Traces of sphalerite and galena have been found (Macnamara, 1973). • Gold appears to vary sympathetically with the copper content and there was a suggestion that this ratio varies slightly in different rock types. Gold was closely associated with the copper sulphides, although some free gold has been observed (Lewis, 1987). • The base of oxidation rises under the topographic highs from the level of the main creeks to a depth up to several hundred feet. Cuprite and malachite are common oxide zone minerals. A thin chalcocite zone occurs in places (Macnamara, 1973).
Drill hole Information	• The Mineral Resource estimate is based on geological, mine planning and production data archived in 1989. The fundamental data used to generate the Mineral Resource estimate has been recovered from BCL

Criteria	Commentary
	archives. • The data sets (including diamond drilling, underground sampling and production blast hole sampling) were reviewed and validated by Rio Tinto and ex-BCL staff. • Diamond drilling on regular 122 m x 122 m grid with some infill holes in areas of complex geology.
Data aggregation methods	• The DDH cores were logged and assayed in 3 m lengths. The nominal 3 m assays were composited to 15 m bench equivalents by rock type. As most drill holes are vertical the majority of composites were equivalent to a downhole composite. Minor rock types were grouped with the five major ones, depending on their similarity and statistical distribution. • The 15m composites were used for geostatistical analysis and kriging.
Relationship between mineralisation widths and intercept lengths	• Reconciliation of blast hole and metallurgical plant data with the Reserve model indicates that the copper and gold drill hole composite database is biased towards under-estimation in several key domains due to a combination of the following: o mineralisation loss during coring o core loss (minor) o vertical drill holes failing to intersect sufficient sub-vertical mineralised fractures and veins o drill hole spacing too wide o variable diamond drill hole core size
Diagrams	• Not applicable - no Exploration Results being reported.
Balanced reporting	• Not applicable - no Exploration Results being reported.
Other substantive exploration data	• The diamond drill sample grades used for the initial evaluation were validated by bulk sampling of Adits and associated rises totalling 4,700m.
Further work	• Further work pending access to the Panguna site.

Section 3 Reporting of Mineral Resources

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

Criteria	Commentary
Database integrity	• Mineral Resource model recovered directly from data archives and imported into modern mining software. • While operating, BCL was at the forefront of computer applications in mining and as a result much of the data manipulation on site was computerised (Booth et al, 2007). • In the mid-1980s a spreadsheet was set up to record a summary of data for each drill hole including: o date started/completed o collar coordinates o hole length o core recovery and size.

Criteria	Commentary
	• Commensurate with the computing technology of the time, grade estimation and prerequisite data analysis was initially performed using in-house computer programs, originally written in HP BASIC and later converted to FORTRAN 77 in the period September 1983 to March 1984. • An Oracle database eventually replaced the earlier VAX-based data storage systems. By the end of the project, a large amount of data had been stored in various data files in a multitude of formats (Booth et al, 2007). • The BCL geological and mine planning data was recovered in 2007 by a former Panguna mine employee familiar with the various data formats (Booth et al, 2007). • Archived data in original formats had been held by Rio Tinto Technology and Innovation and its predecessors since the suspension of the Panguna operations. Earlier archive projects involved the transfer of data from original magnetic tapes to a server. o The main data files recovered were: o combined orebody model o surface matrix (incomplete annual pit surveys) o BH data o blast composite (mining block) perimeters o blast composite (mining block) database (block evaluations) o mine cutback designs o DDH data o bench perimeters • Further examination of the archived files was undertaken in 2008 and resulted in the recovery of data for 174 extra DDHs and a comprehensive database of 15 metre composite molybdenum and magnetite assays. Other data recovered included some bulk density, core size and core recovery data and supporting documentation such as the geological database codes.

Data Type	Holes	Holes Missing Data	Records
Collars	589	0	589
Down-hole surveys	587	2	671
Cu, % Acid Soluble	427	162	49,265
Au, Ag	425	164	29,054
Mo, magnetite	205	384	4,528
Bulk Density	8	581	887
Geology	429	160	3,870
Core Recovery, core Size	577	12	19,070

Criteria	Commentary
Site visits	• No site visits by Competent Persons undertaken since mine closure (1989). Mr G Clark (ex-BCL Geology Manager at Panguna Mine) is a JORC Competent Person for the reporting of the Mineral Resource.
Geological interpretation	• High confidence geological interpretation with well understood geology (multiple journal publications, 17 years of production history). • The geological model was developed by manual interpretation onto 122 metre spaced sections and 15 metre spaced bench plans using core logging and pit mapping data where available. Sections and

Criteria	Commentary
	bench plans were produced for lithology, gypsum content and rock quality. Another set of bench plans was constructed for acid soluble copper using a combination of rock quality and acid soluble copper analyses. • The geology model was accurately transferred to the Mineral Resource model by manually coding each block using plan and section interpretations. The accurate transferral of the major geological units to the block model was confirmed by visually comparing the model geology with DDH geology and with published detailed geological plans. • Grade continuity controlled by geological units. Geological control used in grade estimation. • Original section/plan interpretations were not recovered, and the geological assessment was based on the coded model geology only.
Dimensions	• The approximate plan dimensions of the Mineral Resource are 2 km x 3 km, with mineralisation occurring from surface (existing open pit void) and extending down over 450 m below surface.
Estimation and modelling techniques	• The Mineral Resource model used for reporting has not been updated since the suspension of operations in 1989. • The Mineral Resource model recovered from archives utilised domain based geostatistics (Ordinary Kriging) introduced in 1981 with assistance and on-going review from contemporary geostatistical experts, and further developed throughout the operating period with ongoing geological interpretation and data analysis. • Variographical analysis of the copper and gold of the Panguna deposit was performed using routines within the CAMEO software package. Experimental semivariograms were calculated using the 15 metre DDH composites for a variety of orientations over five major rock types (Leahey et al, 1986). • Due to limited data, minor rocks types such as breccias and areas of mixed lithology were not modelled separately but grouped with the five major domains depending on their geological and statistical similarity (Lewis, 1987). • Omnidirectional (tolerance of 90°) semivariograms were calculated for determination of kriging parameters. • Range ellipsoids were defined from directional semivariograms calculated for all major orientations in 45° increments (eg: 0°→000°, 0°→045°, -45°→000°) using a lag of 30 m and a tolerance of 22.5° (Collier et al 2011). • Using the long-range components of each model as vectors, an ellipsoid of continuity was established for each domain/metal association and physically constructed. The orientation of the major axis of each ellipsoid was then estimated giving the plunge direction of greatest continuity for that particular domain and metal (Leahey et al, 1986). • The continuity parameters were applied to the sample search routine during kriging (Leahey, 2008). • Grade estimation was carried out using a routine in the CAMEO

Criteria	Commentary
	software package. Kriging was performed within each rock type domain, using composites coded by the same domain. A search radius of 150m was used to limit the number of holes influencing the estimation of a block (David, 1982). • Low-grade molybdenum mineralisation was modelled and assessed as part of the 2008 Order of Magnitude Study.
Moisture	• The resource tonnages are based on a dry basis
Cut-off parameters	• Based on 60 Mtpa ore processing capacity, cut-off grades for direct feed and pre-concentration and screening ore were calculated by applying recovery, cost and BCL long-term price assumptions (reviewed February 2021). • Costs were estimated using industry data derived from similar operations and the cut-off grade assumptions remain valid after applying broker consensus metal prices.
Mining factors or assumptions	• The Mineral Resource estimate is based on the evaluation of the Mineral Resource model recovered from data archives against a conceptual design to extend the existing open pit mining void. • The conceptual open pit mine design was prepared based on conventional open pit mining techniques and a range of power generation and tailings storage options. Financial viability of the conceptual pit design used to constrain the Mineral Resource estimate has been demonstrated using appropriate cost and technical assumptions, most recently reviewed in February 2021.
Metallurgical factors or assumptions	• The Panguna processing plant operated successfully from 1972 to 1989. • Historically both direct feed and pre-concentration and screening ore were processed. • The 2012 Order of Magnitude Study assumed any existing processing equipment was not suitable for re-use and allowed for a completely new plant. • Ore processing throughput and recovery parameters were estimated for the 2012 Order of Magnitude Study based on historic performance and potential improvements available using current technologies and practices.
Environmental factors or assumptions	• Panguna is an historical mine site with existing open pit void, non-rehabilitated waste dumps, tailings disposal and infrastructure sites. • BCL has not had site access to assess remediation and rehabilitation requirements but the 2012 Order of Magnitude Study includes expenditure allowances to undertake this work.
Bulk Density	• The Mineral Resource model recovered from data archives did not include significant density data. Historical bulk density values (see table below) determined by standard water displacement methods were applied to the Resource model by rock type. These figures were ratified by Mr G Clark (ex-BCL Geology Manager) and are consistent with the primary ore bulk density of 2.51 t/m3 from the 1969 feasibility study.

<table>
<tr><th>Criteria</th><th>Commentary</th></tr>
<tr><td></td><td>
<table>
<tr><th>Statistic</th><th colspan="9">Rock Type / Domain</th></tr>
<tr><th></th><th>BD</th><th>BG</th><th>BI</th><th>BR</th><th>IB</th><th>KD</th><th>LD</th><th>PA</th><th>PD</th></tr>
<tr><td>Samples</td><td>149</td><td>141</td><td>14</td><td>30</td><td>1</td><td>11</td><td>172</td><td>358</td><td>11</td></tr>
<tr><td>Minimum</td><td>2.19</td><td>2.33</td><td>2.65</td><td>2.48</td><td>2.4</td><td>2.39</td><td>2.4</td><td>2.49</td><td>2.4</td></tr>
<tr><td>Maximum</td><td>2.72</td><td>2.75</td><td>2.68</td><td>2.99</td><td>2.4</td><td>2.61</td><td>2.86</td><td>3.15</td><td>2.68</td></tr>
<tr><td>Mean</td><td>2.57</td><td>2.64</td><td>2.67</td><td>2.66</td><td>2.4</td><td>2.57</td><td>2.63</td><td>2.73</td><td>2.56</td></tr>
</table>
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<tr><td>Classification</td><td>

Measured Mineral Resources- Despite 17 years of historical production, no Measured Mineral Resource is defined due to uncertainty in the Mineral Resource model evidenced by comparisons with grade control data, historical production reconciliation and other technical documentation.
Indicated Mineral Resources- Indicated Mineral Resource material is defined within the volume intersected by the nominal 122 m x 122 m drilling grid and within the designed pit shell.
Inferred Mineral Resources- All other material outside the volume intersected by the nominal 122 m x 122 m drilling grid and within the designed pit shell is classified as Inferred Mineral Resource.

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<tr><td>Audits or reviews</td><td>

An independent estimate produced as part of the 2012 Order of Magnitude Study was reconciled with the contained metal of the 2012 Mineral Resource estimate.
An independent estimate completed for Rio Tinto in 2015, using alternate geological interpretation and estimation process to that of the 2012 and historic estimates, reconciled in global terms to within -4% of grade, 5% of tonnage and 1% of contained Cu metal.

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<tr><td>Discussion of relative accuracy/ confidence</td><td>

The definition of Indicated and Inferred Mineral Resources only is appropriate for the level of study and the geological confidence supported by the nominal 122 m x 122 m drilling grid.
Given the 17-year production history, overall confidence in the deposit is reasonable.

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