



BOUGAINVILLE COPPER LIMITED

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

(insert name or heading of report to be publicly released) ("Report")

Bougainville Copper Limited

(insert name of company releasing the Report)

Panguna

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

If there is insufficient space, complete the following sheet and sign it in the same manner as this original sheet.

3 February 2016

(Date of Report)



BOUGAINVILLE COPPER LIMITED

Statement 1

I, **Perry Andrew Collier** 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 ("2012 JORC Code").
- 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 full time employee of Rio Tinto (53.58% interest in Bougainville Copper Limited) and have on behalf of Bougainville Copper Limited prepared the study and documentation on which the Report is based for inclusion in the Rio Tinto public reporting.
- 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 2015**.

Consent 1

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

Bougainville Copper Limited

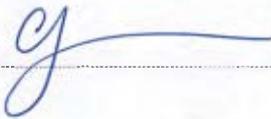
(insert reporting company name)

Signature of Competent Person: 

Date: 1 February 2016

Professional Membership: AusIMM

Membership Number: 110520

Signature of Witness: 

Print Witness Name and Residence (e.g. Town/Suburb): **CHRISTOPHER SIMPSON**

BRISBANE, AUSTRALIA.



BOUGAINVILLE COPPER LIMITED

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 ("2012 JORC Code").
- 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 and have on behalf of Bougainville Copper Limited prepared the study and documentation on which the Report is based for inclusion in the Rio Tinto public reporting.
- 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 2015**.

Consent 2

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

Bougainville Copper Limited

(insert reporting company name)

Signature of Competent Person: 

Date: 1 February 2016

Professional Membership: *AusIMM*

Membership Number: 102687

Signature of Witness: 

Print Witness Name and Residence (eg. Town/Suburb):

*TIARMA SITIO 18 CORMORANT ST.
BONGAREE, QLD, 4507*



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Resource statement

In 2012, Bougainville Copper 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 by Rio Tinto and ex Bougainville Copper 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 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 all updated.

The 2015 Mineral Resource is a restatement of the 31 December 2014 figures after reconfirmation of economic viability. Technical studies supporting the statement remain current and an updated JORC Table 1 fact sheet outlining additional technical assumptions supporting this resource statement can be found on the company web site at www.bcl.com.pg

The Mineral Resource is quoted 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 and a potential 60 million tonnes a year processing rate.

Panguna Mineral Resource Update

	As at December 31 2014					As at December 31 2015				
	Tonnes (Mt)	Cu grade (%)	Au grade (g/t)	Cu (Mt)	Au (Moz)	Tonnes (Mt)	Cu grade (%)	Au grade (g/t)	Cu (Mt)	Au (Moz)
Resource										
Measured	0	0.00	0.00	0	0	0	0.00	0.00	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	0.30	0.40	0.7	3.2	300	0.30	0.40	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 and prevailing economic conditions in the future.

The information in this statement that relates to mineral resources is based on information compiled by Mr Perry Collier and Mr Gerald Clark who are members of the Australasian Institute of Mining and Metallurgy. Mr Collier is a full-time employee of Rio Tinto and Mr Clark is an independent geological consultant. Mr Collier 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 Collier 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.



Bougainville Copper Ltd - New Panguna Table 1

The following table provides a summary of important assessment and reporting criteria used at Bougainville Copper Ltd - New 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)*. Criteria in each section apply to all preceding and succeeding sections.

SECTION 1 SAMPLING TECHNIQUES AND DATA

Criteria	Commentary
Sampling techniques	<ul style="list-style-type: none"> • No fundamental resource data has been collected from the deposit since the suspension of operations in 1989. • Initial diamond core drilling of the 0.3 per cent copper contour at an approximate spacing of 122m (400 feet) and comprised 253 holes for 80,778m. This phase of drilling was completed in 1969 prior to commencement of mining in 1972. Two adits, crosscuts and rises, totalling 4,700 m 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 the cessation of operations in 1989. • Sampling interval usually 3m unless there was a change of core size, poor recovery, or retention of core for records. • A representative 3m sample retained every 60m. • A 0.1 metre bulk density sample collected approximately every 10m. • Approximately 0.5 kilograms per metre of core sampled for metallurgical testing. • 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. • 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 underestimation in several key domains due to a combination of the following: <ul style="list-style-type: none"> ○ 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 ○ variable diamond drill hole core size
Drilling techniques	<ul style="list-style-type: none"> • PQ, HQ, NQ and minor BQ diamond core, mix of standard and triple-tube coring.
Drill sample recovery	<ul style="list-style-type: none"> • Some sample recovery data recovered from data archives, assessment of available data completed. • No recovery-grade relationship identified, but a sampling bias (towards underestimation) due to loss of fines has been documented. • Triple-tube drilling and improved mud systems introduced to combat loss of fines
Logging	<ul style="list-style-type: none"> • Detailed logging sample by sample (3m intervals). • Core photos taken but not recovered from data archives.
Sub-sampling techniques and sample	<ul style="list-style-type: none"> • Whole core submitted for assay. • Sample preparation procedures developed 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



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preparation	checking sample preparation.
Quality of assay data and laboratory tests	<ul style="list-style-type: none">• Assay quality assurance and control (QAQC) techniques applied during the initial 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. Documental evidence suggests that check assaying continued to be used to verify results.
Verification of sampling and assaying	<ul style="list-style-type: none">• 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 in the course of drilling.
Location of data points	<ul style="list-style-type: none">• Drill hole collars surveyed using a theodolite. Early exploration drilling was down-hole surveyed by Tropari directional surveying instrument and acid etching.• Bougainville Copper Limited drilling was down-hole surveyed by Tropari and multi-shot down-hole camera.• Detailed satellite digital elevation model generated over project area as part of 2012 Order of Magnitude Study.
Data spacing and distribution	<ul style="list-style-type: none">• 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, 4700m of underground sampling and production blast hole sampling) were reviewed and validated by Rio Tinto and ex-BCL staff.• Diamond drilling on a regular 120m x 120m grid – combined with 17 years of production history, sufficient to define indicated and inferred mineral resources.• Copper and gold drill hole composite database is biased towards underestimation due mainly to too wide drill hole spacing.
Orientation of data in relation to geological structure	<ul style="list-style-type: none">• Copper and gold drill hole composite database is biased towards underestimation due in part to vertical drill holes failing to intersect sufficient sub-vertical mineralised fractures and veins.
Sample security	<ul style="list-style-type: none">• All primary assaying completed in an on-site laboratory.
Audits or reviews	<ul style="list-style-type: none">• Sampling techniques and data verified during 2008 Order of Magnitude study.



SECTION 2 REPORTING OF EXPLORATION RESULTS

Criteria	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> The Autonomous Bougainville Government has formally recognised that BCL holds an exploration licence for the purpose of Bougainville Mining (Transitional Arrangements) Act (the BMTA Act). Under the BMT Act, as the holder of an exploration licence, BCL has the exclusive right to apply for the grant of a mining lease, subject to the terms of that Act.
Exploration done by other parties	<ul style="list-style-type: none"> CRA Exploration was granted authority to prospect over area including Panguna deposit in 1963. Initial diamond core drilling of the 0.3 per cent copper contour at an approximate spacing of 122m (400 feet) and comprised 253 holes for 80,778m. This phase of drilling was completed in 1969 prior to commencement of mining in 1972.
Geology	<ul style="list-style-type: none"> 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 :- <ul style="list-style-type: none"> vein infilling or coating, associated with fracture and joint planes, disseminated in the rock.
Drill hole Information	<ul style="list-style-type: none"> 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, 4700m of underground sampling and production blast hole sampling) were reviewed and validated by Rio Tinto and ex-BCL staff. Diamond drilling on a regular 120m x 120m grid – combined with 17 years of production history, sufficient to define indicated and inferred mineral resources. Copper and gold drill hole composite database is biased towards underestimation due mainly to too wide drill hole spacing.
Data aggregation methods	<ul style="list-style-type: none"> The resource model has not been updated since the suspension of operations in 1989. The resource model recovered from archives utilised domain-based geostatistics (ordinary kriging) introduced in 1981 with assistance and on-going review from contemporary geostatistical experts. Diamond drill holes are generally drilled on a 122 metre x 122 metre grid with some in-fill holes in areas of complex geology. The DDH cores were logged and assayed in three metre lengths. The nominal three metre assays were composited to 15 m bench equivalents by rock type. Provided at least nine metres of one rock type was available in a bench intersection, a composite assay value was calculated for each 15 m bench. As most of the drill holes were vertical, the majority of composites were equivalent to a down-hole composite. Minor rock types were grouped with the five major ones, depending on their similarity and statistical distribution. The 15 metre composite assay database was used for subsequent geostatistical analysis and kriging.
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> The approximate plan dimensions of the Mineral Resource are 2km x 3km, with mineralisation occurring from surface (existing open pit void) and extending to over 450m below surface. 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 underestimation in several key domains due to a combination of the following: <ul style="list-style-type: none"> mineralisation loss during core loss core loss (minor) vertical drill holes failing to intersect sufficient sub-vertical mineralised fractures and veins



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	<ul style="list-style-type: none">○ drill hole spacing too wide○ variable diamond drill hole core size
Diagrams	<ul style="list-style-type: none">• Not applicable - no Exploration Results being reported.
Balanced reporting	<ul style="list-style-type: none">• Not applicable - no Exploration Results being reported.
Other substantive exploration data	<ul style="list-style-type: none">• The DDH grades used for the initial evaluation were validated by bulk sampling of two adits and associated rises, totalling 4,700 m.
Further work	<ul style="list-style-type: none">• Further work pending access to the Panguna site.



SECTION 3 ESTIMATION AND REPORTING OF MINERAL RESOURCES

Criteria	Commentary
Database integrity	<ul style="list-style-type: none"> Resource model recovered directly from data archives and imported into modern mining software.
Site visits	<ul style="list-style-type: none"> No site visits by Competent Persons undertaken since mine closure (1989). Mr G Clarke (ex-BCL Geology Manager at Panguna Mine) is a JORC Competent Person for the reporting of the Mineral Resource.
Geological interpretation	<ul style="list-style-type: none"> High confidence in geological interpretation, well understood geology (multiple journal publications, 17 years of production history) Geology model accurately transferred to resource model Grade continuity controlled by geological units. Geological control used in grade estimation. Original section/plan interpretations not recovered, geological assessment based on coded model geology only
Dimensions	<ul style="list-style-type: none"> Mineral Resource estimate based on the evaluation of the resource model recovered from data archives against a conceptual design to extend the existing open pit mining void. Approximate plan dimensions of the Mineral Resource are 2km x 3km Mineralisation occurs from surface and extends to over 450m below surface.
Estimation and modelling techniques	<ul style="list-style-type: none"> The resource model has not been updated since the suspension of operations in 1989. The resource model recovered from archives utilised domain-based geostatistics (ordinary kriging) introduced in 1981 with assistance and on-going review from contemporary geostatistical experts. Resource model validated as part of the 2008 Order of Magnitude Study. Resource model supported a 17 year mining operation at Panguna. Independent estimate produced as part of the 2012 Order of Magnitude Study and contained metal of 2012 estimate reconciles globally within 5 per cent. Low-grade molybdenum mineralisation modelled and assessed as part of 2008 Order of Magnitude Study.
Moisture	<ul style="list-style-type: none"> Tonnages are estimated on a dry basis.
Cut-off parameters	<ul style="list-style-type: none"> Based on 60Mtpa ore processing capacity, cut-off grades for direct feed and pre-concentration and screening ore were calculated by applying recovery, cost and Rio Tinto long-term price assumptions (September 2015). Costs were estimated using industry data derived from similar operations and the cut off grade assumptions remain valid after applying broker consensus metal prices. Historically both direct feed and pre-concentration and screening ore were mined from the Panguna open pit.
Mining factors or assumptions	<ul style="list-style-type: none"> 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. The Mineral Resource estimate is based on an open pit operation.
Metallurgical factors or assumptions	<ul style="list-style-type: none"> The Panguna processing plant operated successfully from 1972 to 1989. The 2012 Order of Magnitude Study assumed that the existing processing equipment was not suitable for re-use and allowed for a completely new plant. Ore processing throughput and recovery parameters were estimated based on historic performance and potential improvements available using current technologies and practices.
Environmental factors or	<ul style="list-style-type: none"> Panguna is an historical mine site with existing open pit void, non-rehabilitated waste dumps, tailings disposal and infrastructure sites.



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assumptions	<ul style="list-style-type: none">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	<ul style="list-style-type: none">The resource model recovered from data archives did not include density data. Historical bulk density values determined by standard water displacement methods were applied to the resource model by rock type. These figures were ratified by Mr G Clarke (ex-BCL Geology Manager) and are consistent with the primary ore bulk density of 2.51t/m³ from the 1969 feasibility study.
Classification	<ul style="list-style-type: none">Measured - Despite the 17 years of historical production, no measured material is defined due to uncertainty in the resource model evidenced by comparisons with grade control data, historical production reconciliation and other technical documentation.Indicated - Indicated material is defined within the volume intersected by the nominal 122m x 122m drilling grid.Inferred - All other material outside the volume intersected by the nominal 122m x 122m drilling grid is classified as Inferred.
Audits or reviews	<ul style="list-style-type: none">Independent estimate produced as part of the 2012 Order of Magnitude Study and contained metal of 2012 estimate reconciles globally within 5 per cent.
Discussion of relative accuracy/ confidence	<ul style="list-style-type: none">The definition of Indicated and Inferred Mineral Resources only is appropriate for the level of study and the geological confidence imparted by the nominal 122m x 122m drilling grid,