Ore Reserves and Mineral Resources Statements for Simberi Gold Mine as at 31 December 2019

- **As at 31 December 2019, Simberi Island has:**
  - **Ore Reserves of 33.7 Mt @ 2.0 g/t Au containing 2.2 Moz of gold, and**
  - **Mineral Resources of 93.5 Mt @ 1.4 g/t Au containing 4.4 Moz of gold.**
- Following the completion of a 71,000 metre, 365 hole resource definition drill program targeting sulphide resource extensions beneath the Sorowar Pit, in conjunction with revised revenue parameters, Simberi Ore Reserves have increased from 1.7 Moz of contained gold to 2.2 Moz net of mining depletion, and Mineral Resources have increased from 4.2 Moz of contained gold to 4.4 Moz net of mining depletion.

Simberi Gold Mine Summary at 31 December 2019

Ore Reserves [1,2]

Material Type	Category	Tonnes ('000)	Gold (g/t)	Ounces ('000)
Oxide	Proved	2,095	1.3	86
	Probable	6,768	1.1	249
	Total Oxide	**8,863**	**1.2**	**335**
Sulphide	Proved	1,870	2.2	131
	Probable	23,005	2.3	1,695
	Total Sulphide	**24,876**	**2.3**	**1,827**
Stockpiles	Proved	582	0.6	11
Total		**34,321**	**2.0**	**2,173**

1 Ore Reserves are reported inclusive of Mineral Resources
2 For all tables, data is rounded to thousands of tonnes and thousands of ounces. Discrepancies in totals may occur due to rounding

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Simberi Gold Mine Summary at 31 December 2019

Mineral Resources [1]

Material Type	Category	Tonnes ('000)	Gold (g/t)	Ounces ('000)
Oxide	Measured	2,679	1.2	106
	Indicated	8,894	1.1	313
	Total Measured and Indicated	**11,573**	**1.1**	**419**
	Inferred	8,978	0.9	274
	Total Oxide	**20,551**	**1.0**	**692**
Sulphide	Measured	3,320	1.5	177
	Indicated	52,844	1.6	2,781
	Total Measured and Indicated	**56,164**	**1.6**	**2,958**
	Inferred	16,821	1.4	752
	Total Sulphide	**72,985**	**1.6**	**3,710**
Total		**93,536**	**1.4**	**4,402**

Simberi's Mineral Resources and Ore Reserves position as at 31 December 2019 is summarised and compared with the 30 June 2019 statement below.

Ore Reserves	30 Jun 2019			1H FY20 Production	31 Dec 2019		
	Tonnes ('000)	Gold (g/t)	Ounces ('000)	Ounces ('000)	Tonnes ('000)	Gold (g/t)	Ounces ('000)
Simberi Oxide	6,893	1.3	288	50	8,863	1.2	335
Simberi Sulphide	18,135	2.4	1,375		24,876	2.3	1,827
Simberi Stockpile	1,058	0.7	24		582	0.6	11
Total Simberi	**26,086**	**2.0**	**1,687**	**50**	**34,321**	**2.0** [2]	**2,173**

Mineral Resources	30 Jun 2019			31 Dec 2019		
	Tonnes ('000)	Gold (g/t)	Ounces ('000)	Tonnes ('000)	Gold (g/t)	Ounces ('000)
Simberi Oxide	25,862	1.0	862	20,551	1.0	692
Simberi Sulphide	64.938	1.6	3,335	72,985	1.6	3,710
Total Simberi	**90,800**	**1.4**	**4,197**	**93,536**	**1.4**	**4,402**

A summary of St Barbara's Ore Reserves and Mineral Resources inclusive of this Simberi update is attached in Appendix 1.

1 For all tables, data is rounded to thousands of tonnes and thousands of ounces. Discrepancies in totals may occur due to rounding.
2 Average grade is displayed to one decimal place. Average grade has reduced by approx. 0.04 g/t Au (2%) from 30 June 2019 to 31 Dec 2019.

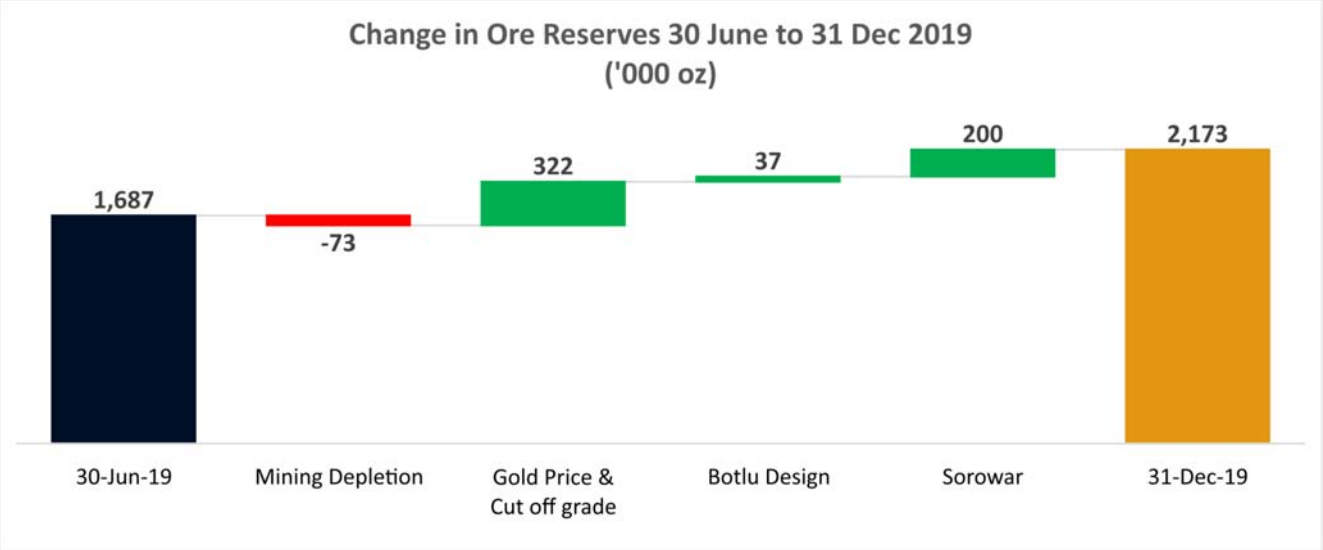
Ore Reserves Revisions

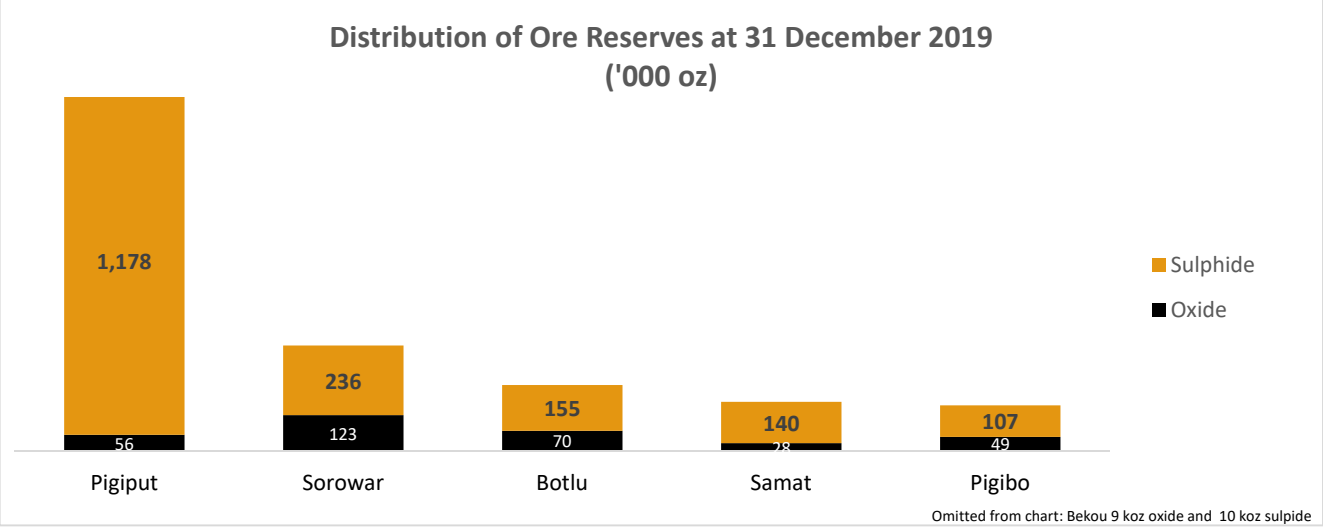
Simberi Oxide and Sulphide Ore Reserves (+486,000 ounces)

The previous publicly reported Proved and Probable Ore Reserve Estimate reported at 30 June 2019 was 26,086,000 t @ 2.0 g/t Au containing 1,687,000 ounces of gold. This has increased by 486,000 ounces of gold to 34,321,000 t @ 2.0 g/t Au containing 2,173,000 ounces of gold.

Simberi Ore Reserves increased after mining depletion, primarily due to increased drill density in Sorowar (converting inferred material to indicated and measured), a higher gold price (US$1,300/oz at 31 December 2019 compared with US$1,250/oz at 30 June 2019) and revised pit designs. The oxide grade dropped from 1.3 g/t Au to 1.2 g/t Au due to a lower cut-off grade, while the sulphide reserve grade reduced from 2.4 g/t Au to 2.3 g/t Au. A substantial increase in tonnes has resulted in an additional 452,000 gold of gold to the sulphide reserve, largely driven by the increased drilling in Sorowar and cut-off grade changes. The overall reserve grade has reduced by approximately 0.04 g/t Au (2%) from 30 June 2019 to 31 Dec 2019, to remain at 2.0 g/t Au when displayed to one decimal place.

The cut-off date for data used in this revision of Mineral Resources was 10 January 2020, with compilation of the updated Mineral Resources and Ore Reserves Report commencing in mid-January 2020, with the major change being the inclusion of the final assay results from the Sorowar sulphide drilling campaign. At the time of modelling, all drilling had been completed and assays were outstanding for only seven holes. The impact of these holes is not expected to be material and their results will be incorporated in the annual Ore Reserve and Mineral Resources update at 30 June 2020.



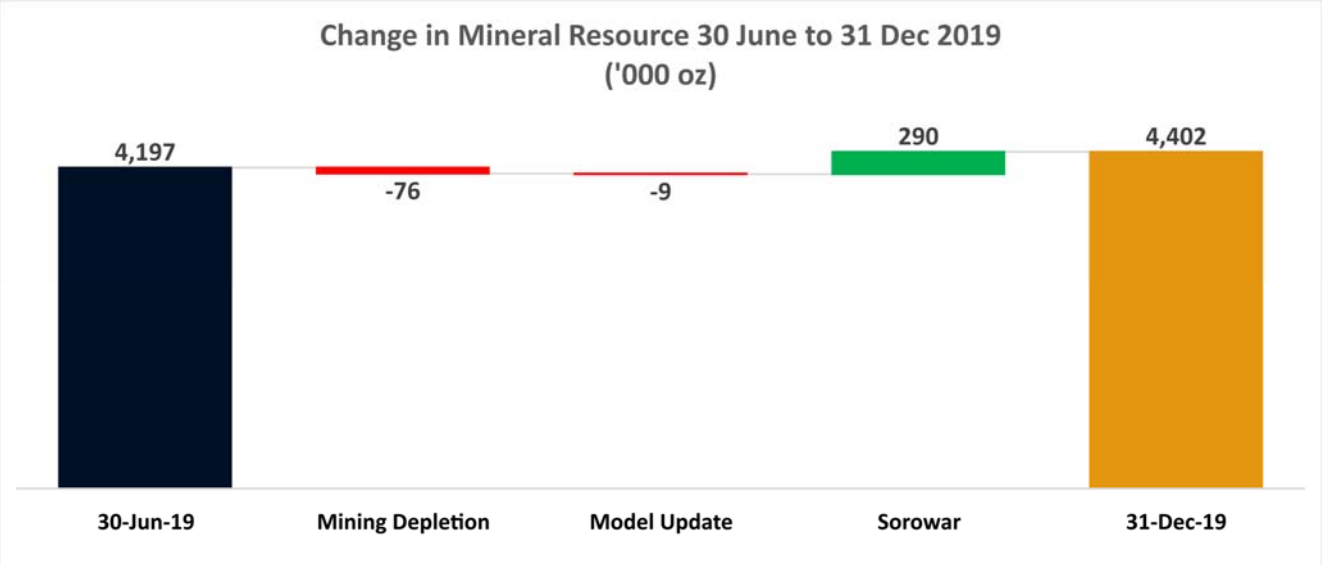


Mineral Resources Revisions

Simberi Oxide and Sulphide Mineral Resources (+205,000 ounces)

The previous publicly reported Measured, Indicated and Inferred Mineral Resource Estimate reported at 30 June 2019 was 90,800,000 t @ 1.4 g/t Au containing 4,197,000 ounces of gold. This has increased by 205,000 ounces of gold to 93,536,000 t @ 1.4 g/t Au containing 4,402,000 ounces of gold.

The revised Mineral Resource estimate incorporates all Sorowar drilling and a revised geological model. Simberi Mineral Resources increased after mining depletion, primarily due to increased drill density in Sorowar.



JORC Code Compliance Statements

The information in this report that relates to Mineral Resources at Simberi is based on information compiled by Mr Chris De-Vitry who is a Member of the Australasian Institute of Mining and Metallurgy. Chris De-Vitry is a full-time employee of Manna Hill Geoconsulting and 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". Chris De-Vitry consents to the inclusion in the statement of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Ore Reserves at Simberi is based on information compiled by Mr Tim Richards who is a Fellow of the Australasian Institute of Mining and Metallurgy. Tim Richards is a full-time employee of St Barbara Ltd and 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". Tim Richards consents to the inclusion in the statement of the matters based on his information in the form and context in which it appears.

Appendix 1 – Ore Reserves and Mineral Resources Summary [1,2]

Gwalia and Tower Hill reported as at 30 June 2019, Atlantic Gold as at 25 March 2019 and Simberi as at 31 December 2019

Ore Reserves

Project	Proved			Probable			Total		
	Tonnes ('000)	Gold (g/t)	Ounces ('000)	Tonnes ('000)	Gold (g/t)	Ounces ('000)	Tonnes ('000)	Gold (g/t)	Ounces ('000)
Gwalia, WA	2,220	8.0	568	7,915	5.9	1,506	10,135	6.4	2,073
Tower Hill, WA	-	-	-	2,572	3.7	306	2,572	3.7	306
Atlantic Gold, CAN	25,400	1.1	902	26,550	1.1	973	51,950	1.1	1,875
Simberi Oxide, PNG	2,095	1.3	86	6,768	1.1	249	8,863	1.2	335
Simberi Sulphide, PNG	1,870	2.2	131	23,005	2.3	1,695	24,876	2.3	1,827
Simberi Stockpiles, PNG	582	0.6	11				582	0.6	11
Total All Projects[3]	**32,167**	**1.6**	**1,698**	**66,810**	**2.2**	**4,729**	**98,978**	**2.0**	**6,427**

1 Mineral Resources are reported inclusive of Ore Reserves. Ore Reserves and Mineral Resources for Gwalia, Tower Hill and Atlantic Gold are as outlined in St Barbara's ASX announcement "Ore Reserves and Mineral Resources Statements as at 30 June 2019" released on 21 August 2019. Available online at www.stbarbara.com.au

2 Gwalia and Tower Hill reported as at 30 June 2019, Atlantic Gold as at 25 March 2019 and Simberi as at 31 December 2019

3 Data is rounded to thousands of tonnes and thousands of ounces. Discrepancies in totals may occur due to rounding.

Appendix 1 – Ore Reserves and Mineral Resources Summary [1,2]

Gwalia and Tower Hill reported as at 30 June 2019, Atlantic Gold as at 25 March 2019 and Simberi as at 31 December 2019

Mineral Resources

Project	Measured			Indicated			Inferred			Total		
	Tonnes ('000)	Gold (g/t)	Ounces ('000)	Tonnes ('000)	Gold (g/t)	Ounces ('000)	Tonnes ('000)	Gold (g/t)	Ounces ('000)	Tonnes ('000)	Gold (g/t)	Ounces ('000)
Gwalia, WA	5,034	7.3	1,183	17,527	6.0	3,393	1,129	5.5	199	23,690	6.3	4,775
Tower Hill, WA	-	-	-	4,604	3.9	574	489	3.3	51	5,093	3.8	625
Atlantic Gold, CAN	25,180	1.2	936	32,230	1.1	1,183	6,060	1.3	252	63,470	1.2	2,371
Simberi Oxide, PNG	2,679	1.2	106	8,894	1.1	313	8,978	0.9	274	20,551	1.0	692
Simberi Sulphide, PNG	3,320	1.5	177	52,844	1.6	2,781	16,821	1.4	752	72,985	1.6	3,710
Total All Projects[3]	**36,213**	**2.1**	**2,402**	**116,099**	**2.2**	**8,244**	**33,477**	**1.4**	**1,528**	**185,789**	**2.0**	**12,173**

1 Mineral Resources are reported inclusive of Ore Reserves. Ore Reserves and Mineral Resources for Gwalia, Tower Hill and Atlantic Gold are as outlined in St Barbara's ASX announcement "Ore Reserves and Mineral Resources Statements as at 30 June 2019" released on 21 August 2019. Available online at www.stbarbara.com.au

2 Gwalia and Tower Hill reported as at 30 June 2019, Atlantic Gold as at 25 March 2019 and Simberi as at 31 December 2019

3 Data is rounded to thousands of tonnes and thousands of ounces. Discrepancies in totals may occur due to rounding.

Appendix 2 – JORC Table 1 Checklist of Assessment and Reporting Criteria

Section 1 Sampling Techniques and Data

CRITERIA	COMMENTS
SAMPLING TECHNIQUES	Chips from reverse circulation (RC) drilling and half-core from diamond holes (DH) have been used to sample the Simberi deposits. Drilling by Kennecott occurred between 1984 and 1989. Subsequent drilling by Nord was carried out between 1995 and 1998. Allied drilled from 2004 to 2012. From September 2012 St Barbara have owned and operated the Simberi project. During the early part of the Kennecott percussive drilling program (up to approximately RC320, February-May 1989), each 1 m sample was collected from a cyclone in a calico bag. The sample was dried, and jaw crushed to less than 7 mm and a 1.5 kg riffle split sub-sample dispatched for assay. The Kennecott 1m diamond drill core samples were cut in half using a diamond saw, dried, jaw crushed, and hammer milled to -30 mesh. A 200-250 g sub-sample was pulverised to -80mesh before submitting to the laboratory. Nord sampled percussive and diamond holes every 1 m. RC samples were collected in polyweave bags direct from a cyclone. Approximately 100 g of every RC sample were washed, dried and retained for reference. RC samples were hammer milled at a Nord sample preparation facility, located on Simberi Island, to approximately -30 mesh. The sample preparation facility was supervised by contract personnel from Astrolabe Pty Ltd, an analytical laboratory in Madang. A 1 kg subsample was riffle split for dispatch for assay and the remainder stored. Nord diamond core was photographed, logged and cut in half using a diamond saw. One half was dried, jaw-crushed, hammer milled and reduced to a 1 kg sub-sample using a riffle splitter. The sub-samples were dispatched to Astrolabe (Madang, PNG) for final preparation and assay up until September 1996. Allied RC samples were collected at 1 m intervals then dried. Each sample was jaw-crushed, hammer milled to -80 mesh and reduced to two approximate 1 kg sub-samples using a riffle splitter. One 1 kg sample was hammer milled to -30 mesh and the other 'reject' split was archived on site for a minimum of 3 months after assays were returned. The 1 kg crushed samples were dispatched to ALS. In mid-2008, a new core shed and sample preparation facility was constructed with upgraded security and new sample processing equipment. This allowed a change to the RC sampling and preparation procedures. Samples from the cyclone were collected in large polyweave bags and weighed. Sub-samples were placed in calico bags. For dry/damp samples a riffle splitter was used to produce approximately 500 g for processing and approximately 500 g for 'reject' or archive. Spear sampling was conducted on wet samples to obtain two 800 g sub-samples, one for archive and one for processing. Sub-samples were sent to sample prep for drying in electric ovens. Before mid-2008, Allied diamond core samples were processed in a similar way to the RC samples. Core was sampled on 1 m intervals, cut in half using diamond saws and dried. One half of each sample was stored on site in the secured core shed, the other half was crushed with a jaw crusher and split to two approximately 1 kg samples. One was hammer milled to -30 mesh and the 'reject' sample archived for a minimum of 3 months after assays were returned. The 1 kg samples were dispatched to ALS Townsville for fire assay. St Barbara have sampled core at 1m intervals irrespective of geology using a petrol clipper saw along its long axis on a plane representing approximately half of the core. RC samples were collected at 1m intervals. The sample generated by the rigs was initially passed through a cyclone/cone-splitter system which delivered a nominal 2-3 kg size sample which was collected in a calico bag for each metre. When drilling wet due to water inflows, samples were collected in a 20 l bucket, the water decanted and the sample transferred to the calico bag. For each one metre interval, a sieved chip sample was also collected and deposited in a chip tray for later photographing and logging. The calico bags were then packed in large green polyurethane bags and delivered to the Simberi's onsite laboratory for drying and aqua regia Au analysis. The pulp residues from this process were sent to the SGS laboratory in Townsville for Au (50 g fire assay) and multi-element ICP analysis.

CRITERIA	COMMENTS
DRILLING TECHNIQUES	From 1984 to 1990 drilling was carried out by Kennecott, comprising 447 (43,727 m) RC drill holes (3.75 - 4 inch), 73 (15,970 m) diamond drill holes and 11 (153 m) diamond holes drilled for metallurgical purposes. Most diamond holes were drilled PQ to depths of up to 200-250 m and HQ thereafter. From 1994 to 1998 Nord completed a further 432 (26,241 m) RC holes and 35 (6,415 m) diamond holes. Many of these diamond holes were triple-tubed for metallurgical sampling and test-work. Allied drilled 816 RC (62,003 m) holes and 219 (42,098 m) diamond holes after 2003. All diamond drill hole core has been photographed. Downhole surveys were restricted to only some of the early Kennecott and Nord diamond drill holes and the bulk of the later Allied diamond drilling. Most of the RC drilling was shallow, averaging less than 100m, and errors due to hole deviation are considered to be minimal. SBM (2014-2018) completed diamond holes using a track mounted Cortech CSD1300G drill rig. RC drilling was completed using a track mounted Gemrok 1000H MP, along with a track mounted Schramm 650 rig. Both RC machines used sample splitting systems to deliver a representative sample of a size which made sample preparation and assaying productive. In March 2018, SBM commenced a major RC drilling program to test the down dip extensions of the Sorowar orebodies. This campaign is ongoing at the time of this report. Holes were generally drilled on an azimuth of 30 degrees to the mine grid, with a dip of -60 degrees and a total depth of 250 m. The campaign has used three drills supplied by Quest Exploration Drilling (QED) running a mixture of 4.5 inch and 5.25 inch RC hammers, a Schramm 685WS (500 psi/1350 cfm onboard compressor), a DML 45 (350 psi/500 cfm onboard compressor) and a UDR 1200 (no onboard compressor). All drills required additional air at high pressure to achieve the required depths. This was provided by a number of independent compressor and booster units, including a Sullair 900 20/12 (500 psi/1150 cfm), an Atlas Copco 487 (350 psi/900 cfm), an Atlas Copco XVRS (450 psi/1000 cfm), Hydro Booster AV92 (350 psi/720 cfm) and a Hurricane Booster Copco (350psi/500cfm). Drilling has proved challenging, with broken ground and high water inflows occurring in certain areas of the Sorowar pit. This led to the loss of one rod string, and considerable time spent retrieving at least three others during the course of the program.
DRILL SAMPLE RECOVERY	In 2016 RC sample recovery was calculated from oven-dried weight of the sample and the assumed volume. RC sample recovery is low at surface but increases up to about a downhole depth of 40 m, and then the average recovery slowly decreases. Presumably this relates to poor recovery in the clay rich oxidised material which can also have higher moisture content and then lower recovery again at greater depths were sample recovery may be more difficult and sometimes wet drilling conditions are encountered. The average sample recovery is 68 % is. RC drilling recoveries around this level are possible but they are very low. There is a possibility that the density used to calculate the recovery is being overestimated, which would underestimate the recovery. This could for example be caused if the samples are sometimes not dried sufficiently. The RC drilling is recorded as mostly 5.25 inches but with some 5.5 inch diameters. If holes were sometimes breaking out wider than expected this could also make the recoveries lower. Ten percent of RC samples were logged as wet and 24% moist. It appears that moist RC samples occur at shallower downhole depths and wet samples are more abundant at greater hole depths. In relative terms, sample recovery is a little lower in moist and wet samples than in dry samples. Core recovery is around 90 % at surface increasing to about 95 % at a depth of 70 m below surface where it remains relatively constant. Some holes have extremely variable recovery (while others have 100 % recovery for the complete hole. Holes with completely 100 % recovery sometimes have large sections of the drill hole that are broken without a piece of intact core. Measuring core recovery is difficult in such holes and may not always be reliable.
LOGGING	Lithology, alteration, structure and assay data exists as well as an extensive set of core photographs. All holes were logged for a combination of geological and geotechnical attributes. Twin holes suggest that

CRITERIA	COMMENTS
	there is often a lack of consistency between the geological logging of various geologists. Some check re-logging will be required if reliable 3D alteration and lithology models are to be built.
SUB-SAMPLING TECHNIQUES AND SAMPLE PREPARATION	During the Kennecott percussive drilling program (up to approximately RC320, February-May 1989), the jaw-crushed sample was split to 250 g, disc pulverised to -80 mesh, further split to a 50 g aliquot and finely pulverised for assay. Lack of correlation between duplicate and original sample assays led Kennecott to revise the sample preparation procedure. Subsequently (up to RC447, 1992) a 250 g split (-80 mesh) was sent to the laboratory. At the laboratory a 50g aliquot was taken for pulverising and assay. A similar sized aliquot from the 200-250 g sub-samples (-80 mesh) from the Kennecott diamond core samples was fire assayed. Every Nord 1m RC sample was hammer milled to approximately -30 mesh and a 5 g aliquot finely pulverised and fire assayed. Nord diamond core sub-samples were dispatched to Astrolabe (Madang, PNG) for final preparation and assay up until September 1996. At the laboratory the 1 kg sub-samples were dried, pulverised and a 50 g sub-sample was fire assayed for gold using an atomic absorption spectrometer (AAS) finish. After September 1996, the samples were dispatched to Australian Laboratory Services (ALS) in Townsville, Queensland, for preparation and assay using the same method. The 1 kg (-30 mesh) sub-samples from the Allied RC drilling were dispatched to ALS and finely pulverised. A 50 g sub-sample was fire assayed and the remainder stored at their facility in Garbutt, Queensland. The Simberi processing equipment was flushed with glass before each hole was processed. After the new core shed and sample preparation facility was constructed (2008) spear sampling was conducted on wet samples to obtain two 800 g sub-samples, one for archive and one for processing. Dried RC samples of up to 600 g were milled in an LM2 to obtain a 90 % pass through 75 microns for dispatch to the laboratory. The laboratory procedures on Simberi Island were reviewed by ALS Chemex in October 2004 and found to be satisfactory. Before mid-2008, Allied drill core samples were processed in a similar way to the RC samples. 1 kg from the half-core sample was hammer milled to -30 mesh and the 'reject' sample archived for a minimum of 3 months after assays were returned. The processing equipment was flushed with glass before each hole was processed. The 1 kg samples were dispatched to ALS Townsville for pulverising and a 50 g sub-sample was fire assayed. For SBM drilling all samples were prepped using the on-site laboratory. Samples were initially crushed to <2 mm using a Terminator jaw crusher. Samples greater than 1 kg were riffle split and this subsample was pulverised using an Essa LM2 pulveriser, with 150-200 g dispatched to ALS in Townsville for analysis. No studies exist to determine if the sample sizes are appropriate for the grainsize being sampled. Sample sizes are however similar to other gold deposits.
QUALITY OF ASSAY DATA AND LABORATORY TESTS	Kennecott evaluated the results of a re-assay program in 1992 dividing the data into oxide, transition and sulphide as well as grade classes. As a result, the following corrections were made to the Au assay data: oxide -6.1%, transition -10.3% and sulphide -9.2%. These corrections were not used for SBM estimates. Duplicate sampling by Nord concluded that the majority of the duplicate pairs agreed well. Nord's internal standard samples were reported as having acceptable agreement. Allied's sample preparation and analytical control procedures included the use of blanks to monitor contamination, duplicates to test splitting and milling efficiency and standards to monitor analytical accuracy and precision. Gold assays for 288 standards showed precision well within two standard deviations. Gold assays for 574 duplicates, representing 4.2% of the (Allied) samples assayed show good agreement with a correlation coefficient of 0.994. In addition, Au assays for 570 samples submitted to a second laboratory also showed good agreement, with a correlation coefficient of 0.996. Between drill holes, sample preparation equipment was cleaned with crushed glass and compressed air. Between samples the same equipment was cleaned with compressed air and a brush. Due to the poor initial selection of blank material, the blanks analysis data could not be used to accurately determine the degree of contamination. Allied conducted Round Robin inter-laboratory checks in 2009 and 2010 with satisfactory results. For resource drilling SBM have inserted non-certified blank material at a ratio of 1:25; inserted certified reference material at a ratio of 1:21; field duplicates (RC) 1:47 and the pulverisation and analysis of

CRITERIA	COMMENTS
	coarse reject (core) at a ratio of 1:22. No bias or contamination issues were detected however, some assays of standards suggest that precision can at times be lower than ideal. Analysis of blanks suggest the occurrence of some sample mix ups particularly since April 2018. RC grade control drilling is also used for resource estimation; however this drilling is predominantly targeting oxide resources. There are 1,310 pairs of field duplicates for RC grade control and while there is no bias precision is not always ideal. There was no pulp duplicate analysis for the RC grade control data. Given the RC grade control data is used for the externally reported resource this data should have similar QA/QC to the resource drilling data. There were 1,317 assays from standards submitted with grade control RC drilling. There is no significant bias in the standard analysis however in some instances the precision is surprisingly poor and this requires attention in the future.
VERIFICATION OF SAMPLING AND ASSAY	The following discussion is based on a data quality study by De-Vitry (2016). There are 12 diamond versus RC twin drill holes. Also present are 5,385 RC versus diamond sample pairs that are located within 10 m or less that may or may not have been intentionally drilled as twin holes. For example, holes that cross close to each other or grade control RC holes next to exploration diamond drill holes. Based on a detailed analysis of the above information and the underlying geology it is possible that gold grades in some of the older RC drilling is biased high. This may be due to difficult drilling conditions (faults, high porosity etc), down hole moisture and insufficient air pressure during RC drilling resulting sample loss and/or contamination. Much higher pressures are now used in RC drilling and operators are more experienced with the ground conditions at Simberi. Reconciliation exists from 2017 onwards and there is no evidence of a bias in the current RC drilling. Six twin holes are still planned to be drilled in areas of difficult ground conditions to verify the current RC drilling. Increasingly the older RC drilling is in mined out oxide areas with recent drilling focussing on sulphide resources.
LOCATION OF DATA POINTS	All drill collars were surveyed using traditional EDM instruments based on UTM WGS 84. An audit by McMullen Nolan and Partners Surveyors Ltd in 2005, using two dual frequency GPS units, determined that the Simberi survey had very high accuracy. Since 2007, an additional QC step was introduced to record all collars with a GPS to cross check the surveyed coordinates. Simberi island was surveyed in 2007 before mining commenced. A LiDAR survey was flown in early 2012 post mining. The two surveys have been merged to create a pre-mining surface. There are areas in which the RL of the collar coordinates and pre-mining surface vary by up to 30 meters. The reason for these difference needs to be identified and corrected. SBM mine survey team has surveyed the SBM drilling. No down hole surveys were completed on the RC holes. There are 246 RC holes of depths greater than or equal to 200m and down hole surveying for deeper RC holes would be worthwhile. Diamond holes were surveyed down hole every 15 metres using a single shot camera.
DATA SPACING AND DISTRIBUTION	For the generation of the 0.25 g/t Au grade shell and the oxide domains all available data is used i.e. diamond, RC, auger and blast hole. For resource estimation diamond, RC and RC grade control data are used. The RC grade control data is nominally on a 10m x 10m grid however, below the pits drill spacing is highly variable and this is taken into account during resource classification. Drilling is composited to 2m for resource estimation.
ORIENTATION OF DATA IN RELATION TO GEOLOGICAL STRUCTURE	Gold mineralisation does not appear to be closely associated with any particular lithology although the contacts between lithologies can at times be a favourable host to gold mineralisation. It is recognised that the primary control of gold mineralization are NW–SE and NE–SW steeply dipping structures and the intersection of these also has the potential to host mineralization. Gold mineralisation is generally associated with sulphides or iron oxides occurring within all variety of hydraulic fractures, and broad disseminations in the naturally porous volcaniclastic rocks. The mix of vertical and inclined drilling goes some way to optimally intersect these mineralisation styles.
SAMPLE SECURITY	Company personnel or approved contractors only were allowed on drill sites. Drill samples were removed from drill sites only to a secure sampling or core logging/processing facility. Logged and cut core was consigned and dispatched as secure cargo to accredited laboratories for processing.

CRITERIA	COMMENTS
AUDITS OR REVIEWS	In 2004, Golder Associates prepared an Independent Qualified Person's Technical Report of the Simberi Oxide Gold Project and in June 2011 Golders produced the Competent Person's Report for the Simberi Gold Project, which found no compromising factors deleterious to the resource. In 2015, QG completed a review of the Simberi grade control which highlighted a potential bias between RC and diamond drilling. The results of a follow up study are discussed in the section above on verification of sampling and assaying.

Section 2 Reporting of Exploration Results

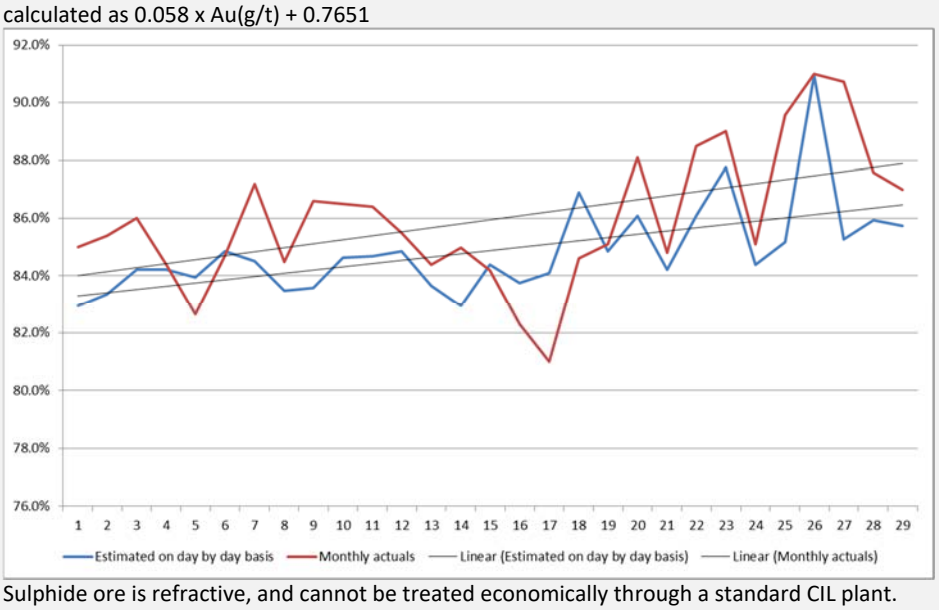
CRITERIA	COMMENTS
MINERAL TENEMENT AND LAND TENURE STATUS	The reported resource is completely located within ML 136 which is 100% owned by the Simberi Gold Company Limited (SGCL), a wholly owned subsidiary of St Barbara Limited. ML 136 expired in December 2018, but the lease remains in effect while the reapproval process is undertaken.
EXPLORATION DONE BY OTHER PARTIES	Drilling of the resource by other parties is discussed in the previous section.
GEOLOGY	The Simberi Gold Project is located on Simberi Island in the Tabar Islands Group situated in the New Ireland Province of Papua New Guinea (PNG), approximately 80 km north-west of Lihir Island. Simberi is the oldest and northernmost island of the Tabar Group. It measures approximately 10 km east-west, 8 km north-south and rises to over 300 m above sea level. The currently known gold prospects (Sorowar, Pigiput, Pigibo, Botlu, Pigicow, Samat, Bekou and Monun Creek) on Simberi Island are located in the eastern half of the island within the central volcanic core. They are contained within a sub-cropping epithermal alteration system and structural corridor extending 4km north-south and 2km east-west. The host rocks for the mineralisation comprise Pliocene altered alkaline lava flows or intrusives (porphyries), volcaniclastics and tuffs. Of the eight separate deposits, Pigiput in the south is by far the largest gold resource. Monun Creek is located immediately to the north-east of Pigiput, with Sorowar, the second largest resource, further north again. Pigibo, Botlu, Samat and Bekou lie to the west and south of Pigiput, and while relatively small, are relatively higher grade. All deposits lie within 2 to 3km of each other. Sorowar, Pigiput and Botlu are currently being mined via open pit methods. Fine grained free gold in oxide material is the target of current operations. Within the sulphide zone gold is also fine grained (most grains are under 15 µm in diameter) but is generally within pyrite. Modifications are required to the current processing plant to allow flotation of pyrite and recovery of the gold. The grade of the mineralisation is related to the natural porosity and degree of fracturing of the host rocks, greatest in the vicinity of steep and moderately dipping feeder structures interpreted to have been the pathways for both alteration and mineralising fluids.
DRILL HOLE INFORMATION	No exploration results are presented.
DATA AGGREGATION METHODS	No exploration results are presented.
RELATIONSHIP BETWEEN MINERALISATION WIDTHS AND INTERCEPT LENGTHS	No exploration results are presented.
DIAGRAMS	No exploration results are presented.
BALANCED REPORTING	No exploration results are presented.
OTHER SUBSTANTIVE EXPLORATION DATA	No exploration results are presented.

CRITERIA	COMMENTS
FURTHER WORK	Future work will focus on converting Inferred oxide and sulphide resources to Indicated resources. Work will also be conducted on areas which are currently unclassified due to not meeting the classification criteria (see below), in the hope they can be brought into the Inferred category.

Section 3 Estimation and Reporting of Mineral Resources - Simberi

CRITERIA	COMMENTS
DATABASE INTEGRITY	Drilling in 2004 and 2005 by Allied Gold was subject to significant external review. Golder Associates visited the site in April 2004 and reviewed data collection procedures. In early 2009, the historic data was transferred into a Maxwell's Datashed model and subjected to QAQC, which traps and reports errors on import. Data is now entered directly into the Datashed SQL database.
SITE VISITS	The Competent Person (Chris De-Vitry) visited the Simberi mining operation in 2016 and 2019.
GEOLOGICAL INTERPRETATION	Gold does have lithological and structural controls, but these controls are complex and cannot be easily used to generate domains for resource estimation. Leapfrog software was used to generate a 0.25 g/t Au grade shell for resource estimation. A grade shell is needed to avoid smearing grades between mineralized and essentially unmineralized areas. This grade shell is sufficiently below the resource reporting cut-offs to not introduce any significant conditional bias during resource estimation. Locally the orientation, degree of anisotropy and extrapolation of the 0.25 g/t Au grade shell tends to be somewhat subjective however, the current grade shell is considered appropriate by the Competent Person. Further improvements could be made by incorporating additional local geological controls into the interpretation. To better understand the impact of uncertainty it is recommended that multiple 0.25 g/t Au grade shells be generated and used for resource estimation. Oxidation domains (oxide, transitional and sulphide (fresh)) are based on logging from drill holes. The domains were defined in Leapfrog by a combination of offset surfaces and intrusion solids. The offset surfaces utilise the logging and depth below topography to create geologically realistic oxidation surfaces. The modelling of oxidation intrusion solids in Leapfrog was also required because a single oxidation surface could not always model the observed spatial complexity. For example, there can be pods of oxide completely enclosed by sulphide and vice versa. Due to the spatial complexity of oxidation, additional improvements are required to the way the oxidation domains have been created. Based on statistical analysis and contact plots the 0.25 g/t Au grade shell was subdivided into two zone i.e. oxidation/transitional and sulphide.
DIMENSIONS	The northernmost deposit is Sorowar, its bulk is aligned SE-NW (1,550 m) with minor (structurally controlled) orthogonal splays towards the southwest and northeast. These splays are less than 750 m long and 300 m wide. Pigibo is oriented W-E for approximately 740 m with a central bulge about 300 m wide and tapering to about 100 m at the western and eastern extremities. It is located about 1,500 m to the southwest of the central part of Sorowar. Pigiput is east of Pigibo and about 1000 m south of Sorowar. It is roughly equidimensional (640 m diameter) in plan. Monun Creek is between Pigiput and Sorowar however, there is now enough drilling to define continuous mineralisation between Pigiput and Sorowar. Botlu is about 800 m south of Pigibo. It strikes SE-NW for approximately 680 m with an average width of around 250 m. About 700 m to the SE of Botlu is the discontinuous Pigicow deposit which strikes SW-NE for nearly 600 m with a variable width (200-450 m). Samat is located about 700 m to the southeast of Pigicow and is aligned north-south for approximately 720 m with an average width of 300 m. Like Pigicow, Bekou is discontinuous and oriented towards the east-northeast with a strike length of around 600 m. Located about 650 m to the southwest of Samat, its width varies from 40 m to 170 m.

CRITERIA	COMMENTS
ESTIMATION AND MODELLING TECHNIQUES	Ordinary Kriging with 2m composites was used to estimate Au with the following parameters: 1. Minimum of 6 composites; 2. Maximum of 16 composites; 3. No quadrant or octant search; 4. Search of 600 m x 600 m x 200 m (blocks informed by large composite to block distances are not classified as a resource – see section on resource classification); 5. Anisotropic distances were used to select the closest composites; 6. Parent cell discretisation for kriging of 5 x 5 x 2 in X, Y and Z dimensions; 7. All composites within a block are used to estimate that block; and 8. All domain boundaries except for the oxide-transitional boundary were treated as hard during estimation. The parent block model dimensions were 10 mX x 10 mY x 5 mZ, which is equal to the spacing of the better drilled areas. Outlier restricted kriging was used with grade above a specified cut-off cut to that value when the composite is greater than 15 m from the block being estimated. For the mineralized domains the cut-off was chosen at the point which the global gold distribution starts to break up. An outlier cut-off of 35 ppm Au was used for the Oxide-Transitional Mineralized domain and 30 ppm Au for the Sulphide Mineralized domain Orientation disks were placed throughout the Simberi deposit using geology, structure and gold grade continuity to define each disks rotation. The orientations from these disks were then interpolated into every block in the mineralized domains using nearest neighbour interpolation. During estimation the search ellipse and variogram were rotated according the orientation stored in each block being estimated. The Au estimate was validated using an inverse distance squared check estimate as well as comparison against the declustered composites. The model was also validated using swath plots and visual comparison between composited and the kriged grades. In the deeper less well drilled parts of the deposit kriging from wide spaced data into relatively small blocks will tend to over-smooth the estimate and conditional simulation or non-linear estimation is recommended for these areas. The current estimate is yet to be compared against mill production.
MOISTURE	Tonnages are estimated on a dry basis.
CUT-OFF PARAMETERS	The resource is reported at a gold cut-off of 0.4 g/t for oxide and 0.6 g/t for transitional and sulphide.
MINING FACTORS OR ASSUMPTIONS	The mining method for all deposits is open pit, using 5 m flitches and 20 m benches. The principle pieces of digging equipment are four Hitachi 1200 excavators, matched with a mixed fleet of CAT 740 and BELL 50D articulated dump trucks. Ore blocks are generated within the site's MineSight software utilising a Dig Block Optimisation module with a base SMU of 5 m x 5 m x 5 m. The optimal blocks are modified by the mine geologists to achieve a practical ore mark out, which is then located on the ground via differential GPS. Ore markout widths vary from 5 m to 60 m, the average being in the 30 m to 40 m range. When forecasting and budgeting, mining dilution and ore loss are set at 15 % and 5 % respectively, and this has given a suitable result when compared against actual. All material within the marked out block, regardless of oxidation state, is delivered to ROM stockpiles, either at the Sorowar Feeder, for the rope conveyor, or to the Mill. The 365 tph rope conveyor from the Sorowar Feeder to the Mill ROM pad is an integral part of the mining process flow at Simberi; as is the downhill trucking that HBS conducts using Astra haul trucks to bring an additional 700 kt to 1 Mt per annum to the Mill ROM.

CRITERIA	COMMENTS
METALLURGICAL FACTORS OR ASSUMPTIONS	Gold recovery in oxide/transition ore types was calculated as follows: Plant recovery performance was analysed from January 2017 to May 2019 and a recovery relationship derived. This relationship for Oxide/Transition ore types from the Sorowar, Pigiput and Pigibo deposits was calculated as 0.058 x Au(g/t) + 0.7651  Sulphide ore is refractive, and cannot be treated economically through a standard CIL plant. Testing has indicated the flotation of the sulphides containing the gold can be successfully undertaken to produce a gold rich sulphide concentrate. Work is ongoing in 2020 to refine the sulphide recovery knowledge across the different orebodies, as historically, only the Pigiput deposit had been systematically tested.
ENVIRONMENTAL FACTORS OR ASSUMPTIONS	Historically, there has been no large-scale mining and the previous alluvial workings have had no significant impact. There are no pre-existing environmental liabilities. During a 2004 environmental baseline study, a network of monitoring stations was established to support the ongoing collection of data. A 2005 Feasibility Study addressed the environmental impacts associated with waste dumps, open pits, pipelines, access/haul roads, process plant, deep sea tailings and stormwater. However, no attempt at identifying the acid rock drainage potential was made, although the resource model was domained with respect to visible oxidation intensity. A report by Environmental Geochemistry International suggests that the distribution of the acid rock drainage (ARD) material types be spatially determined. In this way the non-acid forming (NAF) and potentially acid forming (PAF) factors can be evaluated – using the sulphur values in the model.
BULK DENSITY	The dry bulk densities were determined using the water immersion method. Only intact pieces of core can be measured by this approach and in extremely broken ground there is potential for a bias to be introduced. Core is wrapped in cling wrap before weighing in water. This approach can be unreliable due to either entrapped air bubbles or water leaking into the sample. Further work is required to verify the reliability of the density data and to ensure that clay rich samples have been adequately dried before density is measured. There is limited density data. Generally, one measurement per core tray or less. Density was estimated into the block model using inverse distance squared interpolation.
CLASSIFICATION	The resource estimate is initially classified on data spacing using the following ellipsoidal search criteria: 1. Measured - Utilising a quadrant search of 15 mX x 15 mY x 7.5 mZ (total size of the ellipse is 30 m x 30 m x 15 m), there must be at least one composite in each quadrant; 2. Indicated - Utilising a quadrant search of 30 mX x 30 mY x 15 mZ (total size of the ellipse is 60 m x 60 m x 30 m), there must be at least one composite in each quadrant; 3. Inferred - Utilising a quadrant search of 50 mX x 50 mY x 25 mZ (total size of the ellipse is 100 m x 100 m x 50 m), there must be at least one composite in three of the quadrants.

CRITERIA	COMMENTS
	All the material unclassified by the above steps remains unclassified. Material outside of the mineralized domain is unclassified irrespective of the drill spacing. These unclassified areas represent potential drill targets. After applying the above criteria there were still significant areas classified as Inferred which in the opinion of the Competent Person had higher confidence. Wireframes were generated around areas that had enough gold grade continuity and drill spacing to be classified as Indicated and the classification was updated accordingly. The final resource classification is considered appropriate given the data quality and continuity of the gold mineralization. Almost all the material classified as Measured has been RC grade control drilled at an approximately 10m x 10m spacing. A Measured classification is considered appropriate given that over the 12-month periods of 2017 and 2018 the gold ounces between grade control and the mill are within 5%. The resource estimate utilises the grade control RC drilling. In order to meet the JORC (2012) criteria for reasonable prospects of eventual economic extraction, only the material above an optimistic pit shell has been considered as a resource. This ultimate pit shell was calculated using a gold price of US $1800. Resources were depleted using an end of December 2019 surface.
AUDITS OR REVIEWS	In June 2011, Golders produced the Competent Person's Report for the Simberi Gold Project, which found no compromising factors deleterious to the resource. The Sorowar and Pigiput/Pigibo Mineral Resource Estimate were reviewed internally in 2014 by a panel of experienced company geologists. The review covered all aspects of the estimate including source data, geological model, resource estimate and classification. In addition, the reporting of the company Mineral Resources is guided by the company's Mineral Resource Estimation System and is overseen by the Executive Leadership team prior to being reviewed by the company's Audit Committee.
DISCUSSION OF RELATIVE ACCURACY/CONFIDENCE	Uncertainty in the interpretation of the 0.25 g/t Au grade shell and the interpretation of oxidation domains are key areas of uncertainty. Gold grade uncertainty within the estimation domains is also high with about three quarters of the variability occurring in under 10m (as indicated by variography). Finally, there is still the possibility that some of the older RC drilling has gold grades that are biased high. This risk is reducing as additional drilling is ongoing. No geostatistical study has been carried out to determine confidence limits for the resource. Conditional simulation into conservative, intermediate and optimistic domains is recommended.

Section 4 Estimation and Reporting of Ore Reserves

CRITERIA	COMMENTS
MINERAL RESOURCE ESTIMATE FOR CONVERSION TO ORE RESERVES	The Ore Reserve estimate is based on the Mineral Resource estimate carried out by Chris De-Vitry of Manna Hill Geoconsulting. Gold grade was estimated using ordinary kriging. The Mineral Resources are reported inclusive of the Ore Reserve.
SITE VISITS	The Competent Person was previously employed in a site based role until December 18th 2019. The Competent Person visited site in January 2020 as part of the reserve estimation process.
STUDY STATUS	SGCL is currently an operating mine. Pit Optimisation and Design conducted to enable the Mineral Resource to be converted to Ore Reserves. Oxide Reserves are supported by operational budget planning and evaluations based on operational designs and current practices. The Sulphide component has been subject to a pre-feasibility study (PFS) carried out internally by St Barbara Limited during 2016. An update to the Pre-Feasibility Study for the sulphide component is due to be completed in February 2020.
CUT-OFF PARAMETERS	The economic cut-off was determined from the non-mining breakeven value. The non-mining breakeven value was estimated for each block in the Ore Reserve model and takes the following factors into consideration: • Gold Price • Milling Cost • G&A Costs • Metallurgical Recoveries

CRITERIA	COMMENTS
	• Royalties • Transport and refining charges Only blocks with positive value are Reported in the Ore Reserve estimate. Open pit mining costs are excluded from the cut-off grade calculation. The impact of mining costs is accounted for in the calculation of the optimal pit shell including differences between ore and waste mining due to haul distances.
MINING FACTORS OR ASSUMPTIONS	The Simberi Reserve has been estimated after running pit optimisations using costs, recoveries, dilution and slope angles that are based on zero base build approach using current operating history as a data source. The mining methods used to do the LOM schedules are in line with what is currently used on site. The overall slopes used for the pit optimisation and design work were sourced from reports carried out by external geotechnical consultants. Grade control drilling is carried out in advance of mining and the information obtained from this drilling is made available for decision making in advance of mining. The models used for the Ore Reserve are consistent with that produced for the Mineral Resource declared for the Simberi deposits. Dilution is included in the Ore Reserve estimate through the estimation process. Ore losses and external dilution were assumed to be 0% due to the limited operating experience with the updated Mineral Resource model. An average minimum mining width of 30m was applied for all design work. Inferred material is set to zero value in the optimisation. Subsequently, inferred material reported in the pit shells is considered in the Life of Mine, but not included in the Reserve. Additional optimisations were run, and shells produced, to evaluate the influence of inferred material prior to the Mine Design phase to ensure potential future mill feed is not sterilised when generating current optimum Pit Designs. Inferred material can only present a potential upside to the ore reserve if and when it is reclassified as indicated. The infrastructure requirements of the current mining methods used are already in place. Replacement costs, expected maintenance costs or costs of additional items required have been accounted for in the life of mine evaluation on which the project costings are based.
METALLURGICAL FACTORS OR ASSUMPTIONS	Material from the various Simberi Deposits is trucked and conveyed to the Simberi processing plant. The Simberi processing plant consists of a Wet Scrubber, Oversize Ball Mill, Semi-Autogenous Grinding Mill, Cyclone Circuit, CIL Circuit, elution and acid washing facilities, electrowinning cells, and Kiln. Tails from the process are discharged using a Deep Sea Tailings Placement where the tailings is diluted with sea water, to the ratio of 8:1, prior to its disposal. Expansion of the Oxide Circuit was completed towards the end of 2013 and since then, the operation has been operating at 3.5 Mtpa. A PFS has been completed to evaluate the options for Sulphide processing. The technology associated with processing of Simberi ore is conventional carbon in leach and based on industry standard practices. Recovery performance is variable for the different weathering profile of the material. The metal recovery for oxides is calculated by a formula that uses gold grade as a predictor. The gold recovery has an upper limit of 93%. This gold recovery relationship was developed from plant performance data. A fixed gold recovery of 75% was used for sulphides, based on PFS.
ENVIRONMENTAL	SGCL holds two environmental permits. One for the extraction of water and one for the discharge of waste. Together these two permits form the environmental legislative basis in which the SGCL can operate. Compliance with these conditions is continuously monitored and reported on in Quarterly Environment Performance Reports which are submitted to the National Government, Department of Environment and Conservation (DEC).

CRITERIA	COMMENTS
	SGCL has received a new permit for the 3.5Mtpa expansion project to replace the previous discharge permit. Both the environmental permits are only relevant to operational mining activities within the Mining Lease. In addition, SGCL maintains an Environment Permit for Exploration relating to Waste Discharge. This Permit is referred to as Environment Permit WDL-2A(65).
INFRASTRUCTURE	All equipment required for the mining and processing of the reserve is in place and operational, or have been selected and costed for installation as part of the sulphide PFS. They are, or will be, located on St Barbara held tenements and leases. The infrastructure includes but is not limited to: • Dedicated heavy fuel oil diesel generators • Water supply • Simberi Oxide Processing plant • Future Simberi Sulphide Processing Plant • Surface roads and communications • Plant maintenance workshop facilities • Process plant buildings, administration offices, training rooms, assay laboratory, site security buildings, ablution and stores. • Core shed • Mobile communication tower • Accommodation and camp facilities • Airstrip • Wharf
COSTS	All costs used in the generation of the reserves have been derived from first principles, actual performance and the sulphide PFS work. Operating costs are estimated as part of the internal budgeting process and approved by the St Barbara board. A gold price of US$1,300/oz has been used in all calculations. Exchange rates are sourced from recommendations by the Group Treasury and accepted by the Executive Leadership Team (ELT). Costs associated with treatment and transport have been included in the cost modelling completed for the project based on actual performance and the sulphides PFS. Royalties have been included at the PNG government royalty of 2.0% of gold produced. A MRA levy is also applied to at 0.25% of gold produced.
REVENUE FACTORS	A gold price of US$1,300/oz has been used in all revenue calculations.
MARKET ASSESSMENT	Gold doré bars are transported fortnightly by dedicated service provider from Gold room to final destination Perth Mint. Armoured vehicles are used from start to end of shipment process. Gold is sold on an $A basis with a call option of $USD sales. Sulphide ore is proposed to be treated in a Sulphide Circuit and sold as a concentrate.
ECONOMIC	SGCL is an operating asset and is not subject to project type analysis.
SOCIAL	There are two community agreements which set the guidelines for community relations at Simberi. • The Memorandum of Agreement between SGCL, the national government, New Ireland Provincial Government, Simberi Land Owners Association and the Tabar Community Government • The Compensation Agreement.
OTHER	SGCL is operating on St Barbara 100% held mining leases with all required government and statutory permits and approval in place.

CRITERIA	COMMENTS
	A company risk register is maintained to address and mitigate against all foreseeable risks that could impact the Ore Reserve.
CLASSIFICATION	The ore reserve includes only Proved and Probable classifications. The economically mineable component of the resource material identified as Measured has been included in the Proved category. The economically mineable component of the resource material identified as Indicated has been included in the Probable category. No portion of the Probable ore reserve has been derived from Inferred Mineral Resources. The Competent Person believes the ore reserve declared is an accurate representation for the Simberi deposit.
AUDITS OR REVIEWS	No external audits or reviews have been conducted on the current ore reserve.
DISCUSSION OF RELATIVE ACCURACY/ CONFIDENCE	The Ore Reserve estimate is prepared within the Guidelines of the 2012 JORC code. The relative confidence of the estimates contained fall within the criteria of Proved and Probable Reserves. Significant operating history supports the magnitude of modifying factors which have been applied. The ore reserve has been estimated in line with the St Barbara Ore Reserve process. The ore reserve process has been conducted to industry standard. The ore reserve has been peer reviewed internally and the Competent Person is confident it is an accurate estimation of the current Simberi ore reserve.
END OF REPORT	