ASX RELEASE
19 December 2019

BORBOREMA GOLD PROJECT - DEFINITIVE FEASIBILITY STUDY DEMONSTRATES ROBUST ECONOMICS FOR >10 YEAR MINE LIFE

Highlights

- **The Definitive Feasibility Study (DFS) for the Borborema Gold Project has been completed on-time and demonstrates the economic viability and robustness of the Project.**
- **Borborema will be a standalone gold mine with an initial mine life of 10.2 years producing approximately 729,000 ounces of gold with strong profit margins.**
- **Strong economic and operational results obtained from the DFS (using US$1,400 gold price) with:**
  - Average gold production of approximately 71,000 ounces per annum over the life of mine, including approximately 88,000 ounces per annum over the first four years at an average C1 cost of US$622/oz;
  - C1 cash costs of US$642/oz and AISC of US$839/oz over Life of Mine (LOM);
  - **Compelling returns:**
    - Payback period of 2.4 years
    - Pre-tax $NPV_{8\%}$ of US$218M (A$320M)[1] and IRR 43.6%
    - Post-tax $NPV_{8\%}$ of US$203M (A$299M)[1] and IRR 41.8%
  - EBITDA over LOM of US$527M, averaging US$53.8M (A$79M) per annum (full years)
  - Capital expenditure of US$88M plus contingency of US$11M for total US$99M
- **The Project comprises a single open pit and 2Mtpa processing plant utilising industry standard crushing and SAG and ball mill circuits. Tailings will be dry stacked above ground removing the need for a tailings dam;**
- **DFS identifies additional opportunities to pursue that may further reduce costs and construction timelines.**
- **With Environmental Permit and Installation Licence already granted, allowing mine construction to commence, the Operational Licence will be granted subsequent to confirmation that the plant and infrastructure have been designed in accordance with the Licences.**
- **The DFS is a key milestone and the Company can immediately advance project finance discussions with the assistance of Araujo Fontes, their financial advisor in Brazil.**

Big River Gold Ltd (ASX: BRV) (**Company** or **Big River**) wishes to advise that the Definitive Feasibility Study (**DFS**) on the development of a 2.0 Mtpa operation at the Borborema Project located in north-eastern Brazil has been completed by managing engineers, Wave International Ltd. Borborema is 100% owned by Big River through its wholly owned subsidiary Cascar Mineração Ltda (**Cascar**).

The DFS has confirmed the viability and economic robustness of Borborema and was completed within the accuracy of 10-15% required by international best practice. It comprises a conservative, detailed

[1] AUD:USD 0.68 used in the DFS

study of a standalone gold project and estimates a **post-tax NPV of US$203M** (discounted at 8% pa) and an **IRR of 41.8%.**

The estimated project **capital cost is US$87.97M plus contingency of US$11.36M (11.4%) totalling U$99.3M** which compares favourably to the review announced in February 2018 of US$93.4M excluding contingency[3].

Average C1 operating costs over the 10 year operating mine life are estimated to be **US$642** per ounce compared with previously estimated US$737/oz[2] and an All-In Sustaining Cost (**AISC**) of **US$839** per ounce (US$908).

The estimated production costs provide a strong margin for profitability given current and projected gold prices.

The DFS details an initial Stage 1 Life of Mine (**LOM**) of 10.2 years, producing an average 71,250 ounce of gold per annum from a single open pit. Ore will be processed through a single stage crushing circuit and SAG and Ball (SAB) milling circuit followed by conventional cyanide leaching. Metallurgical recoveries are high ramping up to 92.5% with a 36 hour residence time and low reagent consumption. Gold recovered in production Years 1 and 2 is expected to be 83,888 oz and 83,954 oz respectively delivering revenues of US$235M (A$346M) in the first two years. Production in Years 3 and 4 will increase to 96,938 oz.

The DFS was managed by international engineering firm Wave International Ltd (**Wave**) who also undertook the process and infrastructure design with key contributions from Gruppo GE21 (mine design and scheduling), Integratio (social and community aspects) and testwork undertaken by ALS Laboratories, Outotec and SGS.The DFS built on previous studies and work completed by TetraTech, Ausenco and others.

With the completion of the DFS and LOM cashflow model the Company is now in the position of advancing discussions with several financial institutions that have expressed interest in providing project finance and were awaiting the finalised cashflow model. That will commence immediately with the assistance of Araujo Fontes, BRV's financial advisors in Brazil.

Chairman Stephen Copulos noted: "*the Definitive Feasibility Study represents an excellent outcome resulting from the work of many dedicated people and teams. The reduction in operating costs and containment of capital estimates compared with previous studies provides a strong basis for profitability over the next 10 years at least. The Company's strategy is now to secure financing, investigate opportunities that may further reduce costs and construction time and accelerate the implementation of the Borborema Project*."

KEY RESULTS

Summaries of DFS findings and the project details arising from that including resource/reserves, mine and process designs, capital and operating costs and cashflow modelling with sensitivity analyses are Appended to this announcement for reference.

Table 1 below summarises the key operating and financial results of the DFS which was undertaken at a gold price of US$1400 per ounce.

[2] Refer ASX announcement 8 February 2018.

Table 1. Summary Borborema DFS key results					
Key Parameters					
Mineral Resources (reported above 0.5g/t Au cut off, 2013)[3]			68.6Mt @ 1.10 g/t Au (2.43Moz)		
Stage 1 Ore Reserve Scheduled to be mined in DFS[4]			20.0Mt @ 1.22 g/t (784,480 oz)		
Gold produced			729,374 ounces		
Capital Costs					
Processing plant Capital Costs			US$ 58.61M		
Non Processing infrastructure and Owners costs			US$29.36M		
Contingency			US$ 11.36M		
Total Capital Summary			**US$ 99.33M**		
NPV (8%, Pre-Tax)			US$ 218M		
NPV (8%, Post-Tax)			US$ 203M		
IRR (Pre-Tax)			43.6%		
IRR (Post-Tax)			41.8%		
Payback from commencement of production			2.4 yrs		
Life of Mine C1 Cash Costs			**US$642/oz**		
Life of Mine AISC costs			**US$839/oz**		
Production Summary			**LOM**		
Mine Life (from commissioning date)			10.2 years		
Strip ratio (waste (t): Ore(t))			4.2		
Mill throughput (total)			20.0 Mt		
Grade			1.22 g/t Au		
Recovery			92.5%		
Gold produced – over Life of Mine			729,374 oz		
Project Economics, US$M			**LOM**		
Study Gold price			$1,400/oz		
Gross Revenue LOM			$ 1,021M		
Operating costs LOM			$ 494M		
Capital:					
Capital – Project Plant (inc contingency)			$ 99.3M		
Capital – sustaining and mine closure costs			$ 21.0M		
Working capital – Mine establishment pre-production			$ 6.6M		
Working capital – Other			$12.7M		
EBITDA			$527.3M		
NPAT			$328.3M		
Effect of varying gold price	**US$1350**	**US$1400**	**US$1450**	**US$1500**	**US$1600**
NPV (8%, post-tax), US$	183M	**203M**	224M	244M	285M
IRR (post-tax)	38.9%	**41.8%**	44.6%	47.3%	52.5%
Payback (from start production)	2.6 yrs	**2.4 yrs**	2.3 yrs	2.1 yrs	1.8 yrs
Ave EBITDA (Full years), US$	50.3M	**53.83M**	57.4M	61.0M	68.1M

[3] Resources estimated 2013, refer ASX Announcement 24 July, 2017

[4] Pit optimisation and Reserves estimated using gold price of US$1250/oz; DFS cashflow analysis used US$1400/oz. Only Measured and Indicated Resources were scheduled in mining – no Inferred Category Resources have been considered.

Next Steps & Implementation

The implementation schedule for the Project indicates a construction period of 23 months subject to the conclusion of financing arrangements. Big River believes this to be conservative and the lag time between completion of the DFS and securing finance is an opportunity to investigate critical tasks that impact the execution schedule. These tasks can be undertaken for relatively low cost which the Company is in a position to fund and have the potential to reduce the execution schedule and costs.

In moving forward Big River plans to:

- Appoint and relocate a Project Director to Currais Novos, to oversee implementation, value engineering, completion of remaining contracts and construction of the project.
- Complete contracts and design for supply of waste water and power.
- Appoint General Manager for Borborema operations
- Secure debt financing.
- Issue contracts for procurement and fabrication of plant.

Commercial opportunities in terms of mica by-products will continue to be investigated with metallurgical testwork and market assessment through ANZAPLAN in Germany to assess the potential for saleable quality product. If proven viable, potentially significant revenues could be added for relatively little cost. It would require some amendments to the process design but provision has been made for that in the design.

Funding

The staged development plan aims to minimise initial capital, operating expenditures and funding requirements whilst generating revenue. It also provides an avenue for a rapid payback period of only 2.4 years following commencement of commissioning.

The Project's financial, economic and marketing metrics are robust with good operating margins, and the reported Mineral Resource and Ore Reserve has the potential to deliver a production opportunity over at least 10 years. In addition, the Project's location in Brazil is within a mature, low sovereign risk mining jurisdiction.

Funding in the order of $118M is required to commence production and achieve the outcomes indicated in the DFS. This includes capital works, contingency, mine pre-production costs and other working capital requirements. The Company's Board and Management have a successful track record of obtaining finance for the exploration, evaluation and development of mineral resource projects. This includes the Posse Iron Ore mine in Brazil which the Company brought into production in 2014 and operated before selling the project in 2017. More recently, in June 2019, the Company successfully completed an entitlement offer to raise $4.12M (before costs) which provided funds to complete the DFS and sold non-core assets to establish a cash reserve which currently stands at approximately US$3.13M (A$4.6M).

The company is currently assessing whether the current cash reserves may be applied to investigating aspects of the pre-production costs and optimising the project development plan to reduce capital and operating costs and shorten the construction timeline.

It is anticipated that the finance will be sourced from a combination of equity and debt instruments from existing shareholders, new equity investment and debt providers from Australia and overseas. The Board and management believe that a debt:equity ratio upwards of 70/30 is potentially achievable for the project. The Company's aim is to avoid dilution to existing shareholders, to the greatest extent possible.

As previously announced, the Company has engaged Araujo Fontes as their financial advisors to source debt and equity options in Brazil. With the completion of the DFS, their discussions with funding partners

can now be advanced significantly. In addition, the Company has been approached by a number of Australian and overseas banks and institutions to discuss various funding options and structures.

For the reasons outlined above, the Board believes there is a reasonable basis to assume that funding to develop the project will be available as and when required. However, investors should note there is no certainty that the Company will be able to raise the amount of funding required to develop the project when needed. It is also possible that such funding may only be available on terms that may be dilutive or otherwise affect the value of the Company's shares, or that the Company may pursue other 'value realisation' strategies such as a sale, partial sale or joint venture of the project (which may reduce the Company's proportionate ownership of the project).

Going forward, the Company will continue to assess all possible commercial mechanisms to determine the optimum financing solution for the Project.

This announcement was authorised to be given to the ASX by the Directors of Big River Gold. For further information please contact: Andrew Richards

Yours sincerely,

Andrew Richards
Executive Director

About Big River Gold

Big River Gold Ltd (ASX:BRV), is a mineral exploration and development company listed on the Australian Securities Exchange. Its major focus is Brazil; a country the Company believes is underexplored and offers high potential for the discovery of world class mineral deposits. The Company's key asset is the Borborema Gold Project.

Competent Person Statements

Borborema mineral resource estimate

The information in this announcement that relates to the mineral resource estimate for the Borborema Project was first reported in accordance with ASX Listing Rule 5.8 on 24 July 2017. Big River confirms that it is not aware of any new information or data that materially affects the information included in the announcement of 24 July 2017 and that all material assumptions and technical parameters underpinning the Mineral Resource estimate continue to apply and have not materially changed.

Borborema ore reserve estimate

The information in this announcement that relates to the Ore Reserve estimate for the Borborema Gold Project was first reported in accordance with ASX Listing Rule 5.9 on 6 March 2018, 29 March 2018 and 11 April 2018. Big River confirms that it is not aware of any new information or data that materially affects the information included in these previous announcements and that all material assumptions and technical parameters underpinning the Ore Reserve estimate continue to apply and have not materially changed.

That portion of the Ore Reserve that was included in the Stage 1 Mining Schedule for the December 2019 Definitive Feasibility Study (DFS) was derived from a review and optimisation of the Ore Reserve undertaken by Porfirio Cabaleiro Rodriguez, BSc. (MEng), MAIG of GE21 as part of the DFS. The Ore Reserve was first reported in accordance with ASX Listing Rule 5.9 on 24 July 2017 and updated on 6 March 2018 and the optimisation was undertaken by GE21 in December 2019

BIGRIVERGOLD
LIMITED

PROJECT OVERVIEW &
DEFINITIVE FEASIBILITY STUDY SUMMARY

cascar

The Borborema Project – Overview

Borborema is located in the Seridó area of the Borborema province in north-eastern Brazil. It is 100% owned by Big River through its wholly owned subsidiary Cascar and consists of three mining leases covering a total area of 29 km^2 including freehold title over the main prospect area.

Figure 1. Project Location

Big River owns the freehold land for the area considered by the mine, plant and infrastructure within the DFS. The main Environmental and Installation Permits have also been granted by the relevant Government authorities which will allow construction of the project to commence subject to financing.

There is little or no competing land use in the region, with low density cattle and goat farming as the only other commercial activities. The immediate project area is not populated and there are no indigenous tribes in the area.

The Project benefits from a favourable taxation regime, existing on-site facilities and excellent infrastructure such as buildings, grid power, water and sealed roads. It is close to major cities and regional centres and the services they can provide.

Figure 2. View to the south west over Borborema pit showing exposed ore zone and infrastructure – existing and designed.

The DFS Study Team

The key inputs to this DFS were delivered by Australian based engineers ***Wave International Ltd*** who undertook plant design and operating cost and capital expenditure estimation and incorporated technical aspects from:

- *GE21 Consultoria Mineral* for the mine reserve and pit optimisation, geotechnical and general site infrastructure;
- *Intergratio* for the community and social research, and
- *ALS Metallurgy, SGS Laboratories, Testwork Desenvolvimentos, HDA* and *Outotec* for metallurgical testwork.

Results obtained from previous Pre Feasibility Studies and reviews were incorporated into the DFS with input from:

- *Trepanier Pty Ltd* and *EGRM Consulting Pty Ltd* for Mineral Resource estimates
- *Kirk Mining Consultants* and *Auralia Mining Consulting* for Mining and Mineral Reserve estimates for larger Stage 3 pit (60Mt)
- *TetraTech Inc* who were principal consultants for a draft Bankable Feasibility Study for a 4.2 Mtpa operation in May 2013
- *Ausenco* for partial Scoping Study and process design
- *Metifex Pty Ltd, Orway Mineral Consultants* and *ALS* for metallurgical testwork and process design.

Mineral Resource

Borborema contains a Mineral Resource (JORC 2012) totalling 69Mt at 1.1g/t Au containing 2.43 Moz gold (refer ASX Announcement dated 24 July 2017 and Table 2).

All ore considered in the mine and process schedule is derived from the Measured and Indicated categories of the Mineral Resource. No Inferred category resource is included in the schedule.

Table 2. Borborema Mineral Resource by Multiple Indicator Kriging estimation

Category (>0.5g/t COG)	Tonnes (Mt)	Grade (g/t Au)	Au Ounces (kOz)
Measured	8.2	1.22	320
Indicated	42.8	1.12	1,547
Measured + Indicated	**51.0**	**1.14**	**1,867**
Inferred	17.6	1.00	566
Total Resource	68.6	1.10	2,430

Mineral Resource (JORC 2012) reported above 0.5 g/t Au cut-off. Parent Block 25mE x 25mN x 5mRL. Selective Mining Unit 5mE x 6.25mN x 2.5mRL. Note, appropriate rounding has been applied, subtotals may not equal total figures. (ASX Announcement 24 July 2017).

Mineral Reserve

GE21 reviewed the Mineral Resource to identify higher grade, contiguous material that could be preferentially mined in the initial Stage 1 open pit. The resulting Stage 1 Mineral Reserve estimate comprises 20Mt at 1.22g/t Au containing 784,100 ounces (Table 3) of which 37% of the contained gold is in the Proven Reserve category and 73% in the Probable category.

The ultimate pit and mine plan for the Stage 1 Borborema DFS were derived following the Whittle optimisation, based on Measured and Indicated Resources only. Reserves are reported using a gold price of $ 1,245/oz. The Mineral Reserves are shown in Table 3.

Table 3. Borborema Stage 1 Mineral Reserves (as at 13 August, 2019)			
Category	**Tonnes (Mt)**	**Grade (g/t Au)**	**Contained Au (kOz)**
Proven	7.3	1.26	293.1
Probable	12.7	1.20	491.0
Total in Pit Reserve	**20.0**	**1.22**	**784.1**
Low Grade Stockpile	15.6	0.31	153.5
Waste	67.2		
Total Waste + LG	**82.8**		
REM	**4.14**		

(1) Block Dimensions 25x25x5 (m); (2) Final slope angle range: 37º to 64º; (3) Mine Recovery 98% - Dilution 0%
(4) JORC (2012) definitions followed for Mineral Reserves. (5) Mineral Reserves are inclusive in Mineral Resources
(6) Reserves were estimated following the parameters:
Gold price US1,245 /oz, mining costs: US$ 2.72/t mined, processing costs: US$ 10.96/t milled and G&A: US$ 4.20 /oz. Recovery 94%.

Mining

The mine will be an open pit with contractor operated equipment including excavators with 3.5 m^3 buckets and 45 t trucks. The access roads will be 15 m wide with 10% maximum inclination, meeting safety standards and specifications of the mining fleet. The operational slopes will have 5 m benches in ore and 10 m benches in waste, with a total height of 20 m.

It is anticipated that only 70% of mined material will require blasting.

Operations are based on 24 hour per day, 365 days a year in 8-hour shifts. Where production jobs operate on three shifts there is a panel of four persons per task rotating on shift, on a permanent basis.

Waste rock and low-grade mineralised material will be dumped close to the pits. The sites will be prepared to include drainage at base levels with channels to direct the flow of water ultimately to maximise geotechnical stability and minimise erosion.

Material storage:

- The ROM (Run of Mine) ore >0.7 g/t Au will be transported by trucks and discharged directly into the ROM receiving hopper at an average feed rate of 330 tph. Oversize will be removed and broken by hydraulic hammer. Three days crusher feed of 18,000 tonnes will be stockpiled for wheel loader recovery and production continuity.
- Medium Grade Ore (0.5g/t Au to 0.7g/t Au) in the first 4 years, will be transported to the allocated NW1 Stockpile close to the plant. From years 5 to 10, this material will be reclaimed to feed the plant.
- Marginal ore with less than 0.5 g/t Au, will be stockpiled in the NW Waste stockpile (Figure 3) which will be reserved specifically for low grade ore.
- The waste rock will be transported to the NE Waste stockpile where it will be co-disposed with the filtered tailings generated in the Filtration Plant.

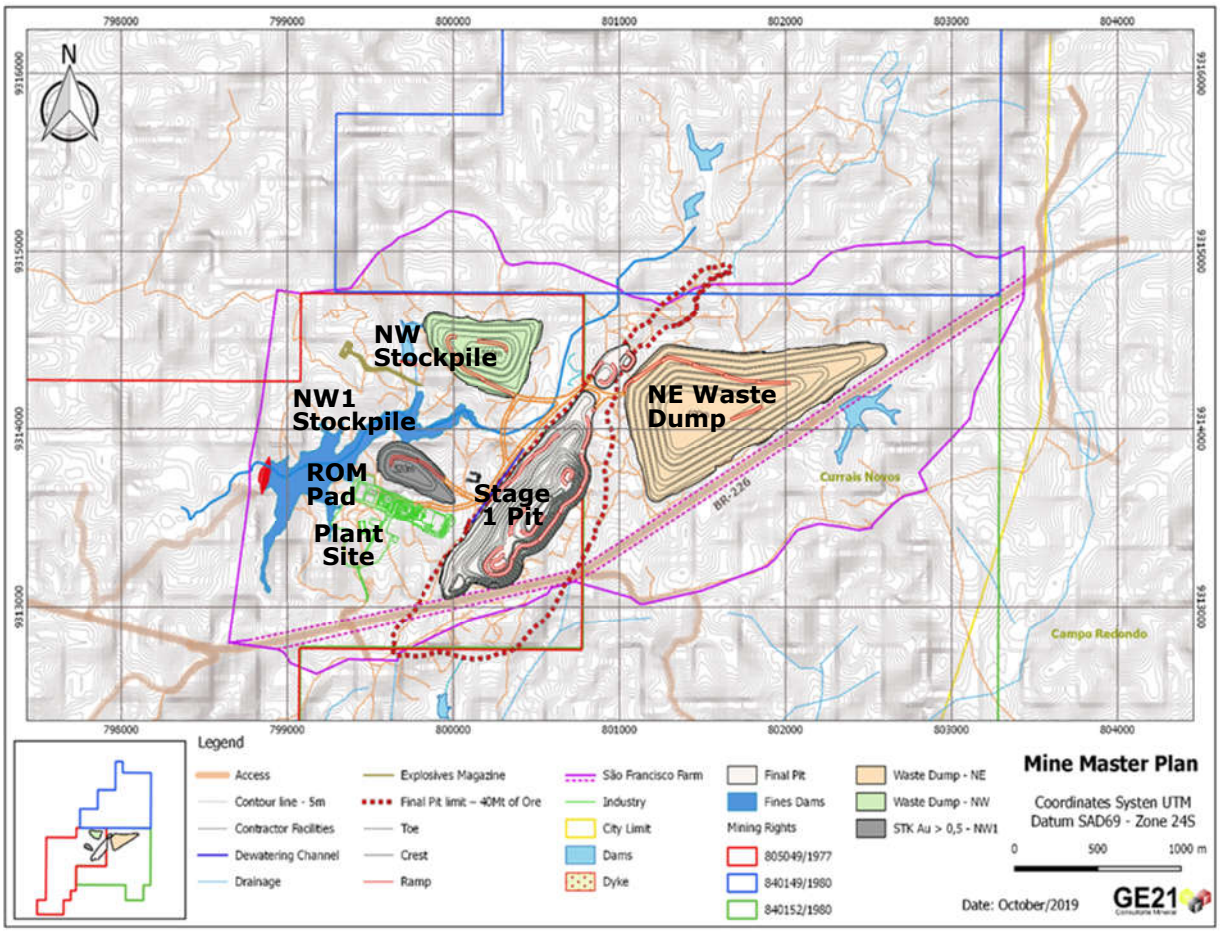

Figure 3. Mine Master Plan showing final Stage 1 pit design, process plant and infrastructure.

Mine Schedule

The mine production schedule summarised in Table 4 is based on a production rate of 2 Mtpa with cut-off grade of 0.7 g/t Au in Years 1 to 4 and generating a stockpile grading between 0.5 g/t and 0.7 g/t Au that will be recovered in the following years as mining costs decline.

Table 4. Mine and plant scheduling

	MINE SCHEDULE						PROCESSING SCHEDULE		
	ROM*		Stockpile MG**		LG	Waste	Mt	g/t Au	Rec'd gold (oz)
	Mt	g/t Au	Mt	g/t Au	Mt	Mt			
Pre-stripping						2.4			
Year 1	2.0	1.45	1.1	0.63	3.1	11.8	2.0	1.45	83,888
Year 2	2.0	1.41	1.2	0.63	3.2	10.6	2.0	1.41	83,955
Year 3	2.1	1.50	0.9	0.63	2.8	11.6	2.0	1.50	87,822
Year 4	2.0	1.64	0.8	0.62	1.2	12.2	2.0	1.64	96,968
Years 5-7	3.7	1.25			2.1	20.7	6.0	1.03	183,318
Year 8- Final	4.3	1.22			3.0	2.7	6.1	1.07	193,423
Total	16.1	1.37	4.0	0.63	15.5	71.9	20.1	1.22	729,374

**ROM – High Grade >0.7 g/t Au **MG – Medium Grade (0.5<Au<0.7 g/tAu), LG – Low Grade (~0.3g/t Au)*

Process Description

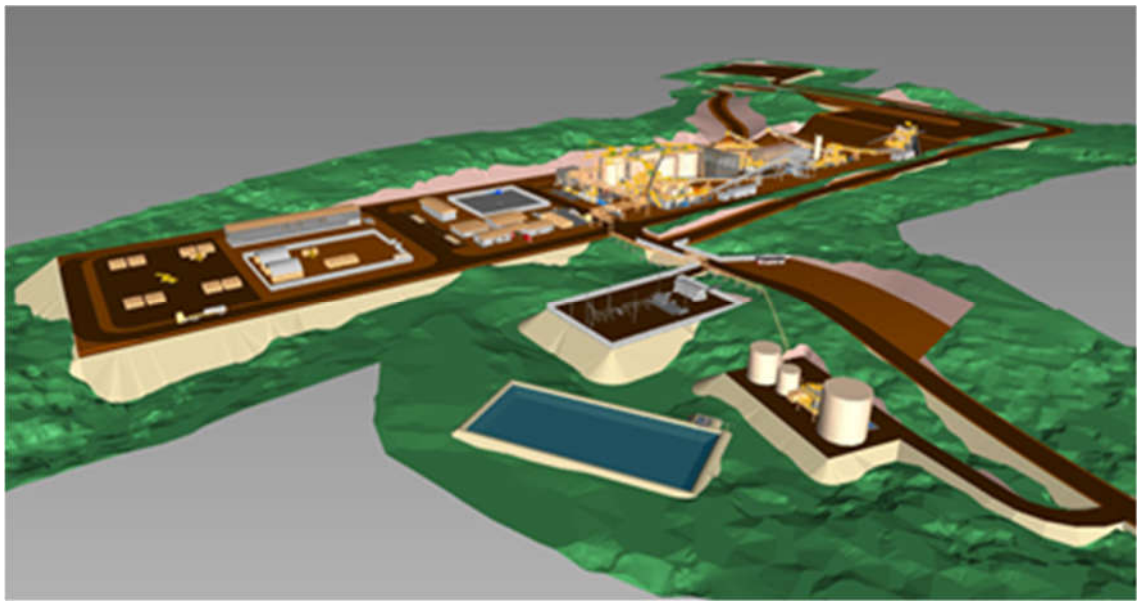

Figure 4: Planned process plant site overview

The proposed plant design is based on a nominal feed of 2 Mtpa of ore and a plant availability of 90% supported by crushed ore emergency stockpile and stand-by equipment in critical areas. The design includes single stage primary crushing with a SAG & Ball Milling (SAB) circuit to a P_{80} 106µm product before leaching to achieve > 92.5% gold recovery. Refer Figure 7.

The plant design incorporates the following unit process operations:

- Single stage primary crushing to produce a crushed product size of 80% passing (P_{80}) of 92mm.
- Transfer conveyor feeding a surge bin with an overflow ore stockpile (48 hours total capacity). Ore reclaim from the bin via apron feeders with emergency reclaim by front end loader.
- Two stage SAG / Ball milling in closed circuit with hydrocyclones to produce a P_{80} grind size of 106 µm.
- A Carbon in leach circuit incorporating six CIL tanks containing carbon for gold adsorption.
- Six tonne capacity split Anglo (AARL) elution circuit, electrowinning and precious metal smelting to recover gold and silver from the loaded carbon to produce doré.
- Thickener unit to recover the cyanide and reduce overall reagent consumption.
- Tailings treatment incorporating cyanide destruction using sodium metabisulphite / air.
- Tailings filtration station to obtain a filter cake which will be transported by conveyor to a tailings stockpile for collection and disposal by truck to the waste dump.

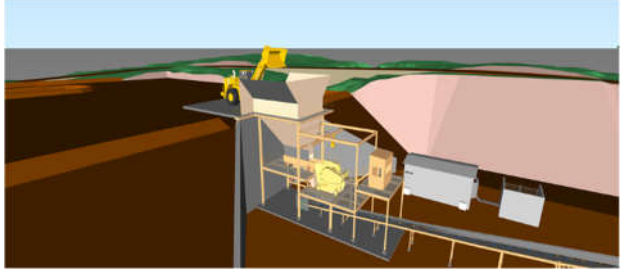

Figure 5: Crusher and surge bin

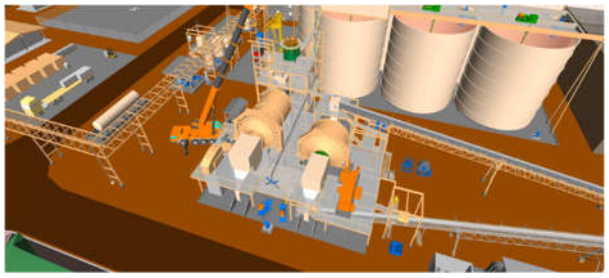

Figure 6: Grinding and classifying

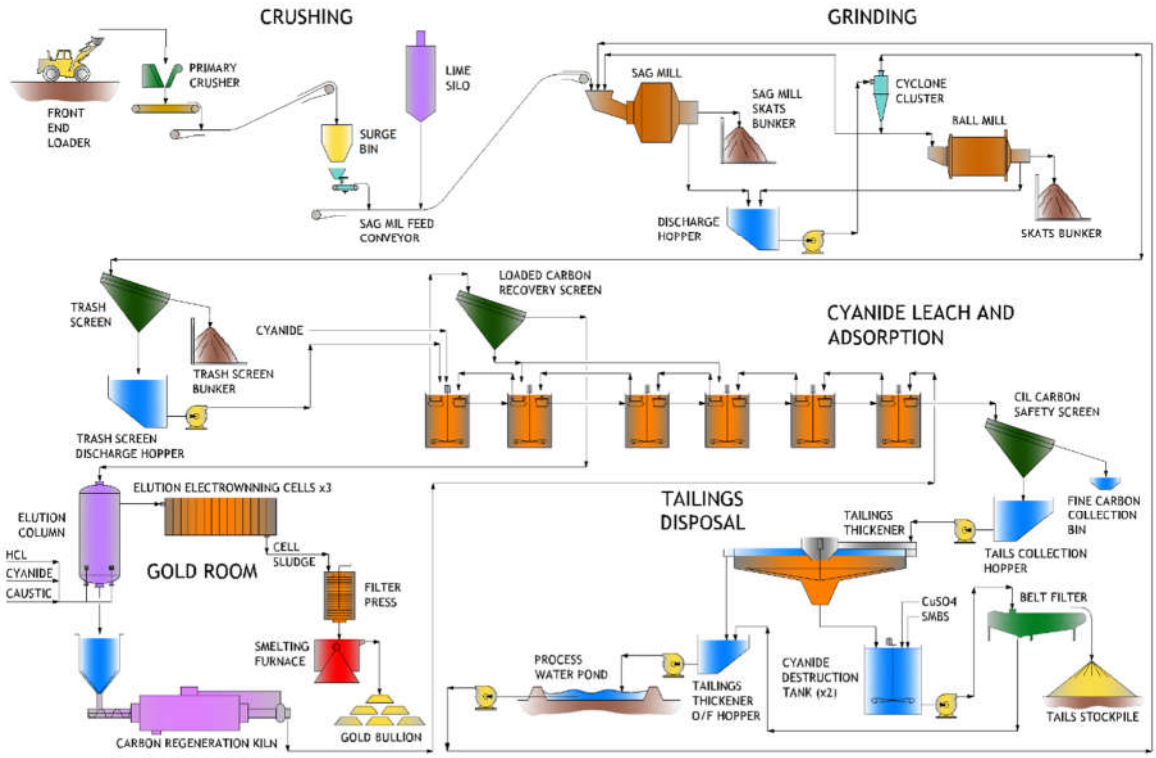

Figure 7. Simplified general process flow diagram

The crushing plant will be able to operate at a design throughput of up to 304 tph at an availability of 90%. Excess ore from the surge bin will be stockpiled and reclaimed from the emergency stockpile (capacity of approximately 12,000 t) via reclaim front end loader (FEL) and emergency stockpile transfer conveyor to the SAG mill feed conveyor.

The (SAB) circuit design has been selected to produce a P_{80} 106 µm product with a throughput rate of 254 t/h. The SAG mill will be equipped with a variable speed drive and the ball mill with fixed speed drive. The design allows for a cyclone underflow return line from the mill cyclone cluster to the SAG mill feed to allow the circuit to operate as a single stage SAG mill when the Ball mill is unavailable. The estimated throughput rate in single stage SAG mode is 112 t/h at the 106µm product grind size.

A configuration with six carbon in leach (CIL) tanks was adopted to achieve a gold recovery of >92.5% with consistently low tails grades. The tanks will be identical in size with cyanide added to the CIL tanks as required. The residence time will be 36 hours at 254 t/h solids with 40% w/w density. Air will be sparged to maintain an adequate dissolved oxygen level for leaching in the CIL tanks.

A six-tonne capacity split Anglo Elution circuit has been selected based on the feed grade and the annual ore feed and the gold extraction. The Anglo circuit has been selected as it offers more operational flexibility. Three electrowinning cells will operate with two in duty and one in standby.

Air/ SO2 has been selected as the Cyanide destruction method after tailings slurry is introduced to a thickener where cyanide is recovered into the process water to be reused. With a higher solids percent in the slurry the efficiency in the filtration system was achieved in order to obtain dry tailings to conform with Brazilian regulations.

Tailings Disposal

The tailings dam option has been replaced with a co-disposal system of tailings and waste rock. The tailings will be dewatered at the plant and after detoxification will be filtered and sent to the co-disposal dump sites at NE Waste Dump (Figure 3) along with waste from the open pit.

Infrastructure

Borborema has excellent existing infrastructure and the key features of the Project's layout are its compact nature and easy internal and external access, including the process plant, roads, helipad, plant and mining services areas, mine open pit and mine waste dump. Haulage distances to the waste dumps and ROM pad are centrally located adjacent to the pit. The plant will be built in a location with solid foundation conditions.

The overall site development plan is shown in Figure 3.

- The main access to the mine site is from the BR-226 highway, 130 km from Natal or 26 km from Currais Novos. The road design internal to the project covers 3,314 meters of which 1,927 will be paved.
- Water from Currais Novos wastewater pond will be pumped to the process plant storage tank located adjacent to the plant where it will be treated on site for use in the plant. The wastewater treatment will be a combination of filtration, chlorination and reverse osmosis. Conventional treatment will provide raw water for use in all areas of the process with the exception of the elution circuit and WAD cyanide analyser which will receive high-quality water from reverse osmosis treatment.
- Power to the Project will be supplied from the grid by tapping into the Currais Novos II substation and installing a 30km, 69kV transmission line to the project site. The infrastructure and power supply up to the new main sub-station will be provided by power utility COSERN - Companhia Energética do Rio Grande do Norte. The Company is currently in advanced discussions with the utility and will prioritise a formal supply agreement.

Capital Requirements

The Company plans on utilising a processing plant with industry standard crushing and SAB milling circuits. The Capital Cost Estimate (CCE) for the Project scope was developed to meet the requirements of a Class 2 estimate as defined by the American Association of Cost Engineers' (AACE) Cost Estimation and Classification System (as applied for Mining and Minerals Processing Industries) with an accuracy range of -10% to + 15%.

The CCE reflects the capital to enable the Company to operate at a mining and process plant throughput of 2 Mtpa. The CCE includes all costs associated with project implementation starting with detailed design through commissioning.

The total capital required to implement the Project has been estimated at US$99.3M including contingency of US$11.4M. Based on the works scope definition status and the extent of study work completed a weighted contingency of 12.9% was calculated (or 11.4% of total CAPEX).

The CCE for the Project is summarised in Table 5 below. All costs are expressed in US dollars with a base date of November 2019.

Table 5: Summary of Initial Capex by Area

DESCRIPTION	QTY	SUPPLY (US$)	INSTALL (US$)		TOTAL (US$)	% OF TOTAL
DIRECT FIELD COSTS		**37,068,000**	**27,918,000**	**% OF TOTAL**	**64,986,000**	**63.5%**
Earthworks	399,000 m^3	1,000	7,286,000	100.0%	7,287,000	7.1%
Building and Architectural		1,341,000	1,946,000	59.2%	3,287,000	3.2%
Civil and Concrete	3,900 m^3	62,000	2,615,000	97.7%	2,676,000	2.6%
Structural Steelwork	1,100 t	3,418,000	2,807,000	45.1%	6,225,000	6.1%
Mechanical / Platework		24,762,000	5,043,000	16.9%	29,804,000	29.1%
Piping and Valves	7,000 m	4,095,000	1,863,000	31.3%	5,959,000	5.8%
Electrical, Controls and Instrumentation	29,000 m	3,390,000	6,358,000	65.2%	9,748,000	9.5%
INDIRECT / OTHER FIELD COSTS	**OF DISCIPLINE**	**6,140,000**	**7,208,000**		**13,348,000**	**13.4%**
Preliminaries						
Earthworks	6.0%	-	437,000		437,000	0.4%
Building and Architectural	6.0%	80,000	117,000		197,000	0.2%
Civil and Concrete	6.0%	4,000	157,000		161,000	0.2%
Structural Steelwork	6.0%	205,000	168,000		373,000	0.4%
Mechanical / Platework	6.0%	1,486,000	303,000		1,788,000	1.8%
Piping and Valves	6.0%	246,000	112,000		358,000	0.4%
Electrical, Controls & Instrumentation	6.0%	203,000	381,000		585,000	0.6%
ISSQN		498,000	1,461,000		1,960,000	2.0%
Transport / Delivery to Site		-	2,957,000		2,957,000	3.0%
Vendor Support		-	884,000		884,000	0.9%
Mobile Equipment		646,000	-		646,000	0.6%
Mobilisation and Demobilisation		954,000	231,000		1,184,000	1.2%
Spares	3.4%	951,000	-		951,000	1.0%
First Fills	3.5%	867,000	-		867,000	0.9%
HOME OFFICE COSTS		**-**	**9,636,000**		**9,636,000**	**9.4%**
EPCM Labour and Expenses			4,964,000		4,964,000	5.0%
Owners' Team Labour and Expenses			3,171,000		3,171,000	3.2%
External Consultants and Peer Review			150,000		150,000	0.2%
Insurances			1,350,000		1,350,000	1.4%
		TOTAL CAPEX (EXCLUDING CONTINGENCY)			**87,970,000**	**88.6%**
					11,361,000	11.4%
				TOTAL CAPEX	**99,331,000**	**100.0%**

Operating Costs

The operating cost estimate (OPEX) was developed as a "bottom-up" estimate over a 10 year mine life to obtain average operating costs. The methodology adopted allows for an accuracy of +/- 10 to 15%.

The total operational expenditure for the project is estimated to be US$642 per ounce produced or US$23.36 per treated tonne.

Methodology

Cost estimates were provided for each activity and were benchmarked against the following:

- First principle estimates;
- Suppliers' budget quotations; and
- Consultant data derived from similar external projects.

The OPEX was generated utilising the information from the mass balance, direct process engineering input for reagent usage, mining operating costs and the equipment maintenance aligned with the equipment provided for in the capital estimate.

Cost areas

The major cost areas contributing to the overall OPEX is presented in Table 6 which shows Mining cost as the greatest cost contributor at 45% with HV power costs second at 17%.

Reagent costs are expected to be significantly lower than other operations based on testwork. The average consumption is 0.24 kg/t for cyanide and 0.46 kg/t for lime, which is in line with the consumption on master composite sample.

Manning

The Company will have a staff complement of 128 full time employees across General Administration, Management, Mining, Processing, Engineering and Stores management with an additional 247 contractors.

Table 6: OPEX by Cost Centre

Cost Centre	%	Cost (US$M)/a	US$/oz Au	US$/t ore
Mining	45%	20.8	288	10.47
Labour Estimate	6%	2.7	37	1.36
Water	2%	1.0	14	0.52
Power - Excluding Fuel Cost	17%	7.8	107	3.90
Diesel	1%	0.2	3	0.12
Natural Gas	1%	0.6	8	0.28
Maintenance	5%	2.5	34	1.24
Reagents and Consumables	10%	4.5	63	2.28
Equipment Hire	2%	1.1	15	0.56
Transport	3%	1.3	18	0.64
Contract/General Expenses	9%	4.0	55	1.99
Total	**100%**	**46.5**	**642**	**23.36**

Cash Flow Analysis

Cash flow model

A cash flow model was developed to conduct discounted cash flow analysis of the Project. The base case model is based on a gold price of US$1,400/oz, an 8% discount rate and an exchange rate of USD:BRL of 0.24.

The model includes a comprehensive tax treatment, incorporating all taxes and duties applicable to capex and opex and to revenues. The standard Brazilian corporate tax rate is 34%, comprising 25% income tax and 9% CSLL (social tax). A tax concession is currently in place for projects in the north-east of Brazil, reducing the 25% income tax component to 6.25% (i.e., a total of 15.25%) and has been applied. This benefit has been routinely extended for periods of 10 or 5 years since its introduction in 1973. In addition, a series of tax concessions negotiated with the Rio Grande do Norte state government have been included in the capex and opex estimates.

The base case after-tax NPV is US$203m with an IRR of 41.8% and an undiscounted payback period of 2.4 years from first production. The project generates life of mine EBITDA of US$527m and an after-tax free cash flow of US$328m.

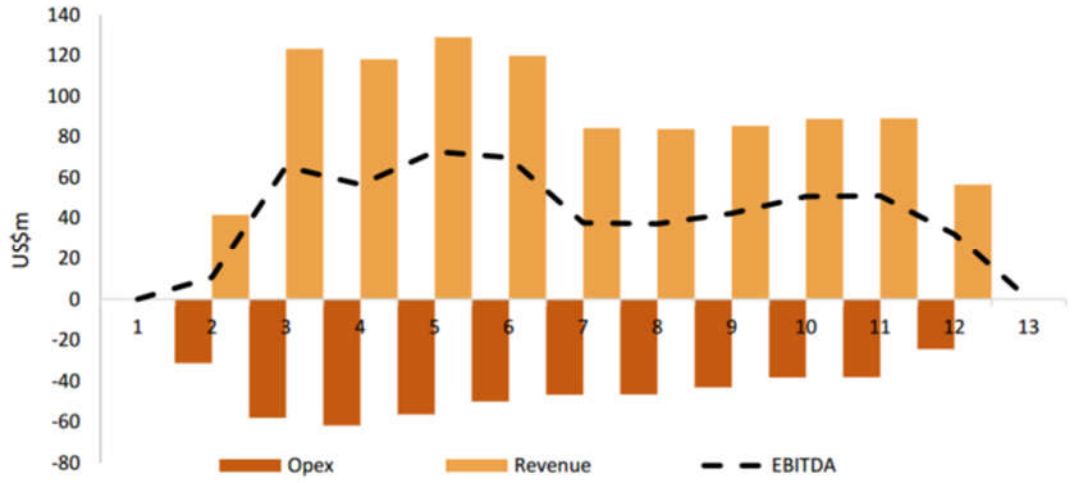

Figure 8: Life of Mine EBITDA

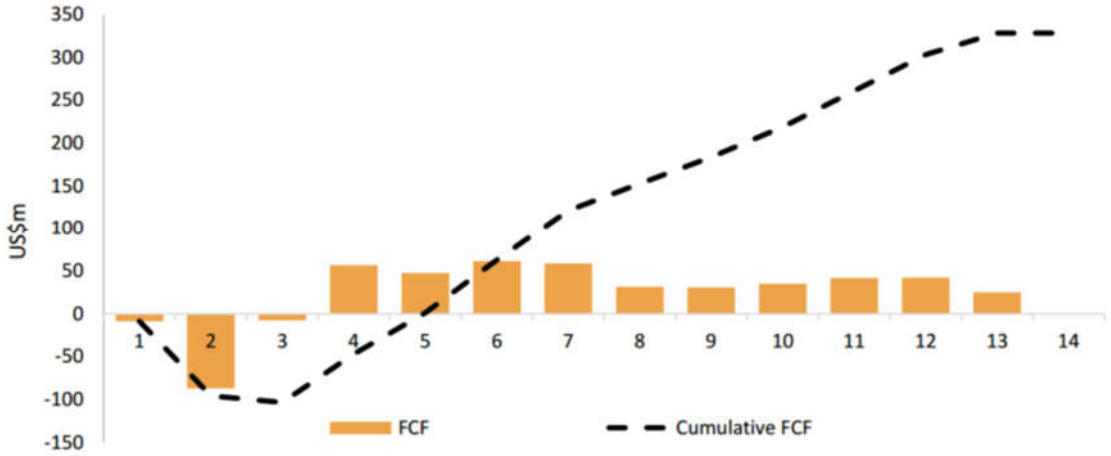

Figure 9: Life of Mine Cumulative Cashflow

US Dollar Gold Price Sensitivities

The DFS has been evaluated at a gold price of US$1,400 per ounce. The average US$ gold price per gold ounce for the period from January 2015 to current day was US$1,265 per ounce. During the period, the US dollar gold price has been in steady uptrend from a low of US$1,270 in April 2019 to its current price of US$1,465 per ounce.

Currency Exchange Rates

The DFS has been evaluated using a number of currencies, namely Brazilian Real (BRL), US Dollars (USD) and Australian Dollars((AUD), in which the goods or services are supplied and converted to a standardised USD figure using USD:BRL = 0.2400 and AUD:USD = 0.6800. Approximately 65% of the operating costs and 67% of the initial capital costs are priced in BRL. The BRL:USD exchange rate has averaged 0.2648 over the last 2 years and the consensus of financial institutions compiled by Bloomberg (18 November 2019) suggests a downward trend will continue.

Commercial opportunities

Minor silver is present in the ore but has been not accurately quantified during the resource estimation. Additional investigation of the leach kinetics may see a small but significant contribution to the revenue line.

Testwork to investigate the potential for producing commercial quality mica products is ongoing. This has the potential to provide significant cashflows for a small cost and little additional processing. Quality of the product and marketing will be key to unlocking this potential.

Sensitivity Analysis

Sensitivities have been run on variations in pre-operational capex, operating costs and gross revenue (gold price or recovered grade). Results are summarised in Figure 10. The project shows relatively low sensitivity to capex variations, a modest sensitivity to opex and a high sensitivity to gold price (or grade).

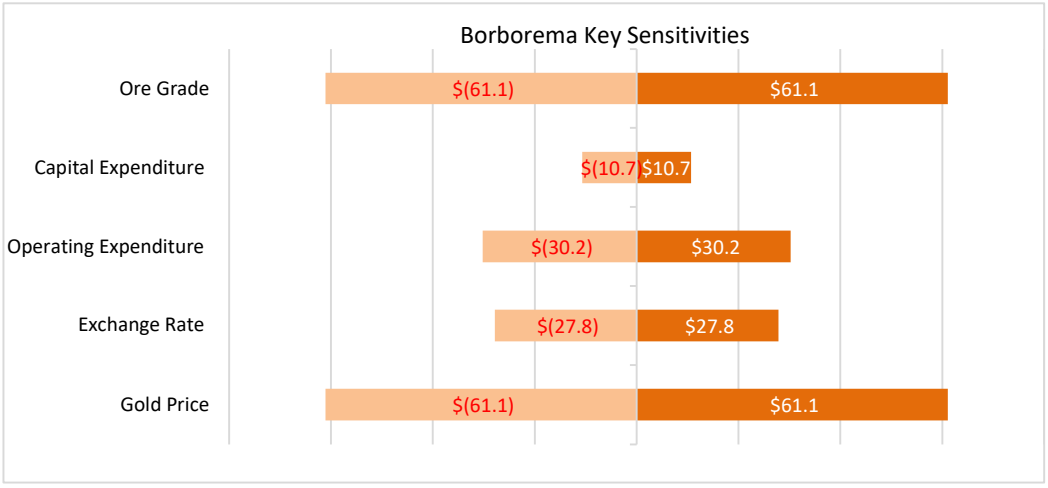

Figure 10: Summary of Sensitivity Analysis – Effect on the NPV (8%) of a 10% change in key parameters

Construction Schedule

The timeline in the DFS assumes commencement of construction upon securing project financing although some aspects may commence prior. The DFS provides for a construction period of 23 months due to several long lead items. BRV considers this to be a conservative estimate and Wave has identified several opportunities and strategies which may reasonably be expected to reduce the cost and construction time.

Opportunities to improve costs and construction schedule

The DFS provides a conservative and robust plan to bring the gold project into production. Big River believes there are several areas in which opportunities to improve the project economics in terms of both construction time and capital and operating costs should be considered. These include but are not limited to:

- Changing the nature of inclusion of key sections such as the crushing circuit – employing contractor or BOOT style contracts to reduce capital expenditure and development timeline by several months.
- Direct employment of Project Directors as part of the implementation process;
- Continued testwork to investigate using a ceramic disk filter rather than the standard belt filters to improve operating efficiencies and costs.
- Commence certain pre-production tasks prior to project financing using available funds to accelerate timeline.