

5 July 2019

## JAMBREIRO PRE-FEASIBILITY STUDY CONFIRMS LOW COSTS, STRONG ECONOMICS FOR 1Mtpa IRON ORE OPERATION

Bankable Feasibility Study to commence immediately on fully-licensed project with significant expansion potential and ideally placed to capitalise on new iron ore market environment

- **2019 Pre-Feasibility Study (PFS) for the Jambreiro Iron Ore Project in SE Brazil demonstrates strong returns, with key highlights including:**
  - A\$114.9M post-tax NPV<sub>8</sub> and 32% IRR at life-of-mine average mine gate domestic iron ore price of US\$41/tonne (A\$58/tonne) using conservative long term 62% Fe reference price of US\$75/tonne;
  - Substantial upside to PFS project economics at current spot iron ore prices;
  - 1Mtpa operation delivering a high grade (+65% Fe), low impurity sinter product over an initial mine life of 18 years;
  - Highly competitive mine gate cash operating costs (life-of-mine C1 cost plus royalties) of A\$29.0/tonne of sinter feed product;
  - Life-of-mine revenue of A\$1,052M and EBITDA of A\$533M;
  - Annual average operating cash flows of A\$29.6M; and
  - Pre-production capital estimate (including contingency) of A\$59.8M with 22-month capital payback.
- **Off-take discussions progressing with potential customers for the supply of high-quality ore into both the Brazilian supply-disrupted domestic market as well as the international export market.**
- **Mining Licence granted and in place.**
- **Key environmental approvals granted and in place for production of up to 3Mtpa.**
- **Process testwork and engineering study ongoing to dry stack all Jambreiro tailings in order to enhance future expansion opportunities and mitigate potential development delays following recent concerns about tailings dams in Minas Gerais.**
- **Board approval in place to commence a Bankable Feasibility Study (BFS) and advance financing discussions with a view to making a Final Investment Decision in early 2020.**

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Centaurus Metals (ASX Code: **CTM**) is pleased to announce the completion of a positive Pre-Feasibility Study (PFS) on its 100%-owned **Jambreiro Iron Ore Project** in south-east Brazil, which outlines a robust 1Mtpa start-up project capable of generating life-of-mine revenues of **A\$1.05 billion** and EBITDA of **A\$533 million** over its initial 18-year life.

The strong economics of the proposed A\$59.8 million development – including a **A\$114.9 million post-tax NPV<sub>8</sub>** and **IRR of 32%** for a 1Mtpa operation – provide a strong foundation for the Company to further progress off-take arrangements and initiate more detailed debt finance discussions to facilitate a Final Investment Decision in early 2020.

The PFS has been based on the **new JORC 2012 Proven and Probable Ore Reserves estimate of 43.3Mt grading 29.1% Fe**, which was released separately to the market today. The Ore Reserve estimate focuses only on the friable component of the JORC 2012 Mineral Resource estimate (Measured, Indicated and Inferred) and utilises current operating costs and conservative revenue assumptions. 82% of the friable Measured and Indicated Mineral Resource has been converted into Ore Reserves.

The Ore Reserve delivers **17.9Mt of high-grade (65% Fe), low-impurity (4.3% SiO<sub>2</sub>, 0.8% Al<sub>2</sub>O<sub>3</sub> & 0.01% P) sinter product** to support the initial 18-year mine life once operations commence.

Underpinning the PFS results are **low forecast mine gate cash operating costs of A\$25.1**, which when combined with government and landowner royalties, amount to a **total mine gate cash cost (C1 + Royalties) of A\$29.0/tonne**.

With tailings management being such a strong focus point for all stakeholders in Brazil at the present time, the Company has proactively made the decision that it will dry stack all tailings from the operations of the Project. This approach has the benefit of facilitating an easier future expansion pathway for the Project (no tails dam capacity constraints) and minimising the potential impact of government and/or non-government organisation intervention as the Project advances towards production.

Based on the strong project economics, the Board has now approved the commencement of a BFS, which is being targeted for completion before the end of 2019. Importantly, the key environmental and mining approvals are all in place to facilitate the timely delivery of the Project.

Commenting on the PFS outcomes, Centaurus' Managing Director Mr Darren Gordon, said:

*"The results of the Jambreiro 2019 Pre-Feasibility Study have confirmed that Jambreiro is a financially robust, long-life, development-ready project which is ideally placed to capitalise on the changed iron ore market environment that has emerged both domestically in Brazil and internationally in the past six months.*

*"The PFS clearly shows that Jambreiro is a quality project, with strong technical fundamentals and robust financial returns forecast from an initial 18-year mine life, based on the friable mineralisation only. The strong economics are underpinned by low operating cash costs forecast at just A\$29 per tonne of final product, which reflect the low stripping ratio, the free-digging nature of the friable material and the extent of natural liberation of the ore.*

*"We have completed a vast amount of work on the Jambreiro Project over a number of years and we now have a great opportunity to quickly advance the project to production. While a detailed BFS will be required to advance all elements of the project to a stage that can support debt financing, we expect that a large portion of the capital and operating costs included in the PFS will be able to be rolled forward to the BFS without much more work given the high level of confidence we have in the process flowsheet and the cost of key capital and operating inputs.*

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*“In parallel, we are advancing product off-take discussions with both domestic consumers and international export traders. The recent change in the supply dynamic, both domestically and internationally, is driving a strong and sustained demand for the Jambreiro product, and we are aiming to have agreements in place in line with the delivery of the BFS.*

*“The Centaurus team has worked extremely hard to deliver this result for shareholders and I would like to acknowledge their ongoing dedication and effort”.*

## Key PFS Assumptions & Financial Outcomes

The PFS is based on a Proven and Probable Ore Reserve at Jambreiro of **43.3Mt grading 29.1% Fe** (representing an 82% conversion of the total friable Measured and Indicated Mineral Resource base) and producing 1Mtpa of final product grading 65% Fe over an 18-year mine life, using a mining contractor for all mining activities on site.

All sales are intended to be made to either local integrated steel mills in the domestic market on a mine gate sales basis or on a rail-head sales basis to mining/trading groups which would look to export the product into international markets.

Under this scenario, the initial friable project delivers a post-tax NPV<sub>8</sub> of A\$114.9 million and an IRR of 32%.

The key assumptions used in the PFS are set out in Table 1 below with Key Financial Outcomes in Table 2.

**Table 1 – Key PFS Assumptions**

Key Assumption	
Reserve – In Situ Ore	43.3 Mt
Grade	29.1% Fe
Average Life of Mine (LOM) Mass Recovery	41%
Reserve – Final Product	17.9 Mt
Grade	65% Fe
Production Rate	1 Mtpa
BRL to AUD Exchange Rate	2.6 to 1
BRL to USD Exchange Rate	3.7 to 1
USD to AUD Exchange Rate	0.7 to 1
LOM Sales Price (Mine Gate)	US\$41/dmt
International Reference Sales Price (62% Fe)	US\$75/dmt
LOM Waste to Ore Ratio	0.68 to 1
Government Royalty	3.5% of Revenue
Other Royalties & Sales Duties	2.6% of Revenue



**Table 2 – Key Financial Outcomes**

Key Financial Outcomes	Total A\$
Total Revenue	1,052 million
EBITDA	533 million
Annual Cash Surplus – Pre-Tax	29.6 million
Capital Costs	59.8 million
Direct Operating Cost (per tonne Product - LOM)	25.1/dmt
Total Operating Cost (per tonne Product – LOM)	29.0/dmt
NPV <sub>8</sub> Pre-tax	190.2 million
NPV <sub>8</sub> Post-tax	114.9 million
Post-Tax IRR	32%

## The Jambreiro Iron Ore Project 2019 Pre-Feasibility Study (PFS)

The information presented below is a more detailed summary of the PFS work and outcomes and provides the information required by ASX Listing Rules 5.8.1 and 5.9.1. Furthermore, detailed technical information on the exploration, Resource and Reserve estimations and PFS work is set out in Appendix A, which is the JORC Code, 2012 Edition – Table 1 Compliance Statement as required by ASX Listing Rules 5.8.2 and 5.9.2.

### 1. Background to the Pre-Feasibility Study

The Company completed a 1Mtpa Feasibility Study on the Jambreiro Project in 2013 based upon the utilisation of a third-party mining contractor, the Project's power being initially sourced from diesel generation and a modularised plant being constructed and installed by CDE Global under a fixed-price turnkey arrangement. The economic outcomes of this Feasibility Study were set out in releases to the ASX on 12 December 2013 and 13 January 2014.

As financing for the Project was being sought, the global price of iron ore began to decline significantly, ultimately resulting in Centaurus putting the Project on hold until sentiment and financing conditions for new iron ore projects improved.

During Q1 2019 the Company decided to re-evaluate potential development options for the Jambreiro Project as a result of:

- A number of structural changes in the iron market in the period 2016-2019, both internationally and domestically in Brazil;
- Specific events in Brazil in the early part of 2019 that disrupted supply and lifted iron ore prices back above US\$100 per tonne;
- The stronger longer-term outlook for future iron ore prices; and
- Significantly improved sentiment in debt and equity markets towards iron ore investment opportunities.

During the initial exploration work on the Project in 2011-2013, 18,983m of drilling was completed at the Project to deliver JORC Mineral Resources and Ore Reserves. As a result of this work, no new drilling of the Project has been required to deliver the new 2019 PFS.

The Project also has granted Mining Leases from the ANM (Brazilian Mines Department), with all key environmental approvals and land access arrangements in place to facilitate the timely development of the Project once financing is secured.

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In preparing the new 2019 PFS, the Company has been able to leverage off the vast amount of work already completed at the Jambreiro Project as well as the advanced nature of the licences and approvals it holds in an environment where the supply of high-grade, low impurity ore in Brazil may become more difficult for potential customers to source.

The Company has also utilised the significant engineering and design work completed previously to reprice all major capital and operating costs. The plant design and flowsheet are the same as the one used in the 2013 Feasibility Study, except for the inclusion of a filtration or centrifuge circuit to dewater the small amount of slimes tailings generated from the production flowsheet. CDE Global has provided a new turnkey pricing proposal.

For operating costs, the Company has sought new quotes for contract mining, the labour force has been reviewed and repriced based on current labour market conditions, and a new diesel price has been sought to determine the overall power cost. Plant consumables have also been repriced.

While a large portion of the current PFS costs have been completed to Feasibility standard, some aspects of the Project require further work to be considered of a BFS standard and capable of being financed. The treatment of slimes and the dry stacking of tails is an example of this.

## 2. PFS Work Fronts & Key Service Providers

Significant work has been undertaken in the following areas to facilitate the completion of the current 2019 PFS. Historical work which was used in the current PFS includes:

- An 18,983m drilling database and geo-metallurgical studies;
- JORC 2012 Measured and Indicated Resources (June 2014);
- Detailed beneficiation testwork results and process flowsheet engineering and design;
- 2013 CDE Plant design, which included a detailed scope of works and capital equipment list; and
- Understanding of the Brazil tax regime applicable to the project.

Recent work completed to deliver the 2019 PFS includes:

- Conversion of Friable Measured and Indicated Resources into Proven and Probable Ore Reserves to JORC 2012 compliance;
- New pit optimisations and pit designs to determine mine material movements;
- Repricing of all major capital items to be free supplied into CDE Global plant design;
- Review and repricing by CDE Global of their previous plant design;
- Repricing of key operating costs of the Project;
- An initial estimate of the equipment required for the dry stacking of tails;
- Updated direct market information for the price of iron ore in the domestic market;
- Investigation and pricing of access to export logistics which were not previously available to the Company; and
- A new financial assessment.

The Study was prepared in conjunction with CDE Global, BNA Mining Solutions, Ausenco, WALM Engenharia, and internal specialist consultants.

CDE Global focused on the process flowsheet and the plant design for the Project, including the associated capital costs and overall power demand of the processing circuit, while BNA focused on Mineral Resources, Ore Reserves, pit optimisation, mine scheduling and mining fleet requirements. WALM Engenharia managed the geotechnical aspects of the Project with a particular emphasis on water management and the design of the waste dumps and the water dam.

Ausenco completed a review and gap analysis of the Project design and provided input on the capital and operating costs outside of the immediate processing plant and mining areas. The Company managed the financial modelling and assessment.



**3. Project Location and Tenure**

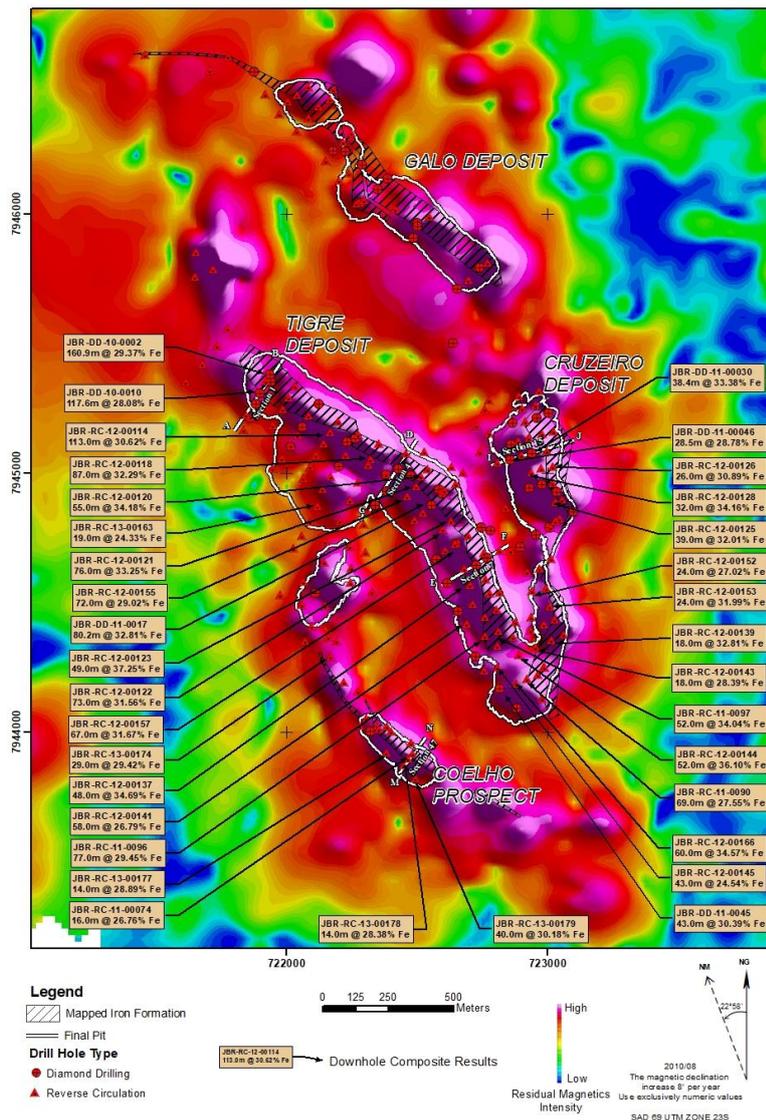
The Jambreiro Project is located in the State of Minas Gerais in the south-east of Brazil. The project is situated in Guanhães region and specifically in the municipality of São João Evangelista, 12km from the town centre and about 280km north-east from the state capital, Belo Horizonte. The Project is located only 150km by road from the key steel-making region of Minas Gerais.

The Jambreiro Iron Ore Project comprises three granted Mining Leases (ML's). The three MLs cover an aggregate area of 3,270 Ha. The Resource base is located on the following ML's: 831.649/2004, 833.409/2007 and 834.106/2010. All of these ML's are 100%-owned by Centaurus Brasil Mineração Ltda, a wholly-owned Brazilian subsidiary of Centaurus.

**4. Geology and Resources**

The Jambreiro Project is part of a sequence of Archean to lower Proterozoic iron formations (locally known as "itabirite") and described as the Guanhães Group in the Guanhães region. Mineralisation is hosted in a meta-volcanic-sedimentary sequence of rocks including itabirites, quartz-mica schist, amphibolite and gneiss. The friable itabirite extends to a vertical depth of 120m before becoming more compact. The principal ore zone, known as the Tigre Deposit, has a strike extent of 1.8km with true widths varying between 40-80m.

**Figure 1– Jambreiro Iron Ore Project Showing Deposit Locations over Ground Magnetic Survey**



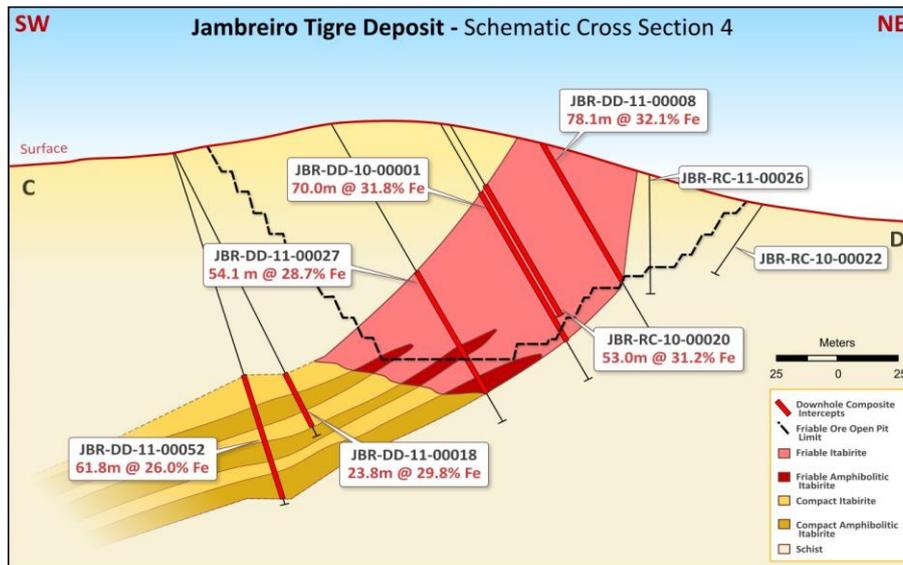
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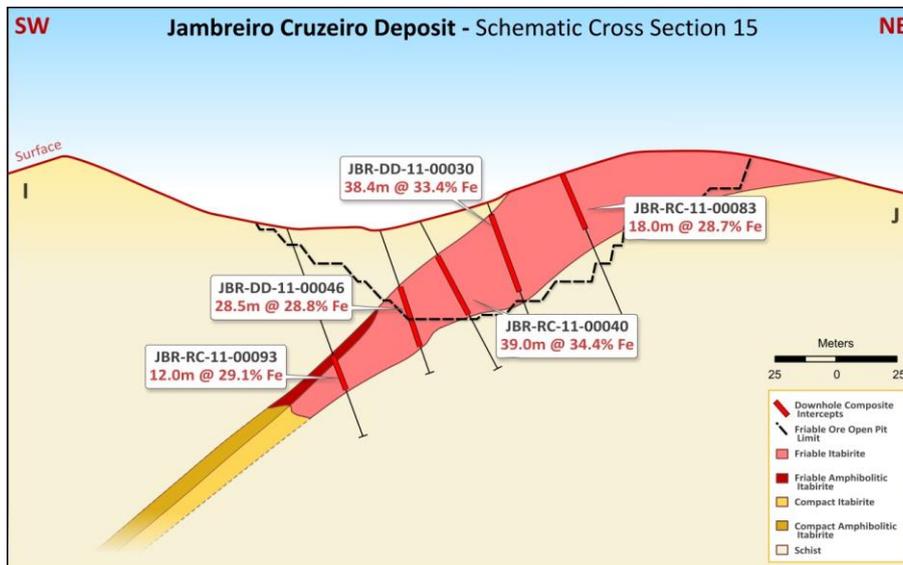
There are three satellite prospects in the immediate project area within 500m of the Tigre Deposit, being: the Cruzeiro, Galo and Coelho (North and South) Deposits. The friable iron mineralisation is continuous along strike, homogenous, medium to coarse grained and composed of mainly hematite and quartz with small amounts of magnetite. Figures 2-3 below are typical cross-sections through the Tigre and Cruzeiro Deposits. Cross-section locations are shown in Figure 1 above.

The project has been comprehensively drilled. When the resource drilling is combined with brownfield and geotechnical drilling, a total of 6,006m of diamond drilling and a further 12,977m of RC drilling has been completed at the Project for a total of 18,983m.

**Figure 2 – Jambreiro Iron Ore Project – Tigre Deposit – Schematic Cross Section 4**



**Figure 3 – Jambreiro Iron Ore Project – Cruzeiro Deposit – Schematic Cross Section 15**



The Jambreiro Project is based on the JORC 2012 Resource estimation (Measured, Indicated and Inferred) of 127.2Mt @ 28.0% Fe, including 82.1Mt @ 28.4% Fe in the JORC Measured and Indicated categories that were estimated in June 2014 (see ASX Release on 30 July 2014).

The Project focuses on the Measured and Indicated Resources incorporating the Friable, Semi-Compact and Colluvium Itabirite mineralisation (excluding the Amphibolitic Itabirite), which amounts to 52.5Mt @ 29.2% Fe. The Compact mineralisation is not considered in the PFS.

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The details of the June 2014 Project Resource estimate are set out in Table 3 below:

**Table 3 – Jambreiro Project June 2014 Mineral Resource Estimate - 20% Fe Cut Off**

Prospect	JORC Resource Category	Mt	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%	LOI %
<b>Tigre</b>	Measured	36.9	29.2	50.8	4.0	0.04	1.4
	Indicated	17.3	27.4	51.3	3.3	0.05	1.3
	Measured + Indicated	54.2	28.6	51.0	3.8	0.04	1.4
	Inferred	30.1	27.3	52.9	2.8	0.06	0.6
	<b>TOTAL</b>	<b>84.3</b>	<b>28.2</b>	<b>51.7</b>	<b>3.4</b>	<b>0.05</b>	<b>1.1</b>
<b>Cruzeiro</b>	Measured	7.4	29.3	49.0	3.7	0.05	1.6
	Indicated	10.2	27.3	50.3	3.0	0.05	1.3
	Measured + Indicated	17.7	28.1	49.8	3.3	0.05	1.5
	Inferred	4.5	28.2	50.3	3.0	0.05	1.5
	<b>TOTAL</b>	<b>22.1</b>	<b>28.2</b>	<b>49.9</b>	<b>3.2</b>	<b>0.05</b>	<b>1.5</b>
<b>Galo Total</b>	Indicated	7.3	28.4	49.5	5.7	0.04	2.6
	Inferred	6.2	27.0	50.9	6.2	0.05	3.1
	<b>TOTAL</b>	<b>13.5</b>	<b>27.7</b>	<b>50.2</b>	<b>5.9</b>	<b>0.04</b>	<b>2.9</b>
<b>Coelho</b>	Indicated	3.0	26.5	56.1	3.8	0.03	1.4
	Inferred	4.3	26.8	56.0	3.6	0.03	1.4
	<b>TOTAL</b>	<b>7.3</b>	<b>26.7</b>	<b>56.1</b>	<b>3.7</b>	<b>0.03</b>	<b>1.4</b>
<b>Jambreiro Total</b>	<b>Measured</b>	<b>44.3</b>	<b>29.2</b>	<b>50.5</b>	<b>3.9</b>	<b>0.04</b>	<b>1.5</b>
	<b>Indicated</b>	<b>37.7</b>	<b>27.5</b>	<b>51.1</b>	<b>3.7</b>	<b>0.04</b>	<b>1.6</b>
	<b>Measured + Indicated</b>	<b>82.1</b>	<b>28.4</b>	<b>50.8</b>	<b>3.8</b>	<b>0.04</b>	<b>1.5</b>
	<b>Inferred</b>	<b>45.1</b>	<b>27.3</b>	<b>52.7</b>	<b>3.3</b>	<b>0.05</b>	<b>1.1</b>
	<b>TOTAL</b>	<b>127.2</b>	<b>28.0</b>	<b>51.4</b>	<b>3.7</b>	<b>0.05</b>	<b>1.4</b>
Ore Type	JORC Resource Category	Mt	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%	LOI %
<b>Friable &amp; Semi-Compact Ore</b>	Measured	34.0	29.7	50.3	4.2	0.04	1.6
	Indicated	18.5	28.1	50.9	4.7	0.04	2.1
	Measured + Indicated	52.5	29.2	50.6	4.4	0.04	1.8
	Inferred	7.8	26.6	52.7	5.4	0.04	2.5
	<b>TOTAL</b>	<b>60.3</b>	<b>28.8</b>	<b>50.8</b>	<b>4.5</b>	<b>0.04</b>	<b>1.9</b>
<b>Compact Ore</b>	Measured	10.4	27.5	51.1	2.9	0.05	1.0
	Indicated	19.2	26.9	51.2	2.8	0.05	1.0
	Measured + Indicated	29.6	27.1	51.1	2.8	0.05	1.0
	Inferred	37.3	27.5	52.7	2.9	0.05	0.8
	<b>TOTAL</b>	<b>66.9</b>	<b>27.3</b>	<b>52.0</b>	<b>2.9</b>	<b>0.05</b>	<b>0.9</b>
<b>Total</b>	<b>Measured</b>	<b>44.3</b>	<b>29.2</b>	<b>50.5</b>	<b>3.9</b>	<b>0.04</b>	<b>1.5</b>
	<b>Indicated</b>	<b>37.7</b>	<b>27.5</b>	<b>51.1</b>	<b>3.7</b>	<b>0.04</b>	<b>1.6</b>
	<b>Measured + Indicated</b>	<b>82.1</b>	<b>28.4</b>	<b>50.8</b>	<b>3.8</b>	<b>0.04</b>	<b>1.5</b>
	<b>Inferred</b>	<b>45.1</b>	<b>27.3</b>	<b>52.7</b>	<b>3.3</b>	<b>0.05</b>	<b>1.1</b>
	<b>TOTAL</b>	<b>127.2</b>	<b>28.0</b>	<b>51.4</b>	<b>3.7</b>	<b>0.05</b>	<b>1.4</b>

*\*Cut-off 20% Fe; Mine Dilution – 2%; Mine Recovery – 98%*

The geological model block size of 50 m E-W by 50 m N-S by 10 mRL was selected to best represent the drilling data and the envisaged mining practices (open-cut). Estimation involved the application of Ordinary Kriging (OK) to the parent and sub-blocks (5 m E-W by 5 m N-S by 2.5 mRL) to ensure accurate volume calculation.

Additional detail on the resource estimation procedures are found in the JORC 2012 Table 1 in Appendix A of this release.

## 5. Geotechnical Studies

WALM Engenharia e Tecnologia Ambiental Ltda, a local specialist geotechnical consulting group, produced the detailed geotechnical and hydrological study for the Jambreiro Project to determine the pit slope angles to be used for the pit optimisation runs and operationalisation of the mine. Final pit slopes will have 10m benches and 6-metre-wide berms. The final pit walls generally reach maximum heights of 80-100m with the high wall at the western side of the pit reaching a maximum of 105m. Final slopes are expected to have average inter-ramp angles of between 42°- 50° depending on the geotechnical sector.



**6. Ore Reserves and Mining**

Independent mine planning consultancy, BNA Mining Solutions (BNA), completed the mining section of the PFS and defined a JORC 2012 compliant Ore Reserve estimate. The final open pit design was based on the friable and semi-compact material that falls in the Measured and Indicated Resource categories. Multiple pit optimisations were run and a conservative pit shell derived from a mine gate sales price of R\$66/t (~US\$18/t), considerably lower than today’s price, was selected. The pit shell selected minimised waste movement and optimised the mine grade.

The Reserve estimation converted 82% of the Measured and Indicated Friable Resource base of 52.5Mt grading 29.2% Fe into Ore Reserves of 43.3Mt grading 29.1% Fe. The Ore Reserve estimate, prepared by BNA, is summarised in Table 4 below:

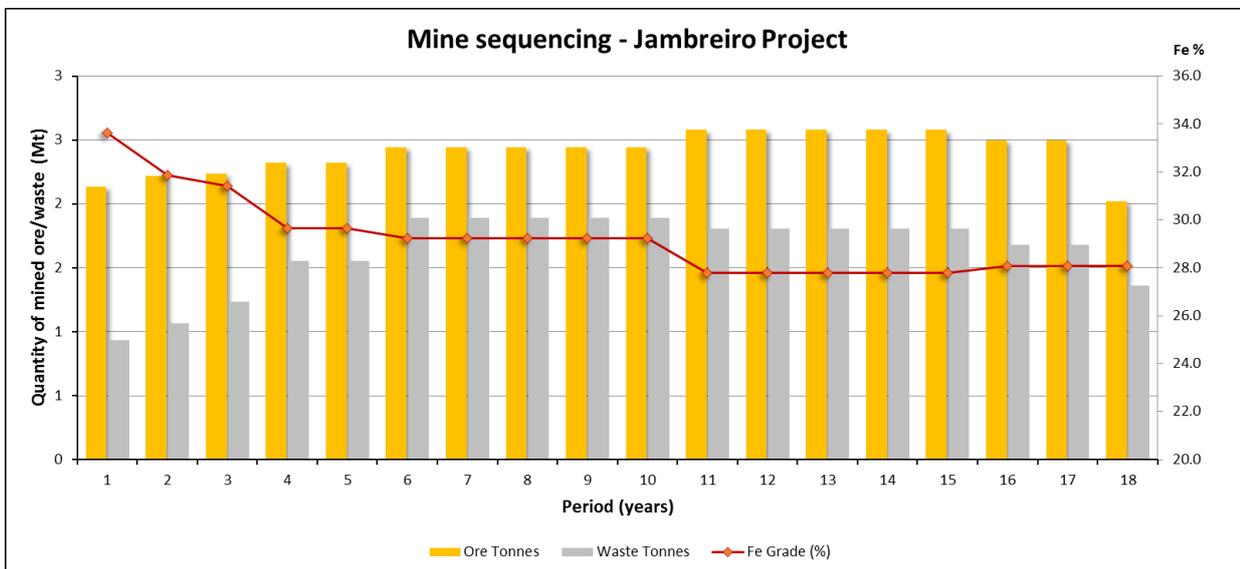
**Table 4 – JORC 2012 Reserve Classification – June 2019**

Ore Reserve Classification	Mt	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%	LOI %
Proven	30.6	29.4	49.8	4.2	0.04	1.6
Probable	12.7	28.4	49.5	4.7	0.04	2.2
<b>Total</b>	<b>43.3</b>	<b>29.1</b>	<b>49.7</b>	<b>4.4</b>	<b>0.04</b>	<b>1.8</b>

*\* Mine Dilution – 2%; Mine Recovery – 98%*

The friable Ore Reserve will provide the Company with approximately 17.9Mt of high-grade product, at an average life-of-mine recovery of 41%, underpinning the initial 18-year mine life at Jambreiro. The average strip ratio for the first four years of the operation is 0.56:1, with a total life-of-mine strip ratio of only 0.68:1 based on a total material movement of 72.9Mt. The Jambreiro mine sequence is set out in Figure 4 below, while Table 5 shows the total material movement and strip ratio in each year of the planned operation at Jambreiro.

**Figure 4 – Jambreiro Mine Sequence**



The nature of the Jambreiro ore bodies allows for low strip ratios and shorter haulage routes for the first five years, which has a positive impact on both operating and deferred capital costs. The ore and waste are predominantly free-dig from surface over the life of the current mine design, with blasting only expected for 5% of the total material movement for the project. Pit exit ramps have been designed to allow easy access to the ROM-pad area, primary crusher and the main waste storage areas while maintaining a minimum haulage distance.

Where possible, ramp development has been restricted to the footwall side of the pit to minimise the strip ratio.

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**Table 5 – Jambreiro Mine Production Schedule with Strip Ratio**

Period (Year)	ROM Wet (Kt)	Fe%	Mass Rec (%)	Product Dry (Kt)	Strip Ratio	Waste Wet (Kt)	Total Wet (Kt)
Pre-Strip	30	33.6	48%	12		70	100
1	2,104	33.6	48%	1,005	0.44	864	2,967
2	2,220	31.9	45%	1,009	0.48	1,068	3,288
3	2,236	31.4	45%	1,001	0.55	1,233	3,469
4	2,319	29.7	43%	988	0.67	1,553	3,871
5	2,319	29.7	43%	988	0.67	1,553	3,871
6 – 10	12,212	29.2	41%	5,041	0.77	9,440	21,652
11 – 15	12,886	27.8	39%	5,058	0.70	9,016	21,902
16 - 18	7,013	28.1	40%	2,809	0.67	4,727	11,740
<b>Total</b>	<b>43,339</b>	<b>29.1</b>	<b>41%</b>	<b>17,912</b>	<b>0.68</b>	<b>29,522</b>	<b>72,861</b>

The mine will be operated by a local mining contractor using 40-tonne off-road trucks that are commonly used in Brazil and readily available in the region. All mining costs used in this study are from current proposals from local contractors.

The road widths in the pit are 12m, including 6m safety berms and a 10-12% road gradient to accommodate the 40-tonne truck fleet. The mine is scheduled to work on a six days per week, 313 days per year basis. Each day will consist of two 8-hour shifts. In order to maintain plant feed ROM, ore will be fed to the crusher by front-end loader on night shift and on Sundays.

Additional detail on the Ore Reserve estimate can be found in the ASX Announcement separately released today under the title “Updated Jambreiro Ore Reserve Delivers 17.9Mt of High Grade (65% Fe) Product Over 18-Year Mine Life”.

## 7. Ore Processing

All the parameters used to design the Jambreiro beneficiation plant were defined through multiple campaigns of bench scale testwork and over 40 tonnes of pilot plant test work carried out at Fundação Gorceix, PCM, UFMG, Metso and Outotec.

The Jambreiro Project ROM ore is friable in nature and composed mostly of iron oxides (hematite with minor magnetite) and silica. The grain size distribution test on the ROM ore showed that the top size of the friable material is 44.5 mm with 80% passing at 2.4 mm, demonstrating the sand-like nature of the ore.

The ore characteristics and the desired concentrate specifications lead to the choice of jigging, spirals and Wet High Intensity Magnetic Separation (WHIMS) as the core Jambreiro beneficiation route.

The feed to the WHIMS circuits is also pre-treated in a Low Intensity Magnetic Separation (LIMS) circuit to recover (to concentrate) the small amount of magnetite in the ore.

The process plant consists of the following major elements:

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- Primary Screening
- Primary Crushing and Secondary Crushing and Screening (from year 11, introduction of semi-compact ore)
- Tertiary Crushing and Screening
- Jigging
- Scavenger Ball Mill
- Spirals concentration
- Magnetic Separators (LIMS and WHIMS)
- Slimes and tailings Thickener
- Centrifuge Tailings dewatering
- Products dewatering by screens

Bench scale testwork and pilot runs consistently demonstrate metal recoveries of +90% Fe and average mass recoveries of 41%. A simplified beneficiation plant flowsheet for the Jambreiro Project is presented in Figure 5 below.

Figure 5 – Jambreiro Process Flowsheet

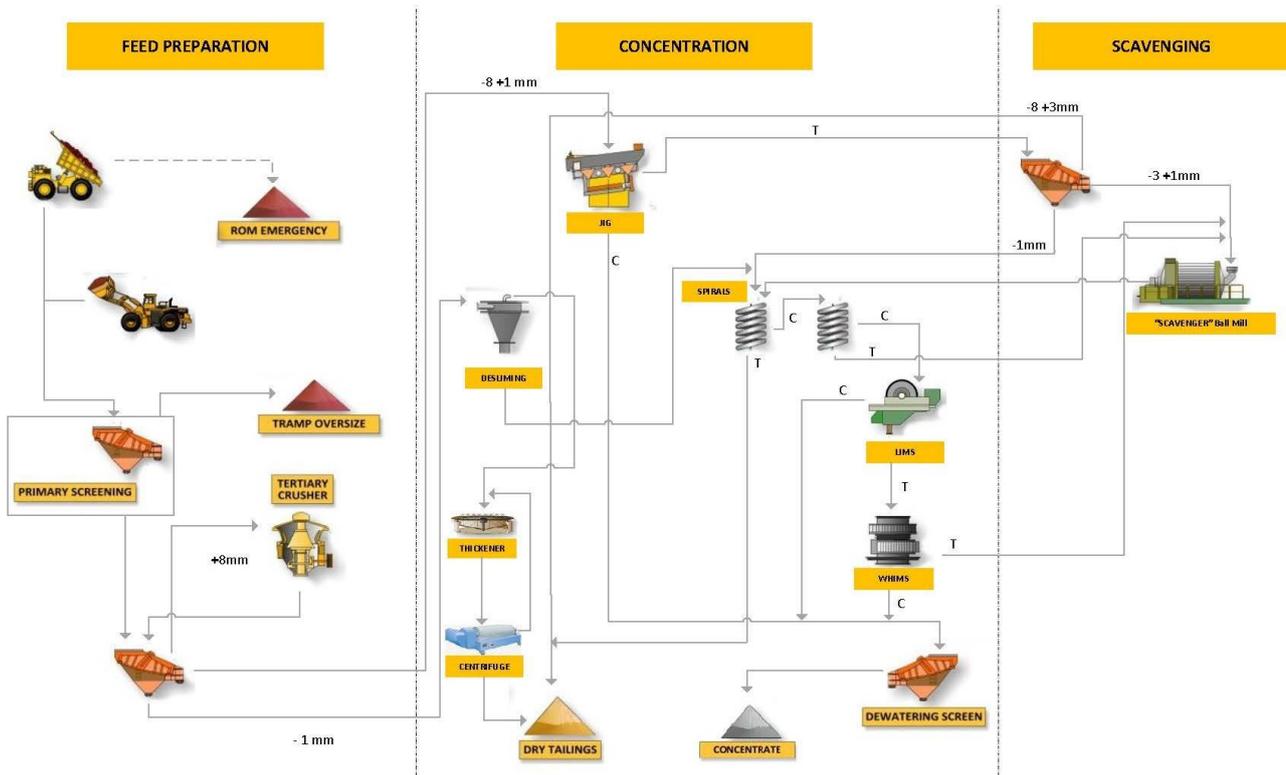




Table 6 summarizes the actual product with high Fe grade and low impurities produced out of the bench and pilot plant test work.

**Table 6 – Products Grade from Pilot Plant Testwork**

	Sinter Feed	
<b>Chemical Analysis</b>	<b>Fe (%)</b>	65.9%
	<b>SiO<sub>2</sub> (%)</b>	4.3%
	<b>Al<sub>2</sub>O<sub>3</sub> (%)</b>	0.8%
	<b>P (%)</b>	0.01%
	<b>Mn (%)</b>	0.04%
	<b>LOI (%)</b>	0.42%

The interesting aspect of the proposed Jambreiro process flowsheet and plant is that the operator will be able to produce different products tailored to the domestic market. By changing the blends of the jig and magnetic separation products the operator will be able to increase iron grade and change grain size distribution specs to meet customer demands.

**8. Project Site Layout**

The Proposed site layout for the Jambreiro Project is set out in the map in Figure 6 below. The 2019 updated Project has a significantly reduced footprint, now being only circa 230 Ha due to the removal of the tails dam from the Project design. The project area is very well serviced by all-weather roads used for eucalypt hauling.

**9. Mine Site Infrastructure, Services and Operations**

The mine site is located only 25km from the regional centre of Guanhões, population 70,000. All accommodation during construction and operations will be in the towns of Guanhões and São João Evangelista (12km to the north-east).

Raw water required for the plant will come from the Corrente Canoa river via a 5.5km pipeline with a maximum 400 m<sup>3</sup>/h flow rate and will be stocked in the water dam reservoir. The water dam height will be 10m and will be constructed from pre-strip mine waste and borrowed material with a total capacity of 481,000m<sup>3</sup>.

The electric supply system is proposed to be via diesel-powered generators for the initial 1Mtpa operation. If required, an existing main transmission line at (69 KV) is located some 8km east of the plant site.

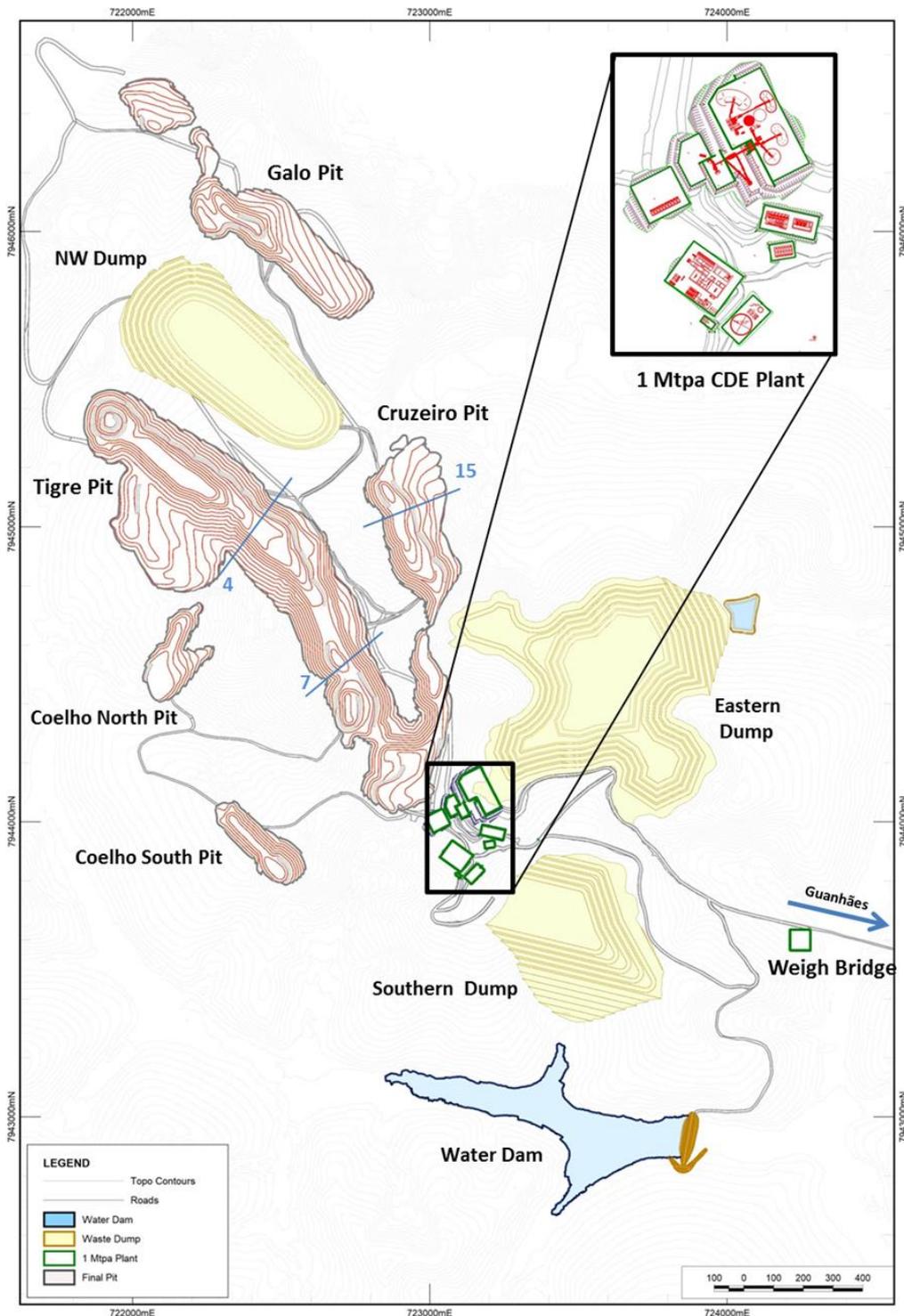
The project industrial support facilities include a heavy vehicle and plant maintenance workshop, warehouse, laboratory, fuel storage and control room. The project also includes administrative support facilities such as a site gatehouse, truck weighbridge, administrative offices, change rooms, bus station, first aid, industrial kitchen and restaurant areas.

Once in operation, the Jambreiro mine will require a total of roughly 130 direct staff, with most being sourced from the local area. There are similar operations in the region and extensive training of the unskilled work force in the region by Centaurus occurred in 2013.

The mine operations will be run by the mining contractor and work from Monday to Saturday (inclusive) in two shifts of 8 hours. The beneficiation plant, will operate on 8-hour shifts, 24 hours-a-day, with four operational teams. Administrative areas will work 44 hours per week, in accordance to the Brazilian labour laws.



Figure 6 – Jambreiro Project Site Layout Map



## 10. Environmental Licensing

Key licences to construct the Project are in place. An amendment to the Installation Licence will be required as the project footprint has significantly reduced due to the dry stacking of tails and the removal of the tails dam from the Project design.

A new water licence is also required and has been applied for. The Company previously surrendered the main licence to extract water from the Corrente Canoa river to reduce holdings costs. The Company sees no issue in securing the water licence again as the water requirement to the Project has reduced with dry-stacking of the tails.



The main licenses and their corresponding validity are as follows:

- ▶ 3Mtpa Installation licence (LI) – currently suspended on request by Centaurus (to be lifted);
- ▶ Vegetation clearing (ASV) – currently suspended on request by Centaurus (to be lifted);
- ▶ IBAMA approval for Atlantic vegetation clearing – valid; and
- ▶ 8 water permit applications.

The licenses mentioned above encompass all project facilities necessary to build an operation at a rate of up to 3Mtpa of final product. Centaurus has a land access agreement with the landowner until 2022 with an option to extend.

## **11. Iron Ore Pricing Assumptions**

Centaurus has undertaken significant analysis of the current pricing regime in the domestic market – both selling to integrated steel mills and also mining/trading groups with ready access to export logistics.

A number of the domestic steel mills have tested the Jambreiro product at their own facilities in the past and have indicated that they are impressed by the high-grade, low impurity sinter product to be produced from Jambreiro and the ability of Centaurus to deliver this product on a long-term consistent basis.

Steel mill pricing is a function of the prevailing international export markets less logistic charges back to the mill's location. Consequently, an analysis of the domestic market pricing is in essence an analysis of the international iron ore pricing environment.

Centaurus' analysis indicates that iron ore grading 62% Fe currently sells in the domestic market to integrated steel mills for around R\$170-R\$190 (US\$45-50) per tonne on a mine gate basis, depending on the location of individual mines relative to point-of-delivery and sale. A 65% product is presently achieving over R\$220 (US\$58) per tonne at the mine gate (less than 50km from the Jambreiro Project) based off a 62% CFR China reference price of US\$105/tonne.

The higher-grade nature of the ore produced at Jambreiro and the very low impurity levels should attract a premium in the market, consistent with international markets. Over the last few years, the international market has changed markedly with respect to premiums for high grade ore. Based on current published indices, a 65% Fe product will attract a premium in the international market in the order of US\$10-12 (R\$37-45) per tonne.

For the purpose of the PFS, Centaurus has estimated a conservative flat line mine gate price, for its 65% product, over the life of the Project, of US\$41 per tonne (R\$152 per tonne) to assess the economics of the Project. This price is based on an assumed long term 62% Fe CFR China Price of US\$75 per tonne (before premium for high quality 65% ore), a price which is well below the current prevailing price for 62% Fe ore US\$125 per tonne.

Further to the sensitivity analysis in Section 16 below, if a 62% Fe CFR China iron ore price of ~US\$125 per tonne continued to be the market price for iron ore over the life of the Project, the Company would be able to achieve a mine gate sales price for domestic market supply in the order of US\$68-70 (R\$255-260) per tonne (assuming current FX rates). **If this range of domestic iron ore pricing was able to be maintained over the life of the project, the already strong project economics would lift substantially to a post-tax NPV<sub>8</sub> of at least A\$303 million and a post-tax IRR of 60%, all other things being equal.**

Concurrently with establishing a strong domestic market for the high-grade Jambreiro product, the Company is analysing opportunities to sell the high quality Jambreiro product to international export markets. MRS Logística S.A. (operator of open access MRS rail line) has indicated that it would be able to provide Centaurus economic rail services from the Sarzedo Rail Terminal just south of Belo Horizonte to one of a number of ports close to Rio de Janeiro.

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Early discussions have taken place with Sudeste Port (Trafigura) to use their capesize port, but further work needs to be undertaken on this front. This work will be undertaken during the BFS.

The Company is also working with a number of trucking groups to determine the cost of trucking from Jambreiro to its various preferred customers, including the trading groups which would purchase ore at the rail head of the Sarzedo rail terminal.

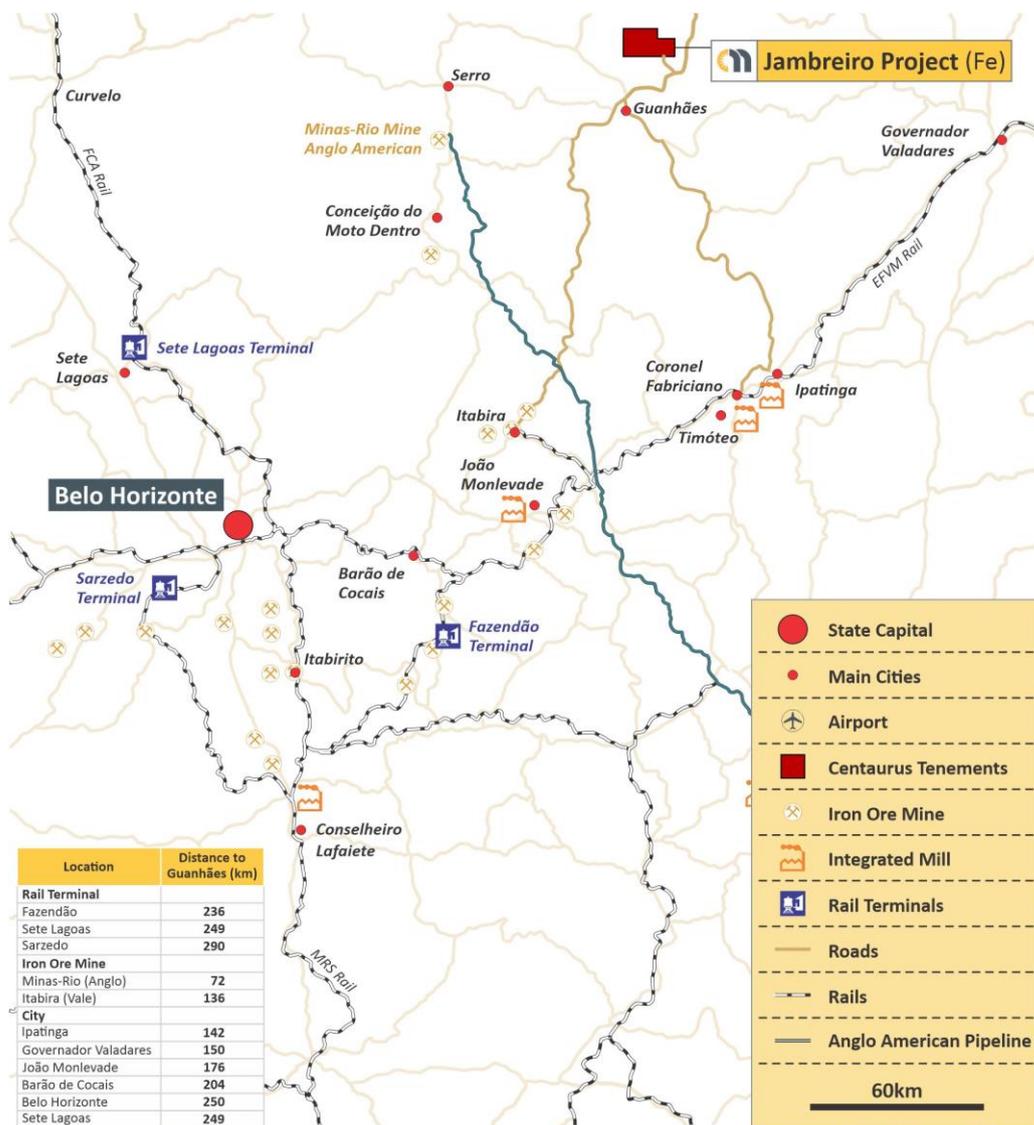
## 12. Product Logistics

The likely customer base for the Jambreiro product are integrated steel mills in the Steel Valley region, 150km south of the Jambreiro Project. The main potential customers' sites are located in Ipatinga, João Monlevade, Barão de Cocais and Itabira.

The Company is also evaluating a number of potential export or quasi export options. For the export of ore from Jambreiro, the product would be trucked to the Sarzedo Terminal near Belo Horizonte, 315km from Jambreiro. The Sarzedo Terminal is on the MRS line from which it can be taken to a number of capesize ports owned by Vale, CSN or Trafigura.

Figure 7 below shows the potential client base and the export options and the respective distances to their operations.

Figure 7 – Distance to Potential Customers





### 13. Capital Costs

The total pre-production capital costs for the initial Project have been estimated at A\$59.8 million, which equates to an attractive A\$59.8 per tonne of annual production. The capital cost estimate includes a 5% contingency on the turn-key CDE Plant and major equipment items and 15% on all other direct and indirect costs with a full breakdown of the pre-production capital set out in Table 7.

The relatively low capital intensity is predominantly a function of the ore type at Jambreiro and the close proximity to potential end user customers. Because the ore is highly friable and naturally liberated, the plant only requires limited comminution to break up the small amount of loosely agglomerated material.

Over 60% of the capital costs come from CDE Global's turnkey price for the processing plant and all of the major equipment items that are to be free supplied by the Company into CDE Global. The Company therefore takes comfort that there should be no major capital variance as the BFS is locked down over the coming months.

**Table 7 – Jambreiro Project Capital Cost Schedule**

Capital Equipment	Total (A\$ M)
<b>DIRECT COSTS</b>	
Mine Access & Civil Earthworks	5.9
Processing Plant	37.7
Site Infrastructure	2.1
Water Dam and Water Supply	3.7
<b>TOTAL DIRECT CAPEX</b>	<b>49.4</b>
<b>INDIRECT COSTS</b>	
Detailed Engineering/Project Management/Owner Costs	5.8
Contingency	4.6
<b>TOTAL CAPEX</b>	<b>59.8</b>

Deferred capital costs for the Project have been estimated at A\$18.2 million over the life of the initial 18 year mine. The estimate includes sustaining capital, primary and secondary crusher to treat semi-compact ore from Year 11 of operations, plant refurbishment, pit dewatering, waste dump drainage and construction and contingency.

### 14. Operating Costs

The average operating costs (including royalties) over the LOM are an attractive A\$29.0 per tonne of final product. A breakdown of the operating costs is set out in Table 8 below.

**Table 8 – Jambreiro Project Life of Mine Operating Costs**

Operating Costs	A\$ per Tonne Product
Mining	9.7
Processing & Beneficiation	13.3
Administration	2.1
<b>SITE OPERATING CASH COST (C1)</b>	<b>25.1</b>
Royalties – Government and Landowner	3.9
<b>TOTAL OPERATING CASH COSTS (C1 + Royalties)</b>	<b>29.0</b>

The mine operations cost, based on actual proposals from local mining contractors, are low due to the friable nature of the ore, which does not require drill and blast for the first 10 years of production and the short haulage distances to the ROM and waste dumps arising from enhanced mine planning and design.

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The larger components of the operating costs are consumed in diesel fuel, labour, power and the cost of the mining contractor. Power has been estimated at R\$660 (A\$253) per Megawatt hour based on diesel generated power with the diesel fuel costed at R\$3.5 (A\$1.35) per litre. During the BFS further work will be undertaken to evaluate renewable energy options to reduce costs and attract favourable funding options from Brazilian development banks.

The labour cost assumes a full-time Centaurus workforce of 130 people, which is typical of a project of Jambreiro's size in Brazil.

In addition to the operating cash costs, the PFS allows for a Federal Government (CFEM) Royalty of 3.5% and landowner royalty of 2.6% on the value of iron ore sales revenue, less certain allowable deductions for taxes charged in Brazil. In addition, a state-based levy of R\$1.44 per tonne of product is also levied on iron ore producers in the State of Minas Gerais.

For the purposes of the PFS, the financial modelling assumes that product will be sold FOB mine gate into the domestic steel market and, as such, transport costs have not been directly considered in the operating costs.

Further work will be undertaken on transport costs during the Bankable Feasibility Study should alternative international markets become more attractive as a long-term solution for the sale of the high-grade Jambreiro product.

## 15. Financial Analysis

The PFS is based on a Proven and Probable Ore Reserve at Jambreiro of 43.3Mt grading 29.1% Fe (82% conversion of the total friable Measured and Indicated Mineral Resource base) and producing 1Mtpa of final product grading 65% Fe over an 18-year mine life, using a mining contractor for all mining activities on site.

All sales are intended to be made into the domestic market to either local integrated steel mills on a mine gate sales basis or mining/trading groups on a rail-head sales basis. Under this scenario, the initial friable project delivers a post-tax NPV<sub>8</sub> of A\$114.9 million and an IRR of 32%.

The key assumptions used in the PFS are set out in Table 9 below with key financial outcomes in Table 10.

**Table 9 – Key PFS Assumptions**

Key Assumption	
Reserve – In Situ Ore	43.3 Mt
Grade	29.1% Fe
Life of Mine (LOM) Average Mass Recovery	41%
Reserve – Final Product	17.9 Mt
Grade	65% Fe
Production Rate	1Mtpa
BRL to AUD Exchange Rate	2.6 to 1
BRL to USD Exchange Rate	3.7 to 1
USD to AUD Exchange Rate	0.7 to 1
LOM Sales Price (Mine Gate)	US\$41/dmt
International Reference Sales Price (62% Fe)	US\$75/dmt
LOM Waste to Ore Ratio	0.68 to 1
Government Royalty	3.5% of Revenue
Other Royalties & Sales Duties	2.6% of Revenue

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**Table 10 – Key Financial Outcomes**

Key Financial Outcomes	Total A\$
Total Revenue	1,052 Million
EBITDA	533 million
Annual Cash Surplus – Pre-Tax	29.6 million
Capital Costs	59.8 million
Direct Operating Cost (per tonne Product - LOM)	25.1/dmt
Total Operating Cost (per tonne Product – LOM)	29.0/dmt
NPV <sub>8</sub> Pre- tax	190.2 million
NPV <sub>8</sub> Post- tax	114.9 million
Post-Tax IRR	32%

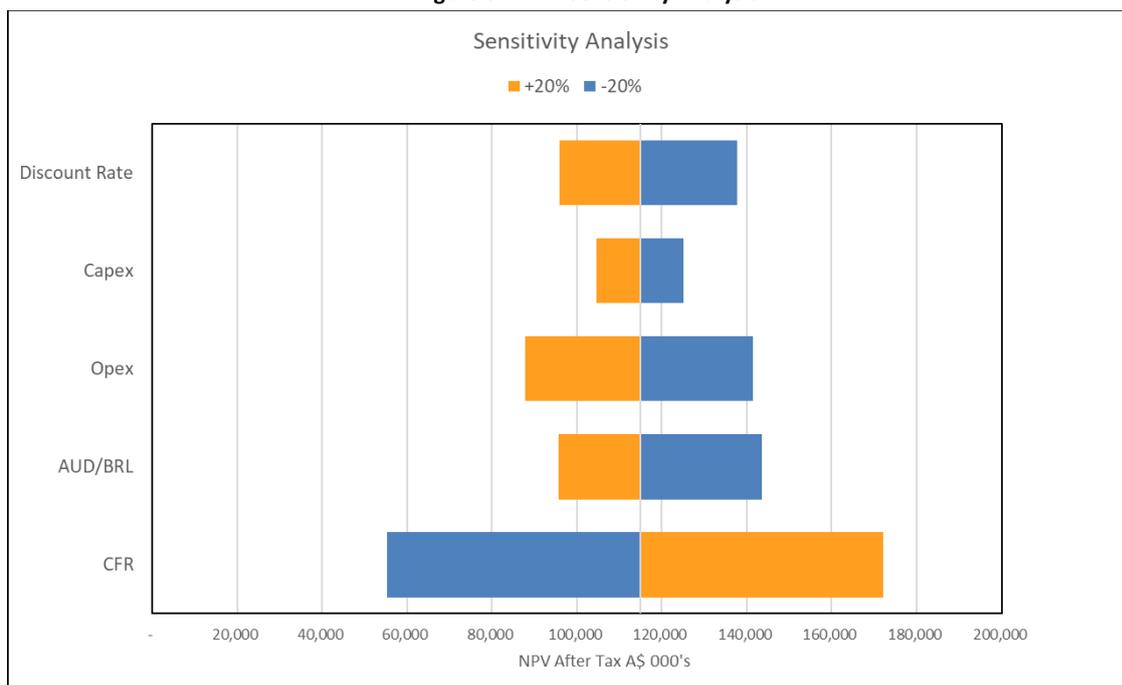
## 16. Sensitivity Analysis

Sensitivity analysis indicates that the Project is most sensitive to iron ore prices, followed by operating costs, AUD/BRL exchange rate, discount rates and capital expenditure. The degree of sensitivity is represented in the Tornado chart in Figure 8 below. The values used for each variable under each case and the impact on post-tax NPV is summarised in Table 11 below:

**Table 11 – Values used for Sensitivity Analysis of 1Mtpa Concentrate Production Scenario**

1Mtpa		Case					NPV <sub>8</sub> Post Tax A\$				
Variable		-20%	-10%	Base	+10%	+20%	-20%	-10%	Base	+10%	+20%
Mine Gate Reference Price	US\$/wmt	60.0	67.5	75.0	82.5	90.0	55.3	85.8	114.9	143.6	172.0
Forex	A\$/R\$	2.08	2.34	2.60	2.86	3.12	143.6	127.7	114.9	104.5	95.7
Operating Costs	A\$/wmt	23.2	26.1	29.0	31.9	34.8	141.5	128.2	114.9	101.4	87.8
Capital Expenditure	A\$ million	47.8	53.8	59.8	65.8	71.8	125.2	120.0	114.9	109.8	104.6
Discount Rate	%	6.4	7.2	8	8.8	9.6	137.7	125.8	114.9	105.0	95.9

**Figure 8 – NPV Sensitivity Analysis**





**17. Project and Mine Life Upside Beyond Friable Jambreiro Project**

The total Mineral Resource base at Jambreiro stands at 127.2 Mt grading 28.0% Fe. The Friable component of this Resource is 60.3Mt grading 28.8% Fe with a further 66.9Mt grading 27.3% Fe forming the Compact component. 29.6Mt (44%) of this Compact mineralisation currently falls into the Measured and Indicated categories.

Pit optimisation, with appropriate cost adjustment for the compact ore, has shown that up to 101.7Mt of the total Resource base falls within an optimised pit should all of the 45.1Mt currently in the Inferred category be converted in to Measured and Indicated categories.

**Table 12 – Jambreiro conceptual in-pit Resource**

<b>In Pit Resource</b>	101.7Mt at 27.9% Fe (80% of the Global Resource base – 127.2Mt)
<b>Strip ratio</b>	1.29:1
<b>Potential Product</b>	36.7Mt of +64% Fe sinter blend concentrate (+36-year mine life @ 1 Mtpa production rate)

The remaining 58.4Mt (outside the current Reserve) includes 37.0Mt of JORC Measured and Indicated Resources and a further 21.4 Mt of JORC Inferred Resources<sup>1</sup>. These Resources, which are almost exclusively compact ore, represent a strong opportunity to continue mining beyond the friable project by up to a further 18 years.

Outside of the Jambreiro Resource, a 2012 JORC Resource of 27.6Mt grading 30.5% exists at the Company’s Canavial Iron Ore Project, just 10km south of Jambreiro. This Project includes 15Mt of friable mineralisation which Centaurus will look to convert to Reserves once the Jambreiro Project is operational.

Importantly, once operational, Jambreiro will be the only plant in the region capable of treating itabirite ores which require beneficiation. With licensing expected to be increasingly difficult to achieve in Minas Gerais, it is reasonable to expect that Jambreiro will become a strategic process plant for other miners.

Centaurus also expects that, once operational, it will be able to source significant amounts of regional ore that may not otherwise be processed and brought to market.

**18. Project Financing**

It is expected that the Jambreiro Project’s capital costs will be financed with a combination of debt and equity with the equity component potentially coming from a sell-down of equity at the Project level.

Initial discussions have also been held with debt and mezzanine debt providers although this process needs to be further advanced during the BFS.

Due to the high quality of the ore, the early payback generated from the strong cash-flows and relatively low front-end capital requirements, the Company is well placed to be able to secure the necessary project funding once further off-take discussions have been advanced.

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<sup>1</sup> These Inferred Resources, by definition, are of insufficient confidence to have economic considerations applied that would enable them to be categorised as Ore Reserves.



## **19. Early Stage Project Implementation Plan**

At this current stage of Project assessment, the Company is working on site implementation commencing shortly after finance for the Project has been secured, which is presently planned for the first quarter of 2020. Plant construction and pre-strip mining would, subject to finance and final approvals, therefore be targeted to commence from April 2020 with the Project estimated to take approximately 12 months to build.

In order to allow for the tight time constraints of construction, the Company has been working with CDE Global so that a fixed-price, turnkey contract can be entered into on completion of the BFS. The aim is to undertake most manufacturing off site in CDE's extensive facilities in Northern Ireland and minimise the amount of time any contractor needs to spend on site installing the plant. This should reduce the site execution time, minimise the peak execution workforce and reduce the risks of weather and other delays.

Key licences to commence project construction and commissioning are already in place. An amendment to the Installation Licence will be sought as the project footprint has significantly reduced due to the dry stacking of tails and the removal of the tail dam from the Project design.

The Operational Licence (LO) will be granted once the plant is installed in line with the LI requirements.

## **20. Next Steps**

As a result of the robust economics of the PFS, the Centaurus Board has approved the commencement of a BFS for the Project which is targeted for completion before the end of 2019 leading towards a development decision early in 2020.

The Company will continue to leverage off the vast body of work completed in the 2013 Feasibility Study while focusing on key components for the 2019 BFS which include:

- Advancing the off-take arrangements for the sale of product and in turn the financing of the Project;
- Finalising the best solution for the dry stacking of tailings;
- Finalising the detailed engineering and turn-key contract for the processing plant;
- Investigating alternative renewable power supply options for the Project; and
- Product transport optimization studies.

Over the next four weeks, the Company will assess and select its preferred consulting groups to assist with the delivery and completion of the BFS whilst the Company continues to advance its offtake and financing discussions. The groups who have worked closely with the Company during the PFS work will be ideally placed to assist the Company in completing the BFS.

**-ENDS-**

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## Competent Persons Statement

*The information in this report that relates to Exploration Results and Mineral Resources is based on information compiled by Roger Fitzhardinge who is a Member of the Australasian Institute of Mining and Metallurgy and Volodymyr Myadzel who is a Member of the Australian Institute of Geoscientists. Roger Fitzhardinge is a permanent employee of Centaurus Metals Limited and Volodymyr Myadzel was the Senior Resource Geologist of BNA Mining Solutions, independent resource consultants engaged by Centaurus Metals, at the time when the Mineral Resource estimate was first completed.*

*Roger Fitzhardinge and Volodymyr Myadzel have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Roger Fitzhardinge and Volodymyr Myadzel consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.*

*The information in this report that relates to Ore Reserves is based on information compiled by Beck Nader who is a professional Mining Engineer and a Member of the Australian Institute of Geoscientists. Beck Nader is the Managing Director of BNA Mining Solutions and is a consultant to Centaurus.*

*Beck Nader has sufficient experience, which is 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'. Beck Nader consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

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## APPENDIX A – JORC Code, 2012 Edition – Table 1 Compliance Statement for Jambreiro Project

### SECTION 1 - SAMPLING TECHNIQUES AND DATA

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

Criteria	Commentary
<b><i>Sampling techniques</i></b>	<ul style="list-style-type: none"> <li>All trenches were excavated with a backhoe or excavator and sampling was done through continuous cut channels down to 2m below the original surface, sampled on 2m intervals or to lithological contacts. The 3-5kg samples were sent to commercial laboratories to proceed with sample preparation and assaying.</li> <li>Reverse Circulation (RC) samples were taken at 1m intervals from which a 3-5kg aliquot was sent to commercial laboratories to proceed with sample preparation and assaying.</li> <li>Diamond Drilling (DD) samples were taken at 1m intervals or to lithological contacts from which ¼ core (3-5kg) was sampled, and sent to commercial laboratories to proceed with sample preparation and assaying.</li> <li>At the laboratories, samples were dried, crushed to &lt;2mm, homogenized and pulverized to 150 mesh then fused with lithium tetraborate and lithium nitrate. The resultant disk is assayed in X-Ray Fluorescence Spectrometer to quantify a range of oxides, some elements and LOI. The Jambreiro Project has a nominal drill hole spacing of 100m x 50m.</li> <li>Field duplicate samples were taken at a set frequency of one every 20 samples (5% of total samples) from the splitter to monitor sample representivity.</li> <li>All of the data used for the Resource estimation is based on the logging and sampling of trenches, RC and diamond core drilling that was carried out under Centaurus procedures that are in line with industry best practice. The historical drill holes (pre-Centaurus) correspond to 1.9% of the total drilling and these were resampled (1/4 core) and re-logged under Centaurus procedures.</li> </ul>
<b><i>Drilling techniques</i></b>	<ul style="list-style-type: none"> <li>RC drilling employed a 5.5" face hammer. A total of 183 RC holes for 12,977m have been drilled. Hole depths range from 13 to 200m.</li> <li>Historical diamond drilling (pre-Centaurus) was carried out in HQ size. A total of 7 historical diamond holes for 365m have been drilled. Hole depths range from 26 to 90m.</li> <li>Diamond drilling (Centaurus) was carried out in HQ size. A total of 52 historical diamond holes for 5,641m have been drilled. Hole depths range from 34 to 270m.</li> </ul>
<b><i>Drill sample recovery</i></b>	<ul style="list-style-type: none"> <li>Diamond Drilling recovery rates were calculated at each drilling run.</li> <li>The diamond drilling core recoveries were recorded in the database for all Centaurus diamond holes. Overall recoveries are &gt;90% and there are no core loss issues or significant sample recovery problems.</li> <li>For RC drilling, geologists or field assistants recorded sample weights and calculated sample recovery based on the expected weight of recovered material according to the approximate density of each rock type. No issues were detected.</li> <li>To ensure adequate sample recovery and representivity a Centaurus geologist or field technician was present during drilling and monitored the sampling process.</li> <li>No relationship between sample recovery and grade has been demonstrated. No bias to material size has been demonstrated.</li> </ul>
<b><i>Logging</i></b>	<ul style="list-style-type: none"> <li>All trenches and drill holes have been logged geologically and geo-technically to a level of detail appropriate to support the Mineral Resource estimate as well as metallurgical and mining study support for iron ore.</li> <li>Logging for both forms of drilling is qualitative and quantitative in nature.</li> <li>All Centaurus trenches, RC chip trays and diamond core have been photographed. Historical drilling was not photographed.</li> <li>The total length of drilling is 18,983m. 100% has been logged. The total length of trenches is 2,486m. 100% has been logged.</li> </ul>
<b><i>Sub-sampling techniques and sample preparation</i></b>	<ul style="list-style-type: none"> <li>Diamond Core (HQ) was cut with a specialized sampling tool where friable or using a core saw where compact. A quarter core was sampled.</li> <li>RC samples were collected on 1m down hole intervals. The 35-kilogram gross samples were split typically using a 3-tier riffle splitter attached to the drill rig cyclone to a 3-5kg aliquot. For the 2012 RC drilling campaign (which corresponds to 49 drill holes and 3,356 metres of drilling) herringbone splitting was done to reduce the gross sample to a 3-5kg sample aliquot. Sample weight/split analysis shows that on average a 12.5% split ratio was achieved.</li> <li>The majority of mineralised samples from RC drilling were dry.</li> <li>All samples were received and prepared by ALS or Intertek Labs in Belo Horizonte, Brazil as 3-5kg samples. They were dried at 105°C until the sample was completely dry (6-12hrs), crushed to 90% passing 2mm and reduced to 500g via a Jones riffle splitter. The 500g samples were pulverised to 95% passing 104µm and split further to 50g aliquots from which 0.5g are used to manufacture the lithium tetraborate fused disks for chemical analysis.</li> <li>Field control sample insertion included field duplicates taken every 20 samples. Results from the duplicate samples show the data has an acceptable precision, indicating that the sampling technique is appropriate for the deposit.</li> <li>The sample size is considered to be appropriate to correctly represent the mineralisation (low grade itabirite ore) as well as the thickness and consistency of the mineralised intersections.</li> </ul>
<b><i>Quality of assay data and laboratory tests</i></b>	<ul style="list-style-type: none"> <li>All chemical analysis was completed at ALS or Intertek Labs. Laboratory duplicates were completed every 10-20 samples and standards were completed every 20-25 samples dependent on the laboratory.</li> <li>Blind laboratory control sample insertion included blank samples at the start of every new hole then every 50 samples and standards (CRM from Geostats, Itak and Agoratek) every 20 samples. Field duplicates were inserted every 20 samples.</li> <li>Metal Oxide is determined using XRF analysis. Analysis at ALS was for a 24-element suite while at Intertek analysis was for 11 elements. FeO is determined using Titration and LOI using Loss Determination by Thermogravimetric analysis.</li> <li>Laboratory procedures are in line with industry standards and are appropriate for iron ore.</li> <li>Certified reference material (standards) at a set frequency of 1:50 (2% of total samples) were inserted within sample batches. A number of different standards at a range of grades are used to monitor analytical precision of the assay results.</li> <li>Acceptable levels of precision have been achieved with the standard assays reported for the main elements of interest.</li> <li>Both the ALS and Intertek labs insert their own standards at set frequencies and monitor the precision of the XRF analysis. These results also reported well within the specified 2 standard deviations of the mean grades for all main elements. Additionally, the labs performed repeat analyses of sample pulps at a rate of 1:20 (5% of all samples). These compare very closely with the original analysis for all elements.</li> </ul>

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Criteria	Commentary
	<ul style="list-style-type: none"> <li>Analysis of field duplicates and lab pulp duplicates have returned an average correlation coefficient of over 0.98 confirming that the precision of the samples is within acceptable limits.</li> <li>Centaurus QAQC procedures and results are to industry standard and are of acceptable quality.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>All significant intersections are verified by alternative Company personnel before release. As part of the Resource estimation process drill hole data was independently reviewed by BNA Mining Solutions.</li> <li>Two sets of diamond twin holes have been drilled for comparison with RC drill holes and quantitatively analysed with no material issues identified. Based on this Centaurus used both diamond and RC drill holes in the Resource estimate.</li> <li>All primary data both electronic and physical is stored in the Centaurus office (Belo Horizonte, Brazil).</li> <li>Sample information was elaborated by a geologist using excel spreadsheets within the electronic database; geological logging and any other relevant exploration field data are retained in both physical and electronic databases.</li> <li>No adjustments were made to the assay data apart from resetting the below detection level values to half of the detection limit.</li> </ul>
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>The grid system used is SAD-69 23S. This is in line with Brazilian Mining Agency requirements. All survey collars and trenches were surveyed using a Total Station. Downhole Maxibore surveys were completed for the 2011 DD campaign, with minimal deviation logged in the holes.</li> <li>Aerial survey was completed by Geoid laser mapping using Orion laser sensors and a GNSS receiver. The survey was flown in October 2011. The topographical data was supplied in SAD-69 23S coordinates. The quality and resolution of the topographic data is considered to be adequate for Resource estimation purposes.</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>Drill sections run parallel to the mineralisation at spacing between 80-100m. Drill holes on section are generally 50m apart. Due to local topographical constraints this spacing is sometimes not achievable.</li> <li>The data spacing and distribution is considered adequate to establish the degree of geological and grade continuity appropriate for the Mineral Resource estimation and classifications applied under the JORC 2012 Code.</li> <li>No sample compositing has been applied.</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li>The orientation of the mineralisation is well understood and drill holes were designed to intersect the mineralisation at an appropriate angle. This is demonstrated in the Project sections (see Figures 4-6).</li> <li>All significant intersections have been reported as downhole widths and not true widths.</li> <li>The trenches by nature are oblique to the mineralisation angle and as a result return accentuated mineralised intervals.</li> <li>No drilling orientation and sampling bias has been recognized at this time and is not considered to have introduced a sampling bias.</li> </ul>
<b>Sample security</b>	<ul style="list-style-type: none"> <li>All samples are placed in pre-numbered plastic samples bags and then a sample ticket is placed within the bag as a check. Bags are sealed and placed in larger bags (10 samples per bag) and then transported by courier to ALS or Intertek labs in Belo Horizonte. Sample request forms are sent with the samples and via email to the labs. Samples are checked at the lab and a work order is generated by the lab which is checked against the sample request.</li> <li>All remnant diamond core and RC chip trays are stored at the Jardim Canada, Nova Lima-MG Centaurus' core shed.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>As part of Resource estimation process drill hole data was independently reviewed by Volodymyr Myadzel, Senior Resource Geologist at BNA Mining Solutions and Project Competent Person. The report finds the sample techniques and data collection and management to be in line with current industry standards.</li> <li>The Jambreiro Project has been subject to an Independent Engineers review by Coffey Mining (Australia/Brazil) and NCL (Chile/Brazil). No critical issues were revealed during the reviews.</li> </ul>

# AUSTRALIAN SECURITIES EXCHANGE ANNOUNCEMENT & MEDIA RELEASE



## APPENDIX A – JORC Code, 2012 Edition – Table 1 Compliance Statement for Jambreiro Project

### SECTION 2 REPORTING OF EXPLORATION RESULTS

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

Criteria	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <li>The Jambreiro Project is located wholly within the following Mining Leases: 831.649/2004, 833.409/2007 and 834.106/2010. The Mining Leases are 100% Centaurus owned.</li> <li>The tenements are part of the Cenibra-Centaurus Agreement. Centaurus will pay a vendor royalty of 0.85% of gross revenue.</li> <li>All mining projects in Brazil are subject to a government royalty of 2% of revenue (less taxes and logistics costs). Additionally, a landowner royalty of 50% of the CFEM royalty is to be paid to Cenibra.</li> <li>The Project is not located within national or state wilderness or historical parks.</li> <li>At the time of this report the three mining leases are in good standing. There are not any known impediments to obtaining a licence to operate in the area.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>Cenibra conducted geological mapping and a small diamond drill program in 2007 to satisfy Brazilian Mining Agency requirements.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>The Jambreiro Project is located within the Guanhaes Group of the Mantiqueira Complex. The region is dominated by structurally complex meta-volcanic and meta-sedimentary sequences with duplex fault systems and folding ranging from micro folding in outcrop to large scale regional deformation.</li> <li>The Itabirite units are part of an iron formation including ferruginous quartzites, quartzites, amphibolitic and/or dolomitic itabirites and schists hosted within a meta-sedimentary sequence. This sequence is emplaced in regional gneissic basement.</li> <li>The Itabirite mineralisation comprises concentrations of medium - coarse grained friable, semi-compact and compact material that have undergone enrichment. The mineralisation is composed of quartz, hematite, magnetite, martite with minor goethite, limonite, amphibole (Grunerite), Mica (muscovite) and clay minerals.</li> <li>Itabirite thicknesses vary from 10m to up to 100m generally dipping 45-70° to the W-SW. The combined strike length of the mapped mineralisation is around 3,000m. Itabirite has been intersected at depths of 240m with friable itabirite intersected to 80m.</li> </ul>
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li>A total of 242 holes for 18,983m have been completed on the Jambreiro Project. Centaurus completed 52 diamond holes for a total of 5,641m and 183 RC holes for a total of 12,977m. There are 7 historical diamond drill holes completed by Cenibra for a total of 365m.</li> <li>This report does not include any new drill hole results.</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>Continuous sample intervals are calculated via weighted average using a 20% Fe cut-off grade with 3m minimum intercept width. Intercepts are also separated by lithology where appropriate.</li> <li>There is no reporting of high-grade intervals.</li> <li>There are no metal equivalents reported.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li>The orientation of the mineralisation is well understood generally dipping 45-70° to the W-SW and drill holes were designed to intersect the mineralisation at an appropriate angle representing the true widths. Where the true width is not intersected it is stated and also demonstrated in cross sectional diagrams.</li> <li>The trenches are generally planned to be excavated perpendicular to the mineralisation strike foliation angle and as a result return approximately true width of the mineralised interval.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>Refer to Figures 1-6.</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>Not applicable to this report. All figures previously reported.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li>A number of metallurgical tests have been carried out on the Jambreiro Project mineralisation. See ASX announcement on 6 August 2012 for full details of the Jambreiro Pilot Plant Results.</li> <li>The Company historically completed a 2Mtpa Bankable Feasibility Study on the Jambreiro Project in 2012. See ASX announcement on 5 November 2012 for full details.</li> <li>Subsequently, the Company completed a JORC 2012 Resource update in 2014. See ASX announcement on 30 July 2014 for full details.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <li>There is no current plan for additional drilling on the Jambreiro Project.</li> </ul>

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## APPENDIX A – JORC Code, 2012 Edition – Table 1 Compliance Statement for Jambreiro Project

### SECTION 3 ESTIMATION AND REPORTING OF MINERAL RESOURCES

(Criteria listed in Section 1, and where relevant in Section 2, also apply to this section).

Criteria	Commentary
<b>Database integrity</b>	<ul style="list-style-type: none"> <li>All data is entered into excel data sheets and project geologists validate the data entry.</li> <li>Assay files are sent electronically from the labs. These files are then imported directly into the database by a geologist. The project geologist is responsible for up-dating the database and generation of validation reports.</li> <li>The independent resource geologist responsible for the Resource estimation ran additional validation checks on the database before completing the estimation. There were no critical database issues at the time of the final Resource estimation.</li> </ul>
<b>Site visits</b>	<ul style="list-style-type: none"> <li>The Competent Person for this report, Volodymyr Myadzel, Senior Resource Geologist of BNA Mining Solutions at the time the Mineral Resource estimate was completed, visited the site in December 2010 to complete an external audit of Centaurus' drilling, sampling, QAQC, and logging procedures. No significant issues were revealed during the audit that would be material to the outcomes presented in this Resource estimate.</li> </ul>
<b>Geological interpretation</b>	<ul style="list-style-type: none"> <li>There is good confidence in the geological interpretation of the mineral deposit. The itabirite mineralisation is consistent in grade and geometry both on section and along strike. This has been demonstrated with consistent results from previous infill drilling campaigns.</li> <li>Surface and trench mapping as well as the ground magnetics geophysics were used for the interpretation of mineralisation and stratigraphy where there was no drill hole support.</li> <li>Lithological domaining of the itabirite mineralisation was completed with the aid of geochemical analysis and in some cases petrography. These domains are important in the building of the geo-metallurgical model and determination of metal recoveries.</li> <li>The interpretation of the friable, semi-compact and compact boundaries was derived primarily from geological logging with support from geochemical analysis where appropriate.</li> <li>The Fe grade reduces slightly with depth due to the effect of supergene enrichment near surface.</li> <li>Centaurus Project geologists were responsible for all stratigraphic, structural and mineralisation wireframe interpretations. They were then passed to the independent resource geologist (Competent Person) to generate the block model.</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>With the combination of the Tigre (1,700m), Cruzeiro (1,200m), Galo (1,500m) and Coelho (900m) prospects, the Jambreiro Resource has dimensions of approximately 5,500m of total strike length. The ore body outcrops in most places with a localized thin colluvial cover in places and is open at depth with the deepest mineralisation being intersected at 240m depth. The mineralisation is between 10-100m thick with the average thickness in the main deposit (Tigre) being around 60m.</li> </ul>
<b>Estimation and modelling techniques</b>	<ul style="list-style-type: none"> <li>Itabirite mineralisation was domained according to compactness (Friable, Semi-Compact and Compact) and mineralisation style (Itabirite and Amphibolitic Itabirite). Each geological unit was domained and estimated separately using hard boundaries. Mineralisation was divided into eight domains.</li> <li>The interpretation was developed off vertical sections. Geological data was extrapolated to half the distance between the vertical sections (50m) and 150m in depth from the deepest drill hole. 3D wireframes were built using the Micromine 14.0.6 software. From the wireframes a block model was built and interpolated by Ordinary Kriging (OK) and Inverse Distance Weighting (IDW).</li> <li>Block model extends from 721300mE to 723100mE and 7943700mN to 7946650mN and elevation from 520mRL to 1020 mRL (surface).</li> <li>Ordinary Kriging was used to estimate the standard suite of 12 elements (Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, Mn, TiO<sub>2</sub>, CaO, MgO, K<sub>2</sub>O, Na<sub>2</sub>O, Cr<sub>2</sub>O<sub>3</sub> and FeO) as well as LOI for the D1, D3 and D4 domains while the other five domains were done by IDW2 due to the lower number of samples.</li> <li>Parent Block size is X=50m, Y=50m and Z=10m with Sub Block size of X=5m, Y=5m and Z=2.5m. Average distance of sample spacing for Measured and Indicated is 64m and the search ellipse longest axis is 150m. Search directions and ranges are domain specific and are determined from variogram modelling.</li> <li>All block estimates are based on interpolation into parent block volumes.</li> <li>The Parent Block and Sub Block height of 10m and 2.5m respectively was assumed based on expected bench and flich heights in waste and ore.</li> <li>The Mineral Resource estimate does not include any form of dilution, apart from internal waste which could not be separated out.</li> <li>No assumptions regarding correlation between variables has been made, however, it is observed that there are direct inverse relationships between Fe and SiO<sub>2</sub>.</li> <li>The mineralisation has clear lithological boundaries and has a Gaussian distribution so top cuts are not applied. A lower cut-off of 20% Fe was applied as that appears to be the natural cut off.</li> <li>Standard model and estimation validation was completed using standard visual and statistical methods. Visual comparisons of composite drill data with block data were completed. In addition, comparisons of OK and IDW2/IDW3 models were completed, all with suitable results. Swatch plots have been generated for all relevant elements with respect to depth and strike. Visual validations of grade trends were carried out. No mining has taken place and as such no reconciliation data is available.</li> </ul>
<b>Moisture</b>	<ul style="list-style-type: none"> <li>Tonnage is estimated on an in-situ basis.</li> <li>Moisture measurements were completed as part of the detailed process test work sample regime. An in-situ moisture content of 6% was determined.</li> <li>Due to the significant topographical relief, the water table depth is quite variable but on average sits 50m below the surface. Approximately 60% of the Resource is located below the water table, most of which is compact mineralisation that is not considered in the Reserve.</li> </ul>
<b>Cut-off parameters</b>	<ul style="list-style-type: none"> <li>The cut-off grade for the itabirite mineralisation is set at &gt;20% Fe, which appears to be a natural grade boundary between itabirite and ferruginous quartzite. Additional process test work carried out on &lt;20% Fe material demonstrates it is up-gradable to saleable product but at low mass recoveries.</li> </ul>

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Criteria	Commentary
	<ul style="list-style-type: none"> <li>No cut-off grades were applied on other contaminant elements.</li> </ul>
<b>Mining factors or assumptions</b>	<ul style="list-style-type: none"> <li>Mining is assumed to be carried out via open pit method using conventional excavator methods with ore being mined on 5m benches and waste on 10m benches. Haulage distance will be relatively short, less than 2km. Small off-road trucks of 30-45t will be used. This is a common mining fleet configuration in Brazil.</li> <li>Minimal drill and blast will be required in the friable mineralised zone. For Reserve estimates it is assumed 20% of semi-compact material will require drill and blast.</li> <li>For Reserve estimation a minimum mining face of 30m was applied. Due to the visual nature of the ore waste contacts a dilution factor of 2% and a mine recovery of 98% was applied. These are in line with industry standards for itabirite ore in Brazil.</li> </ul>
<b>Metallurgical factors or assumptions</b>	<ul style="list-style-type: none"> <li>Jambreiro is a low grade itabirite deposit and as such to produce a saleable iron ore concentrate the ore must pass through a number of process stages.</li> <li>The Jambreiro process route is designed to treat the friable itabirite ore which is the basis of the Reserve estimate. The process route includes gravity and magnetic separation. For the purpose of the Reserve estimation an average mass recovery of 41% was used. This is in line with bench pilot scale test work, see ASX announcement on 6 August 2012 for full details of the Jambreiro Pilot Plant Results.</li> </ul>
<b>Environmental factors or assumptions</b>	<ul style="list-style-type: none"> <li>Both the mine waste and the plant rejects have been studied for potential acid production and both were found to be inert.</li> <li>Extensive study in the use of thickeners and centrifuges to eliminate the requirements of a tailings dam have been undertaken and only a water dam will be necessary to accumulate water to supply the plant during the dry season.</li> <li>The Jambreiro Project has been fully licensed by the Minas Gerais State Environmental agency (SUPRAM).</li> </ul>
<b>Bulk density</b>	<ul style="list-style-type: none"> <li>Wet bulk density measurements were completed via three methods: in situ dimensional (15 measurements), drill core dimensional calculation by the "template method" (194), by the "sand replacement PVC method" (72) and water displacement "Archimedes Method" (491). Measurements were taken every 5m in the mineralisation and every 10m in waste. Dimensional calculation was completed for friable material using a 20cm steel mould cutting the whole core which was then weighed. Water displacement was carried out on 10-20cm whole core compact samples. The sand replacement PVC method was done using a PVC cylinder with known volume and using the weight to calculate each sample density.</li> <li>The resulting wet bulk density for the mineralised zones was 2.35t/m<sup>3</sup> for friable, 2.66 t/m<sup>3</sup> for semi-compact and 3.08 t/m<sup>3</sup> for compact.</li> <li>The results are considered to be conservative when benchmarked against similar low grade itabirite deposits in the Iron Quadrangle, Brazil.</li> </ul>
<b>Classification</b>	<ul style="list-style-type: none"> <li>Resources have been classified by the independent Competent Person in accordance with the JORC Code 2012 Edition.</li> <li>Mineral Resources have been classified by the Competent Person in Measured, Indicated and Inferred categories based on diamond and RC drill hole spacing (100m x 50m), geological interpretation confidence, grade continuity, QAQC and geological data confidence and geo-statistical quality. Mineral Resource classification has appropriately taken into account the data spacing, distribution, continuity, reliability, quality and quantity of data.</li> <li>The input data is comprehensive in its coverage of the mineralisation and does not misrepresent in-situ mineralisation.</li> <li>The definition of mineralised zones is based on a high level of geological understanding producing a robust model of mineralised domains.</li> <li>The results of the validation of the block model show good correlation of the input data to the estimated grades.</li> <li>The geological model and Mineral Resource estimation appropriately reflect the Competent Person's view of the deposit and appropriate account has been taken of all relevant factors.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>Centaurus has undertaken an internal review of the Mineral Resource estimate and is satisfied the estimation is valid and of sufficient confidence to support Measured, Indicated and Inferred classifications.</li> <li>As part of the Reserve estimation process the Resource estimate was internally reviewed by BNA Mining Solutions. The report finds the sample techniques and data collection and management to be in line with current industry standards.</li> <li>The Jambreiro Project has been subject to an Independent Engineers review by Coffey Mining (Australia/Brazil) and NCL (Chile/Brazil). No critical issues were revealed during the reviews that was material to the outcome of the Resource estimate.</li> </ul>
<b>Discussion of relative accuracy/ confidence</b>	<ul style="list-style-type: none"> <li>The confidence in this Resource estimate has been deemed appropriate for medium to long term planning and mine design. It is not sufficient for shorter term planning and mine scheduling.</li> <li>The Jambreiro Resource estimate is sufficient for Feasibility level study purposes. This statement relates to global estimates of tonnage and grade.</li> <li>Operational management of the mine geology and engineering will be important in the control of the local variability and consequently the short term mine planning.</li> <li>There has been no production from the Jambreiro Project.</li> </ul>

# AUSTRALIAN SECURITIES EXCHANGE ANNOUNCEMENT & MEDIA RELEASE



## APPENDIX A – JORC Code, 2012 Edition – Table 1 Compliance Statement for Jambreiro Project SECTION 4 - ESTIMATION AND REPORTING OF ORE RESERVES (Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	Commentary																
<b>Mineral Resource estimate for conversion to Ore Reserves</b>	<ul style="list-style-type: none"> <li>The Mineral Resource estimate on which this Ore Reserve estimate has been based was prepared by Volodymyr Myadzel, Senior Resource Geologist for BNA Mining Solutions. Refer to ASX announcement on 30 July 2014 for full details of the Mineral Resource estimate.</li> <li>The Mineral Resource estimates are not in addition to the Ore Reserve estimate. The Ore Reserve estimate is a sub-set of the Mineral Resource estimate.</li> </ul>																
<b>Site visits</b>	<ul style="list-style-type: none"> <li>The Competent Person is Mr Beck Nader, Director of BNA Mining Solutions. No site visit was undertaken as presently there is no existing mine workings to examine.</li> <li>Mr Nader relied on observations made by Mr Myadzel who visited the site in December 2010. As no material change happened to the project since that time, no new visit was made.</li> </ul>																
<b>Study status</b>	<ul style="list-style-type: none"> <li>The Ore Reserve estimation modifying factors were derived as part of the Project Pre-Feasibility that comprises environmental, mineral processing, geotechnical, hydrogeological, mine method, infrastructure, market and economic model information.</li> <li>Any material classified as an Inferred Mineral Resource was not included in any of the Pre-Feasibility study Ore Reserves calculations.</li> <li>The PFS demonstrated that the mine plan is technically achievable and economically viable. All material modifying factors were considered.</li> </ul>																
<b>Cut-off parameters</b>	<ul style="list-style-type: none"> <li>The mineral resources are reported within a conceptual pit shell at a Fe cut-off grade of 20%, which takes into account extraction scenarios and mineral processing recovery.</li> </ul>																
<b>Mining factors or assumptions</b>	<ul style="list-style-type: none"> <li>The ultimate pit was generated using Micromine software that applies the Lerchs-Grossmann algorithm for the pit optimization process. The mine planning – sequencing – and pit design works were developed using the same software.</li> <li>The optimization cost parameters were derived from the current Pre-Feasibility study work and are outlined in the operation cost item below.</li> <li>The proposed mining method for the Jambreiro Project is an open pit mine. There are minimal pre-strip requirements and site access preparations are minimal and will be carried out by a local mining contractor.</li> <li>The ore will feed a conventional beneficiation plant and the waste will be stored in appropriate waste dump locations. Filtered tailings are to be filtered and blended with mine waste.</li> <li>Measured and Indicated Mineral Resource material blocks were assigned revenue values to drive the pit optimization shell.</li> <li>Only Friable material was considered for the Reserve estimate. Inferred Mineral Resource was not considered for pit optimization purposes.</li> <li>Ore Reserve tables are stated in wet metric tonnes (wmt). The moisture has been estimated at 5%.</li> <li>A mining dilution factor of 2% has been applied for the deposit. The ore contacts are sharp and visual and the small mining equipment will allow for selective mining.</li> <li>A mining recovery factor of 98% has been utilised. Similarly to mine dilution, the configuration of the deposit and the selected mining equipment will allow good mining recoveries to be achieved.</li> <li>The mine parameters were set to accommodate the selected 40t trucks and are set out below. Free digging is expected in all friable itabirite and waste and as such the mining will be performed on nominal 5 metres benches, with final bench heights of 10 metres</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #FFD700;">Parameter</th> <th style="background-color: #FFD700;">Value</th> </tr> </thead> <tbody> <tr> <td>Berm Width (m)</td> <td style="text-align: center;">6</td> </tr> <tr> <td>Bench Height (m)</td> <td style="text-align: center;">10</td> </tr> <tr> <td>Ramp Width (m)</td> <td style="text-align: center;">12</td> </tr> <tr> <td>Ramp Width – Inferior Benches (m)</td> <td style="text-align: center;">8</td> </tr> <tr> <td>Ramp Gradient (%)</td> <td style="text-align: center;">10</td> </tr> <tr> <td>Mining dilution (%)</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Mining recovery (%)</td> <td style="text-align: center;">98</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Ten geo-mechanical zones were delineated, and their stability conditions were analysed separately. These angles are conservative and based on a study by geotechnical specialists Walm Engenharia e Tecnologia Ambiental Ltda.</li> </ul>	Parameter	Value	Berm Width (m)	6	Bench Height (m)	10	Ramp Width (m)	12	Ramp Width – Inferior Benches (m)	8	Ramp Gradient (%)	10	Mining dilution (%)	2	Mining recovery (%)	98
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Criteria	Commentary				
		<b>Sector</b>	<b>Base - Relative Level (m)</b>	<b>Batter Angle (°)</b>	<b>Interramp slope angles (°)</b>
		Sector 1 (HW)	830	38	55.8
			775	50	76.6
		Sector 2 (FW)	830	42	63.0
			775	50	76.6
		Sector 3 (HW)	900	38	55.8
			825	50	76.6
		Sector 4 (FW)	975	42	63.0
			825	50	76.6
		Sector 5 (HW)	950	45	68.2
			875	50	76.6
		Sector 6 (FW)	975	42	63.0
			875	50	76.6
		Sector 7 (HW)	900	45	68.2
			860	50	76.6
		Sector 8 (FW)	925	42	63.0
			860	50	76.6
		Sector 9 (HW)	860	45	68.2
			840	50	76.6
		Sector 10 (FW)	875	42	63.0
			840	50	76.6
<b>Metallurgical factors or assumptions</b>	<ul style="list-style-type: none"> <li>The Jambreiro process route is designed to treat the friable itabirite ore which is the basis of the Reserve estimate. The process route includes gravity and magnetic separation. For the purpose of the Reserve estimation an average metal recovery of 40% was used which is in line with bench pilot scale testwork, see ASX announcement on 6 August 2012 for full details of the Jambreiro Pilot Plant Results.</li> <li>This wet beneficiation process for friable itabirite ore in the Brazilian mining industry is common well tested technology.</li> <li>Circa 200 bench scale tests were carried out at Fundação Gorceix, UFMG, Metso and Outotec. Over 40 tonnes of Jambreiro ore has been subjected to pilot plant testing at Fundação Gorceix, a leading industry recognized test facility in Minas Gerais. Mr Peter Freund, former Operations Director and Country Manager for the Company, who is a Fellow of AUSIMM and considered to have the relevant experience, reviewed the results of the pilot plant testwork.</li> </ul>				
<b>Environmental</b>	<ul style="list-style-type: none"> <li>The Jambreiro Project is fully licensed, which means there is no additional license needed from any authority to commence project construction and commissioning. The main licenses and their corresponding validity are as follows:                             <ul style="list-style-type: none"> <li>3Mtpa Installation licence (LI) – currently suspended on request by Centaurus (to be lifted)</li> <li>Vegetation clearing (ASV) – currently suspended on request by Centaurus (to be lifted)</li> <li>IBAMA approval for Atlantic vegetation clearing – valid</li> <li>8 water permit applications.</li> </ul> </li> <li>The licenses mentioned above encompass all project facilities necessary to operate at a rate of up to 3Mtpa.</li> </ul>				
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>The Jambreiro Project is located 10km from sealed highways and 160-300 km from potential customers (integrated steel mills and rail head loading points to access export market).</li> <li>Power for the proposed plant and project area will be provided by diesel generators and a diesel storage facility will feed the mining fleet.</li> <li>Water catchment is readily available in the project area.</li> <li>The project is located 22km from the regional city of Guanhães which has a population of 70,000.</li> </ul>				
<b>Revenue factors</b>	<ul style="list-style-type: none"> <li>The average mine gate sales price used in the PFS was US\$41/tonne (R\$152/t), based on a 62% Fe CFR Price of US\$75/tonne (40% less than current prices in the international market).</li> <li>The pit shell selected from the optimisation process used a conservative revenue factor of R\$66/wmt (less than 50% of the project pricing assumption).</li> <li>Historically Centaurus has engaged CRU for product pricing guidance. Pricing was further benchmarked against current operations. Brazilian domestic pricing is specific to product type and quality within the region.</li> </ul>				
<b>Costs</b>	<ul style="list-style-type: none"> <li>Process plant and other capital costs were developed by Centaurus using supplier information for the PFS study. No Capital costs were included for the pit optimisation process.</li> <li>Plant Operating costs were obtained from current vendor and contractor quotes derived in the PFS and/or adjusted costs from the historical 2012 BFS study.</li> <li>Mining costs were obtained from current mining contractor proposals.</li> <li>The Project assumes mine gate sales as is the custom in the Brazilian market.</li> <li>The tenement is part of the Cenibra-Centaurus Agreement. Centaurus will pay a vendor royalty of 0.85% of gross revenue on any product sold from the tenement.</li> <li>All iron ore projects in Brazil are subject to the CFEM royalty, a government royalty of 3.5% of revenue (less taxes and logistics costs).</li> <li>A State levy known as the TFRM fee will be payable at a rate of approximately A\$1.44 per tonne of product sold.</li> </ul>				

# AUSTRALIAN SECURITIES EXCHANGE ANNOUNCEMENT & MEDIA RELEASE



Criteria	Commentary														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #FFD700;">Operating Costs</th> <th style="background-color: #FFD700;">A\$ per Tonne Product</th> </tr> </thead> <tbody> <tr> <td>Mining</td> <td style="text-align: right;">9.7</td> </tr> <tr> <td>Processing &amp; Beneficiation</td> <td style="text-align: right;">13.3</td> </tr> <tr> <td>Administration</td> <td style="text-align: right;">2.1</td> </tr> <tr> <td><b>SITE OPERATING CASH COST (C1)</b></td> <td style="text-align: right;"><b>25.1</b></td> </tr> <tr> <td>Royalties – Government and Landowner</td> <td style="text-align: right;">3.9</td> </tr> <tr> <td><b>TOTAL OPERATING CASH COSTS (C1 + Royalties)</b></td> <td style="text-align: right;"><b>29.0</b></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>The foreign exchange assumptions for PFS are fixed over the period of the mine life. Forecasts of AUD/USD - 0.70, AUD/BRL - 2.60 and USD/BRL – 3.7 have been used.</li> </ul>	Operating Costs	A\$ per Tonne Product	Mining	9.7	Processing & Beneficiation	13.3	Administration	2.1	<b>SITE OPERATING CASH COST (C1)</b>	<b>25.1</b>	Royalties – Government and Landowner	3.9	<b>TOTAL OPERATING CASH COSTS (C1 + Royalties)</b>	<b>29.0</b>
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<b>Market assessment</b>	<ul style="list-style-type: none"> <li>Jambreiro is positioned to supply into the Brazilian domestic market or to export options at local rail heads.</li> <li>Centaurus has been in negotiations with integrated steel mills and international trading groups for the off take of Jambreiro products.</li> <li>Bulk samples of Jambreiro iron concentrate has been sent to local steel mills and tested for its sintering suitability. It was determined suitable as a sinter feed blend.</li> </ul>														
<b>Economic</b>	<ul style="list-style-type: none"> <li>The Project delivers a post-tax NPV<sub>8</sub> of A\$114.9 million and an IRR of 32% using a conservative LOM mine gate sales price of US\$41/t off a reference price for 62% ore of US\$75/t. The key financial outcomes are set out in the Table below: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #FFD700;">Key Financial Outcomes</th> <th style="background-color: #FFD700;">Total A\$</th> </tr> </thead> <tbody> <tr> <td>Total Revenue</td> <td style="text-align: right;">1,052 million</td> </tr> <tr> <td>EBITDA</td> <td style="text-align: right;">533 million</td> </tr> <tr> <td>Capital Costs</td> <td style="text-align: right;">59.8 million</td> </tr> <tr> <td>NPV<sub>8</sub> Pre- tax</td> <td style="text-align: right;">190.2 million</td> </tr> <tr> <td>NPV<sub>8</sub> Post- tax</td> <td style="text-align: right;">114.9 million</td> </tr> <tr> <td>Post-Tax IRR</td> <td style="text-align: right;">32%</td> </tr> </tbody> </table> </li> <li>Sensitivity analysis of +20% and -20% of key variables were carried out, with NPV ranging from A\$55.3M to A\$172.0M. The key factors with the greatest impact on Project economics are product prices and operating costs.</li> <li>Inputs to the economic analysis include Modifying Factors as described above.</li> <li>The PFS iron ore price used represents a discount of approximately 40% compared to current spot prices.</li> </ul>	Key Financial Outcomes	Total A\$	Total Revenue	1,052 million	EBITDA	533 million	Capital Costs	59.8 million	NPV <sub>8</sub> Pre- tax	190.2 million	NPV <sub>8</sub> Post- tax	114.9 million	Post-Tax IRR	32%
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<b>Social</b>	<ul style="list-style-type: none"> <li>Centaurus maintains strong working relationships with all stakeholders in the vicinity of the Project, including the landowners in the region.</li> <li>The Company has been operating in the region since 2010.</li> </ul>														
<b>Other</b>	<ul style="list-style-type: none"> <li>The area has no recorded history of earthquakes or natural disasters.</li> <li>The Jambreiro Iron Ore Project comprises three granted Mining Leases (MLs). The three MLs cover an aggregate area of 3,270 Ha. The Resource base is located on MLs: 831.649/2004, 833.409/2007 and 834.106/2010.</li> <li>The Installation Licence (LI) for the Jambreiro Project was issued in March 2013 and currently is in suspension at the request of the Company. The LI may be extended via an application to the state environmental agency (Supram). The Operational Licence (LO) will be granted once the plant is installed in line with the LI requirements.</li> </ul>														
<b>Classification</b>	<ul style="list-style-type: none"> <li>BNA Mining Solutions has set a Proved and Probable classification for the Ore Reserves based on Measured and Indicated Mineral Resource classifications.</li> <li>BNA Mining Solutions and Centaurus are satisfied that the economics of the Project are robust.</li> <li>BNA Mining Solutions and Centaurus are satisfied that there are no material impediments preventing the Project's progress from study to operations.</li> <li>The Ore Reserves were classified following the guidance of JORC Code 2012 and shown in Table 1.</li> </ul>														
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>The historical Reserve Estimate for the Jambreiro Project was subject to Independent Engineers reviews by Coffey Mining (Australia/Brazil) and NCL (Chile/Brazil). No critical issues were revealed during the reviews. No new audit or independent review of the 2019 Ore Reserve was undertaken given the robustness of the original Ore Reserve.</li> </ul>														
<b>Discussion of relative accuracy/ confidence</b>	<ul style="list-style-type: none"> <li>The accuracy and confidence levels of the study are suitable for the reporting of Ore Reserves in a Pre-Feasibility Study as defined in the JORC Code 2012. There is no project production data for benchmarking of the Ore Reserve estimate.</li> <li>The pit optimisation was run on the costs derived during the PFS and used in the economic model. The pit chosen used a Fe price less than 50% of the Project price. This represents a very conservative pit selection.</li> <li>The statement relates to global estimates. Factors that may affect global grade and tonnage estimates may include: geological interpretation, density assumptions, mining dilution and recovery and process performance. A detailed grade control plan will be implemented as part of project readiness to control these factors.</li> <li>Other work required from a mining perspective that will be completed as a part of the Feasibility Study includes, but is not limited to: filtered tailings classification and study for in-pit back fill of this material and more detailed mine and waste sequencing to further optimize mining costs and minimize surface disturbance area.</li> </ul>														