Tombador Iron Limited

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ABN: 20 108 958 274 ASX: TI1

Tombador Iron Limited (ASX:TI1) is an Australian company established in October 2020.

The Company owns 100% of the world-class Tombador iron ore project in Bahia State, Brazil.

Tombador commenced, production of high-grade iron ore from its open-cut mining operations in Q2CY 2021.

Non-Executive Directors

Anna Neuling – Chair David Chapman Keith Liddell

Executive Director

Stephen Quantrill

CEO Gabriel Oliva

Company Secretary

Abby Macnish Niven

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MINERAL RESOURCE UPDATE

24 December 2021

Tombador Iron Limited (TI1.ASX, the "Company" or "Tombador") is pleased to advise an updated JORC Mineral Resource Estimate has been completed following the 2020/2021 infill drilling program.

The Mineral Resource is comprised of:

- **8.92Mt of high-grade DSO hematite**, which the Company is currently mining, and
- **39.24Mt of itabirites and talus**, part of which the Company is studying the suitability for beneficiating to high-grade lump product.

A breakdown of the grade, tonnes and classification can be found in the tables 1 to 6 below, which reflect an increase of 12% in the estimated high-grade DSO resources relative to the prior reported resources (of 2nd October 2020). The stated resources do not include 370kt of highgrade ore produced to 31 October 2021.

The successful drilling campaign focused on proving up the existing resource and its classification within the initial mining area.

The orebody remains open to both the north-east and south-east which the Company expects to explore in subsequent drill programs.

The Mineral Resource Estimate was performed by the external consultant group GE21. All resources reported are within the bounds of the Tombador tenement (872.431/2003). The estimate includes an update to all resource types including Hematite, High Phosphorus Hematite, Dolomitic Itabirites, Talus and Siliceous Itabirite which includes Beneficiable resources.

The Company will announce a maiden reserve in Q1 CY 2022 as part of the life-of-mine plan.

Tombador Iron CEO, Gabriel Oliva noted: "It is pleasing that the results of the recent drilling campaign have confirmed the quality and quantity of the highgrade DSO mineral resource at the Tombador project, with the ore body remaining open to the north-east and south-east. It is also pleasing that the drilling campaign identified talus and itabirites resources that have the potential to be beneficiated into high grade ore, and which is the subject of our current beneficiation study".

High-Grade DSO Hematite Mineral Resource Tables

Classification	Tonnes (Mt)	Fe (%)	SiO2 (%)	Al2O3 (%)	P (%)
Measured	3.98	64.60	4.46	0.61	0.069
Indicated	3.02	65.77	3.76	0.63	0.078
Measured & Indicated	7.00	65.11	4.16	0.62	0.073
Inferred	1.62	61.92	9.33	0.64	0.086
Total	8.62	64.51	5.13	0.63	0.075

Table 1 - Hematite Mineral Resource

Table 2 - High Phosphorus Hematite Mineral Resource

Classification	Tonnes (Mt)	Fe (%)	\$iO₂ (%)	Al ₂ O ₃ (%)	P (%)
Measured	0.29	60.70	8.46	1.17	0.327
Indicated	0.02	56.41	13.38	1.27	0.308
Total	0.30	60.45	8.74	1.17	0.326

Assumptions for Table 1 & 2.

- 1. Hematite and High Phosphorus Hematite resources use a cut-off grade of 55% Fe.
- 2. All figures have been rounded to the relative accuracy of the estimates. Summed amounts may not add due to rounding

Talus and Itabirites Mineral Resource Tables

Tombador is currently studying the amenability of beneficiating talus and itabirites which contain decimetric (10cm) bands of high-grade hematite to produce a high-grade hematite product. This material was logged following the infill drilling and is the basis for the estimate of the Beneficiable Mineral Resource.

Classification	Tonnes (Mt)	Fe (%)	SiO₂ (%)	Al ₂ O ₃ (%)	P (%)
Inferred	2.86	37.97	38.53	1.85	0.017
Total	2.86	37.97	38.53	1.85	0.017

Table 3 - Talus Mineral Resource

Tombador has assigned mineral rights to the itabirites that do not contain decimetric bands of high-grade hematite (60%Fe within the band) for future beneficiation as iron ore concentrate to Colomi Iron. Colomi Iron has agreed to pay Tombador a royalty for iron concentrate produced from the itabirites.

Table 4 - Siliceous Itabirite Mineral Resource

Classification	Tonnes (Mt)	Fe (%)	SiO₂ (%)	Al ₂ O ₃ (%)	P (%)
Measured	1.68	34.94	45.78	1.03	0.044
Indicated	2.07	35.38	47.07	0.91	0.032
Inferred	19.20	37.41	43.86	0.90	0.026
Total	22.96	37.05	44.29	0.91	0.028

Table 5 - Dolomitic Itabirite Mineral Resource

Classification	Tonnes (Mt)	Fe (%)	SiO₂ (%)	Al₂O₃ (%)	P (%)
Measured	2.70	30.84	21.04	0.82	0.036
Indicated	2.26	30.51	27.07	0.96	0.034
Inferred	8.46	31.92	17.35	0.79	0.044
Total	13.42	31.46	19.73	0.82	0.041

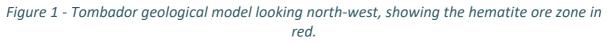
Potential beneficiable itabirite material to produce high grade hematite was logged following the infill drilling and is the basis for the estimate of the Beneficiable Mineral Resource in the Table 6 below. The Beneficiable resource is a subset of the Siliceous Itabirite (ICS) resource.

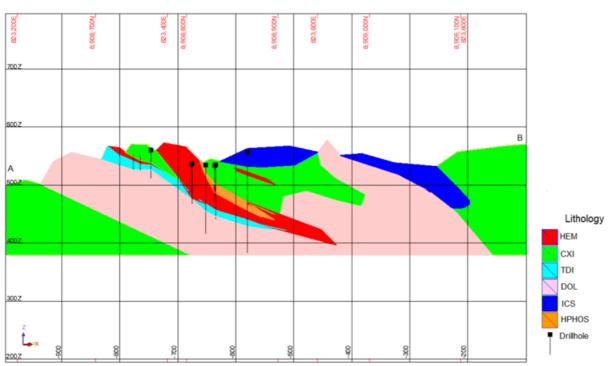
Classification	Tonnes (Mt)	Fe (%)	SiO2 (%)	Al ₂ O ₃ (%)	P (%)
Measured	0.09	37.54	44.45	0.76	0.014
Indicated	0.31	37.99	43.22	0.71	0.017
Inferred	4.00	39.56	41.20	1.05	0.019
Total	4.40	39.41	41.41	1.02	0.019

Table 6 - Beneficiable Mineral Resource

Assumptions for Tables 3, 4, 5 and 6.

- Talus, Siliceous Itabirite, Dolomitic Itabirite and Beneficiable resources use a cut-off grade of 20% Fe
- 2. Beneficiable resource is a subset of the Siliceous Itabirite (ICS) resource.
- 3. All figures have been rounded to the relative accuracy of the estimates. Summed amounts may not add due to rounding





COMPETENT PERSONS STATEMENT

The information in this report that relates to Mineral Resources is based on and fairly represents information and supporting documentation compiled by or compiled under the supervision of Mr Leonardo Rocha who is a Member of the Australian Institute of Geoscientists (AIG 7623). Mr Rocha works for GE21 consultancy group, independent to Tombador Iron Limited. Mr Rocha has sufficient experience relevant to the type of mineralisation and type of deposit under consideration to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code of Reporting Exploration Results, Mineral Resources and Ore Reserves. Mr Rocha consents to the disclosure of information in this announcement in the form and context in which it appears.

ENDS.

Authorised for release by the Board.

About Tombador Iron Ltd

Tombador Iron Ltd owns 100% of the fully permitted Tombador Iron Ore mine located in Bahia Sate Brazil.

Tombador commenced production of premium-grade lump and fines hematite iron ore in May 2021 from a low-capex open-pit mining operation.

Lump ore of Tombador's high quality, which is suitable for Direct Reduced Iron and/or Blast Furnace steelmakers, is in scarce supply globally. Offtake marketer Trafigura will purchase 100% of the lump and fines product which Tombador sells into the international export market. Potential customers from the Brazilian steel industry have also indicated interest in Tombador's ore.

The company's board of directors is focussed on rapidly ramping up production at the Tombador Project to achieve the potential of the operations and to return dividends to shareholders.





JORC Code (2012 Edition) Table 1



JORC Code, 2012 Edition – Table 1 report template TOMBADOR PROJECT – RESOURCE ESTIMATE

ANM Tenement No.: 872.431/2003

Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	 Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. 	 Samples were taken from diamond drillhole core. All drilled material was cored. No material was discarded. A drilling program was undertaken by Vale between 2006 to 2008. A more recent drilling program was executed by Tombador Iron Mineração ("TIM") between November 2020 and May 2021. Core logging and sampling was performed by GE21 Mineral Consultants ("GE21") in 2020 and 2021. Mineralization intervals chosen for splitting of the diamond drilling core was based on geological core description during drill core logging. Recording and measuring drill hole depths and core recoveries were performed throughout the drilling activities followed standard industry practices. All diamond drilling was performed using HQ size diameter core. Core samples were sawn in half or quarters before selection for analysis. For the Vale drill program, half of the core was sent for chemical analysis and the remaining half was boxed in core trays. For the TIM drilling program, ¼ of the core was sent for chemical analysis and the remaining 34 was boxed in core trays and stored in the core shed. Sampling was planned and supervised by the project geologists and care was taken to avoid any contamination between neighboring samples.
	• Aspects of the determination of mineralization that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold	• Sample collection for chemical analysis: For the Vale drill program, samples containing mineralization from diamond drilling cores were collected targeting a 10m interval, (with a minimum 5m and maximum 15m interval) and obeying lithological and weathering contacts. To ensure all mineralized zones were analyzed, 2m of core of the host rock above and below the mineralized intervals was collected and assayed. All drilling was diamond core drilling. Drill core was logged for lithology, structure and magnetism. Drill core samples were sawn in half using a diamond saw. Mineralized samples were prepared for granulo-chemical analysis due to the existence of hematite with potential to form lump iron ore product (as shown in the diagram below).



Criteria	JORC Code explanation	Commentary
	that has inherent sampling problems. Unusual commodities or mineralization types (e.g. submarine nodules) may warrant disclosure of detailed information.	One half of the drill core was sent for granulo-chemical analysis to the assay laboratory SGS Geosol – Vespasiano-MG. The remaining half of the drill core was boxed in core trays and stored in the core shed. Diamond Drill Hole - Bicuda Deposit
		Sterile Depth Sampl No. Analysis 0re 110.00 m (*) Whole rock - Host 0re 108.15 m (*) Whole rock - Ore 104.65 m (*) Whole rock - Host 103.00 m Whole rock - Host
		Sterile 85.00 m
		85.00 m Ø Whole rock - Host 82.70 m Ø Granoluchemistry - Ore 70.00 m Ø Granoluchemistry - Ore 60.00 m Ø Granoluchemistry - Ore 60.00 m Ø Granoluchemistry - Ore 90 Granoluchemistry - Ore Ø Granoluchemistry - Ore 91 Ø Ø Granoluchemistry - Ore 92 Ø Ø Ø 93 Ø Ø Ø 94 Ø Ø Ø 95 Ø Ø Ø 96 Ø Ø Ø 97 Ø Ø Ø 98 Ø Ø Ø 99 Ø Ø Ø 90 Ø
		Sterile
		 Each 10m composite sample (approximate 20 - 30kg) was metallurgically tested using granulo-chemical analysis which employs the following method. Coarse crushing and separation into four size fractions as follows: 8mm to 31.5mm, 1mm to 8mm, 0.15mm to



Criteria	JORC Code explanation	Commentary
		 1mm, < 0.15mm. After weighing, each interval was crushed, pulverized, mixed, split and assayed by: X-Ray fluorescence for the following elements and oxides: Fe, SiO₂, P, Al₂O₃, Mn, TiO₂, MgO, CaO, K₂O, Na₂O₃ and Cr₂O₃; Volumetric analysis using potassium dichromate for FeO; Loss on Ignition (LOI) at 1000°C
		The assays and weights of each size fraction were used to calculate a weighted average grade for the sample interval.
		. Cranulo-chemical assay sample preparation flow chart



Criteria	JORC Code explanation	Commentary
		 For samples less than 5 metres a simple whole rock analysis was used. All of the Tombador deposit drillholes were HQ sized diamond drill holes. The TIM drilling program comprised 41 diamond drillholes, totaling 2,662m. All were within the tenement boundary. This drilling is additional to the earlier Vale drilling program. Diamond drill holes were undertaken in HQ size (6.35cm) diameter triple tube. Mineralized samples from ¼ diamond core were collected targeting approximate 1m intervals, (with a minimum 0.75m and maximum 1.25m interval) and obeying lithological and weathering contacts. To ensure all mineralized zones were analyzed, 2m of core of the host rock above and below the mineralized intervals was collected and assayed.
Drilling techniques	• Drill type (e.g. core, reverse circulation, open- hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	 All diamond drill holes were HQ size core (6.35cm diameter). Triple tube core barrels were used to maximize core recoveries. All but 3 of the TIM drill program drillholes were vertical. Dip and azimuth readings of inclined holes were measured using a Maxibor tool every three metres downhole. There are 78 diamond drill holes in the Tombador deposit area. Of these, 68 are within tenement 872.431/2003.
Drill sample recovery	 Method of recording and assessing core and chip sample recoveries and results assessed. 	• The diamond drilling recovery procedure consisted of verifying drill string advance and recoveries recorded in the drill core trays and drilling logs. Verification was undertaken by measurement using tape measure of the drill core in the core trays.
	 Measures taken to maximise sample recovery and ensure representative nature of the samples. 	• Core recovery values were within acceptable limits for Vale drilling program. The first 4 drillholes in the TIM drilling program had sample recoveries of approximately 65%. Following adjustments to the drilling rig penetration rate the sample recoveries were improved with an overall recovery rate of 80% being achieved.
	• Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	 No relation between grade and sample recovery was detected.



Criteria	JORC Code explanation	Commentary
Logging	 Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. 	 Geotechnical logging was performed on all diamond drill holes where they were classified by geotechnical parameters W (degree of change weathering), R (degree of resistance), spacing of fractures and RQD with degree of detail to one metre. The author considers that the level of detail is sufficient for the support of Mineral Resource Estimation.
	• Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	 Lithological logging was of a qualitative nature. The lithology was reclassified following chemical analysis results and recorded in a MS Access database. Core was photographed prior to logging. Geological logging comprised description of weathering levels, mineralogical lithological and structural data, in all holes with degree of detail to one metre.
	 The total length and percentage of the relevant intersections logged. 	All drillholes were fully logged.
Sub-sampling techniques and sample preparation	 If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique. Quality control procedures adopted for all subsampling stages to maximise representivity of samples. Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field. duplicate/second-half sampling. Whether sample sizes are appropriate to the grain size of the material being sampled. 	 For the Vale and TIM drilling programs, collected drill core samples were sawn in half with half (Vale) or ¼ (TIM) of the drill core sent for chemical analysis and the remaining drill core boxed in core trays for storage in the core shed. The sampling was planned by geologists and care was taken to avoid any contamination between neighboring samples. Total Rock Analysis For the Vale drilling program, the physical preparation of the drilling samples was performed at the ALS Chemex Laboratory, Vespasiano – MG. For the TIM drilling program, the physical preparation of the drilling samples was performed at the SGS Geosol Laboratory, Vespasiano – MG. For the Vale drilling program, the physical preparation of the drilling program, the physical preparation of the drilling samples was performed at the SGS Geosol Laboratory, Vespasiano – MG. For the Vale drilling program, the procedure included drying, primary crushing P95%<4mm, collection of 1/8 of the sample, grinding P95 % < 0.105mm and final division with collection of one sample for whole chemical assay. For the TIM drilling program the procedure included drying, primary crushing P95%<3 mm, collection of ½ of the sample, grinding P95 % < 0.105mm and final division with collection of one sample for whole chemical assay. Drill hole sample sizes, though different in each drill program, were considered as appropriate by GE21. GE21 considers the sampling protocols conducted in both drill programs to be appropriate for resource estimation JORC 2012. GE21 deems the sample sizes appropriate to the grain size of the material being sampled.



Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	• The assaying method is considered the standard for the determination of iron mineralization chemical grades. Chemical analyses were conducted in the laboratory of SGS Geosol, Vespasiano-MG, while checking of 5% of the results were made in the laboratory of ALS Chemex. Sample pulps were assayed by X-Ray fluorescence for the following elements and oxides: Fe, SiO ₂ , P, Al ₂ O ₃ , Mn, TiO ₂ , CaO, MgO, BaO, K ₂ O, Na ₂ O and Cr ₂ O ₃ . The assay technique is considered a global sample geochemical analysis method and a standard technique within the iron ore industry
	• For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	 Handheld XRF tools were used merely as a guide in geological logging of drillhole cores. Sample preparation & assaying was completed within external laboratories The Loss on Ignition (LOI) determination at 1000°C was also completed by SGS Geosol and ALS Chemex.
	 Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established. 	 Quality control tools (standard samples and duplicates) were applied and monitored in chemical analysis performed on SGS Geosol and ALS Chemex laboratories. The quality control was restricted to the elements Al₂O₃, Fe, MgO, P, Mn, SiO₂ and to LOI (Loss on Ignition). The monitored parameters were evaluated in each of the following QAQC tools: Field duplicates, crushing duplicates, pulverized duplicates (internal and independent laboratory), project standard samples, stoichiometry checks, and blank samples. Duplicates quality control results from the Vale drilling program are, in general terms, inside acceptable limits. QAQC control results presented by Tombador (84 preparation blank samples, 42 field duplicates, 84 preparation duplicates and 84 commercial certified reference material samples) were inside acceptable limits.
Verification of sampling and assaying	The verification of significant intersections by either independent or alternative company personnel.	• GE21 approves the methodology applied in both drilling campaigns in the preparation and execution of Tombador Project QAQC Program. GE21 did not have access to the Vale drilling program QAQC data sheet and therefore unable to make an assessment. However, GE21 has been involved with Vale QAQC programs in other projects that used the same methodology and tends to agree with the recommendations of Vale, which concludes it's necessary to improve the QAQC program and some tools, as appropriate standard sample implementation.



Criteria	JORC Code explanation	Commentary
	The use of twinned holes.	 3 twinned holes were executed in the TIM drilling program to validate the previous drilling program in Tombador area. No major discrepancies were found.
	 Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. 	 GE21 approves the methodology applied in both drill programs in the preparation and execution of Tombador Project QAQC Program. According to GE21, results are inside acceptance limits of the mineral industry. Data collection, verification and storage protocols are fully documented for both drilling programs.
	Discuss any adjustment to assay data.	 Adjustment to assay data was neither required nor applied.
Location of data points	 Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. 	 All drillhole collars were topographically surveyed by total station surveying campaign and drillhole landmarks have been properly identified.
	Specification of the grid system used.	SIRGAS2000 Datum for coordinate system.
	Quality and adequacy of topographic control.	No issues were identified by GE21 in the field or in drilling data physical archive.
Data spacing and distribution	 Data spacing for reporting of Exploration Results. 	 The holes were arranged in grid sizes varying from 20 x 20m to 200 x 200m in Tombador deposit. Diamond drillhole samples were produced at average length of 10m length for the Vale drilling program and 1m length for the TIM drilling program. Compositing was produced using 2.5m lengths for all lithologies.
	• Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	 GE21 judges that appropriate grid spacing, applied sampling and composition lengths were provided to establish the degree of geological continuity and classification reported by GE21.
	 Whether sample compositing has been applied. 	 GE21 judges as appropriate the applied sampling and composition lengths to establish the degree of geological continuity and classification.



Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	 The geological layers are dipping approximately 45° and the holes are vertical. Sampling was performed almost perpendicular to the layers, which is the best condition.
	 If the relationship between the drilling orientation and the orientation of key mineralized structures is considered to have introduced a sampling bias, this should be assessed and reported if material. 	 No bias was introduced when using vertical drillholes.
Sample security	 The measures taken to ensure sample security. 	 GE21 approves the methodology applied by TIM in the preparation and execution of the Tombador QAQC Program. GE21 didn't have access to QAQC data sheet for the Vale drilling program but has accompanied the Vale QAQC programs in other projects that used the same technique. Core boxes were transported by the Company's personnel from the drilling site to the core storage facility in Sento Sé-BA. Drillcore boxes were labelled with hole number and depth interval. All core was photographed prior to logging.
Audits or reviews	 The results of any audits or reviews of sampling techniques and data. 	 In 2020 GE21 prepared reports "Tombador Project, Bicuda Target – HCO Type Update" and "Tombador Project, Bicuda Target – Itabirites Resource Update" which audited the entire Colomi Project database, including the Tombador itabirite data, the results of which are included in the report.



Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary								
Mineral tenement and	Type, reference name/number, location and ownership including		Summ	ary of Conce	Tombador ssion Status	•	bador Project			
land tenure status	agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties,	Company	Municipality	Process No.	Area (Hectares)	Application Date	Exploration Permit N°	Status		
	native title interests, historical sites, wilderness or national park and environmental settings.	Tombador Iron Mineração Ltda	Sento Sé	872.431/03	2000	16/12/2003	1315	Mining Permit approved on 27/04/2021		
		 Tombador Iron Mineração Ltda. (TIM or the "Company") is the titleholder of Mining Permit 872.431/2003, which was transferred to TIM from Colomi Iron Mineração Ltda. (CIM or "Colomi). Tenement 872.431/2003 was transferred from Colomi Iron Mineração Ltda to Tombador Iron Mineração Ltda and published at Brazilian Federal Gazette on 14th April 2020. The Mining Permit was approved and published at Brazilian Federal Gazette on April 27, 2021. Initial exploration work was carried on by Vale a major iron ore mining company. Further exploration work was carried out by TIM in 2020 NS 2021. The historic exploration program for the Tombador project was completed as part of a larger program covering all of CIM's tenements shown in figure below with Concession Area Map. The Principal Source of information was the Final Exploration Report (FER) to DNPM/ANM (Brazilian National Department of Mineral Production/National Agency of Mining) with description and evaluation of results obtained in the exploration work carried out by Vale and TIM in the area related to the TIM Mining Permit. TIM has agreed transfer of mineral rights with CIM. In the agreement TIM has rights to exploit mineralization with greater than 60%Fe hematite bands that are greater than 10cm. CIM has the option to exploit remaining mineralization for which CIM must pay a royalty to TIM of 1 U\$\$ per tonne for the iron Concentrate produced by CIM on the tenement. 								



Criteria	JORC Code explanation	Commentary
Mineral		Concession Area Map
tenement and land tenure status		Remanso
	• The security of the tenure held at the time of reporting along with any known impediments to obtaining a license to operate in the area.	 GE21 have consulted the ANM' GIS system (https://sistemas.anm.gov.br) to check the status of tenement 872.431/2003 area at the time of reporting. ANM's GIS system shows the area as being approved for mining permit for Tombador Iron Mineração Ltda (TIM).



Criteria	JORC Code explanation	Commentary
Exploration done by other parties	 Acknowledgment and appraisal of exploration by other parties. 	 Initial exploration works were carried on by Vale, a major iron ore mining company. Further exploration works were carried out by TIM. The principal source of information was the Final Exploration Report (FER) to DNPM/ANM (Brazilian National Department of Mineral Production/ Mining National Agency) with description and evaluation of results obtained in the exploration work carried out by Vale and TIM in the area related to TIM's Mining Permits.
Geology	Deposit type, geological setting and style of mineralization.	 Mineralization: The geological, chemical, physical and technological characteristics divide the iron mineralization into six different types: Dolomitic Itabirite, Siliceous Itabirite, Talus, Hematite, High Phosphorus Hematite (HPHOS) and Bene. The talus deposits are represented by layers with thickness average of 3.5m, formed mainly by retransported itabirite blocks and, secondary blocks of quartzites, dolomites and shales, immersed in siltose mass. Hematite talus blocks are found in areas adjacent to the hematite deposit of Tombador. The bene material comprises insitu layers and transported blocks containing iron mineralization that can potentially be upgraded using sensor based sorting or similar technologies. Hematites represent the high grade granulated iron ore resources. The hematite orebody occurs in the drag fold hinge of siliceous itabirite, with an azimuth direction of 30°. This fold has been interpreted as being generated by a transfer fault, approximately N10E direction. Itabirites: siliceous and dolomitic itabirites, lesser metamorphic grade, and influence of folds, faults and shear zones.



Criteria	JORC Code explanation	Commentary
Drill hole	• A summary of all information material	Drill hole collars for all holes:
Information	to the understanding of the	HoleID COORD. UTM SIRGAS 2000 - 23S Depth_EoH Dip Tenement Company HoleID COORD. UTM SIRGAS 2000 - 23S Depth_EoH Dip Tenement Company
	exploration results including a	BICU-DH00001 823462.6 8908765 548.11 96.00 -90 872.431/03 Vale TBR-DH00003 823323.3 8909015 472.33 70.05 -60 872.431/03 TIM
	tabulation of the following information	BICU-DH00002 823459 8908812 534.72 118.20 -90 872.431/03 Vale TBR-DH00004 823379.9 8908688 587.76 40.05 -90 872.431/03 TIM BICU-DH00003 823556 8908962 540.29 58.60 -90 872.431/03 Vale TBR-DH00005 823432.2 8908665 606.61 40.20 -90 872.431/03 TIM
	for all Material drill holes:	BICU-DH00003 823556 8908962 540.29 58.60 -90 872.431/03 Vale TBR-DH00005 823432.2 8908665 606.61 40.20 -90 872.431/03 TIM BICU-DH000004 823405.8 8908812 527.04 79.50 -90 872.431/03 Vale TBR-DH00006 823468.7 8909012 496.97 121.30 -90 872.431/03 TIM
		BICU-DH00005 823403.1 8908862 505.64 72.30 -90 872.431/03 Vale TBR-DH00007 823394.2 8908709 588.01 52.10 -90 872.431/03 TIM
	 easting and northing of the drill 	BICU-DH00006 823761.2 8908361 531.82 110.90 -90 872.431/03 Vale TBR-DH00007A 823394.2 8908710 587.99 41.90 -90 872.431/03 TIM
	hole collar	BICU-DH00007 823606.3 8908861 584.8 127.45 -90 872.431/03 Vale TBR-DH00008 823418.2 8908708 589.17 58.45 -90 872.431/03 TIM
		BICU-DH00008 823702.8 8908960 556.56 160.20 -90 872.431/03 Vale TBR-DH00009 823428.5 8908912 509.1 40.90 -90 872.431/03 TIM
	 elevation or RL (Reduced Level 	BICU-DH00009 823605.1 8908809 602.74 207.20 -90 872.431/03 Vale TBR-DH00009A 823428.6 8908913 509.04 100.55 -90 872.431/03 TIM
	 elevation above sea level in 	BICU-DH00010 823435.3 8909156 507.29 178.40 -90 872.431/03 Vale TBR-DH00010 823410.1 8908750 573.26 50.10 -90 872.431/03 TIM BICU-DH00011 823435.3 8909357 534.64 146.90 -90 872.431/03 Vale TBR-DH00011 823382 8908756 560.633 49.40 -90 872.431/03 TIM
		BICU-DH00011 622246 6909337 334.64 140.50 -90/672.431/03 Vale 186-DH00012 823425 906/53 900.635 49.40 -90/872.431/03 11M
	meters) of the drill hole collar	BICU-DH00013 823706.1 898662 632.66 159.20 -90/872.431/03 Vale TBR-DH00013 823449.7 898750 559.45 70.50 -90/872.431/03 TIM
	 dip and azimuth of the hole 	BICU-DH00014 824205.7 8910762 487.2 93.00 -90 872.431/03 Vale TBR-DH00014 823418 8908722 582.36 65.90 -90 872.431/03 TIM
	•	BICU-DH00015 824006.2 8910762 487.79 205.50 -90 872.431/03 Vale TBR-DH00015 823462.1 8908833 533.94 62.80 -90 872.431/03 TIM
	 down hole length and 	BICU-DH00016 823453 8908662 606.19 156.30 -90 872.431/03 Vale TBR-DH00015A 823464 8908833 535.402 94.60 -90 872.431/03 TIM
	interception depth.	BICU-DH00017 823414.5 8908748 573.33 79.60 -90 872.431/03 Vale TBR-DH00016 823390 8908778 547.87 50.70 -90 872.431/03 TIM
	hole length.	BICU-DH00018 823906.3 8910762 492.55 135.40 -63.29 872.431/03 Vale TBR-DH00017 82335.5 8908781 543.56 52.25 -90 872.431/03 TIM BICU-DH00019 823906 8908362 559.16 150.20 -90 872.431/03 Vale TBR-DH00018 823442.6 8908707 585.37 59.05 -90 872.431/03 TIM
	5	BICU-DH00019 823902 5953.16 100.20 -90/872.431/03 Vale 186-DH0018 823942.6 8906707 385.37 59.05 -90/872.431/03 TIM
	 If the exclusion of this information is 	BICU-DH00021 823510.7 8908862 557.34 173.95 -90 872.431/03 Vale TBR-DH00020 823360 8908754 557.127 46.00 -90 872.431/03 TIM
	justified on the basis that the	BICU-DH00022 823458.7 8908862 529.39 145.50 -90 872.431/03 Vale TBR-DH00021 823358.9 8908813 526.806 50.45 -90 872.431/03 TIM
		BICU-DH00023 823562.4 8908561 651.29 210.10 -90 872.431/03 Vale TBR-DH00022 823367.8 8908835 516.193 35.25 -90 872.431/03 TIM
	information is not Material and this	BICU-DH00024 823556.5 8909054 491.11 250.00 -90 872.431/03 Vale TBR-DH00023 823374.9 8908860 503.5 52.75 -90 872.431/03 TIM
	exclusion does not detract from the	BICU-DH00025 823863.6 8909962 683.39 150.20 -90 872.431/03 Vale TBR-DH00024 823430.8 8908646 603.13 40.00 -90 872.431/03 TIM
		BICU-DH00025 823802.1 8910362 586.9 201.35 -66.02 872.431/03 Vale TBR-DH00025 823427 8908689 596.84 50.00 -90 872.431/03 TIM
	understanding of the report, the	BICU-DH00029 823658.8 8909962 614.96 133.65 -90 872.431/03 Vale TBR-DH00026 823455.8 8908728 571.566 60.25 -90 872.431/03 TIM BICU-DH00037 823755.5 8910561 530.09 132.30 -90 872.431/03 Vale TBR-DH00027 823513.2 8908748 572.412 74.80 -90 872.431/03 TIM
	Competent Person should clearly explain why this is the case.	BICU-DH0003 225735.3 6510501 330.05 125.50 -50 (672.431/03 Vale 186-0H0002 82355.2 6306/46 572.412 74.60 -50 (872.431/03 11M
		BICU-DH00041 823310.7 8909262 536.82 111.30 -90 872.431/03 Vale TBR-DH00029 823520.9 8908728 574.923 94.60 -90 872.431/03 TIM
	explain why this is the case.	BICU-DH00043 823556 8909277 547.55 163.60 -90 872.431/03 Vale TBR-DH00030 823550.2 8908750 589.588 105.65 -90 872.431/03 TIM
		BICU-DH00044 823454 8909462 606.15 118.10 -90 872.431/03 Vale TBR-DH00031 823577 8908750 602.59 152.55 -90 872.431/03 TIM
		BICU-FD00001 824187.6 8908461 507.23 106.80 -90 872.431/03 Vale TBR-DH00032 823373.1 8908725 569.922 50.15 -90 872.431/03 TIM
		BICU-FD00003 823613.4 8908573 646 56.65 -90 872.431/03 Vale TBR-DH00033 823345.8 8908752 555.44 43.65 -90 872.431/03 TIM
		BICU-FD00004 823455.9 8908681 599.35 104.00 -90 872.431/03 Vale TBR-DH00034 823341.1 8908778 542.434 42.00 -90 872.431/03 TIM
		BICU-FD00005 823482.5 8908775 547.56 119.85 -90 872.431/03 Vale TBR-DH00035 823557.3 8908705 601.554 83.70 -90 872.431/03 TIM BICU-FD00006 823441.3 8908795 536.14 52.80 -90 872.431/03 Vale TBR-DH00036 823350.7 8908856 501.298 37.40 -90 872.431/03 TIM
		01C0+T000001 62344.7.1 8050792 536.14 32.60 -90 (872.431/03 TIM TBR-DH00031 823381.2 8050670 587.113 35.55 -90 (872.431/03 TIM
		TBR-DH00002 823476.1 8908772 547.44 57.50 -90 872.431/03 TIM



Mineraliz	zed	intercept			r dep	1									
Hole ID	Туре	Depth From Depth To	o Average Fe Grade	Length (m) Hole ID	Туре	Depth From	Depth To	Average Fe Grade	Length (m)	Hole ID	Туре	Depth From	Depth To	Average Fe Grade	Length (m)
BICU-DH00001		2.95 54.7	7 68.08	51.75 BICU-DH00001		54.7	7	19.56	15.3 E	SICU-DH00001		2	2.95		0.95
BICU-DH00002 BICU-DH00004		20 67.1	1 66.15 6 57.93	47.1 BICU-DH00002 6 BICU-DH00004		67.1	8 16.9			SICU-DH00003		3.1	8.7		5.7 38.9
BICU-DH00004		28 40.4	4 58.2	12.4 BICU-DH00009		136.85	15	32.97	21.15 E	BICU-DH00008		5.1	20	39.66	15
BICU-DH00005		23 36.7		13.7 BICU-DH00010		91				BICU-DH00009		2	27		25
BICU-DH00012 BICU-DH00017		5.2 20.6		15.4 BICU-DH00010 40.5 BICU-DH00013	-	133.9 85.45				SICU-DH00009		83	114.2 99		31.2 89
BICU-DH00021		35 40		5 BICU-DH00016	1	40.8	5	30.95		BICU-DH00012		0	5.2	49.75	5.2
BICU-DH00021 BICU-DH00022		101 117.2		16.2 BICU-DH00017 9 BICU-DH00021	-	40.5	128.6			SICU-DH00012 SICU-DH00016		20.6	36.9		16.3 21
BICU-DH00022		34.5 52	2 63.07	17.5 BICU-DH00023		43.7	78.9	7.09	35.21 E	BICU-DH00021		12	25	44.7	13
BICU-DH00022 BICU-FD00004		60 85 35.2 43.15		25 BICU-DH00024 7.95 BICU-FD00004		113 49.2	123.			SICU-DH00023		2.1	30.2 13		28.1
BICU-FD00004 BICU-FD00005		35.2 43.15		20.7 BICU-FD00004		49.2				SICU-DH00024		3.15	13		9.85 14.1
BICU-FD00006		0 52.8		52.8 TBR-DH00001		61				SICU-DH00041		46	57.3		11.3
TBR-DH00001 TBR-DH00002		0 61		61 TBR-DH00002 0.05 TBR-DH00004	-	46.8				SICU-DH00043		40	93.2 35.2		53.2 30.6
TBR-DH00002		26 46.8		20.8 TBR-DH00005		35.4	40.		4.8 T	BR-DH00004		0	2.55	40.31	2.55
TBR-DH00004		2.55 9.8		7.25 TBR-DH00006		0.85				BR-DH00005		0	4.2		4.2
TBR-DH00005 TBR-DH00007A		4.2 26.85		22.65 TBR-DH00006 3.4 TBR-DH00007		80.9 35.22	10			BR-DH00005 BR-DH00007	ICS	26.85	28.4 22.53		1.55 22.53
TBR-DH00007A		32 36.4	4 68.66	4.4 TBR-DH00007A	1	36.4	41.	31.79	5.5 1	BR-DH00007A		0	24	16.64	24
TBR-DH00008 TBR-DH00009		11.4 38.1 3.4 10.6		26.7 TBR-DH00008 7.2 TBR-DH00008	-	38.1 49.9				BR-DH00008 BR-DH00013		0	11.4 16.7		11.4 16.7
TBR-DH00009 TBR-DH00010		3.4 10.6		7.2 TBR-DH00008 37 TBR-DH00009A	1	49.9 46.95				BR-DH00013 BR-DH00014		0	16.7 17.15		16.7 17.15
TBR-DH00011		0 1.84	4 25.38	1.84 TBR-DH00010		41.01	. 4	30.49	7.99 1	BR-DH00018		0	15.6	21.62	15.6
TBR-DH00011 TBR-DH00012	HEM	21.9 25.85		3.95 TBR-DH00011 4.25 TBR-DH00012	-	25.85 30.95				BR-DH00019		3.25	19.8		16.55 6.7
TBR-DH00012 TBR-DH00012	112111	0 4.25		4.25 TBR-DH00012 14.95 TBR-DH00013	1	30.95				BR-DH00024 BR-DH00026		4.75	11.45 24.15		6.7 21.35
TBR-DH00012		44 48.35		4.35 TBR-DH00014		50.2	65.			BR-DH00028		1.55	46.15	38.44	44.6
TBR-DH00013 TBR-DH00014		16.7 46.6 17.15 50.2		29.9 TBR-DH00015A 33.05 TBR-DH00016	-	78.7	89.3 11.0			BR-DH00029 BR-DH00029		5.6 60.6	42.7 62.8		37.1 2.2
TBR-DH00014 TBR-DH00015		47.25 62.8		15.55 TBR-DH00017		11.09			1.86 1	BR-DH00029 BR-DH00030		48.16	80		31.84
TBR-DH00015A		49.03 78.7		29.67 TBR-DH00017		21.65				BR-DH00030		93.3	100		6.7
TBR-DH00016 TBR-DH00017		23.85 36.65 12.95 21.65		12.8 TBR-DH00018 8.7 TBR-DH00019	-	49.85 84.15				BR-DH00031 BR-DH00031		61.55 108.3	106.95 116.75	30.11 40.84	45.4 8.45
TBR-DH00018		15.6 44.8	8 61.01	29.2 TBR-DH00020		21	31.	31.52	10.2	BR-DH00035		0	61.95	25.69	61.95
TBR-DH00019 TBR-DH00020		69 84.15 14.35 21		15.15 TBR-DH00021 6.65 TBR-DH00023		18.1				BR-DH00035 BR-DH00038		69 0.6	74.3		5.3 37.1
TBR-DH00020 TBR-DH00022		14.35 21		6.8 TBR-DH00023		4.05	38.			BK-DH00038		0.6	3/./	35	37.1
TBR-DH00023		0 4.05	5 67.3	4.05 TBR-DH00025	1	40.35	5	16.99	9.65						
TBR-DH00023 TBR-DH00024		25.6 32.6		7 TBR-DH00026 4.75 TBR-DH00029	-	49 67.45		29.11							
TBR-DH00025		0.6 34.4		33.8 TBR-DH00030		102.2			3.45						
TBR-DH00026		24.15 43.55		19.4 TBR-DH00031 2.55 TBR-DH00032		125.55									
TBR-DH00027 TBR-DH00027		28.45 31 34.45 68.05		2.55 TBR-DH00032 33.6 TBR-DH00033	-	11.3 13.7									
TBR-DH00029		42.7 60.6		17.9 TBR-DH00034	1	13.2	16.		3.5						
TBR-DH00030 TBR-DH00031		80 93.3 106.95 108.3		13.3 TBR-DH00034 1.35 TBR-DH00037	4	27.62	34.		7.18 24.1						
TBR-DH00032		0 11.3	3 65.18	11.3 TBR-DH00038	1	52.5	74.7	6.7							
TBR-DH00033 TBR-DH00034		6.25 13.7 16.7 27.62		7.45 BICU-DH00003 10.92 BICU-DH00005	-	0		45.27	3						
TBR-DH00034 TBR-DH00035		61.95 69		7.05 BICU-DH00005		0	2		23 3.1						
TBR-DH00038		37.7 50	0 43.87	12.3 BICU-DH00008	1	0		44.43							
BICU-DH00002 BICU-DH00005		13 20 36.7 56.5		7 BICU-DH00009 19.8 BICU-DH00010		0	5.	42 37.57	2						
BICU-DH00009		114.2 116		1.8 BICU-DH00016		0	1		12						
BICU-DH00021		86.7 101 27 34.5		14.3 BICU-DH00021	4	0	1								
BICU-DH00022 BICU-DH00022		27 34.5		7.5 BICU-DH00022 8 BICU-DH00023	TAL	0	1.		5 1.8						
BICU-FD00005		15.75 30	0 65.63	14.25 BICU-DH00024	1	0	3.1	41.06	3.15						
TBR-DH00002		12.7 26		13.3 BICU-DH00026 17.2 BICU-DH00037	4	0	8.88		8.885						
TBR-DH00004 TBR-DH00007A	HPHOS	9.8 27		4.6 BICU-FD00004	1	0	4.		4.6						
TBR-DH00008		46.75 49.9	9 48.11	3.15 BICU-FD00005	1	0	4.	5.87	4.6						
TBR-DH00009 TBR-DH00012		10.6 21.85 4.25 16		11.25 TBR-DH00019 11.75 TBR-DH00029	-	0	3.2		3.25 5.6						
TBR-DH00012 TBR-DH00015		31 47.25	5 52.1	16.25 TBR-DH00029		0	5.								
		55 69		14											
TBR-DH00019															
		6.8 18.15 31 34.45	5 19.81	11.35											

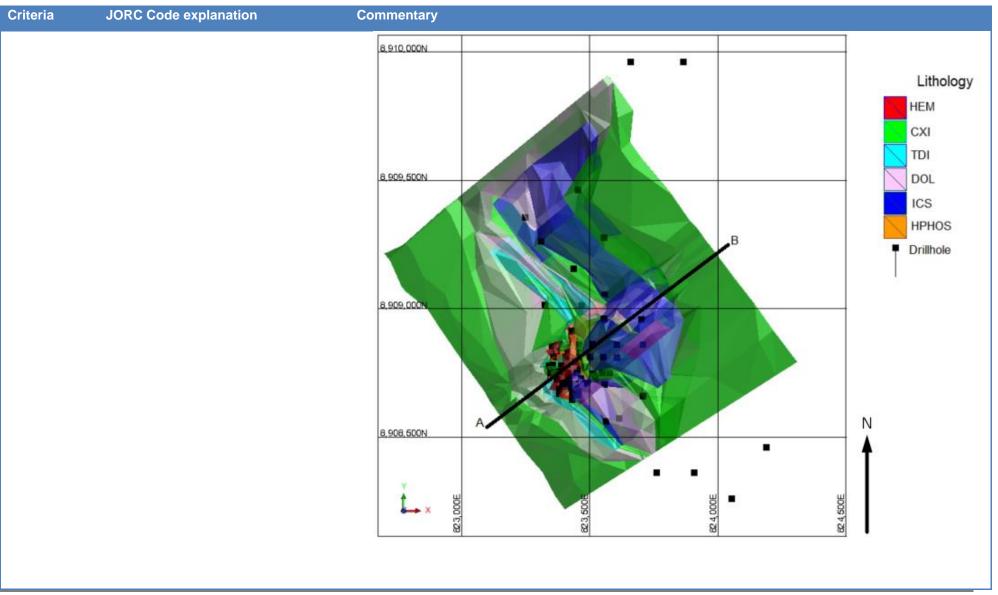


Criteria	JORC Code explanation	Commentary
		Mineralization intervals intersected by drilling were aggregated by weighted average length.
Data aggregation methods	 In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated. 	 Drill hole samples were composited to regular downhole lengths of 2.5m. Compositing was applied to the mineralized intervals inside the geological model. An approximate grade of 25% Fe was used as a guide to create domains for the itabirites and talus domains and bene wireframes (geological modelling). An approximate grade of 55% Fe was used as a guide to create the hematite and high phosphorus domains (geological modelling).
	 Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. 	 Samples were collected in intervals obeying lithological contacts. To ensure a clear definition of the boundaries of mineral zones, samples were also collected of the host rock above and below the mineralized intervals. See Sampling Techniques.
	 The assumptions used for any reporting of metal equivalent values should be clearly stated. 	 No metal equivalent was reported. It's not a mining industry practice the report of metal equivalent for iron ore mineralization type.
Relationship between mineralization widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results.	 Most holes (3 exceptions) were vertical and mineralization zone dipping at 45°.
	 If the geometry of the mineralization with respect to the drill hole angle is known, its nature should be reported. 	See above.
	• If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').	 Further diagrams necessary to describe the Project are included in "Independent Technical Report on Exploration and Mineral Resources Estimation – Tombador Project"- prepared by GE21.



Criteria	JORC Code explanation	Commentary
Diagrams	 Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views. 	• Eurther diagrams necessary to describe the Project are included in "Independent Technical Report on Exploration and Mineral Resources Estimation – Tombador Project"- prepared by GE21.







Criteria	JORC Code explanation	Commentary
		TOZ A COZ COZ COZ COZ COZ COZ COZ COZ
Balanced reporting	 Where comprehensive reporting of all Exploration Results is not practicable, representative reportin of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results. 	stored and readily available.
Other substantive exploration data	 Other exploration data, if meaningf and material, should be reported including (but not limited to): geological observations; geophysic survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical 	 described in the report prepared by Coffey in 2011: "Colomi Project, Brazil Independent Technical Report on Exploration and Mineral Resources Estimation". Other exploration data includes: Geological observations of additional talus areas outside of the Tombador area;



Criteria	JORC Code explanation	Commentary
	test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	823400 823600 00000 00000 000000 000000 000000
		000000000000000000000000000000000000
		Dolomite DH-02 Drill Hole ID Road 20 m SAD69
		 823400 823600 Preliminary metallurgical tests were completed in 2013 by an external group, Modelo Operacional Ltda ("MOPE") on 10 samples consisting of 3 drill core samples, 5 outcrop samples and 2 composite samples. Results confirmed the prospect of producing lump iron ore product. No deleterious or contaminating substances were encountered. Sulphur results were less than 0.01%. Additional topographic survey. Bulk density tests on core samples.



Criteria	JORC Code explanation	Commentary
		Sampling for additional metallurgical and processing tests
Further work	• The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).	 Additional topographic survey. Sampling for additional metallurgical and processing tests
	 Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive. 	 Areas in the downdip part of the hematite body are still open in depth (see figure below). Further drilling could expand the mineralized body locally. ^{8 090 0001} ^{9 00001} ^{9 000001} ^{9 00001} ^{9 000001} ^{9 000001} ^{9 000001} ^{9 000001} ^{9 000001} ^{9 000001} ^{9 00001} ^{9 000101} ^{9 000101} ^{9 000101} ^{9 0010101} ^{9 001010101} ^{9 00101010101010101010101010101010101010}



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	JORC Code explanation	Commentary
Database integrity	 Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes. 	 The Tombador project drilling database was exported from an SQL database and provided to GE21 in MS Access and MS Excel format. GE21 produced the MS Access datasets.
	Data validation procedures used.	• GE21 carried out an electronic validation of the databases with Geovia Surpac software. No errors, gaps or overlapping data, or other material inconsistencies were found.
Site visits	 Comment on any site visits undertaken by the Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case. 	 A site visit was undertaken by Mr Ricardo Reis and Mr Leonardo Rocha to the Tombador Project between 23th to 25th November 2021.
Geological interpretation	Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.	• There is high confidence in the geological interpretation as there is a semi-detail geological map to guide the modelling of the mineralization zone. The defined horizons are considered reasonably robust. The geological model was updated based on the original model presented in the previous Independent Resource Estimate, as prepared by GE21 on March 2020, and new drilling data from the 2021 TIM drilling program.
	 Nature of the data used and of any assumptions made. 	 There is a total of 68 drill holes included within the Tombador tenement. The drilling database contains 2 drilling programs (Vale and TIM). 10 drillholes in the Vale drilling program crossed the tenement boundary.
	 The effect, if any, of alternative interpretations on Mineral Resource estimation. 	 Consistent mineralized intersections, drilled at a reasonably close spacing, refutes alternate mineral interpretation.
	 The use of geology in guiding and controlling Mineral Resource estimation. 	• Vertical geological section provided a guide to the interpreted ore wireframes.
	 The factors affecting continuity both of grade and geology. 	• The continuity of grade and geology were verified in the extension of the deposit. Depth continuity was interpreted based on drilling data.
Dimensions	• The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	• The mineralization outcrops. Within the deposit area, the hematite mineralization is 10 to 50m in thickness and occurs at a length of approximately 150m down dip and 350m down plunge. The itabirite mineralization in the deposit area is 30 to 40m in thickness and occurs at a length of approximately 250m down dip. The mineralized layers were

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Criteria	JORC Code explanation	Commentary
		interpreted from 10 metres to a maximum thickness of 40m.
Estimation and modelling techniques	 The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. 	
		composite grades.



Criteria	JORC Code explanation	Commen	tary											
							Va	riogram	Model Su	mmary				
		Variable	Unit	CO	C1	L A1	C2			Azimuth	Plunge	Dip	Major/Semi Major Ratio	Major/ Minor Ratio
		Fe			0.1	0.35	65	0.55	120				20 1.	
		SiO2			0.1	0.15	20	0.75	120				18 1.	
			-		0.1	0.3	40	0.6	120				30 1.	
		Mn	HEM		0.1	0.3	40 35	0.6 0.65	120 120				38 1. 29 1.7	
		101			0.1	0.25	120	0.65	0				29 1.7 29 1.4	
					0.1	0.9	120	0	0				39 1.4	
		MgO			0.1	0.9	120	0	0				29 1.7	
		Fe SiO2 Al2O3 Mn P LOI CaO MgO Fe SiO2 Al2O3 Mn P LOI CaO MgO • The est present Searching 1 2 3 4			0.1	0.35	45	0.6	120	185			29 1.	
		SiO2			0.1	0.9	140	0	0				29 1.4	
		Al2O3			0.1	0.45	30	0.45	70				29 1.4	
		Mn	ICS/TDI/		0.1	0.9	160	0	0				39 1.3	
		P	HPHOS		0.1	0.9	140	0	0				30 1.	
			-		0.1	0.2	20	0.7	120				30 1.5	
					0.1	0.3	20 20	0.6	150 140				30 1.8 30 1.5	
									es, coi ging Str		d three	estim	nation steps	s, as
											um Num	hor	Maximum N	umberof
		Ste	ep	S	earch	n Distance		f Samp			Samples		Samples per	
				LF	HEM	Unit - Varia								
		Searching	g Param										ajor/Minor R	atio: 2.6;
		1				60		4			12		2	
						180		4			12		2	
						300		4			12		2	
		4			;	>300		1			12		2	
			10	CS / TC)/ HI	PHOS Units	s - Varia	ables: F	e, SiO2,	Al2O3, I	Mn, P, LO	I, CaO	, MgO	
		Searching	g Param	eters:	Bear	ing=185; P	lunge: 2	22; Dip:	:29; Ma	jor/Minc	or Ratio:	1.6; M	ajor/Minor R	atio: 2.8;
		1				60		4			12		2	
						180		4			12		2	
						300		4			12		2	
		4	Ļ		>	>300		1			12		2	

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Criteria	JORC Code explanation	Commentary				
		• The talus unit (T	AL) was estima	ited by Inverse dis	tance weighting	
				Inverse Weighting St	trategy	
		Step	Search Distance	Minimum Number of Samples	Maximum Number of Samples	Maximum Number of Samples per Drillhole
			TAL Unit - Varia	bles: Fe, SiO2, Al2O3,	Mn, P, LOI, CaO, MgO	
		Searching Parame	ters: Bearing=0; Pl	unge: 0; Dip: 0; Major	r/Minor Ratio: 1.0; Ma	ajor/Minor Ratio: 1.0;
		1	50	4	12	2
		2	130	4	12	2
		3	300	4	12	2
		4	>300	1	12	2
	 The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. 	 validation by GB good correlation Validation for ese estimation (NN) results for Fe%, intervals. The comparative show a relative technique and is Local validation bias from comp NN-Check, cons The comparative show the relative technique and is 	E21 confirms the between the b stimated grade v . This validation SiO ₂ %, Al ₂ O ₃ % e analysis of es smoothing in th s inside accepta by the Swath F arative graphs f sidering X, Y, or e analysis of es e smoothing in s inside accepta	e smoothing effect locks estimated an was carried out wi a consists in a corr 6, Mn%, P% and L timation variable w e kriging results w ance limits. Plot method was ca or resource estima r Z coordinates timative variables the kriging results ance limits.	nd the original sam th a comparative N parative statistica OI% variables to t with the Nearest N which are compatib arried out with the ation variable (Ord with the Nearest N that are compatib	al validation shows a pples. Jearest Neighbouring I analysis over global he mineralized eighbouring results le with the kriging verification of local inary Kriging) and Neighbouring results le with the kriging
	 The assumptions made regarding recovery of by-products. Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation). 	 Preliminary met 10 samples con 	allurgical tests sisting of 3 drill leterious or con	were completed in core samples, 5 c	outcrop samples ar	nal group, MOPE, on
	 In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. 			ined as 10m x 10 drilling grid dimens		blocks of 5m x 5m x

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Criteria	JORC Code explanation	Commentary	
	 Any assumptions behind modelling of selective mining units. 	No assumptions were made regarding SMU (selective mining	g units).
	 Any assumptions about correlation between variables. 	No assumptions were made by GE21 regarding the correlation	on between variables.
	 Description of how the geological interpretation was used to control the resource estimates. 	 The main controls to the hematite are lithological and structur occurs in the drag fold hinge in siliceous itabirite, with an azin fold has been interpreted as being generated by a transfer far direction. The main controls of Itabirites mineralization is geo approximately 30° to south-east. 	muth direction of 30°. This ault, approximately N10E
	 Discussion of basis for using or not using grade cutting or capping. 	 The style of iron ore mineralization generally doesn't use gra estimation methodology. 	ide cutting or capping in the
	 The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available. 	 estimation (NN). This validation consists in a comparative staresults for Fe%, SiO₂%, Al₂O₃%, Mn%, P% and LOI% variabintervals. The comparative analysis of estimation variable with the Neashow a relative smoothing in the kriging results which are contechnique and is inside acceptance limits. Local validation by the Swath Plot method was carried out with bias from comparative graphs for resource estimation variable NN-Check, considering X, Y, or Z coordinates The comparative analysis of estimative variables with the Neashow the relative smoothing in the kriging results that are contechnique and is inside acceptance limits. 	atistical analysis over global les to the mineralized arest Neighbouring results mpatible with the kriging ith the verification of local le (Ordinary Kriging) and earest Neighbouring results
Moisture	• Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	 The resource was estimated in a dry basis 	
Cut-off parameters	 The basis of the adopted cut-off grade(s) or quality parameters applied. 	 A 20% Fe COG was applied on geological modeling of itabir 55%Fe COG was applied on geological modeling of hematite 	
Mining factors or assumptions	 Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for 	 A pit scenario study was carried out in order to guide the furthat a reasonable prospect for an eventual economical extra for mineral resource classification. GE21 generated a sche economic parameters of projects according to values pract with a reasonable sell price. The optimization was performed. 	action ("RPEEE") was tested matic pit using physical and iced in the market, however



			Consultoria Mineral
Criteria	JORC Code explanation	Commentary	
	eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	 software including Itabirites, hematite on Tombador deposit an deposit. The mineralization is known, from close spaced drilling, to be fr and the external contacts are sharp and visually distinct to t transitional and waste rock. For this reason both internal and ex by GE21 to be modest. 	om 20 to 50m in thickness, he lower grade peripheral
Metallurgical factors or assumptions	The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	 Preliminary metallurgical tests were completed in 2013 by an end 10 samples consisting of 3 drill core samples, 5 outcrop sample samples. No deleterious or contaminating substances were enwere less than 0.01%. Production data to October 2021 has in 54%. 	es, and 2 composite countered. Sulphur results
Environmental factors or assumptions	• Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	 TIM has provided proof to GE21 of the environmental permit (operate mining activities in Bahia state. GE21 are not aware of factors or impacts that could affect the license to operate. 	

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Criteria	JORC Code explanation	Commentary							
Bulk density	 Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples. The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit. 	 determined b were perform A total of 187 geological cc The density of Archimedes/wax. GE21 applied waste types) 	 GE21 applied the average density values to each corresponding lithology type (ore waste types). GE21 didn't perform any spatial variability study on the density data. The table below summarizes the density values applied on the resource block mode 						
				Density I	Data]			
			Target	Unit	Density (g/cm3)	-			
				ICS	3.40				
				TDI	3.8				
				TAL	1.80				
				HPHOS	4.66	-			
			Tombador	HM	5.11	-			
				HL	4.93	-			
				HF	4.66				
				CXI	2.9				
		•		DOL	2.9				
Criteria JORC Code explanation Commentary Bulk density • Whether assumed or determined. If assumed, the basis for the assumptions. If determined, is address whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples. • The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, prorsity, etc.), moisture and differences between rock and alteration zones within the deposit. • The density determination was carried out by Tombador employees Archimedes/Jolly method. The core samples were oven dried and se wax. • GE21 applied the average density values to each corresponding lith waste types). GE21 didn't perform any spatial variability study on the resort Target Unit Density (g/cm3) Image: Commentary Image: Commentary Image: Commentary Image: Commentary Image: Commentary Image: Commentary Image: Commentary • The density determined by specific gravity tests for each lithology type. All density were performed using drill core. Image: Commentary • The density determination was carried out by Tombador employees Archimedes/Jolly method. The core samples were oven dried and se wax. Image: Commentary • GE21 applied the average density values applied on the resord Image: Commentary Image: Commentary Image: Commentary Image: Commentary Image: Commentary Image: Commentary		-							
Classification									

Resource Class	Cut of Grade (Fe%)	Tonnes (Mt)	Fe (%)	SiO2 (%)	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			
				HEM				1
Measured	55	3.98	64.60	4.46	0.61	0.04	0.069	0.9
Indicated	55	3.02	65.77	3.76	0.63	0.05	0.078	0.3
M+I	55	7.00	65.11	4.16	0.62	0.04	0.073	0.6
Inferred	55	1.62	61.92	9.33	0.64	0.17	0.086	0.5
Total	55	8.62	64.51	5.13	0.63	0.07	0.075	0.6
			<u> </u>	IPHOS				1
Measured	55	0.29	60.70	8.46	1.17	0.22	0.327	0.7
Indicated	55	0.02	56.41	13.38	1.27	0.21	0.308	0.5
M+I	55	0.30	60.45	8.74	1.18	0.22	0.326	0.7
Total	55	0.30	60.45	8.74	1.17	0.22	0.326	0.7
Total I.Mineral Reso 2.Mineral Reso	55 urces effe urces are ng ordina	0.30 ective date: reported u ry kriging ir	60.45 Novembr sing a cu	8.74 er 08 th 2021. t-off grade of arent block s	1.17 f 55% Fe. Mir ize of 10m by of the estimate	0.22 neral Res 10m by es. Sumi	0.326 sources ha 10m block med amou	0 ve b

• Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).



Mineral Resource – Tombador Iron Mineração Ltda Resource Table –November 8th 2021

Block Model: 10m X 10m X 10m (5m X 5m X 5m)

Cut-off Grade Applied: 20% Fe

		Cu	t-off Grac	le Applied: 2	20% Fe			
Resource Class	Cut of Grade (Fe%)	Tonnes (Mt)	Fe (%)	SiO2 (%)	AI2O3 (%)	Mn (%)	P (%)	LOI (%)
				ICS			•	
Measured	20	1.68	34.93	45.78	1.03	0.18	0.044	1.28
Indicated	20	2.07	35.38	47.07	0.91	0.19	0.032	0.77
M+I	20	3.75	35.18	46.49	0.96	0.19	0.037	1.00
Inferred	20	19.20	37.41	43.86	0.90	0.16	0.026	1.00
Total	20	22.96	37.05	44.29	0.91	0.17	0.028	1.00
				TDI				
Measured	20	2.70	30.84	21.04	0.82	0.15	0.036	15.99
Indicated	20	2.26	30.51	27.07	0.96	0.16	0.034	13.29
M+I	20	4.96	30.69	23.79	0.88	0.15	0.035	14.76
Inferred	20	8.46	31.92	17.35	0.79	0.17	0.044	16.91
Total	20	13.42	31.46	19.73	0.82	0.16	0.041	16.12
			٦	TALUS				
Inferred	20	2.86	37.97	38.53	1.85	0.26	0.017	2.77
been estimal figures have not add due Code for Re Code, 2012) 3. Mineral Reso 872.431/2002 4. Tonnages ar 5. In order to di economic ex econcentratec Dilution: 7%; Processing C	burces ar ted using been rou to roundii porting of incorpor- burces we 3). The reporte efine the traction, traction a t; Fines s Mining (Cost: 7.67 CONC R	e reported ordinary k unded to th- ng. Minera Exploratio ating drilling ere estimat d on dry b mineral res an optimize assumption elling price Cost: 1.74 l 7 US\$/t RC	using a c riging insi a relative I Resourc n Results g data ac e in depo asis source blo ed pit she s listed b : 86.00 U JS\$/t min M; DSO	sut-off grade de a parent accuracy of es were pre duired by 20 sit owned by ocks for reas Il was prepa elow. Lump JS\$/t concen ed (Waste); Recovery: 11	of 20% Fe. M block size of the estimates pared in acco esources and	10m by 5 s. Summ ordance v Ore Res ron Mine ects for 6 heral tech 109.20 l g Recove hined (RC Processin	10m by 10i ed amount vith Austra erves (JOI ração (tene eventual nnical and US\$/t ry: 98%; N DM); DSO ng Cost: 9.	n. All s may lasian RC ement fining 00



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explana	tion	Commentary								
			Mi			ombador Iro -Novembe	n Mineração I r 08 th 2021	_tda		
			B			10m X 10m (de Applied: 2	(5m X 5m X 5 20% Fe	m)		
		Resource Class	Cut of Grade (Fe%)	Tonnes (Mt)		SiO2 (%)	AI2O3 (%)	Mn (%)	P (%)	LOI (%)
						*BENE				
		Measured	20	0.09	37.54	44.45	0.76	0.46	0.014	0.42
		Indicated	20	0.31	37.99	43.22	0.71	0.26	0.017	0.62
		M+I	20	0.40	37.88	43.51	0.72	0.31	0.016	0.57
		Inferred	20	4.00	39.56	41.2	1.05	0.18	0.019	0.86
		Total	20	4.40	39.41	41.41	1.02	0.19	0.019	0.84
		size. All figu amounts ma Australasiar Reserves (J 4. Mineral Res 872.431/200 5. Tonnages a 6. In order to d economic ex economic ex concentrate Dilution: 7% Processing	I is incluc ources ar ted using res have I y not add Code for ORC Coc ources we (3). re reporte efine the ctraction a d; Fines s ; Mining C Cost: 7.67 CONC R	ded in ICS e reported ordinary k been roun- d due to rou r Reporting de, 2012) in ere estima ed on dry b mineral re- an optimiz assumptior celling price Cost: 1.74 7 US\$/t RC	grade and using a c criging ins ded to the unding. M of Explo neorporat te in depo asis source ble ed pit she as listed b e: 86.00 L US\$/t mir DM; DSO	d tonnage re sut-off grade ide a parent relative acc ineral Resour- ration Result ing drilling da osit owned by ocks for reas ell was prepa elow. Lump JS\$/t concen- ned (Waste); Recovery: 1	port. of 20% Fe. N block size of curacy of the urces were pr is, Mineral Re ata acquired I	10m by estimates epared ir esources by 2021. ron Mine ects for e neral tech 109.20 l g Recove nined (RC Processin	10m by 10i s. Summed a accordan and Ore ração (tend eventual nnical and JS\$/t ery: 98%; M DM); DSO ng Cost: 9.	m blocl d ce with ement fining 00



Criteria	JORC Code explanation	Commentary
		 The average drill spacing was adopted as the criteria to distinguish Measured, Indicated and Inferred resource classes. Grade estimation passes, which were defined based on the variography modeling, were also considered in the resource classification. Blocks within a 20 x 20m drilling grid and/or estimated in passes 1 or 2 were classified as Measured. Blocks inside a 100 x 100m and/or estimated in passes 2 or 3 were classified as Indicated Resource. Remaining blocks were classified as Inferred Resource. A pit optimization study was carried out in order to define grounds for "reasonable prospect for eventual economical extraction" and hence guide resource classification. Blocks outside of the pit shell were not given a mineral resource classification. The assumptions for the RPEEE optimization are defined in the Resource Tables above. The optimization was performed using Geovia Whittle software for both the hematite and itabirite resources within the Tombador Project (Tombador tenement – see image below). All the mineralization located inside the resultant pit shell was classified as mineral resource.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	• The Competent Person believes the classification to be appropriate as Mineral Resource.
Audits or reviews	The results of any audits or reviews of Mineral Resource estimates.	 In 2020 GE21 developed the "Independent Technical Report on Exploration and Mineral Resources Estimation – Update HCO Resources" and "Independent Technical Report on Exploration and Mineral Resources Estimation – Update Itabirite Resources" which



Criteria	JORC Code explanation	Commentary
		audited the entire Tombador Project database, including the Tombador Hematite and Itabirite data.
Discussion of relative accuracy/ confidence	• Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.	 GE21 has estimated Measured, Indicated and Inferred Mineral Resources for the Tombador Project in accordance with the guidelines as set out in the JORC Code (2012). The in-situ resources are wholly contained within the current license boundary. The Tombador Iron Ore Project contains a representative prospective tonnage of iron mineralization. The Measured plus Indicated Mineral Resources for the Hematite material inside project area has been estimated at 7.00 Mt at 65.11% Fe, 4.16% SiO₂, 0.62% Al₂O₃, 0.04% Mn, 0.073% P and 0.68% LOI, (with 55% Fe cut-off grade). The Measured plus Indicated Mineral Resources for the Itabirite material (ICS plus TDI) inside project area has been estimated at 8.71 Mt at 32.62% Fe, 33.56% SiO₂, 0.91% Al₂O₃, 0.17% Mn, 0.036% P and 8.84% LOI, (with 20% Fe cut-off grade). The cut off value applied was based on economic criteria from study of other similar deposits. The drilling grid spacing, (from 20m x 20m to 100m x 100m) was robust enough for Measured and Indicated Resource classification. However additional sampling is required for reclassification of the Talus lithology to a higher category. GE21 concludes that additional exploration of talus is the main target to be investigated for future work. Based on these positive geological indications, GE21 considers the Tombador Project to be prospective for hosting economic iron ore deposits. GE21 recommends the exploration programs to include: Additional topographic survey of the adjacent areas to improve surface information for mining studies. Conduct additional metallurgical and processing tests to determine the feasibility of economically processing the Talus and itabirite material existing within the deposit. To continue and improve the current QAQC program.
	• The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	 Tombador Project's grade estimate relates to a global estimate.
	• These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	• Tombador Project received it's Operational License on 20 May 2021 and commenced commercial production in December 2021. The production data available is not sufficient to allow reconciliation with relative accuracy and confidence.