# Amapá Iron Ore Project, August 2022

## JORC Code, 2012 Edition – Table 1

### **Section 1 Sampling Techniques and Data**

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

Criteria	Commentary
Sampling techniques	<ul> <li>The Mineral Resource Estimates were based on Diamond Drill Holes (DDH) completed by MMX and Anglo American during 2005 – 2012 using procedures in line with industry best practice.</li> <li>After logging, sample intervals were defined, marked on the core boxes, and registered in the sampling plan. The core was sampled for all mineralisation types (friable itabirites, friable hematite, colluvium, canga, as well as waste lithologies) and dispatched to the Amapá on site laboratory for sample preparation before being dispatched to SGS Geosol for chemical analyses.</li> <li>All drill core was logged, cut and sampled on site.</li> <li>The Mineral Resource Estimate is based on data from DDH only.</li> </ul>
Drilling techniques	<ul> <li>A total of 1,064 DDH's for 77,845m were completed at the Project and included: 676 DDH's for 44,897m completed by MMX and 388 DDH's for 32,949m completed by Anglo American.</li> <li>Drilling produced NQ or HQ core diameters.</li> <li>Drilling was to an average depth of 73m with a maximum depth of 459.8m.</li> <li>Approximately 50% of the DDH's were drilled vertically. The remaining DDH's were inclined at angles of between 60° and 80° to the NE or SW (approximately perpendicular to the dip of the mineralisation).</li> <li>Down hole surveys were carried out in 2011-2012 on 11 DDH's with a minimum depth of 55.45m and a maximum depth of 459.8m. The deviations were not significant at shallower depths which covers the current Mineral Resource Estimate. However, as expected there is a general increase in deviation with increasing depth, the greatest deviation observed is less than 6m for the majority of the drill holes evaluated.</li> </ul>
Drill sample recovery	<ul> <li>The required minimum core recovery was 80% for all DDH's. During drilling, all core was boxed (approximately 3m per box for HQ core and 3 - 4m per box for NQ core) and measured for core recovery by drilling company personnel at the end of each drill shift. Core boxes containing the drill core were then transported from the field to the Amapá core shed by Amapá personnel.</li> <li>The core was then measured for recovery again by a contractor employee, supervised by the geology team and photographed prior to logging and core sampling.</li> <li>No specific measures were required to maximise recovery other than to ensure efficient drilling practices were followed.</li> <li>It has not been determined whether any relationship exists between sample recovery and Fe grade (it is noted that a minimum core recovery of 80% was required during drilling).</li> </ul>
Logging	<ul> <li>Logging was undertaken by company geologists using internal procedures, which included best practices and criteria for geological and geotechnical logging.</li> <li>The core was logged for the following: lithology, geological contacts and features, structures (fractures, folds, and faults), mineralisation, magnetism, and internal waste zones.</li> <li>After the drill core was logged, sample intervals were defined, marked on the core boxes, and registered in the sampling plan. All mineralisation types (friable itabirites, friable hematite, colluvium, canga, hydrothermal altered zone and carbonatic rock) were sampled.</li> </ul>
Sub- sampling techniques and sample preparation	<ul> <li>The sample intervals reflect the geological boundaries. Sample lengths vary from 0.8 to 7.25m, with an average length of approximately 4m. Since 2009, intervals of internal waste less than or equal to 1m were included with the mineralised samples. Waste intervals, greater than 1m in length, were separately sampled.</li> <li>Half core samples were taken (always the left-hand side of the drill core) and the remaining half core was retained for archive. The friable unconsolidated and semi-compact materials were sampled using a sharp knife or a spatula to slice the material in half and a hand trowel was used to collect the material into a pre-labelled plastic bag. The compact material was sampled using a diamond corecutting saw. In this case, the core was sawn in a half, and the sampled material was transferred by hand to a pre-labelled plastic bag. The sampling was performed by a contractor.</li> </ul>



Criteria	Commentary
	<ul> <li>During sample preparation the samples were reduced to -6.3mm by crushing, homogenised and split with either Jones or rotary splitter to produce a sub sample of 2kg to 3kg. This sample was reduced again by crushing to -2mm, homogenised and split to produce a sub sample of approximately 250g. This was then pulverized to -0.105mm, homogenized and split to produce a sub sample of approximately 30g which was submitted for chemical analysis.</li> <li>It is considered that sample size is appropriate to the material being sampled.</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>Prior to June 2009, sample preparation and geochemical analyses were performed by SGS.</li> <li>Since June 2009, sample preparation has been performed at the Amapá laboratory and geochemical analyses performed by SGS.</li> <li>All samples were analyzed by XRF for Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, Mn, CaO, MgO, K<sub>2</sub>O, Na<sub>2</sub>O and TiO<sub>2</sub>. Loss on Ignition (LOI) was analyzed by calcination at 1000°C.</li> <li>Samples were sent to the analytical laboratory on a weekly basis. Analytical results were provided by SGS as electronic files in *.PDF and *.XLS format as well as hard copy assay certificates which were signed and released by the person responsible for approving analytical results. After performing a quality control check, the data were available to the geology team as *.CSV files with collar coordinates, assays, down-hole surveys and geologic information or accessed by ODBC connection through EXCEL or a geology and mining planning application.</li> <li>MMX did not insert any control samples in drilling campaigns carried out from 2005 to December 2007. To check the quality of these data, 404 samples were selected for external check analysis at SGS South Africa (Johannesburg).</li> <li>From January 2008, MMX inserted one coarse (6 mm) duplicate sample in every 20 primary samples plus one commercial certified reference material sample (CRM: OREAS40) and one matrix matched certified reference material sample (MMCRM: APHP) for every 40 primary samples alternatively.</li> <li>From January 2008, a commercial blank (high-silica quart2) was introduced at the rate of one in each 40 samples.</li> <li>In August 2010, a prepared and certified reference material (MMCRM: AFB-01) for the Minas-Rio project with 42.36% Fe, 0.67% Al-O3, and 0.016% P, replaced OREAS40 and APHP. Additionally, four matrix-matched samples of about 200kg each were prepared and certified by ORE Research, Australia, and were initiated in November 2010.</li> <li>In 2010, the QA/QC procedure was updated into the data</li></ul>
Verification of sampling and assaying	<ul> <li>The data were collected from several sources and stored in the acQuire database system.</li> <li>In 2012, the drillhole database was reviewed by Coffey Mining and no significant issues were identified.</li> <li>The physical folders, drill holes and the duplicate samples were stored at the mine in Pedra Branca do Amapari.</li> <li>MMX did not use any control samples in drilling campaigns carried out from 2005 to December 2007. To check the quality of these data, 404 samples were selected for external check analysis at SGS South Africa (Johannesburg).</li> <li>A total of 26 twin holes were completed, and were audited by Coffey Mining (2012), but excluded from the geological modelling as there is no QAQC data.</li> <li>No adjustment to assay data are considered necessary.</li> </ul>



Criteria	Commentary
Location of data points	<ul> <li>The original topography was done by GEOID Laser Mapping (GEOID) using aerophotogrametry to acquire 5m spaced contour lines. To obtain a match between the topography and drill collars, a new surface was generated using previous topographic contours and the surveyed drill collars.</li> <li>Drill collar surveys were carried out by JUVIC Ltda (JUVIC), supervised by Amapá staff, using a total station or a RTK geodesic GPS. The reference point used was the landmark SAT 93813 in Pedra Branca do Amapari. The same survey team was also responsible for the mine survey which was updated every fifteen days. To get the updated mine surface, points were collected in 5m meter spacing along the mining areas using a total station. The Amapá surveyor would then upload the field information into the survey software and compare the updated topography with the monthly topography data.</li> <li>The accuracy of the survey was assessed using the closed polygonal method combined with high precision survey tools for each survey done in the mine and around the project area. A total of 15 survey beacons were established in the area based on location of a geodesic certified landmark located in the town of Pedra Branca do Amapari, SAT 93813. This is a geo-referenced landmark which was installed, monitored and certified by IBGE, the Brazilian Institute of Geography and Statistics with the same datum used by the project, SAD69.</li> </ul>
Data spacing and distribution	<ul> <li>In the MA region, the drilling grid is 50m x 100m. On the other hand, in TB and MC regions, with the additional drilling focusing on short-term geology, the drilling grid is 50m x 50m, while in VM the distances are more irregular and vary between 50m and 150m. In Taboca Leste domain (TL) the drill holes are spaced between 50m and 100m.</li> <li>In Southeast Amapá domain (APLS) the drill holes are spaced between 50m and 100m.</li> <li>The drillhole spacing is considered sufficient to establish geological and grade continuity.</li> <li>No compositing of samples was undertaken prior to Mineral Resource estimation.</li> </ul>
Orientation of data in relation to geological structure	<ul> <li>Drilling was vertical or inclined to intersect the mineralisation (sub-vertical) as perpendicularly as possible.</li> <li>In all areas the same criteria were used to interpret the sections. Along the vertical NE-SW cross-sections, the continuity of each lithology was defined based on the logging and/or chemical samples results.</li> <li>The sample length must be at least three meters and show continuity along the section or in previous and next sections to be separated as a polygon (independent lithology). If a section contained a sample with a length of less than three meters but without any observed geological continuity in the sections either side, this sample was then incorporated into the dominant lithology.</li> </ul>
Sample security	<ul> <li>The chain of custody was controlled by company (MMX or Anglo American) personnel. Samples were delivered to SGS Geosol by contracted courier services.</li> <li>The following procedures were used to ensure sample security: supervision of the drilling process and drill hole transportation, digitization, geological description, sample preparation, storage of archived core samples and storage of data within the AcQuire database.</li> <li>The process was validated by Coffey Mining in 2012.</li> </ul>
Audits or reviews	<ul> <li>In 2012, Coffey Mining audited the database and included: checks on the physical folders of drillholes, drillhole coordinates, drillhole descriptions, sampling procedures, mass balance of the samples and review of duplicate samples. No significant issues were identified by Coffey Mining.</li> <li>Coffey Mining considered the sample collection and assaying techniques to be appropriate for the geometry and style of mineralisation and the data suitable for use in the Mineral Resource Estimate.</li> </ul>



### Section 2 Reporting of Exploration Results

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

Commentary							
<ul> <li>DEV Mineração S.A. ("DEV") is the owner of the Amapá Project and its mining rights.</li> <li>Cadence owns 27% of the Amapá Project, with joint venture partner, Indo Sino Pty Ltd., owning the remaining 73%. The ownership of Amapá is via a joint venture company, Pedra Branca Alliance Pte. Ltd. ("JV Co"), which owns 100% of the equity of DEV.</li> <li>The mineral rights and tenements in the evaluated area are located between the coordinates 51°48' W - 51°54' W and 00°46' N - 00°52' N.</li> <li>Mineral rights in Brazil are governed by the Mining Code Decree 227, February 27, 1967 and further regulations enacted by Brazil's National Agency of Mining, which is the governmental agency that controls mining activities throughout the country. Currently, mineral rights are located in the evaluated area of the Amapá System reported as 852.730/1993, 858.010/1999, 858.075/2010 and 858.114/2004.</li> </ul>							
Tenements Location table							
858.010/1999 Mining License 852.730/1993 Mining License							
Northing Easting Northing Easting							
+00°49'54''952 -51°52'05''898 +00°51'32''419 -51°49'40''332							
+00°48'56''026 -51°52'05''898 +00°49'54''812 -51°49'40''333							
+00°48'56''026 -51°51'49''684 +00°49'54''812 -51°49'40''248							
+00°47'38''735 -51°51'49''684 +00°49'54''750 -51°49'40''248							
+00°47'38"735 -51°52'58"642 +00°49'54"751 -51°48'13"330							
+00°48'55''955 -51°52'58''642 +00°47'15''573 -51°48'13''333							
+00°48'55''955 -51°53'16''070 +00°47'15''575 -51°51'49''703							
+00°49'31"617 -51°53'16"070 +00°48'56"091 -51°51'49"703							
+00°49'31"617 -51°53'30"214 +00°49'25"476 -51°51'49"704							
+00°49'55''026 -51°53'30''214 +00°49'25''476 -51°51'49''619							
+00°49'55"026 -51°52'09"757 +00°51'32"417 -51°51'49"621							
+00°49'54''952 -51°52'09''757 +00°51'32''419 -51°49'40''332							
+00°49'54''952 -51°52'05''898							
858.114/2004 Mining License 858.075/2010 Mining License							
Northing Easting Northing Easting							
+00°48'56''021 -51°51'49''761 +00°51'32''617 -51°51'57''086							
+00°48'56''021 -51°52'05''926 +00°51'32''617 -51°51'49''886							
+00°49'54''947 -51°52'05''926 +00°49'25''536 -51°51'49''886							
+00°49'54''947 -51°52'09''785 +00°49'25''536 -51°51'57''086							
+00°49'55''021 -51°52'09''785 +00°51'32''617 -51°51'57''086							
+00°49'55''021 -51°51'57''430							
+00°49'25''407 -51°51'57''430							
+00°49'25"407 -51°51'49"761							
+00°48'56''021 -51°51'49''761							
<ul> <li>Approximately 17.6 Mt of the Mineral Resource Estimate is contained within the mining licenses 851.676/1992 and 858.075/2010, granted to Mina Tucano Ltd ("Tucano Ltd"), an adjacent gold mining operation. DEV and Tucano entered into several exploration, joint operating, and supply agreements in 2012 and 2013. All of which remain valid. The Joint Operating Agreement provides for the supply of iron ore and iron concentrate from 85176/1992 mining license to DEV. The consideration payable to Tucano is as follows:</li> <li>R\$5.00 per wet tonne of Iron Ore above +40% Fe delivered to a stockpile adjacent to the license boundary between DEV and Tucano and R\$7.50 per wet tonne if the same material is delivered to DEV's ROM Pad. These values reduce to R\$1.00 and R\$4.00 if the Iron Ore delivered above 25% but below 40%. The above values are adjusted on an annual basis so as to be expressed in real</li> </ul>							

terms based on the Brazilian Inflation Index.



Criteria	Commentary							
	<ul> <li>The Royalties payable by AMAPA shall be paid as follows:         <ul> <li>CFEM (Brazilian Government) 3.5 % on gross revenue on the sale of the iron ore</li> <li>Anglo Pacific royalty of 1.0% on gross revenue, ex works (less shipping, transport, storage and government royalties and taxes on sale of iron ore</li> <li>Anglo Pacific royalty of 1.5% on gross revenue, ex works (less shipping, transport, storage and government royalties and taxes on sale of iron ore</li> <li>Anglo Pacific royalty of 1.5% on gross revenue, ex works (less shipping, transport, storage and government royalties and taxes on sale of iron ore mined from the mining licenses 851.676/1992 and 858.075/2010</li> </ul> </li> </ul>							
	851.676_1992 858.075 2010 858.104 858.104 858.010_1999_Line 858.079_2014_tme							
Exploration done by other parties	<ul> <li>All tenements are in good standing, and no known impediments are believed to exist.</li> <li>In January 2005, MMX began a drilling program along Martelo (MA), Taboca (TB), Taboca Leste (TL), Mário Cruz (MC), Mário Cruz Leste (ML), Vila do Meio (VM), Vila do Meio Leste (VL) and Dragão (DG) targets which was completed in 2008. A total of 676 DDH's for 44,897m were completed by MMX.</li> <li>From 2009 to 2012, a total of 388 DDH's for 32,949m were completed by Anglo American.</li> <li>Note: Cadence has not undertaken any exploration at the Amapá Project.</li> </ul>							
Geology	<ul> <li>The Amapá deposit is located in the Northeast portion of Amazon Craton, Guiana Shield, in Maroni- ltacaiúnas province (Tassinari et al., 2000).</li> <li>The deposit is a Proterozoic Banded Iron Formation (BIF).</li> <li>The geological units that underlie the region consist of Archean basement rocks, TTG terrains (Guianense Complex, Tumucumaque Complex and Água Fria Metatonalite), discordantly overlain by Paleoproterozoic greenstone belts (Vila Nova Group; Lima et al., 1974), in turn overlain by Cenozoic lateritic deposits and Quaternary alluvial materials.</li> <li>In the Amapá area, the iron mineralization (oxide and silicatic facies itabirites), calc-silicatic and carbonatic rocks occur above the unit of metabasic rocks (mainly amphibolites) and quartz mica schist (biotite and muscovite-bearing schist).</li> </ul>							
Drill hole Information	<ul> <li>It is the opinion of the Competent Person that listing this material would not add any further material understanding of the deposit and Mineral Resource. The Project is at an advanced stage and has previously operated successfully for a period of some 7 years (2007 - 2014). Furthermore, no Exploration Results are specifically reported.</li> <li>The following drillhole database is a summary of the data used in the MRE:</li> </ul>							
	Total Database Assay Samples							
	Area Number of Total Length Number of Total Length Number of Drillholes (m) Drillholes (m) Samples							
	MA         285         16,150.30         279         8,728.65         2,291							
	TB         250         19,259.00         234         13,497.20         3,481							
	TL         157         12,953.25         148         7,854.00         204							
	MC         120         8,215.20         120         5,912.50         1,568							



Criteria	Comme	entary									
			ML	28	2,00	0.75	27	947.05	244		
			VM	160	13,90	)6.35	153	10,839.55	2,701		
			VL	46	4,09	0.80	46	2,470.20	641		
			Total	1,046	76,57	75.65	1,007	50,249.15	12,966		
				Min			Max	7			
		Easting	8	402,652	2.97	40	8,517.49	1 ſ		Values	]
		Northin	g	88,685	.19	93	3,010.29			0	
		Elevatio	on	101.6	7		295.44		Azimuth	45	
		Length	ı i	7.90			459.80			225	
		Dip		-90			-55				
Data aggregation methods	<ul> <li>Exploration intercepts are not being reported.</li> <li>Notwithstanding the above, no adjustments were made to the drillhole database prior to Miner Resource estimation.</li> <li>The sample intervals reflect the geological boundaries. Sample lengths vary from 0.8 to 7.25m, wi an average length of approximately 4m. Since 2009, intervals of internal waste less than or equal 1m were included with the mineralised samples. Waste intervals, greater than 1m in length, we separately sampled.</li> <li>All the composites (4m length intervals) are accessible in the database and the statistics for the following elements were evaluated (Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, Mn, LOI and Ti).</li> <li>No metal equivalent values are reported.</li> </ul>					5m, with equal to gth, were					
Relationship between mineralisation widths and intercept lengths	<ul> <li>Exploration intercepts are not being reported.</li> <li>The orientation of the mineralization is well understood. And the drill holes were designed to intersect the mineralization at an appropriate angle representing the true widths.</li> <li>Half (50%) of all drill holes were drilled vertically. The remainder were inclined at angles of between 60° and 80° to NE or SW, approximately perpendicular to the dip of the mineralization.</li> </ul>										
Diagrams		ropriate dat final minera					-			alisation, ex	ploration
Balanced reporting	mine	eralisation.							e resource hole results.	is represen	tative of
Other substantive exploration data	<ul> <li>Exploration results are not being reported.</li> <li>No exploration has been conducted since 2012.</li> <li>Other exploration data includes:         <ul> <li>Geological mapping;</li> <li>Exploratory drilling;</li> <li>Airborne and ground geophysics;</li> <li>Mapping; and</li> <li>30 samples collected for metallurgical testworks by MMX including: 9 bench-scale samples ranging from 63kg to 1,060 kg, 1 pilot plant run (3,000kg) and 20 mineralogical and metallurgical samples.</li> </ul> </li> </ul>										
<i>Further</i> work	that	further exp	loratio	on drilling s	should	be un	dertaken te	o improve		er, it is recon ssification in ical drilling.	



#### **Section 3 Estimation and Reporting of Mineral Resources**

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

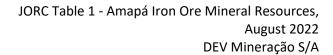
Criteria	Commentary
Database integrity	<ul> <li>All the digital data is stored in Excel spreadsheets as result of an acQuire database extraction. Coffey Mining was hired in 2012 to validate the entire existing database when acQuire was fully operational.</li> <li>Data held in the spreadsheets includes: collar location, downhole surveys, logging, QAQC data and assay information.</li> <li>The data were recovered from the Anglo American data room by DEV and made available to Prominas as CSV files containing collar location, assays, down-hole surveys and core logging.</li> <li>The drillhole data was checked for errors, some issues regarding data integrity and physical records were found and the correction was addressed and validated before modelling of the deposit.</li> <li>Prominas considers that the database represents an accurate record of the drilling undertaken at the Amapá Project.</li> </ul>
Site visits	<ul> <li>The Competent Person for this report, Geraldo Majella Guimaraes (AIG), Senior Resource Geologist of Prominas Mining, visited the site in April 2022 to complete a verification of the geological database.</li> <li>The Competent Person (Geraldo Majella Guimaraes) also visited the site in 2012 on behalf of Coffey Mining.</li> <li>Note: no drilling (or sampling) was observed during the 2022 site visit as no drilling has occurred since 2012.</li> </ul>
Geological interpretation	<ul> <li>A high level of confidence in the geological interpretation has been attained from exploration and mining operations.</li> <li>Detailed geological logging, surface mapping, and historical production allows extrapolation of drill intersections between adjacent sections.</li> <li>The 3D geological model was completed using MinePlan implicit modeling software.</li> <li>Alternative interpretation would likely result in similar tonnage and grade estimation.</li> <li>Lithologies were modeled based on the geological logging.</li> <li>The modeled lithologies included:         <ul> <li>Itabirite (ITB), containing logged lithologies of friable and semi-compact itabirites)</li> <li>Friable Hematite (HP)</li> <li>Colluvium (COL)</li> <li>Canga (CG)</li> <li>Compact Itabirite (ITC)</li> <li>Hydrothermally Altered Zone (ZAH)</li> <li>Carbonatic Rock (RCB)</li> <li>Pegmatite (PEG)</li> <li>Quartz Mica Schist (QMX)</li> <li>Amphibolitic Rock (RANF)</li> <li>Diabase dike (DB)</li> <li>Waste lithologies (WST), minor waste lithologies</li> <li>Lithologies ITB and ITC were modeled as a single itabirite unit and later divided by a contact surface.</li> <li>Lithologies ITB and ITC were modeled on 6%</li> <li>Friable Atterned Itabirite (ITAF) - grades of Fe are equal or higher than 25% and less than 60%, Al<sub>2</sub>O<sub>3</sub> higher than 4% and less or equal to 6%.</li> </ul> <li>These domains are important in construction of the geometallurgical model and determination of metal recoveries</li> <li>Both COL and CG are weathering surfaces, and have priority wherever they occur.</li> <li>The interpretation of the friable itabirites boundaries was derived primarily from geological logging with support from geochemical analysis where appropriate.</li> </li></ul>



Criteria	Commentary					
Dimensions	<ul><li>depth of 100m.</li><li>The mineralization</li></ul>	n of the itabirite i		atite and carbonate	L.5km and a maximum rocks derived from the	
Estimation and modelling techniques	The block model	was created bas	undertaken by Promin sed on the coordinate ng: 407,200m, Northin	es in the table below	v and rotated to 312º	
			-	-	1	
		Easting	Min Coordinate	Max Coordinate	-	
		Easting Northing	401,998.00 86,800.00	409,207.38 93,713.35	4	
		Elevation	0.00	324.00	1	
			gular sub-blocks (as sh d to assist with estima Parent Block Size (m) 12.50		- ow) to better represent osses.   	
		Northing	25.00	12.50	1	
		Elevation	4.00	1.00	-	
	<ul> <li>The sample intervals were composited in 4m length intervals, honoring the modeled lithology, which was coded in the intervals. Intervals smaller than 2m length were added to the previous sample.</li> <li>Prominas reviewed the Fe grade distribution for all mineralized lithologies in the composite sample and noted that the normal distribution allows for grouping of these populations into a single variogram, which was applied to all lithologies.</li> <li>From the variogram model adjusted to the experimental variograms, based on the availab composite sample values as input information, the blocks were estimated for all seven variables - FisiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, P, Mn, LOI and Ti, using Ordinary Kriging and the grade parameters shown in the table below.</li> </ul>					



Criteria	Commentary								
		<b>F</b>							
				Grade Estimati	ion Parame				
					1	2	un 3	4	
			M	lajor Axis	300	<b>2</b> 600	3 1800	2000	
			-	linor Axis	100	200	600	2000	
				rtical Axis	30	60	180	2000	
		Ellipse	R	otation 1	130	130	130	130	
			R	otation 2	0	0	0	0	
				otation 3	0	0	0	0	
				r of samples/block	1	1	1	1	
				er of samples/block	24	24	24	24	
		Colortion	-	les/drillhole	3	3	3	3	
		Selection Rules		Max number of samples/octant	3	3	3	3	
			Octants	Min. number of					
				non-empty	4	3	1	1	
				octants					
Moisture	<ul> <li>The v</li> <li></li></ul>	<ul> <li>No grade capping/top cuts were considered necessary.</li> <li>The validations that are performed were: <ul> <li>The assay validation was performed using criteria related to the QAQC of drillholes, selecting only the QAQC verified drillholes, as well as used at composites the validation regarding stoichiometric balance of grades.</li> <li>For model, it was only used the composites with stoichiometric balance ranging from 95% - 105% at the interpolation.</li> </ul> </li> </ul>							
parameters	cons Reso • The o cut-c	constrained by an optimized pit shell. A cut-off grade of 25% Fe has been used to report the Mineral Resources.							
Mining factors or assumptions	<ul> <li>The mining operation will be open pit mining using conventional truck and shovel methods.</li> <li>Mineral Resources were limited by an optimized open pit shell based on the following technical and economic parameters:</li> </ul>								
	'	- Revenue: o Fe price - \$120.00/t							
	- (	o Fer	metallurgica	l recovery: (Fe*2.1 .0% per year	14 - 37.07)	) %			
				Operatio	nal Costs				
			Туре			uct wet bas	is)		
							· .		





Criteria	Commentary							
		Mini	ng		Detailed	l below		
		Processing		11.94				
			Off-Site Haul 2.78					
		Rai	<b>Rail</b> 2.19					
		Por	Port 1.12					
		Environn			1.6			
		G&A			1.6	53		J
				Min	ing Costs			1
		F	ixed Cost		-	\$ 0.30/t	ROM	
					Distance (		Cost (US\$/t)	
					<1000	,	0.96	-
			_		<2000		1.59	
				)re ortotion	<3000		2.44	
			Transp	ortation	<4000		3.28	
		Variable			>4000		3.35	
		Cost	w	aste	<1000		0.96	_
				ortation	<2000		1.59	-
					<3000		2.44	-
			-		Friable		0.55	-
			Exca	vation	Compac		12.71 0.46	-
					Waste		0.40	J
				Slop	e Angles			
				Rock Mas	s Classificati	on (Bien	iawski, 1976)	
				V	IV	Ш	Ш	
		Litholog	ical Unit		Overal	l slope		
		Amphi	bolite	35	37	38	45	
		Quartz M	ica Schist	32	35	38	40	
		Pegm	atite	32	35	38	40	
		Itabi	irite	37	40	42	48	
		Carbona	tic Rock	37	40	42	45	
		Collu	vium		30			
Metallurgical factors or		2014, the <i>i</i>	Amapá p		operational			ga, colluvium, itabirite
assumptions	and friable hematite mineralization. The plant was initially designed to produce sinter feed, spiral concentrate and pellet feed. After some internal studies DEV planned to increase the milling capacity, increasing the production of the pellet feed, eliminating the sinter feed product.							
Environmental factors or assumptions	<ul> <li>Amapá was in production from 2007 to Q1 2014, however Environmental &amp; Social licenses/permits have lapsed.</li> <li>The table below lists the key environmental operational licenses that will be required to restart production. Given that Amapá has already carried out an environmental impact assessment a shortened permitting pathway has begun.</li> </ul>							



Criteria	Commentary							
		Authority	Permitted Activity					
			Installation of 4 fuel					
			Landfill for solid wa					
			Waste Dump					
	Min	ina	Mining research an	d iron exploitation (ANM 858.0	)75/2010)			
	Activ	•	Iron and gold exploi	itation				
			Gold exploitation (T	ucano Gold Project)				
			Operation of 2 fuels	s storage tanks				
			Transportation of Ir					
			Iron exploitation (AN					
			Landfill for Zamin's					
		Authority	Permitted Activity					
			Conveyors belts					
			Jack-up docks Installation of fuel's	storago tanko				
			Slope stabilisation S	0				
			Chemical cleaning	-				
			Waste dump					
	Po	-	Ore transshipment					
	Activ	ities SEMA	Conveyors belts					
			Iron transshipment					
			Channels Dredging	Channels Dredging				
			Storage tank					
			Storage tank					
			Jack-up docks					
		_	Chemical cleaning	of the mining shed				
	Rail	ities	Permitted Activity					
	activ	SEMA	Railway operation					
	-		-	that has a total volume to 134 Mm <sup>3</sup> (South and N				
Bulk density	<ul><li>in-situ sand replace</li><li>During 2009 and 20</li></ul>	ement methodo 010, an addition	logy. al 468 measureme	d out for the ITBF and IT ents, for all lithologies we illected 150 additional sa	re performed by Anglo			
	• • •		•	2 based on Channel Sam				
	determination of m				C			
	<ul> <li>In 2012, the avail validation.</li> </ul>	able density da	ata were reviewe	d by Coffey Mining as	part of the database			
	<ul> <li>All densities report</li> </ul>	ed are based or	n wet densities					
	•			doutliers were identified	and excluded from the			
	-	owing densities were used by Prominas in the Mineral Resource Estimate:						
	Г	Density Assignment						
	Lithology Assignment (t/m <sup>3</sup> )							
		Friable Itabirite 2.71						
	[	Altered Friable Itabirite 2.33						
		Friable Hematite 2.95						
			uvium Inga	2.14 2.72				
			inga tt Itabirite	3.19				
			al Altered Zone	2.18				
		-	atic Rock	1.76				
	[	-	matite	2.10				
		Compact	Pegmatite	2.52				



Criteria	Commentary			
		Quartz Mica Schist	2.20	
		Compact Quartz Mica Schist	2.20	4
				4
		Amphibolitic Rock	2.17	4
		Waste	2.98	4
		Diabase dike	2.98	1
Classification	<ul> <li>The following were</li> <li>Evaluation of</li> <li>Evaluation of</li> <li>Quality of log recovery etc.</li> <li>Quality and co</li> <li>Quality and co</li> <li>Quality and co</li> <li>Rigor of QA/C</li> <li>Variogram qu</li> <li>Kriging quality sampling patt</li> <li>In summary, and</li> <li>Inferred Resource</li> <li>Measured: B maximum of 2 of at most 0.5</li> <li>Indicated: Bl maximum of 2 at least 4.</li> </ul>	as shown in the criteria used to s is as follows: lock is interpolated in the first or 100 m distance, average distance fo 5, and the number of octants filled ock is interpolated in the first or 120 m distance and kriging variance blocks that lie outside the Meas	fication: cy value(s) for each litholo e data used in the model of the criteria used, inexi ent and stoichiometric bac n, treatment and safety. standards, blanks etc. I of the experimental and tionship between the val classify this MRE as Me second search volume, r is at least 6. second search volume, r ce of at most 0.8, and num	Dgy an estimation works. stence of biasing, core alance control. d modelled variogram riogram model and the easured, Indicated and nearest composite at a 0 m and kriging variance nearest composite at a nearest composite at a nearest composite at a
		l 2 2 totals	Measured Indicated Inferred	
	Mineral Resources	of the MRE reflects the Competent s are reported within an optimized orted as wet tonnes.		-



	CG) for A The effect Geraldo N A summa	PW/APS. ctive date of the Miner	or both fri	ملمام مراما	Commentary							
		<ul> <li>Mineral Resources are reported for both friable and semi compact mineralisation (ITB, HP, COL and CG) for APW/APS.</li> <li>The effective date of the Mineral Resource Estimate is 31-Aug-2022. The competent person is Geraldo Majella Guimarães who is an associate professional with Prominas Mining.</li> <li>A summary of the Mineral Resource Estimate for the Amapá Project reported within an optimised pit and above a cut-off grade of 25% Fe is shown in the table below.</li> </ul>										
	Amapa Mineral Resource Table - Constrained by Maximum Pit - 31/08/2022 DEV Mineral Rights - Fe >= 25%											
	Classification	Material	Tonnage (Mt)	Fe (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	P (%)	Mn (%)				
	Measured	Friable Altered Itabirite	33.31	38.47	30.42	7.22	0.170	1.19				
		Friable Itabirite	14.65	39.55	36.50	2.81	0.086	0.88				
		Friable Haematite	0.69	62.63	4.32	2.20	0.226	0.38				
		Colluvium	5.84	38.80	21.66	11.89	0.177	0.70				
		Canga	0.84	50.03	5.68	10.60	0.971	0.18				
		Sub-total	55.33	39.26	30.40	6.54	0.161	1.03				
		Friable Altered Itabirite	66.43	37.41	32.11	6.73	0.173	1.29				
	Indicated Mea. + Ind.	Friable Itabirite	37.14	39.73	35.73	2.91	0.103	0.92				
		Friable Haematite	1.50	57.53	12.85	2.18	0.113	0.43				
		Colluvium	64.22	37.98	23.11	11.86	0.140	0.58				
		Canga	4.86	48.81	8.98	10.08	0.579	0.21				
		Sub-total	174.15	38.60	28.75	7.86	0.156	0.91				
		Friable Altered Itabirite	99.74	37.76	31.55	6.89	0.172	1.26				
		Friable Itabirite	51.79	39.68	35.95	2.88	0.098	0.91				
		Friable Haematite	2.19	59.14	10.16	2.19	0.149	0.41				
		Colluvium	70.06	38.05	22.99	11.86	0.143	0.59				
		Canga	5.70	48.99	8.49	10.16	0.637	0.21				
		Sub-total	229.48	38.76	29.15	7.54	0.157	0.94				
		Friable Altered Itabirite	11.27	37.01	31.98	6.40	0.190	1.67				
	Inferred	Friable Itabirite	3.09	38.60	35.35	3.28	0.144	1.41				
		Friable Haematite	0.53	50.06	21.36	2.88	0.094	0.85				
		Colluvium	30.21	34.80	26.20	12.92	0.107	0.53				
		Canga	1.66	47.19	11.60	9.98	0.381	0.27				
		Sub-total	46.76	36.20	27.62	10.49	0.139	0.86				
	TOTAL		276.24	38.33	28.89	8.04	0.154	0.93				