Pedra Branca Project May 2019 Resource Estimate Technical Report

Updated: August 12, 2019

Pedra Branca Project, Ceará State, Brazil

Qualified Persons:

Susan Lomas, P.Geo.
Lions Gate Geological Consulting Inc.
Ali Shahkar, P.Eng.
Lions Gate Geological Consulting Inc.

Bert Huls, P.Eng.
Huls Consulting Inc.

Effective Date:
May 28, 2019

CERTIFICATE OF QUALIFIED PERSON

Susan Lomas, P.Geo.
7629 Sechelt Inlet Rd.
Sechelt, British Columbia V0N 3A4

I, Susan Lomas, P.Geo., am the President of Lions Gate Geological Consulting Inc. (LGGC).

This certificate applies to the technical report titled "Pedra Branca Project May 2019 Resource Estimate Technical Report, Updated August 12, 2019, Pedra Branca Project, Ceara State, Brazil", prepared for ValOre Metals Corp., with an effective date of May 28, 2019 (the "Technical Report").

I am a Professional Geoscientist of The Association of Professional Engineers and Geoscientists of British Columbia. In 1987, I graduated from Concordia University of Montreal with a Bachelor of Science degree in geology.

I have practiced my profession continuously since 1987 and have been involved in: mineral exploration for gold, nickel, copper, zinc, lead and silver in Canada, United States, Mexico, Venezuela and Ghana and in underground mine geology, ore control and resource modelling and estimation for gold, nickel, copper, zinc, lead, silver, platinum group elements, potash, uranium and industrial mineral properties in Canada, United States, Mongolia, Mexico, Brazil, Peru, Thailand, China, Greece, Romania, Ecuador, Venezuela, Senegal, New Caledonia, Russia and Argentina.

As a result of my experience with mineral resource modelling and estimation and my qualifications, I meet the requirements of a Qualified Person as defined in National Instrument 43–101 Standards of Disclosure for Mineral Projects (NI 43–101) for the Pedra Branca PGM Project.

I have not visited the Pedra Branca Project.

I am responsible for Sections 1 to 12 and 14 to 19 of the Technical Report.

I am independent of ValOre Metals Corporation as independence is defined by Section 1.5 of NI 43–101.

I have had no prior involvement with the property that is the subject of this Technical Report.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those section of the technical report not misleading.

"Signed and Sealed"

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Susan Lomas, P.Geo.
Dated: 12 August, 2019

CERTIFICATE OF QUALIFIED PERSON

Ali Shahkar, P.Eng.
7629 Sechelt Inlet Rd.
Sechelt, British Columbia V0N 3A4

I, Ali Shahkar, P.Eng., am a Principal Consultant at Lions Gate Geological Consulting Inc. (LGGC).

This certificate applies to the technical report titled "Pedra Branca Project May 2019 Resource Estimate Technical Report, Updated August 12, 2019, Pedra Branca Project, Ceara State, Brazil", prepared for ValOre Metals Corp., with an effective date of May 28, 2019 (the "Technical Report").

I am a Professional Engineer of The Association of Professional Engineers and Geoscientists of British Columbia. In 1995, I graduated from University of British Columbia with a Bachelor of Applied Science degree in geological engineering.

I have practiced my profession continuously since 1995. I have 24 years of experience as a geologist in mineral exploration and mining, with the last 16 years specifically in resource estimation. My work experience has been focussed on exploration and modelling of precious and base metal deposits both in Canada and internationally.

As a result of my experience with mineral resource modelling and estimation and my qualifications, I meet the requirements of a Qualified Person as defined in National Instrument 43–101 Standards of Disclosure for Mineral Projects (NI 43–101) for the Pedra Branca PGM Project.

I have visited the Pedra Branca Project July 26 and 27 in 2019.

I am responsible for Sections 1 to 12 and 14 to 19 of the Technical Report.

I am independent of ValOre Metals Corporation as independence is defined by Section 1.5 of NI 43–101.

I have had no prior involvement with the property that is the subject of this Technical Report.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those section of the technical report not misleading.

"Signed and Sealed"

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Ali Shahkar, P.Eng.
Dated: 12 August, 2019

Huls Consulting
3303 Belford Rd, Reno, NV 89509
+1 303 803 7757
bertjhuls@gmail.com

Certificate of Qualified Person

I, Bert J Huls, am President of Huls Consulting Inc., and am Metallurgical Engineer by Profession.

This certificate applies to the technical report titled "NI 43-101 Pedra Branca Project May 2019 Resource Estimate Technical Report, Updated August 12, 2019, Pedra Branca Project, Ceara State, Brazil", which has an effective date of May 28, 2019 and is dated August 12, 2019 (the "Technical Report").

I am a member of Professional Engineers Ontario # 20869277. I graduated from the Technical University of Delft in April, 1978 with a MSc. Degree in Mining and Petroleum Engineering and received my Doctor of Science Degree from this same University in September 1990.

I have practiced my profession for 41 years since graduation. I have been directly involved in operation of metallurgical facilities, technology development and metallurgical engineering and project management of metallurgical facilities for Base Metals, Industrial Minerals, and Gold and Silver Minerals. I have received various awards and am widely published in my field.

As a result of my education, relevant experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (NI 43-101).

I have not visited the Pedra Branca property in Brazil.

I am responsible for the write up of the metallurgical test work of section 13 Mineral Processing and Metallurgical Testing, and those portions of the summary, conclusions and recommendations that pertain to this section of the Technical Report.

I am independent of ValOre Metals Corp, as independence is described by Section 1.5 of NI 43-101.

I have not had prior involvement with the property that is the subject of the Technical Report.

I have read NI 43-101 and the sections of the technical report for which I am responsible have been prepared in compliance with that instrument.

To the best of my knowledge, information and belief, as of the effective date of the Technical Report, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

"Signed and Sealed"

Dr. Bert J Huls, PEng
DATED this 12th day of August, 2019.

Huls Consulting Inc.

Membership Professional Engineers Ontario # 20869277

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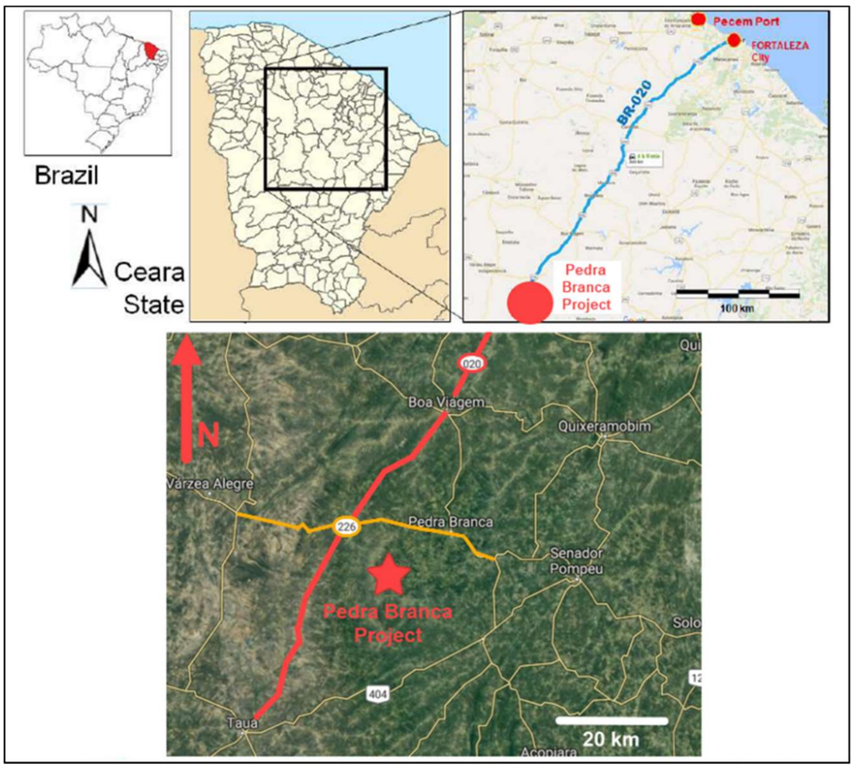
1. Summary

The Pedra Branca Project May 2019 Resource Estimate Technical Report (PB Report) has an effective date of May 28, 2019 and has been prepared using the Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101). This is an update to the previous Technical Report filed on July 23rd, 2019 and includes disclosure of a 1% Net Smelter Royalty in sections 1.1 and 4.2.3 in this report. The PB Report is an Independent NI 43-101 Technical Report prepared for ValOre Metals Corp. (ValOre) on the Pedra Branca Project located in the north-east part of Brazil in Ceará State, approximately 280 km southwest of the state capital city, Fortaleza (Figure 1-1).

Figure 1-1 Pedra Branca Project Location Map (After image from GE21 Report, May 2018)



ValOre retained the services of Lions Gate Geological Consulting Inc. (LGGC) to estimate the mineral resources of five deposits within the Pedra Branca Project including the Santo Amaro, Curiu, Esbarro, Cedro and Trapia Deposits (5PB Deposits). The mineralization included in the resource estimation at the Pedra Branca Project is platinum, palladium and gold. There are other metals locally associated with the PGE+Au mineralization including Ni, Cr, Cu and Co but they have not been included in the current mineral estimation but could be included in future estimations if supported by their distribution and metallurgy.

1.1 Mineral Rights for Pedra Branca Project

The mineral rights to the Pedra Branca Project are held under a series of Exploration Licences in the name of a Brazilian holding company, Pedra Branca Brasil Mineracao Ltda. (PBM). On May 24, 2019 ValOre entered in an agreement with Jangada to purchase 100% interest in their holdings of PBM (ValOre PR, May 28, 2019 and updated ValOre PR, July 16, 2019).

ValOre has agreed to the following considerations to Jangada;

a) issuance and allotment of a total of 25,000,000 ValOre common shares ("**Consideration Shares**") with 22,000,000 of those being issued on the date of closing of the Acquisition and the remaining 3,000,000 issued over 3 years according to terms agreed between ValOre and Jangada; and
b) cash payments to Jangada in the aggregate of C$3,000,000, as follows:
    i. exclusivity payments totalling C$250,000 (paid);
    ii. C$750,000 payable on closing of the Acquisition;
    iii. C$1,000,000 on, or before, three (3) months after the closing of the Acquisition; and
    iv. C$1,000,000 on, or before, six (6) months after the closing of the Acquisition.

Upon closing of the Acquisition, Jangada will have the right to appoint up to two (2) members to ValOre's Board of Directors for a two (2) year term. The term may be extended if mutually agreed in writing by ValOre, Jangada and each of the nominee board members.

There is a net smelter returns royalty agreement (and subsequent royalty transfer agreement) appertaining to the Project under which the Owner of the Project ultimately grants and agrees to pay a 1% net smelter returns royalty to Silverstream Sezc in the event that the Owner (or any successor or assignor) of the Project brings the underlying properties or any portion thereof into commercial production.

The Pedra Branca Project is comprised of 38 Exploration Licences that cover an area of some 38,941 ha. Final exploration reports have been submitted for three licenses (one at Curiu, two at Esbarro) with the intention of advancing to development and 24 of the exploration licenses are currently the subject of extension applications as their expiry dates have been reached on either April 19, 2019 or May 5, 2019. LGGC has been assured that the granting of the extensions is generally assured but there is no guarantee that this is the case and it affects the Exploration Licenses that hold the Santo Amaro and parts of the Trapia and Cedro Deposits.

The legal status of the mineral tenure, ownership of the project area and underlying property agreements or permits has not been independently verified by the QPs. Susan Lomas and Ali Shahkar have relied upon information from Ianê Pitrowsky da Rocha, Lawyer with FFA (Legal Support for Mining Companies) located in Rio de Janeiro, Brazil, in regard to the validity of the Exploration Licenses.

The letter is dated July 12, 2019 and states that Branca do Brasil Mineracao Ltda is currently the owner of the Esbarro, Cedro and Curiu Projects through Exploration Licenses 800.097/1999 (Curiu), 800.096/1999 and 800.698/2014 (Cedro) and 800.095/1999 (Esbarro) and also Trapia (800.411/2014, 800.152/2014 and 800.413/2014) and Santo Amaro Projects (800.124/2014).

The licences are only valid for platinum group minerals but the other elements (Au and possibly Ni, Cu, Co etc.) are perceived to be "by products" in Brazilian law and therefore are covered by the licences. LGGC has not been able to independently verify this but the major contributors to the value of the project are the platinum and palladium elements.

1.2 History and Exploration

All work on the Pedra Branca project to date has been completed by other companies and ValOre is working on their exploration plan to advance the understanding of the mineralization and geology at the deposits and complete further study work to advance the projects to production where possible.

Initial exploration and drilling on the property area were carried out in the 1960's to investigate the chromite potential of the region. During this time five drill holes were completed in the area of the Esbarro Deposit. These drill holes are not part of the project database.

In the 1980's Gencor and Rio Tinto completed exploration in two separate areas of the project site and identified platinum-palladium mineralization in the ultramafic belt using airborne geophysics, mapping, soil sampling, trenching and drilling. Rio Tinto focussed on the Esbarro Deposit and drilled 42 holes along an 800 m strike length. Gencor focussed their work in the area of the Trapia Deposit and drilled 8 holes. Both companies ceased exploration in the region when PGM prices dropped.

In the 1990's when PGM prices increased, Altoro Gold, who became Solitario Resources, began exploring in the area and in 1999 they drilled 8 holes into each of the Esbarro and Trapia Deposits. In the 2000's, Altoro/Solitario completed drilling programs over the 5PB Deposits with 12 at Santo Amaro, 44 at Curiu, 64 at Esbarro, 74 at Cedro and 41 at Trapia.

In 2003, Anglo American Platinum (Amplat) took an interest in the project and secured majority ownership and began managing the project in 2011. During this time, they drilled 6 more holes at Curiu area and 20 more holes at Cedro. Amplat also undertook a relogging and resampling program of the majority of 1999 to 2004 drill holes in the 5PB Deposits to insert QAQC support samples, unify the geology logging process and increase the number of bulk density measurements for the project.

Amplat also completed ground and airborne geophysics programs, preliminary metallurgical test work and exploration drilling outside of the 5PB Deposit areas to test soil and geophysical anomalies.

1.2.1 2018 Preliminary Economic Analysis Study

In 2017 and 2018, Jangada Mines Plc, (Jangada) hired GE21 Consultoria Mineral Ltda. (GE21) to complete a mineral resource estimation and a Preliminary Economic Assessment (PEA) on the Pedra Branca Project. The resource estimate and PEA study were conducted in accordance with Australian Joint Ore Reserves Committee (JORC) and NI 43-101, respectively.

The mineral estimation work resulted in 17.9 Mt at 0.77 g/t Pd, 0.45 g/t Pt and 0.04 g/t Au in Measured and Indicated Mineral Resources categories and 16.6 Mt at 0.68 g/t Pd, 0.66 g/t Pt and 0.03 g/t Au in the Inferred Mineral Resources category (Table 1-1).

Table 1-1 2018 Mineral Resources Declared using a 0.30 g/t AuEq cut-off (GE21, 2018)

		Tonnes (kt)	PGM (g/t)	Pd (g/t)	Pt (g/t)	Au (g/t)	Cu (%)	Ni (%)	Cr2O3(%)	Co (g/t)	PGM (koz)	Pd (koz)	Pt (koz)	Au (koz)
Cedro	Indicated	3 798	1.066	0.665	0.383	0.018	0.043	0.196	0.789	118.73	130.2	81.2	46.8	2.2
	Inferred	2 003	1.522	0.934	0.569	0.019	0.032	0.179	0.812	109.40	98.0	60.2	36.6	1.2
Curiu	Measured	1 061	2.091	1.043	0.957	0.091	0.038	0.218	1.156	130.123	71.3	35.6	32.6	3.1
	Indicated	382	2.046	1.035	0.893	0.119	0.037	0.199	2.382	122.121	25.1	12.7	11.0	1.5
	Inferred	37	2.967	1.550	1.294	0.123	0.056	0.206	2.099	109.791	3.5	1.8	1.5	0.1
Esbarro	Measured	2 985	1.316	0.863	0.428	0.025	0.047	0.249	1.145	139.677	126.3	82.8	41.1	2.4
	Indicated	7 126	1.206	0.771	0.405	0.031	0.047	0.227	0.600	128.516	276.3	176.6	92.8	7.1
	Inferred	495	0.996	0.549	0.424	0.023	0.056	0.178	0.276	109.553	15.9	8.7	6.7	0.4
Trapia	Indicated	2 529	1.113	0.639	0.422	0.052	0.055	0.216	0.910	133.035	90.5	52.0	34.3	4.2
	Inferred	2 717	1.320	0.605	0.616	0.099	0.045	0.202	1.184	122.955	115.3	52.9	53.8	8.6
Santo Amaro	Inferred	11 380	1.360	0.650	0.690	0.020	0.010	0.120	0.710	105.870	497.0	237.0	252.0	7.0
Total	Meas+Ind	17 881	1.252	0.767	0.450	0.036	0.047	0.221	0.846	128.898	719.7	440.9	258.6	20.5
	Inferred	16 632	1.366	0.676	0.657	0.033	0.020	0.142	0.790	109.205	729.7	360.6	350.7	17.4

1.2.2 2018 PEA Study

Results from the PEA were positive and suggested robust Project economics; however, the resource estimate which provided the fundamental basis for financial evaluations was not in compliance to NI 43-101, but to JORC. As such, the results are treated as historic, and summarized in Section 6.1, Exploration History.

1.2.3 2019 Minxcon Mineral Resource Estimation

Jangada hired Minxcon (Pty) Ltd of South Africa (Minxcon) to estimate the mineral resources for the Pedra Branca Project and they completed a JORC report in February 2019.

Minxcon estimated Au, Pd and Pt grade elements along with values for Ni, Cu and Co into their block model. They reported the results of their estimation work in two ways, one using Au, Pd and Pt grades only, and the other using a 3E cut-off of 0.65 g/t (Au+Pd+Pt grades).

Minxcon generated pit shells for mineral resource declarations and included "geological losses" of 10% to 15% for indicated and inferred mineral resources applied respectively. The reporting pitshells were build using the recoveries, metal prices and costs as included in Table 1-2.

Table 1-2 Mineral Resource Pit Shell and Pay Limit Calculation Parameters

Description	Pt	Pd	Au	Ni	Cu	Cr	Co	
Recoveries	67%	68%	40%	26%	77%	67%	7%	
Price (US$/kg)	39,352	40,188	48,804	19.27	7.22	0.26	46.17	
Mining Cost (US$/t)								3.40
Processing Cost (US$/t)								10.80
MCF (%)								100.00
Payability Factor (%)								85.00

The resource estimate resulted in 18 Mt grading 0.42 g/t Pt, 0.84 g/t Pd and 0.03 g/t Au in the Indicated Mineral Resources category and 32 Mt grading 0.44 g/t Pt, 0.74 g/t Pd and 0.03 g/t Au in the Inferred Mineral Resources Category (Table 1-3). Minxcon realized similar tonnes and grade to the GE21 resource estimate in the Indicated category but doubled the amount of Inferred Mineral Resources by creating large mineralization shells that appear to be overly optimistic and will require further drilling to establish confidence it their extensions.

Table 1-3 Minxcon 2019 Mineral Resource Estimation for Pedra Branca 5PB Deposits Reported at a PGM+Au Cut-off of 0.65 g/t

Mineral Resources for 3E (Pt+Pd+Au) for the Pedra Branca Project as at 1 February 2019

Mineral Resource Classification	Tonnes		Grade								Metal Content					
	Tonnes	Tonnes less Geo Loss	3E	Pt	Pd	Au	Ni	Cu	Cr	Co	Pt	Pd	Au	Pt	Pd	Au
	M/t	Mt	g/t	g/t	g/t	g/t	%	%	%	%	kg	kg	kg	oz	oz	oz
Indicated	17.97	16.18	1.30	0.42	0.84	0.03	0.21	0.04	0.55	0.010	6,865	13,661	542	220,727	439,214	17,431
Inferred	31.93	27.14	1.21	0.44	0.74	0.03	0.17	0.03	0.50	0.010	11,820	20,101	920	380,016	646,276	29,588
Indicated and Inferred	**49.91**	**43.32**	**1.24**	**0.43**	**0.78**	**0.03**	**0.19**	**0.03**	**0.52**	**0.010**	**18,685**	**33,763**	**1,462**	**600,742**	**1,085,490**	**47,019**

Notes:

1. Cut-off of 0.65 g/t 3E.
2. Only Mineral Resources falling with in the Mineral Resources pit have been declared.
3. Geological losses of 10% for Indicated and 15% for Inferred were applied.
4. Prices used: Pt = USD1,224/oz, Pd = USD1,250/oz, Au = USD1,500/oz, Ni = USD19,27/t, Cu = USD7,216/t, Cr = USD258/t & Co = USD46,171/t.
5. Mineral Resources are stated as inclusive of Ore Reserves (no Ore Reserves declared at this stage).
6. Mineral Resources are reported as total Mineral Resources and are not attributed.

1.3 Geology, Mineralization and Deposit Style

The Pedra Branca Project mineralization is hosted in ultramafic bodies originated from one large layered intrusion. The ultramafic bodies can be subdivided into two distinct rock packages that occur separated by a relatively thick chromitite marker horizon (reefs), this subdivision is likely to be a primary magmatic feature that is related to the PGM emplacement.

One rock package is characterized by massive black dunite and the other by heterogeneous peridotites. The massive dunite is generally course-grained and is homogenous with minor regions grading into olivine rich peridotites. Locally, it can have thin tremolized units commonly associated with disseminated chromite and chromitites. The peridotite dominated rock package is characterized by mixed pegmatodial, equigranular olivine crystals and cyclic layering. The cyclic units consist of thin chromitite layers followed by equigranular dunite and olivine peridotites grading into pegmatodial peridotites.

The PGMs are associated with two distinct types of mineralization at the Pedra Branca Project:

- Associated with sulphides where PGM mineralization directly correlates to Cu, Ni, S and Au;
- Associated with the chromitites and disseminated chromitites where the PGMs are inversely proportional to Cu, Ni, and S.

1.4 Drilling, Sampling and Data Validation

The core from the 1987 drilling campaigns (RTZ and Gencor) are not included in the core storage area and there is no QAQC data to support the analysis results from these drill holes. They encompass 40% of the drilling at the Esbarro Deposit and 16% at Trapia but only one of the 1987 drill holes is included in the resource estimate at Trapia. A study should be completed to ensure the analytical results from this drilling campaign reasonably represent the tenor of mineralization at Esbarro. This can be accomplished by comparing the assay results to the results from the 1999 to 2007 drill core and may also include some twin-hole drilling or infill drilling in areas where the 1987 drill holes are dominant.

Review of the drilling and core handling procedures in place during the 1999 to 2011 programs did not uncover any factors that would materially impact a mineral resource estimation.

In 2011 and 2012, Amplat relogged and resampled the available drill core from holes completed between 1999 and 2004. The core samples from the resampling program and from 2007 to 2011 drilling programs were submitted with QAQC support in the form of Standard Reference Material (SRMs), blanks and pulp duplicates. Though the insertion rate was not as high as is industry standard, the results support the assay data in the project database and are reasonable to support a mineral resource estimation.

The database audit revealed a transposition error in the results for Au, Pt and Pd for19 drill holes at the Trapia and Curiu Deposits. These errors were corrected using data from the laboratory issued assay certificates for the final iteration of the mineral resource estimation. The project database should undergo a check of all assay, drill hole location, drill orientation and lithology data prior to the next resource estimation. With the corrections made to the database, LGGC determined it would reasonably support an inferred mineral resource estimation.

1.5 Mineral Processing and Metallurgical Testing

Between 2005 and 2019, several samples from the Esbarro and Curiu deposits were tested for metallurgical response. The deposits consist of a weathered or oxidized zone and a zone consisting of harder rock material. The amount of test results is limited, requiring a more extensive metallurgical program. Both analytical measurements and testing appear to have been conducted following the appropriate standards.

Higher-grade material provides better metallurgical response. In some samples, the minerals appear finely disseminated, warranting a finer grind than tested. Slime formation and the presence of talc will require a careful approach to what grinding process or methodology to employ. As the mineralized material does not respond well to the standard Merensky-Reef reagent suite, it may be advisable to tune operating conditions to better correspond the mineralized material in the deposit.

The hardness of the mineralized material can be considered moderately hard to hard, indicating a Ball Mill Work Index ranging from 16 to 20 kWh/tonne.

The "Weathered" material, tested in 2019, attained a 4E (PGM+Au) recovery of about 45 % at a final concentrate grade of about 100 g/t 4E, from a feed grade of about 11.4 g/t 4E.

1.6 Mineral Resource Estimate

The mineral resource estimate was prepared by Susan Lomas, P.Geo. of Lions Gate Geological Consulting Inc. (LGGC). The resource model was prepared using only the platinum, palladium and gold (PGE+Au) elements at the five main deposits (Santo Amaro, Curiu, Cedro, Esbarro and Trapia (5PB Deposits)) within the Pedra Branca Project in Brazil.

LGGC completed a review of the drilling and exploration data for the five deposits and completed new estimates in conformity with generally accepted CIM Estimation of Mineral Resources and Mineral Reserves Best Practices Guidelines (November 23, 2003).

Mineral resources are not mineral reserves and they do not have demonstrated economic viability. There is no certainty that all or any part of the mineral resource will be converted into mineral reserves upon application of modifying factors.

Estimations were made from 3D block models based on geostatistical applications using commercial mine planning software (Geovia GEMS 6.7.4). The project limits are based in the UTM coordinate system using block sizes measuring 20 m x 20 m x 10 m for the Santo Amaro and Trapia Deposits and 15 m x 15 m x 5 m blocks for the Curiu, Cedro and Esbarro deposits. Grades were estimated using inverse distance squared (ID^2) method and nearest neighbour (NN) method was used for comparison and validation purposes.

The diamond drill holes (DDH) intersect the PGE+Au mineralization of the tabular 5 PB Deposits predominantly in a perpendicular to sub-perpendicular manner. The resource estimates were generated using drill hole sample assay results and the interpretation of a PGE+Au grade-based model that relates to the spatial distribution of platinum, palladium and gold. The assay data was composited into 2 m intervals. Interpolation characteristics were defined based on the geology, drill hole spacing, and geostatistical analysis of the data. The resources were classified according to their proximity to the sample data locations and are reported, as required by NI 43-101, according to the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014).

Bulk density values were averaged by oxide, transition and sulphide domains for each deposit then assigned to the 5PB Deposit area block models to the Density Block value. Future resource estimates with more geology and structure influencing the domaining would benefit from bulk density data being interpolated through the block model to better reflect local variations.

LGGC reviewed the basic statistics for the assay and 2 m composite data, selected capping levels for extreme grades and applied a Restricted Outlier Strategy (RO) for some zones to allow top grades to influence local block grades over a shortened range but to not smear into more distal blocks in the deposits. The total metal removed by LGGC's capping/restricted outlier strategy was 11%.

LGGC set the restrictions on the influence of elevated grades at the Santo Amaro and Cedro Deposits conservatively where the percent difference in PGE+Au ounces was reduced by 22% and 23% respectively between the capped and uncapped summations. LGGC considers the risk related to the influence of the elevated assays to be greater for these deposits. The estimation of grades at Santo Amaro is supported by 6 drill holes (3 of them carry the bulk of the elevated grades), representing only 3% of drill hole database but carries 19% of the overall ounces. There appears to be reasonable continuity in the mineralization to support a mineral estimation for this deposit, but more drilling is required to support the consideration of less restrictive influence of the higher-grade assays. The Cedro Deposit has similar concerns. This deposit hosts 8 separate mineralization solids and 68 drill holes support the mineral resource estimate. Four of the solids have less than 5 drill holes so more drilling is required at Cedro to provide more confidence in the higher-grade assay population.

The grade restriction strategy for the other deposits had less of an overall impact on the reduction in the PGE+Au contained ounces due to better drill hole support or smaller number of outlier top grades. The reduction in reported ounces from capped to uncapped PGE+Au ounces was -3% at Curiu, -6% at Esbarro and -9% at Trapia Deposits and these deposits account for just under 70% of the contained ounces at the Pedra Branca Project.

All blocks were classified into the Inferred Mineral Resources category and higher levels of classification could be considered when there is

- detailed modelling of the geology and structural influences on mineralization,
- increased drill density at some of the deposits such as Santo Amaro, Curiu and Trapia,
- a full database check of all assay data back to the assay certificates for all the 5PB Deposit areas,
- more drill holes with downhole survey information,
- resurvey of all collar locations,
- checks on the bulk density data and
- acceptance of the Applications for Extension on the Exploration Licenses for parts of Trapia, Cedro and Santo Amaro Deposits.

Pit shells were generated for each of the 5PB Deposits using palladium price of $1000/ounce, platinum price of $860/ounce and gold price of $1250/ ounce, $1.50/tonne operating costs (ore and waste), $13.50/tonne milling and G+A costs and recoveries of 68% for Pd, 67% for Pt and 40% for Au. Mineral resources are reported using a combined PGM+Au cut-off of 0.65 g/t (Table 1-4).

There are no known factors related to environmental, permitting, legal, title, taxation, socio-economic, marketing, or political issues which could materially affect the mineral resource. Resources in the Inferred category have a lower level of confidence than that applying to Indicated resources and, although there is sufficient evidence to imply geologic grade and continuity, these characteristics cannot be verified based on the current data. It is reasonably expected that the majority of Inferred mineral resources could be upgraded to Indicated Mineral Resources with continued exploration.

Table 1-4 Estimate of Inferred Mineral Resource reported at 0.65 gpt PGE+Au Cut-off

Zone	Oxidation	Tonnes	Pt g/t	Pd g/t	Au g/t	PGE+Au g/t	Pt Oz	Pd Oz	Au Oz	PGE+Au Oz
Santo Amaro	Oxide	400,000	0.66	0.71	0.02	1.38	9,000	10,000	-	19,000
	Transition	2,000,000	0.43	0.71	0.02	1.15	27,000	45,000	1,000	73,000
	Sulphide	2,900,000	0.48	0.70	0.01	1.19	44,000	65,000	1,000	110,000
	All	5,300,000	0.47	0.71	0.02	1.19	80,000	120,000	3,000	203,000
Curiu	Oxide	1,000,000	0.88	1.28	0.07	2.23	29,000	43,000	2,000	74,000
	Transition	300,000	0.54	1.04	0.05	1.62	5,000	10,000	-	15,000
	Sulphide	300,000	0.38	0.73	0.05	1.16	3,000	6,000	-	9,000
	All	1,600,000	0.73	1.14	0.06	1.93	38,000	59,000	3,000	100,000
Esbarro	Oxide	4,600,000	0.43	0.84	0.02	1.29	65,000	125,000	3,000	193,000
	Transition	2,400,000	0.35	0.79	0.02	1.15	26,000	60,000	1,000	87,000
	Sulphide	2,900,000	0.35	0.84	0.02	1.21	33,000	79,000	1,000	113,000
	All	9,900,000	0.39	0.83	0.02	1.23	124,000	264,000	6,000	394,000
Cedro	Oxide	1,700,000	0.43	0.78	0.01	1.22	24,000	43,000	1,000	68,000
	Transition	300,000	0.30	0.60	0.01	0.91	3,000	5,000	-	8,000
	Sulphide	2,300,000	0.36	0.65	0.02	1.03	26,000	48,000	2,000	76,000
	All	4,200,000	0.38	0.70	0.02	1.10	52,000	96,000	3,000	151,000
Trapia	Oxide	600,000	0.43	0.48	0.02	0.93	8,000	9,000	-	17,000
	Transition	500,000	0.32	0.58	0.03	0.93	5,000	9,000	1,000	15,000
	Sulphide	5,100,000	0.37	0.74	0.03	1.15	61,000	122,000	5,000	188,000
	All	6,200,000	0.37	0.71	0.03	1.11	73,000	140,000	6,000	219,000
All Zones	Oxide	8,400,000	0.50	0.85	0.02	1.37	135,000	230,000	6,000	371,000
	Transition	5,400,000	0.38	0.74	0.02	1.15	66,000	129,000	3,000	198,000
	Sulphide	13,400,000	0.39	0.74	0.02	1.15	167,000	320,000	9,000	496,000
	All	27,200,000	0.42	0.77	0.02	1.22	367,000	679,000	21,000	1,067,000

Notes:

1. Resources are reported using a 3PGE+Au cut-off of 0.65 gpt
2. Only blocks within a pitshell are reported as Mineral Resources
3. Prices used were Pd=US$1000/ounce, Pt=US$860/ounce, Au=US$1250/ ounce, operating costs (ore and waste)=US$1.50/tonne, G+A and milling=US$13.50/tonne
4. Recoveries used were 68% for Pd, 67% for Pt and 40% for Au
5. PGE+Au grade = Pt g/t + Pd g.t + Au g/t
6. Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

This report includes estimates for mineral resources. No mineral reserves were prepared or reported.

1.7 Conclusions and Recommendations

To advance the project and increase the confidence in the mineral resource estimation it is recommended that Valore,

- Develop a geology and structural model for each deposit area of Santo Amaro, Curiu, Esbarro, Cedro and Trapia.
- Complete an audit of the drill hole database on all data, including QAQC data and make detection limits used for all elements consistent.
- Collar locations be surveyed for all drill holes, so collar elevations are confirmed.
- Gravity survey may assist in identifying areas underlain by chromitite units.
- Unifying all located data into WGS84 datum.
- Downhole survey all future drill holes.
- Continue to gather more bulk density determinations and verify the data acquired to date through third party validation.
- Measure magnetic susceptibility measurements during the logging process.
- QAQC be re-charted after the full database audit.
- Study for bias in 1987 drill holes in the Esbarro deposit as 40 of 91 holes are historic and no core available for assay verification. Can compare results to 1999 and 2000's DDHs that were reassayed by Amplat to check for bias and use NN model and compare block values.

2. Introduction

The purpose of this Technical Report is to summarize the results of a resource estimation for the Pedra Branca platinum, palladium and gold Project in the Ceará State, Brazil under the guidelines of the Canadian Securities Administrator's National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and form 43-101F (CSA 2011). This report includes disclosure for a mineral resource estimate for the Project, estimated in conformity with generally accepted CIM Estimation of Mineral Resources and Mineral Reserves Best Practices Guidelines (CIM, 2003) and reported according to the CIM Definition Standards for Mineral Resources and Mineral Reserves, (CIM, 2014). This is an update to the previous Technical Report filed on July 23rd, 2019 and includes disclosure of a 1% Net Smelter Royalty in sections 1.1 and 4.2.3 in this report.

This report was commissioned by ValOre Metals Corp. (ValOre), a mineral exploration company with its primary public listing on the Toronto Venture Exchange under the symbol VO.

The report supports the disclosure by ValOre in the news release dated May 28, 2019 entitled, "*ValOre to Acquire the Pedra Branca PGM District in Brazil*" and updated July 16 in a news release entitled, "*Valore Signs Definitive Agreement to Acquire Pedra Branca*".

2.1 Definition of Terms

Unless otherwise stated, all units in this report are metric. All currency values are expressed in US dollars. Analytical results are reported as parts per million ("ppm") or grams per tonne ("g/t") for platinum ("Pt"), palladium ("Pd") and gold ("Au"). This report also states platinum, palladium and gold as a combined entity as PGM+Au.

2.2 Terminology: Project, Area, Prospect, Deposit

The Pedra Branca Project is the subject of a May 24, 2019 purchase agreement between Jangada Mines PLC (Jangada) and ValOre Metals Corp. (ValOre) and is comprised of 38 exploration licenses and encompasses an area of 38,940 hectares (96,223 acres).

The mineral resource estimations are derived from five platinum, palladium and gold deposits in the Pedra Branca Project called Santo Amaro, Curiu, Esbarro, Cedro and Trapia.

2.3 Qualified Persons and Site Visit

Independent consultants were commissioned to complete the mineral resource estimate and this Technical Report on behalf of ValOre. The consultants were selected for their expertise in the fields of geology, exploration, mineral resource estimation and classification, metallurgical testing, mineral processing and processing design. The consultants are considered independent Qualified Persons (QPs) as defined in the NI 43-101, by virtue of their education, experience, membership in good standing of appropriate professional associations and independent consulting relationships with ValOre.

Ali Shahkar, P.Eng. of Lions Gate Geological Consulting Inc. (LGGC) conducted a site visit and geological review of the Pedra Branca Project on June 26 and 27, 2019.

Table 2-1 summarizes the QPs responsible for specific chapters of the report. Ms. Lomas supervised the overall preparation of this report.

Table 2-1 Qualified Persons Sections of Responsibility

Qualified Person	Company	Report Sections of Responsibility
Susan Lomas, P.Geo.	Lions Gate Geological Consulting Inc.	1 to 12, 14 to 19
Ali Shahkar, P.Eng.	Lions Gate Geological Consulting Inc.	1 to 3, 10 to 12 and 14-19
Bert Huls	Huls Consulting Inc.	1.5 and 13

2.4 Sources of Information and Data

In order to prepare the content of the report, the authors held discussions with personnel of ValOre.

In addition, the information, conclusions, opinions and estimates contained herein are based on:

- Geological information supplied by ValOre, in the form of memos and reports prepared for the Company and for previous owners of the Property.
- Data, geological reports, maps, documents, Technical Reports and other information supplied by ValOre employees and consultants. The QPs used their experience to determine if the information from the previous JORC and Technical Report were suitable for inclusion in this Technical Report and adjusted information that required amending.
- Third party reports and papers as indicated in the text are detailed in Section 27, (References).
- Other experts as detailed in Section 3.
- The field observations from the site visit

2.5 Effective Date

The resource estimate is based on drill data from historical drilling campaigns completed between 1987 and 2011, as provided by ValOre. The effective date of the resource model is May 28, 2019 when the resource estimation was completed and released to the public. The effective date of this Technical Report is also held at May 28, 2019. All other information is current as of the report date of August 12, 2019.

3. Reliance on Other Experts

3.1 Project Ownership, Mineral Tenure, Permits and Agreements

The legal status of the mineral tenure, ownership of the Project area and underlying property agreements or permits has not been independently verified.

QPs Susan Lomas and Ali Shahkar have relied upon and disclaim responsibility for, information derived from legal experts for this information through the document received from Ianê Pitrowsky da Rocha, Lawyer with FFA (Legal Support for Mining Companies) located in Rio de Janeiro, Brazil, in regard to the validity of the Exploration Licenses discussed in Sections 1.1 and 4.2.

The letter is dated July 12, 2019 and states that Branca do Brasil Mineracao Ltda is currently the owner of the Esbarro, Cedro and Curiu Projects through Exploration Licenses 800.097/1999 (Curiu), 800.096/1999 and 800.698/2014 (Cedro) and 800.095/1999 (Esbarro) and also Trapia (800.411/2014, 800.152/2014 and 800.413/2014) and Santo Amaro Projects (800.124/2014).

The information from the letter has been used by the QPs in Section 1.1 and Section 4.2 of the Pedra Branca Project May 2019 Resource Estimate Technical Report.

An email from Ianê Pitrowsky da Rocha on July 10, 2019 included a list of all 38 Exploration Licenses that are the subject of the agreement between Valore and Jangada as described in sections 1.1 and 4.2.

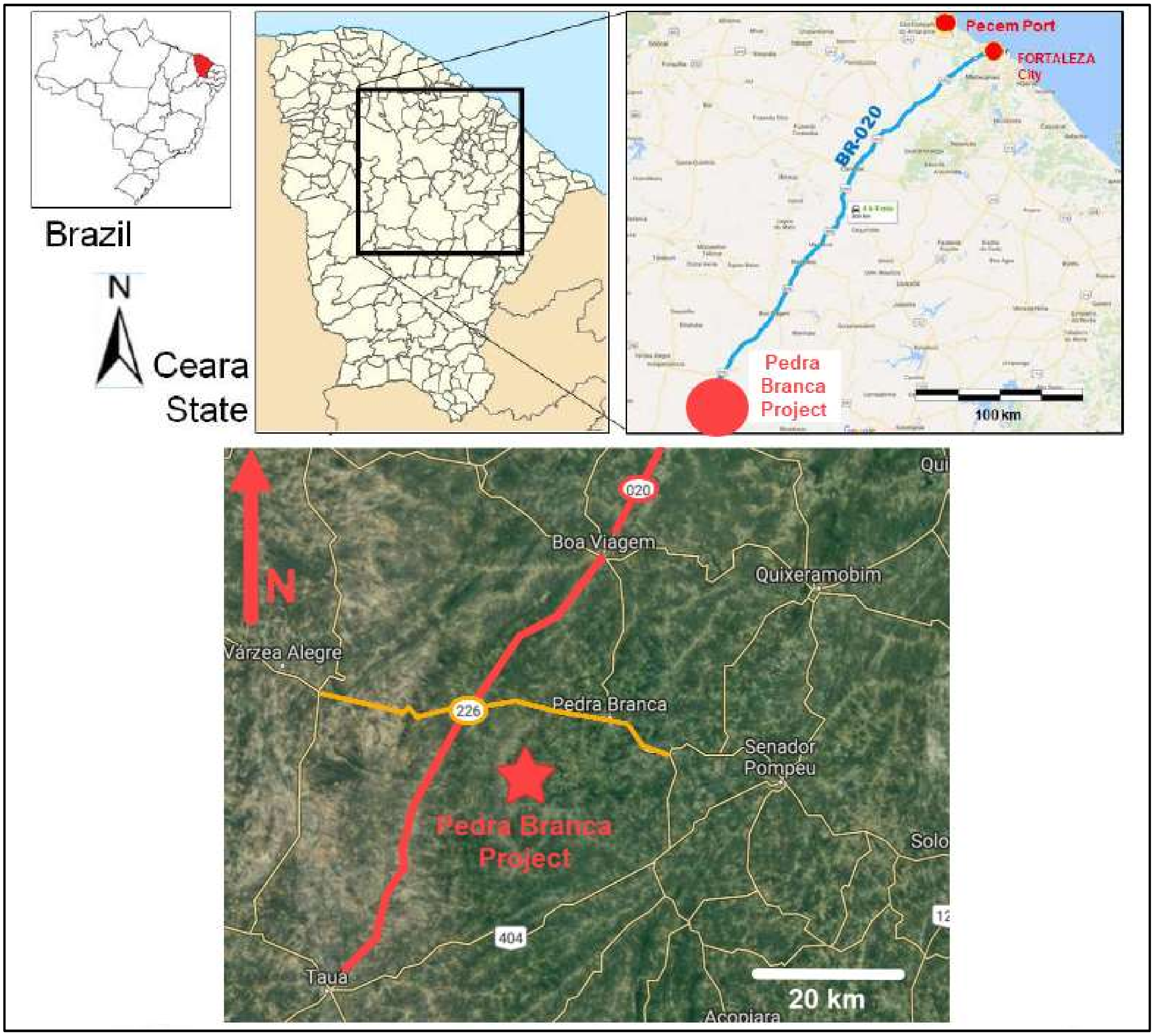
LGGC relied on further legal opinion on the Exploration Licenses and 1% NSR Royalty from a Report by Visconti Law in Sao Paulo, Brazil, dated August 8th, 2019

4. Property Description and Location

4.1 Project Location

The Pedra Branca Project is located in the north-east part of Brazil in Ceará State, approximately 280 km southwest of Fortaleza, the capital (Figure 4-1). The town of Pedra Branca is located 20 km to the north-east of the project site.

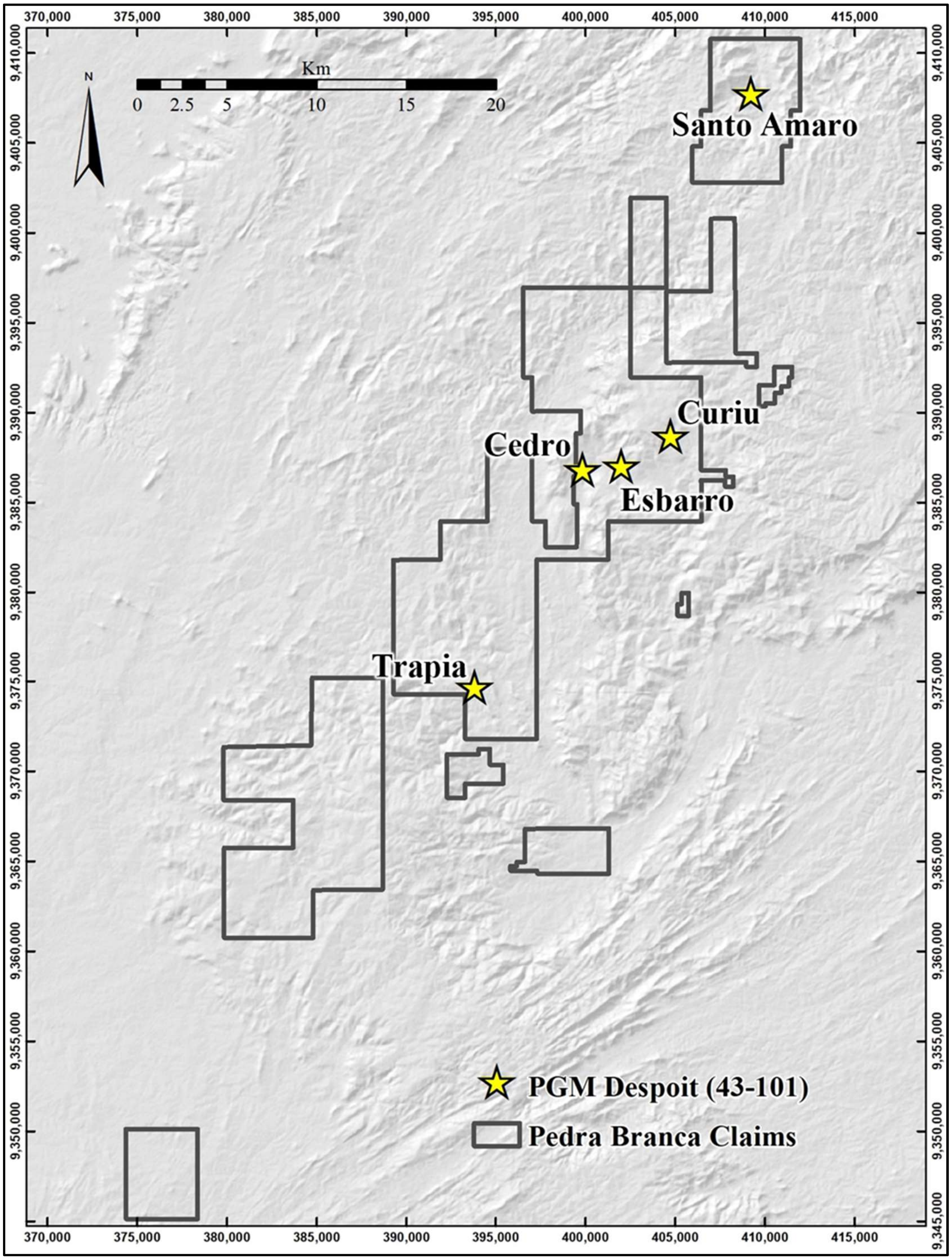
Figure 4-1 Pedra Branca Project Location Map (After image from GE21 Report, May 2018)



Access to the project area is via a paved highway (BR020) that connects Fortaleza to Brasilia and then via a dirt road network from Capitão Mor, 18 km to the east. Driving time from Fortaleza is approximately four hours.

Within the project site, historical work has identified 12 PGM mineralization prospects. This report documents the mineral resources estimated at the Santo Amaro, Curiu, Esbarro, Cedro and Trapia Deposits as located in Figure 4-2.

Figure 4-2 Location of the PGE+/- Au Deposits at the Pedra Branca Project (ValOre Metals Corp, 2019)



4.2 Project Ownership and Licenses

4.2.1 Brazil Mining Governance

(This Section is from Minxcon JORC Report, March 2019)

Brazil has a complex regulatory framework for the mining sector, with jurisdiction and approval processes divided among municipal, state, and federal governments. At the federal level, there are three key government agencies – the Ministry of Mines and Energy ("MME"), the National Mining Agency ("ANM", formerly known as the National Department of Mineral Production or ("DNPM"), and the Geological Survey of Brazil ("CPRM").

The Law No. 227/1967 ("Mining Code") grants authority to the MME and the environmental protection authorities, especially the Brazilian Environmental and Renewable Resources Institute ("IBAMA") and the Federal Environmental Protection Agency ("EPA"), which, along with the DNPM, are the main regulatory bodies supervising mining activities. The enactment of Law No. 13,575/2017 resulted in the creation of the ANM to replace the DNPM. The main legislation regulating mining activities in Brazil is the Mining Code and Law No. 13,575/2017. Law No. 13,540/2017 provides for modifications to the mining royalties legal framework. Law No. 9,406/2018 approves new Mining Code Regulations.

Although primarily regulated by the Federal Constitution and federal laws, mining activities are also subject to state and municipal laws, particularly on taxes, environmental and soil usage matters.

The ANM is the federal agency entitled to regulate mining activities in Brazil. Mineral exploration licenses are granted by the ANM and development concessions are issued by the MME. The DNPM has the responsibility of managing Brazil's Mineral Resources, including the supervision of the mining activity and the enforcement of mining related laws. CPRM is the national agency responsible for collecting information on the country's geology, minerals and water resources.

The Ministry of Environment is responsible for developing environmental regulations. While the National Council of Environment ("CONAMA") implements these regulations, IBAMA acts as the primary licensing entity.

4.2.2 Mineral Licenses in Brazil

(The following Summary is from the GE21 May 2018 Report)

Mineral tenements in Brazil are granted subject to various conditions prescribed by the Brazil Mining Code, including rental payment and reporting requirements, and each tenement is granted subject to standard conditions that regulate the holder's activities or are designed to protect the environment. Mineral tenements in Brazil generally comprise Prospecting Licenses, Exploration Licenses and Mining Licenses.

The holder of a granted Prospecting License, Exploration License or Mining License is not required to spend a set annual amount per hectare in each tenement on exploration or mining activities. Therefore, there is no statutory or other minimum expenditure requirement in Brazil. However, annual rental payments are made to the DNPM and the holder of an Exploration License must pay rates and taxes, ranging, based on the current exchange rate, from US$0.687 to US$1.039 per hectare, to the Local Government.

Lodging a caveat or registering a material agreement against the tenement may protect various interests in a Mining License.

If a mineral tenement is located on private land, then the holder must arrange or agree with the landowners to access the property.

Prospecting Licence

A Prospecting Licence entitles the holder, to the exclusion of all others, to explore for minerals in the area of the licence, but not to conduct commercial mining. A Prospecting Licence may cover a maximum area of 50 ha and remains in force for up to 5 years. The holder may apply for a renewal of the Prospecting Licence which is subject to approval by ANM. The period of renewal may be up to a further 5 years.

Exploration Licence

An Exploration Licence entitles a holder, to the exclusion of all others, to explore for minerals in the area of the licence, but not to conduct commercial mining. The maximum area of an Exploration Licence is 2,000 ha outside of the Amazonia region and 10,000 ha within the Amazonia region (Amazonas, Para, Mato Grosso, Amapá, Rondônia, Roraima and Tocantins States). An Exploration Licence remains in force for a maximum period of 3 years and can be extended by no more than a further 3-year period. Any extension is at ANM's discretion and will require full compliance with the conditions stipulated by the Mining Code that must be outlined in a report to ANM applying for the extension of the licence.

Once all legal and regulatory requirements have been met, exploration authorisation is granted under an Exploration Licence, granting the holder all rights and obligations relating to public authorities and third parties. An Exploration Licence is granted subject to conditions regulating to the conduct of activities, which includes the obligation to commence exploration work no later than 60 days after the Exploration Licence has been published in the Federal Official Gazette and not to interrupt it without due reason for more than three consecutive months or 120 non-consecutive days, to perform exploration work under the responsibility of a geologist or mining engineer, legally qualified in Brazil, to inform ANM of the occurrence of any other mineral substance not included in the exploration permit and to inform ANM of the start or resumption of the exploration work and any possible interruption.

If the holder of an Exploration Licence proves the existence of a commercial ore reserve (as defined in the Mining Code) on the granted Exploration Licence, the ANM cannot refuse the grant of a Mining Licence with respect to that particular tenement if the licence holder has undertaken the following:-

- an exploration study to prove the existence of a Mineral Resource;
- a feasibility study on the commercial viability of the Mineral Resource; and
- the grant of an Environmental Licence to mine on the particular tenement.

Mining Licence

A Mining Licence entitles the holder to work, mine and take minerals from the mining lease subject to obtaining certain approvals. Mining rights can be denied in very rare circumstances, where a public authority considers that a subsequent public interest exceeds that of the utility of mineral exploration, in which case the Federal Government must compensate the mining concession holder.

A Mining Licence covers maximum areas ranging from 2,000 ha to 10,000 ha, depending on the geographical area, as detailed above, and remains in force indefinitely. The holder must report annually on the status and condition of the mine.

As with other mining tenements, a Mining Licence is granted subject to conditions regulating activities. Standard conditions regulating activities include matters such as:

- The area intended for mining must lie within the boundary of the exploration area.
- Work described in the mining plan must be commenced no later than six months from the date of official publication of the grant of the Mining Licence, except in the event of a force majeure.
- Mining activity must not cease for more than six consecutive months once the operation has begun, except where there is proof of force majeure.
- The holder must develop the deposit according to the mining plan approved by the ANM.
- The holder must undertake the mining activity according to environmental protection standards detailed in an Environmental Licence obtained by the holder.
- The holder must pay the landowner's share of mining proceeds according to values and conditions of payments set forth by law, which is a minimum of 50% of "CFEM" (Financial Compensation for the Exploration of Mineral Resources – the consideration paid to the Government of Brazil for the extraction and economic exploration of Brazilian mineral resources), but it is usually agreed to be higher under a contract between the holder of the Mining Licence and the landowner.
- The holder must pay financial compensation to the State and local authorities for exploiting mineral resources by way of a Federal royalty, the CFEM, which is a maximum of 3% of revenue, but varies from state to state.

An application for a Mining Licence is granted solely and exclusively to individual firms or companies incorporated under Brazilian law, which will have a head office, management and administration in Brazil, and are authorised to operate as a mining company.

4.2.3 Mineral Rights for Pedra Branca Project

The mineral rights to the Pedra Branca Project are held under a series of Exploration Licences in the name of a Brazilian holding company, Pedra Branca Brasil Mineracao Ltda. (PBM). On May 24, 2019 ValOre entered in an agreement with Jangada to purchase 100% interest in their holdings of PBM (ValOre PR, May 28, 2019 and updated ValOre PR, July 16, 2019).

Under the agreement, ValOre has agreed to the following considerations to Jangada;

c) issuance and allotment of a total of 25,000,000 ValOre common shares ("**Consideration Shares**"), with 22,000,000 of those being issued on the date of closing of the Acquisition and the remaining 3,000,000 issued over 3 years according to terms agreed between ValOre and Jangada; and
d) cash payments to Jangada in the aggregate of C$3,000,000, as follows:
    v. exclusivity payments totalling C$250,000 (paid);
    vi. C$750,000 payable on closing of the Acquisition;
    vii. C$1,000,000 on, or before, three (3) months after the closing of the Acquisition; and
    viii. C$1,000,000 on, or before, six (6) months after the closing of the Acquisition.

There is a net smelter returns royalty agreement (and subsequent royalty transfer agreement) appertaining to the Project under which the Owner of the Project ultimately grants and agrees to pay a 1% net smelter returns royalty to Silverstream Sezc in the event that the Owner (or any successor or assignor) of the Project brings the underlying properties or any portion thereof into commercial production.

A total of 38 Exploration Licences are held over an area of some 38,941 ha. Of these, final exploration reports have been submitted for three licenses (one at Curiu, two at Esbarro) with the intention of advancing to development. However, Brazilian mining law makes provision for a title holder to submit final exploration reports and apply for a postponement of development. In normal circumstances the title holder would have to start the process of development within 6 months of submission of the final report. The postponement is granted for three years at a time and has been granted for each of the three licences. This is essentially a provision that the government makes to allow a title holder to hold on to a licence when other factors have inhibited its immediate development such as market conditions, commodity prices, funding or further technical studies that area required.

Twenty-four of the exploration licenses are currently the subject of extension applications as their expiry dates have been reached on either April 19, 2019 or May 5, 2019. LGGC has been assured that the granting of the extensions of the licenses is generally assured but there is no guarantee that this is the case and it affects the Exploration Licenses that hold the Santo Amaro and part of the Trapia and Cedro Deposits.

The legal status of the mineral tenure, ownership of the project area and underlying property agreements or permits has not been independently verified by the QPs. Susan Lomas and Ali Shahkar have relied upon information derived from a document received from Ianê Pitrowsky da Rocha, a lawyer with the firm FFA located in Rio de Janeiro, Brazil, in regard to the validity of the Exploration Licenses.

The letter is dated July 12, 2019 and states that Branca do Brasil Mineracao Ltda is currently the owner of the Esbarro, Cedro and Curiu Projects through Exploration Licenses 800.097/1999 (Curiu), 800.096/1999 and 800.698/2014 (Cedro) and 800.095/1999 (Esbarro) and also Trapia (800.411/2014, 800.152/2014 and 800.413/2014) and Santo Amaro Projects (800.124/2014). An email from Ianê Pitrowsky da Rocha on July 10, 2019 included a list of all 38 Exploration Licenses that are the subject of the agreement between Valore and Jangada and comprise the Pedra Branca Project.

The licences are only valid for platinum minerals but the other elements (Au, Ni, Cu, Co etc.) are perceived to be “by products” in Brazilian law and therefore are covered by the licences. LGGC has not been able to independently verify this but the major contributors to the value to the project are the platinum and palladium elements.

A summary of the details of the licences is provided in Table 4-1 and a map of the License outlines in relation to the 5PB Deposits is included in Figure 4-3.

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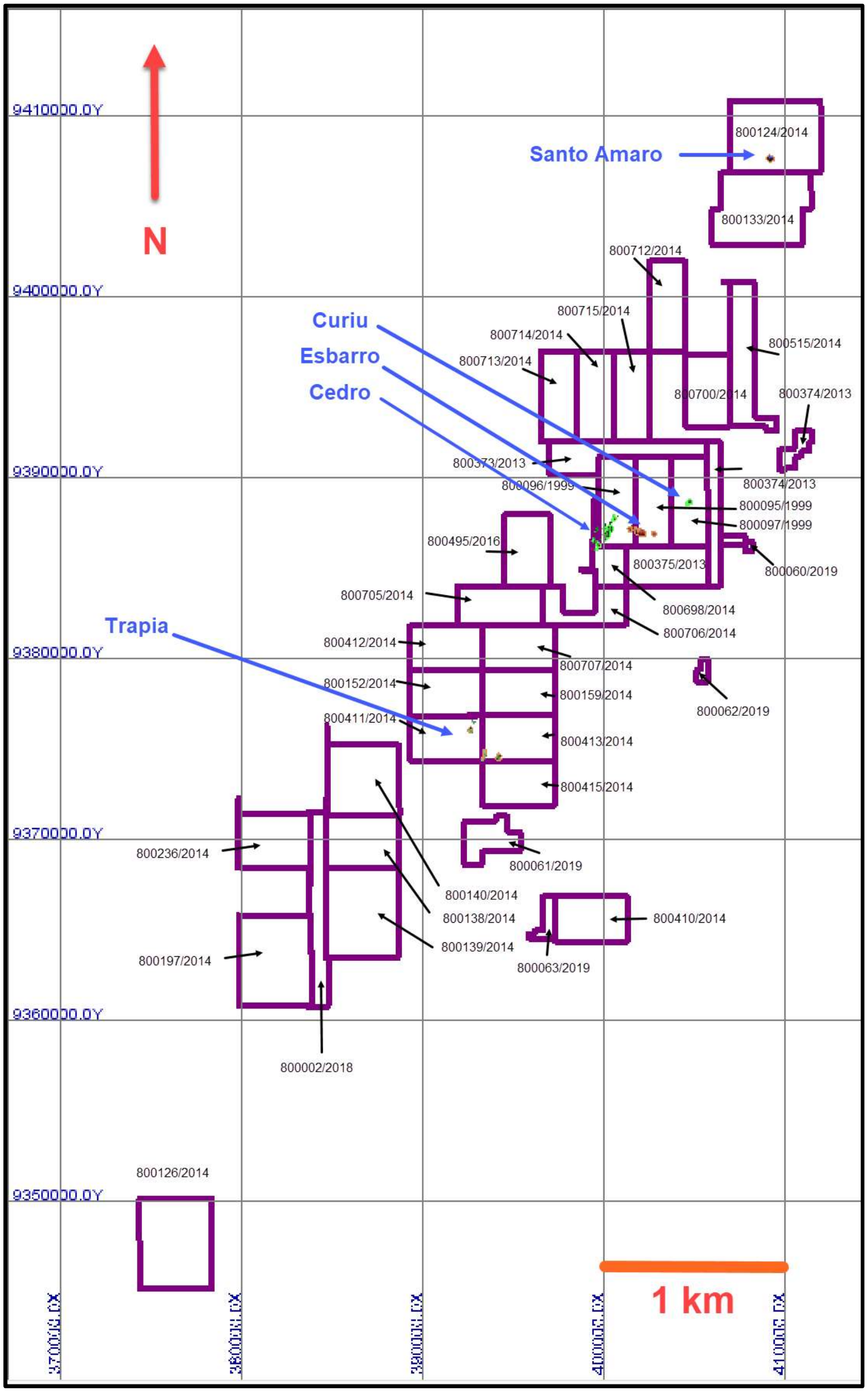
Table 4-1 Summary of Exploration Licences Encompassing the Pedra Branca Project

Process	Area	Type	Deposit	Licence Number	Expiration Date	Mineral
800.152/2014	1,000	Exploration Licence	Trapia	9748	2019/09/13	Platinum Minerals
800.159/2014	1,000	Exploration Licence		9749	2019/09/13	Platinum Minerals
800.495/2016	1,000	Exploration Licence		1524	2020/03/01	Platinum Minerals
800.138/2014	1,159	Exploration Licence Extended		8910	2021/01/16	Platinum Minerals
800.139/2014	2,000	Exploration Licence Extended		8911	2021/01/16	Platinum Minerals
800/095/1999	1,000	Final Report Presented	Esbarro	3911	2021/03/06	Platinum Minerals
800/096/1999	1,000	Final Report Presented	Cedro	2558	2021/03/06	Platinum Minerals
800/097/1999	1,000	Final Report Presented	Curiu	5599	2021/03/06	Platinum Minerals
800.002/2018	960	Exploration Licence			2022/03/13	Platinum Minerals
800.060/2019	97	Application for Exploration				Platinum Minerals
800.061/2019	568	Application for Exploration				Platinum Minerals
800.062/2019	66	Application for Exploration				Platinum Minerals
800.063/2019	189	Application for Exploration				Platinum Minerals
800.064/2019	208	Application for Exploration				Platinum Minerals
800.373/2013	999	Licence Extension Requested		3749	2019/04/19	Platinum Minerals
800.374/2013	580	Licence Extension Requested		3750	2019/04/19	Platinum Minerals
800.375/2013	976	Licence Extension Requested		3751	2019/04/19	Platinum Minerals
800.124/2014	2,000	Licence Extension Requested	Santo Amaro	4275	2019/05/01	Platinum Minerals
800.126/2014	2,000	Licence Extension Requested		4277	2019/05/01	Platinum Minerals
800.133/2014	2,000	Licence Extension Requested		4284	2019/05/01	Platinum Minerals
800.137/2014	2,000	Licence Extension Requested		4286	2019/05/01	Platinum Minerals
800.140/2014	1,569	Licence Extension Requested		4287	2019/05/01	Platinum Minerals
800.236/2014	1,196	Licence Extension Requested		4289	2019/05/01	Platinum Minerals
800.410/2014	999	Licence Extension Requested		4299	2019/05/01	Platinum Minerals
800.411/2014	1,000	Licence Extension Requested	Trapia	4300	2019/05/01	Platinum Minerals
800.412/2014	1,000	Licence Extension Requested		4301	2019/05/01	Platinum Minerals
800.413/2014	1,000	Licence Extension Requested	Trapia	4302	2019/05/01	Platinum Minerals
800.415/2014	1,000	Licence Extension Requested		4304	2019/05/01	Platinum Minerals
800.515/2014	1,146	Licence Extension Requested		4306	2019/05/01	Platinum Minerals
800.698/2014	483	Licence Extension Requested	Cedro	4309	2019/05/01	Platinum Minerals
800.700/2014	1,000	Licence Extension Requested		4311	2019/05/01	Platinum Minerals
800.705/2014	1,000	Licence Extension Requested		4316	2019/05/01	Platinum Minerals
800.706/2014	746	Licence Extension Requested		4317	2019/05/01	Platinum Minerals
800.707/2014	1,000	Licence Extension Requested		4318	2019/05/01	Platinum Minerals
800.712/2014	1,000	Licence Extension Requested		4323	2019/05/01	Platinum Minerals
800.713/2014	1,000	Licence Extension Requested		4324	2019/05/01	Platinum Minerals
800.714/2014	1,000	Licence Extension Requested		4325	2019/05/01	Platinum Minerals
800.715/2014	1,000	Licence Extension Requested		4340	2019/05/01	Platinum Minerals

Figure 4-3 Location of Pedra Branca Exploration Licences



The QPs have not seen the mineral titles or copies thereof but have been informed that this tabulation is produced by the Company's Brazilian lawyer, Ianê Pitrowsky da Rocha of FFA as per the reference in Section 3 of this report. It has been accepted in good faith that the information provided by ValOre as presented in this document is true, accurate and valid at the effective date of this Report.

To the knowledge of the QPs there are no current legal impediments to the lawful operation of ValOre regarding the mineral licences described in this Report.

4.3 Surface Rights

Brazilian law entitles landowners to receive various payments during mineral exploration and mining operations, including revenues for the occupation and use of the land, and compensation for the damage caused to the landowner's property. The payable amounts must be negotiated between the landowner and the mineral licence holder.

Surface rights in the Pedra Branca area are owned by small scale subsistence farmers who own properties varying in size from a couple of hectares to as large as 300 ha. ValOre will seek to renew the contractual access held by Jangada to their licence areas by the farmers for the period of work. In return, the landowners will be compensated for any loss or damage to vegetation and/or crops.

Should the Company proceed to the mining phase, consideration will be given to purchasing the land as opposed to leasing with royalty agreements (which is common practice in Brazil).

4.4 Social and Environmental Considerations

4.4.1 Regulatory Framework

The following paragraphs are sourced from Minxcon (2019).

According to the Federal Constitution, the Federation, the states and the Federal District have legislative competence in environmental matters. In addition, it is the responsibility of municipalities to legislate on matters of local interest. Therefore, Brazilian environmental legislation has an enormous diversity of laws and administrative acts, which affect mining activity, among other things (thelawreviews.co.uk).

The following paragraphs are sourced from GE21 (2018).

Article 225 of the Brazilian Constitution requires reclamation and rehabilitation of mined out areas by the operators. All possible polluting activities are required to be licensed under the terms of the Brazilian National Environmental Policy (Federal Law 6.938 of 31 August 1981).

Regulations for the administration of Environmental Policy are established by CONAMA's Resolution 237 issued on 19 December 1997. CONAMA sets the conditions, limits and the control and use procedures for natural resources and permits implementation and operation of projects. Licenses are issued by either a federal, state or a municipal agency.

The National Environmental Council through Resolution 237/97 has established a three-stage licensing process for mining projects in Brazil:

- **Preliminary Licence** at the planning stage of development:
  - requires approval by the relevant Environmental Authority of the project EIA/RIMA and plan for the recovery of degraded areas;
  - indicates environmental viability of project;
  - location and concept approval, subject to a specific EIA and a formal public hearing;
- **Installation Licence**:

- authorises project initiation and construction according to specifications contained in the approved EIA or Environmental Assessment ("EA"), as well as the Environmental Control Plan;
- **Operation Licence**
  - authorises the start of operations;
  - requirement to demonstrate establishment of all the environmental programmes and control systems required to mine, process and sell mineral substances;
  - granted once the Environmental Authority has inspected the site and verified that construction was completed in keeping with all the requirements of the Installation License, and that the environmental control measures and other conditions of the Installation License have been satisfactorily implemented.

In Ceará State the environmental licensing or permitting is the responsibility of Superintendência Estadual do Meio Ambiente ("SEMACE").

The licences and authorisations are granted based on an analysis of the environmental studies that have been completed. This analysis considers the objectives, criteria and norms for the conservation, preservation, protection and improvement of the environment, the possible cumulative impacts and the planning and land use guidelines of the State. For mining projects that are exceptionally large, as it is the case of the Project, the preparation of the EIA and RIMA must comply with the Reference Term Sheet issued specifically for the Project and the report will be reviewed by SEMACE in agreement with COEMA.

In addition to the environmental licence process and according to Resolution 237/97, requirements of the preliminary licencing phase also include:

- Approval for water resources use by Secretary of Water Resources of the State of Ceará according the State Decree No. 31.076, from 17 November 2012 and Federal Decree No. 24,643, from 10 July 1934;
- Authorisation for Forest Exploration ("APEF") which is required in cases where there is change in the Surficial Deposit usage or vegetation suppression;
- Authorisation for disturbance of vegetation in Permanent Protected Areas ("APP") or in Units of Conservation ("UC") by the Authorised Environmental entity.

4.4.2 Environmental Aspects and Permits

An Environmental Viability Study ("EVA") was completed by SSA for the Pedra Branca Project, which will be a basis for any advanced study requested by SEMACE. The EVA includes environmental baseline studies carried out as part of the preparation of the EIA/RIMA. An EIA/RIMA needs to be undertaken for the project site.

The RIMA will allow the identification of several potential environmental impacts, including stripping and mining bench preparation, drilling and blasting, waste loading and transportation, mineral processing, waste and tailings disposal access opening and ancillary works.

Once the mine advances to development and operation, the following impacts, amongst others, are expected:

- Vegetation and soil will be disturbed by stripping and bench preparation. Erosion will then increase, and surface quality water will be impacted, which can be mitigated through appropriate control procedures.
- Drilling, blasting and processing activities will generate dust, vibration and noise. Measures should be taken to minimise the effects of these on the environment, such as installation of sprinklers to control dust.
- Waste generated by sampling and mining activities, as well as wastewater, should be properly disposed of to minimise environmental impacts.
- Effluents from flotation from the beneficiation plant should be stored in the designed retention dam.
- A stormwater drainage system should be established in the Project Area to control the impact of heavy rain erosion, avoiding environmental impacts on the natural drainage network.
- Berms with cross slopes within the mining area will control internal drainage.
- Rehabilitation should include topographic and landscaping reconstruction, stabilisation of topsoil and revegetation. The immediate objectives will be aesthetics, erosion control and drainage.

Currently, no environmental or water use permits are held or required for the exploration project.

Should the Project advance to mining, full applicable environmental permitting will have to be obtained. In addition, a mine closure plan detailing rehabilitation of the land post-mining as well as an economic development plan will have to be developed and approved by the authorities. There is currently no legislative requirement in Brazil for rehabilitation guarantees related to the closure of a mine and the recovery of the damaged area (thelawreviews.co.uk).

4.4.3 Socio-Economic Aspects

As part of the studies completed by SSA, the social and economic baseline was also investigated, as discussed in GE21 (2018). The socio-economic conditions of the Pedra Branca municipal area are described.

To LGGC’s knowledge, there are currently no social obligations relating to the prospecting activities.

5. Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Accessibility

(Text from this section are from GE21 2018)

Access to the project area is via a paved Brazilian state Highway (BR020) that connects Fortaleza to Brasilia. At the town of Bom Jesus, 260km by road from Fortaleza, a dirt road exits to the village of Capitão Mor, 18km to the east. Driving time from Fortaleza is approximately four hours.

The District of Capitão Mor lies immediately west of the Project and serves as the base camp for the project. An extensive network of dirt roads and jeep tracks provide access throughout the Project area. The village has a population of approximately 800 to 1000 people, electric power, potable water and a sewerage system. There is no mobile phone network coverage, but the area is covered by a recently installed (2013) wireless internet service.

5.2 Climate and Physiography

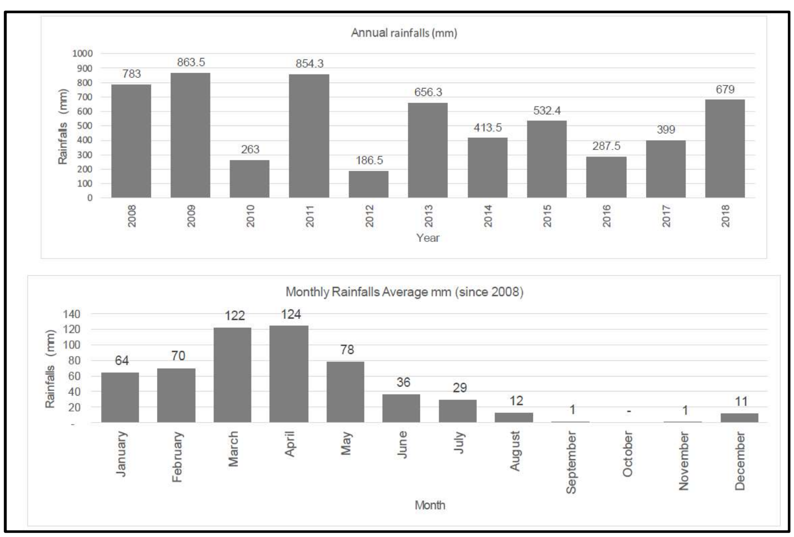
(Text from this section are from GE21 2018)

According to the Köppen classification in the Climatological Atlas of Brazil published in 1969 Pedra Branca Project area is located in the BSwh type climate characterized by a very hot climate, semiarid, with an annual dry season up to ten months.

The semi-arid climate in this region has the highest temperatures occurring in the month of November with an average of 25°C. The month of June has the average temperature of 23°C with the lowest average during the year (Climate-Data.org).

The wet season can last from 4 to 5 months from January to May. The Figure 5-1 shows the historical rainfall in the last 10 years in this region and the Monthly average of rainfalls from the same period, from FUMCEME.

Figure 5-1 Historical Rainfall Indexes in the Pedra Branca Project Region



Physiographically, the Pedra Branca Project has a landform varying from large and smooth plateaus and hills to lower mounts (CPRM). These terrains have good structural support capability. The valley and plane surfaces present stable conditions for the expansion of urban activity and roads. Locally, the area of the Project has the following landforms: plateaus, eroded plain surfaces, small and wide hills with heavily fractured rocks that are favourable to water percolation (Figure 5-2).

Figure 5-2 Photos of Landforms, Topography at Pedra Branca Project (GE21, 2018)

Residual soils are clay-rich, natural erosion resisters, with high compressibility and good stability on slopes and are suitable for use in civil works. The soils are derived from metamorphic rocks and meta-ultramafics usually with high content of K, Na, Ca, Fe and Mg that confers a regular fertility.

5.3 Local Resources and Infrastructure

(Text from this section are from GE21 2018)

The Municipalities of Pedra Branca, Mombaça and Tauá host mainly small agricultural properties, with predominantly monoculture cropping of grains (corn and beans) seasonally. With the closure of an old cotton oil processing facility, the region relies only subsistence agriculture.

Primary and secondary schools are present in the towns and in most villages including Pedra Branca, Tauá and Boa Viagem.

The company responsible for supplying electric power in the Pedra Branca region is Companhia Energética do Ceará - ENEL (previous COLECE). A 69 kV network connects from the Senador Pompeu Substation located in the District of Minerolândia in the municipality of Pedra Branca.

Capitão Mor lies immediately west of the Project and serves as the base camp for the project. An extensive network of dirt roads and trails provides access throughout the Project area. The village has a population of approximately 800‑1000, a public phone, electric power, tapped potable water and a sewerage system. There is no mobile phone network coverage, but the area is covered by a recently installed (2013) wireless internet service.

6. History

(Text from this section are from GE21 2018)

The Pedra Branca complex was discovered in the 1960's by local government geologists who were exploring the area for its chromite potential and by 1969, five holes were drilled into the Esbarro Deposit.

The project then sat idle until 1985, when South African-based Gencor and Rio Tinto identified platinum-palladium mineralization associated with the chromite bands. Targeting separate areas on the ultramafic belt, the companies completed airborne magnetic and radiometric surveys, as well as mapping, soil sampling and trenching. The work resulted in the discovery of 10-15 scattered showings of chromitite and copper-nickel soil geochemical anomalies. Rio Tinto focused on the most northerly chromite occurrence, known as Esbarro 1 and 2 which lie within 400m of each other. A total of 42 drill holes over an 800 m strike length, with 13 of the holes intersecting the chromite horizon were completed. Meanwhile, Gencor targeted the central and southern portions of the ultramafic belt carrying out trenching and drilling eight holes into the Trapia 1 and Trapia 2 showings. Both Rio Tinto and Gencor ceased exploration following a slump in platinum and palladium prices.

As the price of platinum and palladium started to increase in the late 1990s, Altoro Gold, (since merged with Denver-based Solitario Resources), acquired the project and started drilling in 1999.

In January 2003, Anglo American Platinum (Amplat) signed a joint venture agreement with Solitario and continued to invest in the project sufficiently to secure majority ownership in 2011 and assumed management of the joint venture.

In 2015 Jangada Mines (Jangada) acquired the Project from Pedro Branca Joint Venture (Solitario and Amplat).

6.1 Exploration History

Solitario and Amplat advanced the project through several exploration programs which included:

- Extensive drilling on the main target deposits bringing the total drilled meters to 30,000 m
- Resource estimate and scoping study in 2005
- Drill core based metallurgical test work in 2005 and 2006
- Ground geophysics, target generation and drilling 2007 ‐ 2012
- Resampling of all historic 1999 to 2004 drill core in 2011 to 2012
- Mineral resource estimate in 2012
- Regional scale airborne geophysics 2013
- Additional metallurgy test work in 2013
- Geophysics target regeneration and exploration drilling in 2014.

Extensive work throughout the history of the Pedra Branca has produced a number of advanced stage targets with PGE mineralization. These targets demonstrate that there is significant metal in the regional geological system and an indication of the mineralization potential of the area.

Jangada integrated all the available information validated by Amplat and carried out their own validation programme.

The exploration database consists of data resulting from field mapping, remote sensing, geological mapping, soil sampling programs, ground geophysics magnetic work, airborne geophysics, diamond drilling, topographic survey, chemical analysis and petrography.

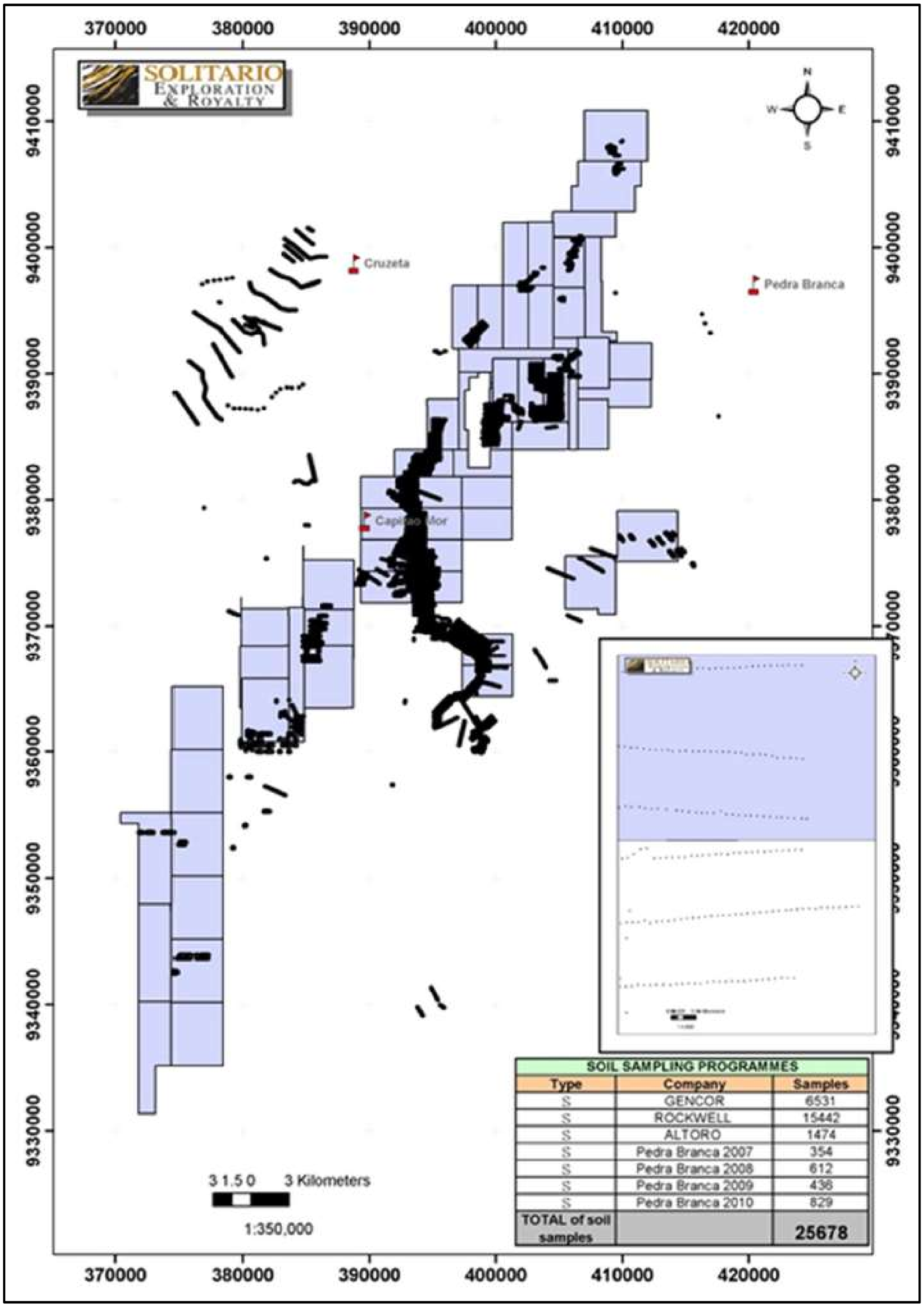
6.1.1 Field Mapping and Sampling

Extensive field mapping and soil sampling campaigns have been conducted in the Pedra Branca project area by various companies since the 1960's. The entire field mapping data set, geological maps and chemical analyses have been preserved.

Field mapping at Pedra Branca has sometimes been challenging due to the density of vegetation and extreme temperatures but had assisted with identify areas of prospective mineralization. Soil and sediment sampling have also proven effective on a local scale but with diminishing results for regional exploration work.

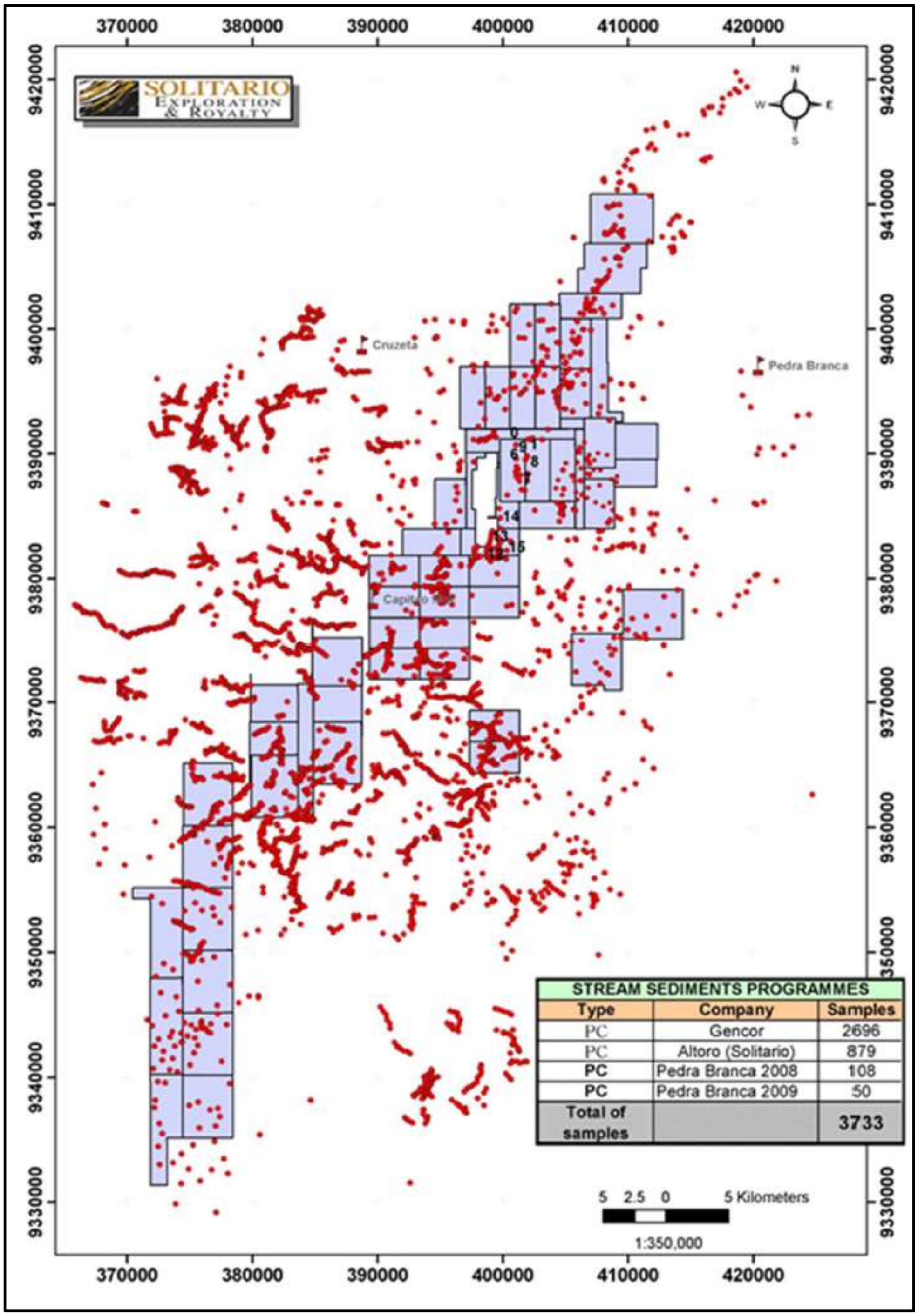
Soil sampling was typically conducted by excavating down to a depth of 80 cm (C-horizon), and a sample of approximately 3 kg was taken. Where soil sampling was conducted a sample spacing of 30 m and a line spacing of 100 m was used. Figure 6-1 indicates the soil samples taken over the Pedra Branca prospect, totalling 25,678 samples.

Figure 6-1 Map Showing the Location of Soil Samples Taken at Pedra Branca Project



A government stream sediment dataset was obtained over the project; the density of sampling on the government dataset is approximately 1 sample/2km^2. The soil sampling has assisted in defining new target areas (Figure 6-2).

Figure 6-2 Map Showing Stream Sediment Sample Locations at Pedra Branca



6.1.2 Remote Sensing

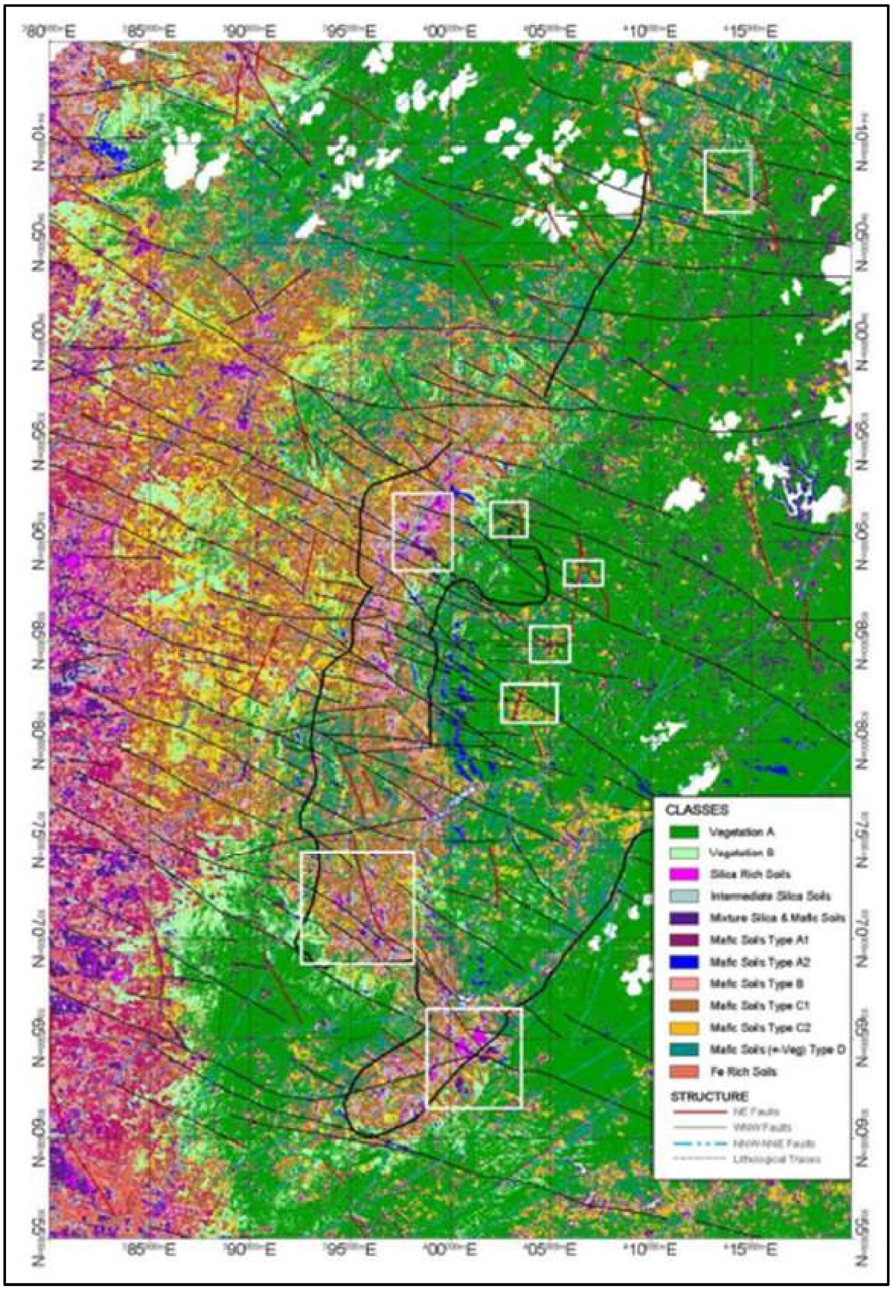
ASTER Mineral Mapping

Amplat purchased two adjacent ASTER scenes over the Pedra Branca exploration area in Brazil in 2006. The main objective of the project was to process the data and provide information to aid the regional exploration in the area.

The system and data correction of ASTER Level 1A data was done using routines and procedures developed by Amplat. Enhanced imagery, mineral abundance maps (Figure 6-3), and litho-spectral and structural interpretation results were generated from the data by applying standard as well as customized algorithms.

Integrated interpretation provided information into litho-structural domains of the Pedra Branca area. Three major structural trends were defined; these include WNW, NE and NNW-NNE trending faults. Major spectral domains associated with vegetation and Mafic and Ultramafic rocks and soils were mapped. New areas of interest were proposed over the Pedra Branca exploration area.

Figure 6-3 Mineral Map Produced from ASTER Images Showing Soil Mineralogy and Pedra Branca Target Areas (GE21, 2018)

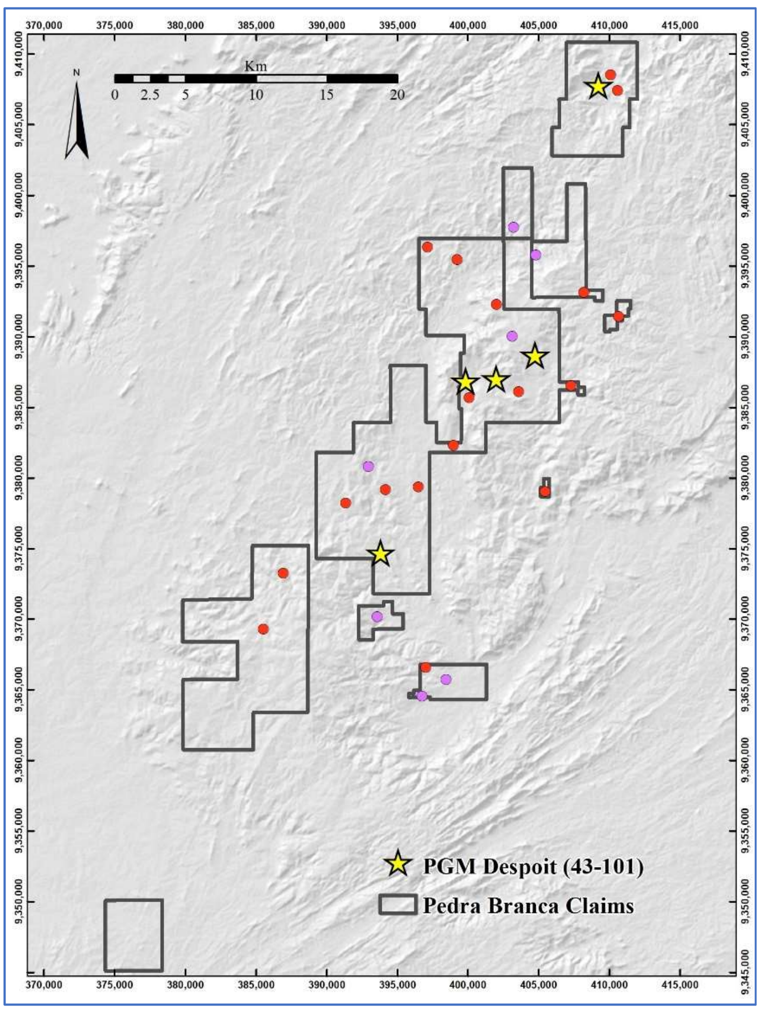


Three major structural trends were interpreted from the ASTER enhanced imagery. These trends include extensive WNW trending faults, NE trending faults and NNE-NNW sets of faults. The intensity of fracturing is relatively high across the Pedro Branca with WNW trending faults displacing NNE-NNW and NE faults.

The prospects along the Trapia, Esbarro and Santo Amaro trends lie in the vicinity of the cross cutting linear structures. Spectral signatures of the prospects along the Esbarro trend show a mixture of Vegetation and Mafic Soil assemblages with Intermediate Silica Soils extracted over the Esbarro West prospect. The spectral domains over the prospects along the Santo Amaro and Trapia trends show similarities with the Mafic and Silica mixed assemblages.

The proposed Areas of Interest (AOI) are shown in Figure 6-4. The selected AOIs lie along the cross-cutting faults. Three prospects in the West along the Trapia trend were mapped within the Silica and Intermediate Silica spectral domains. Mineral assemblage associated with these areas appears to be representative of Kaolinite +/- Mica mineral assemblage. Spectral signatures of the remaining AOI's along the Santo Amaro and Esbarro trends are associated with Mafic spectral domains, and Iron oxide occurrences. The area is dominated by a dense vegetation hence the mixing of the vegetation with the mapped Mafic Soils.

Figure 6-4 The Main Target Areas at Pedra Branca Project (ValOre Metals Corp, 2019)



6.1.3 Geophysics

Ground Geophysics

Ground magnetometry work was conducted by Altoro Ltd in the early 2000's over historic target areas and areas where exploration drilling had been focused. The purpose of this geophysical work was to determine the extent and geometry of targets.

The initial processing was done with data normalized to the Equator due to its proximity, but this proved problematic in detecting anomalous ultramafic rocks which, at times, demonstrate very small magnetic signature differences compared to the country rock.

The data was reprocessed in 2008 and normalized to the poles. This reprocessed data and the resultant images were found to be a better fit to the actual body geometries and better guided exploration work on a local scale (Figure 6-5 and Figure 6-6).

Figure 6-5 Ground Magnetometry Images From the Esbarro Target Showing Data Normalized to the Equator (Left) and Poles (Right) (GE21, 2018)

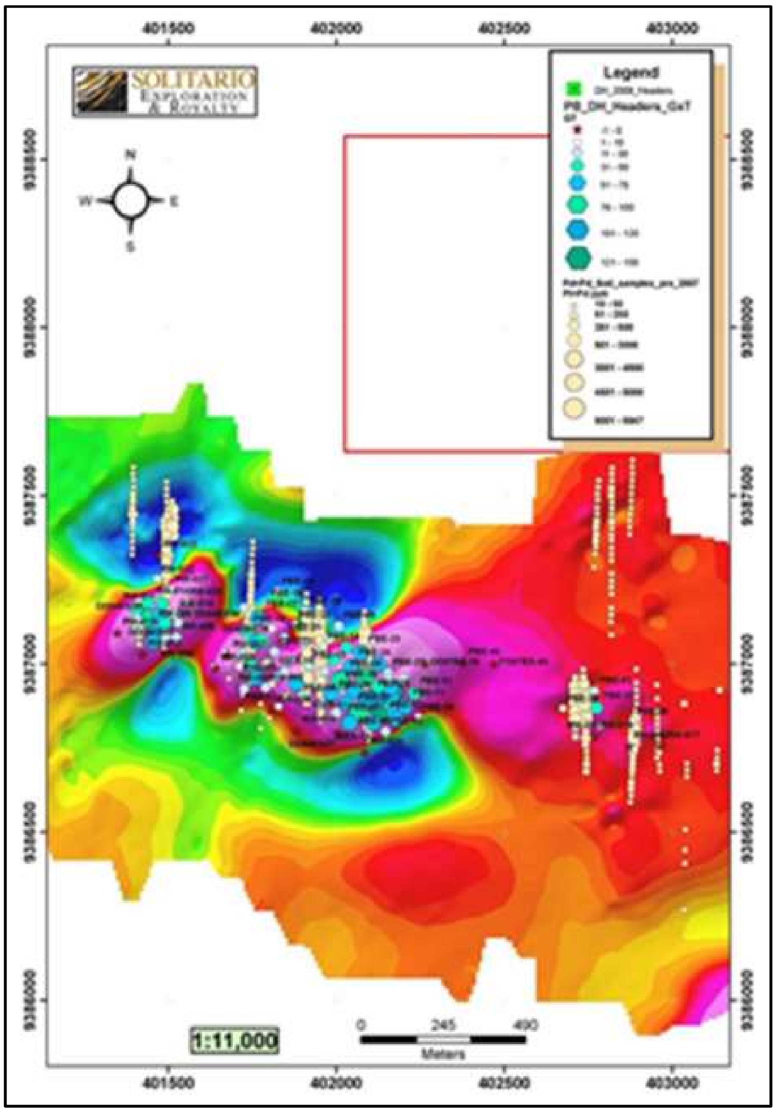
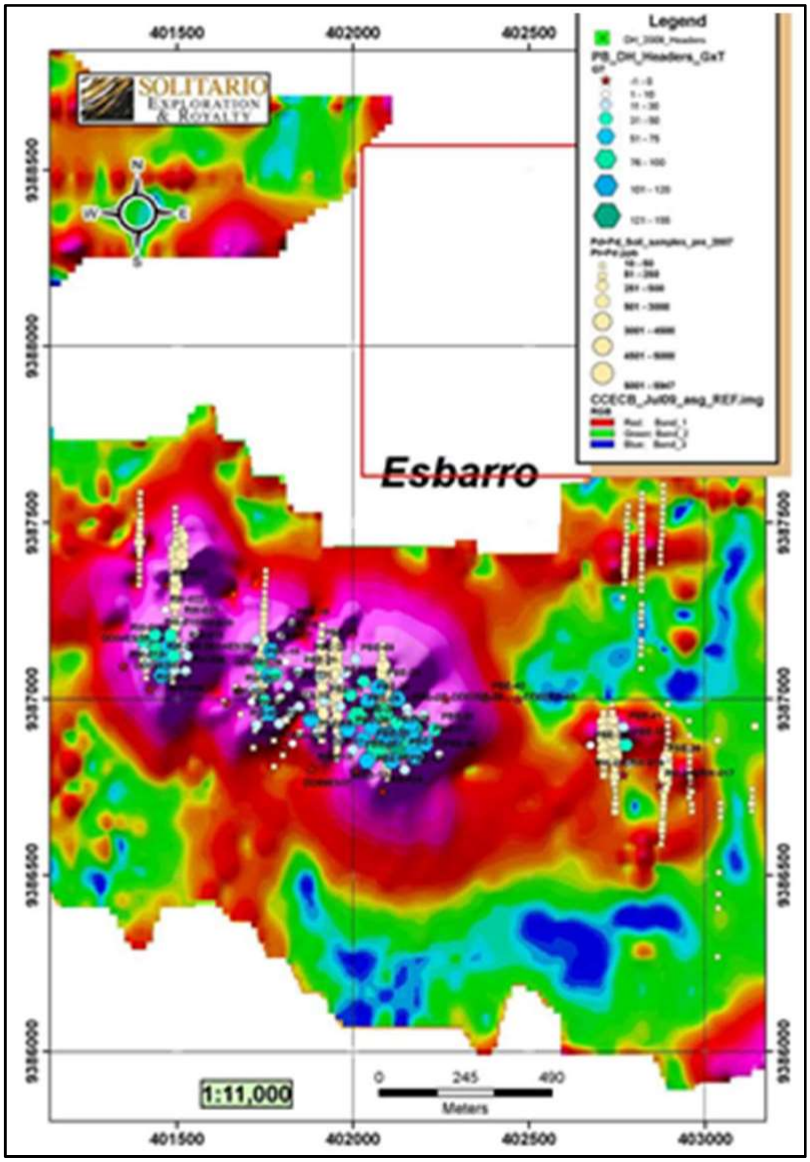


Figure 6-6 Ground Magnetometry Images from the Esbarro Target Area Showing Analytical Signals (GE21, 2018)



6.1.4 Airborne Magnetic Survey

The 2013 airborne magnetic survey provided the project with a definitive regional tool to guide exploration going forward. The survey was conducted using a fixed wing aircraft and flight lines were spaced at 50 m covered an area of 80,000 ha.

Extensive work has been carried out on the target areas to understand and delineate the separate, deposits by previous operators of the Project. Extensive regional mapping and sampling campaigns across the Project area located most of the ultramafic outcrops. Limited ground magnetic surveys further assisted in delineating the buried extents of known deposits.

The Tróia Unit (TU) is a continuous sill that has been, to various degrees, dismembered by several phases of tectonic restructuring. It is not known how much of the sill structure had been preserved in areas of cover

Amplat decided to use a regional, airborne magnetic and radiometric survey to give insight to the structure and extent of the TU and to investigate the subsurface across the Project area. The final survey area included the areas over Curiu, Esbarro, Cedro and Trapia, the central preserved core of the mega-sigmoidal structure at the Project.

The survey was carried out by Prospectors Aerolevantanmentos e Sistemas Ltda using a Piper Navajo Chieftan PA31-350 fitted with 3 high resolution cesium magnetometers and a gamma spectrometer. A linear distance of 14,270 km was flown in a N-S orientation, at a 50 m line spacing. Flying height averaged 100 m. Control lines were flown at 1000 m in an E-W orientation. Figure 6-7 shows the areas of the project site covered by the survey.

Quality assurance work was done on the survey data by Anglo American Geophysics Department. The data was subsequently processed by the Anglo American Exploration team based in Goiania, Brazil who completed the modelling and 3D inversion which was then integrated at Pedra Branca with known geological information and geochemical data to generate exploration targets for follow up and drill testing (Figure 6-7 to Figure 6-10).

Figure 6-7 Extent of the Airborne and Radiometric Survey at Pedra Branca (GE21, 2018)

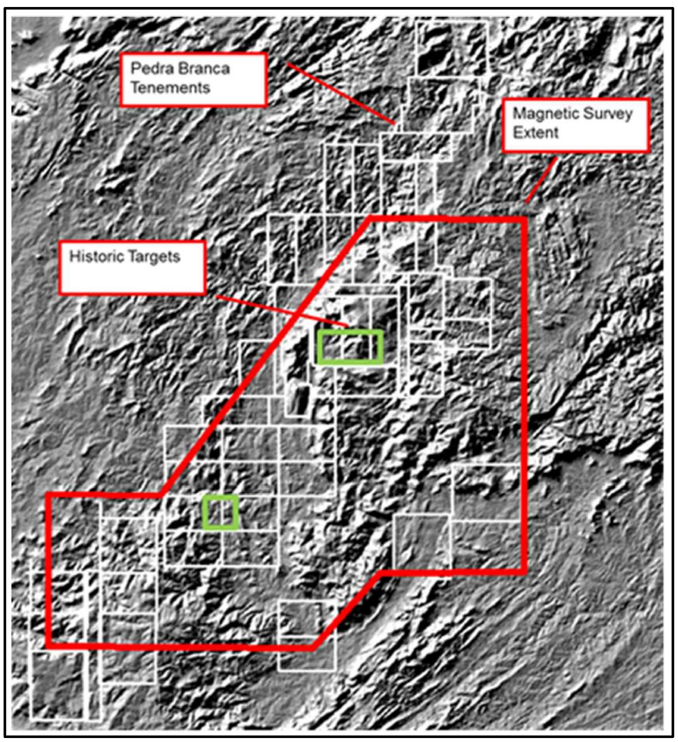


Figure 6-8 White Markings Showing Target Areas Identified from the Airborne Geophysical Survey. The Map Also Shows Historic Target Areas and Regional Structural Features over the Magnetic Analytic Signal Image from Pedra Branca (GE21, 2018)

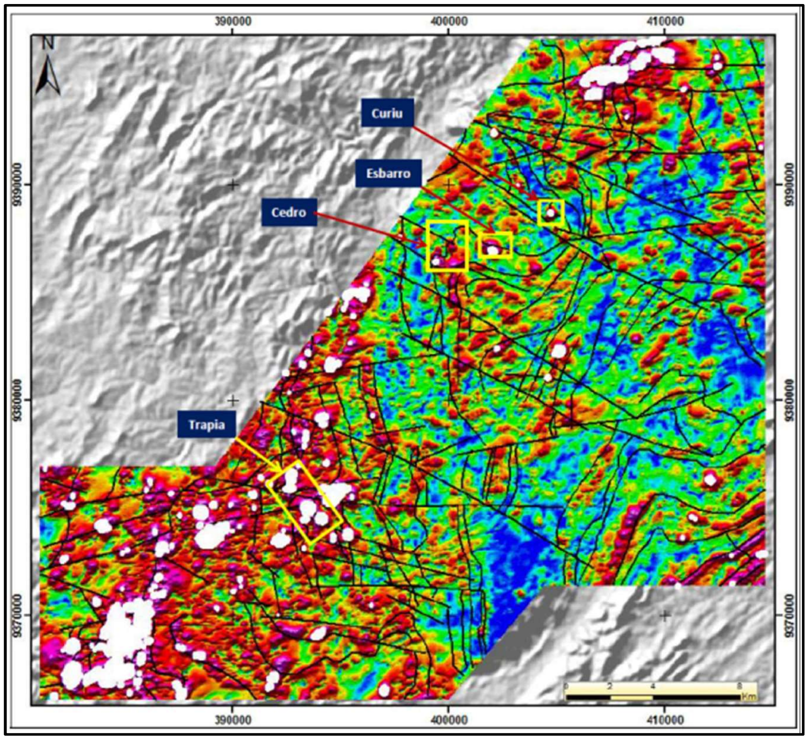


Figure 6-9 White Markings Showing Prospective Target Areas Identified From the Airborne Geophysical Survey. The Map Also Shows Historic Target Areas and Regional Structural Features over the Ternary Radiometric Image From Pedra Branca (GE21, 2018)

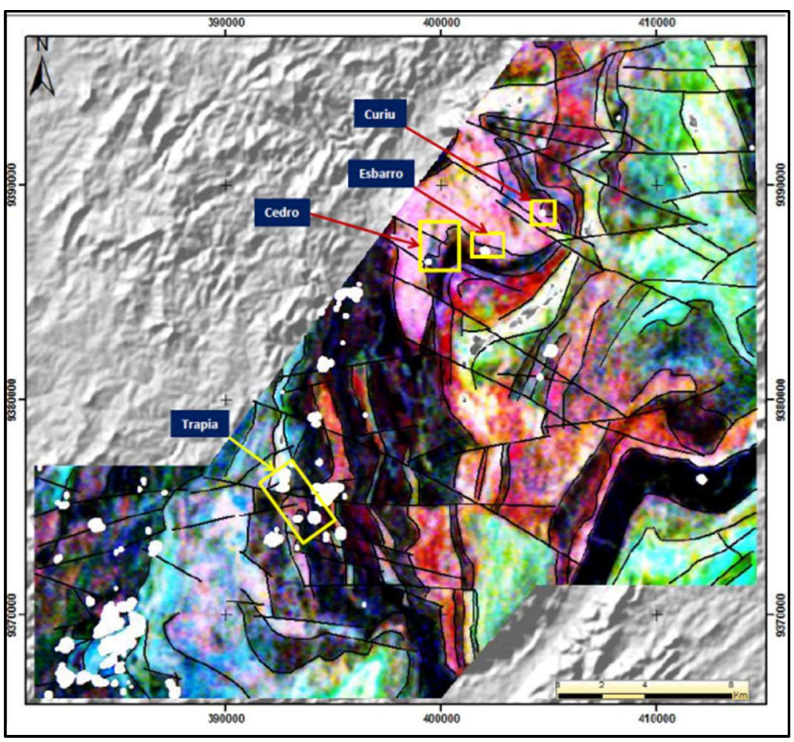
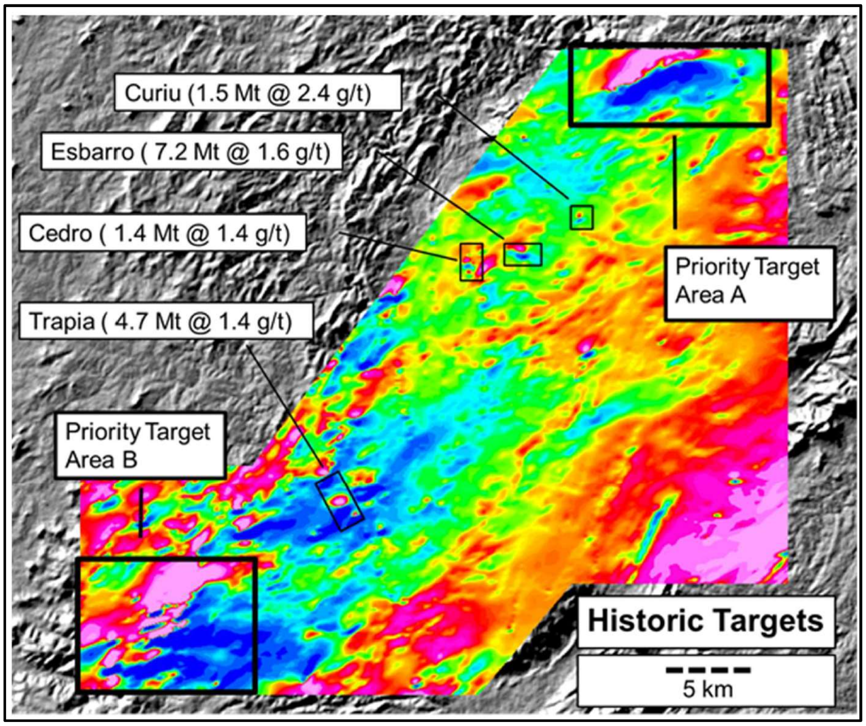


Figure 6-10 The Total Field Magnetic Map Showing Priority Target Areas and Historic Areas with their Mineral Resource Statements (GE21, 2018)



6.1.5 2018 Preliminary Economic Analysis Study, GE21 2018

In 2017 and 2018, Jangada hired GE21 to complete a mineral resource estimation and a Preliminary Economic Assessment (PEA) on the Pedra Branca Project

Mineral Resource Estimate

GE21 completed the geological modelling, the grade estimation and the classification of the mineral resources of the Pedra Branca Project (Santo Amaro, Curiu, Esbarro, Trapia and Cedro targets), and reported the results in a JORC complaint report, with effective date of 2 October 2017.

The modelling and the estimate were developed using Geovia Surpac 6.4 software. The project's database was based on UTM zone 24 south, SIRGAS2000. The estimate was built using 351 drill holes and 9,349 assays composited to 1 m lengths. Grades were estimated into blocks using kriging and bulk density values were estimated using inverse distance weighting. The block models were 20x20x2 m with 5x5x0.5 m sub-block sizes

A cut-off grade of 0.30 g/t Au equivalent (no Au equivalent formula was supplied in the GE21 2018 report) was used for mineral resource estimation reporting using $1300 Au, processing costs of US $6/t, mining costs of US $5.04/t and G&A US $1.5/t.

The classification was based on the following criteria:

- Measured resources had grades estimated with +/-10% relative accuracy with respect to the quarterly production and have a 90% reliability rate

- Indicated resources had grades estimated with +/-10% relative accuracy with respect to the annual production and have a 90% reliability rate.

Results of resource estimation tabulation are included in **Error! Reference source not found.**

Table 6-1 Grade Tonnage Table – Pedra Branca Deposit – Mineral Resources – Declared using a 0.30 g/t AuEq

		Tonnes (kt)	PGM (g/t)	Pd (g/t)	Pt (g/t)	Au (g/t)	Cu (%)	Ni (%)	Cr2O3(%)	Co (g/t)	PGM (koz)	Pd (koz)	Pt (koz)	Au (koz)
Cedro	Indicated	3 798	1.066	0.665	0.383	0.018	0.043	0.196	0.789	118.73	130.2	81.2	46.8	2.2
	Inferred	2 003	1.522	0.934	0.569	0.019	0.032	0.179	0.812	109.40	98.0	60.2	36.6	1.2
Curiu	Measured	1 061	2.091	1.043	0.957	0.091	0.038	0.218	1.156	130.123	71.3	35.6	32.6	3.1
	Indicated	382	2.046	1.035	0.893	0.119	0.037	0.199	2.382	122.121	25.1	12.7	11.0	1.5
	Inferred	37	2.967	1.550	1.294	0.123	0.056	0.206	2.099	109.791	3.5	1.8	1.5	0.1
Esbarro	Measured	2 985	1.316	0.863	0.428	0.025	0.047	0.249	1.145	139.677	126.3	82.8	41.1	2.4
	Indicated	7 126	1.206	0.771	0.405	0.031	0.047	0.227	0.600	128.516	276.3	176.6	92.8	7.1
	Inferred	495	0.996	0.549	0.424	0.023	0.056	0.178	0.276	109.553	15.9	8.7	6.7	0.4
Trapia	Indicated	2 529	1.113	0.639	0.422	0.052	0.055	0.216	0.910	133.035	90.5	52.0	34.3	4.2
	Inferred	2 717	1.320	0.605	0.616	0.099	0.045	0.202	1.184	122.955	115.3	52.9	53.8	8.6
Santo Amaro	Inferred	11 380	1.360	0.650	0.690	0.020	0.010	0.120	0.710	105.870	497.0	237.0	252.0	7.0
Total	Meas+Ind	17 881	1.252	0.767	0.450	0.036	0.047	0.221	0.846	128.898	719.7	440.9	258.6	20.5
	Inferred	16 632	1.366	0.676	0.657	0.033	0.020	0.142	0.790	109.205	729.7	360.6	350.7	17.4

PEA Study 2018

GE21 prepared a Preliminary Economic Assessment (PEA). The PEA did not declare Mineral Reserves.

The ultimate pit and mine plan were developed by GE21 to optimize plant feed for 2.2 Mtpa of production. The mine plan developed was based on the Measured, Indicated and Inferred resources included in Table 6-1.

The Pedra Branca Project was envisioned as an open pit operation utilizing a contract mining fleet of hydraulic excavators, front-end loaders and 36 tonne haul trucks. The mine planning model adopted is considered to be a “diluted” model, adding approximately 5% dilution to the source model.

The disposal of waste rock, and low-grade mineralized material was to be in an area close to the pit. The site was prepared to include drainage at its base and channels to direct the flow of water with the aim of aiding geotechnical stability and mitigating the erosion of the stockpiled material.

Table 6-2 presents the result of pit optimization and refers to the Pedra Branca project Mineable Resources. The results of the PEA-level work are preliminary in nature, and they include inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary economic assessment will be realized.

Table 6-2 Pedra Branca Project, Mineable Resources from PEA Study

	Potential Viability of Mineral Resources												
Target	Mineralization									Waste	Total Mined	Strip Ratio
	Mass	Au	Pd	Pt	Au Equiv	Co	Cr2O3	Cu	Ni			
	Mt	ppm					%			Mt		t/t
Esbarro	9.44	0.025	0.782	0.406	0.928	125.6	0.74	0.05	0.22	6.81	16.25	0.7
Curiu	1.26	0.084	1.132	0.955	1.463	122.6	1.59	0.03	0.20	1.52	2.79	1.2
Cedro	2.93	0.016	1.026	0.583	1.250	109.2	1.16	0.04	0.19	4.71	7.64	1.6
Trapia	3.64	0.056	0.746	0.546	1.069	123.7	1.08	0.05	0.21	7.14	10.78	2.0
Sto Amaro	9.77	0.015	0.638	0.675	1.079	102.0	0.69	0.01	0.12	11.43	21.20	1.2
Total	**27.04**	**0.027**	**0.768**	**0.567**	**1.062**	**114.9**	**0.85**	**0.03**	**0.18**	**31.61**	**58.66**	**1.2**

Modifying Factors applied: Mining Recovery: 95% and Dilution: 5%
* Block Model: 10m x 5m x 1m (5m x 2.5m x 0.5m)
** Block Model: 10m x 5m x 1m (5m x 5m x 0.5m)

Market Studies

Jangada relied on public data from various third-party providers to assist in the analysis and understanding of supply and demand trends. PGM's (Palladium, Platinum), gold, and Base Metal prices are based on a number of factors derived from research by Johnson Matthey (PGM Market Report, February 2018), LBMA Precious Metals Forecast Survey (January, 2018) and World Bank Report Commodity Markets Outlook from October, 2017. Metal prices used in the PEA are summarized in Table 6-3.

Table 6-3 Metal Selling Prices

Metal	Sell Price
Pd - Palladium	1 080 (US$/oz)
Pt - Platinum	1 000 (US$/oz)
Au- Gold	1 318 (US$/oz)
Co - Cobalt	80 775 (US$/t)
Cu - Copper	6 800 (US$/t)
Ni - Nickel	14 650 (US$/t)
Chrome ore concentrate (Cr_2O_3)	260 (US$/t)

Capital and Operating Costs

GE21 summarized the operating and administrative costs, based on real costs collect on GE21 project basis mainly on similar projects in Brazil.

able 6-4 Pedra Branca Project CAPEX

Metal	US$ (Mi)
Mine Development	0.63
Infrastructure	5.0
Mine Closure	4.0
Tailing Dam	7.5
Working Capital	7.8
Exploration	0.39
Plant	54.2

Table 6-5 Average Operating Cost Summary

Operating Cost	US$ /t
Mining (US$/t)	6.61
Processing (US$/t)	10.5
General and Admin (US$/lb)	0.20

Table 6-6 presents the discounted cash flow for the Pedra Branca Project. The results of the PEA-level work are preliminary in nature, and they include inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary economic assessment will be realized.

Table 6-6 Discounted Cash Flow Results

CAPEX (US$ mi)	64.5
NPV (US$ mi)@7%	192.9
IRR (%)	67.9
Payback time (years)	1.6

6.1.6 2019 Minxcon Mineral Resource Estimation

Jangada hired Minxcon (Pty) Ltd of South Africa (Minxcon) to estimate the mineral resources for the Pedra Branca Project and they completed a JORC report in February 2019.

Minxcon estimated Au, Pd and Pt grade elements along with values for Ni, Cu and Co into their block model. They reported the results of their estimation work in two ways, one using Au, Pd and Pt grades only, using what they called a 3E cut-off of 0.65 g/t (Au+Pd+Pt grades) and they used a PdEq cut-off that included Au, Pd, Pt, Ni, Cu and Co.

The Pd Eq formula was given as:

PdEq=Pd + (Pt * 0.965) + (Au *0.714) + (Ni * 1.834) + (Cu * 2.033) + (Cr * 0.063) + (Co * 1.183)

They generated pit shells for mineral resource declarations and included "geological losses of 10% to 15% for indicated and inferred mineral resources applied respectively. The reporting pitshells were build using the recoveries, metal prices and costs as included in Table 6-7.

Table 6-7 Mineral Resource Pit Shell and Pay Limit Calculation Parameters

Description	Pt	Pd	Au	Ni	Cu	Cr	Co	
Recoveries	67%	68%	40%	26%	77%	67%	7%	
Price (US$/kg)	39,352	40,188	48,804	19.27	7.22	0.26	46.17	
Mining Cost (US$/t)								3.40
Processing Cost (US$/t)								10.80
MCF (%)								100.00
Payability Factor (%)								85.00

The total Pt, Pd and Au ounces for the 3E cut-off approach is 1.73 Moz while the total Pt, Pd and Au ounces for the PdEq cut-off approach is 2.17 Moz. The total Mineral Resources for the 3E approach and PdEq approach are presented in the tables to follow.

Mineral Resources for 3E (Pt+Pd+Au) for the Pedra Branca Project as at 1 February 2019

Mineral Resource Classification	Tonnes		Grade								Metal Content					
	Tonnes	Tonnes less Geo Loss	3E	Pt	Pd	Au	Ni	Cu	Cr	Co	Pt	Pd	Au	Pt	Pd	Au
	M/t	Mt	g/t	g/t	g/t	g/t	%	%	%	%	kg	kg	kg	oz	oz	oz
Indicated	17.97	16.18	1.30	0.42	0.84	0.03	0.21	0.04	0.55	0.010	6,865	13,661	542	220,727	439,214	17,431
Inferred	31.93	27.14	1.21	0.44	0.74	0.03	0.17	0.03	0.50	0.010	11,820	20,101	920	380,016	646,276	29,588
Indicated and Inferred	**49.91**	**43.32**	**1.24**	**0.43**	**0.78**	**0.03**	**0.19**	**0.03**	**0.52**	**0.010**	**18,685**	**33,763**	**1,462**	**600,742**	**1,085,490**	**47,019**

Notes:

1. Cut-off of 0.65 g/t 3E.
2. Only Mineral Resources falling with in the Mineral Resources pit have been declared.
3. Geological losses of 10% for Indicated and 15% for Inferred were applied.
4. Prices used: Pt = USD1,224/oz, Pd = USD1,250/oz, Au = USD1,500/oz, Ni = USD19,27/t, Cu = USD7,216/t, Cr = USD258/t & Co = USD46,171/t.
5. Mineral Resources are stated as inclusive of Ore Reserves (no Ore Reserves declared at this stage).
6. Mineral Resources are reported as total Mineral Resources and are not attributed.

Mineral Resources for PdEq for the Pedra Branca Project as at 1February 2019

Mineral Resource Classification	Tonnes		Grade									Metal Content					
	Tonnes	Tonnes less Geo Loss	Pd Eq	3E	Pt	Pd	Au	Ni	Cu	Cr	Co	Pt	Pd	Au	Pt	Pd	Au
	M/t	Mt	g/t	g/t	g/t	g/t	g/t	%	%	%	%	kg	kg	kg	oz	oz	oz
Indicated	32.61	29.34	1.36	0.90	0.30	0.58	0.03	0.20	0.03	0.40	0.009	8,823	16,951	747	283,653	544,987	24,023
Inferred	53.53	45.50	1.28	0.90	0.33	0.55	0.03	0.17	0.03	0.40	0.009	14,826	24,866	1,221	476,681	799,457	39,263
Indicated and Inferred	**86.13**	**74.84**	**1.31**	**0.90**	**0.32**	**0.56**	**0.03**	**0.18**	**0.03**	**0.40**	**0.009**	**23,649**	**41,817**	**1,968**	**760,334**	**1,344,445**	**63,286**

Notes:

1. Cut-off of 0.6 g/t Pd Equivalent.
2. PdEq = Pd+(Pt*0,965)+(Au*0,714)+(Ni*1,834)+(Cu*2,033)+(Cr*0,063)+(Co*1,183).
3. Only Mineral Resources falling with in the Mineral Resources pit have been declared (RPEEE).
4. Geological losses of 10% for Indicated and 15% for Inferred were applied.
5. Prices used: Pt = USD1,224/oz, Pd = USD1,250/oz, Au = USD1,500/oz, Ni = USD19,272/t, Cu = USD7,216/t, Cr = USD258/t & Co = USD46,171/t.
6. Mineral Resources are stated as inclusive of Ore Reserves (no Ore Reserves declared at this stage).
7. Mineral Resources are reported as total Mineral Resources and are not attributed.

A review of the mineralization solids modelled for this resource estimate were considered optimistic by LGGC and that further drilling on the Santo Amaro, Trapia and Cedro Deposits is necessary to support the estimates of tonnage and grade.

7. Geological Setting

(The text for this section is from GE21, 2018)

7.1 Tectonic Framework and Geology

The Pedra Branca PGM project is situated in the Borborema Structural Province, in Ceará State, Brazil, 310 km from Fortaleza.

The Borborema Province is a Brasiliano-Pan African tectonic province that resulted in the convergence of the Amazonian, West African/Sao Luis and San Francisco-Congo Cratons during the assembly of West Gondwanaland ca. 600Ma. However, much of Ceará's basic structural framework was established during the earlier Transamazonian orogeny. This orogenic accretion event involved the collision of Paleoproterzoic terranes along with fragments of Archaean crust. Subsequent to this were a number minor tectonic and magnetic episodes prior to the onset of the Gondwana-related Brasiliano orogeny.

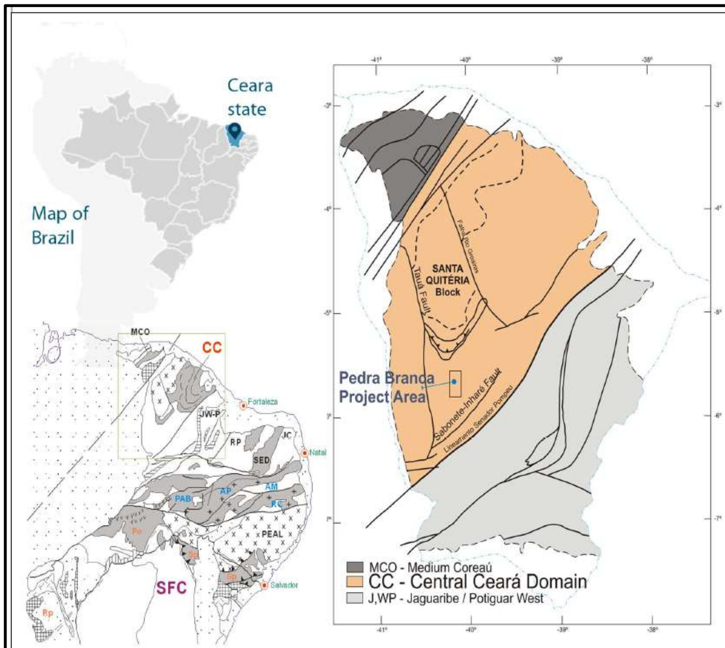
In Ceará this commenced ca. 622 Ma, with the intrusion of calc-alkaline granitoids of continental arc affinity. These intrusions were a result of subduction associated with ocean basin closure. Continued closure of the Gondwana massifs continued until ca. 614 Ma. Subsequent to this, tectonic activity was dominated by the formation of extensive shear zones and associated magnetism. The youngest granitic intrusive dates 540-520 Ma and appears to be related to the relaxation of the Brasiliano orogeny.

The Borborema Province thus comprises Archaean Nuclei, Paleoproterzoic basement gneiss massifs, Paleoproterzoic to Neoproterzoic supercrustal fold belts and cover sequences, and syn-to post kinematic Brasiliano granitoid plutons. As noted above the province is also affected by a number of shear zones that can be traced in Africa and divide the province into a number of crustal domains and blocks.

The primary zone, "Patos Lineament" (Lineamento Patos), marks a major boundary, possibly an oceanic suture. This lineament bisects the Borborema Province into northern and Southern domains with virtually all of Ceará lying within the northern belt.

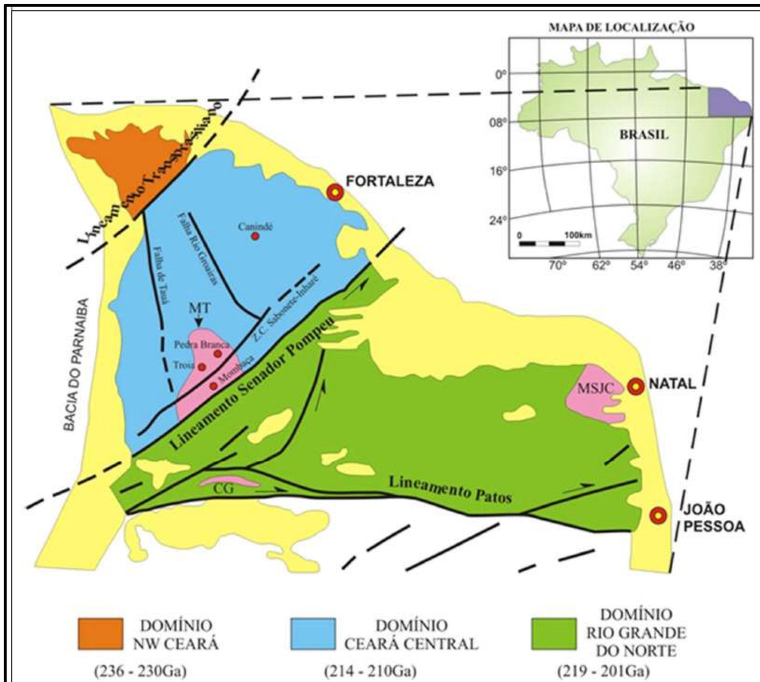
This northern belt is cut by two north-easterly trending features, the Trabsbrasiliano (north) and Senador Pompeu (south) lineaments. These subdivide the northern domain into three main crustal blocks: The Northwest Ceará domain, the Central Ceará domain, and the Rio Grande do Norte terrane. Of these domains only the Central Ceará domain, occupying as region of approximately 80 000km sq. is of direct relevance. Figure 7-1 and Figure 7-2 show the tectonic setting of Pedra Branca in the Central Ceará Domain (CC) of the Borborema Province and the major lineaments defining the tectonic boundaries in the northeast of Brazil.

Figure 7-1 Tectonic Setting of Pedra Branca in the Central Ceará Domain (CC) of Borborema Province (GE21 2018)



MCO – Medio Coreaú Domain; CC – Central Ceará Domain; JW-P – Jaguaribe/Potiguar West Domain; SFC – São Francisco Craton

Figure 7-2 Major Lineaments Defining Major Tectonic Boundaries in the Northeast of Brazil (GE21 2018)



The Central Ceará domain is surrounded by the Transbrasileiro Lineament in the northwest, the Senador Pompeu Lineament in the southeast and the Bacia do Parnaiba in the west

7.2 Local Geology

In Ceará State, the Cruzeta Complex in the Central Ceará Domain is a polycyclic basement unit composed of the Archean Tróia-Pedra Branca Massif. This complex is stratigraphically divided (from bottom to top) into the mafic/ultramafic Tróia Unit (TU), the calcic-sodic gneiss of the Pedra Branca Unit and the sodic-potassic gneiss of the Mombaça Unit. The TU, in particular, is characterized by an important PGE-bearing layered ultramafic sequence. Tectonic reworking of these terrains created a 70 km long almond-shaped mega-structure with a NE-SW trend delimited by sub-parallel, deep-seated crustal shear zones of extensive proportions. The principal strands of shearing are the Sabonete-Inharé Fault, the Senador Pompeu Lineament and the more distal Tauá Fault.

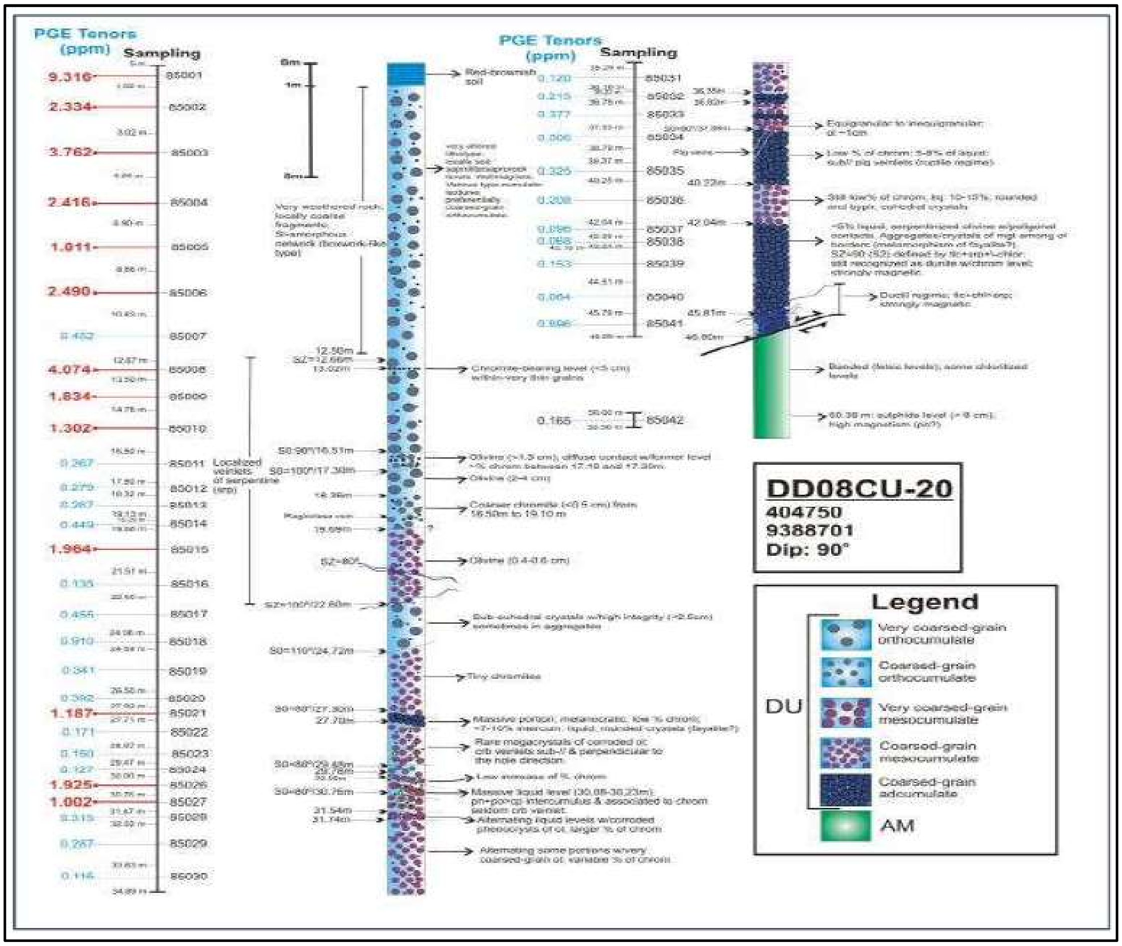
The Tróia Unit is composed of coarse- to medium-grained olivine-websterite, peridotite and dunite cumulates. These rocks are folded, sheared and recrystallized by metamorphic processes. Diorites and probable leuco-gabbroics and even tonalites constitute a more evolved mafic unit. Later tabular injections of pegmatitic and tonalitic composition commonly cut the complex and resulted in metasomatic lenses composed of phlogopite and chlorite. Primary mineral textures vary from adcumulate to mesocumulate; however, metamorphism and metasomatic processes have rounded primary cumulate crystals or partially to totally replaced primary textures with secondary mineral aggregates. The figure below shows a typical stratigraphic column of the Tróia Unit from the Curiu target.

Chromitite horizons from 30 cm to 3 m in thickness occur in classical transitional facies form of layered complexes. Chromite occurs as euhedral octahedral grains from 0.3 mm to 1 mm in a secondary groundmass of foliated chlorite or fine-grained tremolite. These chromite-rich cumulate rocks are strongly associated with the highest PGM grades. This oxide phase also appears as an intercumulatic phase among the principal silicate crystals and its crystallization features demonstrate independent conditions of nucleation from the silicates (no cotectic crystallization paths with the larger silicate crystals. Light green (greyish) coloured chlorite, tremolite/actinolite prisms and subordinate serpentine are formed by later metamorphic/metasomatic events. Trace amounts of chalcopyrite, pyrite, bornite and pentlandite occur in the secondary matrix.

Later PGM-deficient chlorite-bearing layers were formed by shearing during metamorphism and intrusion of younger felsic rocks. Additionally, there are local massive or brecciated Ni-rich sulphide layers up to 3 m in thickness at the basal contact of ultramafic bodies with the basement gneiss of the Cruzeta Complex or pegmatite-textured felsic injections.

Drill core of chromitite layers in TU contain up to 5% Cr, 8 ppm Pt and 21 ppm Pd. Observed Pt to Pd ratios are variable, ranging from 0.29 to 1.9. Normalized to primitive mantle, many chromitites are richer in Au, Cu, Zn and V than host rocks. Ti, Al and Cr variations within chromite suggest diverse environments of formation. Figure 7-3 shows one of those drill cores from the Curiu Target area.

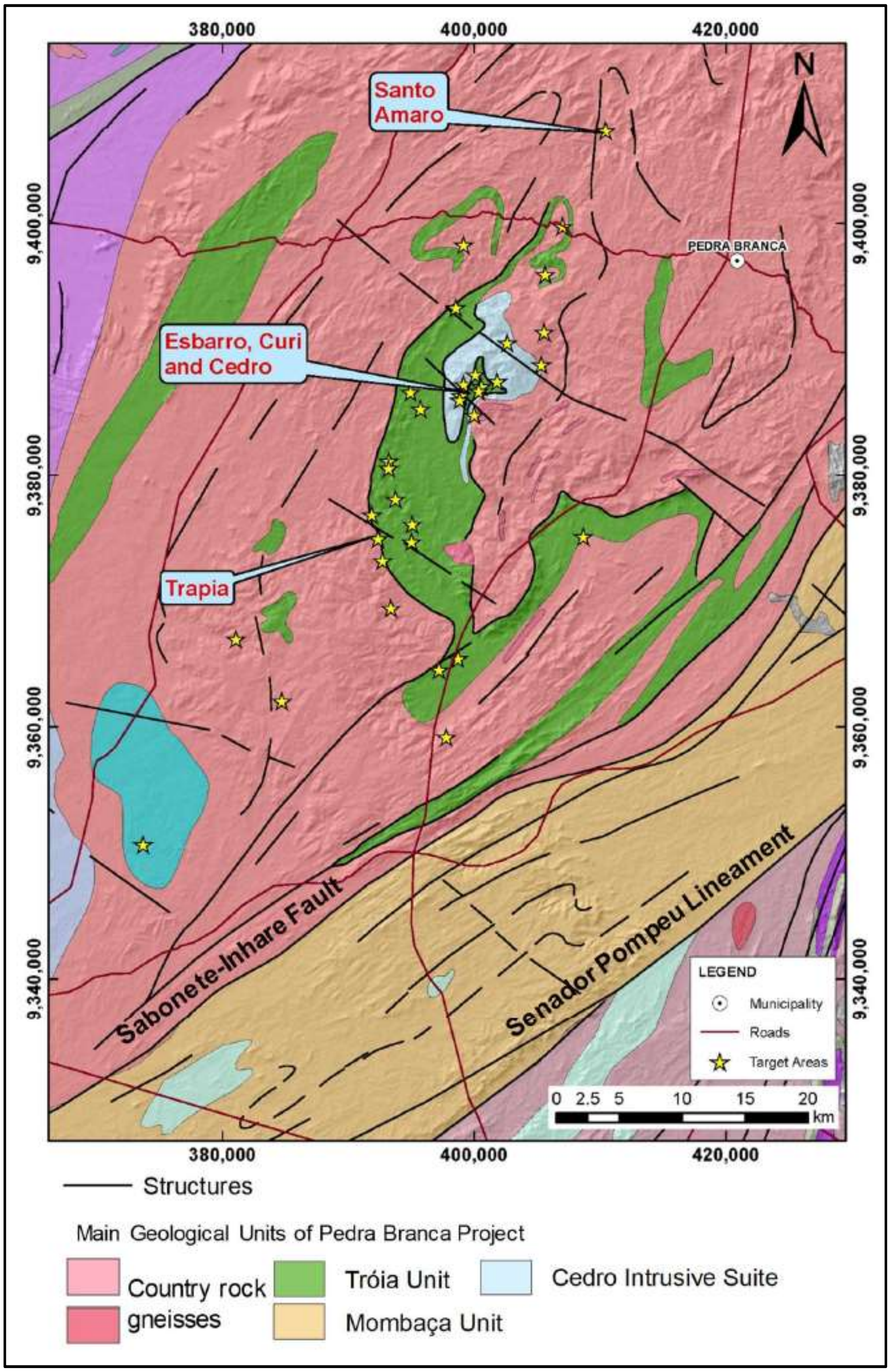
Figure 7-3 Drill Core Logging From Curiu Target Showing Some Intersection of Chromite Layers (GE21, 2018)



Besides the primary chromitites, important PGM values occur as a result of redistribution and enrichment by structural/metasomatic processes in response to regional left-lateral shearing. Cu, Ni, Sr and P have been structurally remobilized, along with PGE. Many occurrences of mineralization display a SW-NE trend, in accordance with a stretching lineation developed on the S2 axial foliation plane, which can be demonstrated geochemically on a microscopic up to a regional scale. District-wide magnetometry has been effective at mapping these trends regionally within the altered and tectonized ultramafic bodies.

Two metamorphic events are recorded in the Pedra Branca Mafic-Ultramafic Complex. The first was a regional metamorphism of medium to high grade and the second a more local, hydrothermal metamorphism of low grade with an age of 0.550 Ga (Brito Neves, 1975). The Esbarro body comprises mainly metaperidotites with minor mafic schists and serpentinites and contains several chromitite lenses within which cumulate texture is locally preserved, albeit in a generally chloritic matrix. Figure 7-4 is a regional geological map of the Pedra Branca Region with the extent of the mafic and ultramafic portions of the Tróia Unit (green), country rock gneisses (pink) and granitoids (light blue) at Pedra Branca.

Figure 7-4 Regional Geological Map of Pedra Branca Project (GE21, 2018)



7.3 Structural Geology

The Tróia Unit represent a previously continuous ultramafic sill structure that has been dismembered into discrete bodies by tectonic activity with primary mechanisms being unrooted folding (x-folding). On a region scale the bodies express the resultant boudinage form, elongated lenses with the long axis of the lenses commonly orientated between 70 and 110 degrees. Sizes of the bodies vary but most have a similar aspect ratio, with a length:width:thickness of about 4:2:1. This characteristic may be useful in the screening of magnetic anomalies for those most likely to be caused by mineralized ultramafic bodies during high-grade dynamic/thermal metamorphism. The ultramafic bodies are generally overlain by a sequence of amphibolite rock interlayered with granitoids. The footwall is a diverse suite of generally well-layered gneisses, granitoid and amphibolites.

Tectonic reworking of these terranes created a 70km long almond-shaped megastructure with a NE-SW trend delimited by subparallel, deep-seated crustal shear zones of extensive proportions (Figure 7-5). The principal strands of shearing are the Sabonete-Inharé Fault, the Senador Pompeu Lineament and the more distal Tauá Fault.

Where observed, contacts of the ultramafic bodies with their host rocks are sheared. The ultramafic bodies themselves are variably cut by altered shear zones. These shears are most often at low to moderate angles, however late steep shears sometimes associated with quartz or pegmatite veins are locally present.

The ultramafic rocks were originally composed primarily of pyroxene and olivine. Alteration has affected the mineralogy however; primary cumulate textures are often well preserved. Four main types of alteration have been recognized. An early pervasive alteration has altered the olivine to serpentine and the pyroxenes to tremolite. This alteration is generally pervasive although petrographic work often shows relic olivine and pyroxene is present in small amounts. Locally light coloured pyroxenite layers have been only partially altered. The alteration of olivine to serpentinite was accompanied by the development of magnetite.

Figure 7-6 present the structural trends along which most target areas at Pedra Branca are defined, namely the Santo Amaro, Esbarro and Trapia trend.

Figure 7-5 The Mega-Sigmoidal Structure That Defines the Regional Structure at Pedra Branca

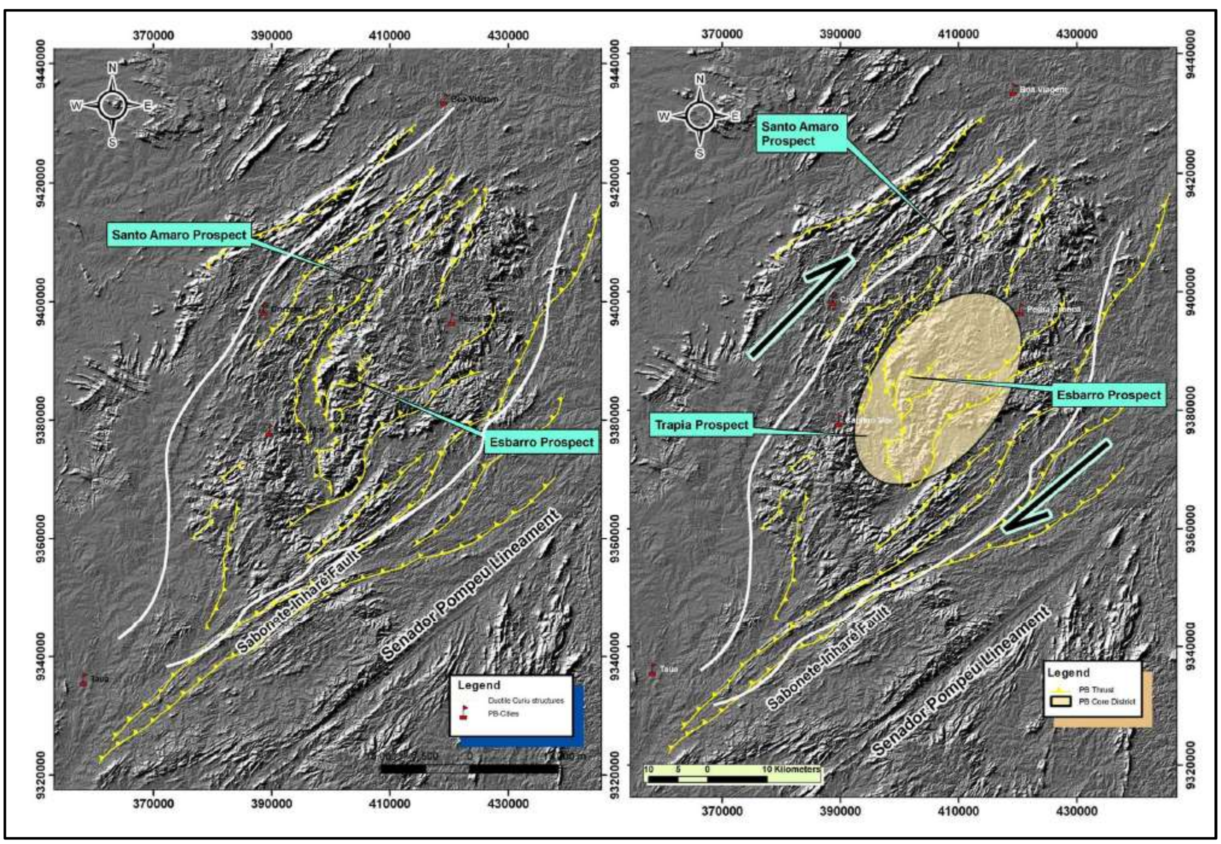
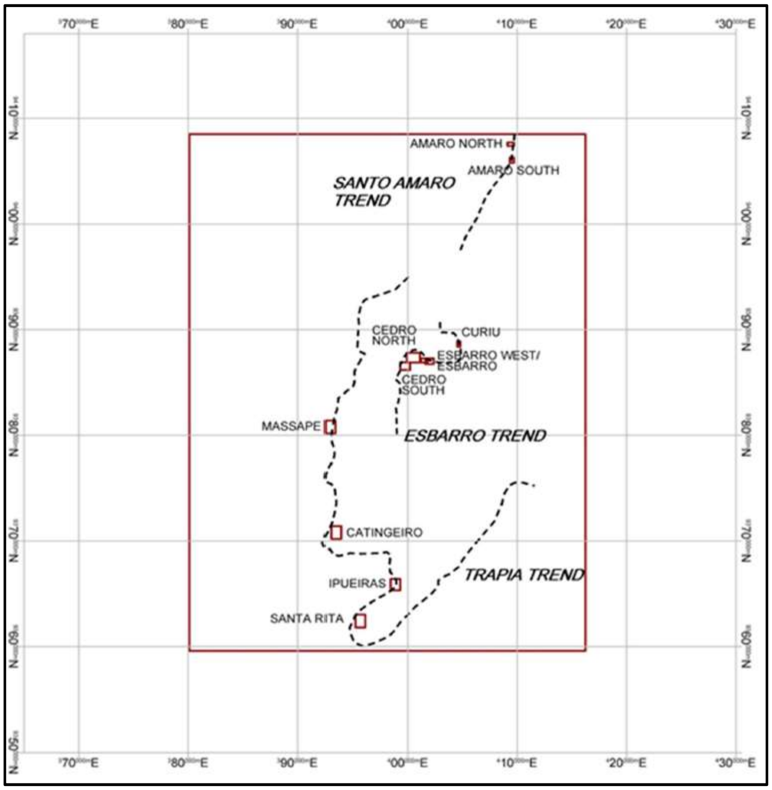


Figure 7-6 Structural Trends Along Pedra Branca Santo Amaro, Esbarro and Trapia Trend



The second phase of alteration is the development of chlorite tremolite schist from peridotitic rocks. This alteration is often accompanied with a distinct texture designated corona texture. This texture is comprised of serpentinite after olivine altering to chlorite but with a rim of tremolite around the olivine.

A third phase of alteration is tremolitization of the serpentinized olivine. This occurs both as pervasive alteration with very sharp boundaries (alteration front) and as a non-pervasive mottling fabric parallel to foliation and generally near shear zones or the margins of the ultramafic bodies. This type of alteration is strongly structurally controlled.

A fourth type of alteration is associated with brittle fractures, quartz veins and/or felsic intrusive rocks. It is generally restricted to structures and fracture selvedges. The mineralogy is often zoned from a central zone of phlogopite schist outward to chlorite phlogopite schist, chlorite actinolite schist and tremolite schist. Structures associated with this alteration are commonly steeply dipping.

The last two types of alteration are generally accompanied with at least partial magnetite destruction. Figure 7-7 shows the structural orientation in the country rocks at Pedra Branca and Figure 7-8 present a cross sections from Banabuiu target area.

Figure 7-7 Structural Orientation in the Country Rock at Pedra Branca (GE21, 2018)

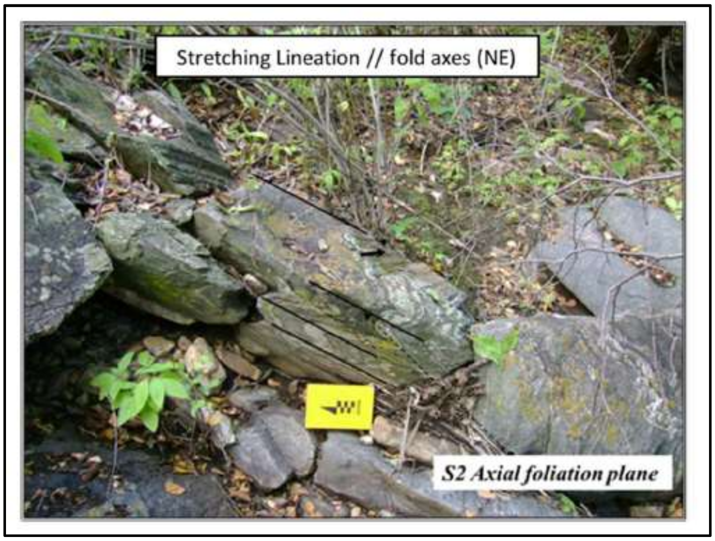
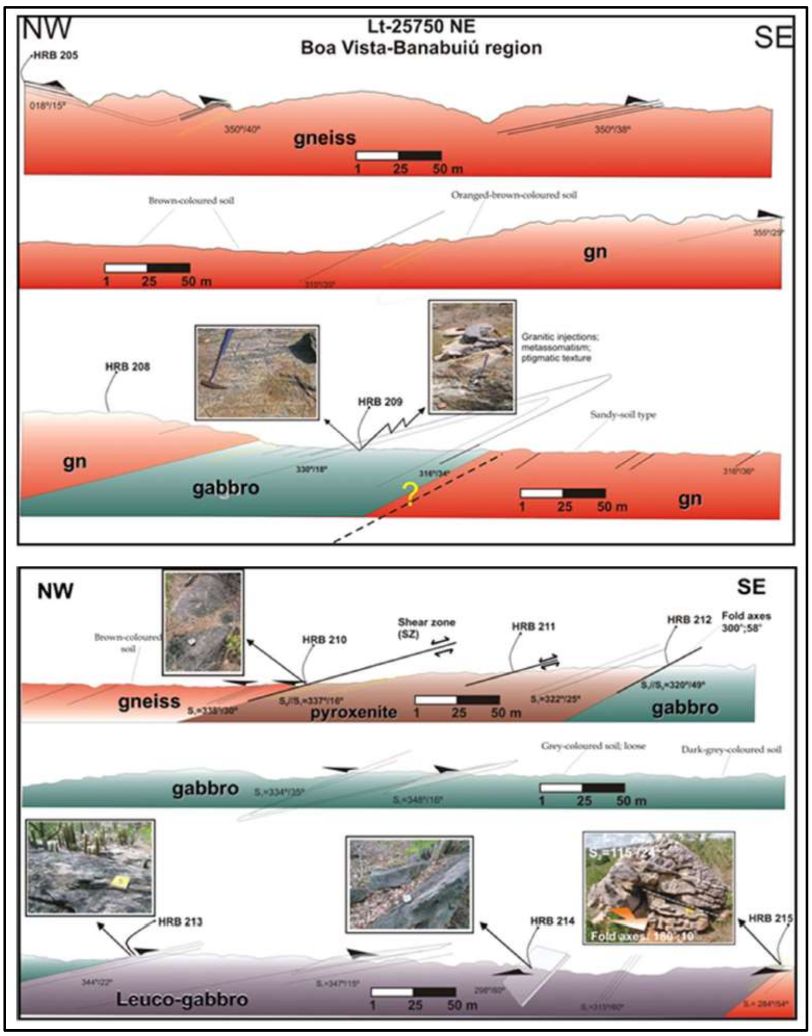


Figure 7-8 Cross Sections from Banabuiu Target Area (GE21, 2018)



8. Deposit Types

(The text for this section is from GE21, 2018)

Layered, ultramafic to mafic intrusions are uncommon in the geologic record but host magmatic ore deposits containing most of the world's economic concentrations of platinum-group elements (PGM). These deposits are mined primarily for their platinum, palladium, and rhodium contents.

Magmatic ore deposits are derived from accumulations of crystals of metallic oxides, or immiscible sulfide, or oxide liquids that formed during the cooling and crystallization of magma, typically with mafic to ultramafic compositions, according Zientek, M.L., 2012.

"PGM reefs" are stratabound PGM-enriched lode mineralization in mafic to ultramafic layered intrusions. The term "reef" is derived from Australian and South African literature for this style of mineralization and used to refer to (1) the rock layer that is mineralized and has distinctive texture or mineralogy (Naldrett, 2004), or (2) the PGM-enriched sulfide mineralization that occurs within the rock layer. For example, Viljoen (1999) broadly defined the Merensky Reef as "a mineralized zone within or closely associated with an unconformity surface in the ultramafic cumulate at the base of the Merensky Cyclic Unit."

PGM-enriched sulfide mineralization is also found near the contacts or margins of layered mafic to ultramafic intrusions (Iljina and Lee, 2005). This contact-type mineralization consists of disseminated to massive concentrations of iron-copper-nickel-PGM-enriched sulfide mineral concentrations in zones that can be tens to hundreds of meters thick. The modes and textures of the igneous rocks hosting the mineralization vary irregularly on the scale of centimeters to meters. Mineralization occurs in the igneous intrusion and in the surrounding country rocks. Mineralization can be preferentially localized along contact with country rocks that are enriched in sulfur-, iron-, or CO2-bearing lithologies.

Reef-type and contact-type deposits, in particular those in the Bushveld Complex, South Africa, are the world's primary source of platinum and rhodium. Reef-type PGM deposits are mined only in the Bushveld Complex (Merensky Reef and UG2), the Stillwater Complex (J-M Reef), and the Great Dyke (Main Sulphide Layer). PGM-enriched contact-type deposits are only mined in the Bushveld Complex.

About the commodities (By-Products) for those two deposit types:

- Reef-type PGM deposits: primarily platinum, palladium, and rhodium; copper, nickel, ruthenium, iridium, osmium, and gold will be recovered as by-products.
- Contact-type Cu-Ni-PGM deposits: polymetallic, with variable proportions of copper, nickel, and platinum-group elements, and by-product gold.

The Reef-type PGM deposits consist of stratabound disseminated iron-, copper-, nickel- and PGM-bearing sulfide minerals that are associated with one or more layers within a layered igneous intrusion. The host rocks for the disseminated sulfide minerals include silicate cumulates such as (1) plagioclase-olivine cumulates that host the J-M Reef in the Stillwater Complex, (2) orthopyroxene cumulates that are associated with the Merensky Reef in the Bushveld Complex, and (3) pyroxene cumulates that host the Main Sulphide Zone in the Great Dyke, as well as oxide cumulates such as (4) the UG2 chromitite in the Bushveld Complex, and (5) the iron-titanium oxide layers in the Stella Intrusion in South Africa. The interval hosting PGM reefs may also mark the position where the magmas achieved sulfur saturation in the stratigraphic column. This is indicated by the presence of disseminated sulfide minerals or changes in metal ratios, such as Pd/S (Barnes, 1993; Miller and others, 2002; Maier and others, 1996, 2003; Maier, 2005; Maier and Barnes, 2010). Sulfur saturation may be associated with iron rich cumulate layers, such as chromitites and iron- and titanium-rich magnetite seams, or with iron-rich silicate rocks resulting from the end-stages of fractional crystallization.

The Copper-nickel-PGM-gold contact-type deposits consist of disseminated, net-textured, and massive copper-nickel-PGE-enriched sulfide minerals found near the lower contact or margin of mafic to ultramafic layered intrusions. The host rocks for the disseminated sulfide minerals include both the igneous rocks and contact metamorphosed country rocks. The sulfide mineralization is found adjacent to or along strike with country rocks that are enriched in sulfur-bearing, iron-bearing, and (or) carbonate minerals. The mineralization can be laterally persistent, commonly extending the strike length of the layered igneous intrusion. However, the mineralized interval is generally tens to hundreds of meters in thickness. The proportion of sulfide minerals varies along strike; using economic cut-offs, areas with higher proportions of sulfide minerals and metals are defined as deposits along the contact zone. Sulfide abundance is typically about 3 to 5 volume percent, but matrix and massive sulfide ores may be present. Erratic variation in the distribution of sulfide minerals is typical, although, the concentration of sulfide minerals within the intrusion generally increases towards its margins and in the adjacent country rocks. Associated deposit types include stratiform chromitite (Schulte and others, 2010), stratiform titanium-vanadium (Force, 1991), and magmatic sulfide-rich nickel-copper deposits related to picrite and (or) tholeiitic basalt dike-sill complexes (Schulz and others, 2010).

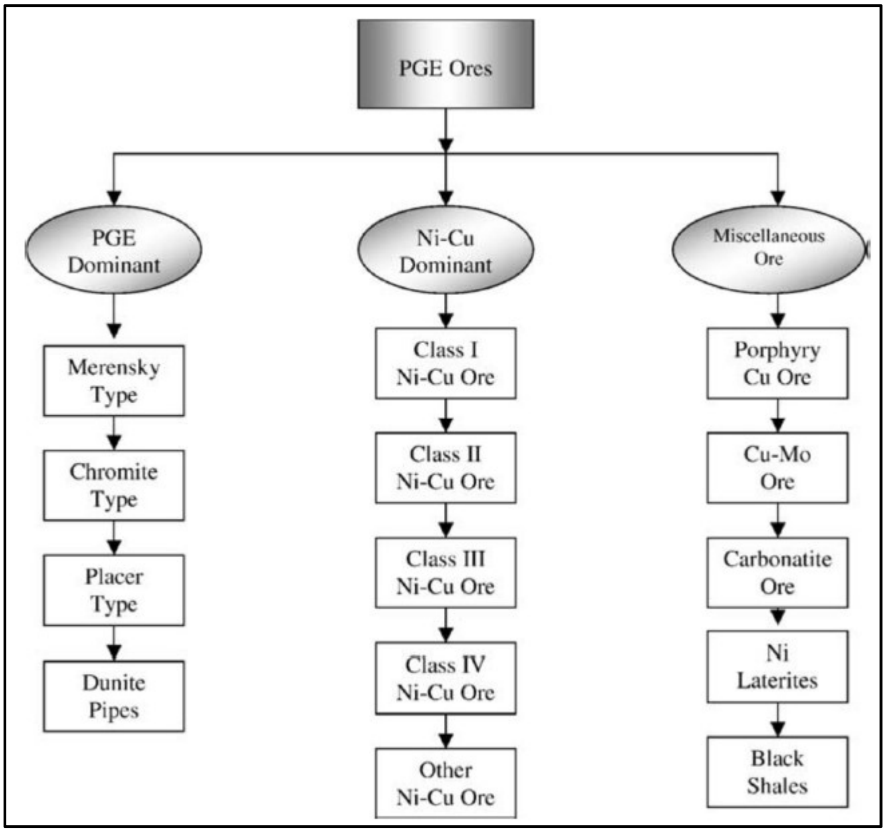
According Naldrett et al. 1990, PMG mineralization also can belonging to two major groups, those that are richer in sulfide, and that are of interest primarily because of their contained Ni and Cu, and those that contain much less sulfide and for which the Platinum Group Elements (PGE) content is the principal economic interest.

Other authors as Xiao et al.,2005, refers to three types of deposits but considering the same criteria of differentiation between (1) PGM’s dominant ores: (2) Ni‑Cu dominant ores and (3) Miscellaneous ores that contain very low PGM concentration compared to the previous two types of ores, Figure 8-1.

The (2) Ni‑Cu dominant sulphides ore in terms of their petro-tectonic setting also an be divided in four settings or classes account for more than 95% of known Ni‑Cu ores:

- Class I: Nortitic rocks associated with an astrobleme (scar resulting form meteorite impact). The only known example of this type is the Sudbury mining camp in Canada.
- Class II: Intrusive equivalents of flood basalts associated with intracontinental rifting. The most important example of this ore type is the Norilsk deposit in Russia. The Duluth complex in Minnesota is another example of this class of ore.
- Class III: Magmatic activity accompanying the early stages of formation of Precambrian greenstone belts.
- Class III can be subdivided into two further classes. Examples of this Class deposits include the Kola Peninsula, Lyn Lake, and Thompson and the Northern tip of the Ungava Peninsula in Canada.
- Class IV: Tholeiitic intrusions, generally synchronous with orogenesis in Phanerozoic orogenic belts.

Figure 8-1 PGM Ore Type Classification According to Xiao et al., 2008 (GE21, 2018)



In Brazil mafic and ultramafic bodies are abundant and several favourable geological settings for PGM-Ni-Cu deposits occur in the country. These include numerous large layered intrusions in cratonic areas, several clusters or lineaments of mafic and mafic-ultramafic intrusions, including examples where feeder dykes and the lowermost parts of layered intrusions are exposed, a continental scale event of flood basalts, and several areas of extensive komatiitic magmatism in Precambrian greenstone belts. The abundance of mafic and ultramafic bodies in Brazil has not reflected so far in the number and magnitude of PGM-Ni-Cu deposits (Ferreira Filho (2010).

The Pedra Branca deposit PGM mineralization occurs within stratigraphic layering of an ultramafic (iron-magnesium-rich) body. The deposit characteristics, mineral associations and style of mineralization is believed to be associated with the "reef-type" PGM ore. PGM association is primarily with chromite and secondarily with base metal sulphides as is the case with the Merensky reef's chromite stringers and cumulate column respectively. The mechanical emplacement mechanisms appear to have been more turbulent with more filter-pressing than gravity settling, post fractional crystallization. This distinguishes the Pedra Branca reef from the narrow Merensky reef by its expression of thick, disseminated mineralization up to 30m in width.

9. Exploration

ValOre has not completed exploration work on the project.

10. Drilling

All the drilling campaigns were completed prior to ValOre's acquisition of the Pedra Branca Project.

10.1 Drilling Campaigns

The core from all drill holes completed from 1999 are stored and available at the project's core yard in Capitão Mor, Ceará State, Brazil. Core from the 1987 drill campaigns. prefixed with PB or BR, are not available for review due to a motor vehicle accident. The 1987 holes account for 40% of the drill holes at the Esbarro Deposit and 16% of the drill holes at the Trapia Deposit but only one of the 1987 drill holes is included in the resource estimate at Trapia. A study should be completed to ensure the analytical results reasonably represent the tenor of mineralization at Esbarro. This can be accomplished by comparing the assays results to the results from the 1999 to 2007 drill core from Esbarro and may also include some twin-hole drilling or infill drilling in areas where the 1987 drill holes are dominant.

Drilling campaigns in Pedra Branca Project are summarized on the Table 10-1. A complete list of all drillholes in the 5PB Deposits with their locations, depth and, year is included in Appendix A. There were 311 drillholes completed in the area of the 5PB Deposits for a total of 22,759 metres and 64 other drillholes were completed throughout the property to test various exploration, geophysics and geochemical anomalies for 7,832 metres between 1987 and 2014.

Table 10-1 Summary of drilling programs at the 5PB Deposits and Exploration Drillholes around the Project Site

Area	DDH Prefix	Year	No. DDHs	Metres	Company	Assay Laboratory
Santo Amaro	DD02	2002	7	563	Solitario	Bondar Clegg and ALS Chemex
	DD04	2004	2	308	Solitario	Bondar Clegg and ALS Chemex
	DD07	2007	3	383	Solitario	Bondar Clegg and ALS Chemex
		Total	**12**	**1,254**		
Curiu	RW	2000	2	146	Rockwell	Bondar Clegg
	DD01	2001	1	38	Solitario	Bondar Clegg and ALS Chemex
	DD03	2003	12	623	Solitario	ALS Chemex
	DD04	2004	6	249	Solitario	ALS Chemex
	DD08	2008	8	360	Pedra Branca	SGS Geosol
	DD09	2009	15	880	Pedra Branca	SGS Geosol
	DD10	2010/11	6	361	Pedra Branca	SGS Geosol
		Total	**50**	**2,657**		
Esbarro	PB	1987	42	2,526	Rio Tinto	Impala
	DD99	1999	8	584	Altoro	Bondar Clegg
	RW	2001	24	1,613	Rockwell	Bondar Clegg
	DD03	2003	25	1,793	Solitario	ALS Chemex
	DD04	2004	5	316	Solitario	ALS Chemex
	DD07	2007	2	318	Pedra Branca	SGS Geosol
		Total	**106**	**7,150**		
Cedro	DD01	2001	7	605	Solitario	Bondar Clegg and ALS Chemex
	DD02	2002	8	876	Solitario	Bondar Clegg and ALS Chemex
	DD03	2003	2	146	Solitario	ALS Chemex
	DD04	2004	6	502	Solitario	ALS Chemex
	DD07	2007	8	597	Pedra Branca	SGS Geosol
	DD08	2008	19	1,482	Pedra Branca	SGS Geosol
	DD09	2009	24	1,824	Pedra Branca	SGS Geosol
	DD10	2010/11	20	1,325	Pedra Branca	SGS Geosol
		Total	94	7,357		
Trapia	BR	1987	8	778	Gencor	LBPM+Impala
	DD99	1999	8	537	Altoro	Bondar Clegg

Area	DDH Prefix	Year	No. DDHs	Metres	Company	Assay Laboratory
	DD01	2001	5	610	Solitario	Bondar Clegg and ALS Chemex
	RW	2001	2	221	Rockwell	Bondar Clegg
	DD02	2002	1	103	Solitario	Bondar Clegg and ALS Chemex
	DD03	2003	2	263	Solitario	ALS Chemex
	DD04	2004	5	540	Solitario	ALS Chemex
	DD07	2007	9	691	Pedra Branca	SGS Geosol
	DD09	2009	9	598	Pedra Branca	SGS Geosol
		Total	**49**	**4,341**		
Deposits Totals			**311**	**22,759**		
Exploration	Various	1999-2014	64	7,832	Various	Various

10.1.1 1987 Diamond Drilling – RTZ and Gencor

Drill holes are all either NQ or HQ core sizes.

Drilling was done by Rio Tinto Zinc (RTZ) and Gencor (Unamgen Subsidiary) in 1987. There is no core remaining from the 50 diamond drill holes, 8 were drilled at the Trapia Deposit by Gencor and 42 were drilled at the Esbarro Deposit by RTZ.

These holes account for 40% of the drill holes at the Esbarro Deposit and 16% of the drill holes at the Trapia Deposit. Only one of the drill holes at Trapia were included in the current mineral resource estimation. ValOre should complete a study to ensure the results from 1987 are reasonable for inclusion in a mineral resource estimation where classification exceeds inferred category at the Esbarro Deposit.

10.1.2 1999 Diamond Drilling – Altoro

Drill holes are all either NQ or HQ core sizes.

Eighteen diamond drill holes were completed by Altoro with 8 drilled at the Esbarro Deposit, 8 drilled at the Trapia Deposit and 2 drilled on property exploration targets. There are no details of the drilling, core handling or logging procedures available from this drilling campaign.

10.1.3 2001 Diamond Drilling – Rockwell

Drill holes are all either NQ or HQ core sizes.

Thirty-one diamond drill holes were completed by Rockwell with 2 drilled at the Curiu Deposit, 24 at the Esbarro Deposit, 2 drilled at the Trapia Deposit and 3 drilled on property exploration targets. There are no details of the drilling, core handling or logging procedures available from this drilling campaign.

10.1.4 2001 to 2004 Diamond Drilling - Solitario

Drill holes are all either NQ or HQ core sizes.

One hundred and forty diamond drill holes were completed by Solitario with 9 drilled in Santo Amaro, 21 drilled at the Curiu Deposit, 54 at the Esbarro Deposit, 23 at the Cedro Deposit, 15 drilled at the Trapia Deposit and 18 drilled on property exploration targets. There are no details of the drilling, core handling or logging procedures available from this drilling campaign.

10.1.5 2007 to 2011 Diamond Drilling – Amplat (Pedra Branca)

All Amplat drill holes were drilled with a BQ core size.

One hundred and forty-three diamond drill holes were completed by Amplat with 3 drilled in Santo Amaro, 29 drilled at the Curiu Deposit, 2 at the Esbarro Deposit, 71 at the Cedro Deposit, 18 drilled at the Trapia Deposit and 20 drilled on property exploration targets.

Typical Amplat exploration drilling standards and procedures were utilised on the Project between 2007 and 2011.

As per the Amplat drilling procedure, drilling instructions were presented to the drilling contractor and included information related to the drill hole locations, dip, azimuth, expected depth, core size and core barrel type (single, double or triple tube).

Core was taken from the core barrel and immediately put into a core tray. Once the core was correctly packed it was cleaned with a degreaser and made ready for transport to the core yard in Capitão Mor.

All core trays were labelled with a hole number, a “from” and “to” depth after which the trays were sequentially numbered.

Drill run recoveries were logged on standard core recovery sheets, which are stored at the Capitão Mor office.

10.2 Drill Core Logging

ValOre has original copies of all the drill logging data for the drill holes at the Pedra Branca project at the Capitão Mor office. Upon review of the drill logs to core, the logging data appears to be of sufficient quality to support a mineral resource estimate and any subsequent mining studies and metallurgical studies.

The logging procedures were described in detail in the GE21 Technical Report of May 18, 2018 and are included below in their entirety.

Before logging commenced, the geologist inspected the core to ensure that the trays and core were correctly marked, the individual core pieces fit together, that depth hole markers were correctly inserted and that Jangada drillhole depth marking on the core was done correctly and accurately. Once core depth measurements and quality checks were conducted, core logging commenced.

Core was logged wet to ensure accurate colour, mineralogy, texture and alteration were correctly identified. Logging was physically carried out by successively aligning a 1 m clinorule on the 1 m interval depth measurements and measuring and recording the depths of lithological contacts and the other aspects of interest, the fundamental purpose being to record as much geological information as possible. A clinorule is also useful for measuring layering angles (core bedding angles). Geological logs were generated utilising standardised rock codes.

All drillholes were logged at the core yard at Capitão Mor and captured on paper and then captured from hardcopy into MS Excel. All core was photographed, and metre blocks are checked prior to logging commencing. The original log sheets are filed on site. All core is neatly stored in an undercover shed in a functional set of core tray racks as demonstrated below in Figure 10-1.

Figure 10-1 Core Storage Facility at the Capitao Mor Core Yard

Based on the information available it is accepted that all historical intersections conducted during the 1980s are represented in the Mineral Resource estimation dataset and were logged. All drilling and relevant intersections relating to 2005 and onwards were logged.

Geotechnical logging was conducted on all core at Pedra Branca in the form of logging industry standard rock quality designation ("RQD") with documented standards and procedures. In addition, the nature of the fracture fills and nature of discontinuity contacts were described. An example of a typical geotechnical log.

Routine photographs were taken during drilling programmes prior to core splitting after the core was placed and fitted into 1 m wooden core trays and core run end blocks placed at relevant intervals. The photos were pasted into MSWord™ documents for ease of storage and stored on the server.

During the 2012 to 2013 resampling exercise conducted by Amplat, photographs were again taken after sampling.

10.3 Diamond Drilling – 2012 Campaign - Amplat (Pedra Branca)

Ten drill holes were completed in the area between the Esbarro and Curiu Deposits. Esbarro and Curiu are located 3.5 km apart along the Esbarro structural trend in the central preservation zone of the mega-sigmoidal structure at Pedra Branca.

The drilling did not locate any significant occurrences of ultramafic bodies that would extend large segments of mineralization between these two zones. Geophysical data suggests there may be small ultramafic bodies occurring between Esbarro and Curiu, but the 2012 drilling campaign confirmed that there is no continuous connectivity between the two bodies. No sampling was completed on these drillholes.

10.4 Relogging and Sampling Campaign 2012 – 2013

Diamond drilling had been conducted at the project between 1987 and 2004 prior to Amplat involvement in the project. Anglo implemented logging and sampling standards when they became involved in the project site in 2007. To address uncertainty about the quality of logging and sampling data of holes completed between 1999 and 2004, Amplat relogged and resampled the ultramafic intersections of all available drill core. This did not include the 1987 drill holes by RTZ and Gencor as no core was available from these holes at the project. By doing this, Amplat was able to take more bulk density measurements and standardize the lithological coding. The ½ core was cut into half again and so that ¼ of the core was put back in the core box and the other ¼ sample was put into a sample bag.

Of the 138 drill holes drilled at the 5PB Deposits between 1999 and 2004, Amplat relogged and resampled 127 of them.

LGGC has completed a comparison of the original assays against the reassays and found the results for Pt, Pd and Au to be reasonably similar with no apparent bias resulting from the use of ½ core to ¼ core resampling. This work is included in section 12.4 of this report.

10.5 Diamond Drilling – 2014 Campaign - Amplat (Pedra Branca)

Amplat drilled 14 exploration drill holes throughout the Pedra Branca Project based on geophysics targets but did not intersect significant ultramafic units.

A total 3000m was completed through 14 reconnaissance holes.

10.6 Core Quality, Recovery and Mineralization Intersections

The core appears to be well kept in the core storage facility at the Capitão Mor office site.

Core recoveries are reported to be in the order of 90%.

Core intersection angles are reasonably perpendicular to the mineralized horizons at each of the 5PB Deposits.

10.7 Collar Location Determinations

Latitude and longitude coordinates recorded in the database were located and measured in the field using a handheld GPS unit (SAD69 datum). Collar markers in the field for some drill holes are aluminium punched plates secured to a concrete collar.

Elevation readings using a handheld GPS unit are not reliable, so collar elevations needed to be adjusted to the topography surface.

LGGC recommends that all drill hole collars be located and re-surveyed by a qualified surveyor utilising a Total Station type survey instrument.

10.8 Downhole Survey Data

There is no downhole survey data for any of the holes in the project database. The average drill hole depth is 73 m and most holes were drilled vertically or had a subvertical dip (average was -77°). There is less likelihood of deflection of the drill hole orientation on short, vertical to sub-vertical holes such as those at the Pedra Branca Project. LGGC does not anticipate that this poses a risk to the resource estimations but recommends that all future drill holes be down hole surveyed.

10.9 Intersection Angles and True Thickness

The combination of vertical to sub-vertical drilling orientation and the shallow dip of the lithology units results in perpendicular to sub-perpendicular intersections of the mineralization in most drill holes. This is ideal for geology modelling and mineral resource estimation.

10.10 Conclusions and Recommendations

LGGC has not found any drilling or recovery factors that could materially impact the mineral resource estimations.

LGGC recommends that Valore synchronize all data to the WGS84 datum and all future drill holes be downhole surveyed to validate the drill hole was set-up properly as per the proposed azimuth and dip of the hole.

11. Sample Preparation, Analyses and Security

11.1 Sampling Protocols at Worksite

11.1.1 1987 Drill Hole Samples

There is no information available on the sampling protocols used during the 1987 drilling campaigns.

11.1.2 1999 to 2004 Drill Hole Samples

There is no information available on the sampling protocols used during the 1999 to 2004 drilling campaigns.

11.1.3 2007 to 2014 Drill Hole Samples

All the drill core from 2007 to 2014 that support the mineral resource estimations in the 5Pb Deposits was sawn in half along the core axis.

Sampling was conducted in the core yard at Capitão Mor.

Geologists selected the sample size based on the geology and mineralization observed during the logging process and lithology boundaries were honoured.

Samples were marked up, sawn in half and one half of the core was returned to the core box while the other half was placed in a sample bag. The sample intervals and sample numbers were recorded on the sampling sheet and on the core boxes. A sample tag was placed in the sample bag and the accumulated sample shipments were sent to the laboratory by truck.

11.2 Resampling of 1999 to 2004 Drill Hole Samples

The assay results from the 1999 to 2004 drill core that was resampled by Amplat (2011 to 2012) are from ¼ core samples as the remaining half-core was cut in half along the core axis.

The difference in sample size between the 1/4 core and 1/2 core samples does not appear to impact the grades of Pt, Pd and Au as per the comparisons documented in section 12.4 of this report.

The drill core from the reassay samples were subjected to the same sampling protocols applied to the Amplat drill holes from 2007 to 2014.

11.3 Laboratory Sample Preparation and Analysis Procedures

The drilling samples have been analyzed at different laboratories by the different companies that have completed drilling campaigns at the Pedro Branca Project.

11.3.1 Historical Drill holes – 1987 to 2004

The 1987 drilling completed by RTZ used the Impala Laboratory and by Gencor used the Impala and LBPM Laboratories.

The drilling completed between 1999 to 2001 by Altoro and Rockwell used the Bondar Clegg Laboratory.

The drilling completed between 2001 and 2002 by Solitario used both the Bondar Clegg and ALS Chemex laboratories then used the ALS Chemex Laboratory exclusively for the 2003 to 2004 drilling campaigns.

11.3.2 2007 Drilling – ALS Chemex Laboratory

Amplat started out using the ALS Chemex laboratory for their 2007 drilling.

For the Pt, Pb and Au results the samples were crushed to 70% passing 2 mm mesh and then 250 gm subsample pulverized to 85% passing -200 mm mesh. The samples were analysed using 30 gm Fire Assay method (PGM-ICP23) with ICP-AES finish.

The samples were also analysed for 33 Elements using four acid digestion with ICP-AES finish for Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Th, Ti, Tl, U, V, W and Zn. Over limits were reanalyzed using the ore-grade version of this method ME-OG62 which also used four acid digestion of the sample. Cu results that exceeded the top limit were reanalyzed using Cu-OG62 method which uses a four acid digestion and ICP or AAS finish.

The ALS-Chemex laboratory was located in Sparks, Nevada in the United States.

11.3.3 2008 to 2014 and Resampled Core (1999 to 2004) - SGS Geosol

Amplat switched to the SGS Geological Solutions Laboratory (SGS Geosol) for their 2008 to 2014 drill holes. This laboratory is ISO9001:2000 accredited and located in Belo Horizonte, Brazil. SGS Geosol laboratory analysed the bulk of the samples from the project as they were also the site that analysed the resampled core from the historical drilling from 1999 to 2004.

At the SGS Geosol Laboratory the samples are crushed to 100% passing 2 mm mesh and then the whole sample was pulverised to 95% passing -200 mesh.

Analysis for Pt, Pd and Au was by fire assay method with an ICP finish (FA1313, 30 gm).

A 37-element analysis by Ion Coupled Plasma Mass Spectrometry (“ICPMS”) using four acid digestion (HCl, HNO_3, HF and $HClO_4$) (ICP40B).

Analysis for S is also conducted using CSA17V method.

Analysis for Mg and Fe were competed when S content was >15% using laboratory method XRF79C. When the content of Mg and Fe exceed 10,000 ppm from the 37 element ICP, Cu and Cr are analysed as well using the XRF method.

The analytical methodologies employed are accepted industry practice on similar deposits in South Africa and are considered representative of total analysis.

11.4 Quality Assurance and Quality Control

11.4.1 Historical Drill Holes – 1987 to 2004

There is no information related to the QAQC procedures and protocols for the historical drill holes.

11.4.2 2007 to 2014 Drill Holes and Resampled Historical Drill Core – QAQC

Amplat inserted QAQC check samples into sampling streams of their drilling from 2007 through 2014 and into the resampling program of the 1999 to 2004 historical drill holes.

Amplat was inserting blank samples at a rate of 1 blank sample for every 70 drill core samples submitted. Industry standard is to include more blank samples at about double that rate.

A Standard Reference Material (SRM) sample was inserted into the sample stream at a rate of 1 SRM for every 40 drill core samples. While some workers find this a reasonable insertion rate it is recommended to include an SRM at a rate of 1 for every 20 drill core samples.

Amplat included duplicate samples in the 2008 to 2009 drilling programs (drill holes DD08Cu20 to DD09CD67) at a rate of 1 duplicate sample per batch of 20 drill core samples. This is a reasonably acceptable rate but the short duration of their duplicate program resulted in only 59 data pairs.

In future drilling programs there should be 1 blank, 1 SRM, 1 core duplicate, 1 course reject duplicate and 1 pulp duplicate for every batch of 20 samples submitted to the assay laboratory. This is to ensure the drilling, sampling and sample preparation protocols applied to the drill core are idealized for the deposits being tested and used for mineral resource estimations.

11.4.3 Standard Reference Materials

SRM samples used to support the 2007 to 2014 diamond drilling samples and the reassayed samples from the historical drill holes were purchased from CDN Resource Laboratories in Delta, BC, Canada (Table 11-1).

SRM results should be reviewed when assay results are received from the laboratory. An SRM is considered to have failed and the associated samples should be reassayed when:

- a single SRM result exceeds triple the standard deviation value or
- more than one consecutive sample exceeds double the standard deviation value.

There are significant number of failures on some the SRM charts that support the drilling data. Some of the apparent failures may be due to the errors in the database that LGGC identified during the data validation process. The database audit should include the QAQC data to confirm the apparent failures on the charts are not due to incorrect assay data in the QAQC database.

Table 11-1 CDN Resource Laboratories SRM Samples Used in QAQC Program

SRM ID	Expected Pt g/t	2 * Standard Deviation	Expected Pd g/t	2*Standard Deviation	Expected Au g/t	Standard Deviation
CDN-PGMS-1	2.3	0.18	10.35	0.74	0.23 (not certified)	0.06
CDN-PGMS-2	0.21	0.04	3.9	0.47	-	-
CDN-PGMS-9	0.71	0.09	2.6	0.24	1.04	0.1
CDN-PGMS-13	1.25	0.08	4.51	0.25	1.41	0.11
CDN-PGMS-15	0.098	0.014	0.428	0.03	0.41 (provisional)	0.07
CDN-PGMS-21	0.293	0.026	2	0.18	3.42	0.41

CDN PGMS-1

Twenty-two CDN PGMS-1 SRMs were used to support the Pt and Pd values from the samples submitted for analysis during 2007 to 2009 (Figure 11-1). The certificate for this SRM provides an expected value for Au and a confidence interval but it clearly states that the gold value is not certified and should not be used to determine the quality of gold assay results.

Ten assay results for Pt and eight for Pd were outside of the acceptable limits and the sample batches associated with these SRMs should have been re-assayed at the time of the sampling program. All other samples returned ranges of Pt and Pd that were within the acceptable range. Seven of the failures in the Pt and Pd SRM results are from the same sample.

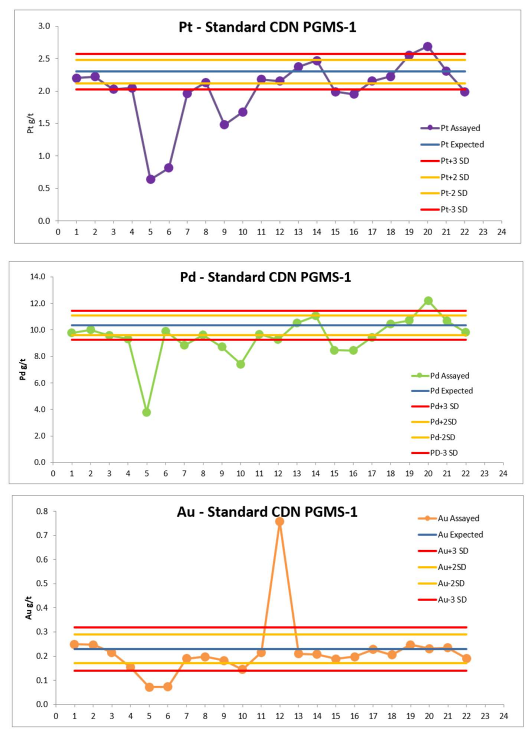
Three samples returned values for Au outside of the expected range but the SRM is not certified for gold values so no actions would have been recommended.

Figure 11-1 SRM Results for CDN PGMS-1

SRM CDN PGMS-1 Results
Pt, Pd and Au (g/t)

2007 to 2014 DDHs
and
Reassay of 1999 to 2004 DDHs

Samp_ID	Type	Au ppm	Pd ppm	Pt ppm
82175	Standard CDN PGMS-1	0.249	9.770	2.200
82225	Standard CDN PGMS-1	0.247	10.000	2.220
82325	Standard CDN PGMS-1	0.215	9.580	2.030
82425	Standard CDN PGMS-1	0.154	9.320	2.050
85100	Standard CDN PGMS-1	0.071	3.783	0.638
85175	Standard CDN PGMS-1	0.073	9.903	0.817
85250	Standard CDN PGMS-1	0.189	8.849	1.967
85325	Standard CDN PGMS-1	0.197	9.629	2.135
85400	Standard CDN PGMS-1	0.181	8.713	1.480
85475	Standard CDN PGMS-1	0.145	7.420	1.680
85550	Standard CDN PGMS-1	0.215	9.672	2.178
85625	Standard CDN PGMS-1	0.758	9.266	2.153
85700	Standard CDN PGMS-1	0.210	10.517	2.375
85775	Standard CDN PGMS-1	0.207	11.061	2.471
86025	Standard CDN PGMS-1	0.188	8.478	1.992
86100	Standard CDN PGMS-1	0.197	8.445	1.951
86175	Standard CDN PGMS-1	0.228	9.447	2.156
86250	Standard CDN PGMS-1	0.205	10.453	2.228
86325	Standard CDN PGMS-1	0.247	10.704	2.553
86400	Standard CDN PGMS-1	0.231	12.215	2.688
86475	Standard CDN PGMS-1	0.234	10.670	2.312
86550	Standard CDN PGMS-1	0.191	9.820	1.992



CDN PGMS-2

Twenty CDN PGMS-2 SRMs were used to support the drill hole samples submitted for analysis during 2007 to 2009 (Figure 11-2). This SRM is certified for Pt and Pd values and does not report a value for Au (Table 11-1).

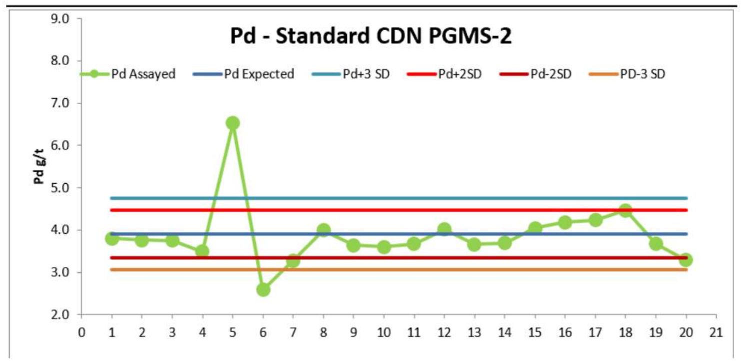
Three samples returned values for Pt and two for Pd that were outside of the expected ranges. The sample batches associated with these SRMs should have been re-assayed at the time of the sampling program. All other samples returned ranges of Pt and Pd that were within the acceptable range.

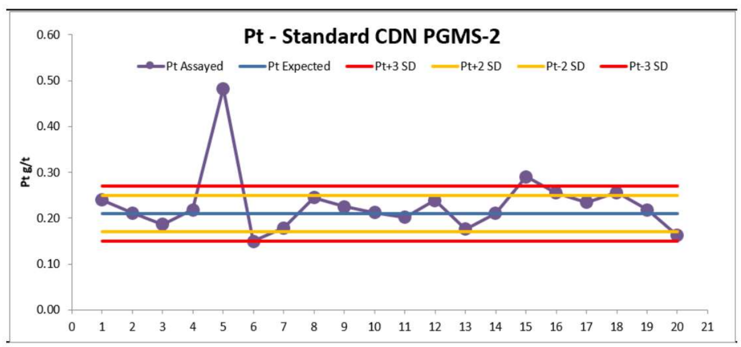
Figure 11-2 SRM Results for CDN PGMS-2

SRM CDN PGMS-2 Results
Pt and Pd (g/t)

2007 to 2014 DDHs
and
Reassay of 1999 to 2004 DDHs

Samp_ID	Type	Au ppm	Pd ppm	Pt ppm
82125	CDN PGMS-2		3.800	0.240
82275	CDN PGMS-2		3.760	0.211
82375	CDN PGMS-2		3.750	0.186
85050	CDN PGMS-2		3.494	0.218
85125	CDN PGMS-2		6.522	0.482
85200	CDN PGMS-2		2.586	0.149
85275	CDN PGMS-2		3.278	0.179
85350	CDN PGMS-2		3.989	0.245
85425	CDN PGMS-2		3.637	0.225
85500	CDN PGMS-2		3.600	0.212
85575	CDN PGMS-2		3.665	0.202
85725	CDN PGMS-2		4.007	0.239
86050	CDN PGMS-2		3.661	0.176
86125	CDN PGMS-2		3.684	0.210
86200	CDN PGMS-2		4.041	0.290
86275	CDN PGMS-2		4.181	0.255
86350	CDN PGMS-2		4.228	0.234
86425	CDN PGMS-2		4.462	0.256
86500	CDN PGMS-2		3.671	0.218
86575	CDN PGMS-2		3.282	0.162





CDN PGMS-9

Twenty-nine CDN PGMS-9 SRMs were used to support the drill hole samples submitted for analysis during 2009 through the 2012 (Figure 11-3). This SRM is certified for Pt, Pd and Au values as per Table 11-1.

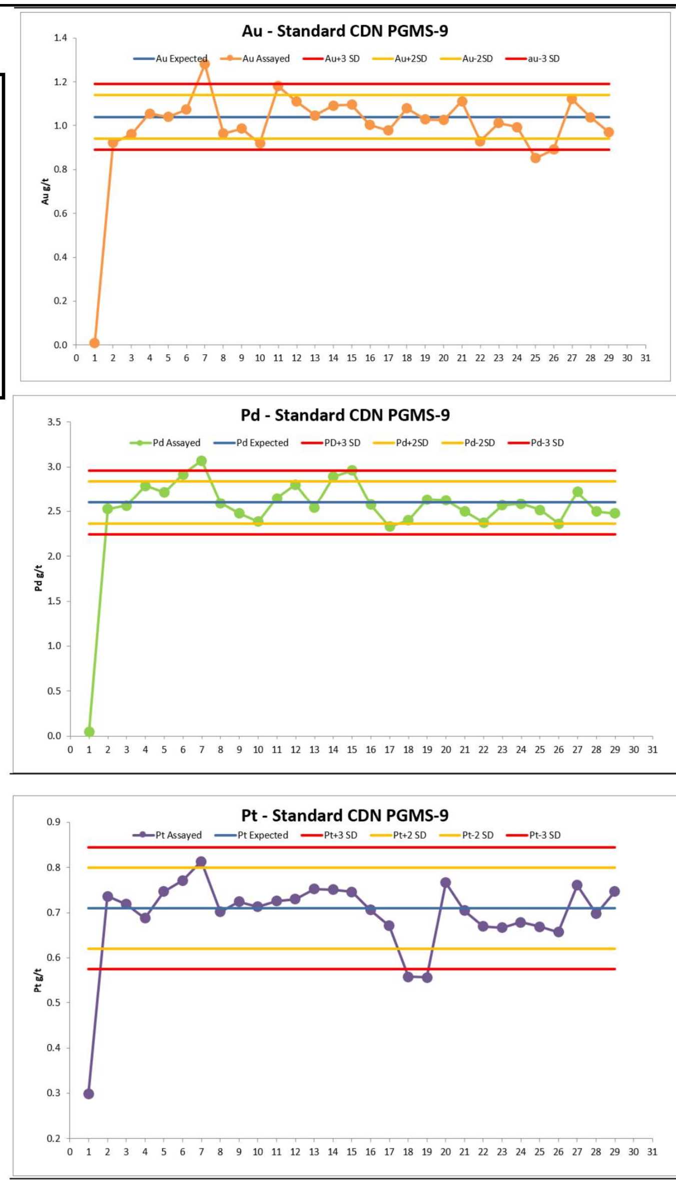
Three samples returned values for Pt, four for Pd and seven for Au that were outside of the expected ranges. The sample batches associated with these SRMs should have been re-assayed at the time of the sampling program.

Figure 11-3 SRM Results for CDN PGMS-9

SRM CDN PGMS-9 Results
Pt, Pd and Au (g/t)

2007 to 2014 DDHs
and
Reassay of 1999 to 2004 DDHs

Samp_ID	Type	Au ppm	Pd ppm	Pt ppm
86625	CDN PGMS-9	0.009	0.044	0.298
86700	CDN PGMS-9	0.922	2.526	0.736
86775	CDN PGMS-9	0.961	2.564	0.719
86850	CDN PGMS-9	1.055	2.787	0.688
87075	CDN PGMS-9	1.040	2.715	0.747
87150	CDN PGMS-9	1.074	2.913	0.771
87225	CDN PGMS-9	1.280	3.068	0.813
87300	CDN PGMS-9	0.964	2.592	0.702
87375	CDN PGMS-9	0.987	2.478	0.724
87450	CDN PGMS-9	0.919	2.386	0.713
89350	CDN PGMS-9	1.180	2.648	0.726
89025	CDN PGMS-9	1.109	2.802	0.730
89100	CDN PGMS-9	1.047	2.538	0.752
89175	CDN PGMS-9	1.092	2.891	0.751
89250	CDN PGMS-9	1.095	2.959	0.746
89400	CDN PGMS-9	1.004	2.573	0.706
90375	CDN PGMS-9	0.978	2.328	0.671
89475	CDN PGMS-9	1.079	2.400	0.558
89625	CDN PGMS-9	1.029	2.634	0.557
89700	CDN PGMS-9	1.026	2.624	0.766
89775	CDN PGMS-9	1.111	2.496	0.705
89850	CDN PGMS-9	0.929	2.375	0.670
89925	CDN PGMS-9	1.012	2.568	0.667
90000	CDN PGMS-9	0.993	2.584	0.679
90075	CDN PGMS-9	0.852	2.516	0.669
90150	CDN PGMS-9	0.892	2.361	0.657
89550	CDN PGMS-9	1.121	2.720	0.761
90225	CDN PGMS-9	1.038	2.496	0.698
90300	CDN PGMS-9	0.970	2.477	0.747



CDN PGMS-13

Twenty-nine CDN PGMS-13 SRMs were used to support the drill hole samples submitted for analysis during 2009 through the 2012 (Figure 11-4). This SRM is certified for Pt, Pd and Au values as per Table 11-1.

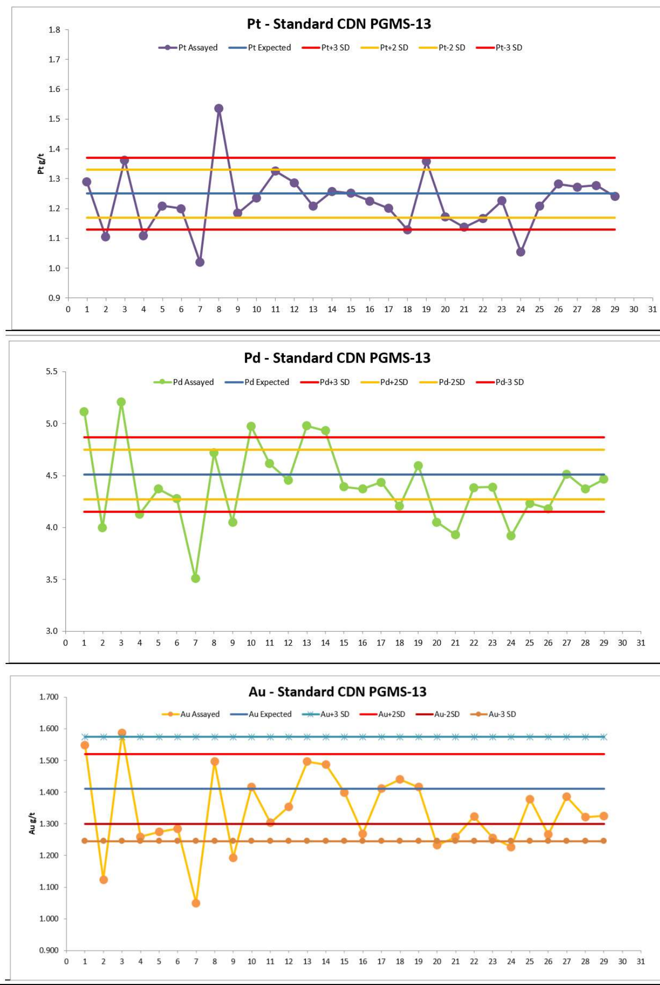
Six samples returned values for Pt, fourteen for Pd and six for Au that were outside of the expected ranges. The sample batches associated with these SRMs should have been re-assayed at the time of the sampling program.

Figure 11-4 SRM Results for CDN PGMS-13

SRM CDN PGMS-13 Results
Pt, Pd and Au (g/t)

2007 to 2014 DDHs
and
Reassay of 1999 to 2004 DDHs

Samp_ID	Type	Au ppm	Pd ppm	Pt ppm
86650	CDN PGMS-13	1.549	5.116	1.289
86725	CDN PGMS-13	1.124	3.997	1.105
86800	CDN PGMS-13	1.587	5.210	1.363
87100	CDN PGMS-13	1.259	4.131	1.108
87175	CDN PGMS-13	1.274	4.373	1.209
87250	CDN PGMS-13	1.285	4.279	1.200
87325	CDN PGMS-13	1.050	3.512	1.020
87400	CDN PGMS-13	1.497	4.719	1.536
87475	CDN PGMS-13	1.193	4.051	1.185
89325	CDN PGMS-13	1.417	4.974	1.236
89050	CDN PGMS-13	1.303	4.616	1.326
89125	CDN PGMS-13	1.354	4.456	1.287
89200	CDN PGMS-13	1.497	4.978	1.208
89275	CDN PGMS-13	1.487	4.933	1.258
90400	CDN PGMS-13	1.399	4.393	1.251
89425	CDN PGMS-13	1.269	4.372	1.225
89575	CDN PGMS-13	1.412	4.436	1.201
89650	CDN PGMS-13	1.440	4.207	1.128
89725	CDN PGMS-13	1.416	4.597	1.358
89800	CDN PGMS-13	1.233	4.053	1.173
89875	CDN PGMS-13	1.258	3.930	1.137
89950	CDN PGMS-13	1.323	4.386	1.167
90025	CDN PGMS-13	1.256	4.391	1.226
90100	CDN PGMS-13	1.227	3.921	1.054
90175	CDN PGMS-13	1.378	4.235	1.209
90250	CDN PGMS-13	1.266	4.183	1.282
90325	CDN PGMS-13	1.385	4.514	1.272
90450	CDN PGMS-13	1.321	4.372	1.278
89500	CDN PGMS-13	1.325	4.467	1.241



CDN PGMS-15

Forty-three CDN PGMS-15 SRMs were used to support the drill hole samples submitted for analysis during 2009 through the 2012 (Figure 11-5). This SRM is certified for Pt and Pd but is only a provisional guide for Au values as per Table 11-1.

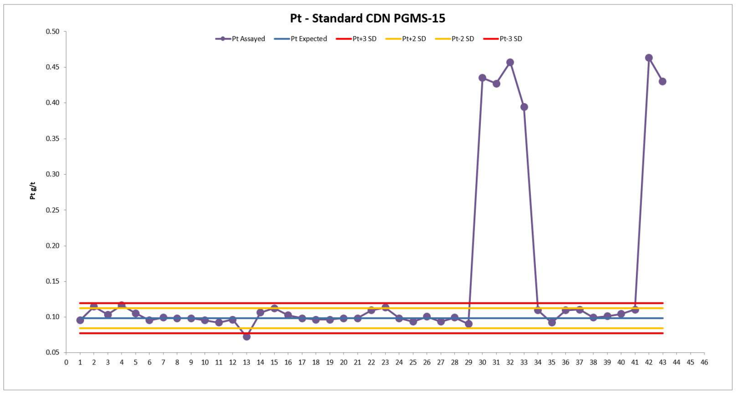
Seven samples returned values for Pt, six for Pd and no Au that were outside of the expected ranges. The sample batches associated with these SRMs should have been re-assayed at the time of the sampling program.

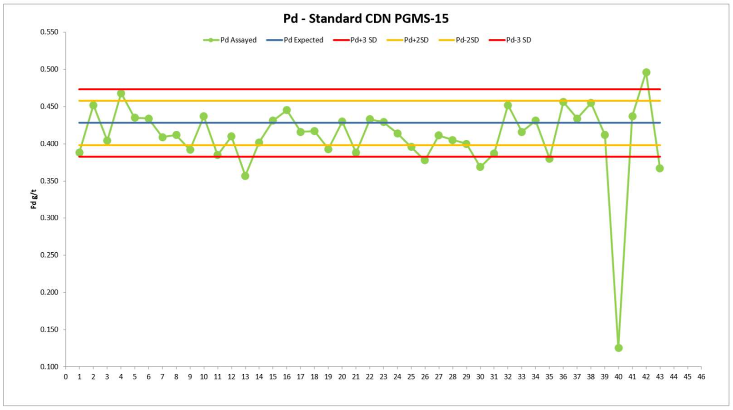
Figure 11-5 SRM Results for CDN PGMS-15

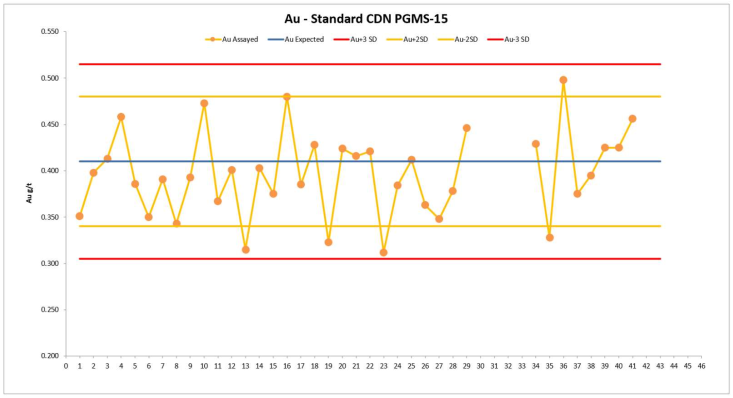
SRM CDN PGMS-15 Results
Pt, Pd and Au (g/t)

2007 to 2014 DDHs
and
Reassay of 1999 to 2004 DDHs

Samp_ID	Type	Au ppm	Pd ppm	Pt ppm
90875	CDN PGMS-15	0.351	0.388	0.095
90950	CDN PGMS-15	0.398	0.452	0.114
91025	CDN PGMS-15	0.413	0.404	0.103
91100	CDN PGMS-15	0.458	0.468	0.116
91175	CDN PGMS-15	0.386	0.435	0.105
91250	CDN PGMS-15	0.350	0.434	0.095
91400	CDN PGMS-15	0.391	0.409	0.099
91475	CDN PGMS-15	0.343	0.412	0.098
91550	CDN PGMS-15	0.393	0.392	0.098
91625	CDN PGMS-15	0.473	0.437	0.095
91700	CDN PGMS-15	0.367	0.385	0.092
91775	CDN PGMS-15	0.401	0.410	0.096
91850	CDN PGMS-15	0.315	0.357	0.072
91925	CDN PGMS-15	0.403	0.402	0.106
91325	CDN PGMS-15	0.375	0.431	0.112
90725	CDN PGMS-15	0.480	0.445	0.102
90800	CDN PGMS-15	0.385	0.416	0.098
92000	CDN PGMS-15	0.428	0.417	0.096
92075	CDN PGMS-15	0.323	0.393	0.096
90475	CDN PGMS-15	0.424	0.430	0.098
90550	CDN PGMS-15	0.416	0.388	0.098
90625	CDN PGMS-15	0.421	0.433	0.109
92150	CDN PGMS-15	0.312	0.429	0.113
92225	CDN PGMS-15	0.384	0.414	0.098
92300	CDN PGMS-15	0.412	0.396	0.093
92375	CDN PGMS-15	0.363	0.378	0.100
92450	CDN PGMS-15	0.348	0.411	0.093
92525	CDN PGMS-15	0.378	0.405	0.099
92600	CDN PGMS-15	0.446	0.400	0.090
92750	CDN PGMS-15		0.369	0.435
92900	CDN PGMS-15		0.387	0.427
92975	CDN PGMS-15		0.452	0.457
93050	CDN PGMS-15		0.416	0.394
93125	CDN PGMS-15	0.429	0.431	0.109
93200	CDN PGMS-15	0.328	0.380	0.092
93375	CDN PGMS-15	0.498	0.456	0.109
93450	CDN PGMS-15	0.375	0.434	0.110
93300	CDN PGMS-15	0.395	0.455	0.099
93525	CDN PGMS-15	0.425	0.412	0.101
93600	CDN PGMS-15	0.425	0.125	0.104
93675	CDN PGMS-15	0.456	0.437	0.110
92675	CDN PGMS-15		0.496	0.463
92825	CDN PGMS-15		0.367	0.430







CDN PGMS-21

Thirty-six CDN PGMS-21 SRMs were used to support the drill hole samples submitted for analysis during 2009 through the 2012 (Figure 11-6). This SRM is certified for Pt, Pd and Au values as per Table 11-1.

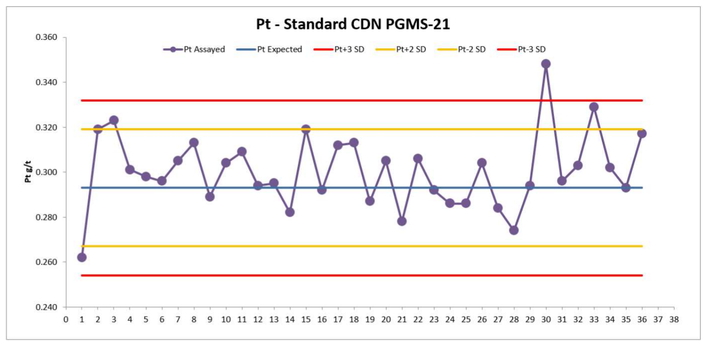
One sample returned values for Pt, one for Pd and no Au were outside of the expected ranges. The sample batches associated with these SRMs should have been re-assayed at the time of the sampling program.

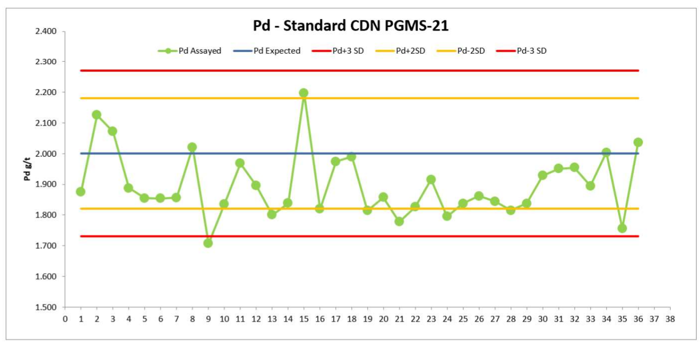
Figure 11-6 SRM Results for CDN PGMS-21

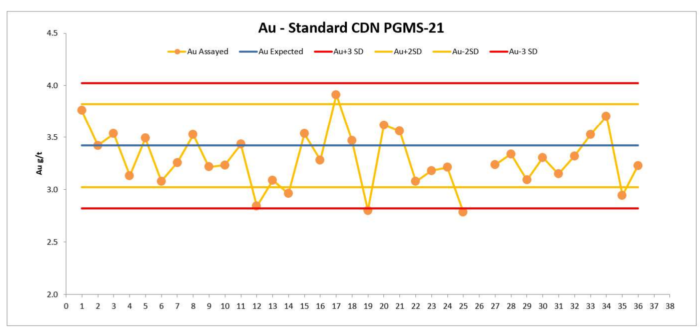
SRM CDN PGMS-21 Results
Pt, Pd and Au (g/t)

2007 to 2014 DDHs
and
Reassay of 1999 to 2004 DDHs

Samp_ID	Type	Au ppm	Pd ppm	Pt ppm
90975	CDN PGMS-21	3.757	1.875	0.262
90825	CDN PGMS-21	3.419	2.125	0.319
91050	CDN PGMS-21	3.532	2.072	0.323
91125	CDN PGMS-21	3.132	1.888	0.301
91200	CDN PGMS-21	3.489	1.855	0.298
91275	CDN PGMS-21	3.077	1.854	0.296
91350	CDN PGMS-21	3.255	1.856	0.305
91425	CDN PGMS-21	3.522	2.021	0.313
91500	CDN PGMS-21	3.214	1.707	0.289
91575	CDN PGMS-21	3.232	1.836	0.304
91650	CDN PGMS-21	3.430	1.968	0.309
91725	CDN PGMS-21	2.840	1.895	0.294
91800	CDN PGMS-21	3.089	1.800	0.295
91875	CDN PGMS-21	2.961	1.838	0.282
91950	CDN PGMS-21	3.532	2.196	0.319
90688	CDN PGMS-21	3.280	1.819	0.292
90750	CDN PGMS-21	3.908	1.974	0.312
90900	CDN PGMS-21	3.468	1.990	0.313
92025	CDN PGMS-21	2.801	1.814	0.287
90500	CDN PGMS-21	3.616	1.857	0.305
90575	CDN PGMS-21	3.555	1.778	0.278
92475	CDN PGMS-21	3.075	1.826	0.306
92100	CDN PGMS-21	3.180	1.915	0.292
92325	CDN PGMS-21	3.210	1.795	0.286
92400	CDN PGMS-21	2.784	1.837	0.286
92550	CDN PGMS-21		1.862	0.304
93150	CDN PGMS-21	3.234	1.844	0.284
93225	CDN PGMS-21	3.338	1.815	0.274
92175	CDN PGMS-21	3.090	1.837	0.294
93400	CDN PGMS-21	3.304	1.928	0.348
93475	CDN PGMS-21	3.147	1.951	0.296
93625	CDN PGMS-21	3.317	1.954	0.303
92250	CDN PGMS-21	3.522	1.894	0.329
93325	CDN PGMS-21	3.703	2.003	0.302
93550	CDN PGMS-21	2.944	1.756	0.293
93700	CDN PGMS-21	3.228	2.036	0.317







11.4.4 Blanks

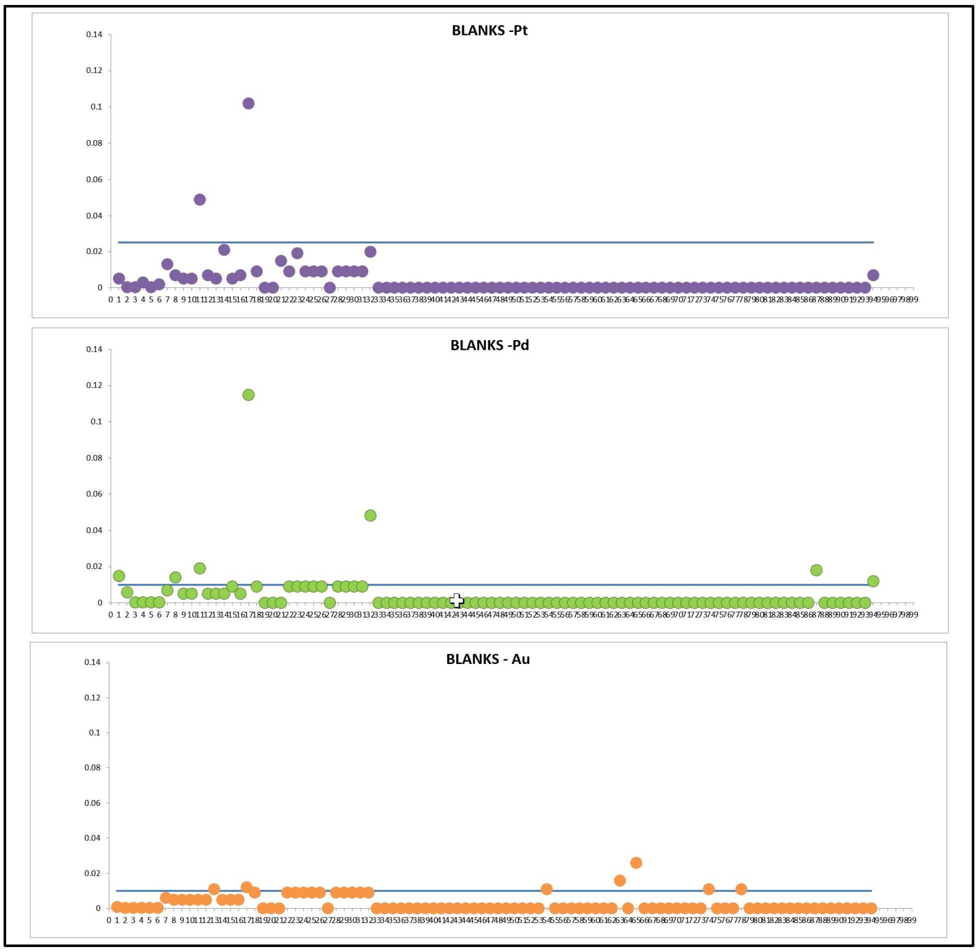
Blank material was inserted into the QAQC sample stream in order to detect cross-contamination between samples during sample preparation.

LGGC has no information regarding the source or the size of the material that was used for the blank samples. There appears to be at least two different blank materials or a change in analysis method as the first 32 assay results show some "noise" in the results and then the results are more consistently reporting at the detection limit (Figure 11-7).

While there are some results that are higher grade than acceptable for a blank there is no indication of any consistent contamination in the sample prep system.

It is recommended that ValOre find a source for a blank sample that is coarse material that will be crushed and pulverized during the sample preparation phase.

Figure 11-7 Blank Sample Results for Pedra Branca Project Sampling Database



11.4.5 Pulp Duplicate

There was a limited pulp duplicate sampling program during the 2008 to 2009 drilling program that resulted in 59 pulp duplicate samples. It is not clear if the assay results presented as duplicates are sourced from the same pulp or if duplicate pulps were created during the sample preparation process.

Pulp duplicate results appear to be reasonably well reproduced between the duplicate analysis results for Pt, Pd and Au. There are some minor outlier results but that is not unusual for precious metal analysis. As part of any future QAQC program duplicates should be taken using core samples, coarse reject samples and pulp samples.

The duplicate graphs for Pt, Pd and Au are presented in Figure 11-8 through to Figure 11-10.

Figure 11-8 Pulp Duplicate Chart Pt (ppb)

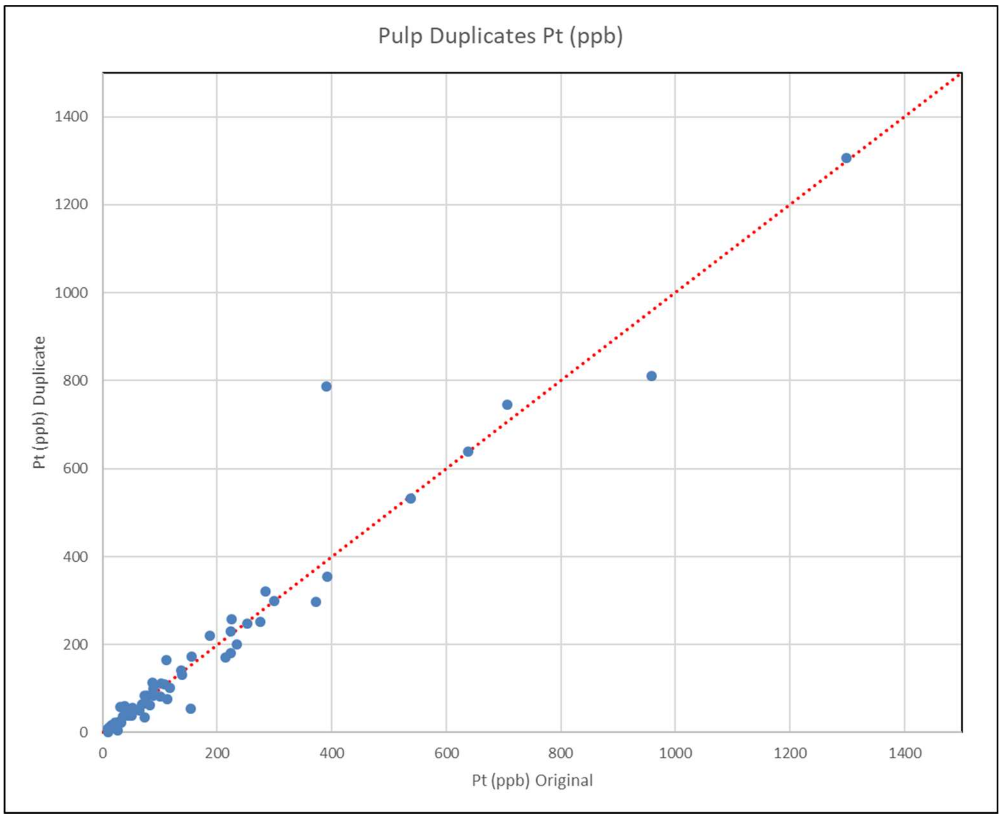


Figure 11-9 Pulp Duplicate Chart Pd(ppb)

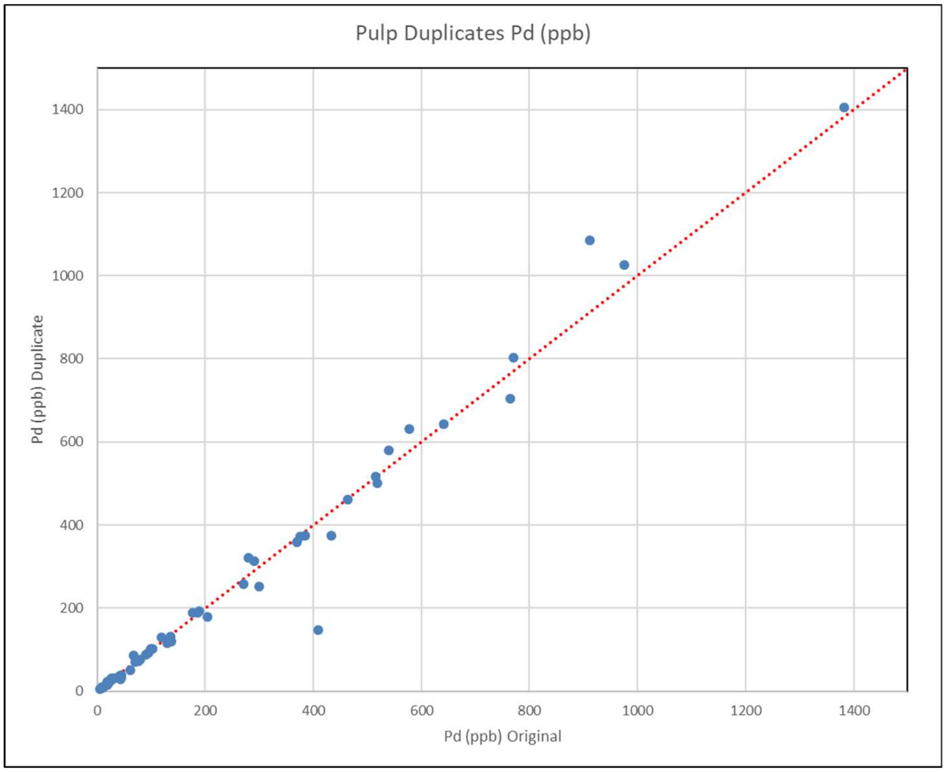
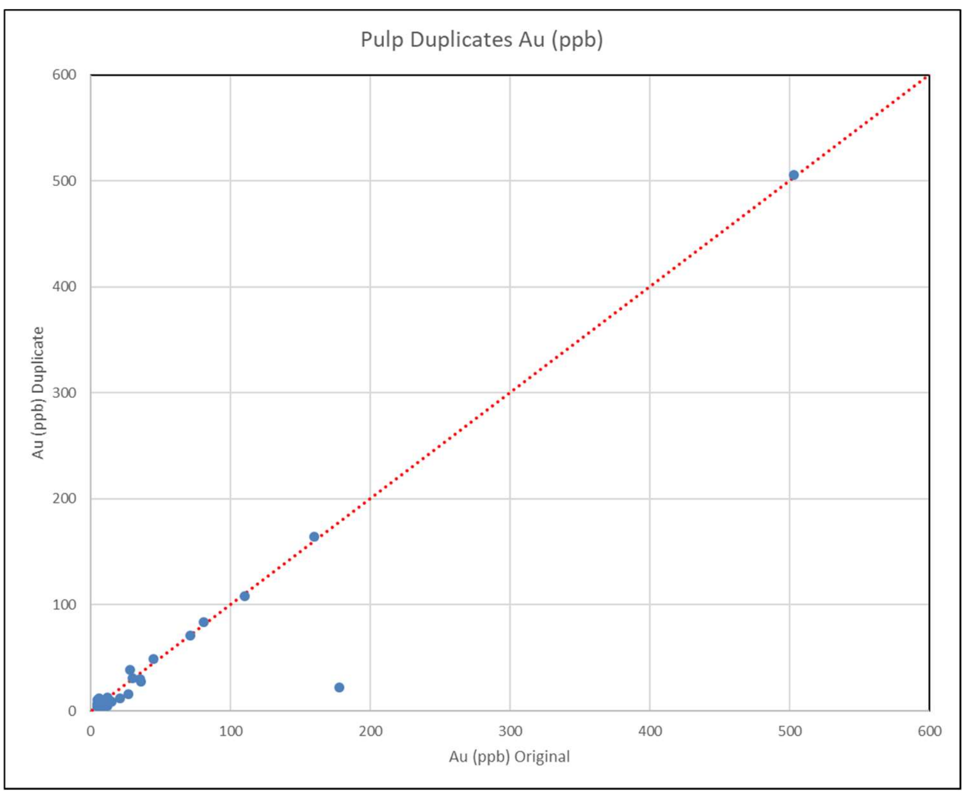


Figure 11-10 Pulp Duplicate Chart Au (ppb)



11.5 Conclusions and Recommendations

The 1987 drill holes are not represented in the drill core library and there is little to no information available regarding the drilling or sampling of the core or any QAQC support for the assay results. There are drill logs and assay certificates available at the project office for these holes. To ensure the quality of the analytical results are sufficient to support mineral resource estimation using indicated classification or higher, a study should be conducted to ensure there is no bias in the 1987 drill hole results compared to those holes drill in 1999 and the 2000's. The 1987 drill holes are 40% of the drill hole inventory at the Esbarro Deposit. No other deposit is influenced by the 1987 drill holes as there is only one other deposit they were drilled at, Trapia, and only one of the holes was used in the grade estimation.

It is unclear if outliers evident on the QAQC charts, especially the SRM charts, are due to database errors identified during the database audit or are true analytical outliers. The full database audit recommended in this report should clear up this uncertainty.

The nature of any future blank sample should be coarse blank material so that it must be crushed during the coarse crush stage and sand samples should not be used.

ValOre should insert 1 blank, 1 SRM, 1 core duplicate, 1 course reject duplicate and 1 pulp duplicate for every batch of 20 samples submitted to the assay laboratory. This is to ensure the drilling, sampling and sample preparation protocols applied to the drill core are idealized for the deposits being tested and used for mineral resource estimations.

12. Data Verification

LGGC completed a site visit in June 26 and 27, 2019 and completed various tasks to validate the exploration data that underpins the resource estimation.

12.1 DDH Collar Locations

The site visit included a tour of the Cedro, Esbarro and Curiu deposit areas, looking at outcrops and historical trench sites and collar location markers.

Six collar locations were identified, and their location recorded using a hand-held GPS. The GPS coordinates were recorded using WAG 84 datum, whereas the database used for resource estimation has the coordinates in SAD 69 datum. This resulted in a consistent discrepancy of 30-36m in Eastings and 35-45m in Northings between the two sets of data (due to the datum difference). Four of the collar locations were compared to the recent survey reports (using WAG 84 datum) and showed only minor variance (< 4m).

LGGC recommends that the entire database be converted into the WAG 84 UTM coordinate system to match the new survey work in progress.

LGGC finds the current location data to be reasonable for use in declaring an Inferred category mineral resource estimate.

12.2 Core Storage and Core Inspection

LGGC visited the core storage and office facilities in Capitão Mor, Brazil. Ten drill holes were selected for detailed inspection and were reviewed to ensure the logging, sampling and assay information was consistent with the recorded information on the drill logs and in the project database.

12.3 Database Validation

Thirty drill holes from the 5 PB Deposits were selected for validation, representing a 10% check of the drill holes in the database for each area. Original drill logs and assay certificates were reviewed while at the worksite and digital copies were retained to complete a detailed audit.

All 1463 assay intervals from the 30 drill holes were checked against the digital copies of the original assay certificates. LGGC only checked the Pt, Pd and Au assay results for these records, as these are the three elements included in the mineral resource estimate.

The database shows inconsistency in the treatment of below detection limit results. In some cases, < 10 ppb has been noted in the database as 0.009 ppm and in other cases as 0.005 ppm. It is recommended that for consistency, detection limits be set to 0.001 ppm. The detection limit for the 1987 PBE holes is recorded in the database as 0.05 ppm for Pd and Pt results which results in a PGE+Au combined result of 0.100 ppm which is the limit used to define the mineralization shells for the estimation. Below detection limit results for these drill holes should be lowered to 0.001 ppm in the project database.

Assay results for 2 of the audited holes showed a transposition error where the results for Pd are in the Pt column of the database, results for Au are in the Pd column and very low values, the source of which is unknown to LGGC, are in the Au column. This resulted in 88 of the 1463 records checked to be in error, or a 6% error rate. Generally, error rates greater than 1-2% are considered too high for use in mineral resource estimation. As such, the remainder of the assay database used in the resource estimate was checked, and 19 additional drill holes were identified with the same transposition error, all from the Trapia and Curiu Deposit areas.

The error was corrected for the 19 holes using original SGS certificate data for Au, Pt and Pd. LGGC subsequently reran the grade estimates for the Curiu and Trapia Deposits and updated the block tabulations.

LGGC recommends a 100% audit of all assay, collar, drill orientation and lithology data for all holes in the project.

12.4 Review of 2011 to 2012 Resampling Program Data

LGGC reviewed the dataset that included the original sampling results from the historical drilling between 1999 and 2004 and the reassayed sample results program completed by Amplat in 2011 and 2012.

Amplat relogged and resampled the stored core from the historical drill holes and submitted 3,889 for reassaying. Due to shifting of core in the core boxes and to new sampling intervals being chosen during the relogging it is not possible to do a direct sample to sample comparison. LGGC composited the original assay data and the reassayed data into 2 m composites (2,885 composites) and compared these results.

The goal of comparing the two data sets is to

- compare the two results and determine if there are any concerns relating to the reproducibility of the results,
- impact of ½ core sample of original to the ¼ core sampling in reassay program and
- if there is any bias in the datasets.

Overall the results show that there was good reproducibility of the original historical results, no apparent impact of the ¼ sample intervals for Pt, Pd and Au and no apparent bias is evident (Figure 12-1 to Figure 12-3).

Figure 12-1 2m Composites, Pt g/t, All Reassayed Samples Compared to All Original Samples (Amplat 2011 to 2012 Reassay Program)

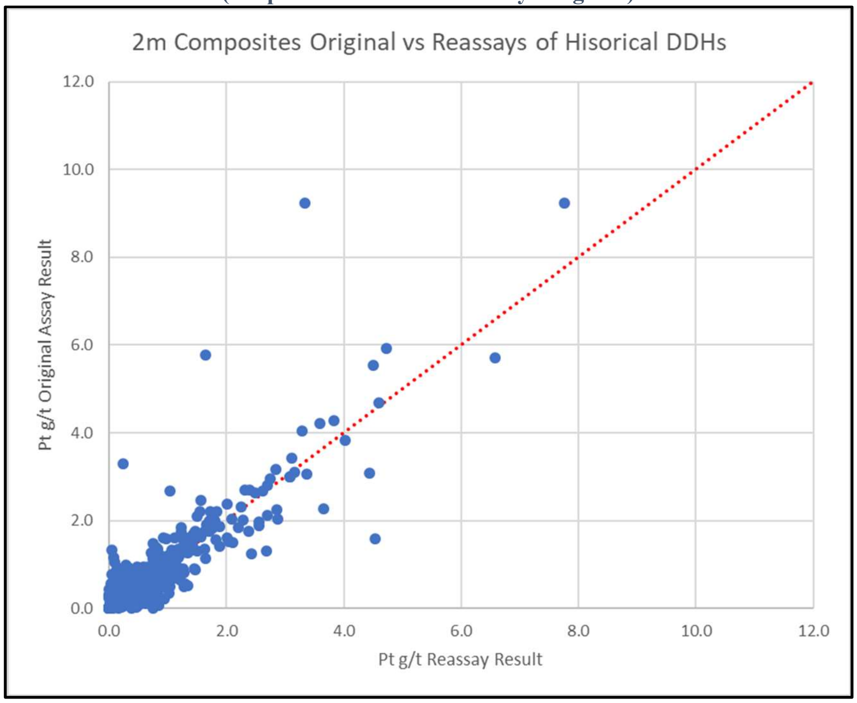


Figure 12-2 2m Composites, Pd g/t, All Reassayed Samples Compared to All Original Samples (Amplat 2011 to 2012 Reassay Program)

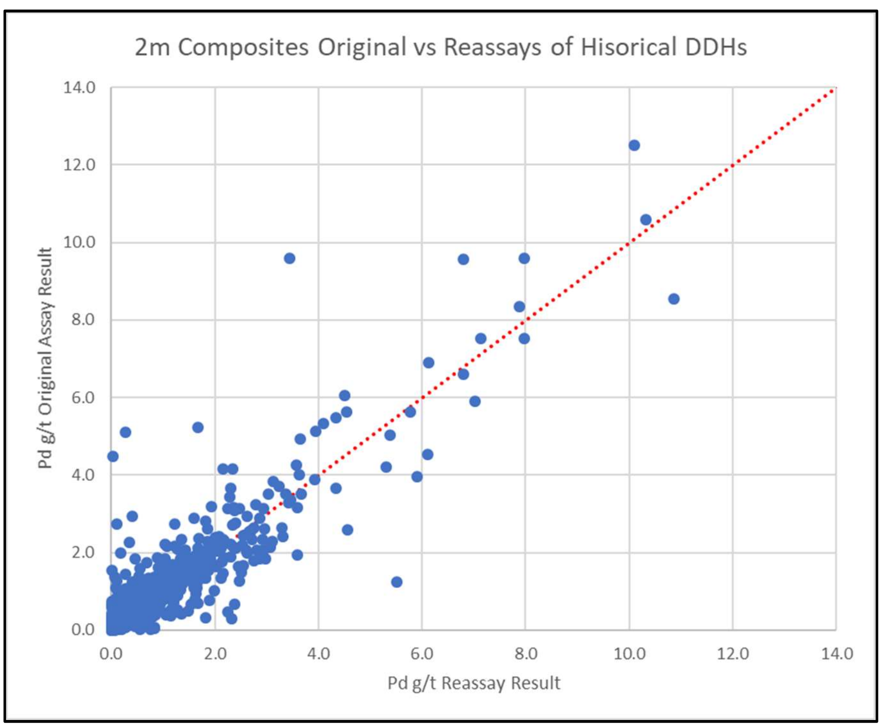
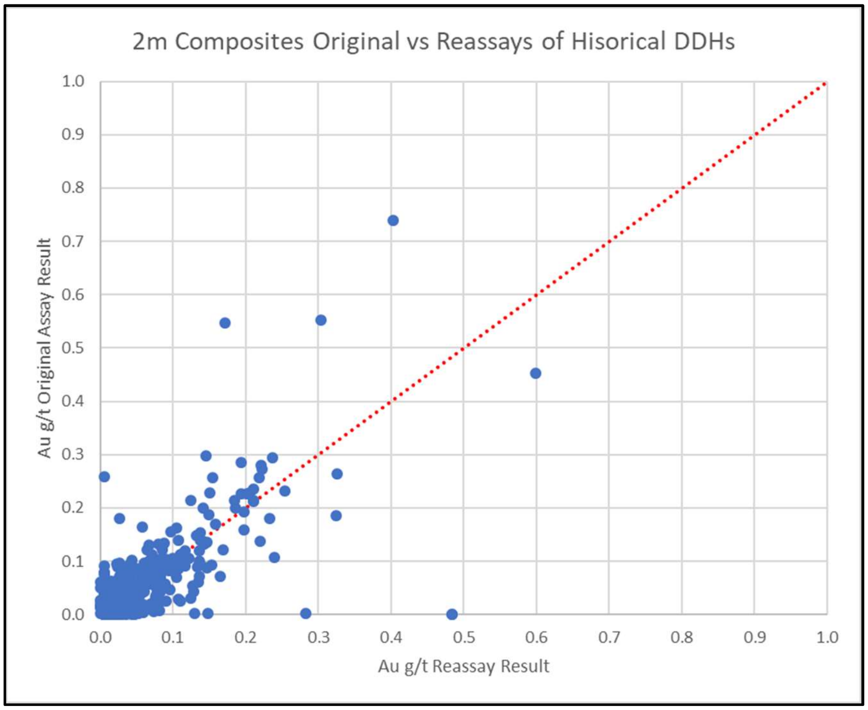


Figure 12-3 2m Composites, Au g/t, All Reassayed Samples Compared to All Original Samples (Amplat 2011 to 2012 Reassay Program)



12.5 Conclusions and Recommendations

LGGC recommends that due to the high error rate found during the database audit, ValOre should complete a full audit of all assay, QAQCs, collar, drill orientation and lithology data for all holes in the 5PB Deposits before any future resource estimates are completed.

13. Mineral Processing and Metallurgical Testing

Over several years, metallurgical test work has been conducted on samples from the Pedra Branca deposit in Brazil.

Test work has been of exploratory nature and is not complete. Results indicate a potential flowsheet consisting of crushing and grinding the mineralized material prior to flotation. Rougher flotation concentrate will require cleaning to produce a saleable PGM concentrate.

From the information available, it appears that correct analytical procedures were followed in determining the PGM and Au assays. No details are available of actual test procedures, although the staging of reagents employed in flotation testing, as well as the testing equipment used, were standard.

This section includes the results of actual metallurgical test work conducted at the various laboratories and does not include any simulation results that inherently contain assumptions that have not been verified.

The following is a listing of reports with respect to the test work conducted on samples from the Pedra Branca Project in Brazil.

1. Anglo Platinum Management Services (Pty) Ltd. ARC – Mineralogical Research Department, Minerals Processing Research Department. Homestead, South Africa. April 2004. Mineralogical and Metallurgical investigation of selected borehole core intersections from Pedra Branca, Brazil. Platinum Project No 183. Platinum Project No 183
2. Anglo Research, Mineralogy Department, Metallurgical Services, Homestead, South Africa. November 2005. Metallurgical testwork on 2 Pedra Branca Composite Samples using a grin of 60% -75 µM – Final Results
3. Anglo Research, Mineralogy Department, Metallurgical Services, Homestead, South Africa. December 2005. Mineralogical and Metallurgical Examination of Material from Pedra Branca, Brazil (CU14 and ES32). Report No: M/05/121
4. Anglo Research, Mineralogy Department, Metallurgical Services, Homestead, South Africa. January 2006. Metallurgical and mineralogical testwork on Piedra Branca Ore Sample
5. Technical Solutions – Research, Johannesburg, South Africa. April 2014. Geometallurgical Characterisation of eight boreholes from the Pedra Branca Exploration Project in Brazil (DD99 ES01 - DD08 CU26). Report No. MPR/14
6. SGS Geosol, Vespasiano – MG – Brasil. November 2017. Rougher Flotation Testwork on Samples from the Pedra Branca Project. Final Report
7. PPM - Projetos e Gerenciamento em Mineração, Belo Horizonte – MG, Brasil. June 2017. SIMULAÇÃO DO PROJETO PEDRA BRANCA
8. GE21 Ltda– Belo Horizonte, Brasil. May 2018. Independent Technical Report -Preliminary Economic Assessment (Pt, Pd, Au, Ni, Cu, Cr2O3, Co)
9. Minxcon (Pty) Ltd., Roodepoort, South Africa. March 2019. Independent Competent Person's Report on the Pedra Branca PGM Project, Brazil. Mineral Resource Report. Minxcon Reference: M2018-050a
10. Consulmet Metals, Johannesburg, South Africa, May 31, 2019. Feasibility Study Phase 1: Pedra Branca Mine PGM Beneficiation Plant, Project Number: JANG-19-001. Executive Summary.
11. Consulmet Metals, Johannesburg, South Africa. June 2019. Jangada flowsheet development testwork. Rev1.

12. Jangada Mines, Brasil. January 2019. Report of sampling for metallurgical tests.

13.1 METALLURGICAL TESTING

Metallurgical test programs were completed by independent commercial metallurgical laboratories, as well as by in-house laboratory facilities of a previous owner.

13.1.1 Ore Hardness

2004-2006

In 2017, nine samples were taken from each of four types of mineralized material, Esbarro Fresco and Oxidado, and Curiu Fresco and Oxidado. The selection of drill core was made with the usual standard of care so that the samples submitted for testing represent all the mineralized rock types within the mineralized area.

For each type of mineralized material, the samples were combined into a composite to generate a single Ball Mill Work Index. This index is expressed in kWh/metric tonne. It appears that each composite was prepared by adding equal weight of each individual sample, such that for each type of mineralized material the overall head assay became the average of each of the nine sample head assays. The resulting Ball Mill Work Index for each type of mineralized material is summarized in Table 13.1. BMWI test work was conducted by SGS GEOSOL.

Table 13-1 Ball Mill Work Index for each Ore Type

Sample ID	Limiting screen	F80	Circulating	P80	Wi
	microns	microns	Load, %	microns	kWh/tonne
Esbarro Fresco	106	1,985	264	77	15.9
Esbarro Oxidado	106	1,898	249	75	16.5
Curiu Fresco	106	1,861	253	77	19.8
Curiu Oxidado	106	1,296	259	76	18.0

Mineralized material from the Curiu deposit appears harder compared to that from the Esbarro deposit, even the weathered Curiu material. It can be considered moderately hard to hard.

13.1.2 Flotation testing

2004-2006

Table 13-2 Head Assays, Esbarro and Curiu Samples Tested in 2005

	Pt:Pd	PGE, (g/t)					Base Metals, %		
Sample	ratio	Pt	Pd	Rh	Au	4E	Cu	Ni	S
ES32(Run1)	0.61	3.36	5.53	0.32	0.02	9.23	<0.05	0.23	0.12
ES32(Run2)	0.61	3.4	5.59	0.33	0.02	9.34	<0.05	0.24	0.09
ES32 Avg	**0.61**	**3.38**	**5.56**	**0.32**	**0.02**	**9.28**	**<0.05**	**0.24**	**0.11**
CU14(Run1)	0.28	0.68	2.44	0.03	0.14	3.29	0.08	0.29	0.26
CU14(Run2)	0.28	0.69	2.46	0.03	0.15	3.32	0.08	0.28	0.27
CU14 Avg	**0.28**	**0.68**	**2.45**	**0.03**	**0.15**	**3.31**	**0.08**	**0.29**	**0.27**

Flotation tests using standard Merensky flotation procedure were carried out in duplicates on each composite sample using a single stage grind of 60 % -75 µm. The flotation concentrates were submitted for Pt, Pd, Au, Cu, Ni, Co, and S assays. Aliquots of the rougher tailings and head samples were submitted for Pt, Pd, Au, Cu, Ni, Co, S, and Rh analysis.

The metallurgical results show that the flotation response of ES32 is poor, ~48 % Pt recovery and ~44 % Pd recovery despite a head grade of 9.3 g/t PGE(4E), see Table 13-3. Mineralogical examinations revealed that this ore was highly altered (high content of serpentine, chlorite and chromite) with Pd(Pt)-tellurides being the predominant PGE minerals followed by Pt-arsenides. The PGMs are however predominantly well liberated Pd (Pt)-tellurides.

In subsequent testwork on the Esbarro sample, the SIBX collector dosage was increased from 60 to 150 and 300 g/t, resulting in an increase in Pd recovery, but at significant drop in concentrate grade, while collector dosage had no effect on the recovery of Pt. The addition of sodium silicate to remove any slime coatings on mineral surfaces improved the metallurgical performance of Pt, but failed to increase the total Pd recovery. It was postulated that Pt and Pd minerals carry different surface charges and behave differently in the presence of serpentine.

For CU14 the recoveries are better, ~73 % Pt and ~79 % Pd from a head grade of 3.31 g/t PGE(4E). From a mineralogical viewpoint, this mineralized material is less altered than ES32 with the BMS being better liberated and of a more optimal flotation size. The PGMs are either well liberated or associated with silicates.

Table 13-3Pt, Pd Ultimate Recover and Final Grades for the Samples Investigated. Note, the values in bold are the weighted average results for the tests conducted.

Sample	Mass Pull (%)	Pt Rec. (%)	Pt Grade (g/t)	Pd Rec. (%)	Pd Grade (g/t)	Pt Recon Head (g/t)	Pd Recon Head (g/t)
ES32(Run1)	10.6	50.6	16.69	45.7	23.29	3.48	5.38
ES32(Run2)	9.5	45.5	16.71	42.7	23.17	3.49	5.15
ES32, Avg	**10**	**48.1**	**16.7**	**44.2**	**23.23**	**3.48**	**5.27**
CU14(Run1)	6.4	70.8	7.81	78	26.11	0.71	2.14
CU14(Run2)	6.9	75.3	9.14	80.7	25.65	0.83	2.18
CU14, Avg	**6.6**	**73.3**	**8.5**	**79.4**	**25.87**	**0.77**	**2.16**

2012

The Anglo Research Center tested eight reef samples from the Esbarro and Curiu deposits in 2012. The samples for metallurgical testing were obtained from judicious planning, considering the typology, spatial distribution of samples and the geological characteristics of the mineralization according to the geological block model and the mining production plan.

Mineralogy showed that the layered ultramafic dunite intrusion is highly altered to chlorite, with lesser amphibole and talc, and contains up to 20 % chromite and almost 3 % BMS (Bulk Mineral Sulfides).

Milling liberates 41 to 87 % of the BMS and 59 to 71 % of the PGM in six of the eight feeds at a grind of 60 % <75 µm. A much poorer liberation of respectively 23 and 32 % of the BMS and 36 and 27 % of the PGM is obtained for DD99 ES04 and DD08 CU20 at the same mill grind. Inadequate liberation of the BMS and PGM is due to the high proportion of middlings and locks hosted by altered silicates, olivine, chromite and magnetite. PGE-arsenides, with lesser PGE-bismuthotellurides and PGE-alloys, are the predominant and coarsest liberated PGM-types, with pentlandite and lesser chalcopyrite being the coarsest and most common PGM-bearing BMS. Pyrite and pyrrhotite are the prevailing minor BMS and generally occur in composite middlings and locks together with pentlandite and/or chalcopyrite, particularly in the DD99 ES01, DD99 ES11 and DD03 CU10 feeds.

Most of the BMS in the oxidised feeds are partially to almost completely oxidised, with pyrite and pyrrhotite being the most susceptible and chalcopyrite the most resistant. Only a small proportion of the PGE-bismuthotelluride and PGE-sulpharsenide grains display sub-micron transverse cracking in places along their periphery.

The feeds have a 4E head grade of 1.4 to 7.4 g/t at a Pt:Pd ratio of 0.25 to 0.77 (Table 13-4). A good agreement between actual and built-up 4E head grade is obtained (Table 13-5), apart from the Pt grade for DD03 CU10, DD08 CU20 and DD08 CU26. Check assays of the feed samples failed to produce a better agreement.

Table 13-4 Head Assays, Esbarro and Curiu Samples Tested in 2012

Borehole ID	Nature of the Reef	Pt/Pd ratio	Pt (g/t)	Pd (g/t)	Rh (g/t)	Au (g/t)	4E (g/t)	Cu (%)	Total Ni (%)	Total S (%)
DD99 ES01	Fresh	0.45	0.96	2.12	0.09	0.01	3.18	0.02	0.21	0.05
DD99 ES04	Oxidised	0.77	2.08	2.69	0.16	0.01	4.94	0.03	0.24	0.06
DD99 ES05	Fresh	0.25	0.34	1.34	0.03	0.03	1.74	0.14	0.35	0.23
DD99 ES11	Oxidised	0.31	0.45	1.43	0.03	0.08	1.99	0.06	0.23	0.07
DD03 CU07	Fresh	0.62	0.53	0.86	0.02	0.06	1.47	0.03	0.2	0.09
DD03 CU10	Fresh	0.36	0.99	2.78	0.07	0.09	3.93	0.21	0.6	1.22
DD08 CU20	Oxidised	0.48	0.46	0.95	0.03	0.08	1.52	0.04	0.18	0.09
DD08 CU26	Oxidised	0.55	2.54	4.63	0.1	0.18	7.45	0.04	0.2	0.06

The standard flotation procedure for Bushveld Merensky ore-types was used. The best flotation response, in terms of recovery, 74 % Pt and 49 % Pd, was generated from sample DD08 CU26. This sample also contains the highest grades of Pt and Pd of all samples tested. Concentrate grades are low at 18 g/t Pt and 20 g/t Pd from a head grade of 7.4 g/t 4E (Table 13-5). Test results indicate that the first concentrate was pulled with a recovery of 47 % Pt and 21 % Pd at a grade of 74 g/t Pt and 58 g/t Pd.

Table 13-5 Final Recovery and Concentrate Grade Obtained from the Milled Flotation Feeds

Borehole	Mass	Pt Grade	Pt Rec	Pd Grade	Pd Rec	2E	2E	Pt BUH	Pd BUH	% Pt	% Pd
ID	Pull (%)	(g/t)	(%)	(g/t)	(%)	(g/t)	(%)	(g/t)	(g/t)	Error	Error
DD99 ES01	17.2	1.3	23.5	2.7	21.7	4.0	22.6	0.96	2.15	0.4	1.2
DD99 ES04	6.9	7.1	25.1	5.4	14.2	12.5	19.7	1.95	2.61	-6.1	-3.1
DD99 ES05	5.3	2.1	31	3.6	13.9	5.7	22.5	0.36	1.38	4.9	2.6
DD99 ES11	11.7	1.2	30	2.4	21	3.6	25.5	0.45	1.35	0.9	-5.4
DD03 CU07	4.8	5.5	53.6	7.5	41.6	13.0	47.6	0.49	0.86	-7.2	0.5
DD03 CU10	10.3	7.8	73.2	10	40.9	17.8	57.1	1.1	2.53	11.5	-8.9
DD08 CU20	13.4	0.9	22	1.5	20.1	2.4	21.1	0.53	1.01	15.8	6
DD08 CU26	11.6	18	74.7	20.1	49	38.1	61.9	2.79	4.75	10	2.6

* BUH is recalculated head grade from flotation results

2017

In 2017, SGS GEOSOL conducted metallurgical testwork on four composite samples from the Pedra Branca Project, with the main objective of defining suitable conditions for rougher flotation of those samples. These composites were prepared from samples from the Esbarro Fresco, Esbarro Oxidado, Curiu Fresco and Curiu Oxidado deposits. No description was provided on the selection procedure followed to collect these samples.

The Esbarro Fresco and Esbarro Oxidado composites were similar in terms of copper (around 0.08%), nickel (around 0.3%) and iron (around 10%) assays. The main differences between those samples were in sulfur (0.38% for Esbarro Fresco and 0.11% for Esbarro Oxidado) and carbon (0.35% and 1.18%, respectively); The Curiu Fresco and Curiu Oxidado composites were also very similar in terms of copper (0.05%), nickel (0.24%) and iron (9.9%) assays. Once again, the main differences were in sulfur (0.25% for Curiu Fresco and 0.03% for Curiu Oxidado) and carbon (0.29% and 0.72%, respectively). Assays for Pt, Pd and Au and Basic Sulfides for each sample are provided in Table 13-6.

Table 13-6 Head Assays, Esbarro and Curiu Samples Tested in 2017

Sample	Au	Pt	Pd	3E	Ni	Cu	Co	S
	ppm	ppm	ppm	ppm	%	%	%	%
Esbarro Fresco 1	0.024	0.650	1.442	2.12				
Esbarro Fresco 2	0.026	0.591	1.430	2.05				
Esbarro Fresco 3	0.028	0.585	1.378	1.99				
Esbarro Fresco 4	0.025	0.560	1.369	1.95				
Esbarro Fresco 5	0.030	0.533	1.402	1.97				
Esbarro Fresco 6	0.027	0.547	1.518	2.09				
Esbarro Fresco 7	0.033	0.548	1.485	2.07				
Esbarro Fresco 8	0.024	0.530	1.378	1.93				
Esbarro Fresco 9	0.024	0.516	1.414	1.95				
Average	0.027	0.562	1.424	2.01	0.30	0.08	0.02	0.38
stdev	12%	7%	4%	3%				
Esbarro Oxidado 1	0.031	0.497	1.338	1.87				
Esbarro Oxidado 2	0.034	0.676	1.363	2.07				
Esbarro Oxidado 3	0.033	0.537	1.301	1.87				
Esbarro Oxidado 4	0.032	0.455	1.332	1.82				
Esbarro Oxidado 5	0.032	0.647	1.360	2.04				
Esbarro Oxidado 6	0.033	0.605	1.387	2.03				
Esbarro Oxidado 7	0.029	0.586	1.310	1.93				
Esbarro Oxidado 8	0.032	0.547	1.367	1.95				
Esbarro Oxidado 9	0.029	0.512	1.284	1.83				
Average	0.032	0.562	1.338	1.93	0.32	0.06	0.02	0.11
stdev	5%	13%	3%	5%				
Curiu Fresco 1	0.081	0.696	1.459	2.24				
Curiu Fresco 2	0.085	0.718	1.485	2.29				
Curiu Fresco 3	0.089	0.709	1.495	2.29				
Curiu Fresco 4	0.087	0.636	1.546	2.27				
Curiu Fresco 5	0.081	0.628	1.504	2.21				
Curiu Fresco 6	0.084	0.689	1.534	2.31				
Curiu Fresco 7	0.096	0.630	1.576	2.30				
Curiu Fresco 8	0.096	0.618	1.632	2.35				
Curiu Fresco 9	0.105	0.591	1.780	2.48				
Average	0.089	0.657	1.557	2.30	0.25	0.05	0.02	0.25
stdev	9%	7%	6%	3%				
Curiu Oxidado 1	0.079	1.267	1.964	3.31				
Curiu Oxidado 2	0.080	1.364	2.051	3.50				
Curiu Oxidado 3	0.073	1.145	1.974	3.19				
Curiu Oxidado 4	0.076	1.118	1.871	3.07				
Curiu Oxidado 5	0.079	1.166	2.035	3.28				
Curiu Oxidado 6	0.110	1.212	1.994	3.32				
Curiu Oxidado 7	0.083	1.357	2.173	3.61				
Curiu Oxidado 8	0.075	1.167	1.946	3.19				
Curiu Oxidado 9	0.075	1.151	2.003	3.23				
Average	0.081	1.216	2.001	3.30	0.23	0.05	0.02	0.03
stdev	14%	8%	4%	5%				

Under different reagent regimes, rougher flotation tests were conducted at either a P_{80} of 75 microns or a P_{80} of 53 microns), and at either 38 % or 22 % solids content in the pulp. An assessment was made of the effect of pre-floating talc. No cleaner flotation was attempted.

Table 13-7 summarizes the findings of effect of grind. The employed reagent regime in all these tests was similar, maintaining a relatively high collector dosage and CMC to depress talc in the first flotation stage.

Table 13-7 Effect of Grind on Sbarro and Curiu Composites

Esbarro Oxidado

				Rougher Grade				Rougher Recovery				
Test #	P80	Talc	Solids	Au	Pd	Pt	3E	Mass	Au	Pd	Pt	3E
	microns	Pre-float	%	g/t	g/t	g/t	g/t	%	%	%	%	%
3	75	N	38	0.07	4.6	1.9	6.5	24.2	53.6	73.9	78.4	68.6
8	53	N	38	0.03	1.6	0.7	2.4	62.8	70.0	72.4	78.0	73.5

Curiu Oxidado

				Rougher Grade				Rougher Recovery				
Test #	P80	Talc	Solids	Au	Pd	Pt	3E	Mass	Au	Pd	Pt	3E
	microns	Pre-float	%	g/t	g/t	g/t	g/t	%	%	%	%	%
4	75	N	38	0.11	2.4	1.5	4.0	70.3	84.1	81.3	85.5	83.6
9	53	N	38	0.15	3.4	2.1	5.6	31	56.3	50.9	51.1	52.8

Curiu Fresco

				Rougher Grade				Rougher Recovery				
Test #	P80	Talc	Solids	Au	Pd	Pt	3E	Mass	Au	Pd	Pt	3E
	microns	Pre-float	%	g/t	g/t	g/t	g/t	%	%	%	%	%
5	75	N	38	0.16	3.0	1.2	4.4	45.4	80.6	87.7	87.7	85.3
7	53	N	38	0.13	2.2	0.9	3.2	64.9	82.9	91.8	93.7	89.5

Esbarro Fresco

				Rougher Grade				Rougher Recovery				
Test #	P80	Talc	Solids	Au	Pd	Pt	3E	Mass	Au	Pd	Pt	3E
	microns	Pre-float	%	g/t	g/t	g/t	g/t	%	%	%	%	%
2	75	N	38	0.06	4.4	1.9	6.3	24.2	53.6	73.9	78.4	68.6
6	53	N	38	0.04	2.6	1.1	3.7	45.4	68.6	83.7	87.3	79.9

Rougher flotation under these conditions resulted in a relatively high mass recovery with very little upgrading. Except for Curiu Oxidado, a finer grind at P80 of 53 microns produced a higher recovery of the 3E metals.

Further test work on the Esbarro Fresco composite employing different flotation conditions, produced an improvement in rougher flotation results, as shown in Table 13-8. All flotation testing was conducted at pH 9. The rougher concentrate grades were calculated from upgrade factors provided for each rougher test.

Table 13-8 Effect of Varying Flotation Conditions on the Esbarro Fresco Composite

					Rougher Grade				Rougher Recovery				
Test #	Reagent	P80	Talc	Solids	Au	Pd	Pt	3E	Mass	Au	Pd	Pt	3E
	Regime	microns	Pre-float	%	g/t	g/t	g/t	g/t	%	%	%	%	%
2	D	75	N	38	2.2	3.1	3.3	8.6	24.2	53.6	73.9	78.4	68.6
6	D	53	N	38	1.5	1.8	1.9	5.2	45.4	68.6	83.7	87.3	79.9
10	C	75	Y	22	6.5	9.0	8.4	23.9	6.3	40.9	56.3	52.7	50.0
11	C	53	N	22	4.6	4.7	4.5	13.8	12.8	56.8	59.7	57.2	57.9
12	C	53	Y	22	2.8	3.5	3.4	9.7	19.3	53.2	68.2	65.2	62.2
13	C	75	Y	22	4.0	7.0	7.0	18.0	8.9	36.2	62.8	62.7	53.9
14	B	53	Y	22	4.0	7.4	7.1	18.5	10.1	51.8	74	70.6	65.5
15	A	53	Y	22	7.5	13.4	12.8	33.7	4.7	44.6	62.4	59.4	55.5
16	B	75	Y	22	3.9	6.3	6.4	16.6	10.2	51.2	63.8	64.9	60.0
17	A	75	Y	22	8.3	11.5	11.8	31.6	3.9	39.9	44.2	45.4	43.2

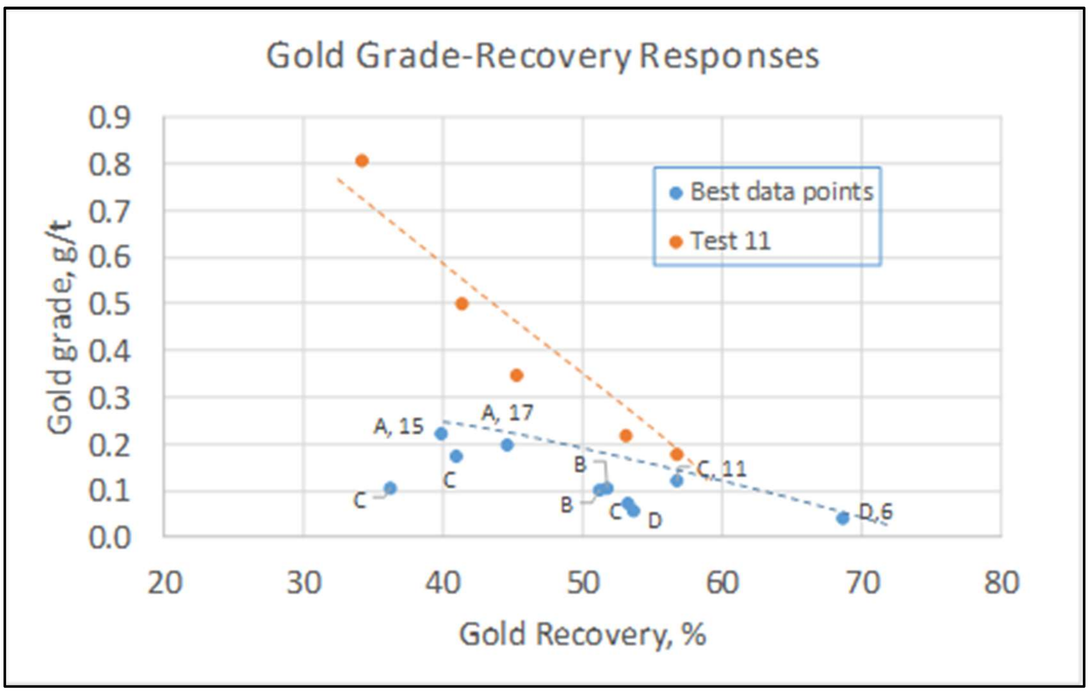
A decrease in collector dosage and reduction of the flotation pulp density seems to produce a better flotation response through improved selectivity. For gold, the dominant factor remains the finer grind, while more than halving the collector dosage appears to move the response towards a higher grade along the same grade-recovery curve. Rougher Grade-Recovery responses for gold and the PGMs are presented in Figure 13-1. The label lettering indicates flotation regimes, while label numbers refer to test numbers reported in Table 13-8. In this Figure 13-1, a blue-dotted line has been drawn through the best responses of all the different tests. Technically, this is not a grade-recovery curve, only a "best-performance" line, because we deal with results from tests conducted under varying conditions. Such line provides an insight to the extremities reached for each test. Dashed-orange rougher grade-recovery curves of the best test for gold and for Pt+Pd are inserted in each graph to illustrate the direction of upgrading achieved for these elements.

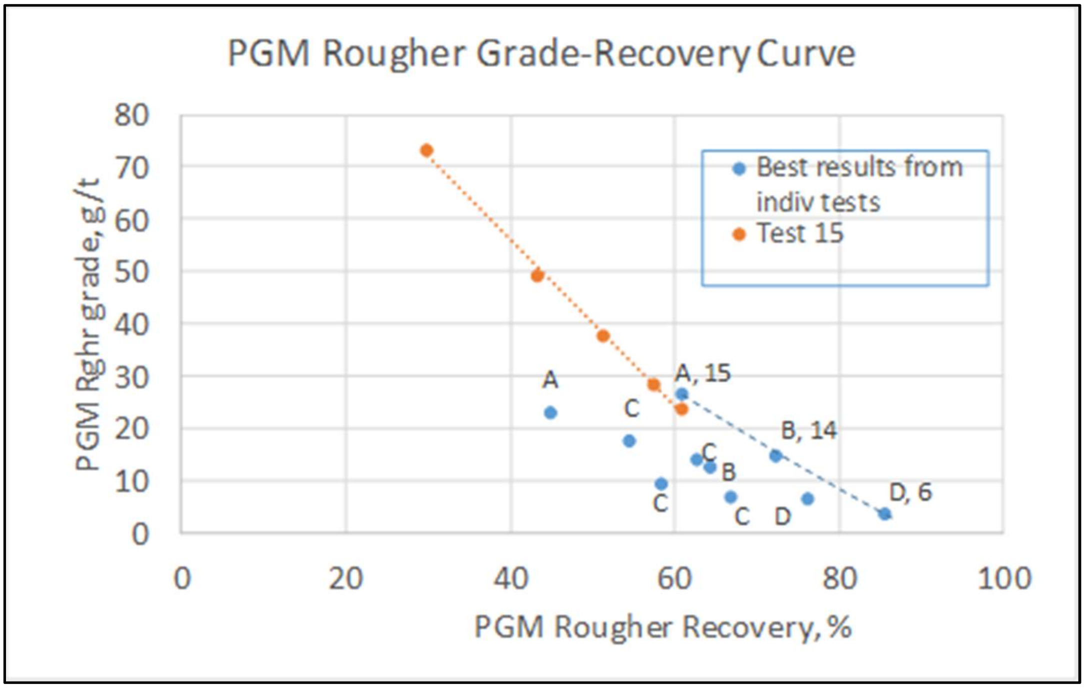
For gold, changing the type of collector from SIBX (in regime C, test 11) to that of SNPX (in regime A, in tests 15, 17) improved selectivity, producing a higher gold grade at the expense of recovery. Pre-floating talc or not, did not bear much influence on the grade-recovery response.

For PGMs (Pt+Pd) in the right-hand graph of Figure 13-1, a similar result was found. A finer grind generates a better flotation response. Lowering collector dosage and switching to either Senkol 5 or SNPX collector, the increased selectivity improved grade, sacrificing recovery (compare results of test 6 with those of tests 14 (Senkol) and 17 (SNPX).

It must be recognized, however, that rougher flotation is intended to maximize recovery, while selectivity must be obtained in the cleaner flotation to maximize concentrate grade at maximum possible recovery. From the results, it is not yet clear whether a talc pre-float is warranted, although talc depression in flotation is required.

Figure 13-1 Best Au and PGM Rougher Grade Recovery Responses from 2017 Testwork on Esbarro Fresco





The flotation recovery of copper, nickel, cobalt, chrome and sulphur in tests 14 and 15 was estimated by difference based upon the head grade and tailings assays, since the small concentrate masses were totally used for chemical analysis of the PGMs. Table 13-9 summarizes the results. The recovery of copper attained 85 % and 68 % in respectively tests 14 and 15, while the recovery of nickel lagged at respectively 31 % and 21%.

Table 13-9 Recovery of Copper, Cobalt and Nickel – Esbarro Fresco Composite

		Grade				Recovery			
Product	Test	Ni	Cu	Co	S	Ni	Cu	Co	S
	#	%	%	%	%	%	%	%	%
Feed		0.30	0.08	0.02	0.38				
Tailings	14	0.23	0.01	0.01	0.09	31.1	85.0	10.1	79.5
Tailings	15	0.25	0.03	0.02	0.13	20.6	68.2	4.7	67.4

2019

In 2019, Consulmet Metals tested sample composites labeled “Rock” and “Oxidised”. Oxidised material indicates here that the material is weathered. In the Esbarro target area, seven new boreholes were twinned to existing boreholes to generate new interfaces from which samples were selected to prepare the two composites. To better represent the oxidized ore sample from the Esbarro target, one sample interval from an open trench was selected. The material collected from the trench is an oxidized ore that represent a very shallow chromitite reef. The estimated grade of this material was obtained by sampling the trench, homogenization of the material and submittal of samples to an external lab for chemical analysis.

A separate objective was to identify if a chromite by-product would be viable. The testwork entailed initial comminution and size classification, followed by mineralogy to characterize the ores in terms of abundant mineral content and liberation and PGM liberation and deportment. Magnetic and gravity separation were evaluated as possible pre-concentration stages. PGM flotation was subsequently conducted on magnetic/gravity products, as well as untreated feed material to evaluate final PGM recovery potential.

Table 13-10 summarizes the head grades of the two samples.

Table 13-10 Head grades of the "Rock" and "Oxidised" Samples tested by Consulmet

Head grade	3E	Cu	Ni	Cr2O3
	g/t	%	%	%
Rock	2.61	0.13	0.5	3.14
Weathered	11.4	0.05	0.18	17

"Rock" material

The PGMs identified in a sample of "Rock" showed that the PGM's are less than 9 µm in size. This is fine PGM grains, but it is likely to float slowly, if liberated. The liberation analysis also indicated that the rock ore feed, milled to a grind of 75 µm, contained 44.5 v/v % of liberated PGMs. The collective remaining 24.5 v/v % of PGMs were attached to silicate or oxide gangue and 9.6 v/v % of PGMs were still locked in the gangue.

The chromite crystals have a wide range of Cr_2O_3 content (12 – 44 %), with an average of 30 % and the associated Cr/Fe ratios between 0.14 – 0.88. This indicates that a chromite product of 42 % Cr_2O_3 metallurgical grade cannot be obtained from this "Rock" sample.

Four flotation tests on rock ore produced the results shown in Table 13-11, with details of the rougher and cleaner tests shown in Table 13-12, and Figure 13-2. Test work was performed using typical flotation conditions, not observing the more optimized conditions established in the 2017 test work.

Table 13-11 Flotation Test Results for "Rock" Ore

	Test Sample	3E+Au	
		Grade (g/t)	Recovery (%)
Test 1	Rougher kinetics	12.5	74.5
Test 2	Rghr+Clnr Tests	49.0	46.1
Test 3	Rghr+Clnr Tests at P80 of 53 micron	40	51
Test 4	Rghr+Clnr Tests at P80 of 38 micron	70	13

In rougher flotation, the overall PGMs recovery for the rock at P80 of 75µm can reach 75%, at a grade of 12.5% 4E. Results are summarized in Table 13-13.

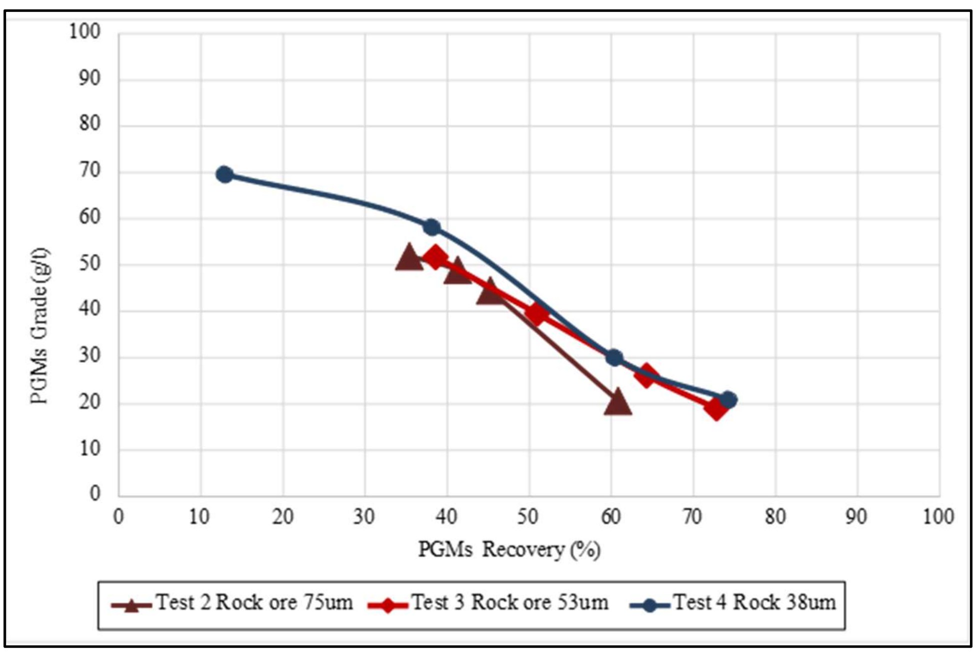
Table 13-12 Results of Rougher and Cleaner Test on "Rock" Ore

		Grade						Recovery					
Test 1 P80 75µm	Mass	4E	Cr2O3	S	MgO	SiO2	Fe	4E	Cr2O3	S	MgO	SiO2	Fe
	%	g/t	%	%	%	%	%	%	%	%	%	%	%
RC1+RC2+RC3	7.49	15.0	0.79	3.33	29.9	37.37	10.07	56.3	3.21	51.3	6.47	7.28	7.07
Overall RC	11.8	12.5	0.76	3.26	29.5	38.0	10.4	74.5	4.86	79.2	10.1	11.7	11.5
RT	88.2	0.58	1.99	0.12	35.3	38.5	10.7	25.5	95.1	20.8	89.9	88.3	88.5
		Grade						Recovery					
Test 2 P80 75µm	Mass	4E	Cr2O3	S	MgO	SiO2	Fe	4E	Cr2O3	S	MgO	SiO2	Fe
	%	g/t	%	%	%	%	%	%	%	%	%	%	%
Recl Conc1	1.78	52.0	0.07	13.7	0.24	38.0	26.9	40.8	0.04	35.4	0.012	1.88	3.69
Recl Conc2	0.35	33.9	0.07	11.5	0.23	37.9	27.1	5.26	0.01	5.90	0.002	0.37	0.74
Recl Tail	0.43	22.6	1.46	6.30	26.0	33.2	14.4	4.32	0.20	3.94	0.32	0.40	0.48
Ctail	4.83	8.06	1.46	2.20	30.5	37.7	10.9	17.21	2.23	15.6	4.23	5.05	4.07
Overall Recl Con	2.13	49.0	0.07	13.3	0.24	38.0	26.9	46.1	0.05	41.3	0.00	2.20	4.43
Overall RC	7.39	20.7	1.06	5.64	21.5	37.5	15.7	67.6	2.48	60.8	4.56	7.70	8.98
Rtail	92.6	0.79	3.33	0.29	35.9	35.8	12.7	32.4	97.5	39.2	95.4	92.3	91.0

In cleaning tests, results indicated that, at a grind of P80 of 75µm, the final concentrate grade achieved was of low grade, attaining 49g/t PGM grade at 46% recovery. The overall performance of cleaner concentrate was poor at 67% PGM recovery at 20g/t grade. Only a slight upgrade is noticeable between the cleaner and recleaner stages. The SiO2, Fe and S contents were very high in the final concentrate, reporting 38%, 27% and 13.3 % respectively.

When grinding finer, the grade-recovery curve of the recleaner concentrate marginally shifts upwards. At a grind P80 of 38µm, the final concentrate grade achieved was 70g/t 4E at 13% recovery, as may be evident from Figure 13-2.

Figure 13-2 Grade-Recovery curve for effect of grinding on "Rock" material



Weathered material

A sample of “Oxidised” showed that 43 v/v % of PGM grains are less than 9 µm, 56 v/v % is liberated, 39 v/v % is attached to silicate or oxide gangue and 8 v/v % is locked. The PGM head grade is high enough to float the ROM material directly without requiring pre-concentration.

As with the rock ore, the spinel chemistry in the “Oxidised” sample reported that the pure chromite crystals have a wide range of Cr2O3 content (24 – 53 %), with an average of 45 % and the associated Cr/Fe ratios between 0.31 – 1.74. Even though it is possible to achieve a Cr2O3 product grade of 42 %, the fluctuating Cr2O3 grades present in feedstock will make it challenging to achieve. The main contaminants were identified as chlorite ((X,Y)4-6 (Si,Al)4O10(OH,O)8, where X and Y Fe+2, Fe+3, Mg+2, Mn+2, Ni+2, Zn+2, Al+3, Li+1, or Ti+4) and enstatite (Mg2Si2O6).

The production of a chromite concentrate through gravity separation proved unsuccessful. Test results show that is possible to attain a 40.5 % Cr2O3 gravity concentrate at 21.7 % mass pull and 62.1 % recovery. This is however at a 32.7 % PGM loss at 14.8 g/t 3E.

Rougher kinetics indicate that the proportion of fast floating minerals can reach ~26% 4E at 7 minutes. About 20% slow floating particles were recovered between 7 and 30 minutes. The overall 4E rougher recovery reached for this ore was ~47%, as shown in the upper part of Table 13-13.

Table 13-13 Results of Rougher and Cleaner Test on “Oxidised” Ore

		Grade						Recovery					
Test 1 P80 75µm	**Mass**	**4E**	**Cr2O3**	**S**	**MgO**	**SiO2**	**Fe**	**4E**	**Cr2O3**	**S**	**MgO**	**SiO2**	**Fe**
	%	g/t	%	%	%	%	%	%	%	%	%	%	%
RC1+RC2+RC3	5.58	61.1	10.2	0.02	21.9	32.9	10.6	26.4	3.63	11.8	5.82	6.98	4.92
Overall RC	13.1	45.7	10.4	0.02	22.5	31.9	10.8	46.7	8.73	26.1	14.1	15.9	11.8
RT	86.9	7.91	16.5	0.01	20.7	25.5	12.2	53.3	91.3	73.9	85.9	84.1	88.2

		Grade						Recovery					
Test 2B P80 75µm	**Mass**	**4E**	**Cr2O3**	**S**	**MgO**	**SiO2**	**Fe**	**4E**	**Cr2O3**	**S**	**MgO**	**SiO2**	**Fe**
	%	g/t	%	%	%	%	%	%	%	%	%	%	%
RC1+RC2+RC3	5.58	61.1	10.2	0.02	21.9	32.9	10.6	26.4	3.63	11.80	5.82	6.98	4.92
Overall Rghr Conc	13.1	45.7	10.4	0.02	22.5	31.9	10.8	46.7	8.73	26.10	14.1	15.9	11.8
Rtail	86.9	7.91	16.5	0.01	20.7	25.5	12.2	53.3	91.3	73.90	85.9	84.1	88.2
Test 3 P80 75µm													
Recl conc	0.73	363	3.17	0.13	25.7	43.8	6.95	26.2	0.14	7.04	0.89	1.3	0.42
Recl Tail	1.16	66.9	7.53	0.13	22.6	31.4	9.76	7.68	0.52	11.20	1.24	1.48	0.93
Clnr tail	5.8	25.7	8.39	0.03	23	30.6	9.67	14.8	2.9	13.00	6.34	7.21	4.64
Overall RC	7.68	63.8	7.77	0.05	23.2	32	9.43	48.6	3.55	31.20	8.46	9.99	5.99
Rghr Tail	92.3	5.61	17.5	0.01	20.9	24	12.3	51.4	96.4	68.80	91.5	90	94

The PGMs upgraded well because of the high feed grade. Of concern with the weathered ore is that the amount of chromite in the concentrate may approach 3 to 5 %, depending on fineness of grind. South African smelters use a maximum of 2 % chromite as a guideline for an acceptable PGM concentrate.

Cleaner test results indicated a PGM product grade of 363g/t at 24% is attainable. Combining recleaner tailings with the final concentrate, the recovery improved to 33.9 %, with grade diluted to 181g/t.

The effect of grind tests demonstrated that there was no improvement in performance in grinding the flotation feed finer to P80 of 53µm as the final product PGM recovery was reduced to 15%. The overall rougher recovery also did not improve; it was 49%. Hence, conducting further testwork is recommended at a P80 of 75µm.

13.1.3 Magnetic Separation

In 2019, the "Rock" and "Oxidised" samples were subjected to magnetic separation to evaluate the possibility of upgrading flotation feed. A higher-grade flotation feed may result in better metallurgical response.

"Rock" material

The overall results, summarized in Table 13-14, show that the feed can be upgraded from 2.49g/t 3E to 2.74 g/t 3E at 66 % mass pull and > 85 % recovery. Although there is a slight upgrade to the final magnetic material, magnetic separation can be beneficial in reducing the feed to the flotation circuit (and thus reduce CAPEX and OPEX) by discarding 34 % of the mass at 0.94 g/t 3E grade and 14 % PGM loss to tailings. High chromite recovery (93 %) was also achieved. This is due to the chromite crystal containing high concentrates of iron, which causes the chromite to behave as a ferromagnetic material.

The PGM's upgrade in rock ore to the magnetic fraction would be beneficial to the flotation circuit performance and may have the potential to generate a PGM product of > 100 g/t, to be validated in future test work.

Table 13-14 Summary of Results of Magnetic Separation of "Rock" Material

Overall Balance

		Grade							Recovery						
	Mass	Cr2O3	SiO2	FeO	Pt	Pd	Au	3E	Cr2O3	SiO2	FeO	Pt	Pd	Au	3E
Stream	(%)	%	%	%	g/t	g/t	g/t	g/t	%	%	%	%	%	%	%
Feed (meas.)	100	2.16	35.2	12.8	0.71	1.74	0.04	2.49	100	100	100	100	100	100	100
Feed (calc.)	100	2.18	40.1	13.7	0.60	1.63	0.05	2.28	100	100	100	100	100	100	100
Variance		0.83	12.2	6.85	19.0	6.44	17.2	9.23							
-45µm	32.2	1.39	41.7	11.52	0.90	2.28	0.05	3.23	20.5	33.5	27.0	48.6	44.9	33.3	45.6
Final mags	33.5	4.75	34.8	19.3	0.59	2.09	0.06	2.74	73.0	29.1	47.1	33.3	42.8	42.8	40.3
Final n/mags	34.3	0.41	43.8	10.4	0.32	0.59	0.03	0.94	6.46	37.4	25.9	18.1	12.3	23.9	14.1

Flotation Feed

		Grade							Recovery						
	Mass	Cr2O3	SiO2	FeO	Pt	Pd	Au	3E	Cr2O3	SiO2	FeO	Pt	Pd	Au	3E
Stream	(%)	%	%	%	g/t	g/t	g/t	g/t	%	%	%	%	%	%	%
Feed (meas)	2	35.20	12.8	0.7	1.74	0.04	2.49								
Feed (calc)	100	2.18	40.1	13.7	0.60	1.63	0.05	2.28	100	100	100	100	100	100	100
Variance	0.83	12.20	6.9	19.00	6.4	17.20	9.2								
Float Feed	65.7	3.10	38.2	15.50	0.74	2.18	0.06	2.98	93.5	62.6	74.1	81.9	87.7	76.1	85.9
Final non-mags	34.3	0.41	43.8	10.4	0.32	0.59	0.03	0.94	6.5	37.4	25.9	18.1	12.3	23.9	14.1

Weathered material

The overall PGM recovery for +45 µm particles was approximately 41 %, as may be evident from Table 13-15. The PGM's did not upgrade significantly (upgrade ratio of 1.15) due to the majority of PGM grains being associated with chromite. The chromite recovery to magnetic fraction was approximately 50 %. It is expected that the PGM grains attached to the chromite particle will report to the magnetic fraction. This chromite gangue dilutes the PGM concentrate. The PGM grains locked up in chromite and/or other gangue will report to the non-magnetic fraction. With the PGM distribution being split almost equally between the magnetic and non-magnetic fraction, it becomes evident that the weathered ore cannot be upgraded using magnetic separation.

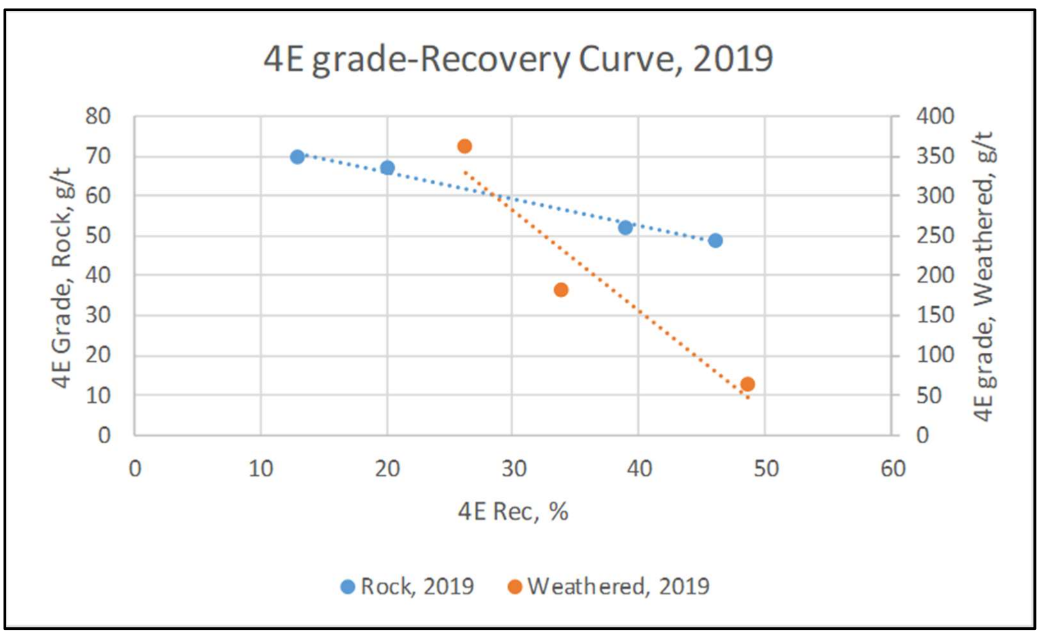
The flotation performance of the "Rock" and Oxidised" samples, tested in 2019, are summarized in Figure 13-3. Note that the concentrate grades for each sample are on different ordinates. The performance of the weathered sample, largely contributed to its higher feed grade, is superior to that of the "Rock" sample.

Table 13-15 Summary of Results of Magnetic Separation of "Oxidised" Material

		Cum. Grade							Cum. Recovery						
Stream	Mass	Cr2O3	SiO2	FeO	Pt	Pd	Au	3E	Cr2O3	SiO2	FeO	Pt	Pd	Au	3E
-500 micron + 106 micron	%	%	%	%	g/t	g/t	g/t	g/t	%	%	%	%	%	%	%
LIMS mags	9.7	22.1	16.5	39.4	1.86	2.25	0.06	4.17	8.3	8.1	17.5	5.3	3.3	6.4	4.0
WHIMS 1 amp mags	10.7	22.7	16.7	37.9	2.20	2.79	0.08	5.07	9.5	9.0	18.6	6.9	4.5	9.6	5.3
WHIMS 2 amp mags	12.5	23.3	16.9	35.8	2.43	3.33	0.09	5.84	11.4	10.7	20.7	9.0	6.3	12.4	7.2
WHIMS 3 amp mags	15.8	22.9	18.2	32.9	2.49	3.66	0.09	6.24	14.1	14.5	23.9	11.6	8.7	15.3	9.7
WHIMS 5.5 amp mags	26.7	22.7	20.1	28.4	2.51	4.33	0.08	6.92	23.7	27.1	34.9	19.8	17.3	23.7	18.2
WHIMS 8.5 amp mags	39.0	25.5	18.9	27.2	2.60	5.20	0.08	7.88	38.8	37.3	49.0	30.0	30.4	35.9	30.3
WHIMS 20 amp mags	49.7	28.1	17.4	26.7	2.75	6.05	0.09	8.89	54.5	43.7	61.1	40.4	45.1	50.1	43.6
WHIMS 20 amp non-mags	100.0	25.6	19.7	21.7	3.38	6.66	0.09	10.10	100.0	100.0	100.0	100.0	100.0	100.0	100.0

		Cum. Grade							Cum. Recovery						
Stream	Mass	Cr2O3	SiO2	FeO	Pt	Pd	Au	3E	Cr2O3	SiO2	FeO	Pt	Pd	Au	3E
-106 micron + 45 micron	%	%	%	%	g/t	g/t	g/t	g/t	%	%	%	%	%	%	%
LIMS mags	4.0	20.9	12.9	44.4	1.79	3.71	0.09	5.59	7.3	1.8	13.3	2.2	3.0	6.0	2.7
WHIMS 1amp mags	6.0	18.4	17.7	35.0	3.44	4.84	0.10	8.39	9.8	3.7	16.0	6.5	6.1	10.2	6.3
WHIMS 2amp mags	8.8	16.4	21.2	29.4	3.81	5.01	0.10	8.91	12.6	6.5	19.5	10.4	9.1	14.3	9.6
WHIMS 3amp mags	13.1	15.6	23.2	25.2	4.10	5.25	0.09	9.45	18.1	10.7	25.0	16.8	14.3	20.2	15.3
WHIMS 5.5amp mags	19.2	15.3	24.3	22.2	3.98	5.33	0.08	9.39	25.9	16.3	32.2	23.7	21.2	27.3	22.2
WHIMS 8.5amp mags	25.8	15.9	24.4	20.8	3.82	5.39	0.08	9.29	36.1	22.1	40.6	30.7	28.8	35.2	29.6
WHIMS 20amp mags	33.1	16.2	24.6	19.8	3.77	5.48	0.08	9.33	47.2	28.6	49.7	38.9	37.6	43.7	38.2
WHIMS 20amp n/mags	100.0	11.3	28.5	13.2	3.21	4.83	0.06	8.10	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Figure 13-3 Flotation performance of "Rock" and Oxidised" samples tested in 2019



14. Mineral Resource Estimate

14.1 Introduction

The mineral resource estimate was prepared by Susan Lomas, P.Geo. of Lions Gate Geological Consulting (LGGC). This section of the technical report describes the resource estimation methodology and summarizes the key assumptions considered by the Qualified Persons to prepare the resource model for the platinum, palladium and gold (PGE+Au) at the five main deposits (Santo Amaro, Curiu, Cedro, Esbarro and Trapia (5PB Deposits) within the Pedra Branca Project in Brazil (Figure 14-1).

This is the third set of mineral resource estimates completed for the Pedra Branca Project. GE21 Consulrtario Mineral completed a series of estimates for the Curiu, Esbarro, Cedro and Trapia Deposits with an effective date of October 2, 2107 and documented the results in a JORC report. In March 2019, Minxcon Consulting issued another set of mineral resource estimates for the Santo Amaro, Curiu, Cedro, Esbarro and Trapia Deposits in a JORC report with an effective date of February 1, 2019.

LGGC has completed a review of the drilling and exploration data for the five deposits and has completed new estimates in conformity with generally accepted CIM Estimation of Mineral Resources and Mineral Reserves Best Practices Guidelines (November 23, 2003).

Mineral resources are not mineral reserves and they do not have demonstrated economic viability. There is no certainty that all or any part of the mineral resource will be converted into mineral reserves upon application of modifying factors.

Estimations were made from 3D block models based on geostatistical applications using commercial mine planning software (Geovia GEMS 6.7.4). The project limits are based in the UTM coordinate system using block sizes measuring 20 m x 20 m x 10 m for the Santo Amaro and Trapia Deposits and 15 m x 15 m x 5 m blocks for the Curiu, Cedro and Esbarro deposits.

The diamond drill holes (DDH) intersect the PGE+Au mineralization of the tabular 5 PB Deposits predominantly in a perpendicular to sub-perpendicular manner. The resource estimates were generated using drill hole sample assay results and the interpretation of a PGE+Au grade-based model that relates to the spatial distribution of platinum, palladium and gold. Interpolation characteristics were defined based on the geology, drill hole spacing, and geostatistical analysis of the data. The resources were classified according to their proximity to the sample data locations and are reported, as required by NI 43-101, according to the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014).

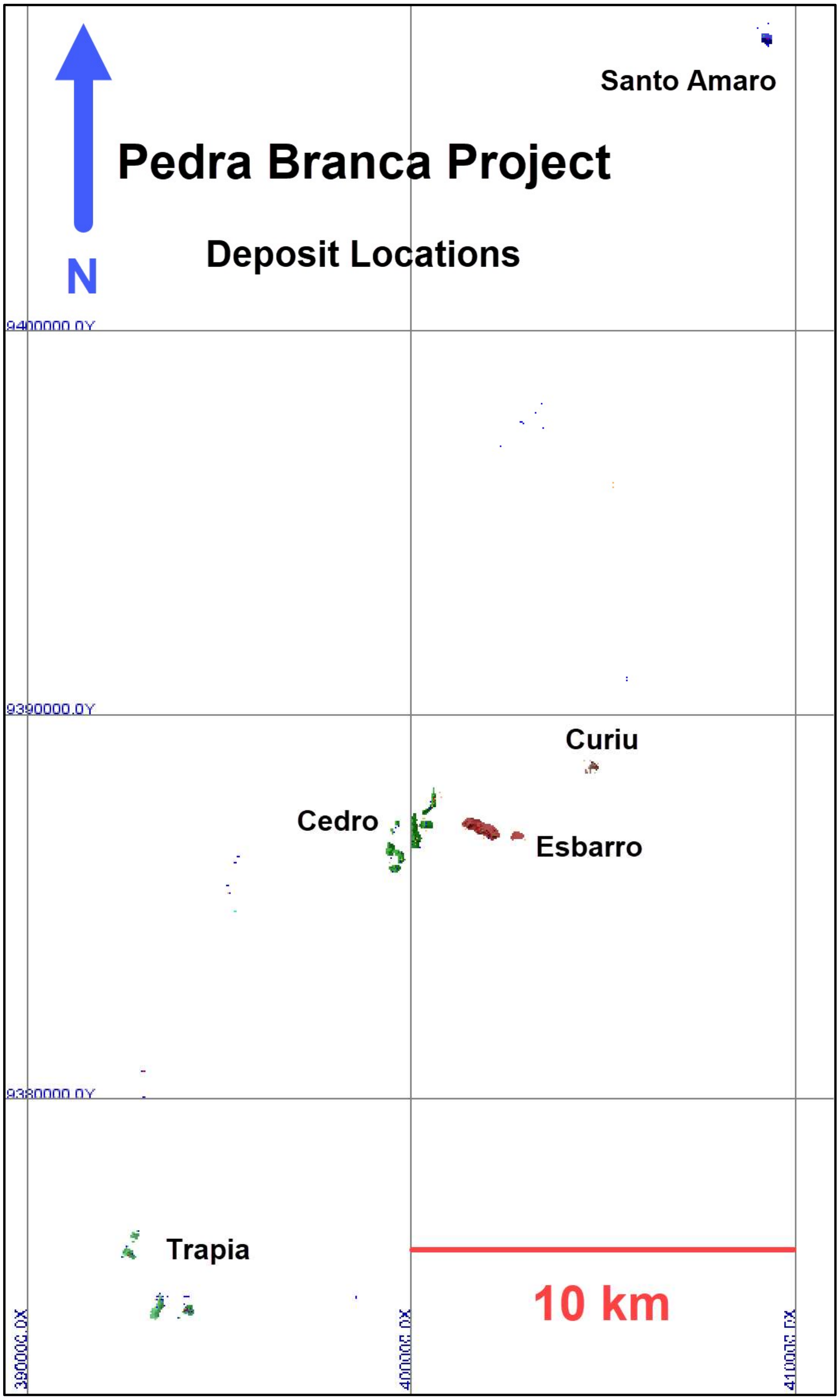
This report includes estimates for mineral resources. No mineral reserves were prepared or reported.

12.2 Data

ValOre Metals Corp. (ValOre) provided the final drill hole sample data for the Pedra Branca Project on May 11, 2019. This comprised a series of Excel® (spreadsheet) files containing collar locations, down-hole survey results, geologic information and assay results for a total of 351 drill holes representing 25,726 m of drilling. There are 311 drill holes in the 5PB Deposits and of these, 228 drill holes intersect the PGE+Au mineralization and contribute to the estimation of mineral resources. There are 6 drill holes at Santo Amaro that support the mineral resource estimation, 37 at Curiu, 91 at Esbarro 68 at Cedro and 26 at Trapia.

The locations of the 5PB Deposits are shown in plan view in Figure 14-1.

Figure 14-1 Planview of Pedra Branca Project and locations of Exploration Drill Holes, and Mineral Resource Estimations Mineralization Envelopes for Santo Amaro, Curiu, Esbarro, Cedro and Trapia Deposits



There are 10,279 samples in the project database and 7,447 of them intersected PGE+Au mineralization modelled in the 5PB deposits. The samples have an average sample length of 1.3 m within the mineralization.

A topographic surface was provided for the study that covered the entire Pedra Branca project. LGGC was also provided with surfaces that represent the oxide, transition and sulphide phases for each of the deposits.

Geologic information, derived from observations during drill sample logging, provide lithology code designations for the various rock units present on the property.

The summary statistics for the PGE+Au assay data and sample lengths, included in the resource estimates, are shown in Table 14-1

Table 14-1 Summary of Basic Statistics for Assays included in the Resource Estimate

Zone	Metal	No.	Mean	CV	Min	Q25	Q50	Q75	Max
All	Au	5305	0.02	2.89	0.001	0.01	0.01	0.01	1.44
	Pt	7379	0.27	2.33	0.005	0.04	0.11	0.28	20.78
	Pd	7409	0.42	2.33	0.001	0.04	0.14	0.41	23.39
	Length	7447	1.32	0.40	0.1	1.00	1.11	1.91	5.25
1000	Au	359	0.02	2.80	0.001	0.01	0.01	0.01	1.26
Santo	Pt	359	0.39	1.56	0.005	0.05	0.23	0.49	8.90
Amaro	Pd	359	0.54	1.84	0.005	0.08	0.31	0.65	17.15
	Length	359	1.46	0.36	0.24	1.02	1.50	2.00	2.10
2000	Au	702	0.06	1.96	0.001	0.01	0.01	0.05	1.44
Curiu	Pt	702	0.59	1.76	0.005	0.11	0.23	0.60	9.26
	Pd	702	0.98	1.81	0.005	0.14	0.34	0.94	20.78
	Length	614	1.31	0.40	0.3	0.88	1.25	1.82	2.62
3000	Au	1792	0.01	2.82	0.005	0.01	0.01	0.01	0.96
Esbarro	Pt	3477	0.25	2.15	0.005	0.05	0.12	0.28	20.73
	Pd	3477	0.47	2.20	0.005	0.05	0.18	0.48	23.39
	Length	3477	1.17	0.36	0.12	1.00	1.00	1.31	5.25
4000	Au	1666	0.01	2.23	0.001	0.01	0.01	0.01	0.50
Cedro	Pt	1694	0.19	2.38	0.005	0.04	0.10	0.20	16.05
	Pd	1694	0.32	2.45	0.002	0.05	0.13	0.31	21.61
	Length	1694	1.43	0.37	0.1	0.98	1.48	2.00	3.15
5000	Au	761	0.03	2.49	0.001	0.01	0.01	0.03	1.02
Trapia	Pt	796	0.28	1.53	0.005	0.07	0.18	0.32	5.08
	Pd	796	0.45	1.60	0.002	0.10	0.25	0.58	11.65
	Length	803	1.49	0.39	0.1	1.00	1.60	2.00	4.00

14.3 Geological Model, Domains and Coding

The PGE+Au mineralization is hosted in the ultramafic package and is strongly associated with the chromitite lithology. 3D wireframe domains were modelled at the 5PB Deposits that encapsulated the PGE+Au mineralization above 100 ppm PGE+Au (Figure 14-2 to Figure 14-6).

Figure 14-2 Santo Amaro Deposit, Plan and Section view of Mineralization Shell

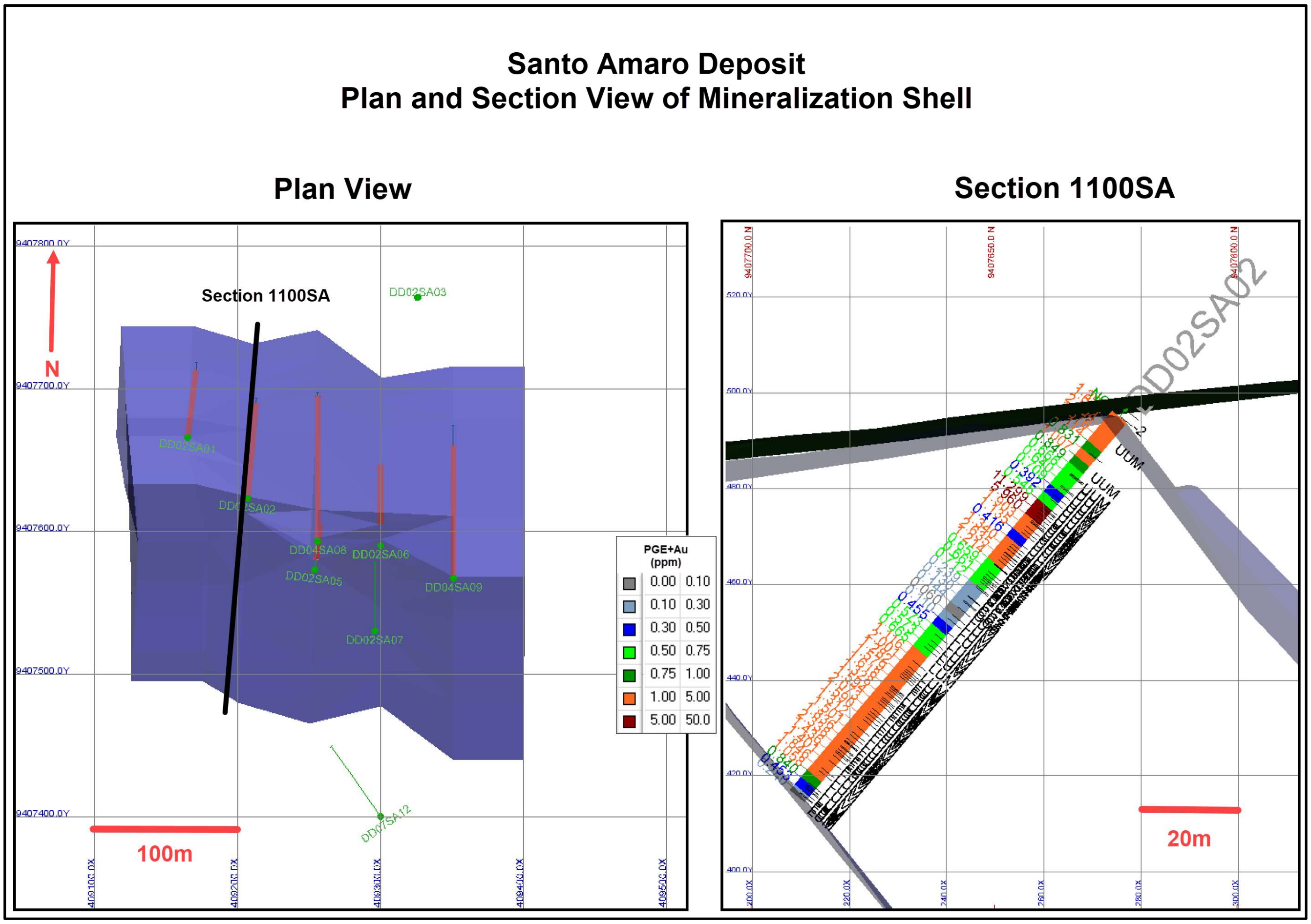


Figure 14-3 Curiu Deposit, Plan and Section view of Mineralization Shell

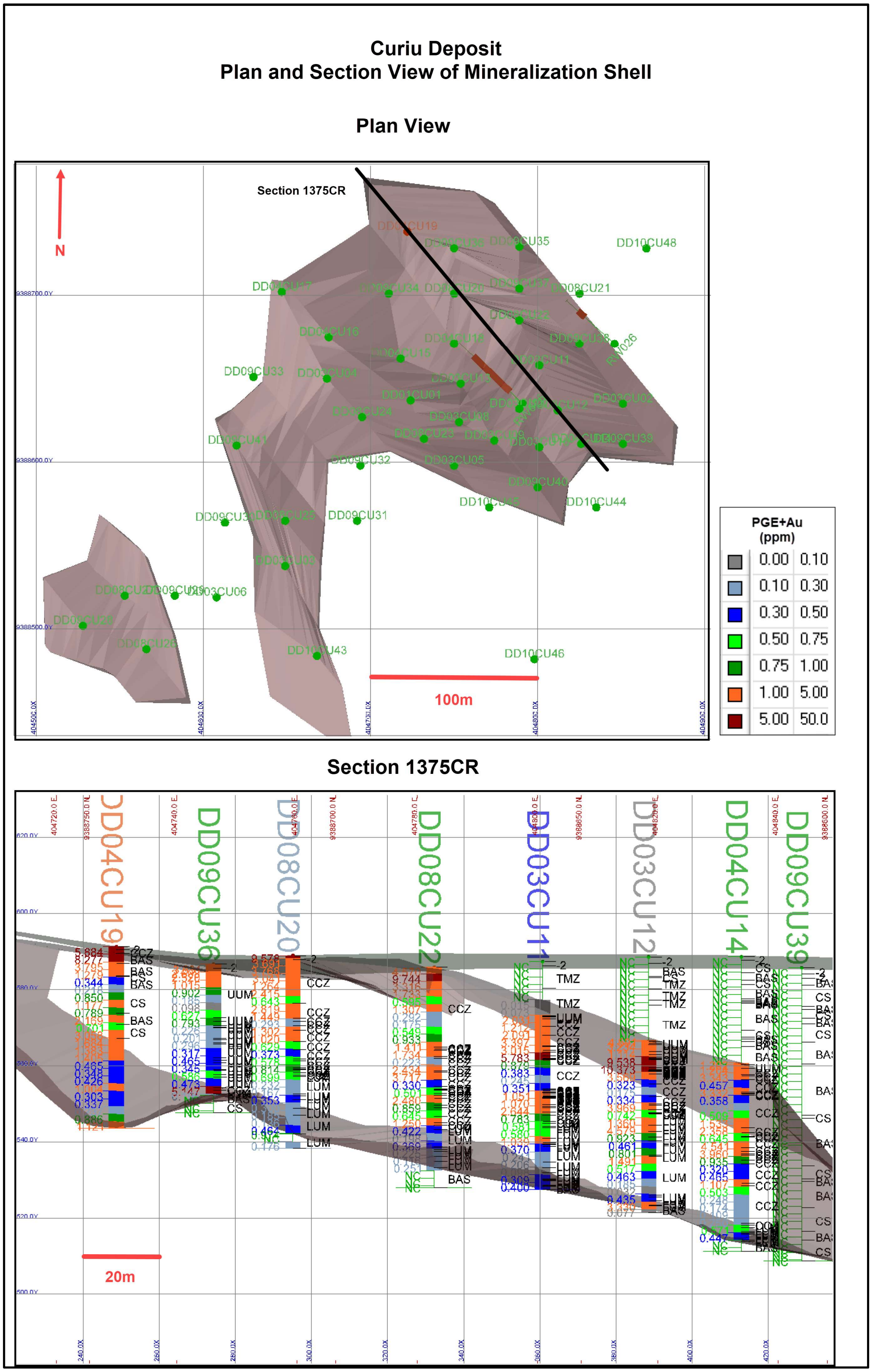


Figure 14-4 Esbarro Deposit, Plan and Section view of Mineralization Shell

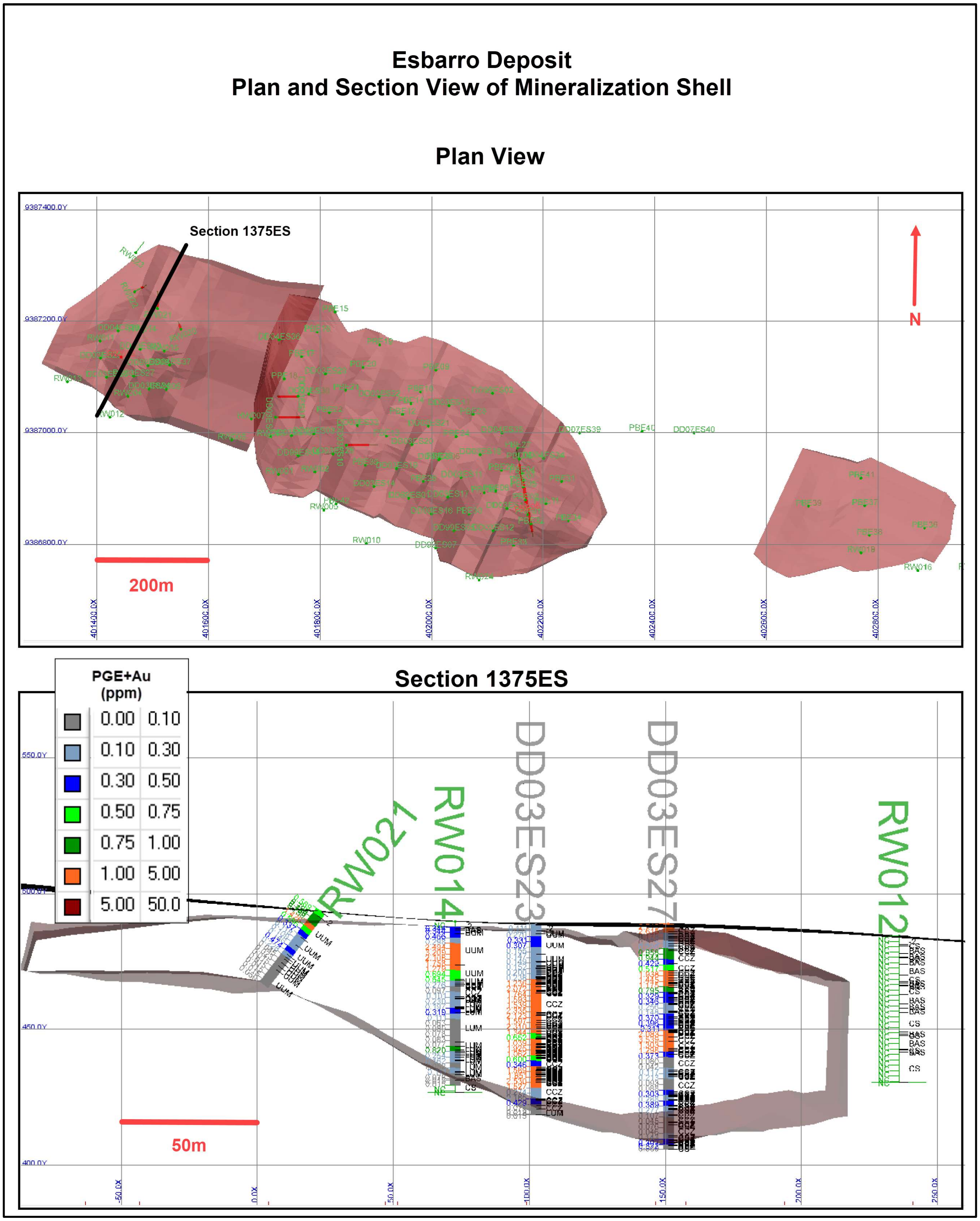


Figure 14-5 Cedro Deposit, Plan and Section view of Mineralization Shell

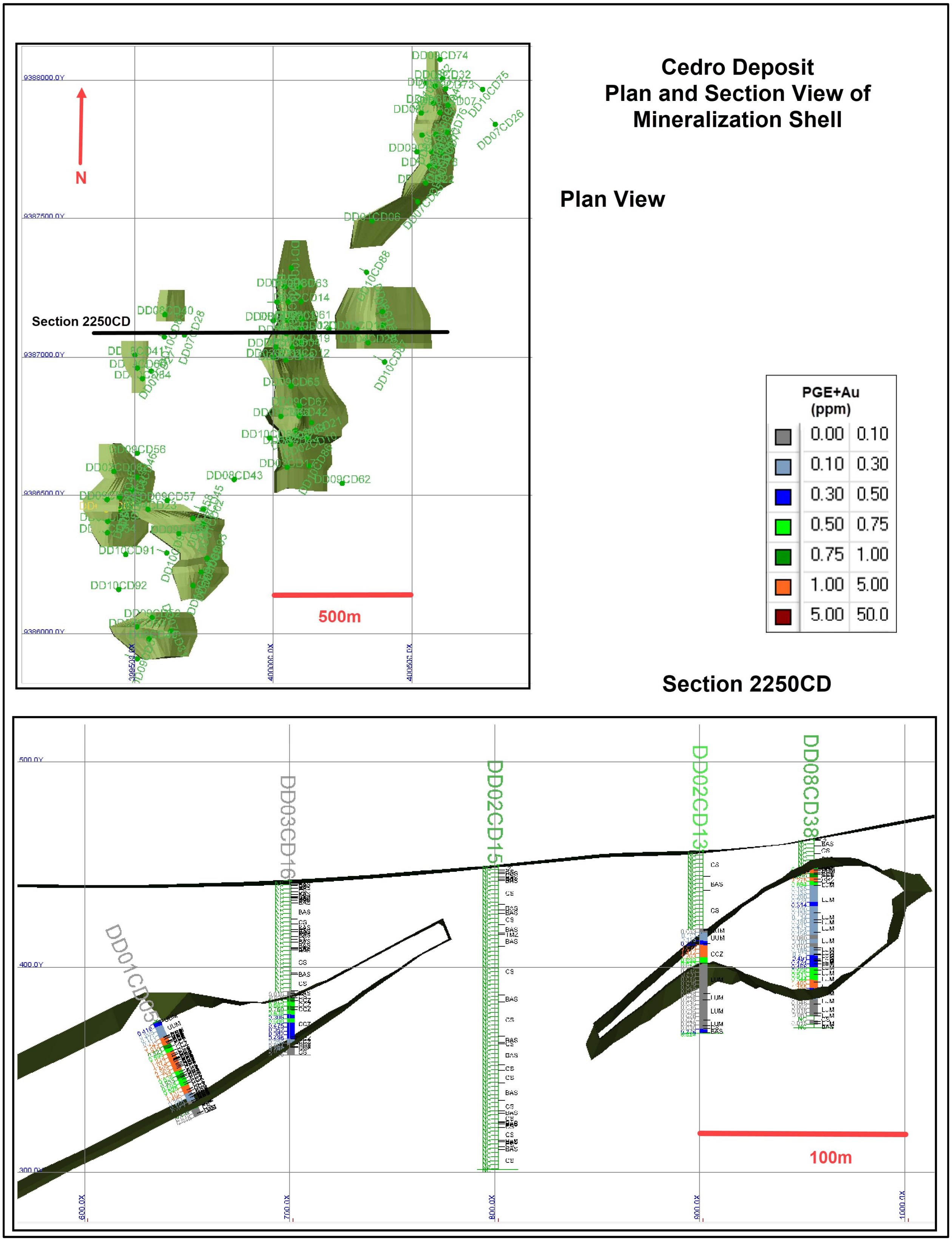
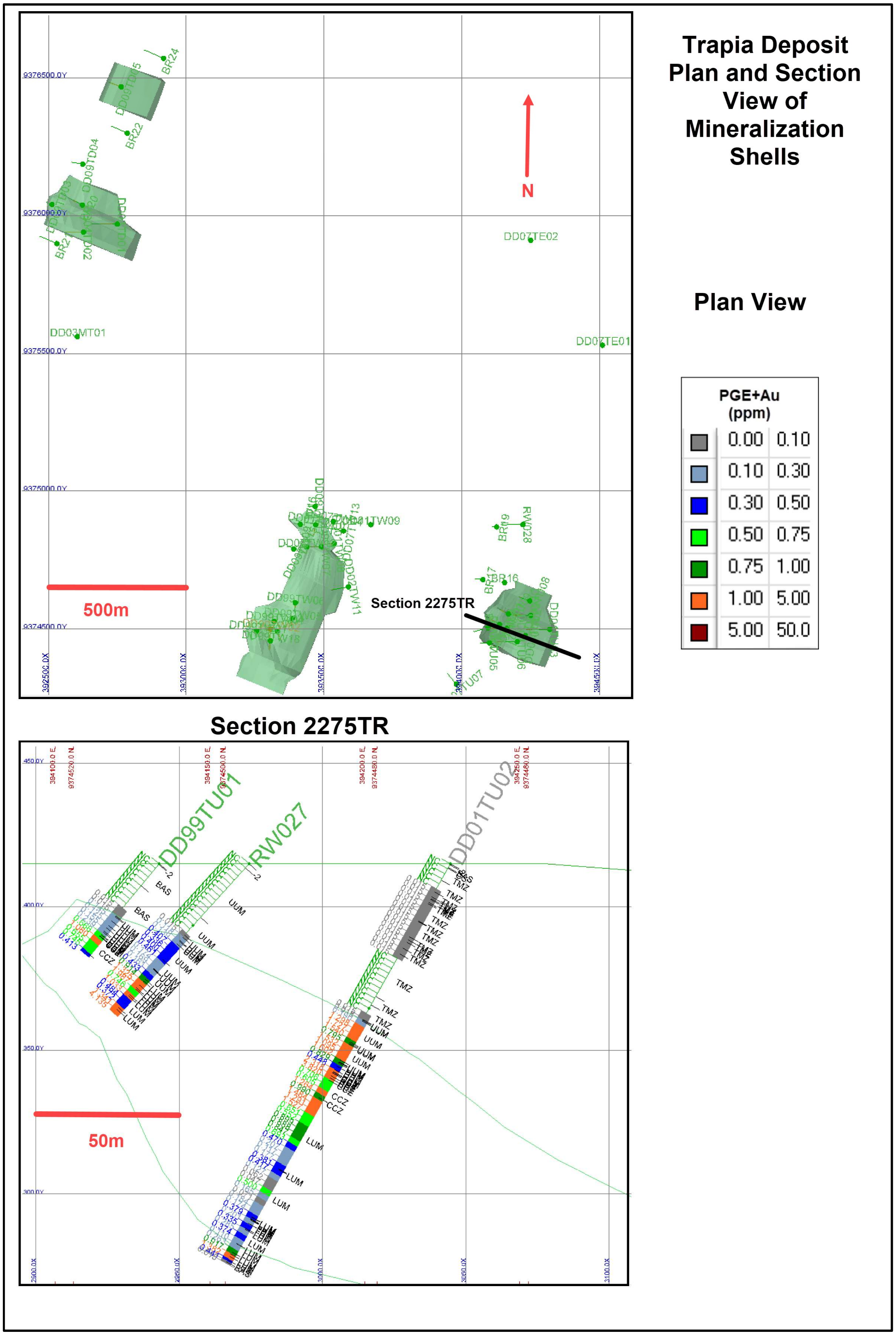


Figure 14-6 Trapia Deposit, Plan and Section view of Mineralization Shell



14.4 Compositing

The mean assay length within the mineralized shells was 1.3 m. LGGC composited the assay data to 2m intervals within the mineralized shells (Table 14-2).

Table 14-2 Summary of Basic Statistics for 2 m Composites included in the Resource Estimate (Uncut Grades)

					Oxide				
Zone	**Metal**	**No.**	**Mean**	**CV**	**Min**	**Q25**	**Q50**	**Q75**	**Max**
1100	Au	49	0.020	0.795	0.003	0.007	0.019	0.026	0.068
	Pt	49	0.614	1.186	0.005	0.245	0.343	0.616	2.976
	Pd	49	0.657	1.000	0.019	0.264	0.413	0.863	3.220
2100	Au	202	0.074	1.484	0.002	0.008	0.024	0.091	0.630
	Pt	202	0.931	1.286	0.005	0.232	0.450	1.115	7.760
	Pd	202	1.363	1.301	0.022	0.307	0.641	1.780	10.332
3100	Au	377	0.019	1.912	0.005	0.005	0.005	0.017	0.403
	Pt	756	0.340	1.728	0.005	0.077	0.180	0.359	6.583
	Pd	756	0.597	1.624	0.005	0.115	0.275	0.685	8.100
4100	Au	432	0.012	1.545	0.001	0.005	0.009	0.009	0.241
	Pt	442	0.217	1.879	0.005	0.05	0.098	0.198	4.864
	Pd	442	0.39	1.989	0.005	0.055	0.147	0.356	7.127
51000	Au	73	0.021	0.638	0.004	0.01	0.018	0.029	0.07
	Pt	73	0.245	1.013	0.03	0.074	0.168	0.333	1.545
	Pd	73	0.365	0.622	0.057	0.195	0.287	0.458	1.154
					Transition				
Zone	**Metal**	**No.**	**Mean**	**CV**	**Min**	**Q25**	**Q50**	**Q75**	**Max**
1200	Au	155	0.016	1.751	0.001	0.005	0.006	0.016	0.261
	Pt	155	0.306	1.42	0.005	0.04	0.181	0.397	3.035
	Pd	155	0.499	1.600	0.005	0.054	0.272	0.627	8.004
2200	Au	78	0.046	1.211	0.005	0.007	0.024	0.067	0.254
	Pt	100	0.496	1.361	0.005	0.118	0.219	0.566	3.462
	Pd	100	0.946	1.460	0.005	0.189	0.343	1.035	7.235
3200	Au	213	0.014	1.417	0.005	0.005	0.005	0.016	0.143
	Pt	347	0.263	1.452	0.005	0.050	0.145	0.340	3.550
	Pd	347	0.564	1.602	0.005	0.066	0.212	0.635	7.249
4200	Au	295	0.014	2.730	0.001	0.005	0.009	0.009	0.481
	Pt	297	0.165	1.907	0.007	0.051	0.095	0.182	4.174
	Pd	297	0.265	1.71	0.006	0.058	0.138	0.288	4.147
5200	Au	92	0.029	1.351	0.005	0.006	0.014	0.036	0.279
	Pt	128	0.211	0.909	0.009	0.084	0.164	2.66	1.227
	Pd	128	0.392	0.846	0.039	0.136	0.285	0.591	1.966

					Sulphide				
Zone	**Metal**	**No.**	**Mean**	**CV**	**Min**	**Q25**	**Q50**	**Q75**	**Max**
1000	Au	68	0.008	0.952	0.001	0.005	0.005	0.010	0.041
	Pt	68	0.438	1.151	0.005	0.064	0.341	0.601	2.493
	Pd	68	0.514	1.127	0.015	0.082	0.349	0.816	3.635
2000	Au	164	0.040	1.303	0.002	0.008	0.020	0.054	0.309
	Pt	164	0.252	1.069	0.005	0.090	0.146	0.296	2.850
	Pd	164	0.516	1.374	0.005	0.126	0.270	0.592	6.220
3000	Au	620	0.010	2.860	0.005	0.005	0.005	0.006	0.484
	Pt	960	0.180	1.561	0.005	0.040	0.094	0.215	3.625
	Pd	960	0.326	1.902	0.005	0.050	0.131	0.330	7.570
4000	Au	602	0.016	1.740	0.003	0.005	0.009	0.012	0.360
	Pt	602	0.169	1.179	0.005	0.047	0.107	0.209	1.708
	Pd	602	0.273	1.365	0.005	0.056	0.153	0.34	3.498
5000	Au	425	0.033	2.446	0.001	0.005	0.008	0.027	0.731
	Pt	449	0.304	1.293	0.008	0.073	0.195	0.379	4.289
	Pd	449	0.472	1.401	0.005	0.104	0.269	0.606	7.65

14.5 Exploratory Data Analysis

Exploratory data analysis ("EDA") involves the statistical summarization of the database to better understand the characteristics of the data that may control grade. One of the main purposes of this exercise is to determine if there is evidence of spatial distinctions in grade which may require separation and isolation of domains during interpolation. The application of separate domains prevents unwanted mixing of data during interpolation and, therefore, the resulting grade model will better reflect the unique properties of the deposit. However, applying domain boundaries in areas where the data is not statistically unique may impose a bias in the distribution of grades in the model.

A domain boundary, which segregates the data during interpolation, is typically applied if the average grade in one domain is significantly different from that of another domain. A boundary may also be applied if there is evidence that a significant change in the grade distribution has occurred across the contact.

The mineralized shells at the 5PB Deposits have distinct grade distributions from the materials outside of the shells and hard boundaries were placed between them during grade interpolation.

14.5.1 Extreme Grade Review, Capping and Restricted Outlier Strategy

LGGC reviewed the basic statistics for the assay and 2 m composite data, selected capping levels for extreme grades and also applied a Restricted Outlier Strategy (ROS) for some domains. An ROS allows top grades to influence local blocks over a shortened range but were not available for interpolation into more distal blocks. At Santo Amaro and Trapia Deposits (20x20x10 m blocks) the restricted range was 55 and 40 m respectively while the more densely drilled deposits of Curiu, Esbarro and Cedro (15x15x5 m blocks), the restricted range was 30 m. This allows some high-grade influence locally but does not permit anomalously high-grade values to smear through a deposit.

Table 14-3 includes a summary capped 2 m composites with the top-cut grades and restricted outlier thresholds by estimation domains and metals. The total metal removed by LGGC's capping/restricted outlier strategy was 11%.

LGGC set the restrictions on the influence of elevated grades at Santo Amaro and Cedro Deposits conservatively. The percent difference in PGE+Au ounces was reduced by 22% and 23% respectively between the capped and uncapped summations. LGGC considers the risk related to the influence of the elevated assays to be greater for these deposits. The estimation of grades at Santo Amaro is supported by 6 drill holes (3 of them carry the bulk of the elevated grades), representing only 3% of drill hole database but carries 19% of the overall ounces. There appears to be reasonable continuity in the mineralization to support a mineral estimation for this deposit, but more drilling is required to support the consideration of less restrictive influence of the higher-grade assays. The Cedro Deposit has similar concerns. This deposit hosts 8 separate mineralization solids and 68 drill holes support the mineral resource estimate. Four of the solids have less than 5 drill holes so more drilling is required at Cedro to provide more confidence in the higher-grade assay population.

The grade restriction strategy for the other deposits had less of an overall impact on the reduction in the PGE+Au contained ounces due to better drill hole support or smaller number of outlier top grades. The reduction in reported ounces from capped to uncapped PGE+Au ounces was -3% at Curiu, -6% at Esbarro and -9% at Trapia Deposits and these deposits account for just under 70% of the contained ounces at the Pedra Branca Project.

Table 14-3 Summary of Top Cap on 2m Composite Data and Restricted Outlier Level for Composites

Zone	Metal (g/t)	No.	CV	Mean	Q50	Q75	Max	Cap	No. Assays Cappe	RO	No Comps	Percentile Restri
1100	Au	49	0.02	0.80	0.02	0.03	0.07					
SA	Pt	49	0.61	1.19	0.34	0.62	2.98			1.0	6	90th
	Pd	49	0.66	1.00	0.41	0.86	3.22			1.0	8	95th
2100	Au	202	0.07	1.44	0.02	0.09	0.60	0.6	3	0.2	24	90th
Cu	Pt	202	0.93	1.29	0.45	1.04	7.76			5.0	3	99th
	Pd	202	0.93	1.29	0.45	1.12	7.76	10.0	2	5.0	10	95th
3100	Au	377	0.02	1.61	0.01	0.02	0.20	0.2	5			
ES	Pt	756	0.33	1.53	0.18	0.36	4.53	6.0	5	2.0	17	98th
	Pd	756	0.60	1.62	0.28	0.69	8.10	10.0	5	7.0	5	90th
4100	Au	432	0.01	1.18	0.01	0.01	0.10	0.1	5			
CD	Pt	442	0.20	1.47	0.10	0.20	2.17	3.0	5	1.6	6	98th
	Pd	442	0.38	1.88	0.15	0.36	6.64	10.0	4	2.8	11	98th
5100	Au	73	0.02	0.56	0.02	0.03	0.05	0.05	3			
TR	Pt	73	0.25	1.01	0.17	0.33	1.55			0.7	4	95th
	Pd	73	0.35	0.52	0.29	0.46	0.73	0.7	5			
Zone	**Metal (g/t)**	**No.**	**CV**	**Mean**	**Q50**	**Q75**	**Max**	**Cap**	**No. Assays Cappe**	**RO**	**No Comps**	**Percentile Restri**
1200	Au	155	0.01	1.08	0.01	0.02	0.07	0.1	3			
SA	Pt	155	0.30	1.41	0.18	0.40	3.04	5.0	2	1.0	7	90th
	Pd	155	0.44	1.09	0.27	0.62	2.67	3.0	4	1.4	7	95th
2200	Au	109	0.04	1.10	0.02	0.06	0.20	0.2	5			
Cu	Pt	109	0.50	1.36	0.22	0.57	3.46			1.0	14	85th
	Pd	109	0.95	1.46	0.34	1.04	7.24			2.0	17	83rd
3200	Au	213	0.01	1.29	0.01	0.02	0.14	0.1	5			
ES	Pt	347	0.26	1.31	0.15	0.34	2.55	3.0	3			
	Pd	347	0.55	1.53	0.21	0.64	7.25	8.0	3	4.0	4	99th
4200	Au	222	0.01	1.20	0.01	0.01	0.10	0.1	5			
CD	Pt	222	0.15	1.11	0.10	0.18	1.09	3.0	1	0.8	3	98th
	Pd	222	0.25	1.40	0.14	0.29	3.00	3.0	3	0.8	11	95th
5200	Au	94	0.03	1.01	0.01	0.04	0.10	0.1	2			
TR	Pt	94	0.21	0.81	0.16	2.66	0.87	2.0	2			
	Pd	94	0.37	0.73	0.39	0.58	1.18	1.2	2			
Zone	**Metal (g/t)**	**No.**	**CV**	**Mean**	**Q50**	**Q75**	**Max**	**Cap**	**No. Assays Cappe**	**RO**	**No Comps**	**Percentile Restri**
1300	Au	68	0.01	0.95	0.01	0.01	0.04					
SA	Pt	68	0.44	1.15	0.34	0.60	2.49			1.0	8	83rd
	Pd	68	0.47	0.94	0.34	0.82	1.84	2.0	5	1.2	4	93rd
2300	Au	164	0.04	1.30	0.02	0.05	0.31					
Cu	Pt	164	0.25	1.02	0.15	0.30	2.00	2.0	8	1.2	3	99th
	Pd	164	0.48	1.26	0.27	0.57	4.00	4.0	5	1.0	19	90th
		620	0.01	1.39	0.01	0.01	0.13					
3300	Au	960	0.18	1.45	0.09	0.22	3.00	0.2	2			
ES	Pt	960	0.33	1.90	0.13	0.33	7.57	3.0	5	1.5	7	99th
	Pd									5.0	2	99th
		602	0.02	1.63	0.01	0.01	0.25					
4300	Au	602	0.17	1.18	0.11	0.21	1.71	0.3	1	0.1	14	98th
CD	Pt	602	0.27	1.37	0.15	0.34	3.48			1.0	7	98th
	Pd									2.0	3	99th
		425	0.03	1.82	0.01	0.03	0.30					
5300	Au	449	0.30	1.23	0.20	0.38	3.61	0.3	10	0.1	26	95th
TR	Pt	449	0.45	1.18	0.27	0.61	3.65	4.0	4	2.0	3	99th
	Pd	68	0.01	0.95	0.01	0.01	0.04	4.0	9	2.0	10	98th

14.5.2 Conclusions and Modelling Implications

The results of the EDA indicate that the PGE+Au grades within the mineralized shells are significantly different than those in the surrounding area, and that the shells should be treated as distinct or hard boundary domains during block grade estimations.

14.6 Variography

The degree of spatial variability in a mineral deposit depends on both the distance and direction between points of comparison. Typically, the variability between samples increases as the distance between those samples increases. If the degree of variability is related to the direction of comparison, then the deposit is said to exhibit anisotropic tendencies which can be summarized with the search ellipse. The semi-variogram is a common function used to measure the spatial variability within a deposit.

The components of the variogram include the nugget, the sill and the range. Often samples compared over very short distances, even samples compared from the same location, show some degree of variability. As a result, the curve of the variogram often begins at some point on the y-axis above the origin: this point is called the nugget. The nugget is a measure of not only the natural variability of the data over very short distances but also a measure of the variability which can be introduced due to errors during sample collection, preparation, and the assay process.

The amount of variability between samples typically increases as the distance between the samples increases. Eventually, the degree of variability between samples reaches a constant, maximum value: this is called the sill, and the distance between samples at which this occurs is called the range.

In this report, the spatial evaluation of the data was conducted using a correlogram rather than the traditional variogram. The correlogram is normalized to the variance of the data and is less sensitive to outlier values, generally giving better results.

Correlograms were generated using the commercial software package Sage 2001© developed by Isaaks & Co. Multidirectional variograms for Pt, Pd and Au generated from the distributions of the combined data located inside the mineralization shells at the Curiu, Esbarro and Cedro Deposits. The results are summarized in Table 14-4.

Table 14-4 Variogram Parameters from Combined Composites from Curiu, Esbarro and Cedro Deposits

Element	Nugget	Sill 1	Sill 2	1st Structure Range (m)	1st Structure Azimuth (°)	1st Structure Dip	2nd Structure Range (m)	2nd Structure Azimuth (°)	2nd Structure Dip
Platinum	0.450	0.360	0.190	48	167	-17	691	149	-26
	Exponential			209	77	-1	574	52	-13
				11	163	73	66	118	60
Palladium	0.550	0.370	0.080	34	174	-77	374	295	14
	Exponential			94	65	-4	1644	209	-19
				7	154	12	164	171	66
Gold	0.500	0.357	0.143	76	114	40	259	63	5
	Exponential			174	37	12	1182	38	-85
				26	137	0	4627	333	2

14.7 Model Setup and Limits

Five different block models were initialized in Geovia GEMS for each of the 5PB Deposits and their dimensions are defined in Table 14-5. The selection of a nominal block size measuring 15 x 15 x 5 m for Curiu, Esbarro and Cedro Deposits and 20 x 20 x 10 m at Santo Amaro and Trapia Deposits is considered appropriate with respect to the current drill hole spacing as well as the selective mining unit size.

Table 14-5 Block Model Limits at the 5PB Deposits

Zone	Direction	Minimum	Maximum	Block Size(m)	# of Blocks
1000 SA	X (east)	408,800	409,700	20	45
	Y (north)	9,407,200	9,408,100	20	45
	Z (elevation)	200	600	10	40
2000 CU	X (east)	404,250	405,150	15	60
	Y (north)	9,388,150	9,389,050	15	60
	Z (elevation)	450	700	5	50
3000 ES	X (east)	401,100	403,200	15	140
	Y (north)	9,386,500	9,387,505	15	67
	Z (elevation)	300	640	5	68
4000 CD	X (east)	399,000	400,995	15	133
	Y (north)	9,385,650	9,388,410	15	184
	Z (elevation)	150	700	5	110
5000 TR	X (east)	392,200	394,600	20	120
	Y (north)	9,374,000	9,376,900	20	145
	Z (elevation)	220	600	10	38

Blocks in the model were coded on a majority basis with the mineralization shell codes. Geovia GEMS software uses a percent model to measure the portion of the block inside the mineralization solid.

Only blocks that were more than 51% below the topography surface were available for coding for the mineralized domains and only blocks that were more than 5% inside the mineralization shells were selected for grade interpolation.

14.8 Interpolation Parameters

The block model grades for PGE+Au were estimated using inverse distance squared (ID2) as the main method while blocks were also estimated using nearest neighbour ("NN") method for validation purposes.

The estimation parameters for the various elements in the resource block model are shown in Table 14-6.

Table 14-6 Interpolation Parameters

Zone	Element	Search Ellipse Rotation			Search Ellipse Range (m)			# of Composites		
		Z	Y	Z	X	Y	Z	Min/block	Max/block	Max/hole
1000 SA	Platinum	-90	45	0	125	150	35	3	12	2
	Palladium	-90	45	0	125	150	35	3	12	2
	Gold	-90	45	0	125	150	35	3	12	2
2000 CU	Platinum	-50	20	0	75	100	40	3	12	2
	Palladium	-50	20	0	75	100	40	3	12	2
	Gold	-50	20	0	75	100	40	3	12	2
3000 ES	Platinum	-115	15	0	75	100	30	4	15	3
	Palladium	-115	15	0	75	100	30	4	15	3
	Gold	-115	15	0	75	100	30	4	15	3
4000 CD	Platinum	0	25	0	150	175	40	4	15	3
	Palladium	0	25	0	150	175	40	4	15	3
	Gold	0	25	0	150	175	40	4	15	3
5000 TR	Platinum	-20	15	0	150	200	50	3	12	2
	Palladium	-20	15	0	150	200	50	3	12	2
	Gold	-20	15	0	150	200	50	3	12	2

14.9 Bulk Density

Amplat completed bulk density measurements (weight in water-weight in air) on 3808 pieces of core from 55 drill holes in the 5PB Deposits. LGGC tagged the bulk density database with the mineralization shell codes and the oxidation codes and compiled the means of each deposit and oxidation horizon. The averaged values for each deposit were assigned to the block the deposit block models as per Table 14-7.

LGGC recommends that ValOre compile all the core-based bulk density data for the deposits and ensure that specific gravity determinations are kept in a separate database. The bulk density data should be assessed for spatial distribution at each deposit and under-sampled areas be filled in so that the bulk density data can be interpolated like a grade element into future mineral resource estimations.

Table 14-7 Summary of Bulk Density Data

Deposit	Zone/Oxidation	No. Samples	Avg. Bulk Density (t/m3)
CEDRO		1205	2.89
	Waste Oxide	20	2.86
	Waste Transition	28	2.72
	Waste Sulphide	385	2.91
	Mineralized Oxide	190	**2.62**
	Mineralized Transition	122	**2.83**
	Mineralized Sulphide	460	**3.00**
CURIÚ		252	2.94
	Waste Oxide	8	2.79
	Waste Transition	3	2.74
	Waste Sulphide	17	2.92
	Mineralized Oxide	19	**2.84**
	Mineralized Transition	58	**2.93**
	Mineralized Sulphide	147	**2.97**
Esbarro		1858	2.81
	Waste Oxide	159	2.47
	Waste Transition	18	2.45
	Waste Sulphide	292	2.89
	Mineralized Oxide	384	**2.68**
	Mineralized Transition	308	**2.86**
	Mineralized Sulphide	697	**2.92**
SANTO AMARO		128	2.96
	Waste Sulphide	7	2.93
	Mineralized Transition	21	**2.92**
	Mineralized Sulphide	63	**3.02**
TRAPIÁ		365	2.91
	Waste Oxide	4	2.96
	Waste Transition	16	2.90
	Waste Sulphide	59	2.94
	Mineralized Oxide	2	**2.56**
	Mineralized Transition	39	**2.79**
	Mineralized Sulphide	245	**2.92**
	Grand Total	3808	2.86

14.10 Validation

The results of the modelling process were validated using several methods. These include a thorough visual review of the model grades in relation to the underlying drill hole sample grades, comparisons of the composite and block mean grades and grade distribution comparisons using swath plots of ID^2 and NN results.

14.10.1 Visual Inspection

A detailed visual inspection of the block model was conducted in both section and plan to ensure the desired results following interpolation. This includes confirmation of the proper coding of blocks within each of the mineralization shells for the 5PB deposits. The estimated PGE+Au grades in the model appear to be a valid representation of the underlying drill hole sample data.

14.10.2 Block and Composite Means

The means of the composite and resulting block grades were compared for each domain and mineralization shell for both the cut and uncut grade elements. The mean values were reasonably comparable for each deposit and domain for the PGE+Au grades.

14.10.3 Swath Plots (Drift Analysis)

A swath plot is a graphical display of the grade distribution derived from a series of bands, or swaths, generated in several directions through the deposit. Grade variations from the ID^2 model are compared using the swath plot to the distribution derived from the declustered (NN) grade model.

On a local scale, the NN model does not provide reliable estimations of grade, but, on a much larger scale, it represents an unbiased estimation of the grade distribution based on the underlying data. Therefore, if the ID^2 model is unbiased, the grade trends may show local fluctuations on a swath plot, but the overall trend should be similar to the NN distribution of grade.

Swath plots have been generated in three orthogonal directions for all models. An example of the platinum, palladium and gold distributions in north-south swaths for the Esbarro Deposit are included as Figure 14-7 , Figure 14-8 and Figure 14-9.

There is good correspondence between the models in most areas. The degree of smoothing in the ID^2 model is evident in the peaks and valleys shown in the swath plots. Areas where there are large differences between the models tend to be the result of “edge” effects where there is less available data to support a comparison or due to non-mineralized spaces between mineralization shells. The validation results indicate that the ID^2 model is a reasonable reflection of the underlying sample data.

Figure 14-7 Esbarro Deposit Swath Plot of Platinum ID2 and NN Models by Eastings

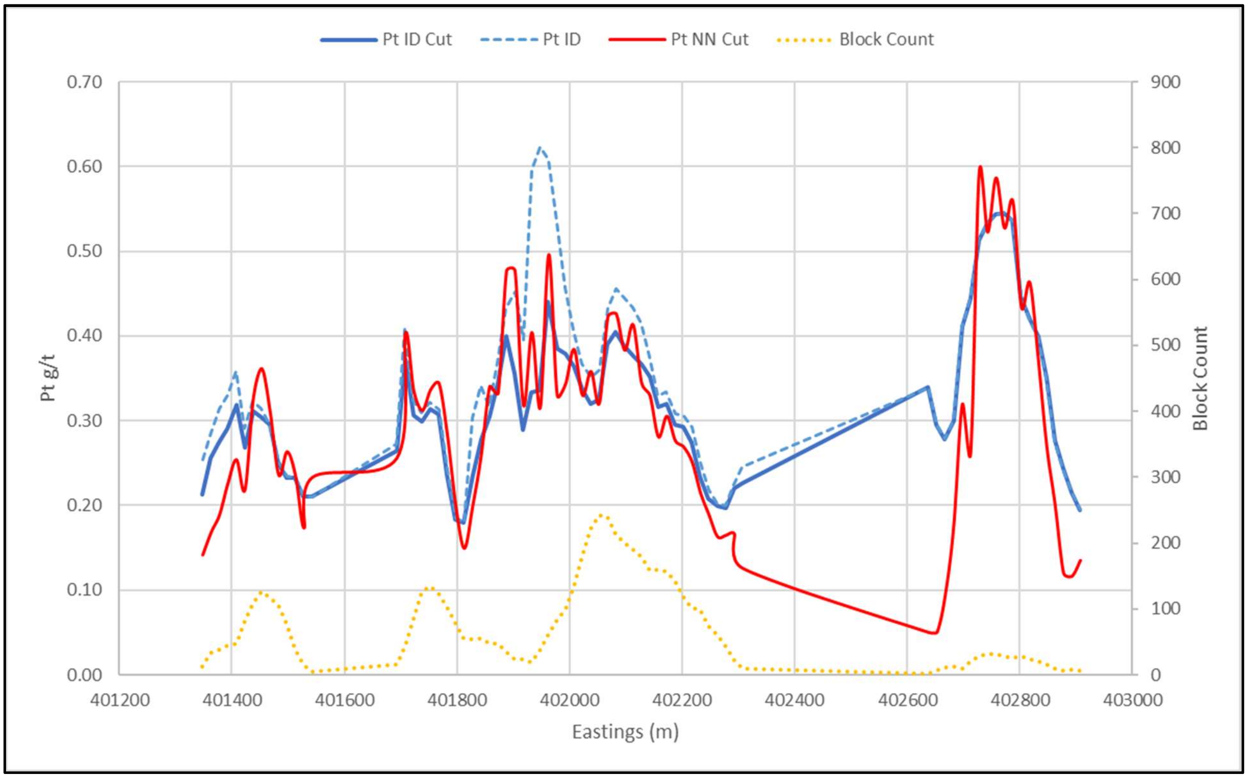


Figure 14-8 Esbarro Deposit Swath Plot of Palladium ID2 and NN Models by Eastings

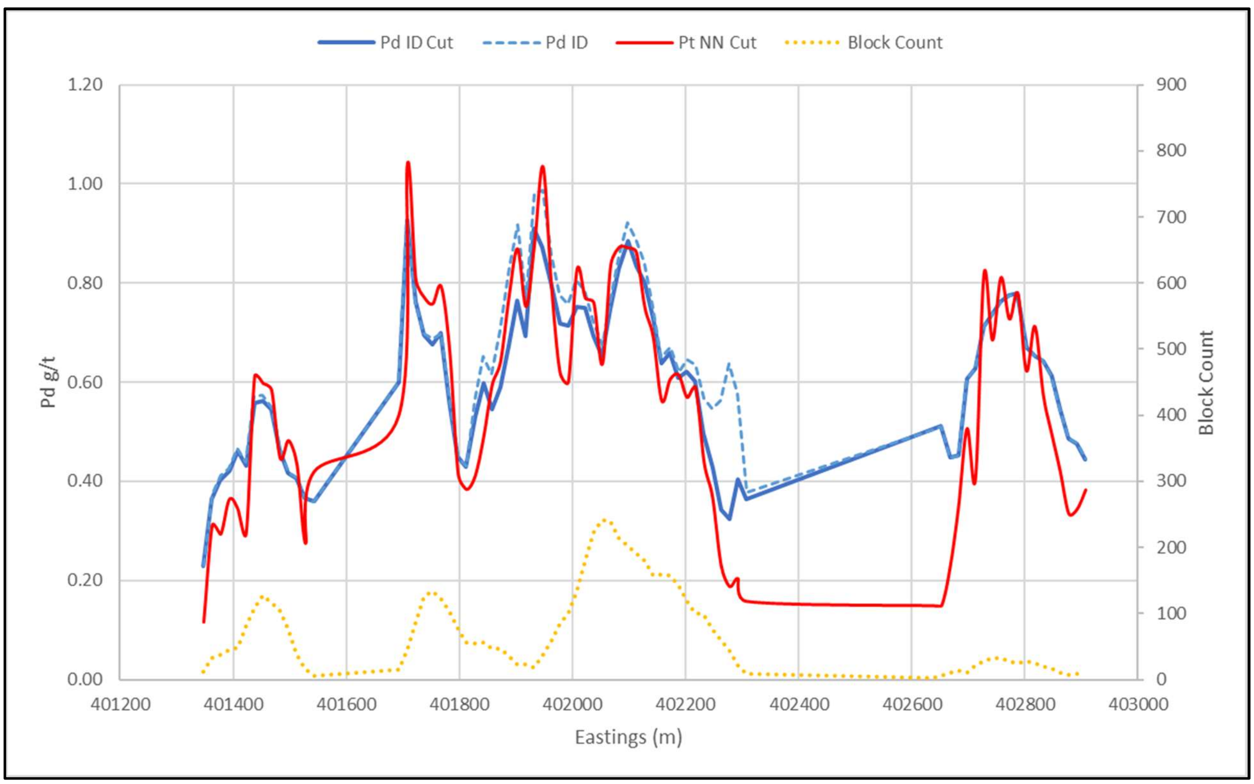
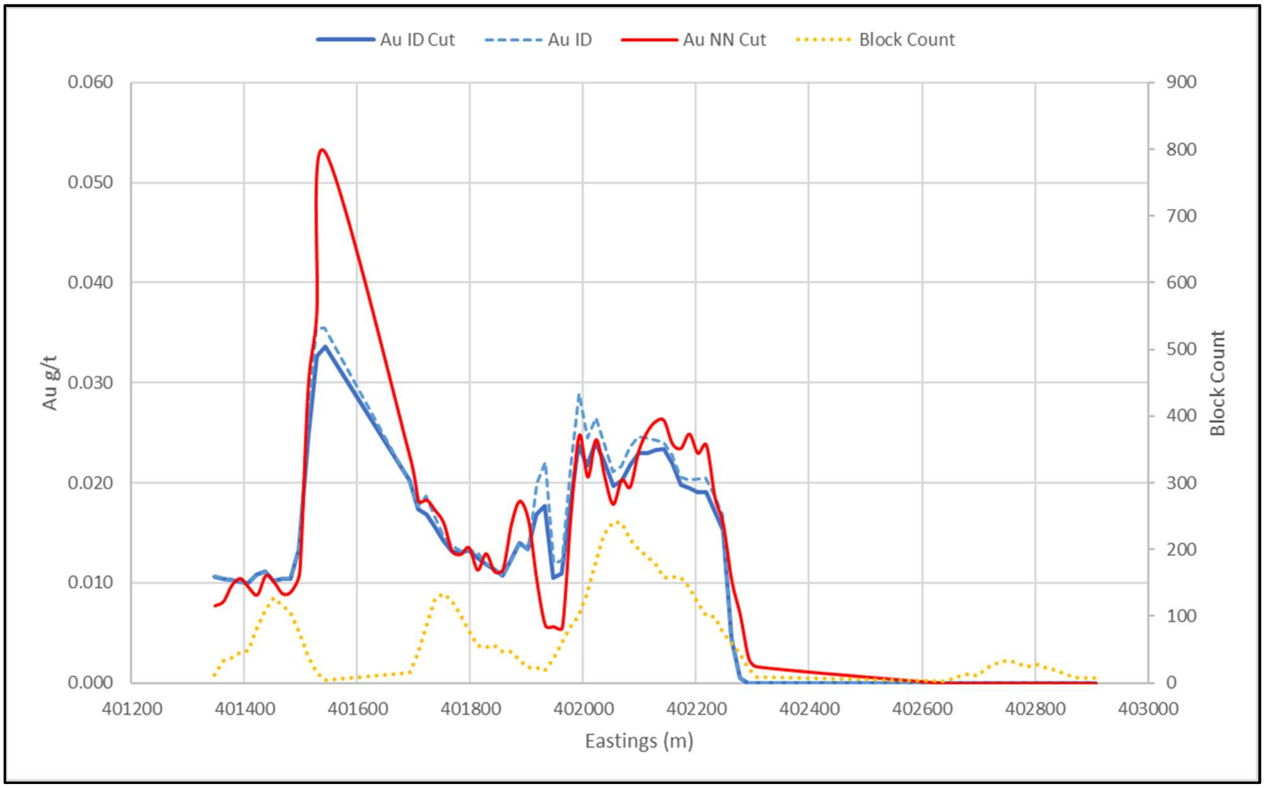


Figure 14-9 Esbarro Deposit Swath Plot of Gold ID2 and NN Models by Eastings



14.11 Resource Classification

The mineral resources for the Santo Amaro, Curiu, Esbarro, Cedro and Trapia Deposits within the Pedra Branca Project were classified in accordance with the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014). The classification parameters are defined relative to the distance between the PGE+Au sample data and are intended to encompass zones of reasonably continuous mineralization that exhibit the desired degree of confidence. These parameters are based on visual observations and statistical studies. Classification parameters are based primarily on the nature of the distribution of platinum, palladium and gold data as these elements are the main contributor to the relative value of the deposits.

The following criteria were used to define resources in the Inferred category. At this stage of project evaluation, the data only supports resources in the inferred category. There are no mineral resources included in the Indicated or Measured categories.

14.11.1 Inferred Mineral Resources

Mineral resources in the Inferred category include model blocks that are located within a maximum distance of 150 m from a drill hole.

CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) define a mineral resource as:

“[A] concentration or occurrence of solid material of economic interest, in or on the Earth’s crust in such form, grade or quality and quantity, that there are reasonable prospects for eventual economic extraction.

The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

The "reasonable prospects for eventual economic extraction" requirement generally implies that quantity and grade estimates meet certain economic thresholds and that mineral resources are reported at an appropriate cut-off grade that considers extraction scenarios and processing recovery.

In the areas assigned to Inferred Mineral Resources, all blocks above cut-off were selected with the use of a pit shell.

Pit shells were generated for each of the 5PB Deposits using palladium price of $1000/ounce, platinum price of $860/ounce and gold price of $1250/ ounce, $1.50/tonne operating costs (ore and waste), $13.50/tonne milling and G+A costs and recoveries of 68% for Pd, 67% for Pt and 40% for Au.

The distribution of the Inferred mineral resource within the pitshells are shown in a series of section viewpoints in Figure 14-10 to Figure 14-14.

Higher levels of classification for the 5PBE Deposits could be considered when there is

- detailed modelling of the geology and structural influences on mineralization,
- increased drill density at some of the deposits such as Santo Amaro, Cedro and Trapia,
- a full database check of all assay data back to the assay certificates for all the 5PB Deposit areas,
- more drill holes with downhole survey information,
- resurvey of all collar locations,
- checks on the bulk density data and
- acceptance of the Applications for Extension on the Exploration Licenses for parts of Trapia, Cedro and Santo Amaro Deposits.

There are no known factors related to environmental, permitting, legal, title, taxation, socio-economic, marketing, or political issues which could materially affect the mineral resource. Resources in the Inferred category have a lower level of confidence than that applying to Indicated resources and, although there is sufficient evidence to imply geologic grade and continuity, these characteristics cannot be verified based on the current data. It is reasonably expected that the majority of Inferred mineral resources could be upgraded to Indicated Mineral Resources with continued exploration.

Table 14-8 Estimate of Inferred Mineral Resource reported at 0.65 gpt PGE+Au Cut-off

Zone	Oxidation	Tonnes	Pt g/t	Pd g/t	Au g/t	PGE+Au g/t	Pt Oz	Pd Oz	Au Oz	PGE+Au Oz
Santo Amaro	Oxide	400,000	0.66	0.71	0.02	1.38	9,000	10,000	-	19,000
	Transition	2,000,000	0.43	0.71	0.02	1.15	27,000	45,000	1,000	73,000
	Sulphide	2,900,000	0.48	0.70	0.01	1.19	44,000	65,000	1,000	110,000
	All	5,300,000	0.47	0.71	0.02	1.19	80,000	120,000	3,000	203,000
Curiu	Oxide	1,000,000	0.88	1.28	0.07	2.23	29,000	43,000	2,000	74,000
	Transition	300,000	0.54	1.04	0.05	1.62	5,000	10,000	-	15,000
	Sulphide	300,000	0.38	0.73	0.05	1.16	3,000	6,000	-	9,000
	All	1,600,000	0.73	1.14	0.06	1.93	38,000	59,000	3,000	100,000
Esbarro	Oxide	4,600,000	0.43	0.84	0.02	1.29	65,000	125,000	3,000	193,000
	Transition	2,400,000	0.35	0.79	0.02	1.15	26,000	60,000	1,000	87,000
	Sulphide	2,900,000	0.35	0.84	0.02	1.21	33,000	79,000	1,000	113,000
	All	9,900,000	0.39	0.83	0.02	1.23	124,000	264,000	6,000	394,000
Cedro	Oxide	1,700,000	0.43	0.78	0.01	1.22	24,000	43,000	1,000	68,000
	Transition	300,000	0.30	0.60	0.01	0.91	3,000	5,000	-	8,000
	Sulphide	2,300,000	0.36	0.65	0.02	1.03	26,000	48,000	2,000	76,000
	All	4,200,000	0.38	0.70	0.02	1.10	52,000	96,000	3,000	151,000
Trapia	Oxide	600,000	0.43	0.48	0.02	0.93	8,000	9,000	-	17,000
	Transition	500,000	0.32	0.58	0.03	0.93	5,000	9,000	1,000	15,000
	Sulphide	5,100,000	0.37	0.74	0.03	1.15	61,000	122,000	5,000	188,000
	All	6,200,000	0.37	0.71	0.03	1.11	73,000	140,000	6,000	219,000
All Zones	Oxide	8,400,000	0.50	0.85	0.02	1.37	135,000	230,000	6,000	371,000
	Transition	5,400,000	0.38	0.74	0.02	1.15	66,000	129,000	3,000	198,000
	Sulphide	13,400,000	0.39	0.74	0.02	1.15	167,000	320,000	9,000	496,000
	All	27,200,000	0.42	0.77	0.02	1.22	367,000	679,000	21,000	1,067,000

Notes:

1. *Resources are reported using a PGE+Au cut-off of 0.65 gpt*
2. *Only blocks within a pitshell are reported as Mineral Resources*
3. *Prices used were Pd=US$1000/ounce, Pt=US$860/ounce, Au=US$1250/ ounce, operating costs (ore and waste)=US$1.50/tonne, G+A and milling=US$13.50/tonne*
4. *Recoveries used were 68% for Pd, 67% for Pt and 40% for Au*
5. *PGE+Au grade = Pt g/t + Pd g.t + Au g/t*
6. *Mineral resources are not mineral reserves because the economic viability has not been demonstrated.*

Figure 14-10 Santo Amaro, Section 1100SA with Mineralization Shell, PGE+Au Block Grades and Pitshell

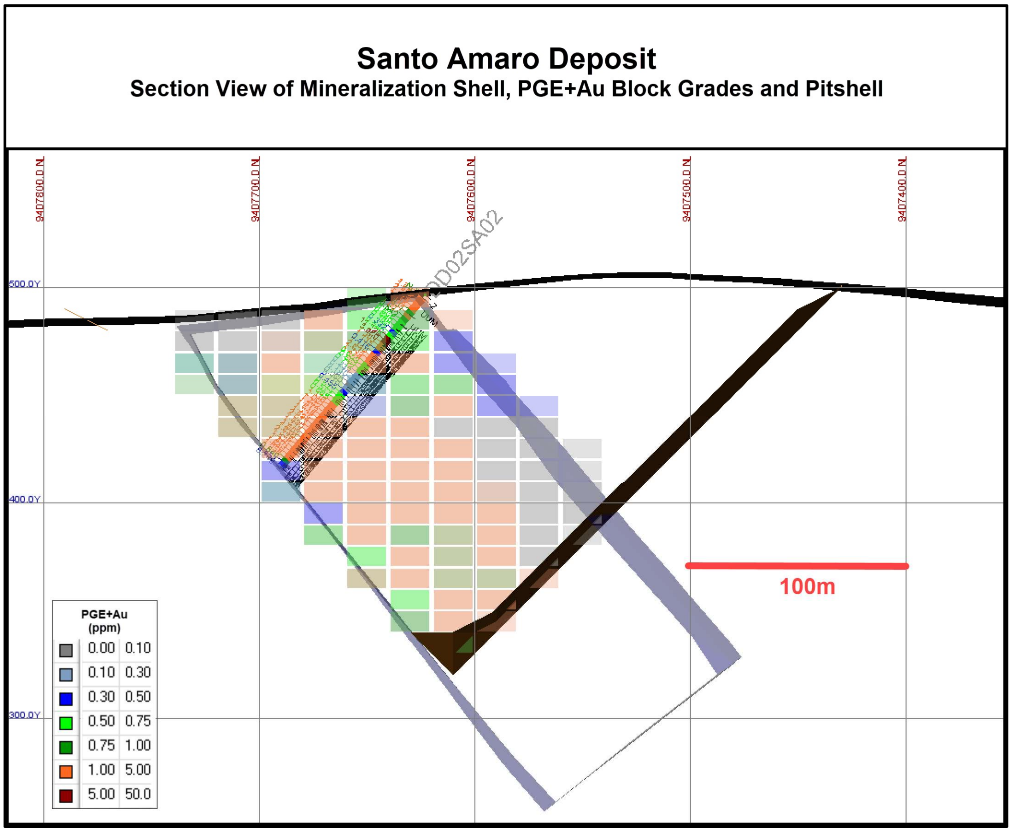


Figure 14-11 Curiu, Section 1100CR with Mineralization Shell, PGE+Au Block Grades and Pitshell

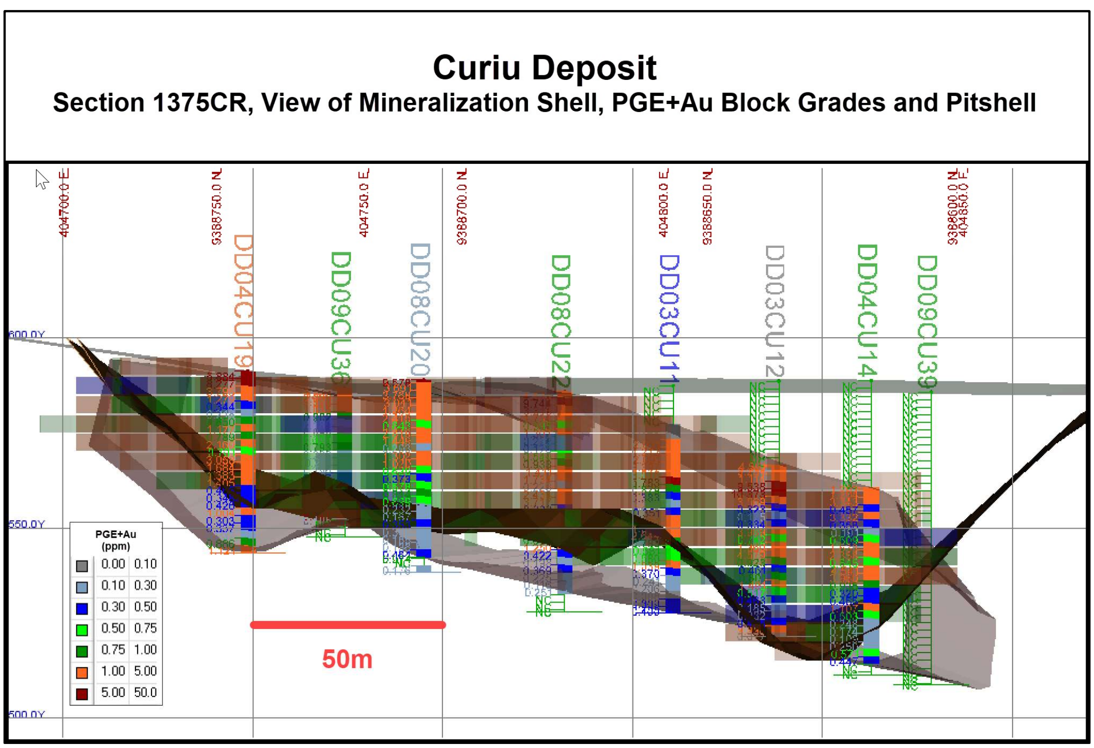


Figure 14-12 Esbarro, Section 1375ES with Mineralization Shell, PGE+Au Block Grades and Pitshell

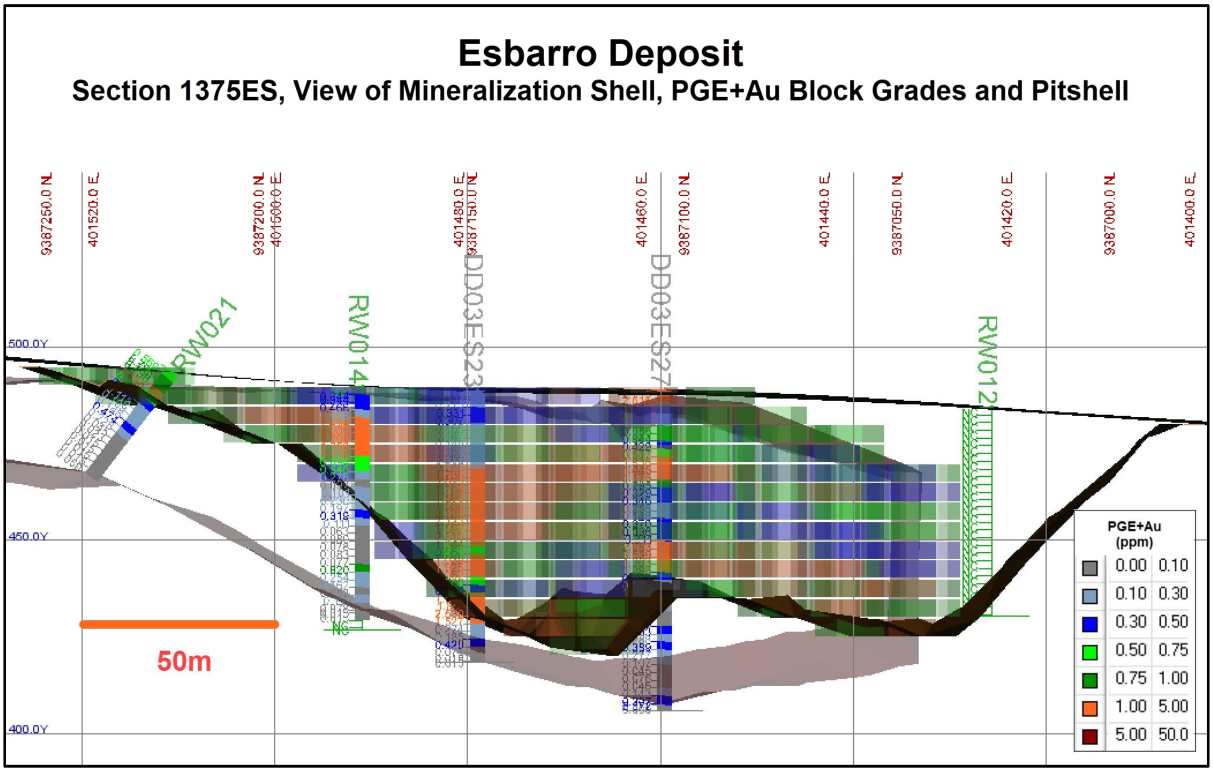


Figure 14-13 Cedro, Section 2250CD with Mineralization Shell, PGE+Au Block Grades and Pitshell

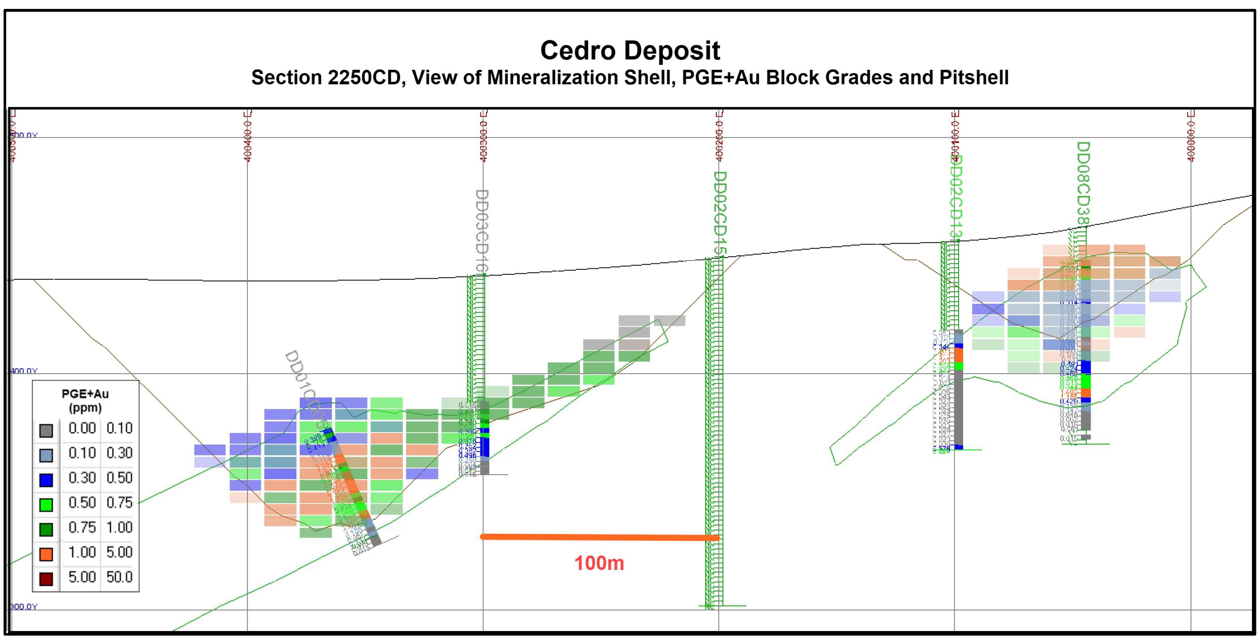
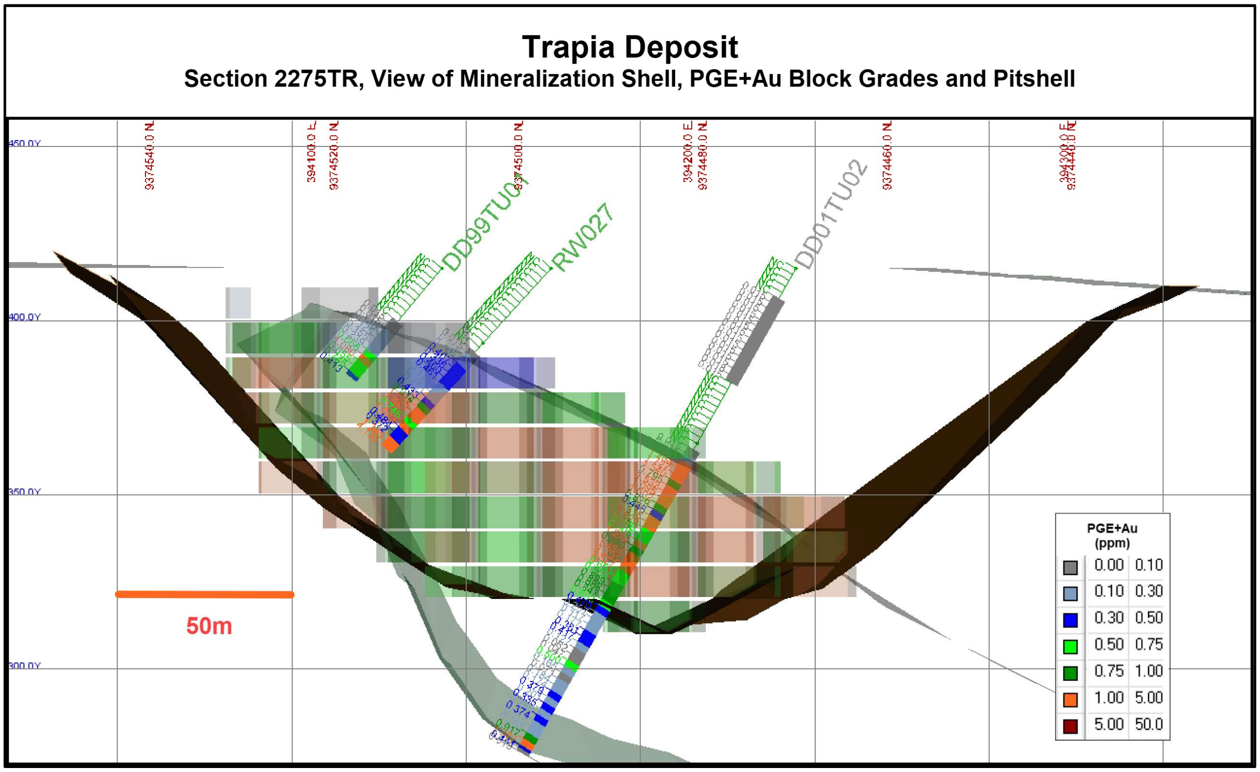


Figure 14-14 Trapia, Section 2275TR with Mineralization Shell, PGE+Au Block Grades and Pitshell



14.12 Sensitivity of Mineral Resources

The sensitivity of mineral resources is demonstrated by listing resources at a series of cut-off thresholds as shown in Table 14-9.

Table 14-9 Inferred Mineral Resources reported at Additional PGE+Au Grade Cut-offs for Comparative and Sensitivity Purposes

Zone	Cut-off PGE+Au	Tonnes	Pt g/t	Pd g/t	Au g/t	PGE+Au g/t	Pt Oz	Pd Oz	Au Oz	PGE+Au Oz
Santo Amaro	0.25	7,800,000	0.38	0.56	0.01	0.96	96,000	142,000	3,000	241,000
Curiu	0.25	1,900,000	0.64	1.01	0.06	1.70	39,000	62,000	3,000	104,000
Esbarro	0.25	14,000,000	0.33	0.67	0.02	1.02	148,000	301,000	7,000	456,000
Cedro	0.25	7,300,000	0.29	0.51	0.02	0.82	68,000	121,000	4,000	193,000
Trapia	0.25	7,700,000	0.33	0.62	0.03	0.98	82,000	155,000	7,000	244,000
All Zones	0.25	38,700,000	0.36	0.65	0.02	1.02	433,000	781,000	24,000	1,238,000
Santo Amaro	0.50	6,400,000	0.43	0.64	0.01	1.09	89,000	132,000	3,000	224,000
Curiu	0.50	1,800,000	0.68	1.07	0.06	1.80	39,000	61,000	3,000	103,000
Esbarro	0.50	11,900,000	0.36	0.75	0.02	1.13	137,000	286,000	7,000	430,000
Cedro	0.50	5,000,000	0.36	0.65	0.02	1.02	58,000	105,000	3,000	166,000
Trapia	0.50	7,000,000	0.35	0.67	0.03	1.05	78,000	149,000	7,000	234,000
All Zones	0.50	32,100,000	0.39	0.71	0.02	1.12	401,000	733,000	23,000	1,157,000
Santo Amaro	0.75	4,700,000	0.49	0.74	0.02	1.25	75,000	113,000	2,000	190,000
Curiu	0.75	1,500,000	0.78	1.22	0.06	2.06	37,000	57,000	3,000	97,000
Esbarro	0.75	8,400,000	0.42	0.90	0.02	1.33	112,000	241,000	5,000	358,000
Cedro	0.75	3,600,000	0.41	0.75	0.02	1.18	47,000	86,000	2,000	135,000
Trapia	0.75	5,400,000	0.39	0.74	0.03	1.16	68,000	129,000	6,000	203,000
All Zones	0.75	23,600,000	0.45	0.83	0.02	1.30	339,000	626,000	18,000	983,000
Santo Amaro	1.00	3,300,000	0.56	0.84	0.02	1.41	59,000	90,000	2,000	151,000
Curiu	1.00	1,200,000	0.88	1.36	0.07	2.31	34,000	53,000	3,000	90,000
Esbarro	1.00	5,100,000	0.50	1.11	0.02	1.63	82,000	183,000	4,000	269,000
Cedro	1.00	2,000,000	0.47	0.93	0.02	1.42	30,000	59,000	1,000	90,000
Trapia	1.00	3,100,000	0.46	0.89	0.04	1.39	45,000	88,000	4,000	137,000
All Zones	1.00	14,700,000	0.53	1.00	0.03	1.56	250,000	473,000	14,000	737,000

14.13 Summary and Conclusions

Based on the current level of exploration, the Pedra Branca Property contains an Inferred Mineral Resource of 27.2 Mt at a grade of 1.22 gpt PGE+Au, 0.42 gpt Pt, 0.77 gpt Pd and 0.02 gpt Au reported at a 0.65 gpt PGE+Au cut-off for a total of 367,000 oz of Pt, 679,000 oz of Pd, 21,000 oz of Au and 1,067,000 oz of PGE+Au.

To advance the project and increase the confidence in the mineral resource estimation, the following steps are recommended:

- Develop a geology and structural model for each deposit area of Santo Amaro, Curiu, Esbarro, Cedro and Trapia.
- Complete an audit of the drill hole database on all data, including QAQC data and make detection limits used for all elements consistent.
- Collar locations be surveyed for all drill holes, so collar elevations are confirmed.
- Gravity survey may assist in identifying areas underlain by chromitite units.
- Unifying all located data into WGS84 datum.
- Downhole survey all future drill holes.
- Continue to gather more bulk density determinations and verify the data acquired to date through third party validation.
- Measure magnetic susceptibility measurements during the logging process.
- QAQC data should be re-charted after the full database audit.
- Study for bias in 1987 drill holes in the Esbarro deposit as 40 of 91 holes are historic and no core available for assay verification. Can compare results to 1999 and 2000's DDHs that were reassayed by Amplat to check for bias and use NN model and compare block values.

15. Adjacent Properties

Approximately 10 km to the north and west of the Pedra Branca licences, Jaguar Mining Inc. ("Jaguar") holds 24 exploration licences over 38,926 ha covering a 38-km section of a regional shear zone in the Tróia Greenstone Belt (Jaguar, 2018b). Jaguar is targeting gold mineralisation, with secondary PGMs, Cu, Ni, Co and V.

There are two quarries bordering the Pedra Branca licences that are currently mining dimension stone.

16. Other Relevant Data and Information

This section is not applicable to the project

17. Interpretation and Conclusions

17.1 Mineral Resource Estimation

Based upon the review of the overall geology, exploration history, diamond drilling and sampling at the Pedra Branca Project, LGGC has completed a mineral resource estimation for the Santo Amaro, Curiu, Esbarro, Cedro and Trapia Deposits.

The block models for each 5PB deposit were classified into the Inferred Mineral Resources category.

Higher levels of classification for the 5PBE Deposits could be considered when there is

- detailed modelling of the geology and structural influences on mineralization,
- increased drill density at some of the deposits such as Santo Amaro, Cedro and Trapia,
- a full database check of all assay data back to the assay certificates for all the 5PB Deposit areas,
- more drill holes with downhole survey information,
- resurvey of all collar locations,
- checks on the bulk density data and
- acceptance of the Applications for Extension on the Exploration Licenses for parts of Trapia, Cedro and Santo Amaro Deposits.

There are no known factors related to environmental, permitting, legal, title, taxation, socio-economic, marketing, or political issues which could materially affect the mineral resource. Resources in the Inferred category have a lower level of confidence than that applying to Indicated resources and, although there is sufficient evidence to imply geologic grade and continuity, these characteristics cannot be verified based on the current data. It is reasonably expected that the majority of Inferred mineral resources could be upgraded to Indicated Mineral Resources with continued exploration.

The Pedra Branca Property contains an Inferred Mineral Resource of 27.2 Mt at a grade of 1.22 gpt PGE+Au, 0.42 gpt Pt, 0.77 gpt Pd and 0.02 gpt Au reported at a 0.65 gpt PGE+Au cut-off for a total of 367,000 oz of Pt, 679,000 oz of Pd, 21,000 oz of Au and 1,067,000 oz of PGE+Au. Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

17.2 Metallurgy

Ball Mill Work Index measurements were made from four composites of different ore types. The mineral hardness is considered moderately hard to hard, ranging from 16 to 10 kWh/tonne.

Earlier flotation test work was performed at a P60 of 75 microns. Later test work seems to indicate that a finer grind may benefit the metallurgical response from weathered material.

Talc can be kept under control, either by the addition of CMC as talc depressant in flotation, or by a talc pre-float. The Pedra Branca mineralized material does not seem to respond well to the standard flotation procedure for Bushveld Merensky ore-types. Pt and Pd minerals each seem to react differently with collector dosage and type. A staged collector dosage will likely be more beneficial to flotation response. Higher-grade and less disseminated mineralized material generate better metallurgical results, where Curiu mineralized material seems to generate a better metallurgical response than Esbarro mineralized material.

The degree of alteration seems to produce different metallurgical responses depending on the sample taken. For example, the less altered Curiu material tested in 2005 produced higher concentrate grades compared to the higher-grade Esbarro sample. Good PGM concentrate grades are achievable from the weathered material tested in 2019, at chromite grades between 3 and 5 % in the PGM product.

“Rock” material may be upgradeable by magnetic separation to allow processing a higher feed grade in the flotation process.

18. Recommendations

Future work initiatives at the Pedra Branca Project will focus on three primary objectives: completing a comprehensive database verification program, expanding and upgrading the reported 43-101 Inferred resource, and advancing multiple property-wide grassroots exploration targets to drill-ready stage. These objectives will be executed in two Phases over approximately two years. Specific recommendations relating to the Phases aimed at advancing the Project are as follows:

Phase 1 (3-4 months):

- Full verification of the Project databases, including: drillhole assay data and collar locations, surface geochemical data, airborne and ground geophysical data, and GIS workspaces.
- Initiate recommended metallurgical test work (scope of work will span Phase 1 and portion of Phase 2).
- Purchase of property-wide high-res (30 cm) digital satellite imagery (WorldView-2 and WorldView-3).
- Acquisition of property-wide LiDAR data to corroborate and expand upon understanding of surface lineaments and associated subsurface geological structures.
- Develop robust geological and structural models each of the five deposit areas (Santo Amaro, Curiu, Esbarro, Cedro and Trapia).
- Submit representative pulps from each of the five deposits to be re-assayed for rhodium (Rh).
- Execute targeted reconnaissance soil geochemistry programs over high priority greenfields exploration targets.

Phase 2 (1-2 years):

- Design and execute resource step-out and delineation drill programs following the successful completion and interpretation of Phase 1 programs, with priority given to the Santo Amaro (1,500 m) and Trapia (3,000 m) PGM deposits.
- Complete recommended metallurgical test work to a level which would support a PFS.
- Conduct follow-up and infill soil geochemistry (incl. geological mapping and prospecting) on prospective anomalies extended or discovered in Phase 1.
- Extend regional geochemical, prospecting and mapping coverage over prospective untested ground and airborne magnetic anomalies.
- Extend ground magnetic geophysical coverage to delineate the extent and scale of unconstrained targets.

- Synthesize and interpret the results of Phase 1 and Phase 2 for inaugural drill campaigns of high priority exploration targets (est. 10,000 m, contingent on funds).

- Pending successful implementation and positive results of Phase 1 and Phase 2, conduct recalculation of NI 43-101 resource estimate.

Table 18-1 Estimated Cost for Phase 1 and Phase 2 exploration programs at the Pedra Branca Project

Item	Amount	Unit	Unit Cost (CAD)	Cost (CAD)
Phase 1				
Database verification	30	days	$1,000	$30,000
Metallurgical test work (initiation)				$150,000
WV-2, WV-3 satellite imagery				$65,000
Property-wide LiDAR data				$50,000
Geological and structural models	30	days	$1,000	$30,000
Rhodium re-assay of pulps	40	samples	$45	$1,800
Targeted soil geochemistry	2,000	samples	$50	$100,000
			Sub-total	**$426,800**
Phase 2				
Resource step-out and delineation drilling	10,000	meters	$150	$1,500,000
Metallurgical test work (completion)				$250,000
Infill soil geochemistry on Phase 1 anomalies	2000	samples	$50	$100,000
Regional soil geochemistry extension	10,000	samples	$50	$500,000
Ground geophysics (magnetics)	500	line-km	$225	$112,500
Greenfields exploration drilling	10,000	meters	$150	$1,500,000
Recalculation of NI 43-101 resource				$30,000
			Sub-total	**$3,992,500**
			TOTAL	**$4,419,300**

19. References

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Visconti, Luiz Fernando, Visconti Law Firm, Sao Paulo, Brazil, August 9th, 2019, "*Project White: Legal Opinion on Mining*"

20. Appendix 1

List of Drillholes in Santo Amaro, Curiu, Esbarro, Cedro and Trapia Deposits

HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	AREA	Area Name	Year	Company
DD02SA01	409165	9407666	496.5	82.0	SA	Santo Amaro	2002	Solitario
DD02SA02	409207	9407623	496.6	110.0	SA	Santo Amaro	2002	Solitario
DD02SA03	409326	9407764	464.8	94.3	SA	Santo Amaro	2002	Solitario
DD02SA04	409024	9407895	460.1	64.5	SA	Santo Amaro	2002	Solitario
DD02SA05	409254	9407573	496.9	49.2	SA	Santo Amaro	2002	Solitario
DD02SA06	409300	9407590	490.0	87.8	SA	Santo Amaro	2002	Solitario
DD02SA07	409296	9407530	496.0	75.2	SA	Santo Amaro	2002	Solitario
DD04SA08	409256	9407593	494.1	155.9	SA	Santo Amaro	2004	Solitario
DD04SA09	409351	9407567	486.9	152.0	SA	Santo Amaro	2004	Solitario
DD07SA10	409300	9407980	466.3	122.1	SA	Santo Amaro	2007	Pedra Branca
DD07SA11	409680	9407760	435.6	118.8	SA	Santo Amaro	2007	Pedra Branca
DD07SA12	409300	9407400	484.7	142.0	SA	Santo Amaro	2007	Pedra Branca
DD01CU01	404724	9388637	601.6	38.5	CU	Curiu	2001	Solitario
RW025	404791	9388635	590.9	86.5	CU	Curiu	2001	Rockwell
RW026	404846	9388671	580.2	60.0	CU	Curiu	2001	Rockwell
DD03CU02	404851	9388635	583.7	65.0	CU	Curiu	2003	Solitario
DD03CU03	404649	9388538	623.4	36.3	CU	Curiu	2003	Solitario
DD03CU04	404674	9388650	611.5	15.8	CU	Curiu	2003	Solitario
DD03CU05	404750	9388598	600.3	41.5	CU	Curiu	2003	Solitario
DD03CU06	404608	9388519	628.6	45.3	CU	Curiu	2003	Solitario
DD03CU07	404789	9388632	591.4	63.6	CU	Curiu	2003	Solitario
DD03CU08	404753	9388624	597.3	45.2	CU	Curiu	2003	Solitario
DD03CU09	404774	9388613	595.1	60.0	CU	Curiu	2003	Solitario
DD03CU10	404801	9388609	592.0	73.0	CU	Curiu	2003	Solitario
DD03CU11	404801	9388658	587.4	59.9	CU	Curiu	2003	Solitario
DD03CU12	404812	9388631	588.7	67.2	CU	Curiu	2003	Solitario
DD03CU13	404754	9388647	594.6	50.1	CU	Curiu	2003	Solitario
DD04CU14	404826	9388611	588.7	77.3	CU	Curiu	2004	Solitario
DD04CU15	404718	9388662	599.2	42.0	CU	Curiu	2004	Solitario
DD04CU16	404675	9388675	606.5	16.5	CU	Curiu	2004	Solitario
DD04CU17	404647	9388702	605.2	15.0	CU	Curiu	2004	Solitario
DD04CU18	404750	9388671	592.8	50.8	CU	Curiu	2004	Solitario
DD04CU19	404722	9388738	591.3	47.8	CU	Curiu	2004	Solitario
DD08CU20	404750	9388701	589.0	50.6	CU	Curiu	2008	Pedra Branca
DD08CU21	404825	9388701	578.5	64.9	CU	Curiu	2008	Pedra Branca
DD08CU22	404789	9388685	585.9	57.9	CU	Curiu	2008	Pedra Branca
DD08CU23	404732	9388614	602.3	38.5	CU	Curiu	2008	Pedra Branca
DD08CU24	404695	9388627	609.7	27.5	CU	Curiu	2008	Pedra Branca
DD08CU25	404649	9388565	623.9	51.0	CU	Curiu	2008	Pedra Branca
DD08CU26	404566	9388488	632.0	39.0	CU	Curiu	2008	Pedra Branca
DD08CU27	404553	9388520	635.7	31.0	CU	Curiu	2008	Pedra Branca
DD09CU28	404528	9388502	637.5	43.6	CU	Curiu	2009	Pedra Branca
DD09CU29	404583	9388520	631.8	48.5	CU	Curiu	2009	Pedra Branca
DD09CU30	404613	9388564	629.0	45.0	CU	Curiu	2009	Pedra Branca
DD09CU31	404692	9388565	614.7	47.5	CU	Curiu	2009	Pedra Branca
DD09CU32	404694	9388598	612.7	44.0	CU	Curiu	2009	Pedra Branca
DD09CU33	404630	9388651	618.3	55.5	CU	Curiu	2009	Pedra Branca
DD09CU34	404711	9388701	595.2	53.7	CU	Curiu	2009	Pedra Branca
DD09CU35	404789	9388729	580.0	61.5	CU	Curiu	2009	Pedra Branca
DD09CU36	404750	9388728	586.7	39.0	CU	Curiu	2009	Pedra Branca

HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	AREA	Area Name	Year	Company
DD09CU37	404789	9388704	582.7	53.5	CU	Curiu	2009	Pedra Branca
DD09CU38	404825	9388671	583.0	49.5	CU	Curiu	2009	Pedra Branca
DD09CU39	404851	9388611	585.8	77.0	CU	Curiu	2009	Pedra Branca
DD09CU40	404800	9388585	593.8	82.0	CU	Curiu	2009	Pedra Branca
DD09CU41	404620	9388610	625.0	103.0	CU	Curiu	2009	Pedra Branca
DD09CU42	404517	9388802	618.4	77.0	CU	Curiu	2009	Pedra Branca
DD10CU43	404668	9388484	619.2	32.2	CU	Curiu	2010	Pedra Branca
DD10CU44	404835	9388573	590.1	69.6	CU	Curiu	2010	Pedra Branca
DD10CU45	404771	9388573	598.9	60.5	CU	Curiu	2010	Pedra Branca
DD10CU46	404798	9388482	600.8	69.4	CU	Curiu	2010	Pedra Branca
DD10CU47	404656	9388786	601.6	68.1	CU	Curiu	2010	Pedra Branca
DD10CU48	404865	9388728	572.5	60.9	CU	Curiu	2010	Pedra Branca
PBE01	402172	9386854	544.2	50.0	ES	Esbarro	1987	Rio Tinto
PBE02	402168	9386880	545.6	50.1	ES	Esbarro	1987	Rio Tinto
PBE03	402157	9386953	541.4	50.2	ES	Esbarro	1987	Rio Tinto
PBE04	402162	9386928	543.9	53.0	ES	Esbarro	1987	Rio Tinto
PBE05	402164	9386903	545.6	103.5	ES	Esbarro	1987	Rio Tinto
PBE06	402115	9386896	539.6	103.7	ES	Esbarro	1987	Rio Tinto
PBE07	402164	9386915	545.1	144.3	ES	Esbarro	1987	Rio Tinto
PBE08	402169	9386877	545.5	133.2	ES	Esbarro	1987	Rio Tinto
PBE09	402008	9387113	517.9	44.2	ES	Esbarro	1987	Rio Tinto
PBE10	401980	9387074	514.8	39.3	ES	Esbarro	1987	Rio Tinto
PBE11	402205	9386873	547.2	92.1	ES	Esbarro	1987	Rio Tinto
PBE12	401948	9387033	511.3	43.6	ES	Esbarro	1987	Rio Tinto
PBE13	401919	9386994	508.5	54.9	ES	Esbarro	1987	Rio Tinto
PBE14	401963	9387053	513.0	36.6	ES	Esbarro	1987	Rio Tinto
PBE15	401827	9387217	517.6	20.4	ES	Esbarro	1987	Rio Tinto
PBE16	401795	9387181	510.3	34.7	ES	Esbarro	1987	Rio Tinto
PBE17	401767	9387137	503.5	37.5	ES	Esbarro	1987	Rio Tinto
PBE18	401736	9387097	497.1	36.7	ES	Esbarro	1987	Rio Tinto
PBE19	401907	9387158	519.6	33.5	ES	Esbarro	1987	Rio Tinto
PBE20	401877	9387118	514.7	42.3	ES	Esbarro	1987	Rio Tinto
PBE21	401846	9387077	508.7	42.0	ES	Esbarro	1987	Rio Tinto
PBE22	401817	9387036	502.1	50.2	ES	Esbarro	1987	Rio Tinto
PBE23	402074	9387033	523.5	77.3	ES	Esbarro	1987	Rio Tinto
PBE24	402044	9386993	524.0	88.5	ES	Esbarro	1987	Rio Tinto
PBE25	402014	9386953	522.2	77.8	ES	Esbarro	1987	Rio Tinto
PBE26	401985	9386913	518.3	78.4	ES	Esbarro	1987	Rio Tinto
PBE27	402154	9386973	539.4	84.6	ES	Esbarro	1987	Rio Tinto
PBE28	402125	9386933	539.9	98.4	ES	Esbarro	1987	Rio Tinto
PBE29	402094	9386893	535.9	101.0	ES	Esbarro	1987	Rio Tinto
PBE30	402067	9386855	529.1	101.9	ES	Esbarro	1987	Rio Tinto
PBE31	402233	9386913	548.6	78.7	ES	Esbarro	1987	Rio Tinto
PBE32	402178	9386837	542.9	87.6	ES	Esbarro	1987	Rio Tinto
PBE33	402147	9386799	536.3	94.2	ES	Esbarro	1987	Rio Tinto
PBE34	402245	9386843	546.6	66.5	ES	Esbarro	1987	Rio Tinto
PBE35	401881	9386942	506.0	70.6	ES	Esbarro	1987	Rio Tinto
PBE36	402883	9386830	604.8	18.3	ES	Esbarro	1987	Rio Tinto
PBE37	402776	9386870	604.9	20.4	ES	Esbarro	1987	Rio Tinto
PBE38	402784	9386817	598.9	12.7	ES	Esbarro	1987	Rio Tinto
PBE39	402675	9386869	597.8	8.3	ES	Esbarro	1987	Rio Tinto
PBE40	402377	9387003	560.6	4.2	ES	Esbarro	1987	Rio Tinto
PBE41	402769	9386919	609.4	16.8	ES	Esbarro	1987	Rio Tinto
PBE42	401829	9386873	500.6	44.5	ES	Esbarro	1987	Rio Tinto
DD99ES01	401959	9386883	515.7	78.9	ES	Esbarro	1999	Altoro
DD99ES02	402109	9387071	523.6	56.8	ES	Esbarro	1999	Altoro

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DD99ES03	401789	9386998	497.4	65.9	ES	Esbarro	1999	Altoro
DD99ES04	401761	9386959	495.8	75.2	ES	Esbarro	1999	Altoro
DD99ES05	402040	9386825	525.1	103.0	ES	Esbarro	1999	Altoro
DD99ES06	402013	9386952	522.1	74.0	ES	Esbarro	1999	Altoro
DD99ES07	402007	9386794	518.5	50.1	ES	Esbarro	1999	Altoro
DD99ES08	401492	9387121	490.0	80.1	ES	Esbarro	1999	Altoro
RW001	401726	9386926	491.7	83.7	ES	Esbarro	2001	Rockwell
RW002	401791	9386930	498.8	85.0	ES	Esbarro	2001	Rockwell
RW003	401712	9386993	491.5	63.0	ES	Esbarro	2001	Rockwell
RW004	401456	9387066	487.9	81.0	ES	Esbarro	2001	Rockwell
RW005	401444	9387136	487.2	72.0	ES	Esbarro	2001	Rockwell
RW006	401525	9387078	491.4	93.0	ES	Esbarro	2001	Rockwell
RW007	401677	9387025	489.5	72.0	ES	Esbarro	2001	Rockwell
RW008	401642	9386987	486.2	57.0	ES	Esbarro	2001	Rockwell
RW009	401807	9386862	497.8	120.0	ES	Esbarro	2001	Rockwell
RW010	401883	9386802	501.3	16.3	ES	Esbarro	2001	Rockwell
RW011	401406	9387165	488.5	54.0	ES	Esbarro	2001	Rockwell
RW012	401424	9387028	484.5	54.1	ES	Esbarro	2001	Rockwell
RW013	401348	9387092	483.6	198.0	ES	Esbarro	2001	Rockwell
RW014	401482	9387181	489.8	63.0	ES	Esbarro	2001	Rockwell
RW015	401521	9387147	490.9	72.0	ES	Esbarro	2001	Rockwell
RW016	402871	9386754	594.7	45.0	ES	Esbarro	2001	Rockwell
RW017	402968	9386755	594.2	45.0	ES	Esbarro	2001	Rockwell
RW018	402769	9386786	594.9	16.6	ES	Esbarro	2001	Rockwell
RW019	402769	9386786	594.9	48.0	ES	Esbarro	2001	Rockwell
RW020	401551	9387186	493.6	54.0	ES	Esbarro	2001	Rockwell
RW021	401509	9387223	493.6	48.2	ES	Esbarro	2001	Rockwell
RW022	401468	9387253	496.9	48.0	ES	Esbarro	2001	Rockwell
RW023	401470	9387323	504.8	48.0	ES	Esbarro	2001	Rockwell
RW024	402085	9386737	522.2	76.5	ES	Esbarro	2001	Rockwell
DD03ES09	401720	9387028	492.6	81.5	ES	Esbarro	2003	Solitario
DD03ES10	401847	9386978	502.2	87.4	ES	Esbarro	2003	Solitario
DD03ES11	402053	9386920	529.2	92.5	ES	Esbarro	2003	Solitario
DD03ES12	402110	9386825	534.5	108.3	ES	Esbarro	2003	Solitario
DD03ES13	402031	9387049	518.3	69.3	ES	Esbarro	2003	Solitario
DD03ES14	401897	9386904	508.7	61.0	ES	Esbarro	2003	Solitario
DD03ES15	402135	9386865	540.8	107.1	ES	Esbarro	2003	Solitario
DD03ES16	402000	9386855	520.2	90.1	ES	Esbarro	2003	Solitario
DD03ES17	402029	9386885	523.7	96.7	ES	Esbarro	2003	Solitario
DD03ES18	402087	9386961	532.7	92.0	ES	Esbarro	2003	Solitario
DD03ES19	401937	9386936	512.1	65.0	ES	Esbarro	2003	Solitario
DD03ES20	401965	9386979	514.0	61.5	ES	Esbarro	2003	Solitario
DD03ES21	401994	9387012	516.2	55.6	ES	Esbarro	2003	Solitario
DD03ES22	401906	9387065	511.3	47.5	ES	Esbarro	2003	Solitario
DD03ES23	401478	9387150	488.8	70.4	ES	Esbarro	2003	Solitario
DD03ES24	401494	9387079	490.3	78.4	ES	Esbarro	2003	Solitario
DD03ES25	401407	9387134	486.7	47.3	ES	Esbarro	2003	Solitario
DD03ES26	401418	9387100	486.0	59.4	ES	Esbarro	2003	Solitario
DD03ES27	401466	9387102	488.9	83.2	ES	Esbarro	2003	Solitario
DD03ES28	401823	9386962	500.7	60.8	ES	Esbarro	2003	Solitario
DD03ES29	401810	9387106	507.0	47.5	ES	Esbarro	2003	Solitario
DD03ES30	401780	9387070	500.5	58.4	ES	Esbarro	2003	Solitario
DD03ES31	401761	9387066	498.0	58.2	ES	Esbarro	2003	Solitario
DD03ES32	401749	9386995	494.2	63.2	ES	Esbarro	2003	Solitario
DD03ES33	401867	9387013	504.9	50.4	ES	Esbarro	2003	Solitario
DD04ES34	402200	9386954	543.1	70.0	ES	Esbarro	2004	Solitario

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DD04ES35	402126	9387000	533.9	85.3	ES	Esbarro	2004	Solitario
DD04ES36	401727	9387167	500.7	33.0	ES	Esbarro	2004	Solitario
DD04ES37	401531	9387122	491.7	76.6	ES	Esbarro	2004	Solitario
DD04ES38	401439	9387183	489.6	51.2	ES	Esbarro	2004	Solitario
DD07ES39	402265	9387000	543.9	142.5	ES	Esbarro	2007	Pedra Branca
DD07ES40	402470	9387000	574.6	175.8	ES	Esbarro	2007	Pedra Branca
DD01CD01	399398	9386448	475.4	102.0	CD	Cedro	2001	Solitario
DD01CD02	399748	9386398	454.0	81.1	CD	Cedro	2001	Solitario
DD01CD03	400050	9387133	463.9	86.6	CD	Cedro	2001	Solitario
DD01CD04	400067	9387038	458.5	95.6	CD	Cedro	2001	Solitario
DD01CD05	400396	9387116	440.7	125.1	CD	Cedro	2001	Solitario
DD01CD06	400355	9387491	479.1	59.0	CD	Cedro	2001	Solitario
DD01CD07	400629	9387909	486.8	55.3	CD	Cedro	2001	Solitario
DD02CD08	399425	9386587	491.3	90.6	CD	Cedro	2002	Solitario
DD02CD09	400078	9386736	427.1	138.7	CD	Cedro	2002	Solitario
DD02CD10	400121	9386708	421.7	141.3	CD	Cedro	2002	Solitario
DD02CD11	400000	9387000	467.3	92.0	CD	Cedro	2002	Solitario
DD02CD12	400100	9387000	453.6	91.1	CD	Cedro	2002	Solitario
DD02CD13	400100	9387100	456.7	89.2	CD	Cedro	2002	Solitario
DD02CD14	400100	9387200	465.8	85.1	CD	Cedro	2002	Solitario
DD02CD15	400200	9387100	449.8	148.3	CD	Cedro	2002	Solitario
DD03CD16	400301	9387100	442.1	85.1	CD	Cedro	2003	Solitario
DD03CD17	400050	9386602	422.8	61.2	CD	Cedro	2003	Solitario
DD04CD18	400045	9386989	459.3	103.1	CD	Cedro	2004	Solitario
DD04CD19	400101	9387054	455.2	92.9	CD	Cedro	2004	Solitario
DD04CD20	400341	9387052	437.4	90.9	CD	Cedro	2004	Solitario
DD04CD21	400138	9386763	425.1	119.8	CD	Cedro	2004	Solitario
DD04CD22	400549	9387627	459.1	60.0	CD	Cedro	2004	Solitario
DD04CD23	399548	9386450	463.7	35.7	CD	Cedro	2004	Solitario
DD07CD24	400570	9387740	467.6	59.8	CD	Cedro	2007	Pedra Branca
DD07CD25	400520	9387560	457.1	50.8	CD	Cedro	2007	Pedra Branca
DD07CD26	400800	9387840	469.9	43.8	CD	Cedro	2007	Pedra Branca
DD07CD27	399560	9386950	487.7	75.8	CD	Cedro	2007	Pedra Branca
DD07CD28	399680	9387080	492.0	71.0	CD	Cedro	2007	Pedra Branca
DD07CD29	400070	9384610	525.3	76.3	CD	Cedro	2007	Pedra Branca
DD07CD30	399490	9386520	481.9	108.9	CD	Cedro	2007	Pedra Branca
DD07CD31	399630	9386010	407.4	110.3	CD	Cedro	2007	Pedra Branca
DD08CD32	400609	9388005	493.7	33.0	CD	Cedro	2008	Pedra Branca
DD08CD33	400533	9387881	481.3	65.0	CD	Cedro	2008	Pedra Branca
DD08CD34	400600	9387882	484.2	64.3	CD	Cedro	2008	Pedra Branca
DD08CD35	400585	9387803	475.4	64.5	CD	Cedro	2008	Pedra Branca
DD08CD36	400393	9387164	444.0	119.9	CD	Cedro	2008	Pedra Branca
DD08CD37	400000	9387132	473.1	69.0	CD	Cedro	2008	Pedra Branca
DD08CD38	400046	9387085	462.3	92.1	CD	Cedro	2008	Pedra Branca
DD08CD39	400009	9387037	467.3	59.5	CD	Cedro	2008	Pedra Branca
DD08CD40	399609	9387154	493.3	51.0	CD	Cedro	2008	Pedra Branca
DD08CD41	399501	9387008	498.1	64.2	CD	Cedro	2008	Pedra Branca
DD08CD42	400093	9386787	431.9	125.0	CD	Cedro	2008	Pedra Branca
DD08CD43	399859	9386558	446.9	80.0	CD	Cedro	2008	Pedra Branca
DD08CD44	400062	9386685	422.4	69.0	CD	Cedro	2008	Pedra Branca
DD08CD45	399748	9386449	457.3	69.0	CD	Cedro	2008	Pedra Branca
DD08CD46	399508	9386566	484.1	106.1	CD	Cedro	2008	Pedra Branca
DD08CD47	399444	9386450	475.0	132.0	CD	Cedro	2008	Pedra Branca
DD08CD48	399446	9386495	482.0	95.0	CD	Cedro	2008	Pedra Branca
DD08CD49	399552	9385982	408.6	60.0	CD	Cedro	2008	Pedra Branca
DD08CD50	399508	9386025	417.1	63.0	CD	Cedro	2008	Pedra Branca

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DD09CD51	399509	9385910	413.6	72.0	CD	Cedro	2009	Pedra Branca
DD09CD52	399563	9386060	414.0	60.6	CD	Cedro	2009	Pedra Branca
DD09CD53	399403	9386407	468.0	86.8	CD	Cedro	2009	Pedra Branca
DD09CD54	399402	9386366	462.1	54.4	CD	Cedro	2009	Pedra Branca
DD09CD55	399401	9386485	481.2	118.3	CD	Cedro	2009	Pedra Branca
DD09CD56	399509	9386652	489.4	82.0	CD	Cedro	2009	Pedra Branca
DD09CD57	399617	9386482	463.7	76.6	CD	Cedro	2009	Pedra Branca
DD09CD58	399710	9386417	457.3	64.9	CD	Cedro	2009	Pedra Branca
DD09CD59	399659	9386362	451.8	79.0	CD	Cedro	2009	Pedra Branca
DD09CD60	399510	9386961	494.2	56.3	CD	Cedro	2009	Pedra Branca
DD09CD61	400103	9387138	459.5	91.0	CD	Cedro	2009	Pedra Branca
DD09CD62	400248	9386544	427.4	91.2	CD	Cedro	2009	Pedra Branca
DD09CD63	400094	9387252	469.8	80.3	CD	Cedro	2009	Pedra Branca
DD09CD64	400053	9387199	468.1	76.0	CD	Cedro	2009	Pedra Branca
DD09CD65	400064	9386895	447.5	88.2	CD	Cedro	2009	Pedra Branca
DD09CD66	400027	9386785	442.0	80.4	CD	Cedro	2009	Pedra Branca
DD09CD67	400093	9386824	435.4	126.1	CD	Cedro	2009	Pedra Branca
DD09CD68	400013	9387199	472.8	78.0	CD	Cedro	2009	Pedra Branca
DD09CD69	400517	9387740	469.1	86.6	CD	Cedro	2009	Pedra Branca
DD09CD70	400536	9387800	474.0	49.3	CD	Cedro	2009	Pedra Branca
DD09CD71	400577	9387917	486.4	57.5	CD	Cedro	2009	Pedra Branca
DD09CD72	400583	9387978	490.6	46.0	CD	Cedro	2009	Pedra Branca
DD09CD73	400621	9387968	491.5	52.3	CD	Cedro	2009	Pedra Branca
DD09CD74	400600	9388074	497.1	70.4	CD	Cedro	2009	Pedra Branca
DD10CD75	400754	9387966	485.7	66.8	CD	Cedro	2010	Pedra Branca
DD10CD76	400626	9387810	477.5	39.2	CD	Cedro	2010	Pedra Branca
DD10CD77	400606	9387738	467.2	67.9	CD	Cedro	2010	Pedra Branca
DD10CD78	400562	9387688	462.8	44.5	CD	Cedro	2010	Pedra Branca
DD10CD79	400583	9387688	462.5	58.6	CD	Cedro	2010	Pedra Branca
DD10CD80	400041	9387254	472.5	71.5	CD	Cedro	2010	Pedra Branca
DD10CD81	400064	9387322	473.4	36.9	CD	Cedro	2010	Pedra Branca
DD10CD82	400549	9387991	489.4	49.5	CD	Cedro	2010	Pedra Branca
DD10CD83	399607	9387073	491.5	65.4	CD	Cedro	2010	Pedra Branca
DD10CD84	399528	9386921	489.4	29.5	CD	Cedro	2010	Pedra Branca
DD10CD85	399986	9386707	435.3	64.9	CD	Cedro	2010	Pedra Branca
DD10CD86	400128	9386607	419.7	93.9	CD	Cedro	2010	Pedra Branca
DD10CD87	400401	9386983	431.9	93.2	CD	Cedro	2010	Pedra Branca
DD10CD88	400336	9387306	462.9	60.4	CD	Cedro	2010	Pedra Branca
DD10CD89	399739	9386224	434.3	73.9	CD	Cedro	2010	Pedra Branca
DD10CD90	399616	9386293	441.8	72.7	CD	Cedro	2010	Pedra Branca
DD10CD91	399468	9386288	447.0	49.6	CD	Cedro	2010	Pedra Branca
DD10CD92	399442	9386161	439.5	113.7	CD	Cedro	2010	Pedra Branca
DD10CD93	399761	9386274	440.0	81.1	CD	Cedro	2010	Pedra Branca
DD10CD94	399710	9386175	426.4	91.6	CD	Cedro	2010	Pedra Branca
BR16	394155	9374669	422.4	144.7	TD	Trapia	1987	Gencor
BR17	394076	9374679	425.0	43.8	TD	Trapia	1987	Gencor
BR18	394094	9374504	415.0	81.2	TD	Trapia	1987	Gencor
BR19	394126	9374870	421.1	29.5	TD	Trapia	1987	Gencor
BR20	392623	9376038	499.1	140.1	TD	Trapia	1987	Gencor
BR21	392530	9375898	487.3	102.4	TD	Trapia	1987	Gencor
BR22	392786	9376300	497.7	122.9	TD	Trapia	1987	Gencor
BR24	392917	9376571	499.1	113.4	TD	Trapia	1987	Gencor
DD99TU01	394137	9374517	415.0	86.3	TD	Trapia	1999	Altoro
DD99TW01	393256	9374493	430.0	41.0	TD	Trapia	1999	Altoro
DD99TW02	393306	9374499	429.6	85.8	TD	Trapia	1999	Altoro
DD99TW03	393331	9374493	427.3	70.2	TD	Trapia	1999	Altoro

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DD99TW04	393319	9374527	423.8	70.4	TD	Trapia	1999	Altoro
DD99TW05	393385	9374539	415.6	53.8	TD	Trapia	1999	Altoro
DD99TW06	393396	9374595	417.1	58.4	TD	Trapia	1999	Altoro
DD99TW07	393490	9374799	420.1	71.5	TD	Trapia	1999	Altoro
DD01TU02	394230	9374476	415.0	160.5	TD	Trapia	2001	Solitario
DD01TU03	394319	9374498	411.6	172.9	TD	Trapia	2001	Solitario
DD01TW08	393538	9374810	421.7	111.7	TD	Trapia	2001	Solitario
DD01TW09	393669	9374878	437.9	100.9	TD	Trapia	2001	Solitario
DD01TW10	393469	9374878	427.5	64.5	TD	Trapia	2001	Solitario
RW027	394166	9374505	415.0	110.0	TD	Trapia	2001	Rockwell
RW028	394222	9374879	418.8	111.0	TD	Trapia	2001	Rockwell
DD02TW11	393589	9374653	414.3	103.1	TD	Trapia	2002	Solitario
DD03MT01	392604	9375561	462.2	97.2	TD	Trapia	2003	Solitario
DD03TD01	392750	9375969	483.4	166.2	TD	Trapia	2003	Solitario
DD04TD02	392627	9375940	489.5	106.8	TD	Trapia	2004	Solitario
DD04TR01	395433	9384900	450.4	74.9	TR	Trapia	2004	Solitario
DD04TU04	394250	9374550	416.2	140.0	TD	Trapia	2004	Solitario
DD04TU05	394100	9374450	413.0	69.5	TD	Trapia	2004	Solitario
DD04TU06	394201	9374454	415.0	148.6	TD	Trapia	2004	Solitario
DD07TE01	394510	9375530	408.9	125.7	TD	Trapia	2007	Pedra Branca
DD07TE02	394250	9375910	449.8	83.3	TD	Trapia	2007	Pedra Branca
DD07TR02	395240	9385560	369.0	49.8	TR	Trapia	2007	Pedra Branca
DD07TR03	395975	9384910	316.3	76.3	TR	Trapia	2007	Pedra Branca
DD07TR04	395270	9385360	364.9	24.3	TR	Trapia	2007	Pedra Branca
DD07TU07	393980	9374300	405.0	79.0	TD	Trapia	2007	Pedra Branca
DD07TW12	393437	9374797	422.5	37.3	TD	Trapia	2007	Pedra Branca
DD07TW13	393571	9374856	427.9	122.3	TD	Trapia	2007	Pedra Branca
DD07TW14	393533	9374890	429.7	93.4	TD	Trapia	2007	Pedra Branca
DD09TD03	392512	9376040	496.4	43.5	TD	Trapia	2009	Pedra Branca
DD09TD04	392625	9376186	495.0	65.4	TD	Trapia	2009	Pedra Branca
DD09TD05	392764	9376468	501.0	74.0	TD	Trapia	2009	Pedra Branca
DD09TU08	394247	9374602	417.8	85.6	TD	Trapia	2009	Pedra Branca
DD09TU09	394169	9374554	415.3	85.6	TD	Trapia	2009	Pedra Branca
DD09TW15	393390	9374790	423.7	52.3	TD	Trapia	2009	Pedra Branca
DD09TW16	393414	9374880	426.1	67.2	TD	Trapia	2009	Pedra Branca
DD09TW17	393468	9374944	435.4	71.5	TD	Trapia	2009	Pedra Branca
DD09TW18	393305	9374457	433.5	53.0	TD	Trapia	2009	Pedra Branca