Technical Report on the Caeté Mining Complex, Minas Gerais, Brazil Report for NI 43-101

Jaguar Mining Inc.

SLR Project No: 233.03422.R0000

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March 31, 2022

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1.0 SUMMARY

1.1 Executive Summary

SLR Consulting (Canada) Ltd (SLR) was retained by Jaguar Mining Inc. (Jaguar) to prepare an independent Technical Report on the Caeté Mining Complex (Caeté Complex or the Complex), located in Minas Gerais, Brazil. The purpose of this independent Technical Report is to support the disclosure of the Mineral Reserves and Mineral Resources as of December 31, 2021. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. SLR visited the Caeté Complex a number of times, with the most recent site visit on January 24 to 28, 2022.

Jaguar is a Canadian listed junior gold mining, development, and exploration company operating in Brazil with three gold mining complexes and a large land package covering approximately 33,000 ha. Jaguar's principal operating assets are located in the Iron Quadrangle, which is a greenstone belt in the state of Minas Gerais. Jaguar's common shares are listed on the Toronto Stock Exchange under the symbol JAG.

The Caeté Complex is operated by Jaguar's wholly-owned subsidiary, Mineração Serras do Oeste (MSOL). The Complex includes the Pilar Mine (Pilar) and Roça Grande Mine (Roça Grande) as well as the Caeté processing plant (the Caeté Plant) and a number of exploration-stage mineral properties, including the Córrego Brandão claim group. The Caeté Plant is located at the Roça Grande site and has a nominal capacity of 2,050 tonnes per day (tpd). The permitted mine capacity was increased to 500,000 tonnes per annum (tpa) in 2022 allowing Pilar to increase production to a nominal 1,370 tpd. The fine flotation and carbon-in-pulp (CIP) tailings produced are deposited in separate tailings storage facilities (TSFs). Electrical power is supplied through the national power grid.

Pilar's output averaged approximately 1,200 tpd in 2021.

1.1.1 Conclusions

Jaguar was successful in replacing Mineral Reserves depleted by production in 2021, through in-fill drilling and conversion of Mineral Resources to Mineral Reserves. Estimated Mineral Reserve contained ounces have increased 16% compared to the previous estimate.

Mineral Resources are considerably in excess of Mineral Reserves, reflecting good future potential to develop new areas and more fully utilize the capacity of the Caeté Plant.

The SLR qualified persons (QPs) offer the following conclusions by area.

1.1.1.1 Geology and Mineral Resources

- The Caeté Complex Mineral Resource estimates were prepared in accordance with Canadian Institute of Mining, Metallurgy and Petroleum (CIM) for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions).
- Measured and Indicated Mineral Resources total 4.8 million tonnes (Mt) at an average grade of 3.81 g/t Au, containing 588,000 oz Au, and Inferred Mineral Resources total 4.1 Mt at an average grade of 3.5 g/t Au, containing 456,000 oz Au.

1.1.1.1.1 Roça Grande Mine

- Roça Grande production was approximately 200 tpd until Q1 2018, when it was placed on care and maintenance. No additional work has been completed at Roça Grande since the last disclosure of Mineral Resources.
- Roça Grande Mineral Resources were estimated based on drilling and channel sample data using a data cut-off date of December 31, 2018, after an internal audit. The wireframe models of the Roça Grande excavated volumes were also constructed using information available as of December 31, 2018, with only local adjustments completed in 2021 for RG01 and RG02.
- At a cut-off grade of 1.80 g/t Au, the Roça Grande Measured and Indicated Mineral Resources total approximately 962,000 t, at an average grade of 3.90 g/t Au, containing approximately 121,000 oz Au. In addition, Roça Grande Inferred Mineral Resources total approximately 889,000 t, at an average grade of 4.08 g/t Au, containing approximately 117,000 oz Au.
- Jaguar commenced diamond drilling at Roça Grande in August 2006. Following the completion of the first exploratory holes drilled at the RG01/07, RG02, RG03, and RG06 mineralized zones, Jaguar carried out an in-fill program to delineate these zones. No drilling has been completed at Roça Grande since 2015, however collection of channel sample information in support of limited production activities was continued through 2018. The drill hole and channel sample information were grouped into five sets to reflect the known mineralized zones at Roça Grande.
- Two important banded iron formation (BIF) horizons are present at Roça Grande, the North Structure (Structure 1) which hosts the RG01 mineralized body and the South Structure (Structure 2) which hosts the RG02, RG03, and RG06 mineralized bodies. The RG07 mineralized body is located immediately in the hanging wall of Structure 1 and is predominately hosted by a quartz vein. The bedding is well defined by the carbonate-facies iron formation and chert observed in the BIF horizons, with an overall azimuth strike of 070° to 080°, and dipping approximately 30° to 35° south.
- Gold mineralization is more commonly associated with BIF horizons. In the RG01, RG02, RG03, and RG06 mineralized bodies, gold mineralization is developed approximately parallel to the primary bedding and is related to centimetre scale bands of massive to disseminated pyrrhotite and arsenopyrite. Gold mineralization usually increases along the hanging wall contact of the iron formation sequence and is hosted by carbonate-facies iron formation. The grades generally decrease towards the footwall where the iron formation becomes more silica-rich.
- In conjunction with the information gathered from the production reconciliation through 2015, the block model validation activities carried out for the year end 2021 Roça Grande Mineral Resource model indicate that the drilling and sampling procedures and the Mineral Resource estimation modelling workflows are successful at producing reliable long term block models for Roça Grande.

1.1.1.1.2 Pilar Mine

- Pilar has been in continuous production since 2008 and has produced a total of approximately 554,000 oz Au as of December 31, 2021.
- The Pilar Mineral Resource estimate was prepared based on drilling and channel sample data using a data cut-off date of December 31, 2021. The wireframe models of the Pilar excavated volumes were constructed using information available as of December 31, 2021.

- At a cut-off grade of 1.66 g/t Au, the Pilar Measured and Indicated Mineral Resources total approximately 3.8 Mt, at an average grade of 3.79 g/t Au, containing approximately 467,000 oz Au. In addition, Pilar Inferred Mineral Resources total approximately 2.1 Mt, at an average grade of 4.21 g/t Au, containing approximately 288,000 oz Au.
- The underground diamond drilling campaigns carried out in the second half of 2020 and throughout 2021 have been largely focussed on providing information on the extents of the gold distribution of the known mineralized zones such as the BA, BF, BF II, and BF III deposits as well as improving the reliability of the Mineral Resource estimates for the Southwest (SW) deposit. The drilling programs have been successful in locating gold mineralization down to the -300 m elevation in the LPA deposit, a distance of approximately 1,100 m below the surface.
- A program of detailed lithological, mineralization, and structural mapping carried out in 2019 and 2020 successfully demonstrated that the gold mineralization is hosted in a variety of rock types such as BIFs (e.g., BA, BF, BF II, and BF III deposits), mafic metavolcanics (LFW deposit), and mafic/ultramafic metavolcanics (e.g., Torre deposit). As past exploration activities have been largely focussed on evaluating the gold bearing potential of the BIF units, the SLR QP is of the opinion that the potential for the remaining host rocks has been under-evaluated.
- The mapping programs have clearly demonstrated that the entire stratigraphic sequence located to the east of the São Jorge Fault and gold mineralized zones have been affected by a period of west-northwest to east-southeast compression (D1) that has transposed all of the host rocks and mineralized zones into a series of broad, open folds at surface, to a series of compact, tightly folded structural slices at depth.
- The observation that the gold bearing zones have been affected by this D1 folding event presents clear evidence that the gold mineralizing event took place prior to this deformation event. The observation that some of the mineralized zones (e.g., the LPA deposit) are approximately parallel to the D1 axial plane orientation suggests that a second gold mineralizing event may have occurred. All host rocks and mineralized zones are affected by a series of late-stage reverse faults.
- The geometry of the mineralization located in the SW deposit suggests that this mineralization has not been affected by a post-mineralization deformation event, indicating that the age of this deposit may be younger than that of such deposits as BA, BF, BF II, and BF III.
- Drill hole information collected during the 2020 and 2021 drill programs clearly indicates that the down-dip extensions of the SW deposit may merge at depth with the BIF hosted deposits.
- The continuity and distribution of gold grades for selected mineralized wireframe domains were examined by means of contoured longitudinal projections. Review of the longitudinal projections for these selected domains suggests that the samples with gold grades above the 3.0 g/t Au to 5.0 g/t Au range appear to occur as somewhat isolated pods measuring approximately 15 m to 30 m in size that have a slightly preferred elongation along the down-plunge orientation of the folded mineralized wireframes, possibly influenced by the F1 fold axes. The lower grade samples generally exhibit a more pronounced preferred elongation along the down-plunge orientation of the folded mineralized wireframes.
- In conjunction with the information gathered from the production reconciliation over the past number of years, the block model validation activities carried out for the year end 2021 Pilar Mineral Resource model indicate that the drilling and sampling procedures and the Mineral Resource estimation modelling work flows are successful at producing reliable long term block models for Pilar.

1.1.1.1.3 Córrego Brandão

- The Córrego Brandão deposit was discovered in 2019 following regional exploration in the Roça Grande area.
- The Córrego Brandão block model is based on drilling and channel sample data using a data cut-off date of June 8, 2021.
- The initial Mineral Resource for Córrego Brandão is reported within an optimized open pit surface generated using cut-off grades of 0.38 g/t Au and 0.74 g/t Au for oxide and fresh material, respectively. The Inferred Mineral Resources at Córrego Brandão total approximately 1.1 Mt at an average grade of 1.48 g/t Au, containing approximately 51,000 oz Au.
- Surface exploration including geological mapping, aerial geophysics (drone-based magnetics), soil and chip sampling, auger drilling, and trenching have been successful in locating gold mineralization at the Córrego Brandão deposit.
- The 2021 diamond drilling campaign that was carried out to test a relatively restricted portion of the semi-regional scale fold structure mapped and targeted by Jaguar since 2020 has confirmed that the Córrego Brandão deposit has near-surface open pit potential to add feedstock to the nearby Caeté Plant.
- Córrego Brandão economic gold mineralization corresponds to a highly altered and mineralogically "exotic" conformable horizon approximately 20 m to 40 m in true thickness that occurs at the sheared contact between a meta-mafic volcanic package and a meta-ultramafic volcanic package.
- Recent mapping and semi-regional reconnaissance activities completed in the Córrego Brandão area confirmed weathered and surficial high grade mineralization which corresponds to a dark brown, magnetic, argillaceous, and somewhat pulverulent material that resembles the Lapa Seca lithological unit, where deeply weathered. The Lapa Seca lithostratigraphic unit hosts the very large Morro Velho gold deposit in the Iron Quadrangle district.
- High gold grade intersections in diamond and auger holes were identified to be related with a highly magnetic iron rich mafic lithological unit, initially described as a chlorite rich BIF, contained within a folded mafic to ultramafic greenstone sequence. The BIF is approximately six metres to 10 m wide, appearing to be mineralized across this width and with high grades associated with both, the upper and lower contacts
- High grade and extensive mineralization zones appear to occur where there are visible concentrations of smaller scale parasitic folding to the higher amplitude, easily mappable, overturned plunging synforms and antiforms. The economic mineralized zones and bodies at the Córrego Brandão deposit appear to plunge and progress spatially with double-plunging orientations, as a result of a refolded and re-oriented structural pattern of a previous/earlier structural deformation event.

1.1.1.2 Mining and Mineral Reserves

- The Caeté Complex Mineral Reserve estimates were prepared in accordance with CIM (2014) definitions.
- Proven and Probable Mineral Reserves total 2.1 Mt at a grade of 3.71 g/t Au, containing 251,000 oz Au.

- The Pilar deposit is suitable for sublevel open stoping (SLOS), considering the orebody's configuration and geotechnical characteristics.
- Pilar's mining method is longitudinal SLOS with delayed backfilling.
- Once mined out, stopes are backfilled with rockfill consisting of waste from mine development.
- Longhole drilling is predominately with downholes, however, upholes are drilled when leaving a sill pillar above the top lift of a stoping sequence.
- Access to the underground levels is via ramp.
- The stopes are accessed via sublevel development driven from the ramp, with a sublevel interval of 20 m.
- Pilar's ventilation system is pull type with intake air drawn down the ramp and return air exhausted via two ventilation raises. Each of these raises has two main ventilation fans installed at its collar.
- The mining operations area has a workforce of approximately 590. Jaguar personnel comprise approximately 70% of the workforce and the remainder are contractor employees.
- Complying with Brazilian legislation, Pilar operates on four six-hour long shifts daily.
- Roça Grande is presently on care and maintenance, and no Mineral Reserves are currently estimated for it.

1.1.1.3 Mineral Processing

- The processing circuit unit operations are reasonable to recover gold as expected and provide for adequate throughput.
- Recent test work was aimed at identifying differences between the Pilar orebodies, designated: BF, BF II, BF III, TORRE, LPA1, LPA2, and LPA3.
  - Minor variations by orebody were observed, with gold recoveries ranging from 85% to 95%. A weighted average recovery for the reserve orebodies is 89%.
  - Flotation tests indicated that there is the possibility of increased recovery using Sodium Isobutyl Xanthate (SIBX) or Potassium Amyl Xanthate (PAX).
- Further test work is underway to identify options for optimizing the existing processes.

1.1.1.4 Infrastructure

- The current Caeté Complex infrastructure is sufficient for the operation.

1.1.1.5 Environment

- No environmental issues were identified from the documentation available for the SLR QP's review. The Caeté Complex complies with applicable Brazilian permitting requirements. The approved permits and the licence renewals address the Brazilian authority's requirements for mining extraction and operation activities.
- Environmental monitoring is carried out by Jaguar at Roça Grande and Pilar according to the obligations defined in the environmental permits. These include surface water quality, groundwater quality, air quality, and ambient noise. Fauna is also monitored in the Roça Grande area. In 2021, Jaguar initiated groundwater quality monitoring at Roça Grande, with the intent of

obtaining field data to determine if groundwater contamination has taken place in the receiving environment.

- The SLR QP's review of social or community requirements indicates that, at present, the Caeté Complex represents a positive contribution to sustainability and community well being. Jaguar continues to develop a strong relationship with the nearby communities and stakeholders. Jaguar's commitment to community development and programs is demonstrated through its ongoing investments in the "Seeds of Sustainability" program. Information on any existing or potential archeological resources was not provided at the time of this review, nor were any site-specific policies or guidelines.

1.1.2 Recommendations

The SLR QPs offer the following recommendations by area.

1.1.2.1 Geology and Mineral Resources

1.1.2.1.1 Geological and Sampling Data

1. Select and assay on a remedial basis a selection of pulp samples from the 2021 diamond drilling programs representing approximately 2% of the total samples analyzed.
2. Reduce the insertion frequency of the blank and standard reference materials to approximately one blank and one standard reference material sample for every 50 sample assays.
3. Maintain the same list of standard reference materials to better monitor their performance over the sampling periods.

1.1.2.1.2 Mineral Resources

1. Undertake a resampling program for the unsampled intervals located within the Pilar mineralized wireframe boundaries if sufficient drill core or reject material is available.
2. Continue to correct the erroneous or anomalous information (not used in the estimation of Mineral Resources) for older drill holes that are located in the as-yet unmined portions of the Pilar deposit. For the suspect drill holes for which remedial corrections are not possible, the SLR QP recommends that these holes be transferred from the active database into a database that is dedicated specifically for these suspect records.
3. Prepare future Pilar Mineral Resource estimates using drill hole data available as of September 30th of the current year so as to allow adequate time to complete the estimation workflow.
4. Evaluate the gold bearing potential of the mafic metavolcanic and the ultramafic metavolcanic units within Pilar.
5. Update the lithologic and structural models to reflect the current information and level of understanding of the nature of the folding and faulting of the host rock units at Pilar, Roça Grande, and Córrego Brandão.
6. Review the reconciliation data between the estimated block model grades and the as-mined grades for the BF III orebody. Subject to the results of this review, the capping value applied to the samples from this deposit may be increased.

7. Continue to collect bulk density values for samples within the mineralized wireframe, especially for zones with a low number of density values.
8. Complete in-fill drilling to upgrade the Inferred Mineral Resources at Córrego Brandão.
9. Prepare wireframe models of the major lithological units as aides in coding the density values to all of the block models.
10. Consider the use of a dynamic anisotropy method for estimation of grades so as to reflect the gold grade variations more accurately at the local scale, particularly in the highly deformed sulphide mineralization at Córrego Brandão.
11. When no Cavity Monitoring Survey (CMS) model is available for a given excavation volume, use the design shape for the excavations in question (suitably modified for the estimated amount of overbreak) as a proxy when preparing the reconciliation reports.
12. Review and re-evaluate the reporting volumes for the remaining remnant mineralization above Level 7 in consideration of the current metal price environment and short term outlook.
13. Update the input parameters and workflows used to prepare the reporting volumes to more accurately reflect the volumes of material in the block model that are candidates for classification as Mineral Resources.
14. Undertake studies including change of support to investigate options for achieving a better correlation between the distribution of informing composite sample gold grades and estimated block grades.

1.1.2.2 Mining and Mineral Reserves

1. Continue efforts to exploit opportunities in the upper areas of Pilar to increase the life of mine plan (LOMP). There are additional Mineral Resources in the old workings that can potentially be mined at reduced haulage distances. A detailed mining plan and costing is required.
2. Conduct drilling to re-establish a buffer of one mining level (three sublevels) between the Pilar LOMP and the defined resource limits at depth.
3. Conduct a geotechnical study to update the one completed by Lopes in 2015.
4. Conduct a prefeasibility study (PFS) to demonstrate the Roça Grande deposit's economic viability in support of declaring Mineral Reserves. Prior to a PFS, complete a preliminary economic assessment (PEA) to define the best approach for mining the Roça Grande deposit.
5. Conduct hydrogeological and mine dewatering studies to determine the best strategy for controlling water inflows at Roça Grande.
6. Investigate alternative methods for mining narrow shallow dipping veins at Roça Grande, such as the Shallow Angle Mining System (SAMS) developed by MINRAIL Inc.
7. Plan on using smaller sized mining equipment than was previously utilized at Roça Grande, to minimize dilution.
8. Plan on using resue mining in ore development and cut and fill stopes at Roça Grande, to also minimize dilution.
9. Conduct a PEA to define the best approach for developing and mining the Córrego Brandão deposit.

1.1.2.3 Mineral Processing

1. Conduct plant trials to optimize flotation reagents.
2. Continue metallurgical test work and include samples from the SW orebody (which makes up one third of the Mineral Reserves) to assess variations in metallurgical performance.
3. Study the long term stability of ferric arsenate, in relation to the ongoing operation of the Moita TSF.

1.1.2.4 Environment

1. Continue to review management and mitigation corrective actions, as applicable, based on the data collected from the environmental monitoring programs. In particular, evaluate the groundwater quality at Roça Grande, based on the results of the monitoring program initiated by Jaguar in 2021, to determine if and how the site affects groundwater quality and quantity, and implement mitigation measures as needed.
2. Install piezometers and displacement monitoring instrumentation for the existing and proposed filtered tailings stacks.
3. Monitor the long term displacement and phreatic levels within filtered tailings stacks to observe trends and confirm physical stability.
4. Monitor seepage from all TSFs to confirm chemical stability.
5. Complete the standardization of management processes in 2022 according to the mapped strategy that was initiated in 2021.

1.2 Economic Analysis

This section is not required as Jaguar is a producing issuer, and the property is currently in production and there is no material expansion of current production.

1.3 Technical Summary

1.3.1 Property Description and Location

The Caeté Complex, consisting of Roça Grande, Pilar, the Caeté Plant, and the Córrego Brandão claim group, is situated east of the Minas Gerais state capital, Belo Horizonte. Roça Grande, Córrego Brandão, and Pilar are located in the municipalities of Caeté and Santa Bárbara, respectively, and the Caeté Plant is located at Roça Grande. The municipalities of Caeté (approximately 45,000 inhabitants) and Santa Bárbara (approximately 31,000 inhabitants) are comparably sized towns, located 55 km and 110 km, respectively, east of Belo Horizonte. The two municipalities have good urban infrastructure, including banks, hospitals, schools, and commercial businesses.

Pilar ore is transported a total distance of approximately 45 km to the Caeté Plant by trucks using public paved and dirt roads.

Belo Horizonte is the state capital and largest city of Minas Gerais, with a population in excess of six million. It is the major centre for the Brazilian mining industry. A large commercial airport with domestic and international flights services Belo Horizonte, which hosts several state and federal government agencies and private businesses that provide services to the mining industry.

Jaguar maintains a corporate office in Belo Horizonte.

1.3.2 Land Tenure

Title to the land tenure package for the Caeté Complex is held by Jaguar's wholly-owned subsidiary, MSOL. The Caeté Complex comprises 29 mining leases and exploration concessions granted by the Agência Nacional de Mineração (ANM), and four surface rights holdings. The mining leases and exploration concessions cover an area totalling 17,467.04 ha. The surface rights holdings comprise eleven separate agreements that cover a total area of 829.57 ha.

Mining leases are renewable annually and have no set expiry date. Each year Jaguar is required to provide information to ANM summarizing mine production statistics.

Jaguar must pay a royalty equivalent to 1% of net sales to ANM. In addition, one royalty payment and three lump sum annual rental payments are associated with the Caeté Complex.

1.3.3 History

Initial exploration activities carried out by Companhia Vale do Rio Doce (Vale) between 1973 and 1993 in the Roça Grande area consisted of regional geological reconnaissance, exploratory geochemistry, and geophysical surveys, in addition to the excavation of exploration trenches and diamond drilling to evaluate the gold mineralization observed in the area. Vale also carried out geological mapping, geological interpretation, and exploration and in-fill drilling at the Pilar deposit.

In December 2003, Jaguar acquired the Santa Bárbara property, which included the Pilar mineral concessions, from Vale. In November 2005, Jaguar entered into a mutual exploration and option agreement with Vale, which resulted in final transfer of the Roça Grande concessions to Jaguar in December 2010 and August 2011.

Jaguar initiated exploration activities at Pilar in 2006, and initially contemplated building a sulphide plant at the Pilar site, however, the acquisition of the Roça Grande concessions created an opportunity to develop an expanded project, with greater plant capacity to receive ore from several mineral properties.

In 2007, Jaguar completed a scoping study of the Caeté Project, received the Implementation Licence, and secured the power contract for the start-up. A feasibility study was completed in 2008, and by the end of Q3 2008, Jaguar initiated construction of the milling and treatment circuits.

In December 2008, Jaguar began transporting ore by truck from Pilar to Jaguar's Paciência Mining Complex to supplement the ore being supplied from Paciência Santa Isabel Mine.

The Caeté Plant was commissioned in June 2010, with first gold poured in August 2010, and commercial production declared in October 2010. Roça Grande was placed on a care and maintenance in Q1 2018.

From 2010 to December 31, 2021, gold production from the Caeté Plant totalled approximately 517,420 oz Au from approximately 5.7 Mt of feed at an average gold recovery of 88%. These production statistics include feed from Pilar, Roça Grande, and Paciência.

The recent Córrego Brandão exploration discovery was investigated during 2019 and 2021 following a soil geochemistry survey. Exploration activities carried out by the Jaguar exploration teams at the Córrego Brandão deposit included geological mapping, soil and chip sampling, channel sampling, auger drilling, and trenching. Magnetic aerial data was acquired using a drone in the summer of 2020, and core drilling commenced in 2021 with 44 relatively shallow diamond drill holes totalling 5,670 m completed through December 31, 2021.

1.3.4 Geology and Mineralization

The Roça Grande and Pilar deposits are located in the eastern portion of the Iron Quadrangle. Gold has been produced from numerous deposits in the region, primarily in the northern and southeastern parts of the Iron Quadrangle, with most hosted by Archean or Early Proterozoic BIFs contained within greenstone belt supracrustal sequences.

In the Brumal-Pilar (Santa Bárbara) region, occurring outcrops belong to the granitic-gneissic basement, and to the Nova Lima and Quebra-Ossos groups of the Archean Rio das Velhas Supergroup. The granitic-gneissic basement consists of leucocratic and homogeneous gneisses and migmatites, making up a complex of an initial tonalitic composition intruded by Archean rocks of granitic composition. The contacts between the supracrustal sequences and the granitic-gneissic basement are discordant and tectonically induced by reverse faulting. The Rio das Velhas Supergroup is predominately regionally represented by meta-volcanic and meta-epiclastic packages of the Nova Lima Group and by the meta-ultramafic rocks of the Quebra-Ossos Group including serpentinites, talc schists, and meta-basalts. "Algoma type" BIFs occur as the more prominent volcanogenic-sedimentary rock packages in the Nova Lima Group, with thicknesses of up to 15 m to 20 m.

1.3.4.1 Roça Grande Deposit

Roça Grande is located in the upper unit of the Nova Lima Group. The dominant rock types observed at Roça Grande are a mixed assemblage of meta-volcanoclastics and meta-tuffs. These are represented by quartz sericite and chlorite schists with variable amounts of carbonate facies BIF, oxide-facies BIF, meta-cherts, and graphitic schists. The iron formations, chert units, and graphitic schist units are intimately inter-bedded with each other, such that they form an assemblage of chemical and clastic sedimentary units.

Two important BIF horizons are present at Roça Grande: the North Structure (Structure 1), which hosts the RG01 mineralized zone, and the South Structure (Structure 2), which hosts the RG02, RG03, and RG06 mineralized zones. The RG07 mineralized zone is located immediately in the hanging wall of Structure 1 and is predominately hosted by a quartz vein. The bedding is well defined by the carbonate-facies iron formation and chert observed in the BIF horizons, with an overall azimuth strike of 70° to 80° and dipping approximately 30° to 35° south.

Gold mineralization is commonly associated with BIF horizons. In the RG01, RG02, RG03, and RG06 mineralized zones, gold mineralization is developed approximately parallel to the primary bedding and is related to centimetre scale bands of massive to disseminated pyrrhotite and arsenopyrite. In many instances, higher gold values are located along the hanging wall contact of the iron formation sequence and are hosted by carbonate-facies iron formation. Grades generally decrease towards the footwall where the iron formation becomes more silica-rich.

In the RG07 mineralized zone, gold is observed to be hosted in quartz veins that are contained within a sericite (chlorite) schist associated with an east-west oriented shear zone.

1.3.4.2 Pilar Deposit

The Pilar deposit is hosted by the basal units of the Nova Lima Group, and by sequences of the Quebra-Ossos Group. The rock packages in the immediate Pilar area are comprised of tholeiitic meta-basalts, mica-quartz schists, chlorite-quartz schists, quartz-chlorite-sericite schists, and volcano-chemical and clastic meta-sedimentary rocks of the Santa Quitéria Unit (Nova Lima Group), and further to the east, of meta-komatiite flows (along with their intrusive equivalents) of the Quebra-Ossos Group. The volcano-chemical meta-sedimentary rock packages include cherts, BIFs, and carbonaceous phyllites. Along the eastern edge of the Pilar property, the supracrustal units of the Rio das Velhas Supergroup are in fault contact with migmatites and granitic gneisses of the Santa Bárbara Complex, the unit that locally represents the basement sequence.

Pilar occurs at the northernmost end of the northeasterly oriented Brumal-Pilar BIF trend, which corresponds to a package of "Algoma type" BIFs that represent the main economic target as hosts of the Pilar deposit. While the "Algoma type" BIFs typically range between five metres and 15 m to 20 m in thickness, at Pilar, they have been severely and tightly folded and thickened as a result of a west-verging compressional regional deformation event that affected the entire eastern border of the Rio da Velhas Supergroup exposures in the Iron Quadrangle Terrain.

The resulting folded geometry of the Pilar deposit stratigraphic package is now described as a series of overturned synform-antiform folds (a synclinorium) primarily outlined by the Pilar BIF Unit, and which locally may exhibit some degree of stratigraphic transposition and/or stratigraphic thickening at their hinge zones. The axes generally plunge to the southeast, with some instances of very local mesoscopic folds plunging to the northeast. The axial-planar tectonic cleavage of the overturned synform-antiform folds dips steeply to the east-southeast.

Gold mineralization at Pilar is hosted by the folded, and locally refolded, "carbonatic-oxide-facies" Pilar BIF Unit and by the conformably folded Torre meta-volcanic sequence. The main zones of mineralization at Pilar, including the SW Limb, São Jorge, BF III, BF II, BF, LPA, and BA, occur as scattered, stratabound lenses (or "pods") of sulphide-facies BIFs within the Pilar BIF Unit. Arsenopyrite and pyrrhotite are the most important sulphide minerals in mineralized bodies, with pyrite, chalcopyrite, galena, and sphalerite commonly present as accessory minerals. The sulphide minerals occur predominately as disseminations in the host rocks, but can achieve semi-massive to massive concentrations locally, over a few metres. Individual quartz veins also occur and are typically less than one metre in width.

1.3.4.3 Córrego Brandão

The Córrego Brandão altered and mineralized horizon is hosted by the Basal Unit of the Nova Lima Group, a stratigraphic entity present in almost all cartographed areas of the Iron Quadrangle belt as the Ouro Fino Formation. The Basal Unit of the Nova Lima Group in the Caeté region is predominately represented by komatiitic meta-ultramafic rocks packages (magnesium-chlorite amphibole schists, magnesium-chlorite-talc-schists, meta-peridotites) and meta-mafic volcanic packages (greenschists and lower grade amphibolites).

Regarding stratigraphic setting, the Córrego Brandão economic gold mineralization corresponds to a highly altered and mineralogically "exotic" conformable horizon with a true thickness of approximately 20 m to 40 m that occurs at the sheared contact between a meta-mafic volcanic package and a meta-ultramafic volcanic package. The alteration zone is delineated by the modal presence of indicator minerals that should not be stable under the typical low-greenschist metamorphic grade recorded in the Caeté region, such as garnet, biotite, and iron-rich carbonates (ankerite, siderite and iron bearing dolomite).

The main (already delineated) Córrego Brandão mineralized zone has approximately 300 m of strike length, up to 30 m in thickness, and exhibits complex fold geometries associated with the mapped higher-amplitude Córrego Brandão synform ("M type" asymmetries and associated parasitic folding). High grade and extensive mineralization zones appear to occur where there are visible concentrations of smaller scale parasitic folding to the higher amplitude, easily mappable, overturned plunging synforms and antiforms.

The economic mineralized zones and bodies at Córrego Brandão appear to plunge and progress spatially with double-plunging orientations, as a result of a refolded and re-oriented structural pattern of a previous/earlier structural deformation event.

1.3.5 Exploration Potential

At Pilar, the recent 2021 in-fill and step out diamond drilling program resulted in conversion of Mineral Resources to Mineral Reserves and the expansion of the Inferred Mineral Resources.

Planned exploration will continue to target shallow extensions to mineralization associated with the SW, Torre, and Sao Jorge structures including the main BIF hosted mineralization. Higher grade mineralization extensions projected down plunge, associated with the BF, BF II, and LPA mineralized zones, are being specifically targeted at depth.

During Q4 2021, Jaguar initiated an exploratory drilling campaign on the Pilar 2 target (three diamond drill holes completed, totalling 903 m in length). Two of these drill holes intercepted anomalous grades and gold mineralization.

At the Catita target, where a total of 3,319 oz Au were produced through open pit and underground mining between 2004 and 2006, exploration work carried out by Jaguar included relogging and resampling a limited number of remaining available drill cores from holes completed from underground drilling stations and local scale geological mapping. Based on a program of auger drilling, soil sampling, and channel sampling in the open pit mines, Jaguar confirmed the presence of anomalous gold values in proximity to the contact with foliated rocks of granitic composition at the Caeté Complex. The soil sampling and associated exploration work subsequently extended a zone, anomalous in gold, arsenic, antimony, tellurium, and silver, to over five kilometres in strike extent.

Surface diamond drilling commenced at Córrego Brandão in late November 2020 to evaluate its potential for near term, open pit (and underground) mineable Mineral Resource additions. The area drilled to date at Córrego Brandão has tested a relatively restricted portion of the semi regional scale fold structure mapped and targeted by Jaguar since 2020.

The 2021 drilling campaign and surface mapping activities also identified a refolded geological structure that indicates potential for a deeper and larger gold deposit, both at Córrego Brandão and at the former Catita open pit. Córrego Brandão is located only six kilometres from the Caeté Plant.

Additional exploratory drilling, together with a resource definition drilling campaign, are expected to be completed during 2022 and 2023 to fully evaluate the size and grade potential of a Córrego-Brandão-Catita combined project.

1.3.6 Mineral Resources

Table 1-1 summarizes the Roça Grande, Pilar, and Córrego Brandão Mineral Resource estimate prepared by Jaguar, and audited and accepted by the SLR QP, as of December 31, 2021, based on a US$1,800/oz gold price and exchange rate of R$5.50 : US$1.00. A cut-off grade of 1.80 g/t Au was used to report Roça Grande Mineral Resources, while 1.66 g/t Au was used for Pilar. For the reporting of Córrego Brandão Mineral Resources cut-off grades of 0.38 g/t Au and 0.74 g/t Au were used for oxide and fresh material, respectively.

Table 1-1: Summary of Mineral Resources as of December 31, 2021
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
	Roça Grande		
Measured	197	3.42	22
Indicated	765	4.02	99
Sub-total M+I	962	3.90	121
Inferred	889	4.08	117
	Pilar		
Measured	2,338	3.91	294
Indicated	1,499	3.60	173
Sub-total M+I	3,837	3.79	467
Inferred	2,125	4.21	288
	Córrego Brandão		
Measured	-	-	-
Indicated	-	-	-
Sub-total M+I	-	-	-
Inferred	1,072	1.48	51
	Total Caeté Complex		
Measured	2,535	3.87	316
Indicated	2,264	3.74	272
Sub-total M+I	4,799	3.81	588
Inferred	4,086	3.46	456

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Underground Mineral Resources are estimated at a cut-off grade of 1.80 g/t Au for Roça Grande and 1.66 g/t Au for Pilar. Open pit Mineral Resources at Córrego Brandão are estimated using cut-off grades of 0.38 g/t Au and 0.74 g/t Au for oxide and fresh material, respectively.
3. Mineral Resources are estimated using a long term gold price of US$1,800/oz Au and an average long term foreign exchange rate of R$5.50 : US$1.00.
4. A minimum mining width of one metre and two metres were used for the estimation of underground Mineral Resources at Roça Grande and Pilar, respectively. A pit shell based on the Lerchs-Grossman algorithm was used for the estimation of Córrego Brandão Mineral Resources.
5. Bulk densities assigned to Pilar Mineral Resources are variable for each wireframe. Bulk densities of 2.00 t/m^3 and 2.25 t/m^3 were assigned to Roça Grande oxide and transition material, respectively, 2.87 t/m^3 for RG01, RG02, RG03, and RG06 fresh material and 2.75 t/m^3 for RG07 fresh material. Bulk densities of 1.31 t/m^3 or 1.4 t/m^3 and 2.92 t/m^3 were assigned to Córrego Brandão oxide and fresh material, respectively.
6. Gold grades are estimated using ordinary kriging (OK) for Roça Grande, Pilar, and Córrego Brandão.
7. No Mineral Reserves are currently present at Roça Grande or Córrego Brandão. Mineral Resources are inclusive of Mineral Reserves for Pilar.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. Numbers may not add due to rounding.

The SLR QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that could materially affect the Mineral Resource estimates.

1.3.6.1 Roça Grande Mine

The updated Roça Grande block model is based on drilling and channel sample data using data cut-off dates of December 31, 2018, after an internal audit. The database comprises 943 drill holes and 8,619 channel samples. The Roça Grande Mineral Resource estimate was generated from a block model constrained by three-dimensional (3D) wireframe models that were constructed using a minimum width of one metre in Datamine StudioRM Version 1.11.200.0 software package (Datamine). The purpose of the minimum width criteria was to identify areas of high grade mineralization that could be candidates for extraction using highly selective underground mining methods.

Gold grades were estimated with OK using composited, capped assays. A capping value of 30 g/t Au was applied for the RG01 and RG06 mineralized zones while capping values of 17 g/t Au, 13 g/t Au, and 60 g/t Au were applied for the RG02, RG03, and RG07 mineralized zones, respectively. The wireframe models of the excavated material for Roça Grande were constructed using information as of December 31, 2018.

Mineralized material for each Roça Grande mineralized body was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, observed continuity of the mineralization, drill hole and channel sample density, and previous production experience with this deposit. Reporting volumes were created to ensure that the "reasonable prospects for eventual economic extraction" (RPEEE) requirement of the CIM (2014) definitions were met. These reporting volumes were used to code the block model and prepare the Mineral Resource reports.

1.3.6.2 Pilar Mine

The updated Pilar block model is based on drilling and channel sample data using a data cut-off date of December 31, 2021. The database comprises 2,564 drill holes and 25,377 channel samples. The Pilar Mineral Resource estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of two metres using either the Hexagon HxGN MinePlan 3Dv.15.30 mine modelling software package (MinePlan 3D) or the functions available through the Leapfrog software package. Gold grades were estimated with OK using composited, capped assays. Various capping values were applied to each of the different orebodies, ranging from 60 g/t Au for the BA orebody to 20 g/t Au for the LFW and LHW orebodies. These capping values are unchanged from the previous Mineral Resource estimate (RPA, 2020), except the capping value for the LPA domain. The wireframe models of the excavated material for Pilar were constructed using the information as of December 31, 2021.

Mineralized material for each Pilar mineralized body was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, observed continuity of the mineralization, drill hole and channel sample density, and previous production experience with this deposit. Reporting volumes were created using MinePlan 3D or using the functions available through the Deswik mine modelling software package to ensure that the RPEEE requirement of the CIM (2014) definitions were met. These reporting volumes were used to appropriately code the block model and prepare the Mineral Resource reports.

1.3.6.3 Córrego Brandão Deposit

The Córrego Brandão block model is based on drilling and channel sample data using a data cut-off date of June 8, 2021. The database comprises 44 diamond drill holes, 46 auger holes, and 13 trench and channel samples. Jaguar did not use any of the auger drilling data for the purposes of Mineral Resource estimation. The Córrego Brandão Mineral Resource estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of two metres in MinePlan 3D software package.

Gold grades were estimated with OK using composited, capped assays. A capping value of 9.0 g/t Au was applied for the oxide mineralization while a capping value of 7.0 g/t Au was applied for the mineralization in the fresh material.

Due to limited drilling, all the material in the Córrego Brandão deposit was classified as Inferred Mineral Resources and constrained by an optimized pit shell so that the RPEEE requirement of the CIM (2014) definitions was met.

1.3.7 Mineral Reserves

Table 1-2 summarizes the Pilar Mineral Reserves as of December 31, 2021, based on a gold price of US$1,650/oz Au and cut-off grade of 2.11 g/t Au. There are no reported Mineral Reserves for Roça Grande or Córrego Brandão.

Table 1-2: Summary of Mineral Reserves as of December 31, 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Proven	1,221	3.80	149
Probable	887	3.59	102
Total	2,108	3.71	251

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 2.11 g/t Au.
3. Mineral Reserves are estimated using an average long term gold price of US$1,650/oz Au and a foreign exchange rate of R$5.50:US$1.00.
4. A minimum mining width of two metres was used.
5. Bulk density is 2.89 t/m^3.
6. Numbers may not add due to rounding.

The SLR QP is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Pilar Mineral Reserve estimate.

The Pilar Mineral Reserves consist of selected portions of the Pilar Measured and Indicated Mineral Resources that are within designed stopes and associated development. The stope design was completed by Deswik Brazil.

1.3.8 Mining Method

Pilar currently produces at a rate of approximately 1,200 tpd, with ore being transported 45 km by truck to the Caeté Plant for processing. The Pilar gold mineralization occurs in a shear zone, which dips on average 50° to 60°. The mineralization is structurally complex, with intense folding and displacements (up to one metre) associated with local faulting. Consequently, the vein can change direction, pinch, and swell over relatively short distances. Though the orebody's hanging wall and footwall contacts are visually distinguishable, an assay wall can occur within the formation. The Pilar deposit extends from 250 m to 350 m along strike and is suitable for the SLOS mining method, considering the orebody's configuration and geotechnical characteristics.

There are two mining methods currently in use, longitudinal SLOS and mechanical cut and fill. The current LOMP forecasts SLOS with delayed backfill for the majority of the Mineral Reserves. Mechanical cut and fill mining is used when ore geometry does not favour SLOS.

The Pilar deposit is mined in horizons between sublevels, with each horizon mined in retreating fashion, starting at the end of the mineralized zone, and progressing towards the central crosscuts. The sublevel interval is 20 m. Crosscuts near the mineralized zone centre are advanced to the hanging wall contact at each level and sublevel. From there, ore drives are driven in both directions along strike, under geological control for alignment, exposing the footwall and hanging wall contacts until reaching the limits of the deposit. This approach provides for two working faces per sublevel.

The hanging wall is supported with cable bolts before stoping begins. Stope mining on a horizon retreats from the ends of the Pilar deposit towards the central access. The stopes are up 50 m long along strike and are separated by three to five metre wide rib pillars, depending on the thickness of the zone. When there are adjacent stopes in parallel, pillars measuring five metres high by five metres long are strategically left in the stope to reduce external dilution.

When the stope is mined out, the opening is backfilled with unconsolidated rockfill consisting of development waste. The waste volume generated by mine development matches well with the required backfill volume. Occasionally, waste rock is either hauled to surface or from surface to an underground stope being filled due to timing discrepancies. Mining then proceeds upward to the next sublevel, and the sequence is repeated until the sill pillar is reached. The horizons between sill pillars are mined in a bottom-up sequence, and a three metre thick sill pillar is left between levels. Stopes are mined from several sublevels simultaneously, thereby providing the required number of active workplaces to meet production targets.

Pilar's ground support generally consists of 2.4 m long bolts, which are either resin grouted rebar or Swellex depending on the excavation type. Screening is installed if required by the ground conditions. Cable bolts are installed at intersections and stope hanging walls.

Pilar is accessed via a five metre by five metre ramp situated in the deposit's footwall. All ore is hauled to surface via the ramp, the portal's elevation is 760 MASL. Pilar is divided into levels, with Level 1 situated at 690 MASL. The level spacing is 75 m vertical, with Level 2 at 615 MASL, Level 3 at 540 MASL, and so on. Pilar's ventilation is a pull type system. Intake air is drawn down through the ramp, and return air is exhausted via two ventilation raises. Each of these raises has two ventilation fans at the collar. Auxiliary fans and ventilation ducting provide ventilation on the levels.

Pilar is highly mechanized, with development and mining activities accomplished using a fleet of two boom, electric hydraulic jumbos. Two jumbos are used for face drilling and two for bolting. Pilar has three DL421 longhole drill rigs to carry out production drilling and cable bolting, as well as five load-haul-dump units (LHDs), with 10 t tramming capacity . For haulage, Pilar has a fleet of five Volvo A30G articulated dump trucks.

The mine development contractor has two jumbos, three Volvo L120 front-end loaders, and seven Mercedes Benz 30 t dump trucks.

The mining operations area has a workforce of approximately 590 personnel. Jaguar personnel comprise approximately 70% of the workforce and the remainder are contractor employees. Pilar operates on four six hour shifts daily, complying with government regulations limiting workers to six hours per day underground.

1.3.9 Mineral Processing

The Caeté Plant has a design capacity of 720,000 tpa of run of mine (ROM) ore. In 2021, the Caeté Plant produced 46,372 oz Au at a recovery of 87.57%.

In 2021, the Caeté Plant processed feed from Pilar and operated at approximately 62% of its design capacity. Tailings filtration capacity could be expanded if future mine production exceeds the filtration capacity of 720,000 tpa.

The process flowsheet consists primarily of the following unit operations:

- Crushing
- Grinding
- Gravity Gold Recovery
- Flotation
- Leaching of flotation concentrate and CIP
- Gold Recovery
- Detoxification
- Tailings Disposal

The SLR QP is of the opinion that the processing circuit unit operations are reasonable to recover gold as expected and to provide for adequate throughput.

1.3.10 Project Infrastructure

The Caeté Complex includes the nominal 2,050 tpd Caeté Plant with separate TSFs for both fine flotation tailings and CIP tailings. Electrical power supply is provided through the national power grid. The Caeté Plant is located at Roça Grande at an elevation of approximately 1,250 MASL.

An administration complex is located at the entrance to the Caeté Plant, with such ancillary buildings as offices, conference rooms, cafeteria, maintenance shops, compressors (mine and mill), a dry, a first aid station, warehouse, backfill preparation, and a water treatment plant, which is located near the Caeté Plant. The assay laboratory and process testing laboratory are also located near the Caeté Plant. Roça Grande (under care and maintenance since Q1 2018) is accessed by an adit that is located approximately 800 m to the southwest of the Caeté Plant at an elevation of approximately 1,100 MASL.

Surface infrastructure at Pilar is limited to shops, offices, cafeteria, first aid, and warehouse facilities. Pilar is accessed by an adit that is located at an elevation of approximately 750 MASL.

Trailers located at the Pilar adit provide local storage and office space. The explosives and blasting accessories warehouses are located 3.5 km away from the mine area, in compliance with the regulations set forth by the Brazilian Army.

1.3.11 Market Studies

Gold is traded freely at widely known prices, consequently, the prospects for the sale of any production of the metal are virtually assured. The Pilar Mineral Reserve estimate uses a gold price of US$1,650/oz Au. This price was used because it permits direct comparability between this Technical Report and the previous ones. The significant increase in the gold price at the time of writing will enable Jaguar to evaluate opportunities for incorporating lower grade material into mining and operation plans. However, it is not in the scope of this Technical Report to comment on the potential impacts of materially higher gold price scenarios.

1.3.12 Environmental, Permitting and Social Considerations

Environmental impact assessments were completed for Pilar in 2006 and for Roça Grande in 2007 followed by the development of environmental management plans in 2008 for the Pilar and Roça Grande operations. These plans outline the identified potential impacts on the physical, biological, and social environments, mitigation measures applicable to construction and operations, and environmental monitoring programs to verify the effectiveness of the mitigation measures and compliance with applicable environmental standards.

Environmental monitoring being carried out by Jaguar at Roça Grande and Pilar includes surface water quality, groundwater quality, air quality, and ambient noise monitoring. Fauna is also monitored in the Roça Grande area. Monitoring results for water quality and fauna are documented in reports submitted to the environmental authority. Monitoring results for air quality and ambient noise are documented in internal reports.

Jaguar has all required permits to continue operating the Caeté Complex in the near future. The approved permits and licences under revalidation process address the Brazilian authority's requirements for mining extraction and operation activities including disposal of mineralized mine waste.

No extraction activities are currently taking place at Roça Grande. Ore from underground mining at Pilar is processed in the Caeté Plant. Flotation tailings are currently deposited in the mined-out pits RG02W and RG02E. Disposal will transition to the mined-out RG06 pit in 2022 where it will continue until 2025. A new TSF will be required beyond 2025 for disposal of flotation tailings. CIP tailings have been deposited in the Moita TSF.

Proposed expansions and upgrades to the Caeté Plant include the construction of a filter plant, which will be commissioned in April 2022. All the CIP tailings will be filtered and stacked in the Moita TSF commencing in April 2022. The Moita TSF is anticipated to reach its storage capacity near the end of 2024. A new TSF will be required to continue the disposal of filtered tailings in 2025.

As a corporation, Jaguar has a strong commitment to sustainability and continues to develop a strong relationship with the nearby communities and stakeholders. Jaguar's commitment to community development and programs is demonstrated through its ongoing investments in the "Seeds of Sustainability" program.

At Roça Grande and Pilar, community questions, feedback, and complaints are tracked and monitored. Most of the feedback received at the sites has been positive, with most of the negative complaints focused on nuisance effects. Other common questions pertained to business and job opportunities.

Progressive rehabilitation and closure activities have been scheduled for the LOMP. The total cost of closure estimated by Jaguar for the Caeté Complex is US$8.08 million, which represents the undiscounted, uninflated future payments for the expected rehabilitation costs.

1.3.13 Capital and Operating Cost Estimates

The Caeté Complex's life of mine (LOM) capital and operating costs were estimated in R$ based on recent operating results and Jaguar budgets. The amounts were converted to US$ using an exchange rate of R$5.50 : US$1.00 for 2021.

Table 1-3 and Table 1-4 present the estimated capital costs and operating costs over the Caeté Complex's LOM, respectively.

Table 1-3: LOM Capital Cost Summary
Jaguar Mining Inc. – Caeté Mining Complex

Area	Units	Total	2022	2023	2024	2025	2026	2027	2028
Sustaining Capital									
Primary Development	US$ 000	19,113	6,396	4,757	7,670	290	-	-	-
Equipment	US$ 000	13,640	4,606	3,011	3,011	3,011	-	-	-
Engineering	US$ 000	6,402	1,601	1,601	1,601	1,601	-	-	-
Exploration	US$ 000	11,503	2,876	2,876	2,876	2,876	-	-	-
Subtotal Sust. Capital	US$ 000	50,659	15,479	12,245	15,158	7,778	-	-	-
Other Capital									
Working Capital	US$ 000	-	9,160	392	478	183	(5,062)	(3,412)	(1,740)
Growth Capital	US$ 000	7,325	3,053	3,053	610	610	-	-	-
ARO/Closure	US$ 000	7,784	1,945	1,322	1,185	1,029	2,302	-	-
Total Capital Cost	US$ 000	65,768	29,637	17,012	17,431	9,600	(2,760)	(3,412)	(1,740)

Source: Jaguar, 2022

Table 1-4: LOM Operating Costs
Jaguar Mining Inc. – Caeté Mining Complex

Area	Units	Total	2022	2023	2024	2025	2026
Mining (Underground)	US$ 000	99,259	21,490	22,599	22,587	22,599	9,984
Processing	US$ 000	59,550	12,893	13,558	13,551	13,558	5,990
G&A	US$ 000	17,491	3,787	3,982	3,980	3,982	1,759
Total Operating Cost	US$ 000	176,300	38,170	40,140	40,117	40,140	17,733

Source: Jaguar, 2022

1.3.14 Other Relevant Data and Information

1.3.14.1 Roça Grande Mine

Roça Grande is a past producing underground mine situated in the Roça Grande unit of the Caeté Complex. Roça Grande operated from 2010 to 2018 using the mechanized cut and fill method. During operations Roça Grande experienced challenges with surface and groundwater inflows. In Q1 2018, as part its strategy to refocus on improvements to the Turmalina and Pilar mines and exploration growth activities, Jaguar made a strategic decision to suspend the Roça Grande operations. Jaguar has commenced a review of the Roça Grande asset with a view to evaluating the various financial and technical scenarios that may lead to recommencement of production from this area.

Roça Grande has potential for reactivating as an operating mine, upgrading Inferred Resources to the Indicated and Measured categories, and converting Mineral Resources to Mineral Reserves. The following are considered favourable for reactivation:

- Knowledge of the deposit based on experience/operating history.
- Caeté Plant and other surface infrastructure is already available on site.
- Existing underground development that can be rehabilitated and reused.

However, Roça Grande has two significant challenges:

- A history of heavy surface and groundwater inflows.
- The Roça Grande deposit's configuration, consisting of narrow shallow dipping veins, is not favourable for mechanized mining methods or avoiding excessive waste dilution.

1.3.14.2 Córrego Brandão Deposit

The Córrego Brandão deposit is situated in the Roça Grande unit of the Caeté Complex, approximately five kilometres from the Caeté Plant and Roça Grande.

The following are considered favourable for advancing Córrego Brandão as a potential development project:

- Located near the Caeté Plant and other infrastructure.
- Potentially mineable as an open pit.

2.0 INTRODUCTION

SLR Consulting (Canada) Ltd (SLR) was retained by Jaguar Mining Inc. (Jaguar) to prepare an independent Technical Report on the Caeté Mining Complex (Caeté Complex or the Complex), located in Minas Gerais, Brazil. The purpose of this independent Technical Report is to support the disclosure of the Mineral Reserves and Mineral Resources as of December 31, 2021. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

Jaguar is a Canadian listed junior gold mining, development, and exploration company operating in Brazil with three gold mining complexes and a large land package covering approximately 33,000 ha. Jaguar's principal operating assets are located in the Iron Quadrangle, which is a greenstone belt in the state of Minas Gerais. Jaguar's common shares are listed on the Toronto Stock Exchange under the symbol JAG.

The Caeté Complex is operated by Jaguar's wholly-owned subsidiary, Mineração Serras do Oeste (MSOL). The Complex includes the Pilar Mine (Pilar) and Roça Grande Mine (Roça Grande) as well as the Caeté processing plant (the Caeté Plant) and a number of exploration-stage mineral properties, including the Córrego Brandão claim group. The Caeté Plant is located at the Roça Grande site and has a nominal capacity of 2,050 tonnes per day (tpd). The permitted mine capacity was increased to 500,000 tonnes per annum (tpa) in 2022 allowing Pilar to increase production to a nominal 1,370 tpd. The fine flotation and carbon-in-pulp (CIP) tailings produced are deposited in separate tailings storage facilities (TSFs). Electrical power is supplied through the national power grid.

Pilar's output averaged approximately 1,200 tpd in 2021.

2.1 Sources of Information

A site visit to Pilar, Roça Grande, and Córrego Brandão was carried out by Mr. Renan G. Lopes, M.Sc, MAusIMM CP(Geo), on behalf of the SLR team, from January 24 to 28, 2022. SLR previously visited Pilar and Roça Grande in 2018, 2017, and 2014.

During the site visit, Mr. Lopes reviewed the procedures pertaining to mining and geology, collected samples for an external laboratory check, visited the tailings storage facilities (TSFs), core shed, mine operation, onsite laboratory, the Caeté Plant, exploration areas, examined drill holes and ore faces at both Pilar and Roça Grande, and held meetings with key personnel to discuss the workflow and methodology adopted for the estimation of the Caeté Complex Mineral Resources and Mineral Reserves.

Discussions were held with the following personnel from Jaguar and Deswik Brazil Holdings Pty Ltd. (Deswik Brazil)

- Jonathan Victor Hill, VP, Geology & Exploration, Jaguar
- Armando José Massucatto, Geology & Exploration Manager, Jaguar
- Sergio Yngor Dourado Honorio dos Santos, Technical Services Manager, Jaguar
- Tiago Pedro de Souza, Geology Specialist, Jaguar
- Hugo Leonardo de Avila Gomes, Resource Geologist, Jaguar
- Paul Cezanne Pinto, Growth Projects Manager, Jaguar
- Afonso José Guedes Salles, Growth Projects Coordinator, Jaguar
- Vitor Diniz Silveira, Exploration Coordinator (MTL/CCA), Jaguar
- Williams Santos, Geology Coordinator, Jaguar

- Rômulo Bortolozzo, Exploration Geologist, Jaguar
- Márcio Andre Sales, Mine Geology and Exploration Consultant, Jaguar
- Iuri Pinto Mascarenhas, Plant Manager (CCA), Jaguar
- Roberta Cristina Oliveira, Plant Manager (MTL), Jaguar
- Istelamares Alvarenga, Process Coordinator (CCA), Jaguar
- Vagno Faustino, Plant Coordinator (MTL), Jaguar
- Huet Souza, Plant Coordinator (CCA), Jaguar
- Gustavo Pereira de Aguiar, Financial Manager, Jaguar
- Francisco Bittencourt Oliveira, Regional Manager, Deswik Brazil
- Bruno Tomaselli, Consulting Manager, Deswik Brazil
- Rayssa Garcia de Sousa, Environmental Manager, Jaguar
- Frederico José da Costa Silva, Financial Coordinator, Jaguar
- Carla Fernandes Moura Tavares, Legal Manager, Jaguar
- Juliana Souza Dolabela, Human Resources Manager, Jaguar
- Ana Thereza Nápoles Balbi, Administrative Manager , Jaguar
- Christiane Delgado Alam, Institutional Relations, Jaguar
- Ana Andrade, Consulting, Deswik Brazil
- Bruna Rozendo, Consulting, Deswik Brazil

Table 2-1 presents a summary of the qualified person (QP) responsibilities for this Technical Report.

Table 2-1: Listing of SLR Qualified Persons
Jaguar Mining Inc. – Caeté Mining Complex

Qualified Person	Title/Position	Sections
Reno Pressacco, M.Sc.(A), P.Geo.	Associate Principal Geologist	1.1.1.1, 1.1.2.1, 14.3, 25.1, and 26.1
Dorota El-Rassi, M.Sc., P.Eng.	Consultant Geologist	1.3.4 to 1.3.6, 7.0 to 11.0, 14.1, 14.2, and 14.4
Renan G. Lopes, M.Sc., MAusIMM CP(Geo)	Consultant Geologist	12.0
Jeff Sepp, P.Eng.	Consultant Mining Engineer	1.1, 1.1.1.2, 1.1.1.4, 1.1.2.2, 1.2, 1.3.1 to 1.3.3, 1.3.7, 1.3.8, 1.3.10, 1.3.11, 1.3.13, 1.3.14, 2.0 to 6.0, 15.0, 16.0, 18.0, 19.0, 21.0 to 24.0, 25.2, 25.4, and 26.2
Brenna J.Y. Scholey, P.Eng.	Principal Metallurgist	1.1.1.3, 1.1.2.3, 1.3.9, 13.0, 17.0, 25.3, and 26.3
Luis Vasquez, M.Sc., P.Eng.	Senior Environmental Consultant and Hydrotechnical Engineer	1.1.1.5, 1.1.2.4, 1.3.12, 20.0, 25.5, and 26.4
All	-	27.0

The documentation reviewed, and other sources of information, are listed at the end of this Technical Report in Section 27 References.

2.2 List of Abbreviations

Units of measurement used in this Technical Report conform to the metric system. All currency in this Technical Report is US dollars (US$) unless otherwise noted.

μ	micron	kVA	kilovolt-amperes
μg	microgram	kW	kilowatt
a	annum	kWh	kilowatt-hour
A	ampere	L	litre
bbl	barrels	lb	pound
Btu	British thermal units	L/s	litres per second
°C	degree Celsius	m	metre
C$	Canadian dollars	M	mega (million); molar
cal	calorie	m^2	square metre
cfm	cubic feet per minute	m^3	cubic metre
cm	centimetre	MASL	metres above sea level
cm^2	square centimetre	m^3/h	cubic metres per hour
d	day	mi	mile
dia	diameter	min	minute
dmt	dry metric tonne	μm	micrometre
dwt	dead-weight ton	mm	millimetre
°F	degree Fahrenheit	mph	miles per hour
ft	foot	MVA	megavolt-amperes
ft^2	square foot	MW	megawatt
ft^3	cubic foot	MWh	megawatt-hour
ft/s	foot per second	oz	Troy ounce (31.1035g)
g	gram	oz/st, opt	ounce per short ton
G	giga (billion)	ppb	part per billion
Gal	Imperial gallon	ppm	part per million
g/L	gram per litre	psia	pound per square inch absolute
Gpm	Imperial gallons per minute	psig	pound per square inch gauge
g/t	gram per tonne	RL	relative elevation
gr/ft^3	grain per cubic foot	s	second
gr/m^3	grain per cubic metre	st	short ton
ha	hectare	stpa	short ton per year
hp	horsepower	stpd	short ton per day

hr	hour	t	metric tonne
Hz	hertz	tpa	metric tonne per year
in.	inch	tpd	metric tonne per day
in^2	square inch	US$	United States dollar
J	joule	USg	United States gallon
k	kilo (thousand)	USgpm	US gallon per minute
kcal	kilocalorie	V	volt
kg	kilogram	W	watt
km	kilometre	wmt	wet metric tonne
km^2	square kilometre	wt%	weight percent
km/h	kilometre per hour	yd^3	cubic yard
kPa	kilopascal	yr	year

3.0 RELIANCE ON OTHER EXPERTS

This Technical Report has been prepared by the SLR QPs for Jaguar. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to the SLR QPs at the time of preparation of this Technical Report.
- Assumptions, conditions, and qualifications as set forth in this Technical Report.

For the purpose of this Technical Report, the SLR QPS have relied on ownership information provided by Jaguar. The SLR QPs have not researched property title or mineral rights for the Caeté Complex and express no opinion as to the ownership status of the property.

The SLR QPs have relied on Jaguar for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Pilar and Roça Grande mining operations discussed in Section 22 Economic Analysis.

Except for the purposes legislated under provincial securities laws, any use of this Technical Report by any third party is at that party's sole risk.

4.0 PROPERTY DESCRIPTION AND LOCATION

The Caeté Complex, consisting of Roça Grande, Pilar, the Caeté Plant, and the Córrego Brandão claim group, is situated east of the Minas Gerais state capital, Belo Horizonte (Figure 4-1 and Figure 4-2). The Caeté Plant is located at Roça Grande and currently processes ore from Pilar. Roça Grande was placed on care and maintenance in Q1 2018. Roça Grande and Córrego Brandão are located in the municipality of Caeté and Pilar is located in the municipality of Santa Bárbara, in the state of Minas Gerais, Brazil. The municipalities of Caeté (approximately 45,000 inhabitants) and Santa Bárbara (approximately 32,000 inhabitants) are comparably sized towns, located 55 km and 110 km, respectively, from Belo Horizonte. The two municipalities have good urban infrastructure, including banks, hospitals, schools, and commercial businesses.

From the municipality of Caeté, the main access to Roça Grande is via a seven kilometre public dirt road that links Caeté to the town of Barão de Cocais. Roça Grande has geographic coordinates of 19°57’ S latitude and 43°38’ W longitude.

Pilar ore is transported a total distance of approximately 45 km to the Caeté Plant by trucks using paved and dirt public roads. Pilar has geographic coordinates of 19°58’4.43” S latitude and 43°28’ 25.70” W longitude.

Belo Horizonte is the state capital and largest city of Minas Gerais, with a population in excess of six million. It is the major centre for the Brazilian mining industry. A large commercial airport with domestic and international flights services Belo Horizonte, which hosts several state and federal government agencies and private businesses that provide services to the mining industry.

Jaguar maintains a corporate office in Belo Horizonte.

Figure 4-1

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Location Map

March 2022

Source: Map Resources, 2010 .

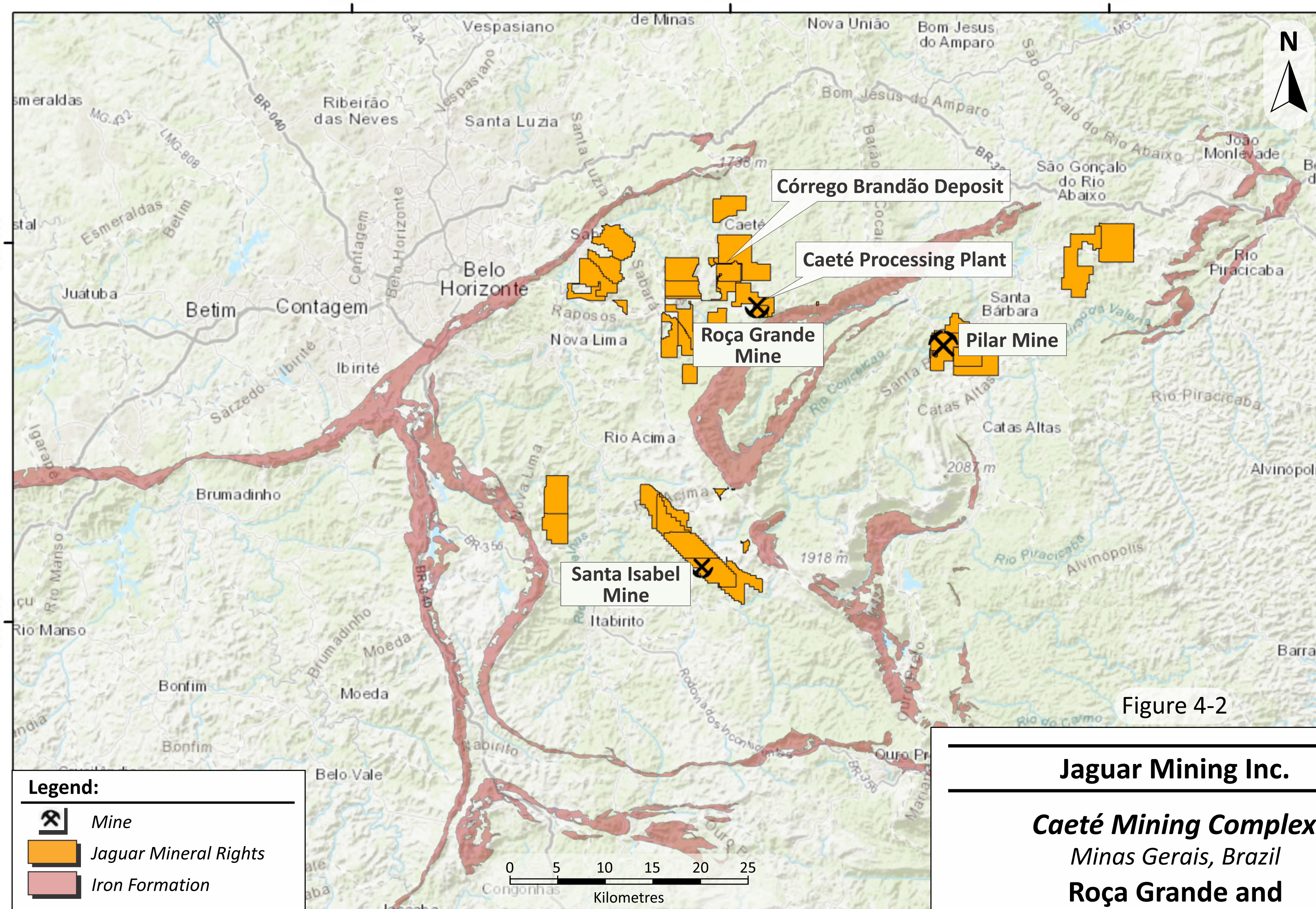


Figure 4-2

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Roça Grande and Pilar Mines Location

March 2022

Source: Jaguar Mining Inc., 2020.

4.1 Mineral Tenure and Surface Rights

4.1.1 Introduction

Mining activities in Brazil are governed by the Brazilian Federal Constitution of 1988 (the Brazilian Federal Constitution), the Brazilian Mining Code (Federal Decree-Law No. 227/1967), and various other decrees, laws, ordinances, and regulations such as the Decree No. 9.406/2018 which renews the regulation of the Brazilian Mining Code. These regulations impose several obligations on mining companies pertaining to items such as the manner in which mineral deposits are exploited, the health and safety of the workers and local communities where mines are located, and environmental protection and remediation measures.

Under the Brazilian Federal Constitution, mineral rights are recognized as being distinct from surface rights and belonging exclusively to the Brazilian federal government. The Brazilian federal government is the sole entity responsible for governing mineral exploration and mining activities in Brazil.

Amongst other ministries and agencies, the Ministry of Mines and Energy (MME) and the National Mining Agency, or Agência Nacional de Mineração (ANM) in Portuguese, (formerly the Departamento Nacional de Produção Mineral (DNPM)) regulate mining activities in Brazil. The ANM is responsible for monitoring, analyzing, and promoting the performance of the Brazilian mineral industry by administering and granting rights related to the exploration and exploitation of mineral resources and other related activities in Brazil.

In Brazil, mineral resource tenure is achieved via exploration licenses (Autorizações de Pesquisa), mining concessions (Concessões de Lavra), mining concession applications (Requerimento de Lavra), and exploration license applications (Requerimentos de Pesquisa), which are together broadly referred to as mineral rights.

4.1.2 Mining Concessions and Exploration Licenses

Mining concessions have no set expiry date. Each year Jaguar is required to provide information to ANM summarizing mine production statistics through the annual mining report (Relatório Anual de Lavra).

Exploration licenses are granted for an initial period of three years. Once a company has applied for an exploration license, the applicant holds a priority right to the concession area as long as there is no previous ownership. The fees for holding the licenses during this initial three year phase is Brazilian Reais (R$) 4.09/ha, to be paid annually. The owner of the license can apply to have the exploration license renewed for a one time extension period up to three years. The fees for holding the licenses during the second phase is R$ 6.13/ha, to be paid annually. Renewal is at the sole discretion of ANM. Granted mining concessions and exploration licenses are published in the Official Gazette of the Republic (Diário Oficial da União - DOU), which lists individual concessions and their change in status. The exploration licenses and mining concessions grant the owner subsurface mineral rights, while surface rights can be applied for if the land is not owned by a third party.

The owner of an exploration license is guaranteed, by law, access to perform exploration field work, provided adequate compensation is paid to third party landowners and the owner accepts all environmental liabilities resulting from the exploration work. Exploration licenses are subject to annual fees based on their size (Taxa Anual por Hectare). A final report that provides the results of any exploration activities carried out is required to be filed with the ANM upon expiry of an exploration license.

Title to the land tenure package for the Caeté Complex is by Jaguar's wholly-owned subsidiary, MSOL. The Caeté Complex comprises 29 mining leases and exploration concessions granted by the ANM (Figure 4-3). The mining leases and exploration concessions cover an area totalling 17,467.04 ha (Table 4-1).

4.1.3 Surface Rights

The Caeté Complex includes four surface rights holdings (Figure 4-4). The surface rights holdings comprise eleven separate agreements that cover a total area of 829.57 ha (Table 4-2).

The location of the mineralized wireframes in relation to the Roça Grande and the Pilar property boundaries are presented in Figure 4-5 and Figure 4-6, respectively.

Table 4-1: Summary of Mineral Rights Holdings
Jaguar Mining Inc. – Caeté Mining Complex

ANM Tenement	Target	Area (ha)	Licence No.	Licence Published (DD/MM/YYYY)	Licence Renewal Date (DD/MM/YYYY)	Status
			Pilar			
830.463/1983	Pilar	961.66	206	17/08/2005	-	Mining Concession
830.187/2004	Cubas	600.00	3867	05/05/2004	26/10/2018	Exploration Licence Renewal Application
831.878/2013	Pilarzinho	35.33	13494	29/10/2015	30/08/2018	Exploration Licence Renewal Application
831.233/2017	Pacheca Norte	1,227.97		-		Exploration Licence
Sub-total, Pilar		2,824.96				
			Roça Grande and Caeté Plant			
430.001/1935	Zona A	1,000.01	229	24/07/1996	-	Mining Concession
430.002/1935	Zona B	654.41	236	25/07/1996	-	Mining Concession
807.482/1976	Boa Vista	675.18	322	21/10/2009	-	Mining Concession
830.037/2015	Camará 1	8.15	-	-	-	Mining Concession Application
830.038/2015	Camara 2	12.72				Mining Concession Application
830.807/2017	Morro da Mina	999.85	-	-	-	Mining Concession Application
830.935/1979	Morro do Adão	728.38	933	28/02/1984	19/07/1990	Mining Concession Application
830.938/1979	Catita	521.7	264	03/09/2009	-	Mining Concession

ANM Tenement	Target	Area (ha)	Licence No.	Licence Published (DD/MM/YYYY)	Licence Renewal Date (DD/MM/YYYY)	Status
830.940/1979	Juca Vieira	285.32	246	22/07/1993	-	Mining Concession
831.056/2010	RG 3	706.03	-	-	-	Mining Concession Application
831.057/2010	RG 1,2,5,6, and 7	193.08	-	-	-	Mining Concession Application
831.196/2018	Fazenda dos Cristais	106.93	6670	06/09/2018	-	Exploration Licence (Initial)
831.282/2002	Arr.Velho de Santana	884.70	6047	10/09/2002	12/05/2006	Exploration Licence (Positive Final Report Filed)
831.371/2003	Morro Vermelho	583.42	1433	05/06/2008	-	Exploration Licence (Positive Final Report filed)
831.580/2018	Fazenda dos Cristais	313.76	-	-	-	Exploration Application
831.817/2003	Córrego Brandão	1,583.69	8078	06/12/2016	-	Exploration Licence (Positive Final report filed)
830.471/2019	Córrego Brandão	10.95	3838	03/07/2019	-	Right to Request Mining
832.022/2018	Florália	1,618.45	6472	14/09/2021	-	Exploration Licence (Initial)
832.023/2018	Florália	1,500.51	1316	25/02/2021	-	Exploration Licence (Initial)
832.152/2002	Fazenda Furnas do Cutão	600.24	8782	16/12/2002	26/04/2006	Mining Concession Application
832.230/2003	Fazenda Cristais	339.99	9512	25/11/2003	06/12/2016	Exploration Licence (Negative Report)
834.126/2007	Carrancas	808.95	127	19/02/2008	19/03/2013	Right to Request Mining
834.409/2007	Água de Sapo	550.61	147	19/02/2008	19/03/2013	Right to Request Mining

ANM Tenement	Target	Area (ha)	Licence No.	Licence Published (DD/MM/YYYY)	Licence Renewal Date (DD/MM/YYYY)	Status
831.157/2019	Caete-Sabara	86.00		27/07/2021		Exploration Licence (Initial)
830.920/2021	Santa Barbara-Sao Goncaio	209.04		27/08/2021		Exploration Licence (Initial)
Sub-total, Roça Grande and Caeté Plant		14,642.08				
Total Caeté Complex		17,467.04				

Table 4-2: Summary of Surface Rights Holdings
Jaguar Mining Inc. – Caeté Mining Complex

Surface Owner/Property	Area (ha)	Registry No.	Mineralized Zone or Utility		20% Area Forest Legal Reserve
Faz.Velha/Navantino Peixoto	140.00	Pending	Moita II	Inactive	Legal reserve area of 28.52 ha
Trindade	184.78	2920	Camará II	Inactive	Legal reserve area of 71.43 ha
Roça Grande	41.65	13171	Moita I Dam	Inactive	Legal reserve area of 9.23 ha
Roça Grande	177.71	13172	RG01, RG07 and RG05	Active	Not Available
Gongo Soco	64.00	8854	RG02, RG03 and RG06	Active	Not Available
Serra Luis Soares	9.38	13170	Processing Plant	Active	Not Available
Serra Luis Soares	99.47	12734	RG02W, Processing Plant and Waste Dump	Active	Not Available
Santa Rita	23.55	11379	Catita	Inactive	The legal reserve area of 4.29 ha
Serra Luis Soares/Saint Gobain	10.63	17033	Mechanic Workshop	Active	Not Available
José Engrácio	6.70	4191 AV-10	RG03	Active	Not Available
Fazenda Santa Rita	71.70	16180	Catita Property	Active	Not Available
Total	829.57				

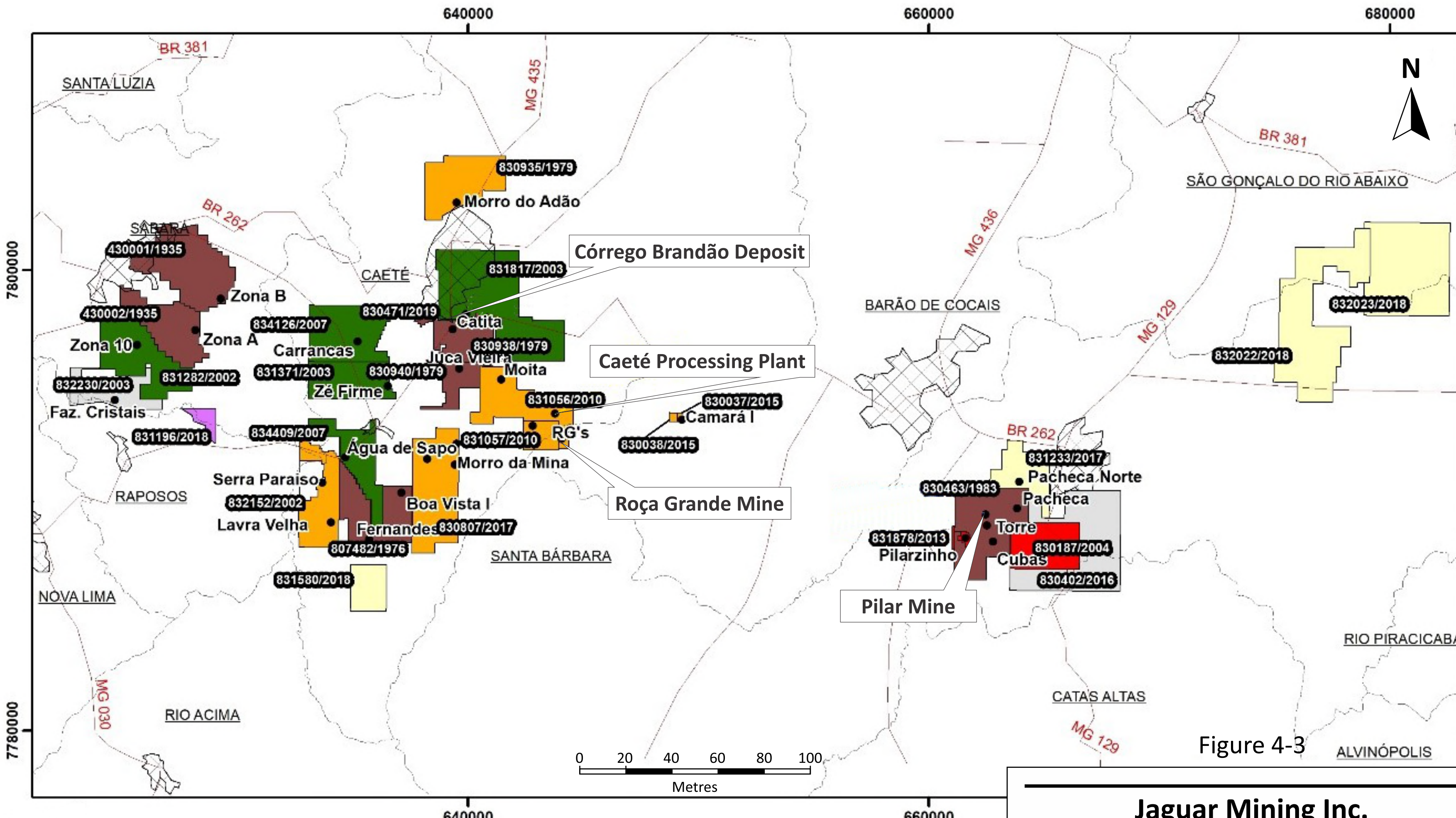


Figure 4-3

Legend:

- Targets
- Roads
- Municipality Boundary
- Urban Area

Mineral Rights Phase

- *Exploration License (Negative Report)*
- *Exploration Application*
- *Exploration License (Initial)*
- *Exploration License Renewal Application*
- *Exploration License (Positive Final Report Filed)*
- *Mining Concession Application*
- *Mining Concession*

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Mineral Rights Distribution

March 2022

Source: Jaguar Mining Inc., 2020.

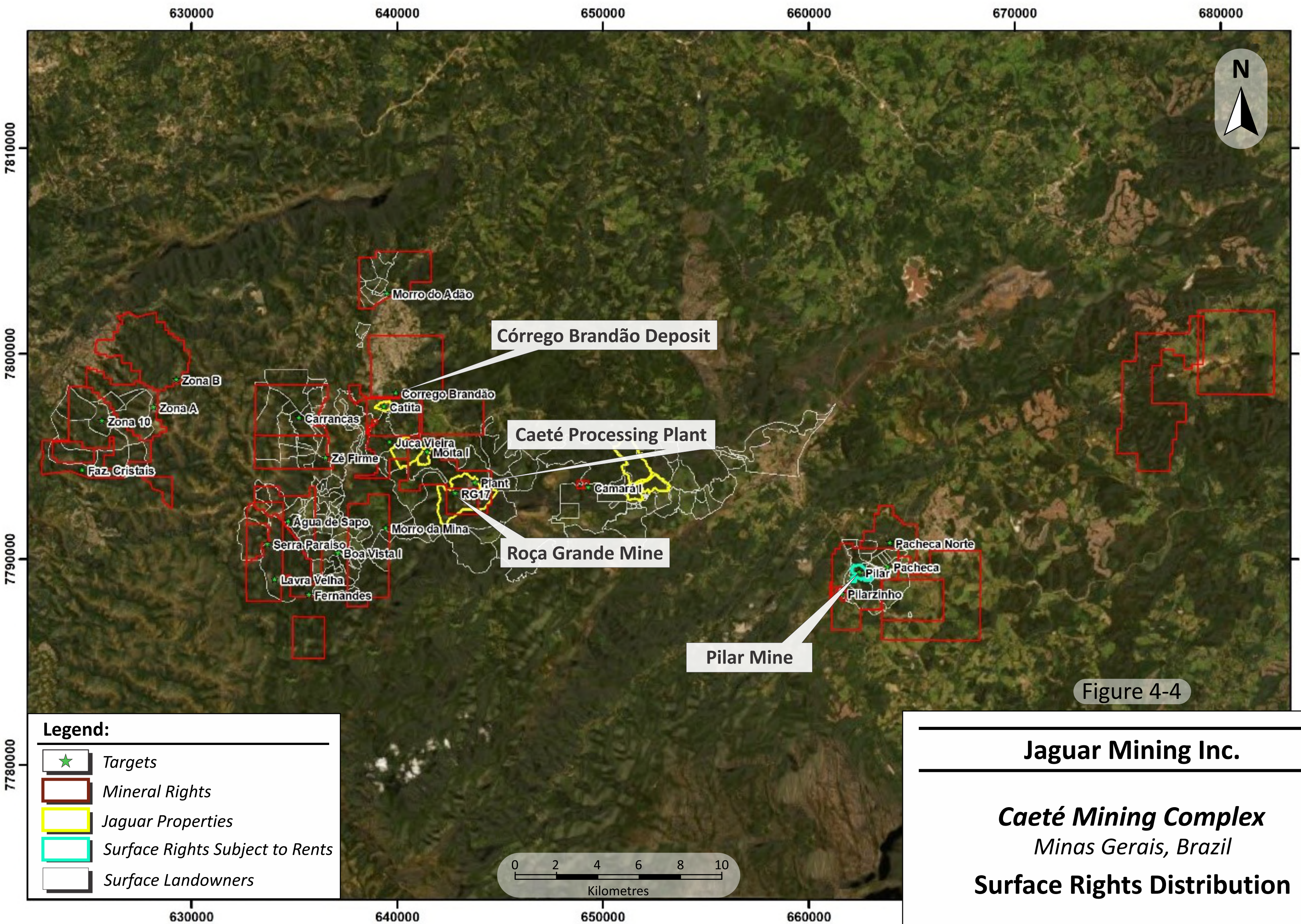


Figure 4-4

Jaguar Mining Inc.

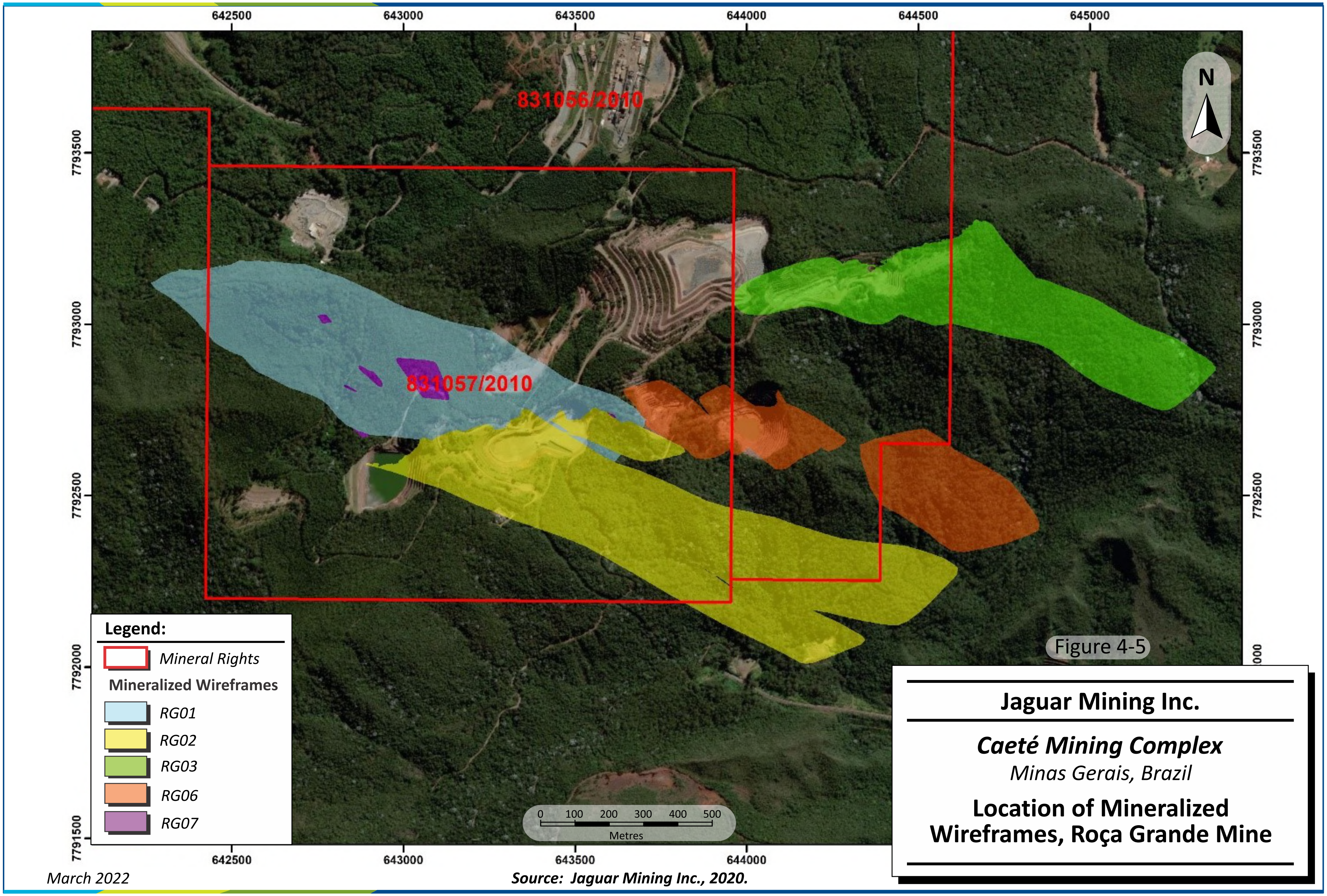
Caeté Mining Complex

Minas Gerais, Brazil

Surface Rights Distribution

March 2022

Source: Jaguar Mining Inc., 2020.



March 2022

Source: *Jaguar Mining Inc., 2020.*

Figure 4-5

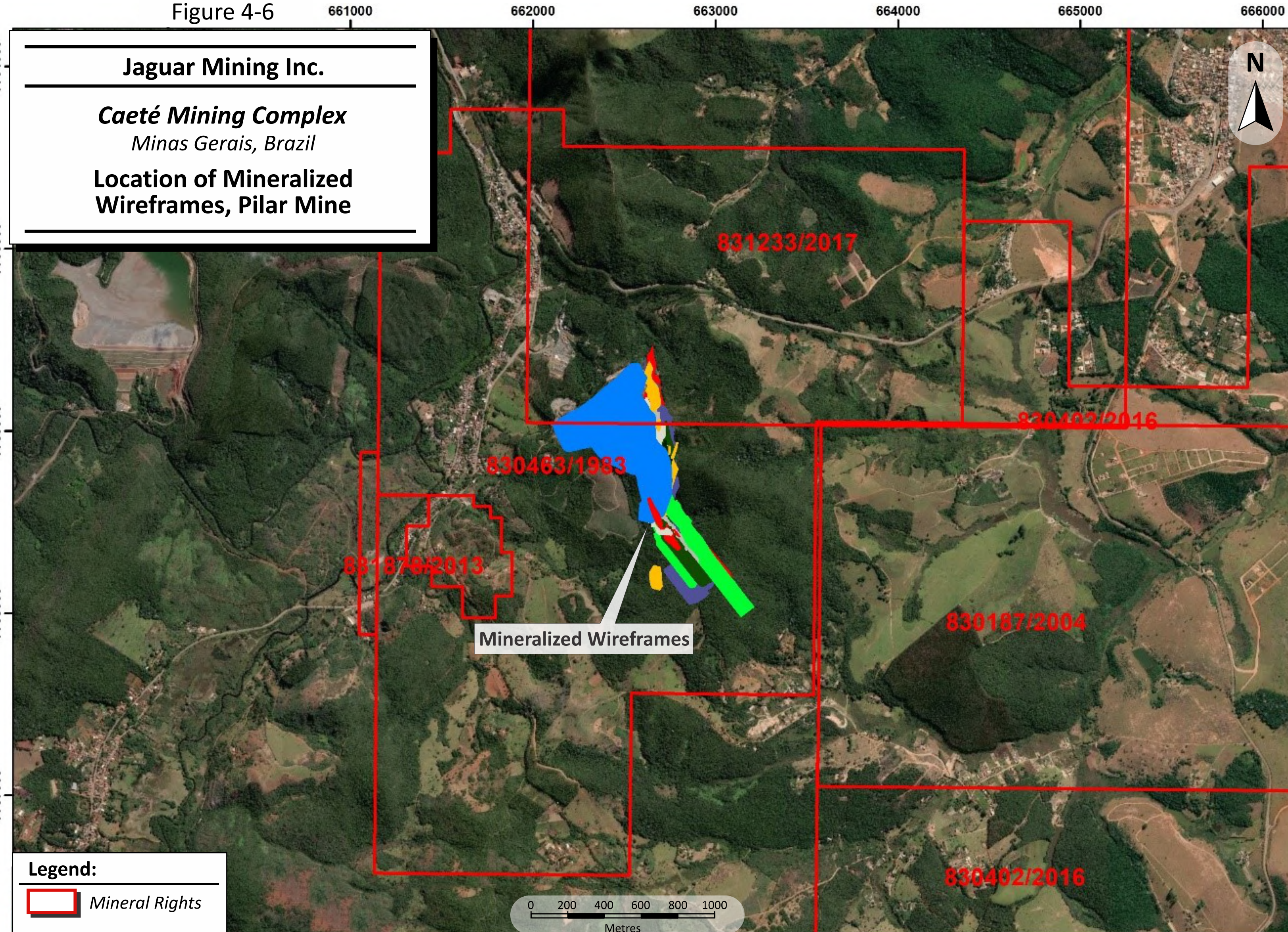
Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Location of Mineralized Wireframes, Roça Grande Mine

Figure 4-6



March 2022

Source: Jaguar Mining Inc., 2020.

4.2 Royalties and Other Encumbrances

Revenues from mining activities are subject to the Financial Compensation for the Exploration of Mineral Resources, Compensação Financieria pela Exploração de Recursos Minerais (CFEM) in Portuguese, royalty that is paid to the ANM. The CFEM is a royalty paid on a monthly basis based on the sales value of minerals, net of taxes levied on the respective sale. When the produced minerals are used in its internal industrial processes, the CFEM payment is determined based on the costs incurred to produce them. The CFEM is determined by a reference price of the respective mineral to be defined by the ANM. The applicable rate varies according to the mineral product (currently 1% for gold).

In addition, one royalty payment and three lump sum annual rental payments are associated with the Caeté Complex (Table 4-3).

Table 4-3: Summary of Royalties and Rents, 2021
Jaguar Mining Inc. – Caeté Mining Complex

Owner	Royalty	Mineralized Zone or Utility	Payments (R$)
Carlos Marcelani	0.5% of Production Gross Profits (Concession 830.463/1983)	Pilar office, Mechanic Shop, and BA, BF, BFII, and SW mineralized zones	3,083,325.84

4.2.1 Permits and Other

Key licenses to operate and environmental and other permits are discussed in Section 20 of this Technical Report.

The SLR QP is not aware of any environmental liabilities on the property. Jaguar has all required permits to conduct the proposed work on the property. The SLR QP is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The Caeté Complex can be accessed via federal highway BR-381 and state paved roads. The distance from Belo Horizonte to the municipality of Caeté is 110 km along paved roads (and an additional eight kilometres by dirt road from the municipality of Caeté to the Caeté Plant). Access to Pilar is provided by a paved highway from both Belo Horizonte (93 km) and the municipality of Santa Bárbara (seven kilometres). A partially paved, 45 km secondary road is used to transport Pilar run of mine (ROM) ore to the Caeté Plant at the Roça Grande site.

Belo Horizonte has a large commercial airport with domestic and international flights.

5.2 Climate and Physiography

The Caeté Complex is situated at an elevation of approximately 1,000 MASL. The terrain is characterized as rugged in many places, with numerous rolling hills incised by deep gullies along drainage channels. The relief in the area is approximately 400 m. Farming and ranching activities are carried out in approximately 50% of the region.

Annual rainfall in the Caeté Complex area averages between 1,300 mm and 2,300 mm, 84% of which falls during the rainy season between October and March. Most of the precipitation falls in the months of December and January. Surface winds in the Caeté Complex area have a generally low average speed (less than 1.0 m/s) and are predominantly from the south and southeast.

The annual average temperature is slightly above 20°C. Air humidity does not exceed 90%, even during the summer months. The annual average evaporation is approximately 934 mm. The climate is suitable for year round operations.

5.3 Local Resources

Belo Horizonte is one of the world's mining capitals, with a regional population in the range of six million people in its metropolitan region. Automobile manufacturing and mining services dominate the economy. General Electric has a major locomotive plant which produces engines for all of South America and Africa. Mining activities in Belo Horizonte and the surrounding area have been carried out in a relatively consistent manner for over 300 years.

This mining region has historically produced significant quantities of gold and iron from open pit and large scale underground mining operations operated by AngloGold Ashanti Limited (AngloGold Ashanti), Companhia Vale do Rio Doce (Vale), Companhia Siderúrgica Nacional (CSN), and Eldorado Gold Corp. (Eldorado). Belo Horizonte is a well developed urban metropolis and has substantial infrastructure including two airports, an extensive network of paved highways, a fully developed and reliable power grid, and ready access to process and potable water.

Both the municipalities of Caeté and Santa Bárbara have good urban infrastructure, including banks, hospitals, schools, and commercial businesses. The local economy is based on agriculture and iron mining, and skilled labour is readily available. Manpower, energy, and water are also readily available.

5.4 Infrastructure

The Caeté Complex includes the nominal 2,050 tpd Caeté Plant with separate TSFs for both fine flotation tailings and CIP tailings. The Caeté Plant is located at Roça Grande, at an elevation of approximately 1,250 MASL.

The Caeté Complex is supplied by electric power from the Brazilian national grid, however, back-up generator power is also available at Roça Grande and Pilar.

An administration complex is located at the entrance to the Caeté Plant, with such ancillary buildings as offices, conference rooms, cafeteria, maintenance shops, compressors (mine and mill), a dry, a first aid station, warehouse, backfill preparation, and a water treatment plant, which is located near the Caeté Plant. The assay laboratory and process testing laboratory are also located near the Caeté Plant. Adjacent to the Caeté Plant is Roça Grande (under care and maintenance since Q1 2018), which is accessed by an adit located approximately 800 m to the southwest of the Caeté Plant, at an elevation of approximately 1,100 MASL.

Pilar surface infrastructure is limited to shops, offices, a cafeteria, a first aid station, and warehouse facilities. Pilar is accessed by an adit located at an elevation of approximately 750 MASL. The explosives and blasting accessories warehouses are located away from the mine area, in compliance with the regulations set forth by the Brazilian Army.

At the time of SLR's most recent site visit, the Caeté Complex was well run and organized, provided a safe environment for the mine workforce, and had well maintained maintenance and equipment facilities. The facilities are of a size and quality capable of supporting the forecasted production rates.

6.0 HISTORY

6.1 Prior Ownership

In December 2003, Jaguar acquired the Santa Bárbara property, which included the Pilar mineral concessions, from Vale. In November 2005, Jaguar entered into a mutual exploration and option agreement with Vale with respect to six concessions, known as the Roça Grande concessions, located on 9,500 acres of highly prospective gold properties along 25 km of a key geological trend in the Iron Quadrangle. The option agreement between Jaguar and Vale provided Jaguar with the exclusive right, over a 28 month period beginning November 28, 2005, to explore and conduct feasibility studies and to acquire gold mining rights to the Vale properties if the studies supported economical mining operations. The option agreement granted corresponding rights to Vale to explore the Jaguar property for iron and acquire mineral rights to the Jaguar property during a three year period. In November 2007, Jaguar notified Vale of its intent to exercise the option to acquire all six Roça Grande concessions. The final transfers of the Roça Grande concessions to Jaguar were concluded in December 2010 and August 2011 (Jaguar, 2020). In November 2014, four of the six Roça Grande concessions acquired from Vale were returned to Vale by amending the original contract.

6.2 Exploration and Development History

Initial exploration activities carried out by Vale between 1973 and 1993 in the Roça Grande area consisted of regional geological reconnaissance, exploratory geochemistry, and geophysical surveys, in addition to the excavation of exploration trenches and diamond drilling to evaluate the gold mineralization observed in the area. In total, 4,746 stream sediment samples were collected, and 4,350 m of trenches were excavated during the 1973 to 1993 period.

Vale carried out geological mapping, geological interpretation, and exploration and in-fill drilling at the Pilar deposit. Eldorado executed a small drilling campaign to evaluate the Pilar deposit from 2002 to 2003 (Machado, 2010).

Soil sampling programs have been carried out throughout the various claim blocks within the Caeté Complex. A summary of the soil samples collected by the various mining companies is presented in Table 6-1.

Table 6-1: Caeté Mining Complex Soil Samples by Mining Company
Jaguar Mining Inc. – Caeté Mining Complex

Company	Total
MMV (AngloGold Ashanti)	1,270
DOCEGEO (Vale)	7,899
WMC (Western Mining Co.)	2,674
Jaguar	11,441
Total	23,284

Jaguar initiated exploration activities at Pilar in 2006, and initially contemplated building a sulphide plant at the Pilar site, however, the acquisition of the Roça Grande concessions created an opportunity to develop an expanded project, with greater plant capacity to receive ore from several mineral properties.

In 2007, Jaguar completed a scoping study of the Caeté Project, received the Implementation Licence, secured the power contract for the start-up, and commissioned TechnoMine Services, LLC (TechnoMine) to prepare a NI 43-101 Technical Report on the Caeté Project mineral resources.

In 2008, expansion plans at the Caeté Project continued as TechnoMine completed a feasibility study (FS). By the end of Q3 2008, all necessary permits and licences for the construction and commissioning phase of the Caeté Project had been received and Jaguar initiated civil works for the milling and treatment circuits.

In November 2008, due to the decline in gold prices, the financial markets and worldwide equity values, including the gold sector, Jaguar temporarily suspended development of the Caeté Project pending an assessment of market conditions and the availability of capital to move the project forward. Consistent with the decision to suspend the development of the Caeté Project, underground work at Roça Grande was temporarily suspended, however, development at the Pilar continued.

In December 2008, Jaguar began transporting ore by truck from Pilar to Jaguar's Paciência Mining Complex to supplement the ore being supplied from Paciência Santa Isabel Mine.

In March 2009, Jaguar completed an $86.3 million equity offering, the proceeds of which were primarily used to restart development and construction of the Caeté Plant. During 2009 and part of 2010, Jaguar focussed on the implementation and construction of the Caeté Plant.

The Caeté Plant was commissioned in June 2010, with first gold poured in August 2010, and commercial production declared in October 2010. Capital expenditures for the Caeté Project totalled US$127 million (Jaguar, 2020). Since 2010, the Caeté Plant has processed material from various local deposits including Roça Grande, Pilar, and Rio de Peixe.

At Roça Grande, mining activities focussed on the RG01 deposit. The principal access to Roça Grande is provided by an adit and ramp system that has been developed to the 925 m elevation, approximately 175 m below the elevation of the adit collar. A crosscut to the south was begun from the 1,070 m elevation to provide access to the RG02 deposit but was abandoned when it encountered poor ground conditions. Roça Grande has been on care and maintenance since Q1 2018.

Principal access to Pilar is provided by an adit and ramp system that has been developed to a depth of approximately 1,000 m below the elevation of the adit collar as of December 31, 2021. Mining activities are focussed on a number of separate zones, however, the bulk of the production is now being derived from the BF and BF II zones.

6.3 Past Production

A small amount of gold was produced by DOCEGEO from the Roça Grande deposits (RG02, 03, 04, 05, and 06) from 1996 to 2000. In total, approximately 1.02 million tonnes (Mt) of predominately oxide material at an average grade of 2.2 g/t Au was mined by open pit mining methods and processed by heap leaching. A total of approximately 66,800 oz Au was recovered (Machado, 2010).

Initial production from Pilar was processed at the Paciência Mining Complex during the 2008 to 2010 period. After 2010, Pilar ore was processed at the Caeté Plant. Since 2008, Pilar has recovered approximately 517,420 oz Au as of December 31, 2021.

The Roça Grande was placed on care and maintenance in Q1 2018.

Production for the Caeté Complex is summarized in Table 6-2.

Table 6-2: Caeté Mining Complex Production
Jaguar Mining Inc. – Caeté Mining Complex

Year	Pilar Production		Roça Grande Production		Caeté Plant Production			
	Tonnes (t)	Grade (g/t Au)	Tonnes (t)	Grade (g/t Au)	Tonnes (t)	Grade (g/t Au)	Recovery (%)	Ounces Produced (oz Au)
2008	7,000	5.43	-	-	-	-	-	-
2009	163,000	4.39	-	-	-	-	-	-
2010	291,000	3.73	58,000	2.48	290,000	2.71	88	19,319
2011	453,000	3.55	204,000	2.35	674,000	2.90	87	54,998
2012	426,000	3.36	208,000	3.30	657,000	2.96	89	54,995
2013	450,000	3.23	156,000	2.81	624,000	2.94	88	52,170
2014	391,000	2.85	172,000	2.39	596,000	2.57	88	44,251
2015	308,000	3.32	159,000	2.29	469,000	2.92	90	39,762
2016	296,000	3.35	89,000	2.16	380,000	3.02	91	33,349
2017	335,000	3.80	69,000	2.51	406,000	3.27	90	38,685
2018	353,000	4.24	12,000	2.69	377,000	3.81	89	41,788
2019	426,826	3.85	-	-	428,830	3.09	87	40,682
2020	433,625	3.84	-	-	433,625	4.16	88	51,049
2021	447,427	3.72	-	-	447,430	3.70	88	46,372
Total	4,780,878	3.60	1,127,000	2.59	5,782,885	3.14	88	517,420

Notes:

1. From 2008 to 2011, some of the Pilar ore was processed at the Paciência Mining Complex.
2. From 2010 to 2012, open pit oxide ore from Roça Grande was mined and processed.
3. Caeté Plant production in 2019 included small quantities of feedstock from Roça Grande stockpiles.

6.3.1 Plant Recovery and Production

Figure 6-1 presents the monthly recovery and throughput of the Caeté Plant for 2020 and 2021. Table 6-3 summarizes the annual production information from 2019 to 2021.

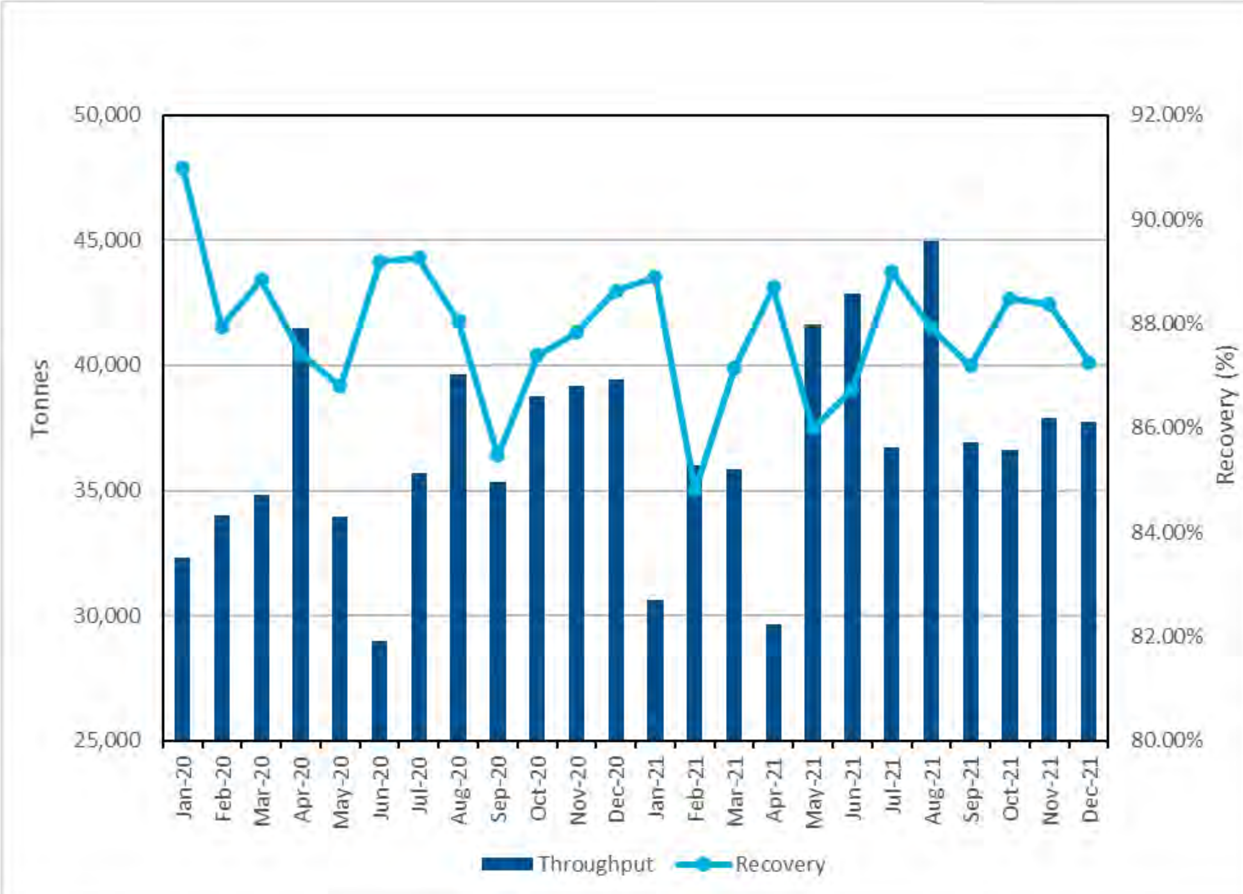


Figure 6-1: Monthly Plant Throughput and Recovery

In 2020 and 2021 the Caeté Plant produced 51,049 oz Au at a recovery of 88.13% and 46,372 oz Au at a recovery of 87.57%, respectively.

In 2020 and 2021, the Caeté Plant processed feed from Pilar. Tailings filtration capacity could be expanded if future mine production exceeds the filtration capacity of 720,000 tpa.

Table 6-3: Annual Plant Production Information
Jaguar Mining Inc. – Caeté Mining Complex

Description	Unit	2019	2020	2021
Throughput	t	432,847	433,625	447,427
Feed Grade	g/t Au	3.66	3.99	3.59
Gold Production	oz	40,682	51,049	46,372
Recovery	%	86.94	88.13	87.57

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The Roça Grande and Pilar deposits are located in the eastern portion of the Iron Quadrangle, which had been the largest and most important mineral province in Brazil for centuries until the early 1980s, when the Carajás mineral province, in the state of Pará, attained equal status. Many commodities are mined in the Iron Quadrangle, the most important being gold, iron, manganese, bauxite, imperial topaz, and limestone. The Iron Quadrangle was the principal region for Brazilian hard rock gold mining until 1983 and accounted for approximately 40% of Brazil's total gold production. Gold has been produced from numerous deposits in the region, primarily in the northern and southeastern parts of the Iron Quadrangle, with most hosted by Archean or Early Proterozoic banded iron formations (BIFs) contained within greenstone belt supracrustal sequences.

In the Brumal-Pilar (Santa Bárbara) region, observed outcrops belong to the granitic-gneissic basement, and to the Nova Lima and Quebra-Ossos groups of the Archean Rio das Velhas Supergroup. The granitic-gneissic basement consists of leucocratic and homogeneous gneisses and migmatites, making up a complex of an initial tonalitic composition intruded by Archean rocks of granitic composition. The contacts between the supracrustal sequences and the granitic-gneissic basement are discordant and tectonically induced by reverse faulting. The Rio das Velhas Supergroup is predominately regionally represented by meta-volcanic and meta-epiclastic packages of the Nova Lima Group and by the meta-ultramafic rocks of the Quebra-Ossos Group including serpentinites, talc schists, and meta-basalts (Figure 7-1). "Algoma type" BIFs occur as the more prominent volcanogenic-sedimentary rock packages in the Nova Lima Group with thicknesses of up to 15 m to 20 m.

The Nova Lima Group can be sub-divided into three units:

- A basal unit composed of mafic (basic) to intermediate meta-volcanic rocks interlayered with meta-pelites, Algoma type BIFs, and rare acidic meta-volcaniclastic rocks.
- An intermediate unit represented by meta-mafic to meta-felsic volcanic rocks and meta-volcaniclastic rocks interlayered with graphitic phyllites and horizons of Algoma type BIFs.
- An upper unit composed of meta-pelites interlayered with felsic meta-volcanic rocks and meta-volcaniclastic rocks, quartzites, and meta-conglomerates.

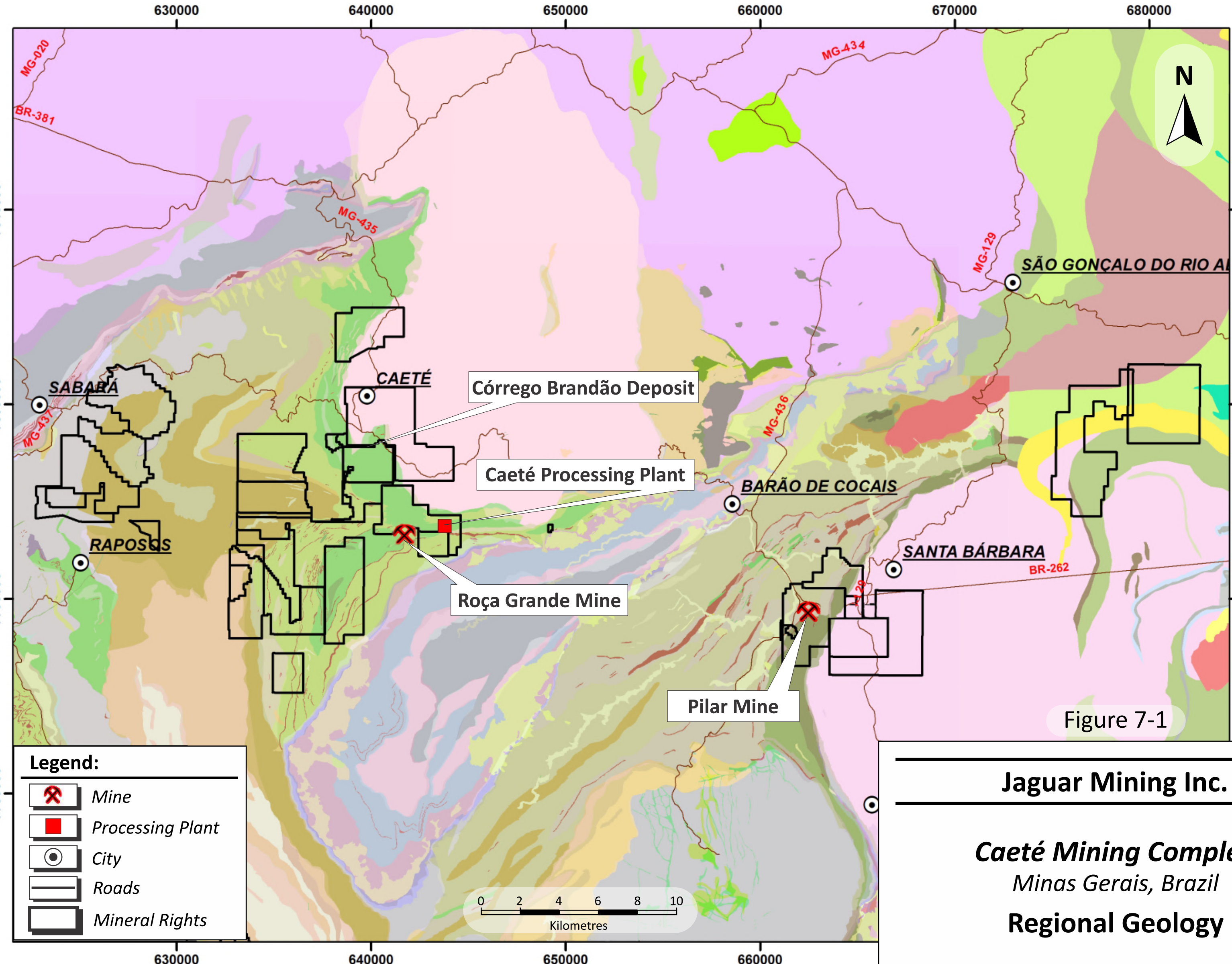


Figure 7-1

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Regional Geology

March 2022

Source: Jaguar Mining Inc., 2020.

PHANEROZOIC

Cenozoic

NEOGENO

Pleistocene-Holocene

- N34al — Alluvium: sand and gravel
- N34co — Colluvial deposits: Blocks, boulders and Pebbles of Quartzite and cango in alluvial soil
- N23ca — Canga: rock fragments cemented by limonite
- N23co — Colluvial deposits: Quartzite blocks, blocks and pebbles, itabirite and canga in alluvial soil

PALEOGENE

Eocene-Oligocene

- E23sl — Lake sediment: argillite, sandstone and lignite

PALEOGENE

- Eca — Canga: rock fragments cemented by limonite

PROTEROZOIC

PALEOPROTEROZOIC

RIACIANO

ITACOLOMI GROUP

- PP2i — Undivded - Quartzite with conglomerate and Phyllite lenses
- PP2isa — Santo Antônio Formation - Phyllite, quartzite, conglomerate and dolomite. Lenses of rock rich in iron or iron formation

PROTEROZOIC

PALEOPROTEROZOIC

MINES SUPER GROUP

RIACIANO

GROUP WILL KNOW

- PP2ms — Undivided - Chlorite-sericite shale, serictic quartzite, feldspar quartzite and metagravit

SIDERIAN

PIRACICABA GROUP

- PP1mp — Undivided - Phyllite, quartzite, ferruginous quartzite and quartz-sericite shale
- PP1mpb — Barreiro Formation - Graffite shale, schist mica and phyllite
- PP1mpf — Formation Fêcho do Funil - Phyllite, dolomitic phyllite, dolomite; quartzite and subordinate iron formation
- PP1mpc — Cercadinho Training - Ferruginous quartzite , quartzite, grit, quartz sericite shale, phyllite, sericita shale, talco xisto e grafita xisto

ITABIRA GROUP

- PP1mi (h) — Undivided - Itabirito, phytotic and dolomitic itabirite; high-content, friable hematite (h)
- PP1mig (it) — Gandarela Training - Dolomite, dolomite itabirite, limestone and phyllite Itabirito (it)
- PP1mic (h) — Cauê Formation - Itabirito and dolomitic itabirite, with dolomite lenses. Compact and friable hematite (h)

CARAÇA GROUP

- PP1mc — Undivided- Quartzite, quartzite phyllite, Phyllite and conglomerate
- PP1mcb — Batatal Training- phyllite seriolitic, phyllite carbonaceous, finite quartzite lens and iron formation
- PP1mcm — Training Currency - Gray quartzite, grit and conglomerate, quartz-sericite shale with interspersed philite lenses; quartzite phyllite, quartz-mica shale and conglomerate

ARCHEAN

NEOARCHEAN - MESOARCHEAN

SRIO DAS VELHA SUPERGROUP

NEOARCHEAN

MACHINE GROUP

STRONG HOUSE FORMATION

- A4rmcc — Capanema Unit - Sericite shale and sericite-quartz shale. (Association of Non-Marine Litofacies: alluvial-floating metasediments)
- A4rmce — Unit Córrego do Engenho- Seritic quartzite of medium granulation and subordinate conglomerate quartzite. Association of non-marine lithofacies: alluvial-flown metasediments)
- A4rmcj — Jaguara Unit- Medium-to-thick granular sericitic quartzite and grit; polymorphic metaconglomerate and quartz-mica suborporate shale. Preserved cross-sectional and cross-sectional stratification. (Association of Non-Marine Litofacies: alluvial-fluvial metastasis)
- A4rmcdc — Unit Girl Owner, Fácies Córrego da Cidreira - Metaparaconglomerado polymic and quartzite (Association of Non-Marine Litofacies: alluvial-fluvial metasediments)
- A4rmcdv (cg) — Unit Girl Owner, Fácies Córrego do Viana - Polycyclic metaconglomerate and serictic quartzite with gradient and cross-grooved and tangential cross stratification; Quartz mica subordinate shale. Polymorphic conglomerate (cg). (Association of non-marine lithofacies: alluvial-flown metasediments)

PALMITAL FORMATION

- A4rmprp (qts) — Rio de Pedras Unit - Sericotic quartzite and quartz-sericite schist with small to medium cross stratification; shale carbonated subordinate. Quartzito seriolitic (qts). (Association of Litofacies Ressedimentada: proximal metaturbidites)

GROUP NOVA LIMA

- A4rncp — Stream Unit of Paina - Quartz-mica-chlorite shale, clorita shale, biotita-small feldspar shale; local ferrous formation. (Association of Litofacies Retentionation: target distal turbidites)
- A4rnfv — Old Farm Unit- Chlorite-quartz feldspar shale, biotite-sericite-chlorite feldspar shale, biotita-moscovita shale, rocha calcis-silicática e metargilito carbonoso (metapsamites and metapelites with small gradational and cross stratification). (Association of Litofacies Staphylococci: metapsamitos and metapelites with small gradational and cross strati fication)
- A4rncm (ff, ge) — Catarina Mendes Unit - Carbonate-quartz-feldspar-biotite-chlorite shale, sericite-biotite-chlorite-quartz shale, quartz-chlorite shale, calcissilictic rock, metaconglomerado e fm. ferrífera. Ferrous formation (ff). Grenada-staurolite schist in contact metaphoric aureole (ge). (Association of Litofacies Ressedimentada: metagrauvaca with cyclic and gradational stratification and plane-parallel and cross stratification)
- A4rncs (ff, sq) — Site Stream Unit - Quartz-carbonate-mica-chlorite shale, quartz-mica shale, charcoal phyllite; fsubordinate ferrous formation. Ferrous formation (ff). Sericita-quarzto shale (sq). (Association of Litofacies Ressedimentada: metapelites and metapsamitos with gradational and cross-sectional esti trati fi cation)
- A4rnm — Minda Unit - Plagioclase-chlorite-mica-quartz shale, sericite-quartz shale, quartz-chlorite-mica shale; shale and subordinate iron formation. (Association of Litofacies Ressedimentada: metapsamitos and metapelites with pre-served gradation stratification)

MESOARCHEAN

- A3rnsq (ff) — Santa Quitéria Unit - Mica-quartz shale, chlorite-quartz shale, sericite-chlorite shale, carbonic shale, iron formation and meta-chert. Ferrous formation (ff). (Classification of Sedimentary Litofacies)
- A3rnmv (ff) — Morro Vermelho Unit - Teolitic and Komatic metabasalt, Iron formation and Metachert; piclastic and fissile-subordinate metavolcanic shale. Ferrous formation (ff). (Association of Vulcanosedimentary-chemical Litofacies)
- A3rnof (ff) — Fine Gold Unit - Teolitic and Komatic metabasalt, metaperidotite and basic metatuph; acid metavulcanic, metachert, iron formation and subordinate carbonaceous shale. Ferrous formation (ff). (Association of Volcanic Milky-Ultramafic Litofacies)

MESOARCHEAN

BASE COMPLEX

- A3b — Mix, sediment or granite

IGNEOUS ROCKS OF UNKNOWN AGE

- d — Diabase Dykes

GEOLOGIC STRUCTURES

- Strike and Dip
- Foliated Bedding
- Inverted Layers
- Inverted bedding with sub-parallel foliation
- Layering/Compositional Banding
- Direction of Vertical Layers
- Direction of vertical schistosity
- Direction and diving of foliation
- Measured Dip Foliation, Phase 2
- Vertical Foliation, Phase 2
- Dip of Shale
- Dip of cleavage
- Dip of Crenulated cleavage or fracture, Phase 3
- Dip of Crenulated cleavage or fracture, Phase 4
- Direction of vertical Cleavage
- Plunge of Joints
- Junta measured Dip
- Vertical Jointing
- Direction of Lineaments
- Direction of Intersections and Lineaments
- Lineaments B
- Lineaments B, Phase 2
- Lineaments B, Phase 3
- Linear shearing of Minerals
- Linear shearing of Minerals, Phase 1
- Linear shearing of Minerals, Phase 2
- Pencil Structures
- Crenulation Axis
- Small Folds, with inducated folds

- Geologic Contact
- Inferred Contact
- Normal Fault
- Inferred Normal Fault
- Thrust Fault
- Inferred Thrust Fault
- Transverse Fault
- Normal Fault
- Inferred Normal Fault
- Axial Trace Anticline Normal
- Inferred Axial Trace Anticline Normal
- Axial Trace Sycline Normal
- Inferred Axial Trace Sycline Normal
- Inferred Axial Trace Anticline Inverted
- Inferred Axial Trace Sycline Inverted

Figure 7-1A

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Regional Geology Legend

March 2022 ***Source: Jaguar Mining Inc., 2020.***

7.2 Local and Property Geology

7.2.1 Roça Grande Deposit

Roça Grande is located in the upper unit of the Nova Lima Group. The dominant rock types observed at Roça Grande are a mixed assemblage of meta-volcanoclastics and meta-tuffs. These are represented by quartz sericite and chlorite schists with variable amounts of carbonate facies BIF, oxide-facies BIF, meta-cherts, and graphitic schists. The iron formations, chert units, and graphitic schist units are intimately inter-bedded with each other, such that they form an assemblage of chemical and clastic sedimentary units.

Two important BIF horizons are present at Roça Grande and they are separated by a central unit of sericitic phyllites and schists (Figure 7-2). The two BIF horizons are approximately parallel and referred to as Structures 1 and 2. In general, the southern BIF unit (Structure 2) is thicker than the northern BIF unit (Structure 1). The North Structure (Structure 1) hosts the RG01 mineralized zone and the South Structure (Structure 2) hosts the RG02, RG03, and RG06 mineralized zones (Figure 7-3). The RG07 mineralized zone is located immediately in the hanging wall of Structure 1 and is predominately hosted by a quartz vein. The bedding is well defined by the carbonate-facies iron formation and chert observed in the BIF horizons, with an overall azimuth strike of 70° to 80° and dipping approximately 30° to 35° south (Figure 7-4).

At the mine scale, folding of the iron formation stratigraphy is generally absent. Local folding and faulting in Structure 2 has been observed in the RG06 mineralized zone where a 200 m to 300 m strike length of the stratigraphy has been folded.

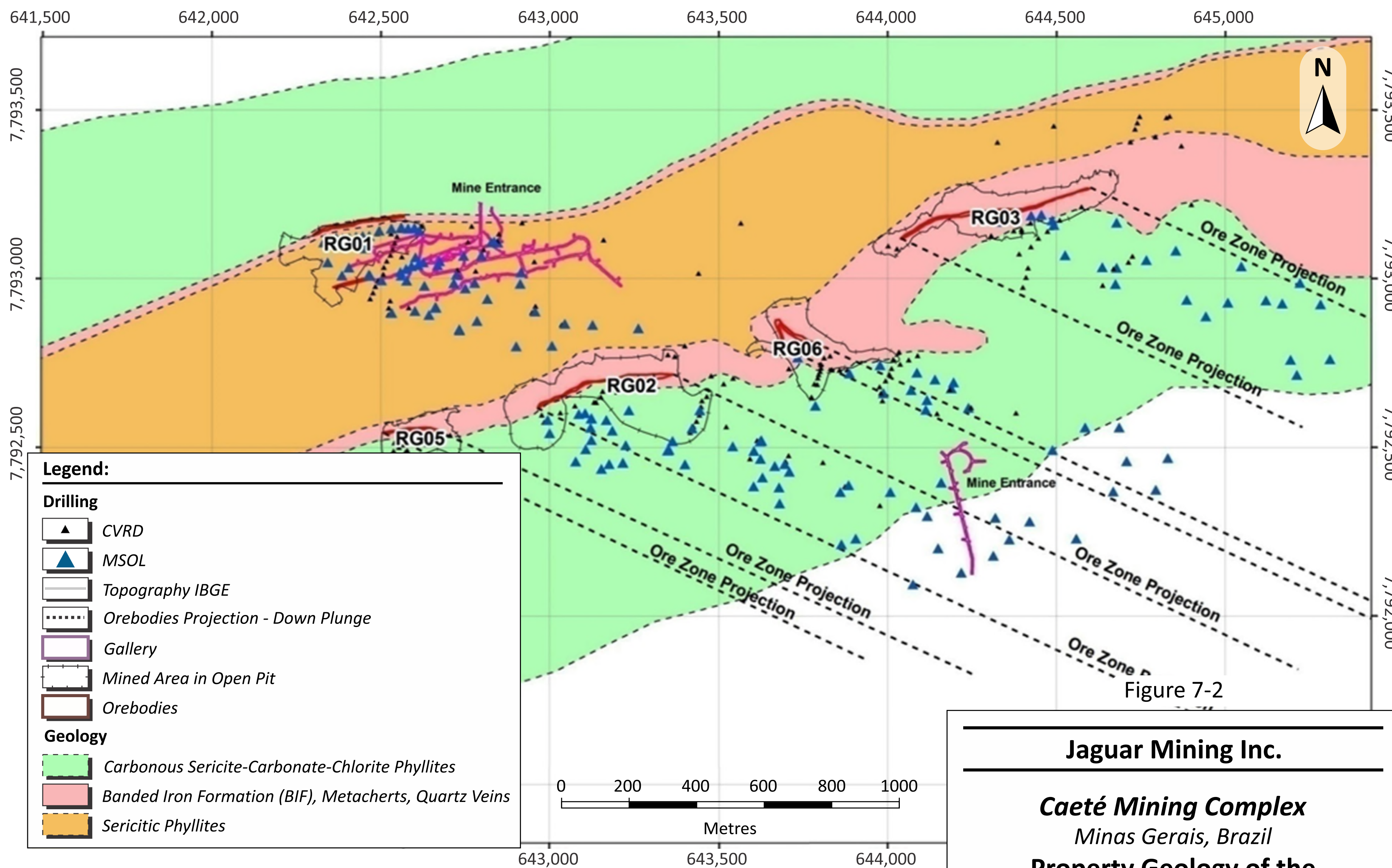


Figure 7-2

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Property Geology of the Roça Grande Mine

March 2022

Source: Jaguar Mining Inc., 2020.

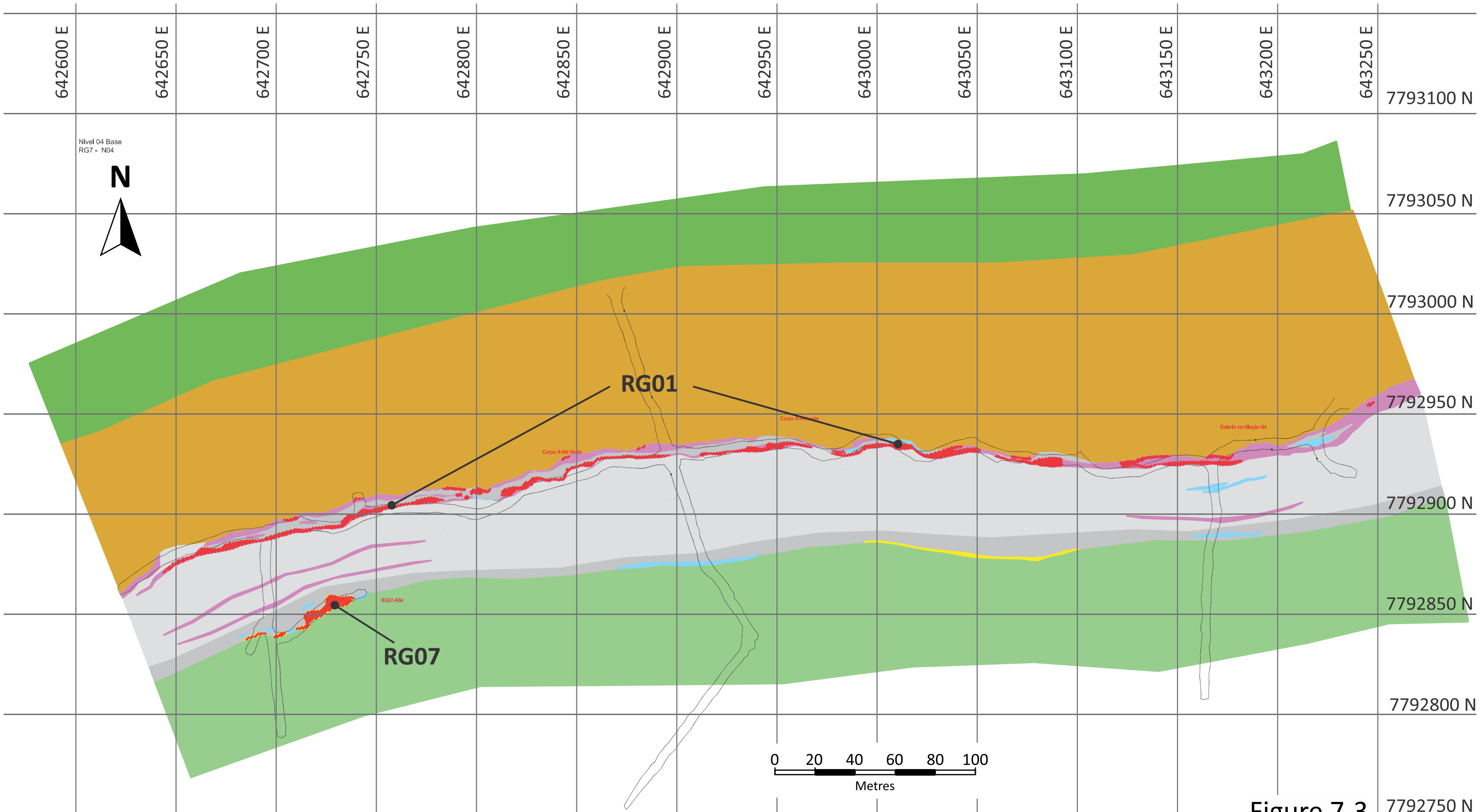


Figure 7-3

Legend:

- *FF - Banded Iron Formation*
- *XG - Graphitic Schist*
- *X1 - Carbonate quartz schist with sericite and carbon*
- *X2 - Carbonate quartz schist with sericite*
- *X2Cl - Carbonate quartz schist with sericite and chlorite*
- *XS - Carbonate chlorite sericite quartz schist with volcanic quartz*
- *VQz - Quartz Vein*
- *VQz - Smoky quartz vein with free fold*
- *Orezone*

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Level Plan, 4th Level, Roça Grande Mine

March 2022

Source: Jaguar Mining Inc., 2020.

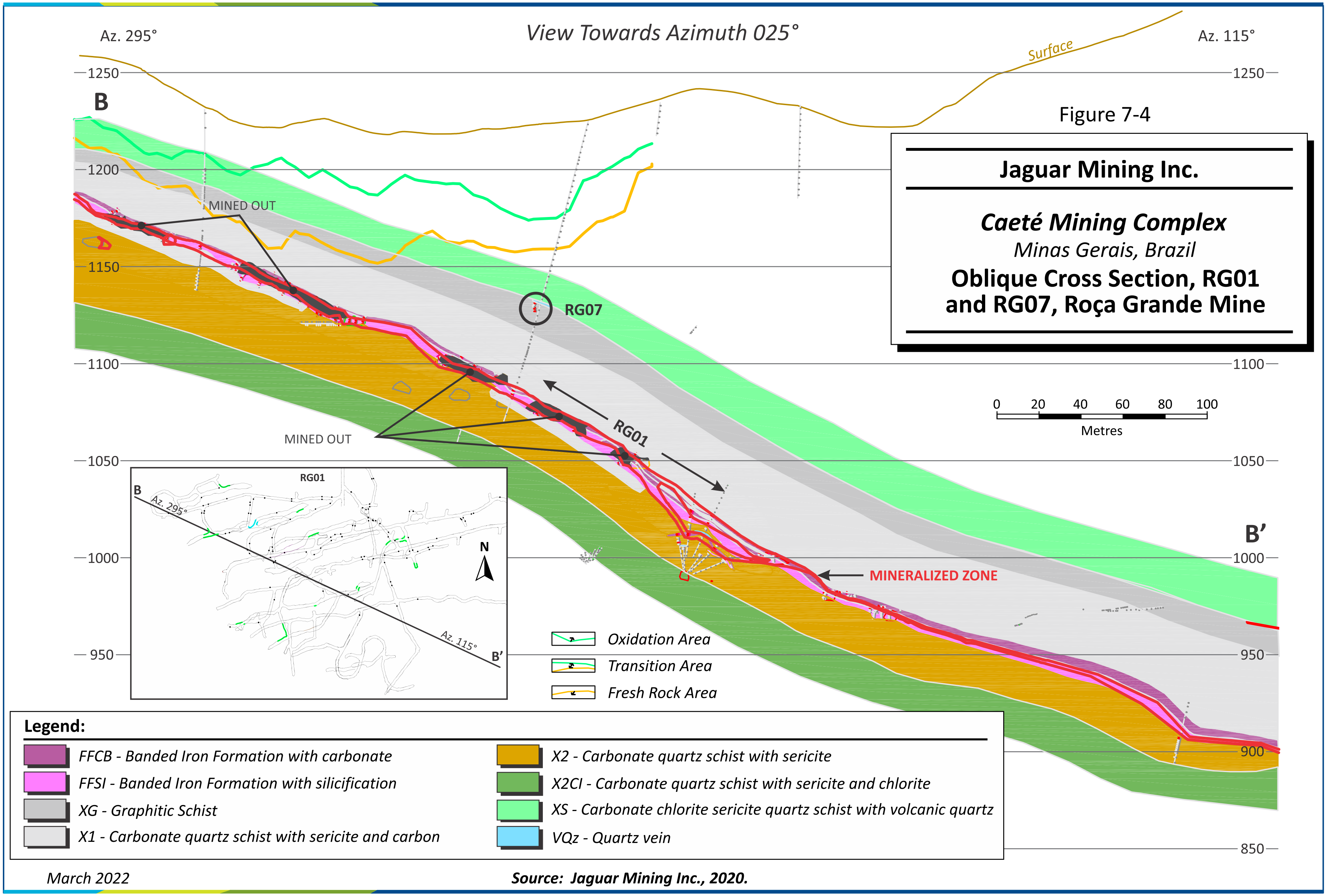


Figure 7-4

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Oblique Cross Section, RG01 and RG07, Roça Grande Mine

7.2.2 Pilar Deposit

The Pilar deposit is hosted by the basal units of the Nova Lima Group, and by sequences of the Quebra-Ossos Group (Figure 7-5). The rock packages in the immediate Pilar area are comprised of tholeiitic meta-basalts, mica-quartz schists, chlorite-quartz schists, quartz-chlorite-sericite schists, and volcano-chemical and clastic meta-sedimentary rocks of the Santa Quitéria Unit (Nova Lima Group), and further to the east, of meta-komatiite flows (along with their intrusive equivalents) of the Quebra-Ossos Group. The volcano-chemical meta-sedimentary rock packages include cherts, BIFs, and carbonaceous phyllites. Along the eastern edge of the Pilar property, the supracrustal units of the Rio das Velhas Supergroup are in fault contact with migmatites and granitic gneisses of the Santa Bárbara Complex, the unit that locally represents the basement sequence.

Within the current (2019 to 2021) Pilar footprint, there are only two known zones of mineralization that outcrop at surface and which were previously mined in an open pit operation, the South-West (SW) and São Jorge Synform (Figure 7-5). The currently mined BF and BF II zones are truly “blind” mineralized zones that occur at deeper levels of the Pilar deposit and were identified and put into production by Jaguar only after the initial years of the underground operation.

Pilar occurs at the northernmost end of the northeasterly oriented Brumal-Pilar BIF trend, which extends for many kilometres to the southwest from the Pilar deposit. In regional terms, the Brumal-Pilar BIF linear trend corresponds to a package of “Algoma type” BIFs (oxide-facies, silicate-facies, and carbonate-facies lithotypes) that represent the main economic target as hosts of the Pilar deposit.

Past regional mapping demonstrated that the Brumal BIF trend within the Pilar site is folded into a considerably tight, overturned synform-antiform fold of approximately one kilometre in amplitude, with axes statistically plunging steeply to the southeast and with an axial-planar tectonic cleavage dipping steeply in the east-southeast direction.

Jaguar has completed systematic geological structural mapping at a number of deep operational levels of Pilar (e.g., Level 13, Level 12, Level 11, Level 10, and Level 8) to better understand the structural setting of the Brumal BIF trend. Figure 7-6 and Figure 7-7 present schematic level plans based on the results from these underground mapping initiatives.

While the “Algoma type” BIFs typically range between five metres and 15 m to 20 m in thickness, at Pilar, they have been severely and tightly folded and thickened as a result of a west-verging compressional regional deformation event that affected the entire eastern border of the Rio da Velhas Supergroup exposures in the Iron Quadrangle Terrain. Structural geometries recorded at Pilar indicate that the mine stratigraphic package may have been folded and refolded during this event. Moreover, some major reverse faults and/or accommodation faults (such as faulted synform closures) formed during this regional compressional event locally exhibit evidence of the presence of later superimposed events (mainly tilting and/or rotation of the previously faulted blocks).

The resulting folded geometry of the Pilar deposit stratigraphic package is now described as a series of overturned synform-antiform folds (a synclinorium) primarily outlined by the Pilar BIF Unit, and which locally may exhibit some degree of stratigraphic transposition and/or stratigraphic thickening at their hinge zones (Figure 7-6). The axes generally plunge to the southeast, with some instances of very local mesoscopic folds plunging to the northeast. The axial-planar tectonic cleavage of the overturned synform-antiform folds dips steeply to the east-southeast.

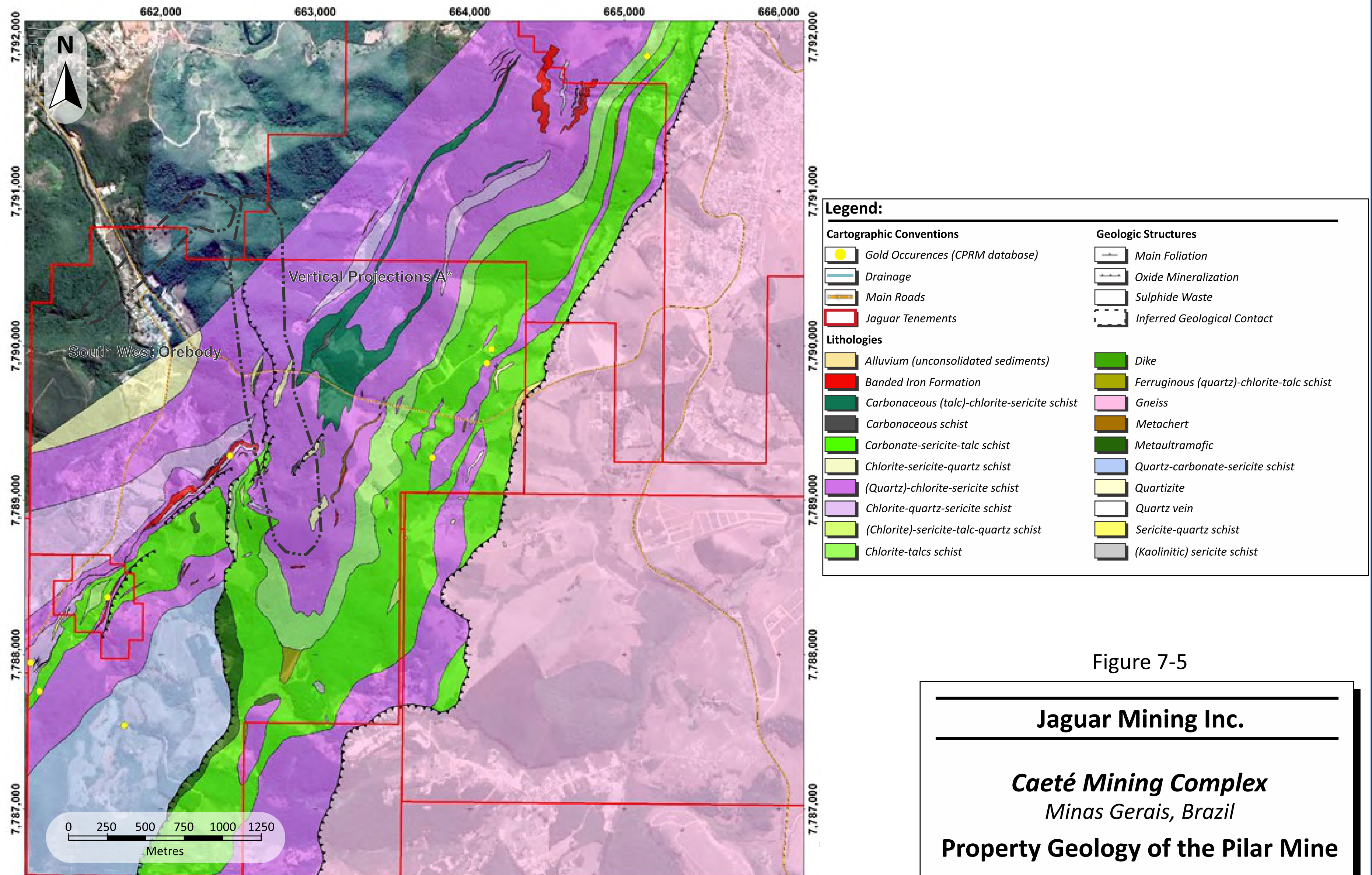


Figure 7-5

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Property Geology of the Pilar Mine

March 2022

Source: Jaguar Mining Inc., 2020.

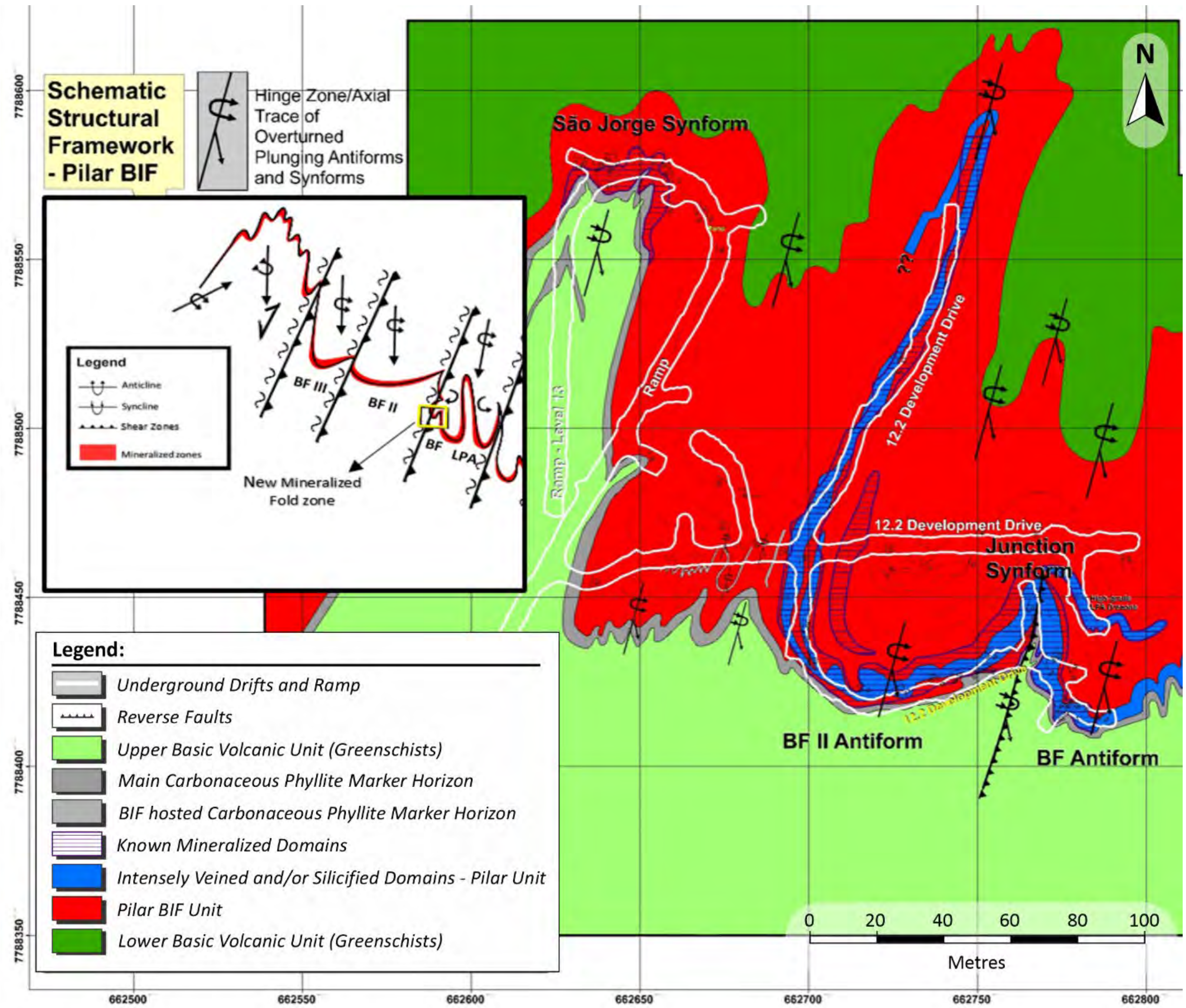


Figure 7-6: Schematic Geological Setting - Level 12.2 "Composite", Pilar Mine

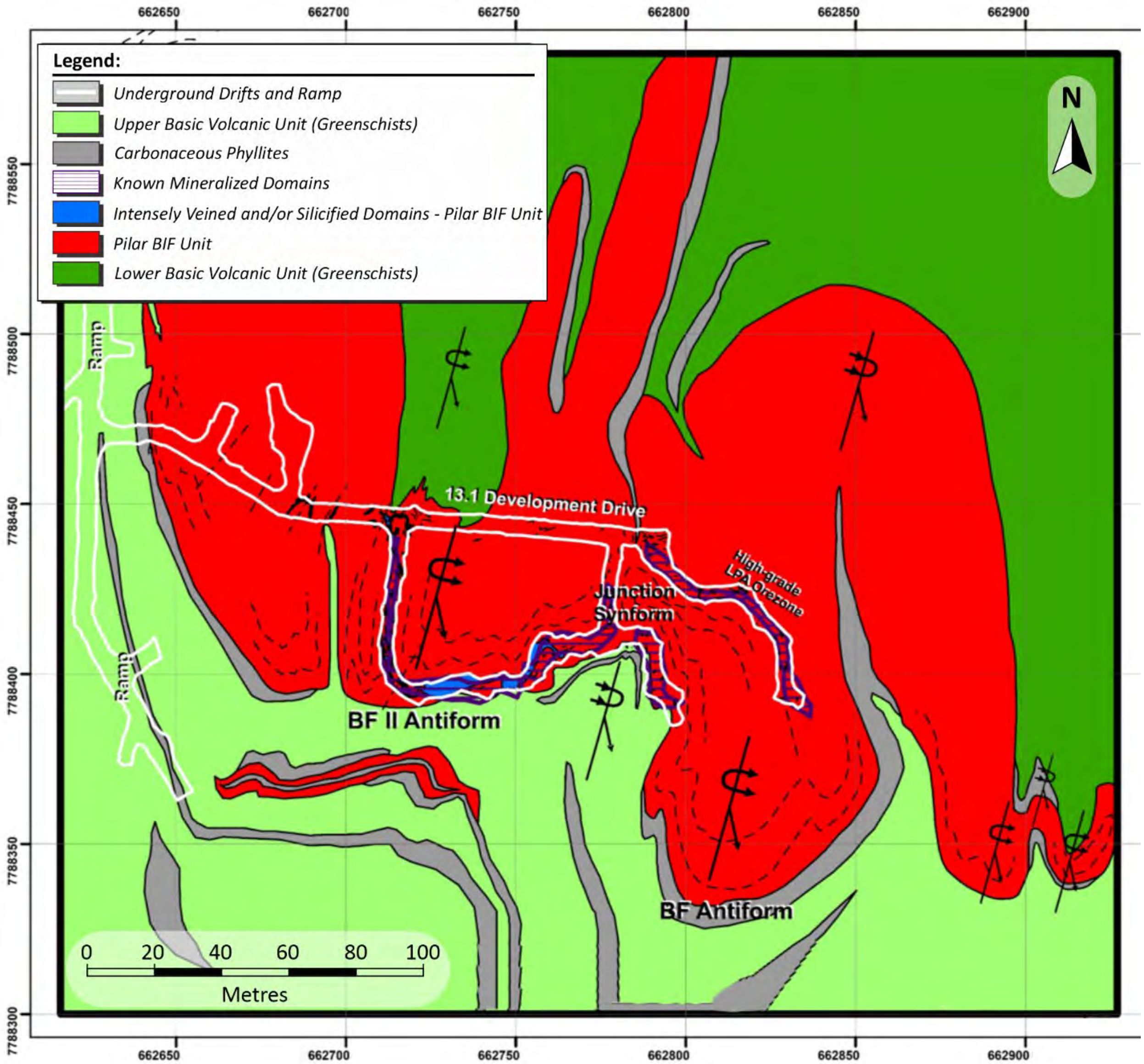


Figure 7-7: Schematic Geological Setting - Level 13.1, Pilar Mine

The deposit scale synform closures at Pilar locally tend to nucleate "accommodation" reverse faults (with considerably variable relative slips between the opposite faulted blocks) due to the tight nature of the west-verging compressional-folding event. As expected, the differential and heterogeneous relative movements observed along the two sides of these reverse faults are directly responsible for the difference in footprint/plane expressions of the Pilar BIF Unit in different levels of the mine.

Stratigraphically, the Pilar BIF Unit is overlain by a two to five metre thick layer of carbonaceous phyllites, which in turn is overlain by a thick package of greenschists (meta-basic volcanic rocks - "Upper Basic Volcanic Unit"). The Pilar BIF Unit is underlain by a thick package of greenschists ("Lower Basic Volcanic Unit"). The Lower and Upper basic volcanic units are very similar in nature, if not identical, considering their lithologies, lithostratigraphic record, and penetrative structural petrofabrics mapped, (Figure 7-6 and Figure 7-7).

At the mesoscopic scale, the visibly dominant penetrative planar petrofabrics observed in Pilar underground exposures are the depositional bedding, mapped in all of the Pilar BIF Unit lithotypes (Figure 7-8), and the main tectonic cleavage, generally associated with the more incompetent schistose lithologies of the enveloping greenschists units (Figure 7-9). While this primary tectonic cleavage/schistosity is not commonly present in the more competent, carbonate-quartz rich lithotypes of the Pilar BIF Unit it does occur in those localities underground where the BIF lithologies are more "impure", i.e., containing phyllosilicates.

Detailed studies carried out by mine geologists at Pilar indicate the presence of three types of penetrative planar tectonic fabrics:

- The first type is characterized by a tectonic cleavage that appears to record the compressional phase of the regional deformation-shear zone event (the main tectonic cleavage), which is axial-planar to folded geometries of all scales.
- The second type represents an extensional tectonic cleavage, thought to be associated with the reactivation of shear zones and faulted planes, with surfaces approximately parallel to the main tectonic cleavage. In BIF lithotypes, this extensional cleavage is filled by "open" sets of quartz veinlets oriented almost parallel to the axial planes of coeval mesoscopic folds, as observed underground in hinge zones (Figure 7-10).
- The third type is a mild, spaced crenulation cleavage that records the last regional penetrative deformation event in the Pilar package. The later crenulation cleavage dips to the northwest, and is more readily observed in more incompetent, phyllosilicate-rich lithologies.

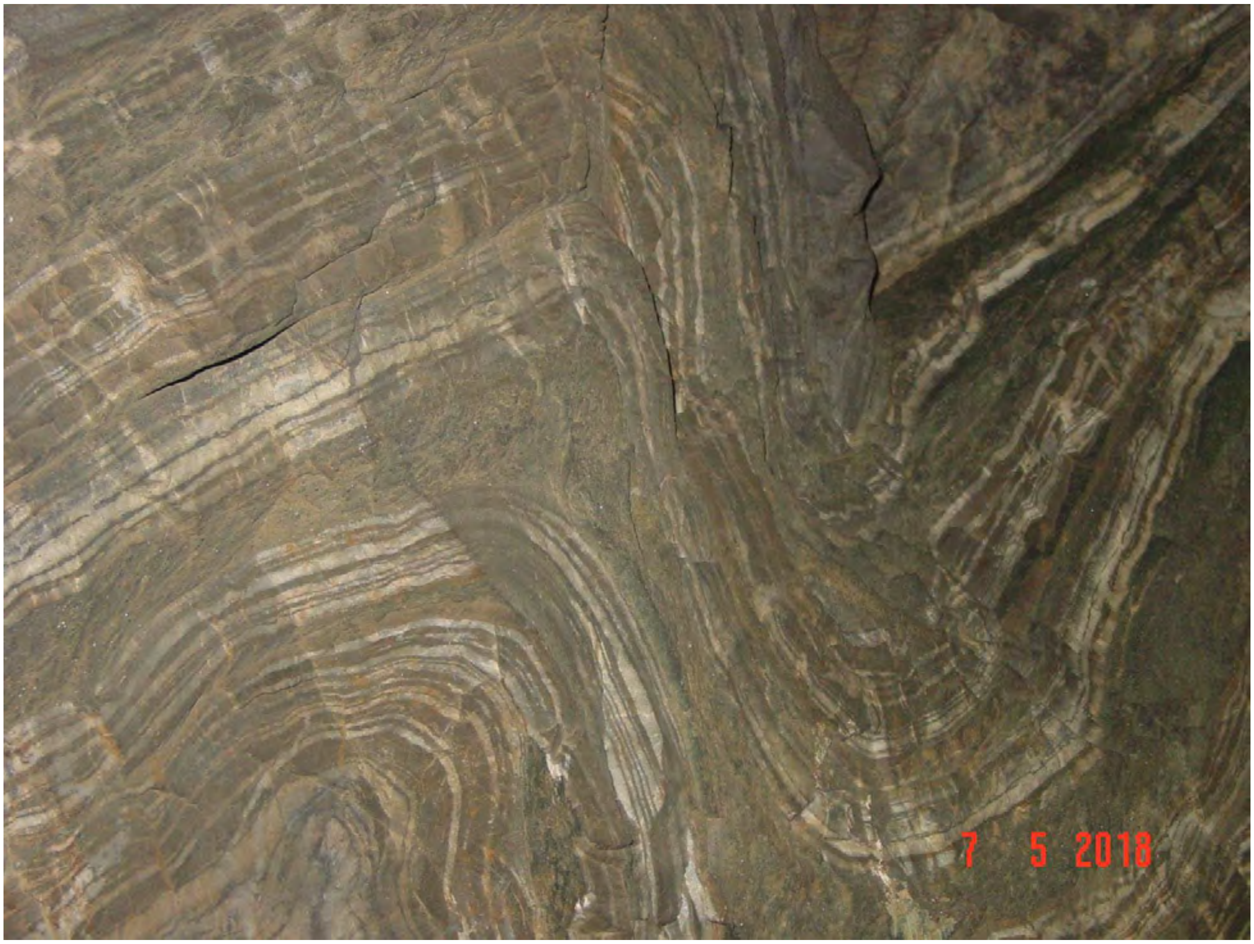


Figure 7-8: Typical Folding in Barren "Carbonate-Facies" Banded Iron Formation (Pilar BIF Unit, Level 10), Pilar Mine

Figure 7-9: Main Penetrative Tectonic Cleavage (Main Schistosity), Pilar Mine

Figure 7-10: Penetrative Extensional Cleavage in Competent Rocks, Pilar Mine

Figure 7-11 presents a representative, equal-area stereonet illustrating the distribution of the attitudes of the main cleavage/schistosity planes measured in the underground exposures of Level 10 and Level 11. The maximum of the distribution obtained for the whole Pilar deposit is interpreted to be proximal to the attitude N21E/55^0 SE. This tectonic schistosity is then interpreted to be the axial-planar cleavage to the deposit scale overturned synforms and antiforms (e.g., São Jorge Synform, BF Antiform, BF II Antiform - see Figure 7-6), and to most of the mesoscopic folds that have been mapped underground.

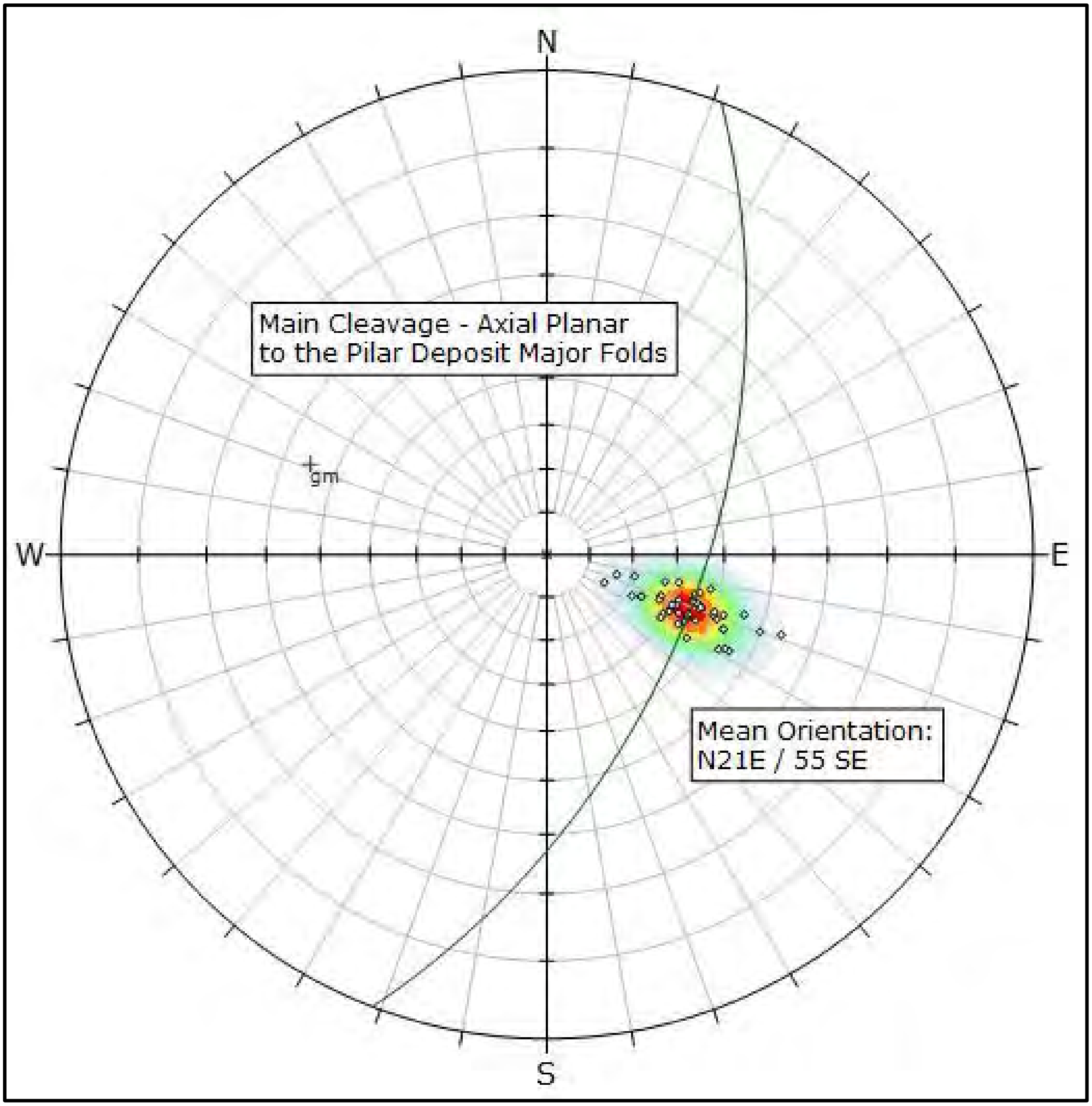


Figure 7-11: Distribution of Attitudes of Main Cleavage Planes in Underground Exposures

Mesoscopic folds at the Pilar deposit are variable in size, with amplitudes that may range from less than 10 cm to several tens of metres. Mesoscopic folds in more incompetent rock types tend to be moderately tight to tight, more rarely near-isoclinal, while decametre scale folds in the competent Pilar BIF Unit may range from moderately open to closed. These folds are typically near-reclined, as both axes and axial surfaces generally plunge to the southeast, with only few plunging to the northwest or northeast, or being nearly horizontal.

Mesoscopic fold axes, as well as the inferred axes of the deposit scale synforms and antiforms, generally mimic the orientation of the main intersection lineation that is easily measured on both the main tectonic cleavage and bedding surfaces/S0 and represents the intersection lines between the bedding and cleavage planes (Figure 7-12). Therefore, the nearly "stratabound" mineralization of the Pilar deposit is also expected to plunge (continuities towards greater depths) with the same orientation measured for the intersection lineation in the bedded BIFs present at Pilar.

Figure 7-12: Typical Penetrative Intersection Lineation on Folded Bedding (S0) Surfaces of the Pilar BIF Unit (Level 10)

Equal-area stereonets illustrating the distribution of the orientations (and statistical maximums) for the main penetrative intersection lineation measured in various localities and at various elevations (Level 10, Level 11, Level 12, and Level 13) in the Pilar deposit are presented in Figure 7-13 to Figure 7-15.

Geological mapping and underground observations indicate that mineralized zones of the Pilar BIF Unit represent scattered, generally stratabound lenses of "sulphide-facies" BIF ranging from 15 m to 20 m to 100 m to 200 m in strike length and two metres to 15 m in thickness. In the Pilar deposit, the best grade BIF hosted mineralized zones are typically located along the contact between the Pilar BIF Unit and the layer of carbonaceous phyllites that occurs immediately adjacent to the greenschists of the Upper Basic Volcanic Unit (see Figure 7-6). The BIF hosted mineralized zones are conformably folded together with the whole Pilar BIF Unit at the deposit scale "synclinorium" of the Pilar deposit (São Jorge Synform, BF II Antiform, Junction Synform, BF Antiform, BA Antiform).

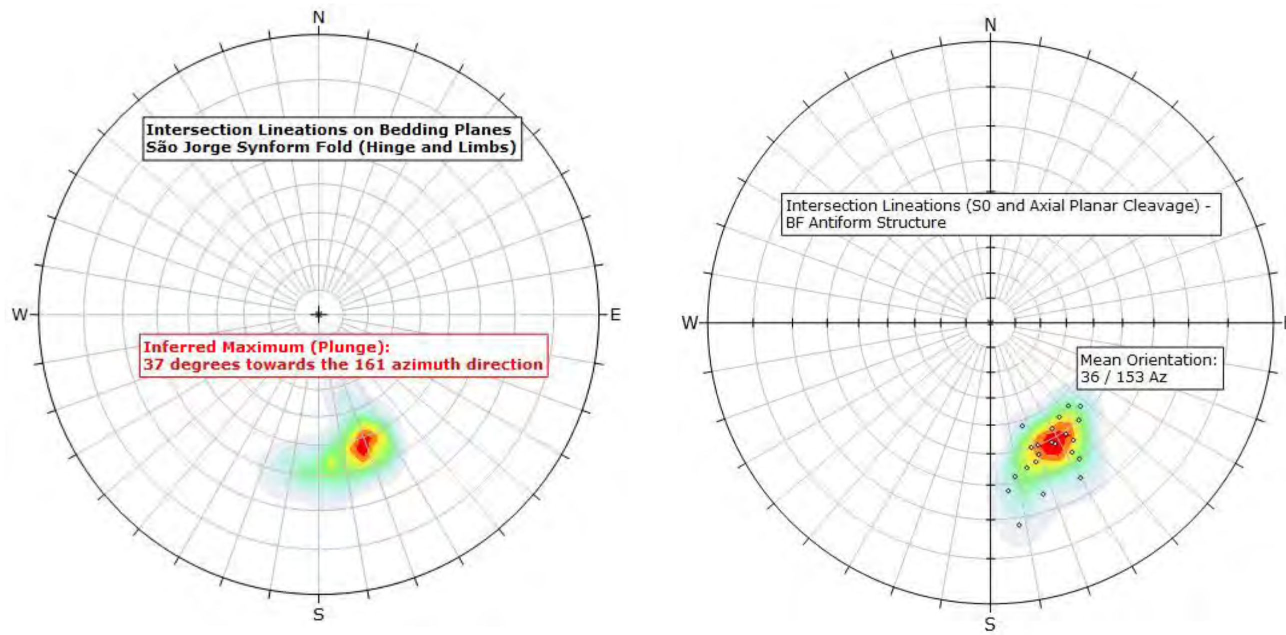


Figure 7-13: Distribution of Attitudes of Main Penetrative Intersection Lineation in São Jorge Synform, Level 12 (Left) and BF Antiform, Level 10 (Right)

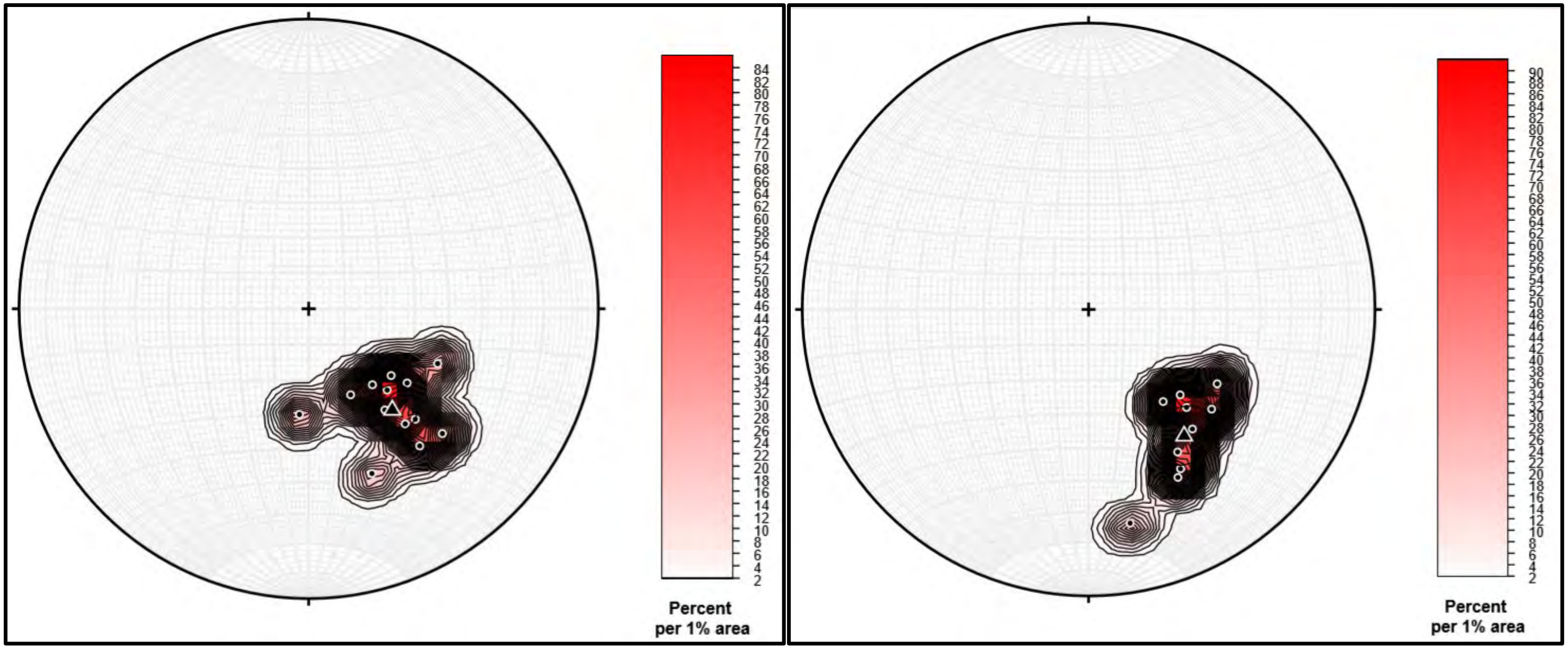


Figure 7-14: Distribution of Attitudes of Main Penetrative Intersection Lineation at Sublevel 13.1 in BF II Orezone and LPA Orezone

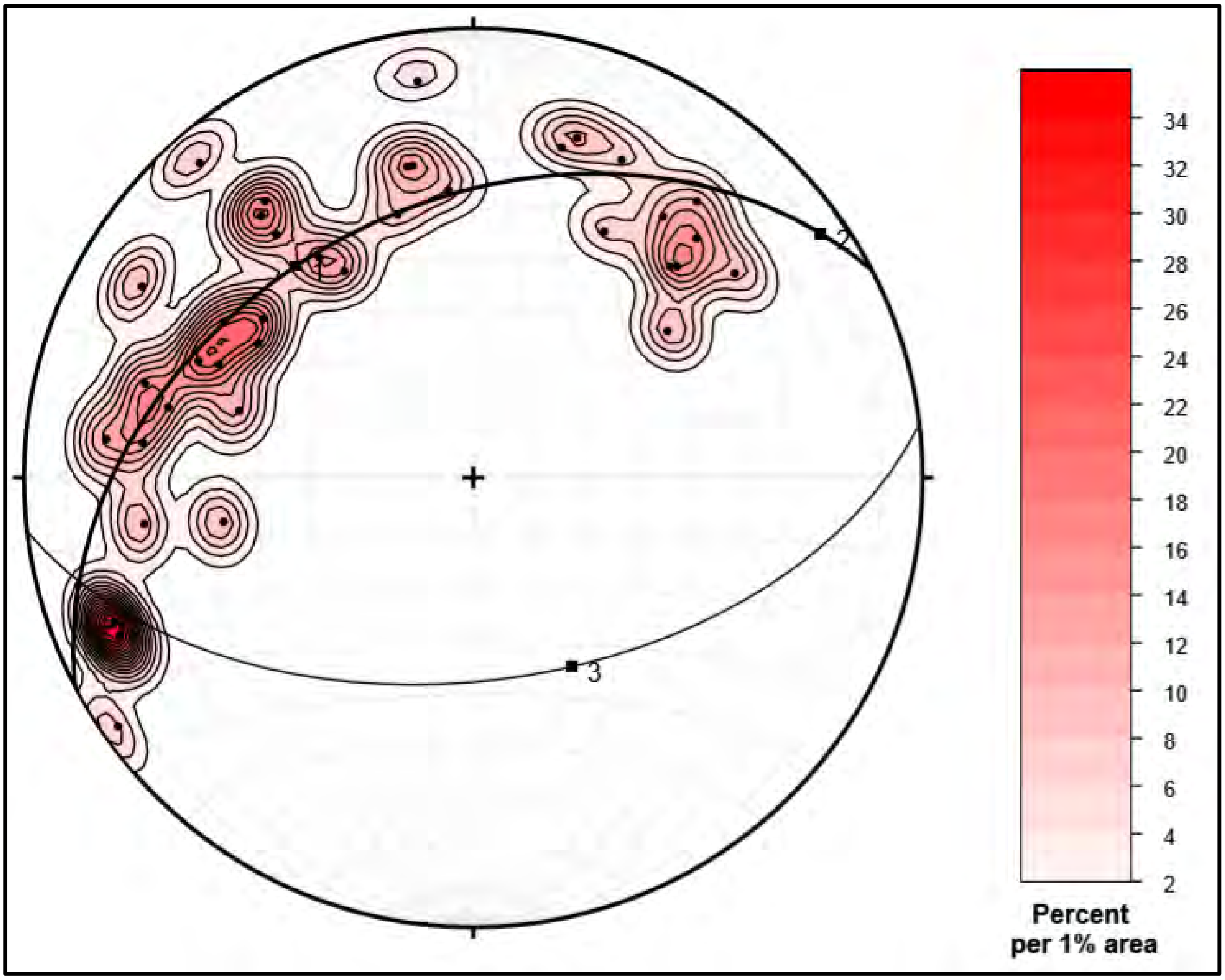


Figure 7-15: Distribution of Bedding Surfaces (Poles to Bedding) in BF II Antiform Sublevel 13.1

7.2.2.1 Other Zones of Mineralization

7.2.2.1.1 Torre Mineralized Zones/Lenses

The Torre mineralized zone stratigraphic sequence of the Pilar package is to an extent distinct from the mafic/basic volcanic packages (greenschists) that host the Pilar BIF Unit. Where not hydrothermally altered, the Torre stratigraphic sequence is composed predominantly of the same mafic/basic greenschists that have been mapped in other portions of the Pilar deposit, although repeated alternations of distinct, very thinly foliated, greenish coloured talc-magnesium chlorite schists up to tens of metres in thickness also occur.

These talc-magnesium chlorite schists consist of approximately 11% MgO to 20% MgO and 800 ppm Cr to 1,500 ppm Cr, however, due to limited access to their exposures underground in the eastern portion of Pilar, the nature of these schists is not yet clear. They may either represent individual volcanic horizons/intercalations of different composition, or they may correspond, genetically and geometrically, to metamorphosed intrusive bodies (sills, laccoliths, etc.).

The individual altered and mineralized "lenses" hosted by the recently mapped (underground) Torre sequence (Figure 7-16) are composed of highly silicified schists, disseminated sulphides (pyrrhotite, arsenopyrite and some chalcopyrite), coarser grained phyllosilicates, and calcite, and have very encouraging gold grades (Figure 7-17). The Torre stratigraphic sequence, including the mineralized lenses, has been conformably folded in reclined/overturned southeast-plunging antiforms and synforms of considerable amplitude in a similar manner to the whole Pilar package (Figure 7-16).

Based on recent exploration/development activities carried out at the Sublevel 8.1, the average thickness of individual Torre mineralized (and potentially economic) lenses is 2.5 m, and the sequence can be traced for 180 m along strike.

Outcrops of the Torre mineralized stratigraphic package were observed during past surface exploration at Pilar. The area of mineralization was subsequently tested at shallower elevations and underground levels of Pilar, however, the different stratigraphic setting, lack of the traditional BIF lithologies, structural complexity, and only moderate average gold grades discouraged any further exploration in this sequence.

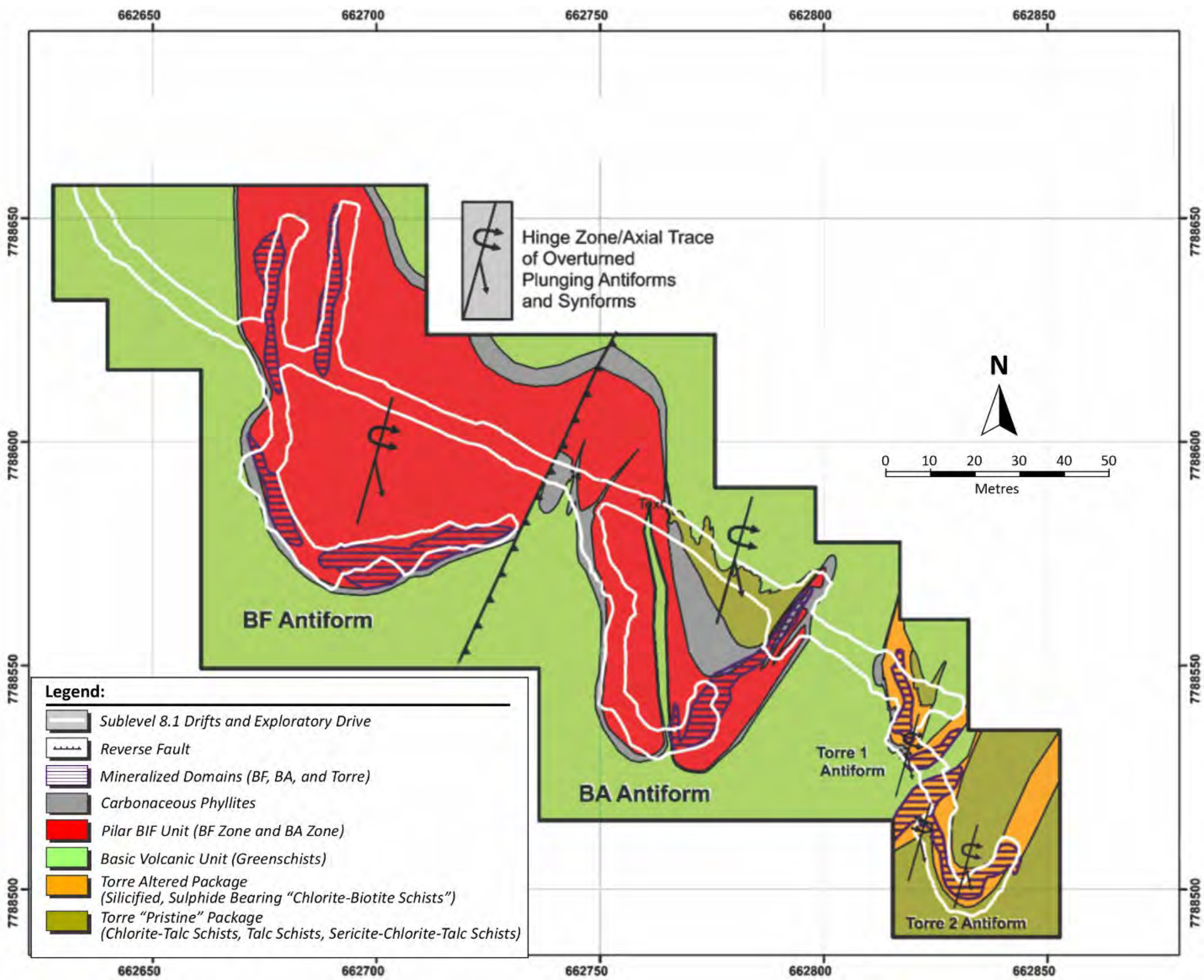


Figure 7-16: Schematic Geological Setting –Torre Sublevel 8.1

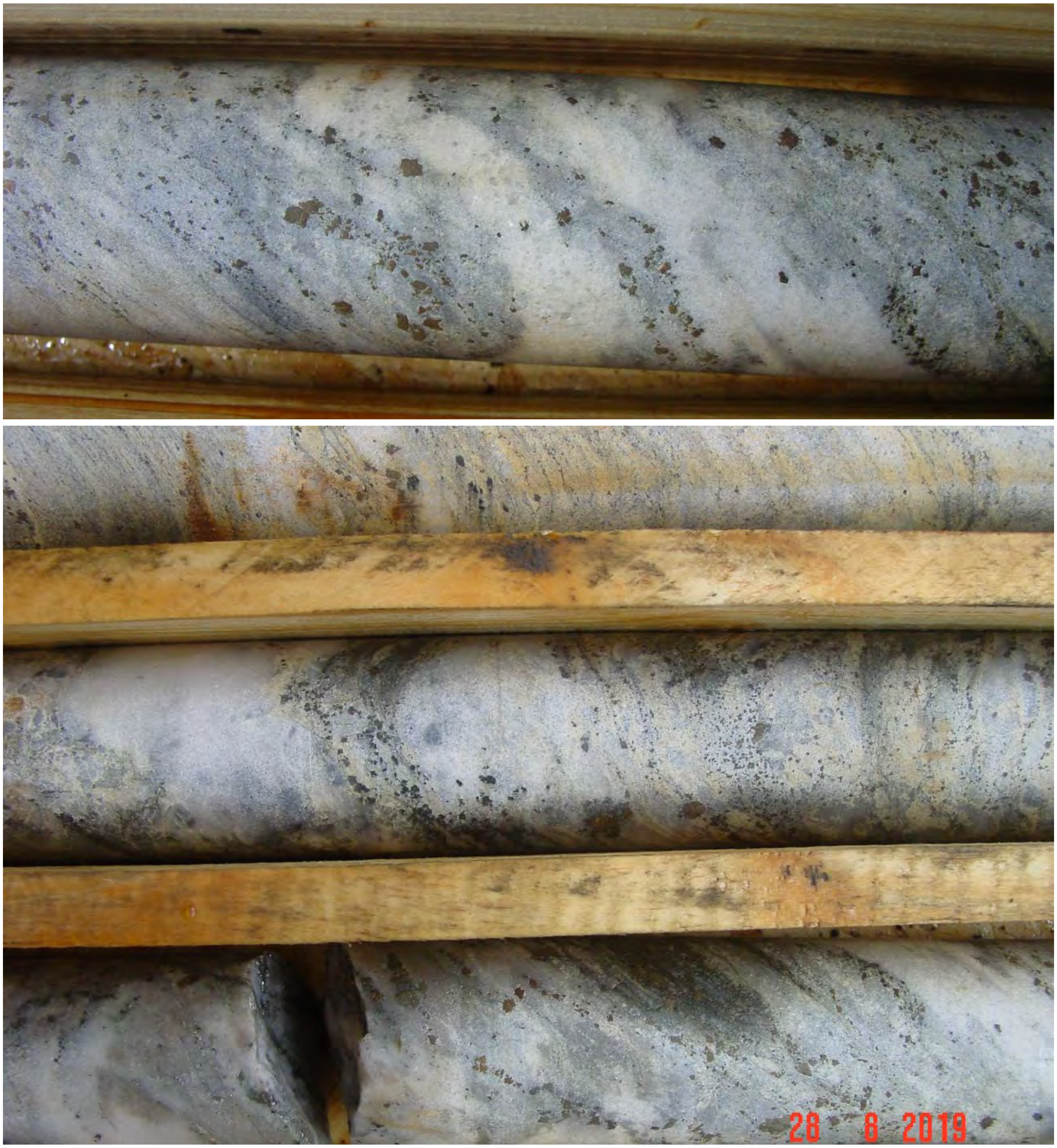


Figure 7-17: Representative Core Samples of Torre Mineralization

7.2.2.1.2 São Jorge Synform Mineralized Zone

The São Jorge Synform mineralized zone (São Jorge) is an approximately stratabound "saddle-reef" type BIF hosted mineralized zone which was recently revisited and mapped at the main Pilar ramp (Level 13), at the deposit scale synformal closure of the same name (see Figure 7-18).

The São Jorge mineralized zone was previously mined at surface, in a small open pit operation. The São Jorge saddle-reef mineralized zone is understood as a two to three metre thick horizon that has a total strike length of less than 140 m. As was observed at different shallower operational levels of Pilar, the zone has highly variable characteristics (geometry, volumes, and average grades) and as a result, the development and mining activities in the São Jorge area were discontinued during the initial years of the Pilar underground operation.

7.2.2.1.3 BF III Antiformal Folded Structure

Structurally, the BF III mineralized zone (BF III) corresponds to a deposit scale antiform structure, which is adjacent to the well known BF II overturned antiform and has recently been identified from Level 11 downwards (see Figure 7-6). It appears that this antiform structurally nucleated at Level 11 and can be of greater strategic importance for the operation at deeper levels of the Pilar deposit.

The style of the BIF hosted gold mineralization in this area is similar to the BIF hosted gold mineralization in the adjacent BF II mineralized zone, however, the average thickness of BF III, based on data available to date, does not exceed 1.5 m. This zone may require revisiting when development and exploration activities are undertaken at the deeper operational levels of Pilar.

Figure 7-18 presents a schematic of the Pilar geological setting, highlighting the approximate relative locations/settings of the São Jorge and of BIF III zones.

Figure 7-19 presents a schematic, initial plant representation of the relatively complex footprint of the Pilar BIF Unit which was developed and geologically mapped at the bottom of the operation, during 2021 (Level 14).

7.2.2.1.4 SW Limb of the Pilar Deposit Folded Structure

The SW Limb of the deposit scale Pilar folded structure corresponds to the hypothetical northeastern most termination of the regional mineralized lineament known as the Brumal-Pilar trend Figure 7-17. The SW Limb mineralized zone was previously mined at surface, in a small open pit operation. At surface, this potential high grade zone has a strike length of 200 m and an average thickness of approximately three metres.

The SW Limb mineralized zone was previously mined at surface, in a small open pit operation (Figure 7-20). At surface, this potential high grade zone has a strike length of 200 m and an average thickness of approximately three metres. The SW Limb was mined at upper operational levels of the Pilar operation, however, mining ceased after poor results had been encountered at several successive shallow levels. From the 2019 onwards, however, Jaguar restarted a specific drilling and assessment project aimed at revisiting the SW Limb mineralized zone. The obtained results supported the development and mining of this mineralized zone at Level 9 and provided good information regarding the SW Limb at upper and lower operational levels (from the Level 9 mining panel). Mapping activities completed since 2019 identified and confirmed that the SW Limb represents a “limb extension” of the greater and relatively complex folded structure that constitutes the Pilar deposit. Therefore, the SW Limb would be located along the western limb of São Jorge.

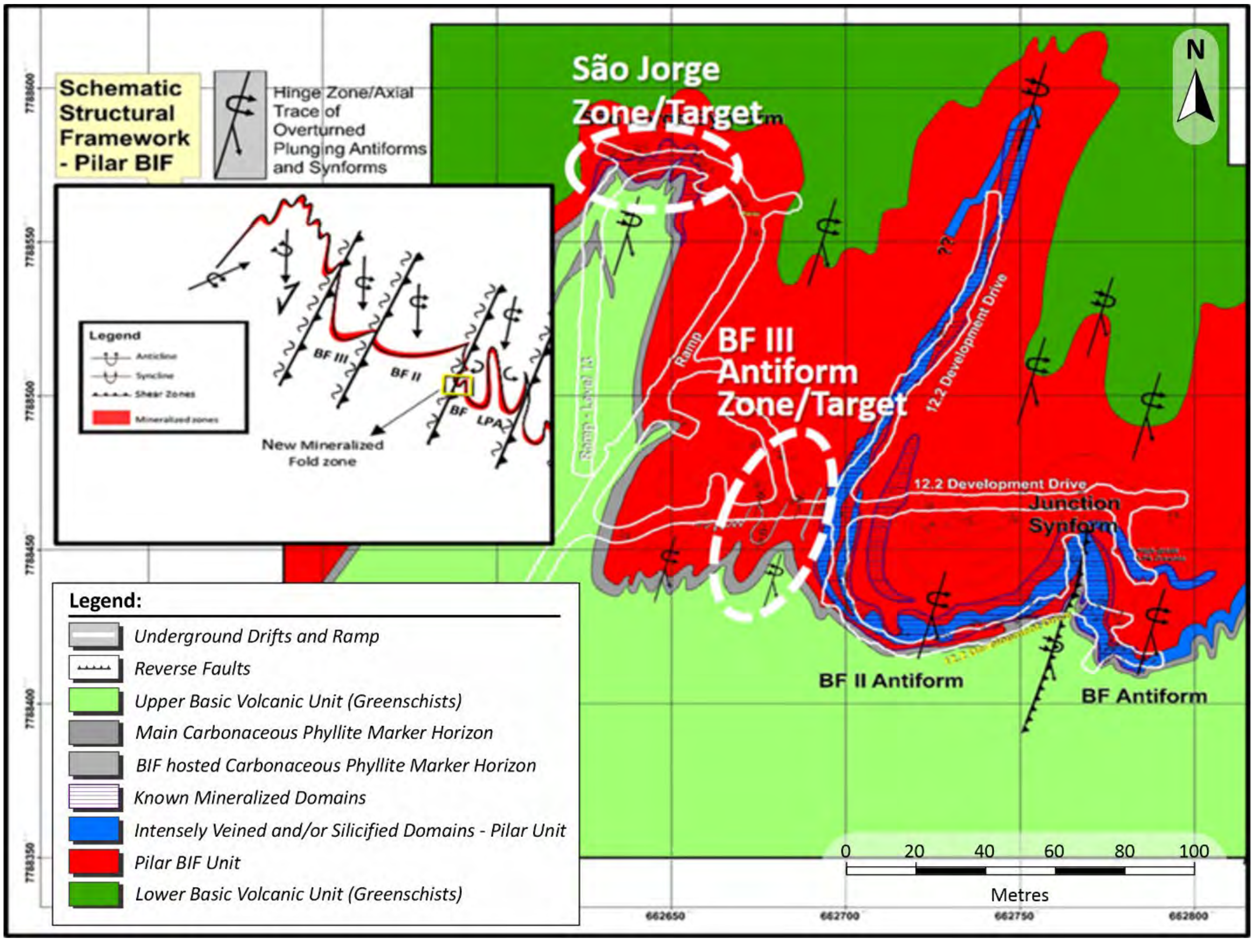


Figure 7-18: Schematic Geological Setting Level 12.2. "Composite" with Zones/Targets, Pilar Mine

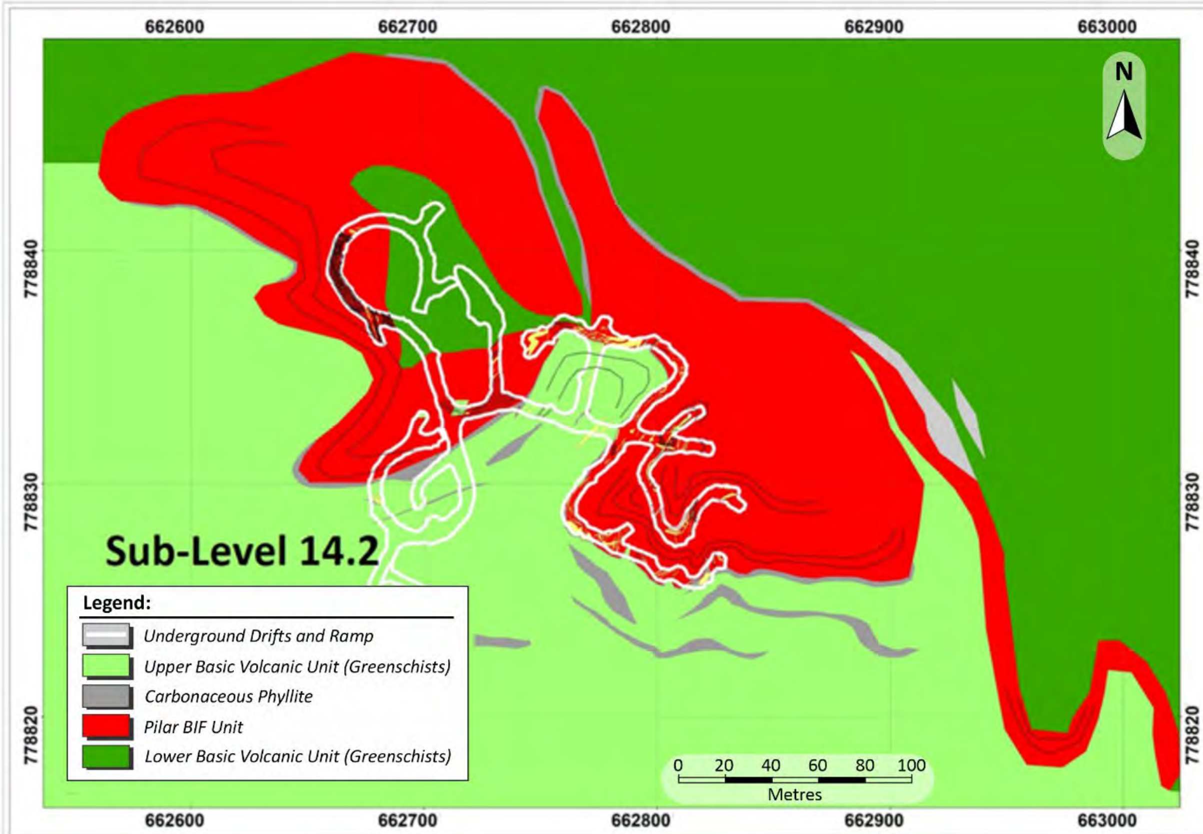


Figure 7-19: Schematic of the Pilar BIF Unit

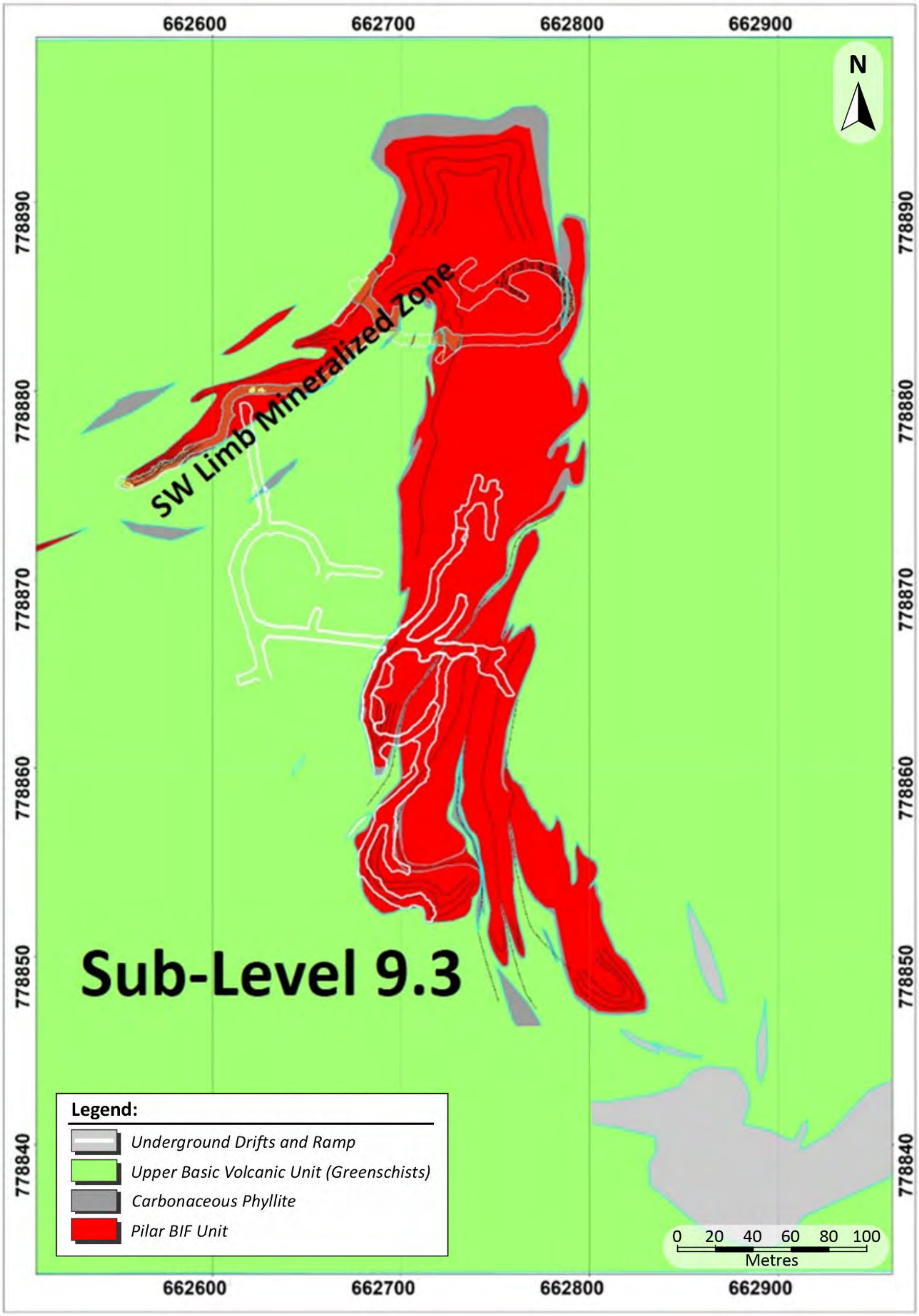


Figure 7-20: SW Limb Mineralized Zone

7.2.3 Córrego Brandão Deposit

The Córrego Brandão altered and mineralized horizon is hosted by the Basal Unit of the Nova Lima Group, a stratigraphic entity present in almost all cartographed areas of the Iron Quadrangle belt as the Ouro Fino Formation. The Basal Unit of the Nova Lima Group in the Caeté region is predominately represented by komatiitic meta-ultramafic rocks packages (magnesium-chlorite amphibole schists, magnesium-chlorite-talc-schists, meta-peridotites) and meta-mafic volcanic packages (greenschists and lower grade amphibolites).

Córrego Brandão potentially economic gold mineralization corresponds to a highly altered and mineralogically “exotic” conformable horizon approximately 20 m to 40 m in true thickness that occurs at the sheared contact between a meta-mafic volcanic package and a meta-ultramafic volcanic package. This targeted altered and sheared horizon has been easily distinguished during the exploratory drilling activities by the modal presence of indicator minerals that would-should not be stable under the typical low-greenschist metamorphic grade recorded in the Caeté region, such as garnet, biotite, and iron-rich carbonates (Figure 7-21).

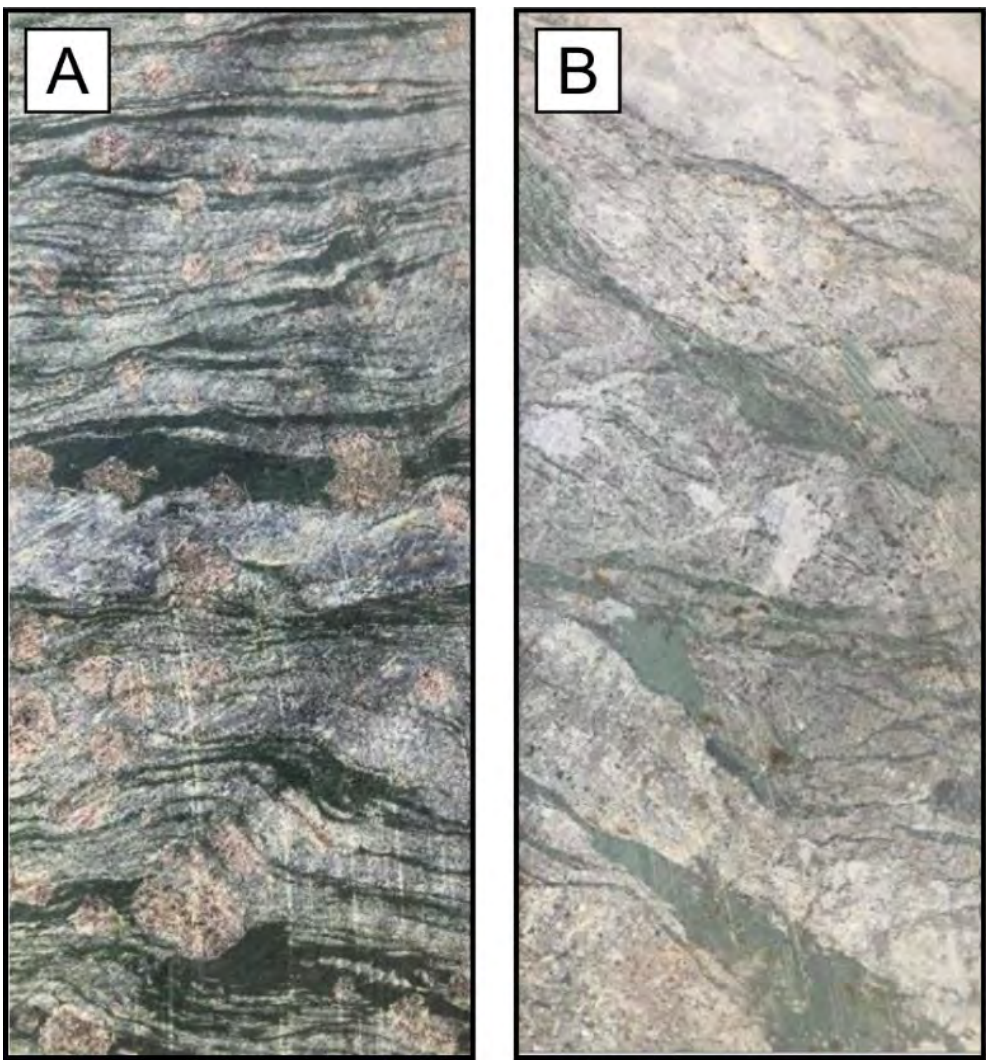


Figure 7-21: Targeted “Exotic”, Altered and Sheared Mineralized Horizon at the Córrego Brandão Deposit

The numerous auriferous mineralized zones and small colonial age stopes, as well as the Roça Grande orebodies, which are mainly hosted by the Ouro Fino Formation/Basal Unit of the Nova Lima Group in the Caeté region, exhibit down-plunge continuities oriented 15° to 30° towards the linear direction 115° to 120° azimuth (Figure 7-22). Moreover, extensive previous field mapping activities completed in the Caeté region by Unigeo/AngloGold Ashanti, the Brazilian Geological Survey, and Jaguar, have clearly recorded that this average orientation in down-plunge continuity for gold mineralization zones and ore zones mimics the orientation of a very visible and penetrative linear petrofabric mapped in foliated rocks of the Ouro Fino Formation/Basal Unit.

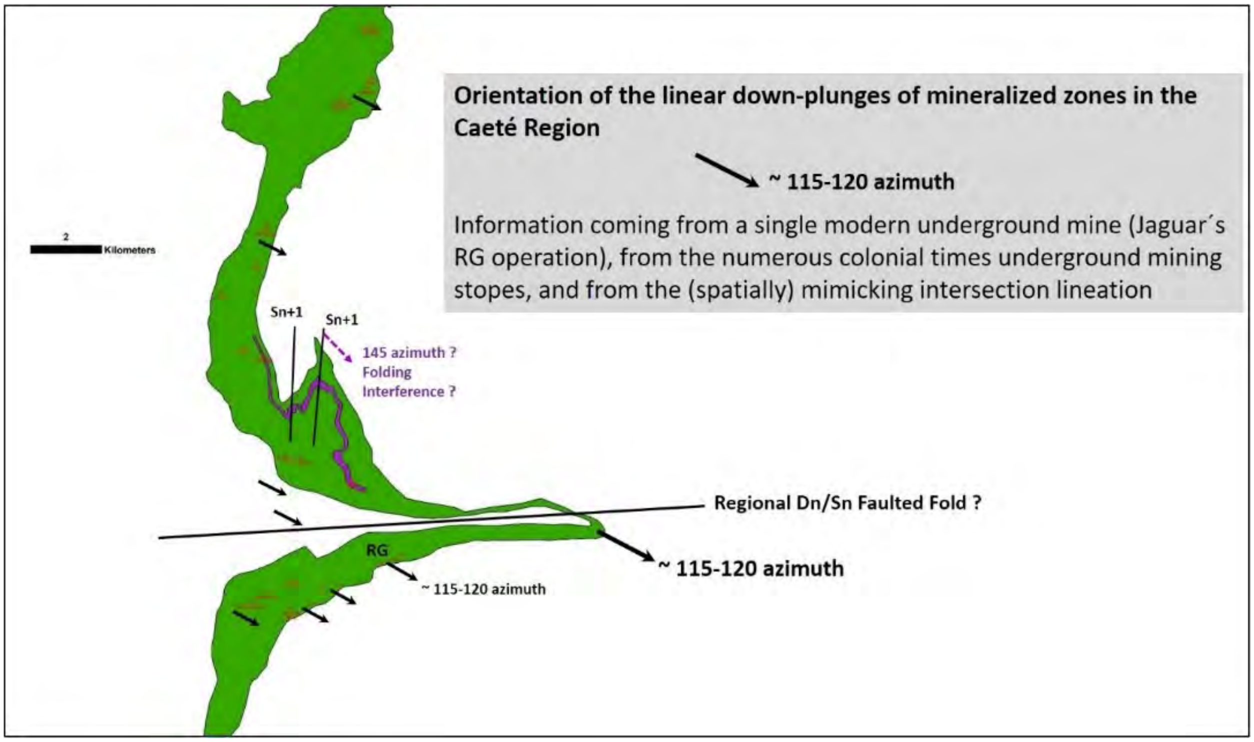


Figure 7-22: Outline of the Ouro Fino/Basal Unit of the Nova Lima Group in the Caeté Region

A penetrative lineation of such great importance corresponds to the intersection lines between the bedding planes/S0 and the main penetrative tectonic cleavage/Sn that are mapped in the rock packages of the Caeté region. This interpreted spatial "linear control" would also correspond to the orientation of axes of (plunging and overturned) major amplitude, Archean Dn/Fn folds that deformed the regional stratigraphic packages of the Nova Lima Group.

During the more recent mapping and semi-regional reconnaissance activities completed by Jaguar in the Córrego Brandão deposit and Catita target area, this penetrative linear fabric has been mapped, and a synthesis of its behaviour, in terms of spatial orientation, is presented in a structural stereonet (Figure 7-23).

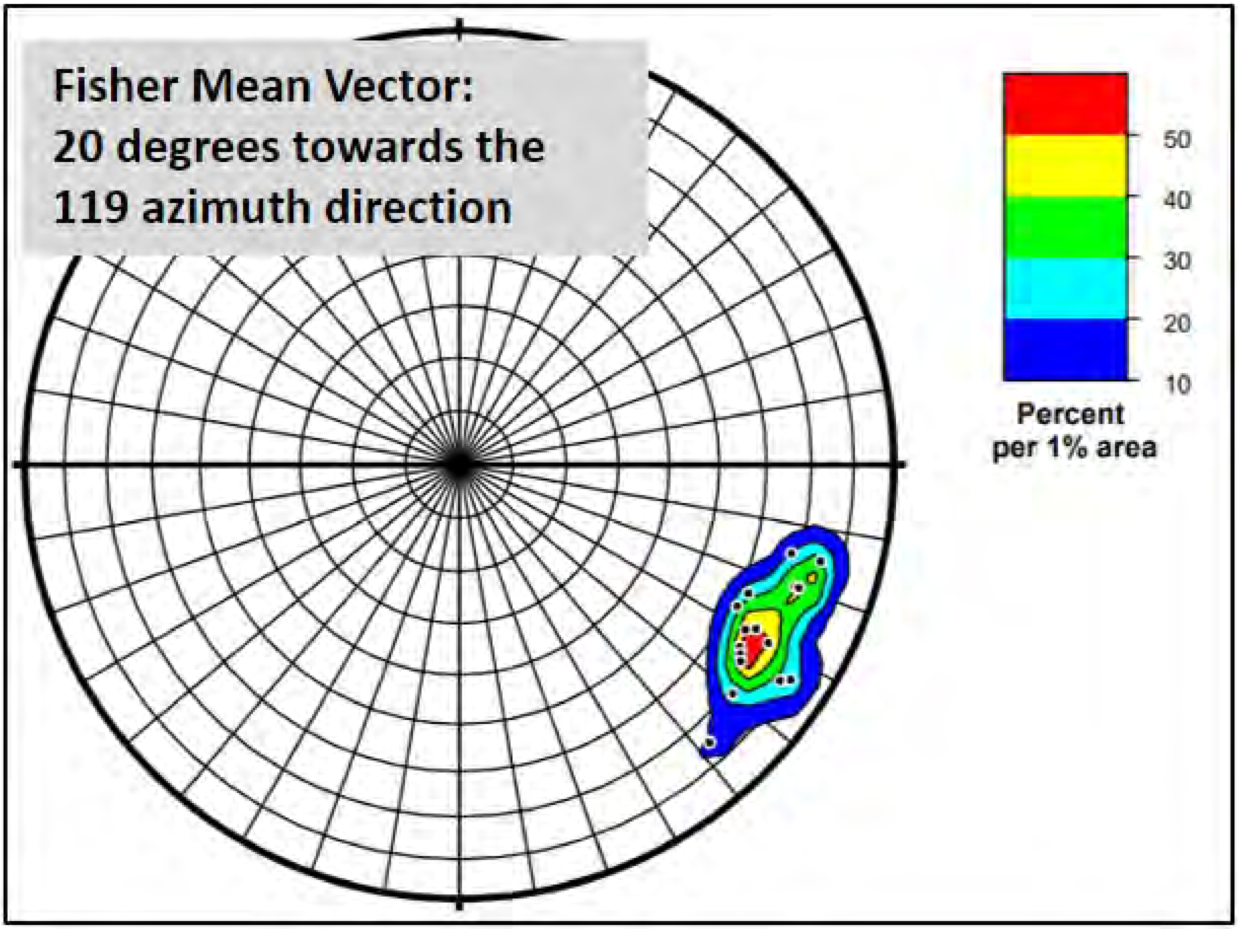


Figure 7-23: Intersection Lineations of the Basal Unit/Caeté Regional

7.3 Mineralization

7.3.1 Roça Grande Deposit

At Roça Grande, gold mineralization is commonly associated with BIF horizons. In the RG01, RG02, RG03, and RG06 mineralized zones, gold mineralization is developed approximately parallel to the primary bedding and is related to centimetre scale bands of massive to disseminated pyrrhotite and arsenopyrite. In many instances, higher gold values are located along the hanging wall contact of the iron formation sequence and are hosted by carbonate-facies iron formation. Grades generally decrease towards the footwall where the iron formation becomes more silica-rich. The thicknesses of the iron formations are observed to be affected by broad scale boudinaged structures. Higher gold grades are observed in the thicker portions while the narrower portions of the boudinaged structures have lower grades. Late-stage, barren quartz veins are also ubiquitously present and display a boudinaged form.

The SLR QP recommends that structural mapping information be integrated with isopach maps of the carbonate iron formation and trend analyses of the gold distribution to identify any primary controls on the distribution of the BIF hosted gold mineralization.

In the RG07 mineralized zone, gold is observed to be hosted in quartz veins that are contained within a sericite (chlorite) schist associated with an east-west oriented shear zone (Machado 2010).

7.3.2 Pilar Deposit

Economic gold mineralization at Pilar is hosted by the folded, and locally refolded, Pilar BIF Unit including the SW Limb, São Jorge, BF III, BF II, BF, LPA, and BA mineralized zones, and by the conformably folded Torre meta-volcanic sequence.

The main zones of mineralization occur as scattered, stratabound lenses (or "pods") of sulphide-facies BIFs within the "carbonatic-oxide-facies" deposit scale Pilar BIF Unit (Figure 7-24 to Figure 7-26). Economic mineralized bodies consist of stratabound, but not stratiform, concentrations of gold bearing sulphides that occur in scattered grains, seams, and irregular shaped granular aggregates located along and replacing iron carbonates-rich bands of the BIFs. Arsenopyrite and pyrrhotite are the most important sulphide minerals in mineralized bodies, with pyrite, chalcopyrite, galena, and sphalerite commonly present as accessory minerals. A direct relationship can generally be established between the amounts of arsenopyrite (percentage per volume) and the gold concentrations in mineralized BIF samples of the Pilar deposit.

There is a clear temporal-spatial-genetic relationship between the epigenetic replacement/sulphidation of the host BIFs and the onset of a structurally controlled, district scale silicification event. Carbonate-rich bands of mineralized BIFs commonly exhibit sulphide enriched alteration/replacement halos that are symmetrically distributed around swarms of quartz veins and veinlets (Figure 7-27). The sulphide minerals occur predominately as disseminations in the host rocks, but can achieve semi-massive to massive concentrations locally, over a few metres.

Individual quartz veins are typically less than one metre in width and can be observed to be of three generations. Quartz veins of the first generation are typically associated with the gold mineralization and are folded by the main tectonic event which affected the Pilar package as a whole. Quartz veins of the second generation are typically lower grade or barren and are not affected by folding. Lastly, quartz veining of the third generation is associated with the aforementioned extensional tectonic cleavage and may also be related to halos of mineralization/sulphidation where related to hinge structural domains.

At the Pilar deposit, increased average gold grades and higher sulphide/arsenopyrite concentrations (within the economic mineralized zones and orebodies) are almost everywhere (or at least very frequently) mapped in association with the deposit scale, larger, higher-amplitude fold hinge geometries. Increased average gold grades and higher sulphide/arsenopyrite concentrations have also been observed in association with a second folding event (and/or with a subsequent third folding event) in the Pilar BIF package (Tiago Souza, 2020). The second folding event would have brought mineralized quartz veins into the BIF Pilar package, however, according to Tiago Souza (2020), the third folding event was responsible for the generation of the economic mineralization hosted by the large fold hinge geometries of the Pilar package (São Jorge synform, BF II antiform, BF antiform, BF II-BF Junction synform, BA antiform, and the smaller-amplitude Torre antiforms).

Figure 7-24: Typical "Sulphide-Facies", High Grade, Arsenopyrite-Rich BIFs at Pilar Sublevel 10.2

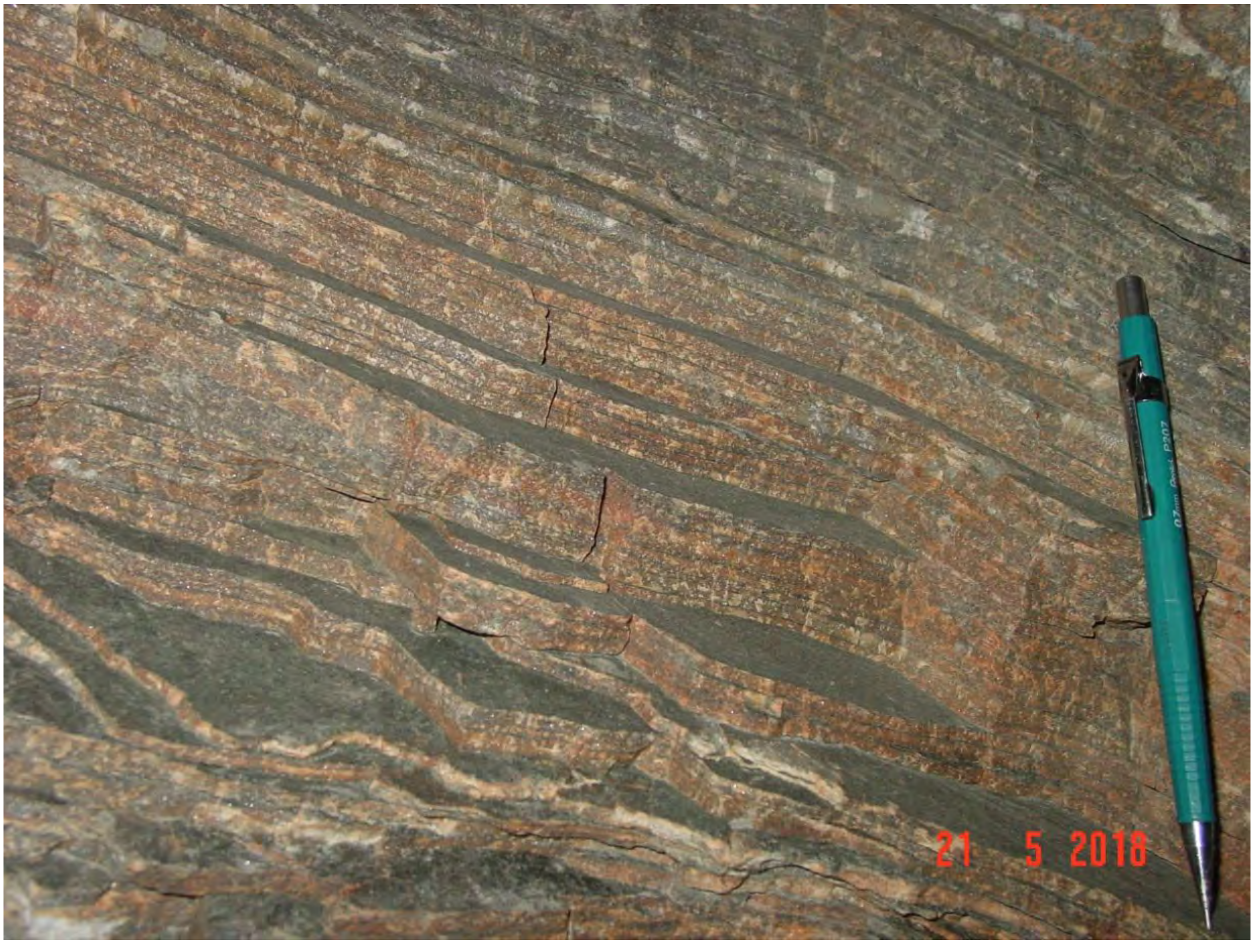


Figure 7-25: Typical Proximal "Carbonate-Facies", Barren BIFs at Pilar Sublevel 10.2

Figure 7-26: Typical Distal "Oxide-Facies", Non-Mineralized BIFs at Pilar Sublevel 10.2

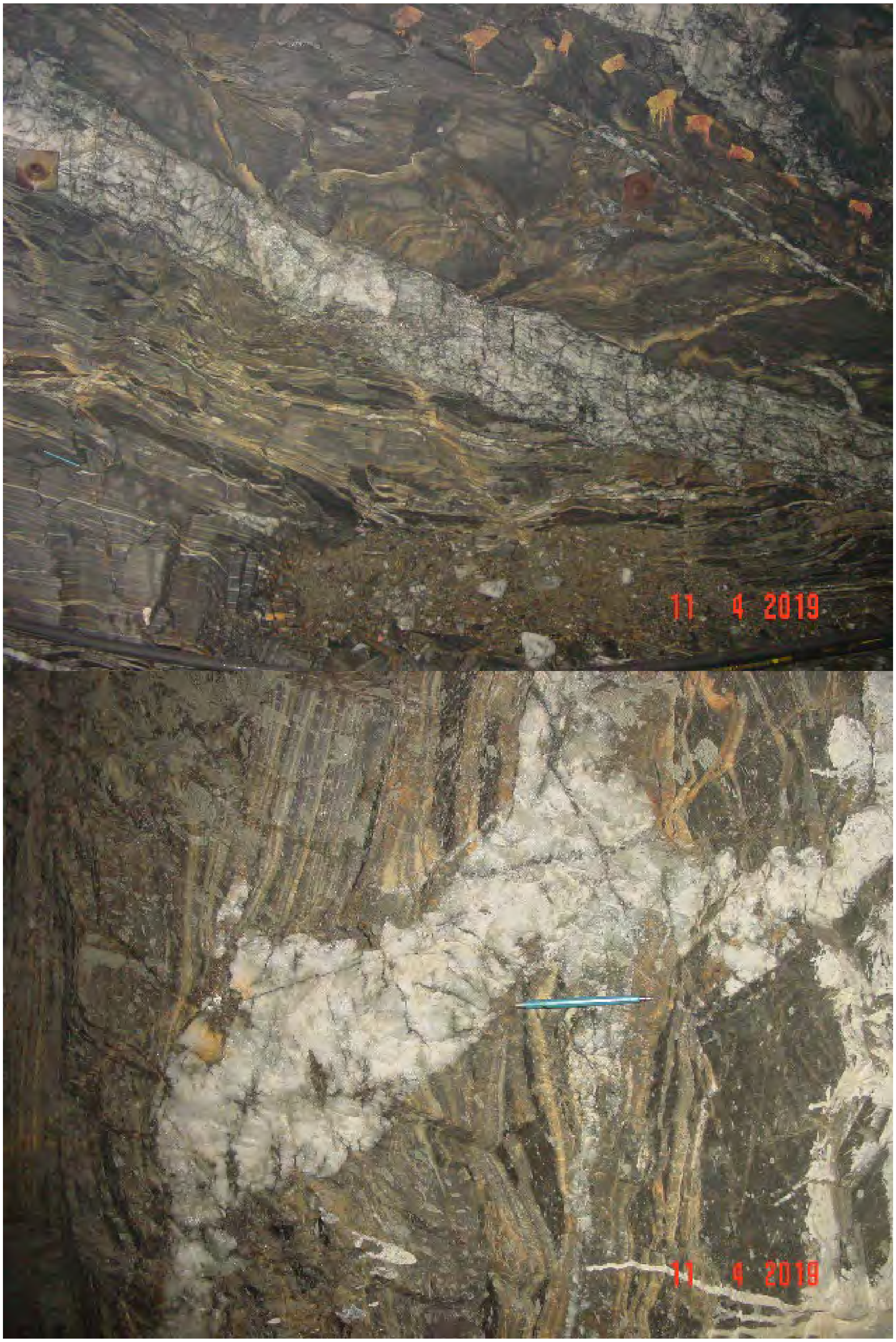


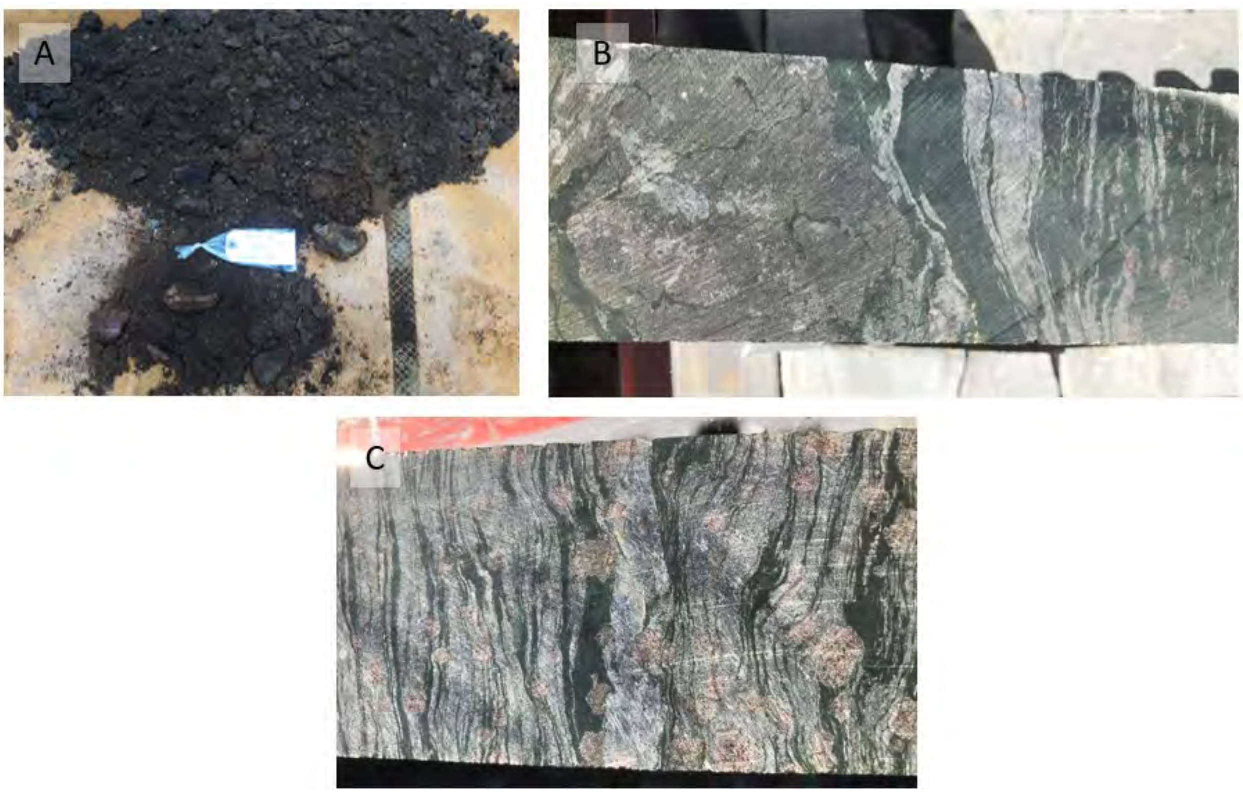
Figure 7-27: Relationship Between Epigenetic Replacement/Sulphidation and Structurally Controlled, District Scale Silicification Event

7.3.3 Córrego Brandão Deposit

The initial exploration identified Córrego Brandão weathered and surficial high grade mineralization (in trenches, auger drill holes, and shallower diamond drilling holes) which corresponds to a dark brown, magnetic, argillaceous, and somewhat pulverulent material that resembles the Lapa Seca lithological unit, where deeply weathered. The Lapa Seca lithostratigraphic unit hosts the very large Morro Velho gold deposit in the Iron Quadrangle district.

Regarding stratigraphic setting, the Córrego Brandão economic gold mineralization corresponds to a highly altered and mineralogically "exotic" conformable horizon with a true thickness of approximately 20 m to 40 m that occurs at the sheared contact between a meta-mafic volcanic package and a meta-ultramafic volcanic package. The alteration zone is delineated by the modal presence of indicator minerals that should not be stable under the typical low-greenschist metamorphic grade recorded in the Caeté region, such as garnet, biotite and iron-rich carbonates (ankerite, siderite and iron bearing dolomite).

Fresh (non-weathered) high grade ("proximal") interceptions are predominately characterized by massive concentrations of light brown colored iron bearing carbonates, disseminated magnetite, dark green chlorites, and visible modal concentrations of disseminated crystals of pyrite and arsenopyrite (Figure 7-28). Fresh lower grade ("distal") interceptions are lighter colored banded lithotypes that are rich in a calcitic-type carbonate, and in quartz, biotite, garnet, and tourmaline (Figure 7-28). Individual samples yielding greater than 25 g/t Au in drill cores quite often exhibit visible gold particles (Figure 7-28).

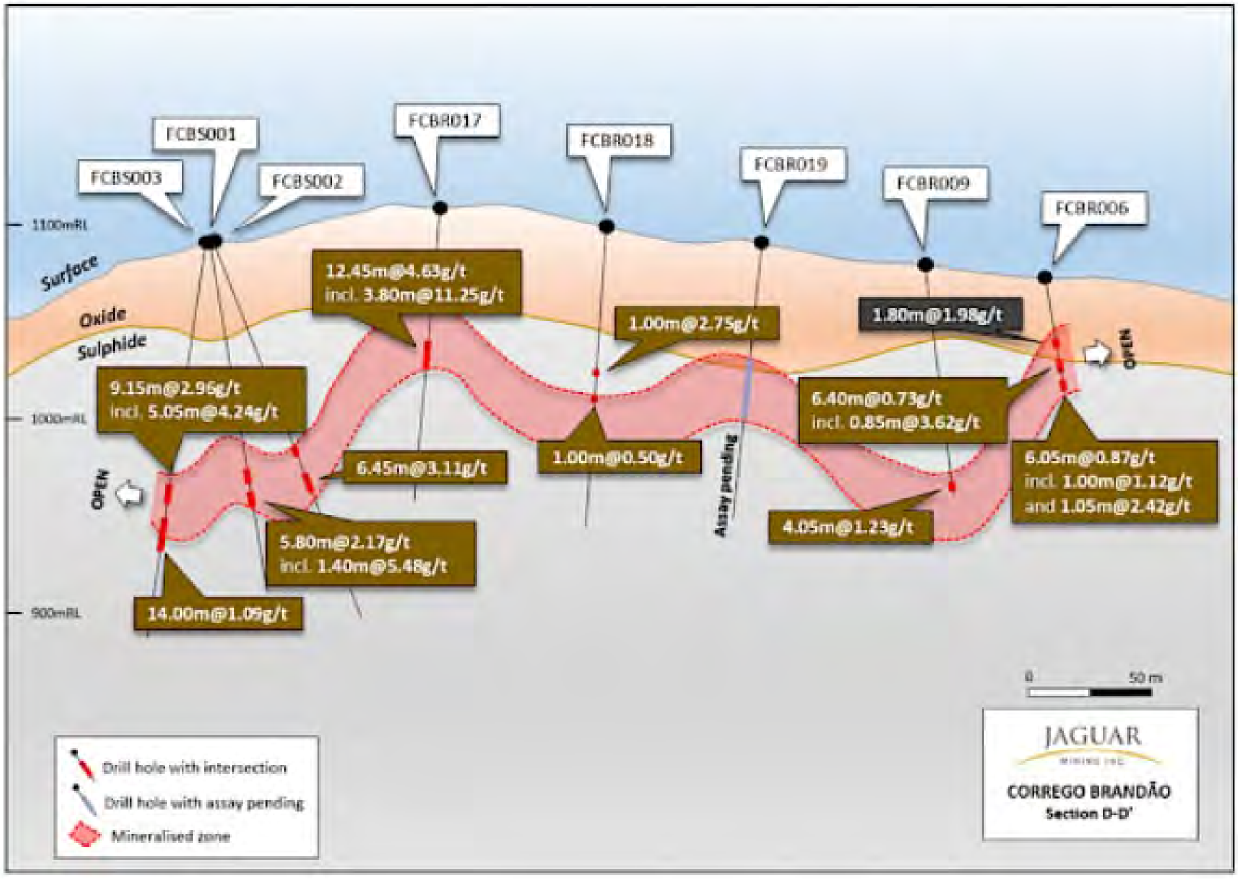


Notes:

1. A – weathered high grade mineralization, B – fresh high grade proximal mineralization, and C – fresh low grade distal mineralization.

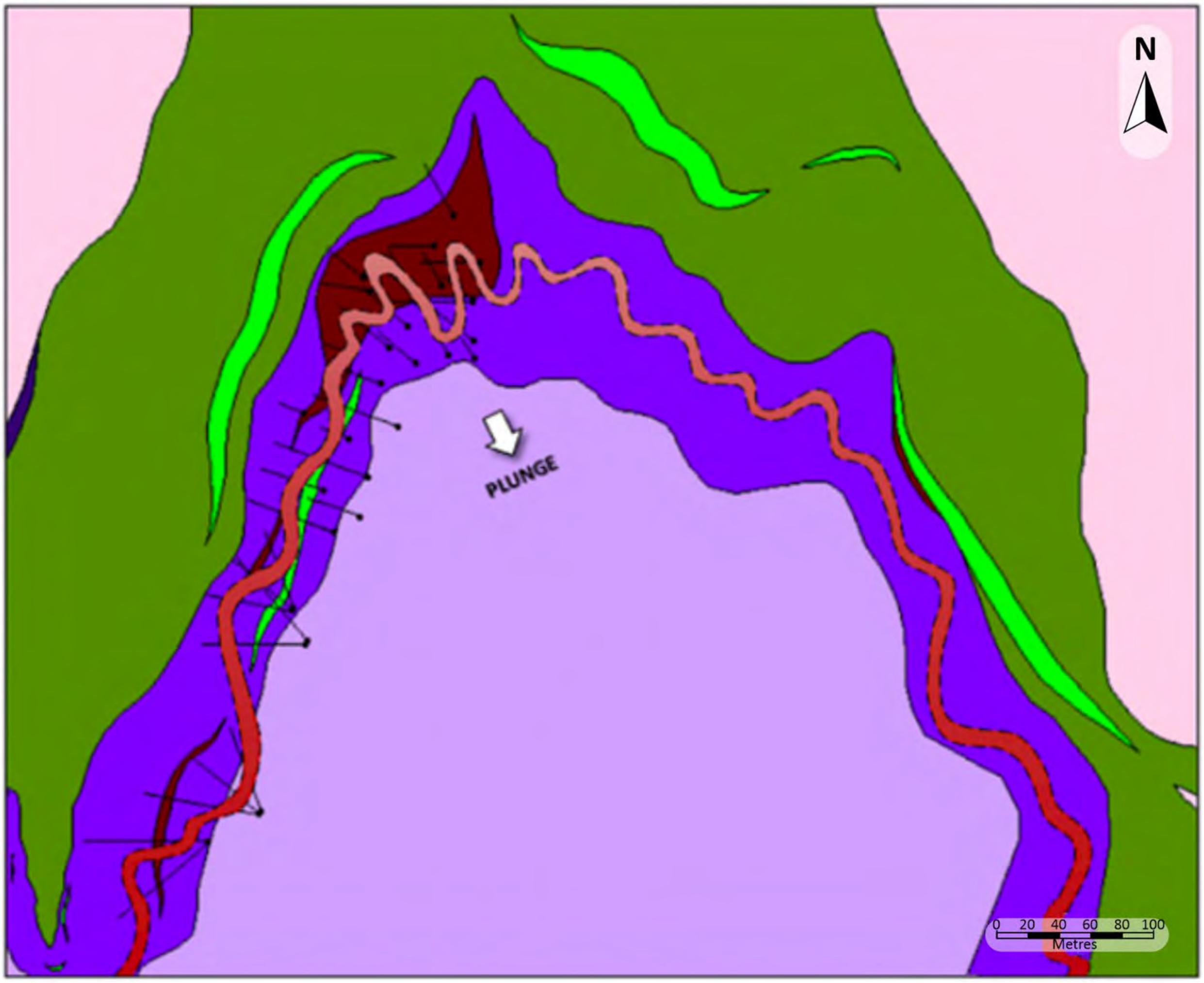
Figure 7-28: Córrego Brandão Mineralization

The main (already delineated) Córrego Brandão mineralized zone has approximately 300 m of strike length, up to 30 m in thickness, and exhibits complex fold geometries associated with the mapped higher-amplitude Córrego Brandão synform ("M type" asymmetries and associated parasitic folding). High grade and extensive mineralization zones appear to occur where there are visible concentrations of smaller scale parasitic folding to the higher amplitude, easily mappable, overturned plunging synforms and antiforms (Figure 7-29 and Figure 7-30). The economic mineralized zones and bodies at Córrego Brandão appear to plunge and progress spatially with double-plunging orientations, as a result of a refolded and re-oriented structural pattern of a previous/earlier structural deformation event.



Source: Jaguar, 2021b

Figure 7-29: East West Drill Tested Strike Section, Córrego Brandão Deposit



Source: Jaguar, 2021b

Figure 7-30: Geological Map Showing Deposit Scale Synformal Structure, Córrego Brandão Deposit

High gold intersections in diamond and auger holes were identified to be associated with a highly magnetic iron rich mafic lithological unit, initially described as a chlorite rich BIF, contained within a folded mafic to ultramafic greenstone sequence. This BIF is approximately six metres to 10 m wide, appearing to be mineralized across this width and with high grades associated with both, the upper and lower contacts.

8.0 DEPOSIT TYPES

The gold metallogeny in the Iron Quadrangle is complex, with gold mineralization predominately observed within three general types of deposits:

- Archean-age, invariably stratabound-like, Algoma BIF hosted deposits.
- "Quartz vein swarms-style", clearly mesothermal deposits.
- Early-Proterozoic, Witwatersrand type paleo-placer deposits.

While the Pilar and Roça Grande deposits are examples of the Algoma BIF hosted type, Córrego Brandão is a folded and sheared deposit hosted in carbonate-quartz-chlorite schists with iron occurrences. The main geological characteristics of this group are summarized as follows:

- Main host/fertile "Algoma type" BIF Units:
  - These units host the mineralization and are stratigraphically located at the waning stages of major volcanic cycles of the Rio da Velhas greenstone belt. They are overlain by later sedimentary rocks composed of greywackes and turbidites.
- Mineralization style:
  - The mineralization consists of predominately "lateral" replacements/sulphidations of the iron carbonate-rich bands of the host Algoma type BIF units. The BIF hosted gold mineralization at Pilar, however, is not syngenetic in nature (in relation to the deposition of the host rock packages), rather it is clearly an epigenetic event that has occurred after the formation of the host rock units. There is a clear temporal-spatial-genetic relationship between the replacement/sulphidation of the host BIFs and the onset of a structurally controlled, district scale silicification event at Pilar. Textural observations suggest that at least two episodes of quartz veining has occurred. The early stage veining is deformed by the regional strain and clearly pre-dates the deformation event. The later stage veins are observed to crosscut the strain-related fabrics and so are interpreted to represent a younger mineralizing event that has taken place some time after the regional deformation event.
  - Other than the mineralization contained within the RG07 deposit, the gold mineralization at Roça Grande is more stratiform in nature.
  - Córrego Brandão mineralization is hosted in altered mafic volcanic rocks, and the higher grades appear to be associated with higher percentages of disseminated fine magnetite and quartz veins. The main sulphides are fine grained and predominately pyrrhotite and subordinate pyrite. Minor associations with arsenopyrite is also observed.
- Dimensions of the economic orebodies:
  - Economic strike lengths of only 50 m to 350 m for individual mined zones. The average thicknesses of the BIF hosted orebodies may range from two metres to 20 m.
  - At Córrego Brandão the sulphide mineralization extends approximately 1,000 m along strike and 250 m down dip. The thickness of the mineralized zones may range from two metres to 20 m.
- Structural-geometric controls and down-plunge continuities of the mineralized zones:

- Mineralized zones plunge with the orientation of an intersection lineation (between bedding planes and a tectonic cleavage) that mimics the orientation of axes of major, deposit scale reclined folds. Increased gold grades and higher sulphide concentrations are typically mapped in association with the fold hinge zones of the deposit scale reclined folds.

- Mineralized zones with incredible down-plunge persistence towards great depths:
  - Major BIF hosted orebodies and underground operations exhibit consistent continuities for many kilometres down-plunge despite the relatively small lateral dimensions (along the strike of the host units). They can be longer than five kilometres along the plunge, similar to the main zones of the AngloGold Ashanti Morro Velho and Cuiabá Mines. All major BIF hosted mineralized zones are open at depth and warrant additional deep drilling to expand resources.
- BIF hosted gold deposits amenable to both bulk mining and more selective high grade underground operations.
  - The Roça Grande and Pilar mine packages demonstrate good average gold grades and attractive thicknesses and may be amenable to both bulk and selective mining.

9.0 EXPLORATION

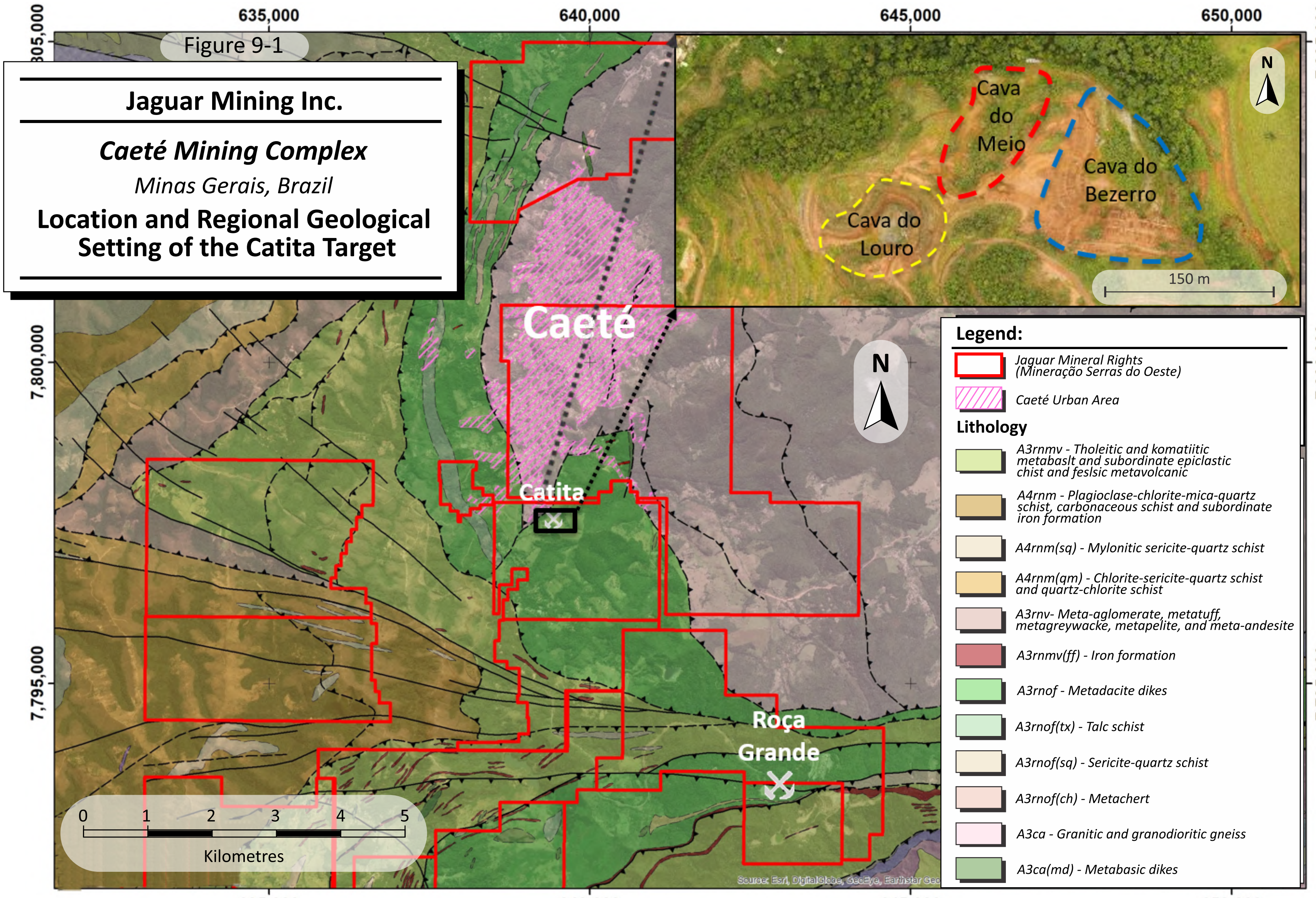
9.1 Roça Grande Area

Jaguar has not conducted any surface based exploration programs on the Roça Grande property other than the drilling programs described in Section 10. In 2018 and 2019, Jaguar did carry out exploration programs on two of its exploration concessions located to the west-northwest of Roça Grande, as detailed in the following subsections.

9.1.1 Catita Target

The Catita target is located on Mineral Tenement 830.938/1979, approximately seven kilometres northwest of Roça Grande, and along the southern perimeter of the municipality of Caeté (Figure 9-1). Catita target mineralization was first observed during the colonial period and more recently gold was extracted from this deposit by MSOL by means of open pit and underground mining operations in 2004 to 2006. Three open pits were excavated, Cava do Louro, Cava do Meio, and Cava do Bezerro. A total of 3,319 oz Au were produced.

Exploration activities carried out by Jaguar exploration teams over the Catita target in 2018 and 2019 included relogging and resampling a limited number of remaining available drill core from holes completed from underground drilling stations and local scale geological mapping. Channel sampling was carried out at the Cava do Louro and Cava do Bezerro open pits to investigate the potential presence of any remaining mineralization, and to aid in the understanding of the style of mineralization and any structural controls that may be present (Figure 9-2). A total of 225 channel samples were collected from within the Cava do Louro and Cava do Bezerro open pits.



March 2022 **Source: SLR, 2022.**

Figure 9-2: Channel Sampling Program at the Cava Do Bezero Open Pit

Beyond the open pit mines, a program of auger drilling and soil sampling was carried out which confirmed the presence of anomalous gold values in close proximity to the contact with foliated rocks of granitic composition at the Caeté Complex.

The auger drilling program was carried out by the Jaguar exploration team using a portable drilling rig, model TR2, supplied by the Brazilian manufacturer Trado. The drilling rig was powered by a Honda GX 200 (6.5 hp, 196 cc) engine and used a 50 cm length barrel. Only the lower 30 cm of the sample material in the barrel was usually collected, as it is common for material from the wall of the hole to collapse and collect at the bottom of the hole after every run. Drilling activities were not carried out under rainy conditions. The sample material was inspected and portions of the samples judged to be unrepresentative were removed, typically the first and last five centimetres of the drilling run. The remaining material was geologically described and placed in a clean sample bag along with suitable identification tags.

The soil sampling grid was planned based on local geological knowledge, with the lines orientated to best crosscut the geologic structures expected to host gold mineralization. With the aid of a handheld global positioning system (GPS) unit, the exploration team created access trails to the established sampling sites. Samples were collected from the B soil horizon using a post hole digger. For each sample site, the depth of the B soil horizon was reached at varying depths depending on the geomorphological setting. If a stoneline was encountered, it was penetrated in order to collect the underlying residual soil. One to two kilograms of B horizon soil was withdrawn and placed over a clean PVC canvas. The sample was described, bagged, and identified. If necessary, the sample was disaggregated and sieved to remove coarse material (greater than two millimetres).

Channel sampling is performed on outcrops, usually of saprolite as fresh rock is rare. The exposure is initially "cleaned", removing any superficial material (approximately five centimetres) which may contain non-representative transported particles and is most exposed to weathering, including rain leaching. Channel sample limits are subsequently marked by a technician or a geologist with small wood stakes (using spray paint if necessary), in an orientation so as to obtain the best knowledge regarding the outcrop being sampled – usually crosscutting the target feature and respecting lithological contacts. The sampler and an assistant collect the sample along the defined channel, with a duck head hammer and a clean aluminum tray, extracting material from an approximately five centimetre wide and three centimetre deep band. The total weight of a one metre sample is approximately three kilograms. It is bagged and identified. Geologic description and structural bearings are taken by a geologist, along with a field sketch.

All soil, channel, and auger samples were analyzed at the ALS Limited (ALS) laboratory in Belo Horizonte using the PREP-31 method for preparation and Au-AA26 (fire assay for gold – 50 g) analytical method. All soil and channel samples were also analyzed by the ME-MS61 method for 48 elements. Chip samples were analyzed at the onsite Jaguar laboratory by fire assay with an atomic absorption spectroscopy (AAS) finish.

A summary of the exploration work conducted over the Catita target during 2018 and 2019 is presented in Table 9-1. A summary of significant intersections returned from the auger drilling program and the channel samples taken in the Cava do Bezerro open pit is presented in Table 9-2 and illustrated in Figure 9-3 and Figure 9-4.

Table 9-1: Summary of Exploration Samples, Catita Target
Jaguar Mining Inc. – Caeté Mining Complex

Item	Number	Remarks
Soil Samples	664	Multi-element analysis. Best value 1.94 g/t Au.
Chip Sampling	30	13 samples had gold grades greater than 1.00 g/t Au. Best value was 4.4 g/t Au.
Channel Sampling	225 samples along 29 channels	Highest value of 5.15 g/t Au over 1 m.
Auger Drilling	5 holes total 56.7 m 57 samples taken	Best intercept was 1.88 g/t Au along 3 m.

Table 9-2: List of Significant Results from the 2018 and 2019 Catita Target Exploration Programs
Jaguar Mining Inc. – Caeté Mining Complex

Sample type	Hole ID	From (m)	To (m)	Length (m)	Grade (g/t Au)	Grade x Thickness	Composite
Channel	CCAT0001	8.09	9.22	1.13	2.14	2.41	1.13 m @ 2.14 g/t Au
Channel	CCAT0001	17.11	18.35	1.24	2.58	3.21	1.24 m @ 2.58 g/t Au
Channel	CCAT0001	30.18	31.40	1.22	1.04	1.26	1.22 m @ 1.04 g/t Au
Channel	CCAT0003	0.00	1.19	1.19	1.05	1.25	1.19 m@ 1.05 g/t Au
Channel	CCAT0004	7.19	8.17	0.99	5.15	5.07	0.99 m @ 5.15 g/t Au
Channel	CCAT0004	11.25	12.52	1.28	3.14	4.01	1.28 m @ 3.14 g/t Au
Channel	CCAT0006	0.00	1.13	1.13	4.45	5.03	1.13 m@ 4.45 g/t Au
Channel	CCAT0007	0.00	1.43	1.43	3.69	5.26	1.43 m @ 3.69 g/t Au
Channel	CCAT0008	6.41	7.22	0.80	2.23	1.79	0.8 m @ 2.23 g/t Au
Channel	CCAT0011	0.00	9.05	9.05	1.87	16.92	9.05 m @ 1.87 g/t Au including 1.02 m@ 12.2 g/t Au
Channel	CCAT0012	0.00	1.07	1.07	2.13	2.28	1.07 m @ 2.13 g/t Au
Channel	CCAT0012	2.47	3.44	0.97	4.35	4.20	0.97 m @ 4.35 g/t Au
Channel	CCAT0013	0.00	2.64	2.64	2.72	7.18	2.64 m @ 2.72 g/t Au
Channel	CCAT0013	5.92	6.86	0.94	3.76	3.53	0.94 m @ 3.76 g/t Au
Channel	CCAT0013	13.22	14.67	1.45	1.61	2.33	1.45 m @ 1.61 g/t Au
Channel	CCAT0014	0.00	2.47	2.47	2.89	7.13	2.47 m @ 2.89 g/t Au
Channel	CCAT0015	4.01	8.06	4.05	1.79	7.26	4.05 m @ 1.79 g/t Au
Channel	CCAT0016	0.00	0.93	0.93	2.53	2.35	0.93 m @ 2.53 g/t Au
Channel	CCAT0023	5.70	8.05	2.35	2.05	4.83	2.35 m @ 2.05 g/t Au
Channel	CCAT0024	0.00	2.42	2.42	3.52	8.53	2.42 m @ 3.52 g/t Au
Auger	ACAT0002	5.00	8.00	3.00	1.88	5.64	3.00 m @ 1.88 g/t Au

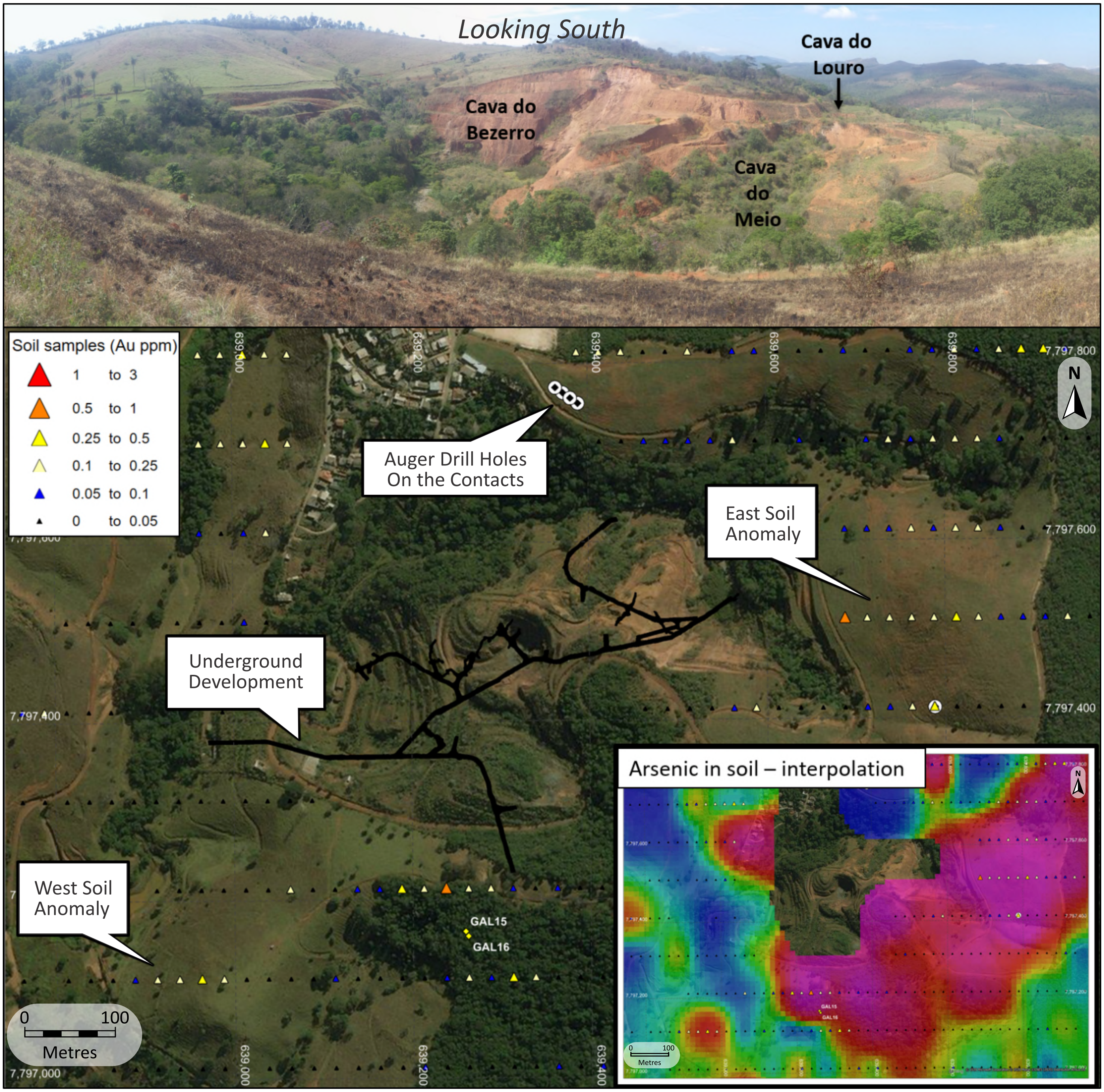


Figure 9-3

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

View of the Current Open Pits, Extent of the Underground Workings, and Location of Exploration Samples at Cava Do Bezerro

March 2022

Source: Jaguar Mining Inc., 2020.

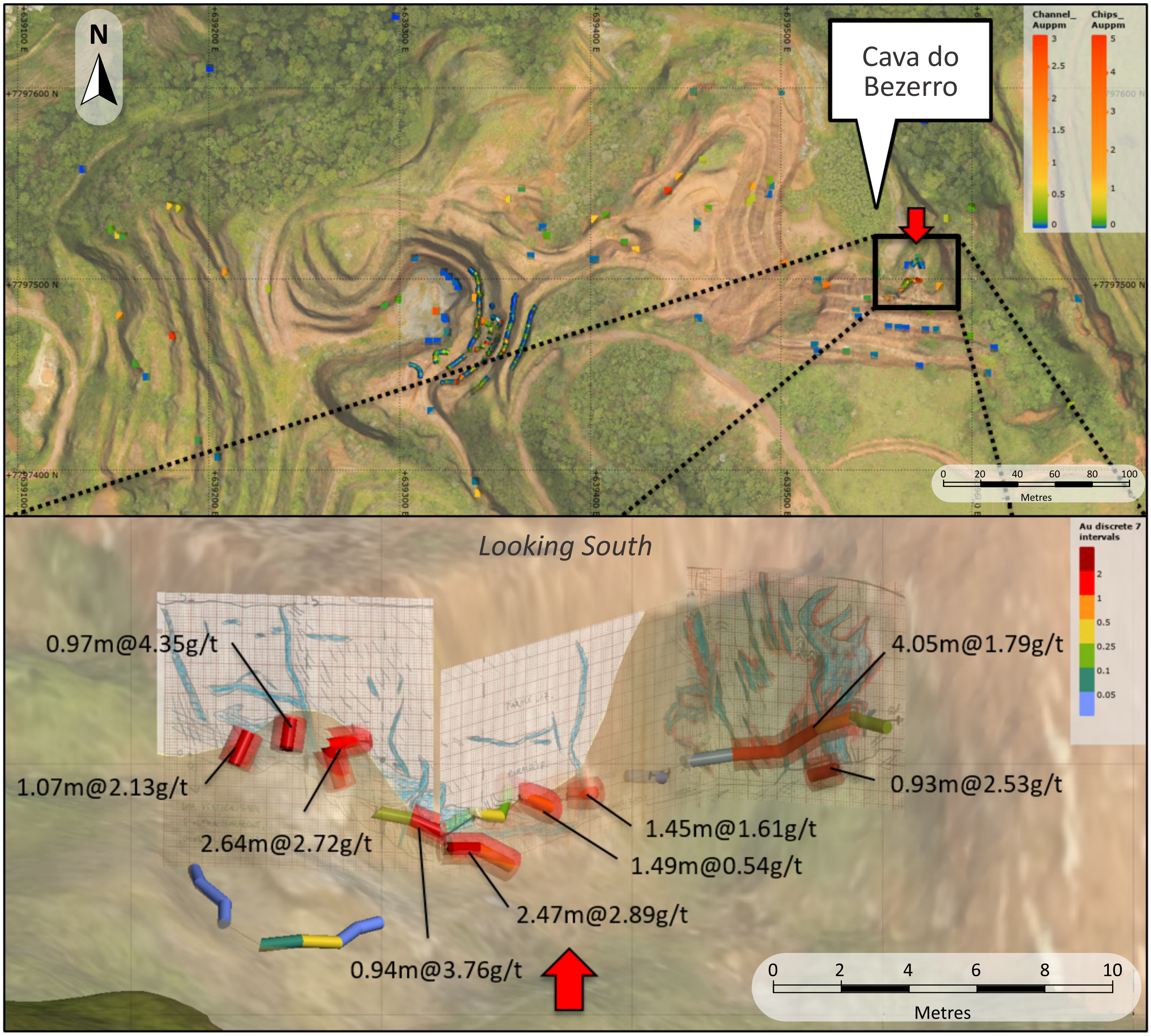


Figure 9-4

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Location of Significant Channel Samples Collected from the Cava Do Bezerro Open Pit

March 2022 ***Source: Jaguar Mining Inc., 2020.***

9.1.2 Córrego Brandão Deposit

The Córrego Brandão deposit is located on Mineral Tenements 831.817/2003 and 830.471/2019, approximately seven kilometres north of Roça Grande, approximately 800 m northeast of the Catita target, and along the southern perimeter of the municipality of Caeté (Figure 9-5).

Exploration activities carried out by the Jaguar exploration teams at the Córrego Brandão deposit included geological mapping, aerial (drone-based) geophysics, soil and chip sampling, channel sampling, auger drilling, and trenching. A summary of the equipment and procedures used to collect the auger, channel, and soil samples is presented in Section 9.1.1. All soil, channel, and auger samples were analyzed at the ALS laboratory in Belo Horizonte using the PREP-31 method for preparation and Au-AA26 (fire assay for gold – 50 g) analytical method. All soil and channel samples were also analyzed by the ME-MS61 method for 48 elements. Chip samples were analyzed at the onsite Jaguar laboratory by fire assay with an AAS finish.

Table 9-3 presents a summary of the exploration work carried out at Córrego Brandão from 2018 to 2021, while Table 9-4 presents a summary of the significant intersections from the auger and trench sampling programs. A representative cross section illustrating the significant results from the auger drilling program is presented in Figure 9-6, while Figure 9-7 presents an oblique view of a portion of the auger drilling program in the mineralized area.

Examination of the gold bearing saprolite samples from the auger holes suggest that they have a high iron content (likely up to 80% Fe_2O_3), are magnetic, and predominately contain quartz and chlorite with lesser quantities of talc and sericite.

Table 9-3: Summary of Exploration Samples, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Item	Number	Remarks
Soil Samples	487	Multi-element analysis. Best value 1.76 g/t Au
Chip Sampling	39	3 samples had gold grades greater than 1.00 g/t Au. Best value was 9.37 g/t Au
Channel Sampling	101 samples collected along 2 channels	9 samples had gold grades greater than 1.00 g/t Au. Best value 2.47 g/t Au.
Auger Drilling	46 holes totalling 707 m 493 samples collected	8 samples had gold grades greater than 1.00 g/t Au. Best value 2.28 g/t Au.
Trenches	1 trench for a totalling 7.85 m 6 samples collected	

Table 9-4: Summary of Significant Intersections, Auger, and Trenches, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Hole/Trench ID	From (m)	To (m)	Downhole Interval (m)	Grade (g/t Au)	Grade x Thickness	Type	Year
TCBR0001	0	4.9	4.9	1.13	5.54	Trench	2019
TCBR0002	0	10.22	10.22	1.59	16.25	Trench	2019
Including	0	5.06	5.06	2.77	14.04	Auger	
TCBR0003	0	12.23	12.23	1.89	23.11	Trench	2019
Including	6.53	12.23	5.7	3.08	17.53	Auger	2021
ACBR0003	0	11	11	1.44	15.84	Auger	2019
Including	2	4	2	2.3	4.59		
ACBR0004	10	22.8	12.8	21.32	272.9	Auger	2019
Including	10	13	3	60.08	180.25		
ACBR0005	9	20	11	7.08	77.88	Auger	2019
Including	9	12.8	3.8	16.91	64.26		
Including	9	11	2	28.7	57.4		
ACBR0006	8	17.5	9.5	2.72	25.84	Auger	2019
Including	9	11	2	3.01	6.02		
Including	11.5	17.5	6	3.14	18.84		
ACBR0011A	8	9	1	1.85	1.85	Auger	2019
ACBR0012	0	2	2	2.25	4.5	Auger	2019
	11	12	1	1.17	1.17		
ACBR0013	9	16.5	7.5	1.97	14.78	Auger	2019
Including	10	12.5	2.5	4.37	10.93		
ACBR0014	5	17	12	1.51	18.12	Auger	2019
Including	15	17	2	3.28	6.56		

The 2021 diamond drilling campaign was carried out to test a relatively restricted portion of the semi-regional scale fold structure mapped and targeted by Jaguar since 2020 (Figure 9-8). The initial shallow diamond drilling campaign has confirmed that the Córrego Brandão deposit has near-surface open pit potential to add feedstock to the nearby Caeté Plant.

More recently, a drone-based magnetic aerial survey was completed for Jaguar (2020 to 2021), covering the Córrego Brandão area. The new airborne magnetic datasets were acquired using a drone (hexacopter) with GEM magnetometer as part of an Avant Geofisica's DRONEmagTMsystem surveys. The consulting company Southern Geoscience Consultants (SGC) has produced an integrated interpretation of the magnetic data for Jaguar and proposed 26 targets for follow-up testing, either by surface geological mapping activities or by diamond drilling. The highest priority geophysical targets suggested were the ones coincident with gold in soil anomalies (the Córrego Brandão very anomalous area in particular).

A total of 284 line-km of magnetic data were collected over 50 m spaced lines on a 045° heading over approximately 12.5 km^2 (1,250 ha), additionally some 250 m spaced tie lines were also acquired. The drone flew at an average height of 50 m, and at an average speed of 8 m/s (individual measurements at every 0.2 seconds).

All exploratory diamond drill core samples from Córrego Brandão were analyzed at the ALS laboratory in Belo Horizonte using the PREP-31 method for preparation and Au-AA26 (fire assay for gold - 50 g) analytical method.

A summary of the significant diamond drill intersections obtained at the Córrego Brandão deposit is provided in Table 9-5.

Table 9-5: Summary of Significant Core Drilling Intersections in 2021, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Hole ID	From (m)	To (m)	Core Length (m)	Average Grade (g/t Au)
FCBR001	0.00	40.00	40.00	4.20
including	10.40	16.50	6.10	15.81
including	27.00	28.50	1.50	33.60
FCBR002	0.00	40.05	40.05	1.41
including	8.50	10.25	1.75	6.29
including	18.00	25.50	7.50	3.38
including	29.50	35.5	6.00	2.56
FCBR004	0.00	19.95	19.95	0.91
including	10.05	12.85	2.80	2.95
including	14.80	19.95	5.15	1.18
FCBR005	0.00	46.15	46.15	0.78
including	9.25	12.35	3.10	2.45
including	16.55	39.05	22.50	0.94
FCBR007	5.50	31.05	25.55	1.84
including	10.65	16.80	6.15	2.41
including	24.15	25.25	1.10	14.35
including	29.25	31.05	1.80	4.83
FCBS003	114.70	123.85	9.15	2.96
including	114.70	116.80	2.10	2.58
including	118.80	123.85	5.05	4.24
FCBR017	72.50	84.95	12.45	4.63
including	73.50	80.00	5.34	2.13
including	81.15	84.95	3.12	11.25
FCBR025	77.30	86.60	9.30	2.15
including	77.30	82.55	5.25	3.51
FCBR028	16.85	37.85	21.00	0.81
including	16.85	22.85	6.00	2.60
FCBR031	16.45	36.45	22.00	2.91
including	16.45	23.45	7.00	8.14

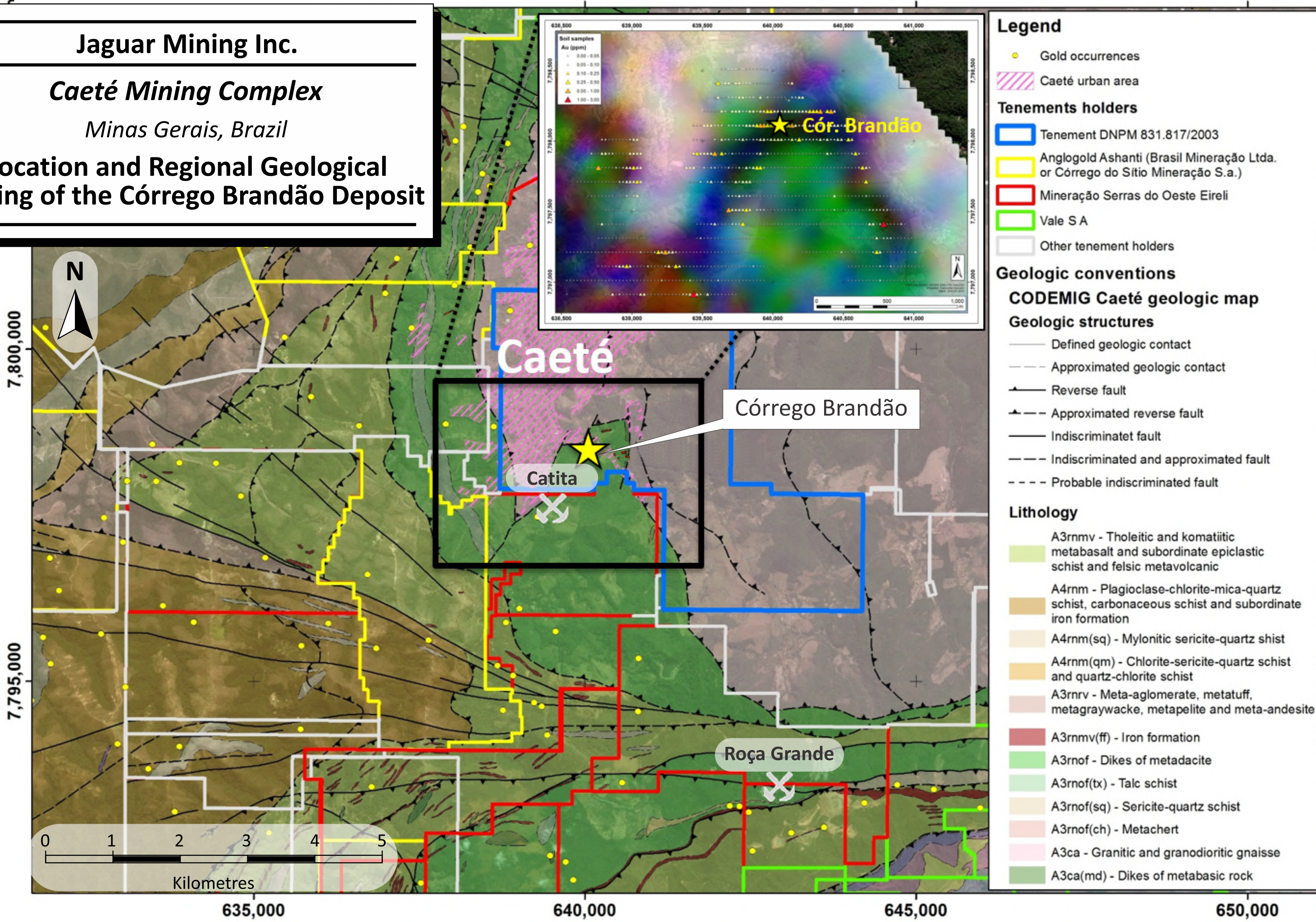
Figure 9-5

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Location and Regional Geological Setting of the Córrego Brandão Deposit



March 2022

Source: Jaguar Mining Inc., 2020.

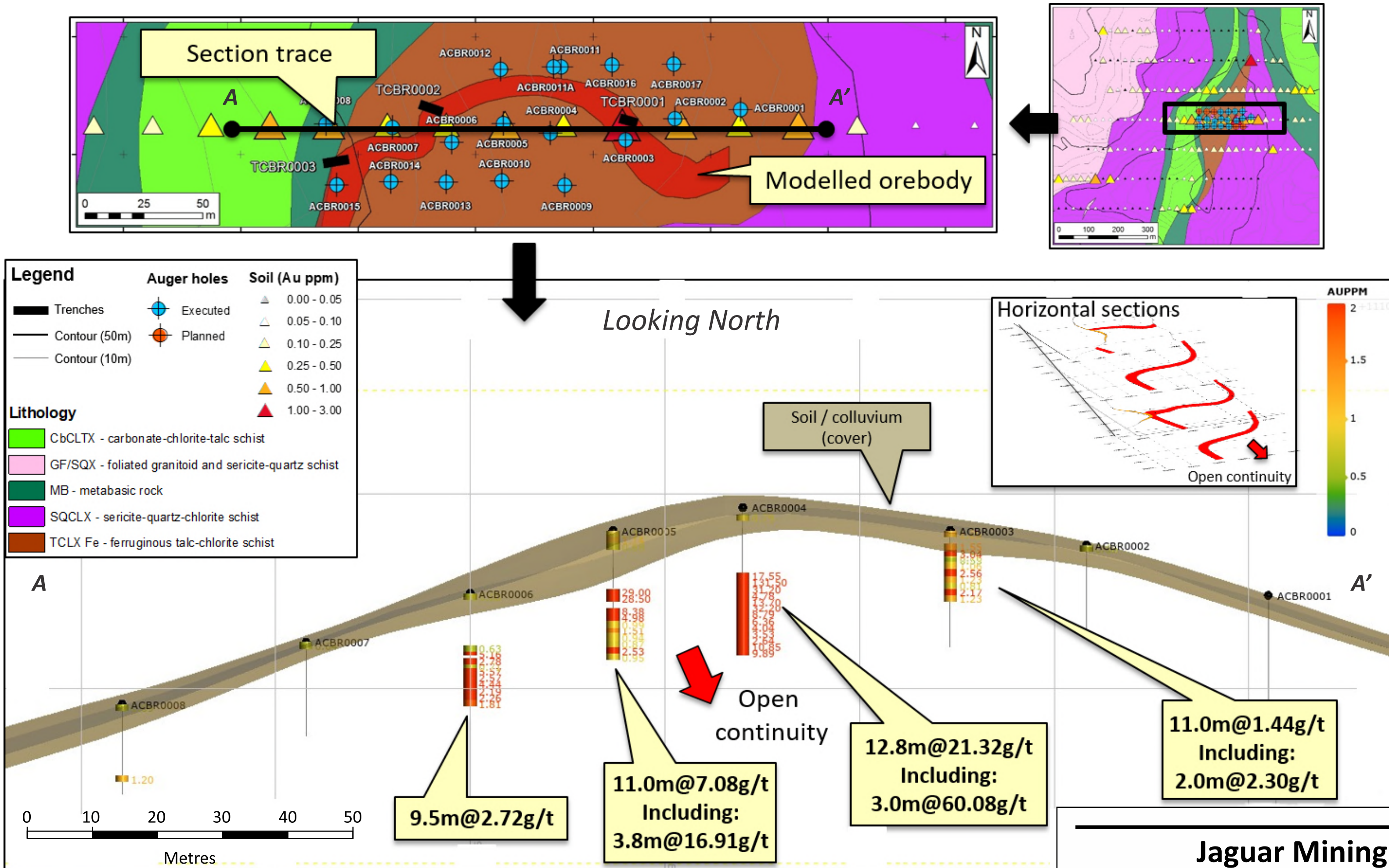


Figure 9-6

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Sample Cross Section of the Auger Drilling Program, Córrego Brandão Deposit

March 2022

Source: Jaguar Mining Inc., 2020.

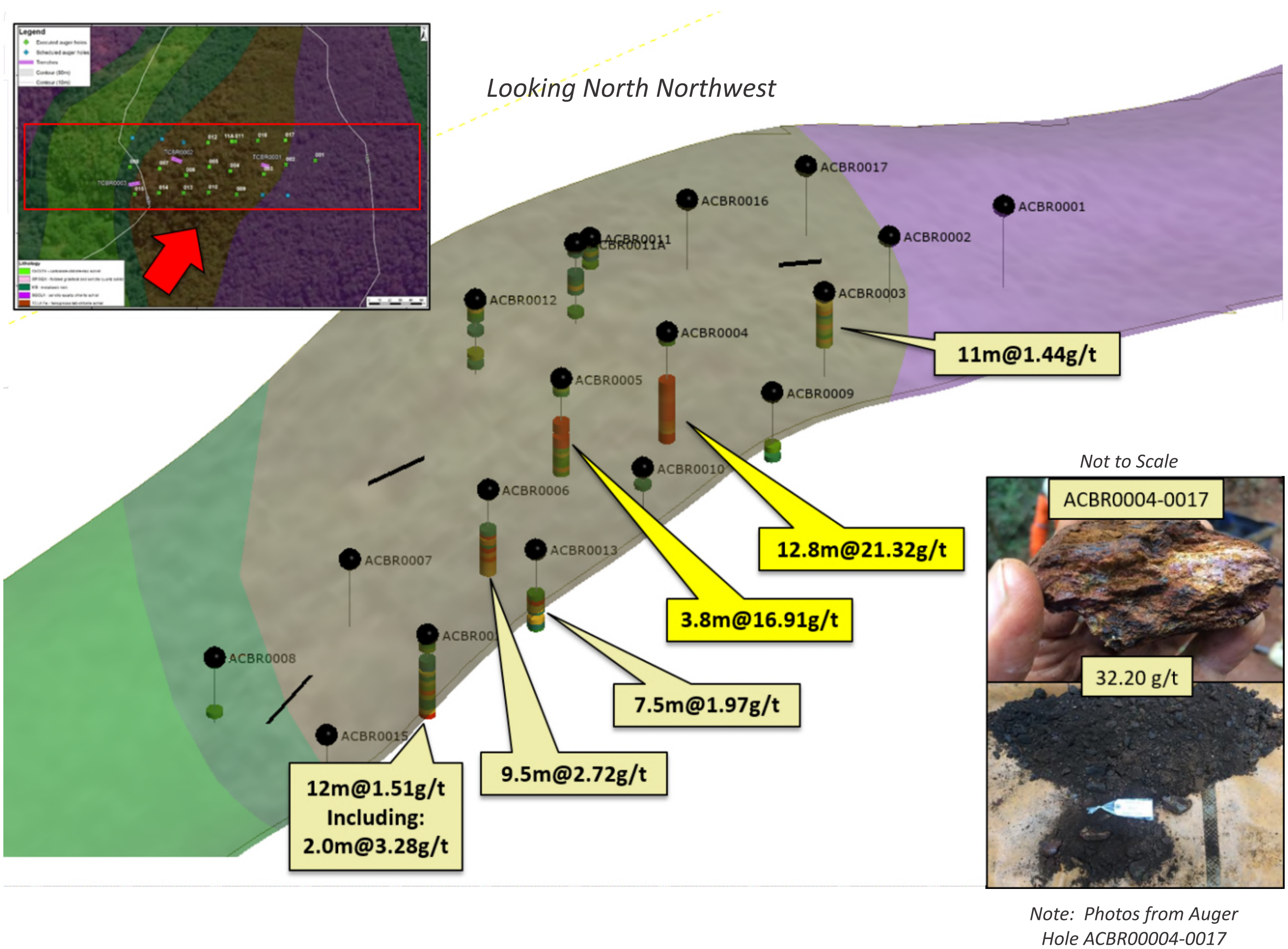


Figure 9-7

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Isometric View of the Auger Drilling Program, Córrego Brandão Deposit

March 2022 ***Source: Jaguar Mining Inc., 2020.***

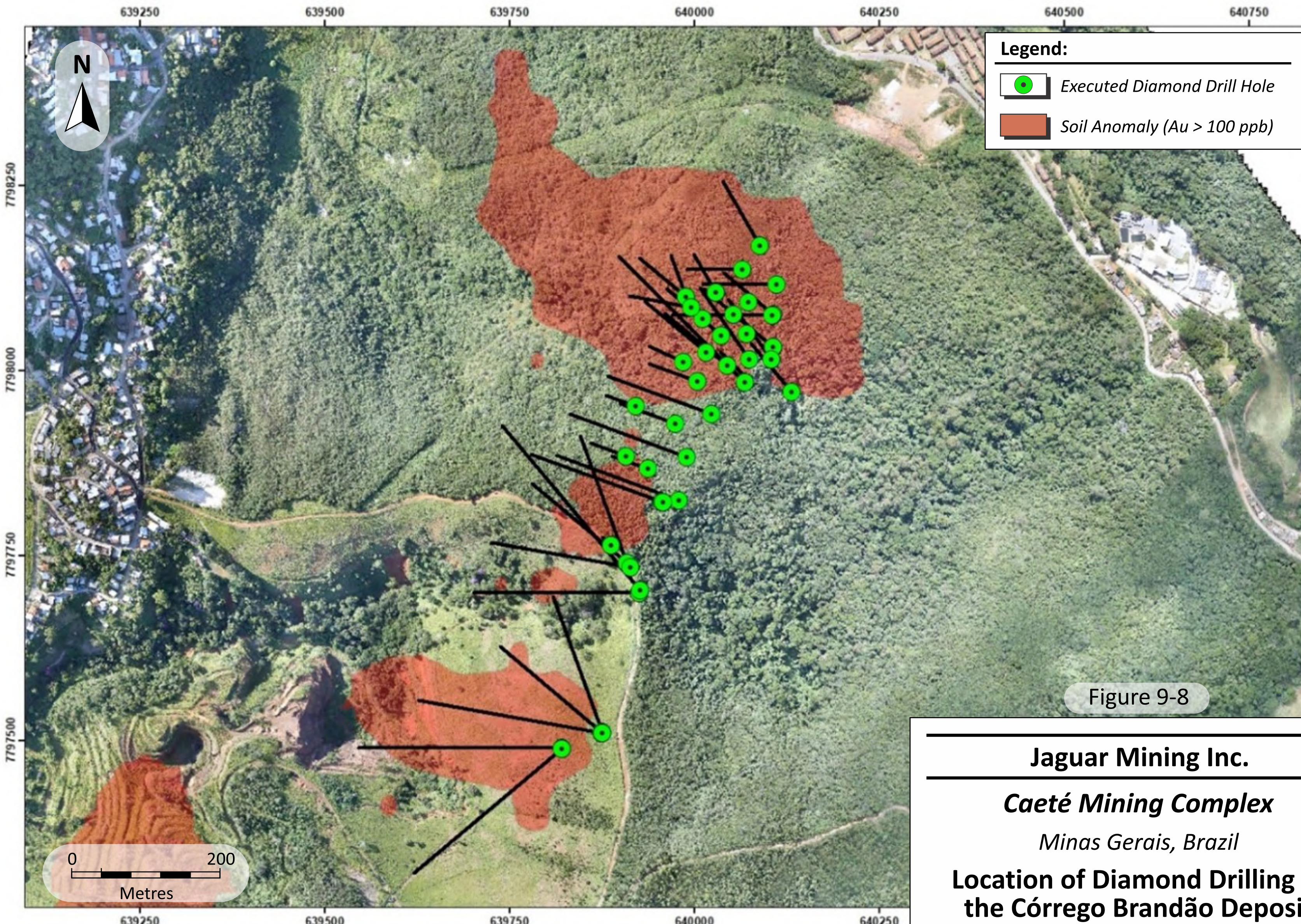


Figure 9-8

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Location of Diamond Drilling at the Córrego Brandão Deposit

March 2022

Source: Jaguar Mining Inc., 2020.

9.2 Pilar Mine

The following exploration activities were carried out by Jaguar on the Pilar property:

- 2014:
  - Reprocessing of magnetic data from the airborne Companhia de Desenvolvimento Econômico de Minas Gerais (CODEMIG) survey.
- 2015:
  - High definition induced polarization (IP) ground survey covering the south extension of Pilar. The estimated depth of penetration of the survey was up to 1,000 m.
  - Geological mapping and soil sampling on the Pacheca and Cubas targets.
  - Soil sampling campaign, consisting of 744 samples. Anomalous values (0.15 g/t Au to 0.48 g/t Au) were outlined along an 800 m long area oriented in a northeast-southwest direction.
- 2017 and 2018:
  - Detailed geological mapping, soil and chip sampling campaigns, channel sampling, and auger drilling on the Pilarzinho and Torre targets.

9.2.1 Pilarzinho Target

The Pilarzinho target is located on Mineral Tenement 831.878/2013, approximately 1,400 m southwest of Pilar, and along the southwestern strike projection of the SW Limb (Figure 9-9). This area has been the focus of previous exploration and mining activities as evidenced by the presence of excavations completed by previous owners of the property (Figure 9-10). Records from this previous work are not currently available.

The location and results of the soil sampling program is presented in Figure 9-11, and a summary of the exploration work carried out on the Pilarzinho target is presented in Table 9-6. All soil, channel, and auger samples were analyzed at the ALS laboratory in Belo Horizonte using the PREP-31 method for preparation and Au-AA26 (fire assay for gold – 50 g) analytical method. All soil and channel samples were also analyzed by the ME-MS61 method for 48 elements. Chip samples were analyzed at the onsite Jaguar laboratory by fire assay with an AAS finish.

Table 9-6: Summary of Exploration Samples, Pilarzinho Target
Jaguar Mining Inc. – Caeté Mining Complex

Item	Number	Remarks
Soil Samples	296	Multi-element analysis completed for 289 samples. Best value 0.92 g/t Au.
Chip Sampling	37	One sample had a gold grade of 2.36 g/t Au.
Channel Sampling	255 samples collected along 15 channels	Best result is 8.56 g/t Au along a length of 2.63 m (includes 9.46 g/t Au / 2.0 m).
Auger Drilling	6 holes total 66 m, 68 samples taken	No significant values intersected.

The gold mineralization observed in the channel sample is interpreted to be hosted by the same stratigraphic package that hosts the SW Limb. It is also observed to be hosted by BIF layers and is interpreted to occur as free gold and associated with sulphides (as evidenced from pan concentrates and boxwork textures observed in outcrop, respectively). Silicification and quartz veining are also observed in the area.

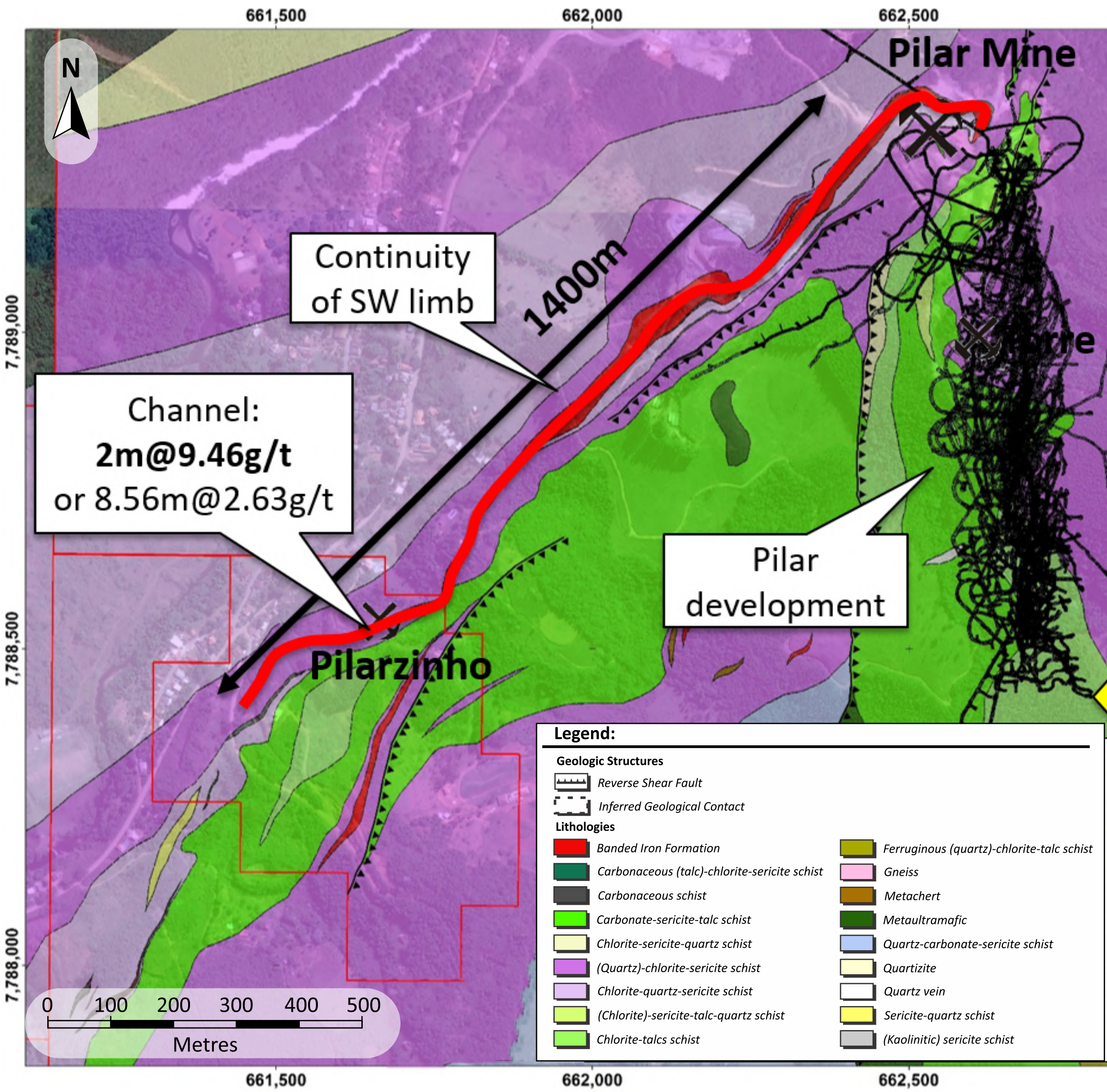
Figure 9-9

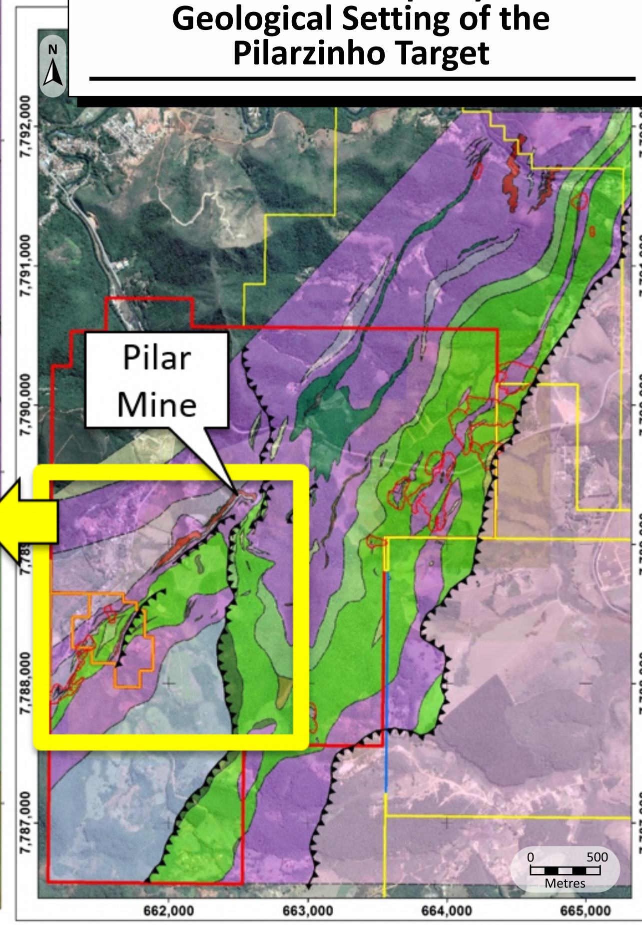
Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Location and Property Scale Geological Setting of the Pilarzinho Target





March 2022

Source: Jaguar Mining Inc., 2020.

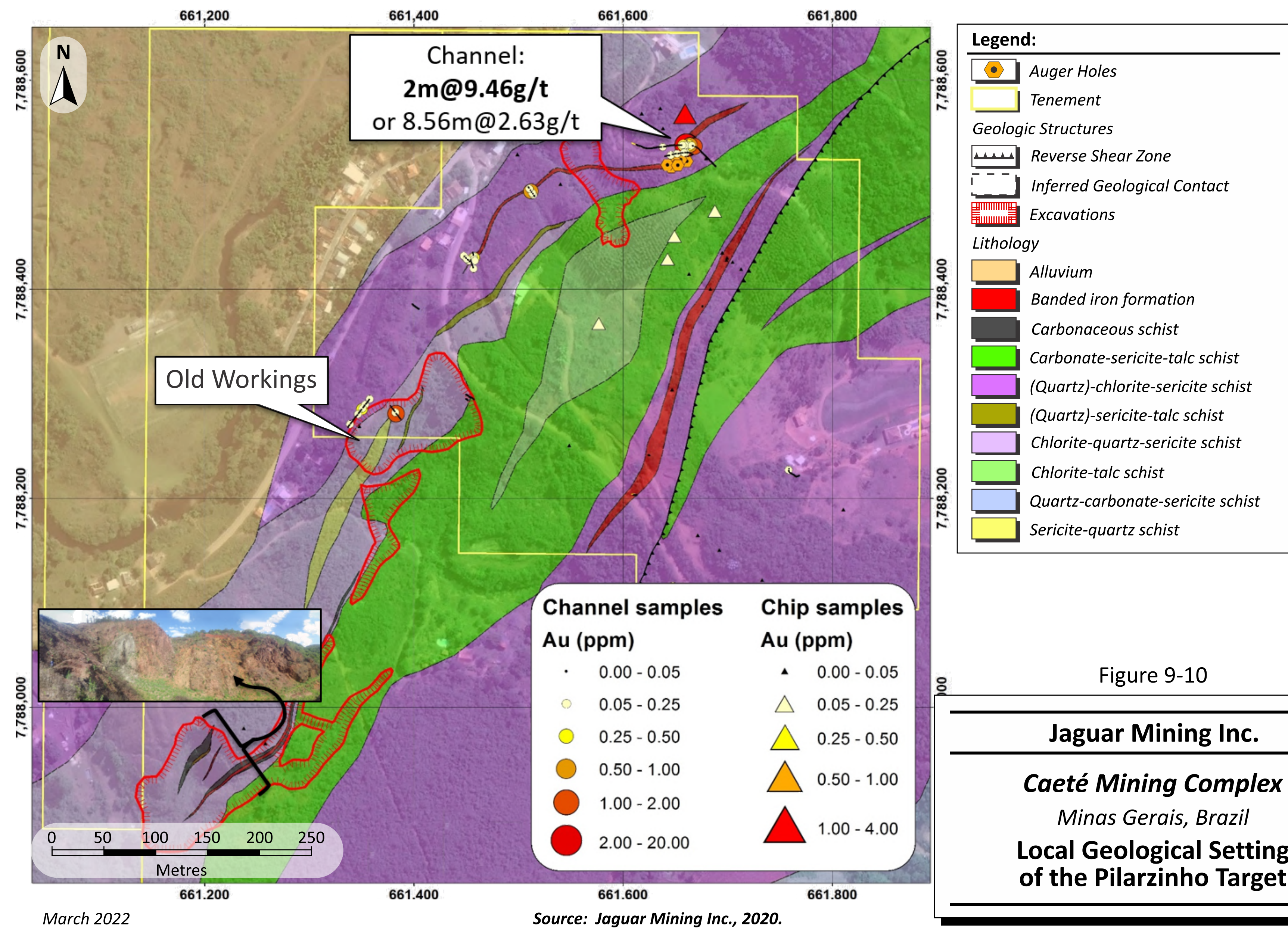


Figure 9-10

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Local Geological Setting of the Pilarzinho Target

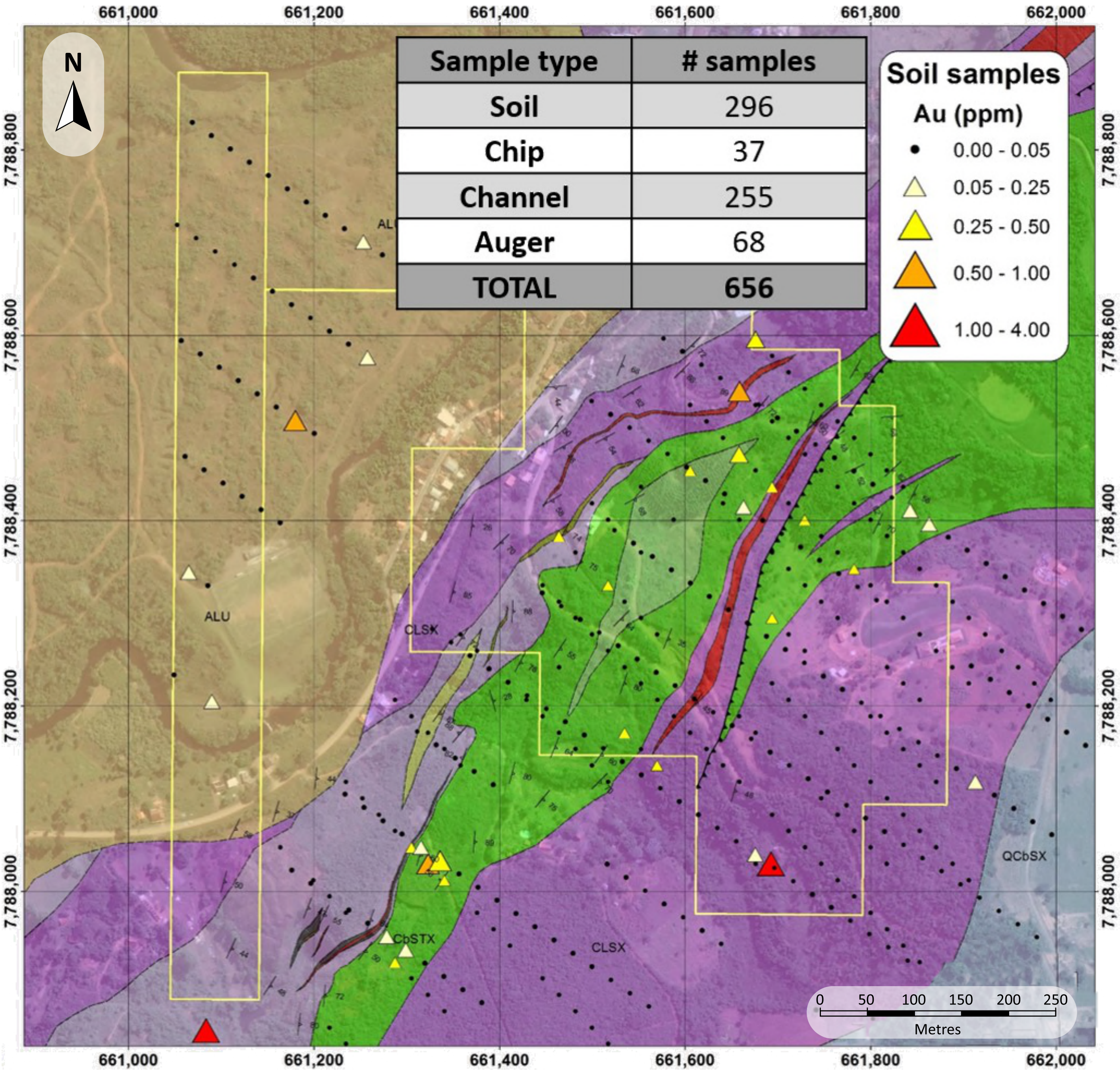


Figure 9-11

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Location and Results of Soil Samples, Pilarzinho Target

March 2022 ***Source: Jaguar Mining Inc., 2020.***

9.2.2 Torre Target

The Torre target is located immediately to the south of one of the previously excavated Pilar open pits. Figure 9-12 presents the surface expression of the Torre deposit, which has been traced by drilling and channel samples at Pilar to a depth of approximately 800 m to 850 m beneath the surface. Images of the Torre mineralization at depth have been presented in Section 7.

In the Torre area, chemical and clastic sedimentary rocks of the Santa Quitéria Unit are observed in contact with tholeiitic basalts and komatiites (now metamorphosed to talc-chlorite schists) of the Quebra-Ossos Unit. These two units are in contact across a shear zone which can be traced to the northeast where it crosses the BIF units in the São Jorge region. A previous open pit mine (Pit 15) was excavated along a mineralized portion of this shear zone that now forms part of the Torre orebody. At the extreme southern end of this pit, the strike of the host rocks changes abruptly by 90° for a distance of approximately 250 m. This inflection in the strike of the host rocks forms the Torre target.

The strike of the host rock units in the Torre target area are generally west-northwest to east-southeast, and the foliations observed vary widely in both direction and angle. In the area of the inflection at the southern end of Pit 15, the dip of the foliations is towards the southwest, but gradually changes to a southeasterly dip along strike to the east. The dip angle of the foliations varies from sub-vertical to approximately 35°. The gold mineralization appears to be related to the first recognizable penetrative foliation (Sn) which is observed to be folded along a fold axis that plunges -37° towards an azimuth of 168°. A younger penetrative foliation is recognized in this region (Sn+1), as is an even younger deformation event (Sn+2) that is expressed as a crenulation cleavage. Observations suggest that the intersection lineation between the first and second penetrative fabrics may be associated with the plunge of the Torre mineralization.

The thickness of the cover materials (soils and colluvium) increases along strike to the east-southeast. This required the excavation of trenches and collection of samples by mechanical auger in order to observe and describe the lithologies present in this region. The location of the trenches and auger drill holes completed at the Torre target are presented in Figure 9-13.

A summary of the equipment and procedures used to collect the auger, channel, and soil samples is presented above. All soil, channel, and auger samples were analyzed for gold at the onsite Jaguar laboratory using fire assay with an AAS finish. All soil samples were analyzed by SGS do Brasil Ltda (SGS) using the ICM14B method for multielement analysis.

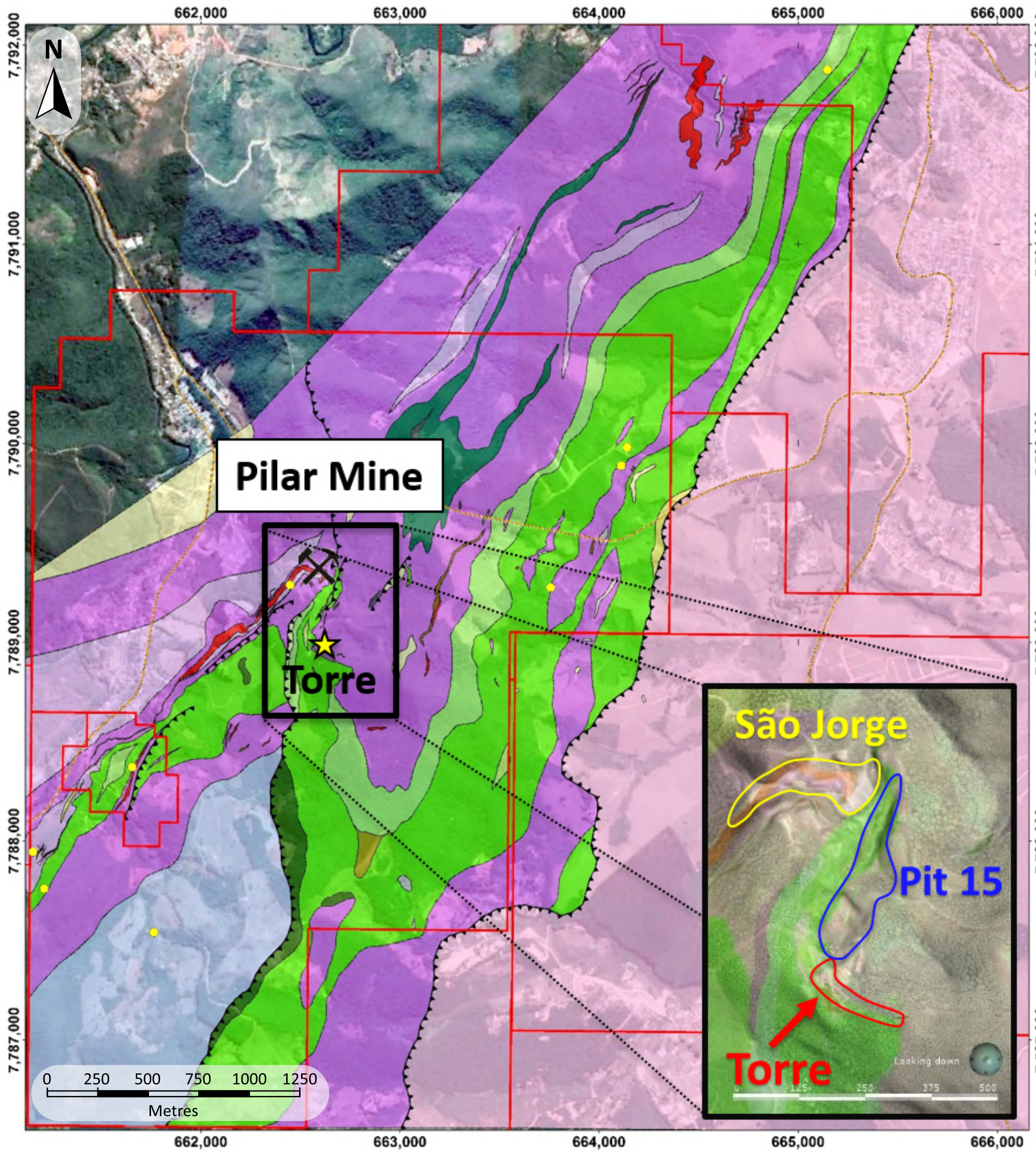
Figure 9-12

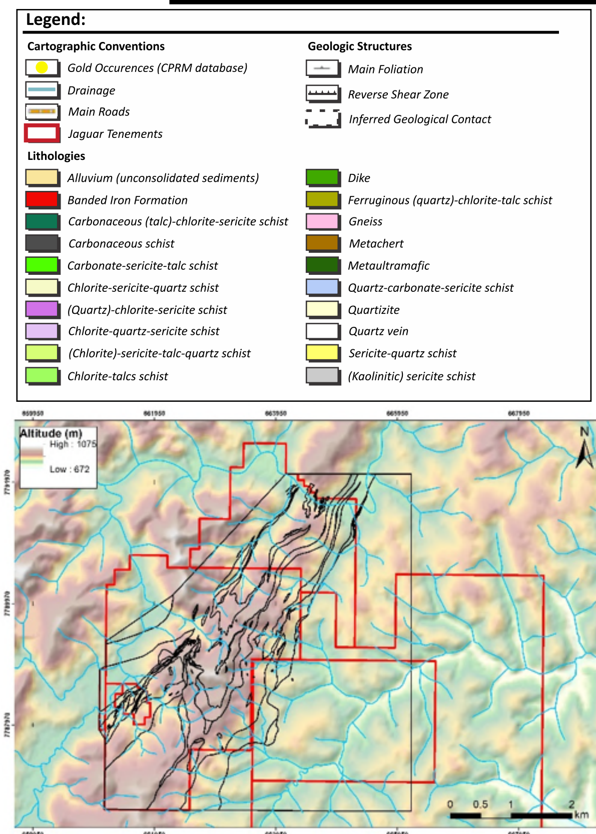
Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Local Geological Setting of the Torre Target





March 2022

Source: Jaguar Mining Inc., 2020.

A summary of the exploration work carried out on the Torre target is presented in Table 9-7. A summary of significant values returned from this work is presented in Table 9-8 and their locations are presented in Figure 9-14.

Table 9-7: Summary of Exploration Samples, Torre Target
Jaguar Mining Inc. – Caeté Mining Complex

Item	Number	Remarks
Soil Samples	766	Multi-element analysis completed for 722 samples. Best value 2.23 g/t Au.
Chip Sampling	147	Highest value of 7.86 g/t Au.
Channel Sampling	378 samples collected along 30 channels	Highest value of 9.86 g/t Au
Auger Drilling	15 holes total 152 m 161 samples taken	Highest value of 1.71 g/t Au
Trenching	6 trenches completed for a total length of 160 m. 130 samples collected	Highest value of 1.27 g/t Au

Table 9-8: Summary of Exploration Samples, Torre Target
Jaguar Mining Inc. – Caeté Mining Complex

Sample Type	Hole ID	Length (m)	Grade (g/t Au)
Auger	ACUB005	5.00	1.71
Auger	ACUB012	2.50	1.25
Channel	CLCUB038	4.93	3.92
Channel	CLCUB048	3.30	4.85
Channel	CLCUB051	5.79	1.86
Channel	CLCUB057	1.00	7.74
Channel	CLCUB071	2.53	2.79
Channel	CLCUB081	1.15	2.63
Channel	CLCUB141	3.61	9.86
Channel	CLCUB156	2.74	1.50
Trench	TTOR0004	10.61	1.27

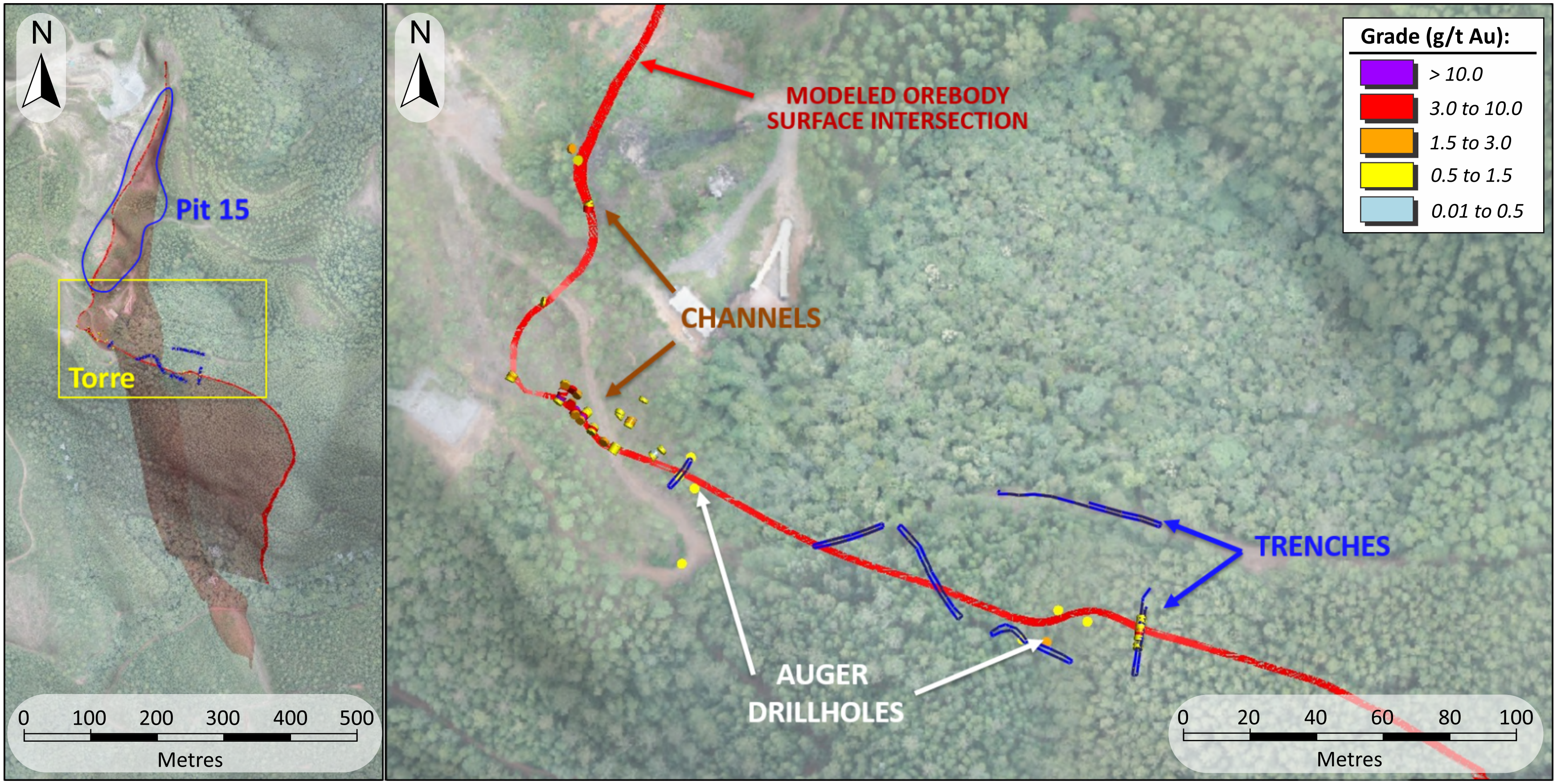


Figure 9-13

Jaguar Mining Inc.

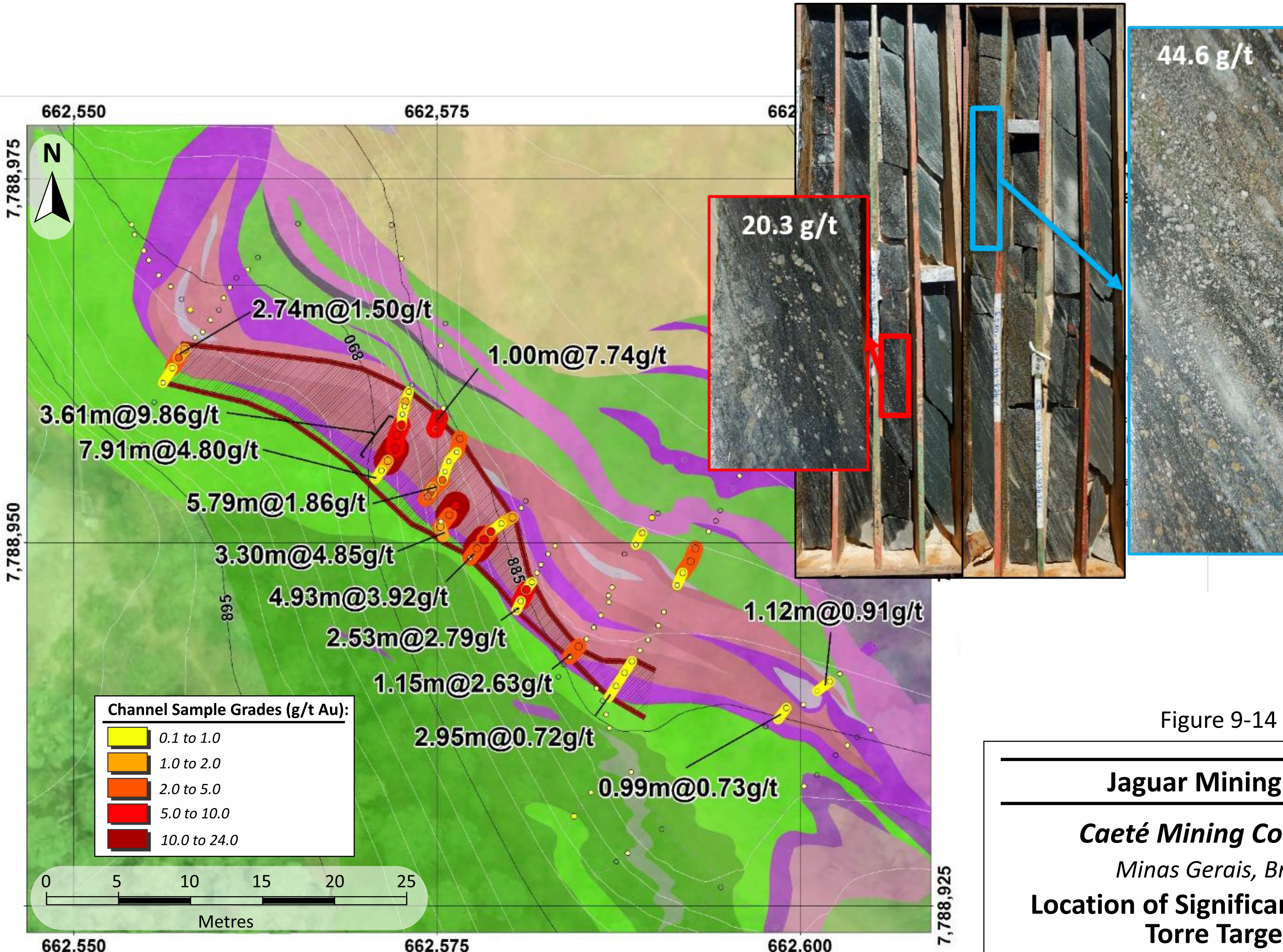
Caeté Mining Complex

Minas Gerais, Brazil

Location of Exploration Trenches and Auger Holes, Torre Target

March 2022

Source: Jaguar Mining Inc., 2020.



March 2022

Source: Jaguar Mining Inc., 2020.

Figure 9-14

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Location of Significant Results, Torre Target

10.0 DRILLING

Jaguar has carried out a number of surface and underground based drilling programs at Roça Grande since entering into the mutual exploration and option agreement with Vale in 2005. These in-fill and exploration drilling programs were focussed primarily on the RG01/07, RG02, RG03, and RG06 mineralized zones.

Exploration activities at Pilar were carried out by Vale from 1989 to 1994 and again between 2002 and 2003. Beginning in 2004, Jaguar has carried out drilling programs to search for gold bearing mineralization located in the Pilar area.

Jaguar commenced exploring in the Córrego Brandão area in 2018. Drilling commenced in 2019 with auger drilling and was followed by a core drilling program in 2021.

10.1 Roça Grande

Jaguar commenced diamond drilling at Roça Grande in 2004. Following the completion of the first exploratory holes drilled at the RG01/07, RG02, RG03, and RG06 mineralized zones, Jaguar carried out an in-fill program to delineate these zones. No drilling has been completed at Roça Grande since the last Mineral Resource disclosure.

A summary of the drilling campaigns completed at Roça Grande is provided in Table 10-1. The distribution of drill holes and channel samples is presented in Figure 10-1.

Table 10-1: Summary of Drilling Campaigns, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Period	Target	Diamond Drilling		Roto-Percussive Drilling	
		No. Holes	Total Length (m)	No. Holes	Total Length (m)
		Vale			
1973-1993	Roça Grande	111	17,831	-	-
1994-1995	Roça Grande	0	-	313	17,270
1996-1999	RG01	6	437	-	-
	RG02	9	910	-	-
	RG05	18	1,530	-	-
	RG03/04	7	505	-	-
2000	RG02	1	230	-	-
	RG03	4	273	-	-
	RG05	1	63	-	-
	RG06	3	379	-	-
Sub-total, Vale		160	22,158	313	17,270

Period	Target	Diamond Drilling		Roto-Percussive Drilling	
		No. Holes	Total Length (m)	No. Holes	Total Length (m)
		Jaguar			
2004-2010	RG01/07	132	14,997	-	-
	RG02	59	16,580	-	-
	RG03	56	9,407	-	-
	RG06	55	7,954	-	-
2011	RG01/06	79	10,769	-	-
2012	RG01	106	12,436	-	-
	RG02	12	1,027		
	RG03	14	686		
	RG06	2	92		
2013	RG01/07	83	13,853	-	-
2014	RG01/07	39	3,860		
	RG03/06	14	794	-	-
2015	RG01/07	22	2,759	-	-
2016	RG01/07	91	8,858	-	-
2017	RG01/07	13	1,050	-	-
2018	RG01/07	6	716	-	-
Sub-total, Jaguar		783	105,838	-	-

The SLR QP has not identified any drilling, sampling, or core recovery issues that could materially affect the accuracy or reliability of the Roça Grande core samples.

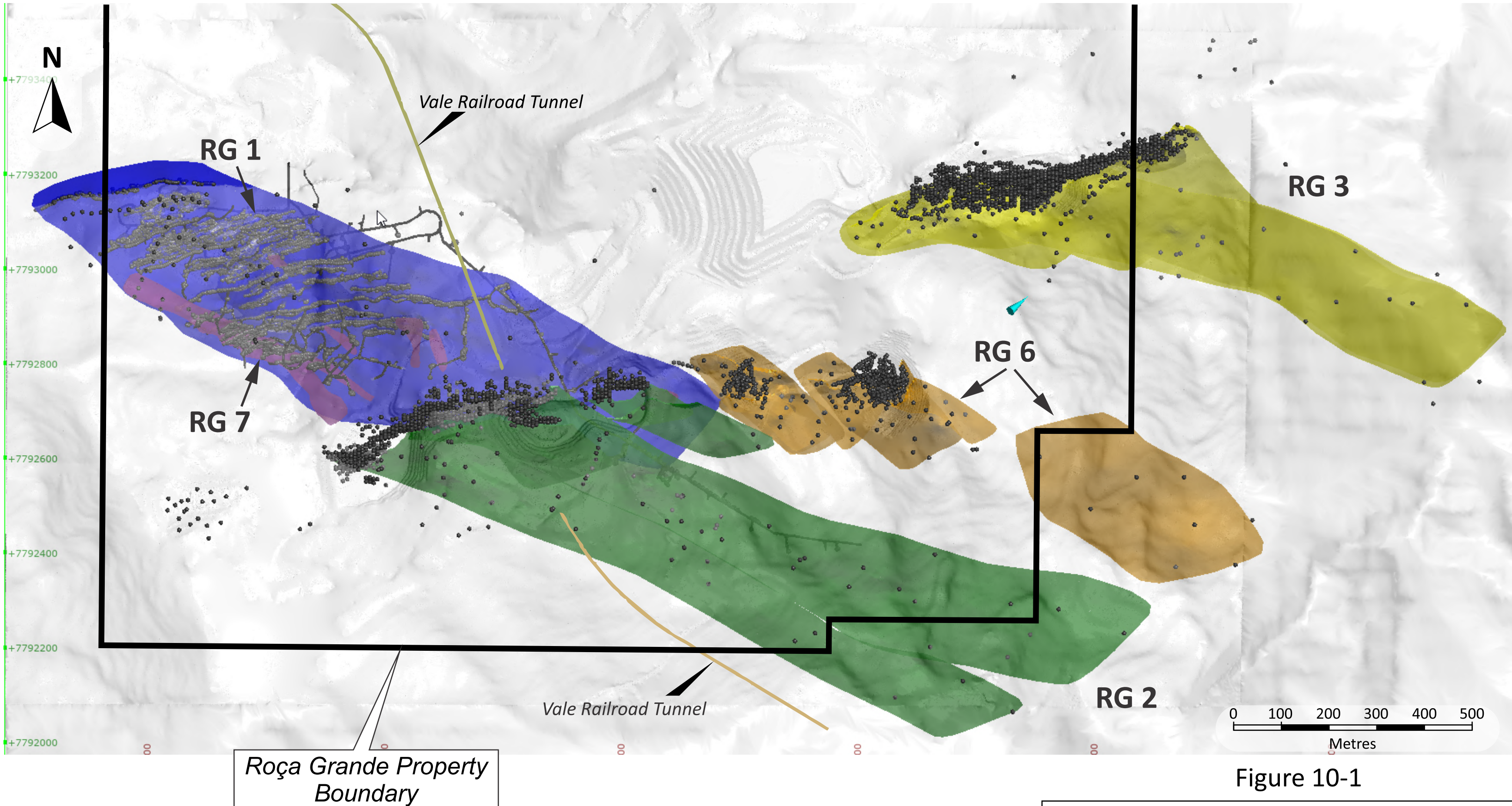


Figure 10-1

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Drill Hole and Channel Sample Locations, Roça Grande Mine

March 2022

Source: SLR, 2022.

10.2 Pilar

Exploration activities were carried out at Pilar by Vale from 1989 to 1994 and again between 2002 and 2003. Beginning in 2004, Jaguar has carried out drilling programs to search for gold bearing mineralization located in the Pilar area. Targets in the early years included the near surface portions (within 200 m of the surface) of the Pilar Sul, São Jorge, and the São Jorge Extensão areas of the Pilar property. The targets of the drilling programs have subsequently involved evaluating the depth extensions of the gold mineralized zones that were found at the surface. A summary of the 2004 to 2021 drilling programs is provided in Table 10-2. Additional details regarding these drilling campaigns have been presented in RPA (2020) and the references therein.

Table 10-2: Summary of Drilling Campaigns, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Period	Target	Diamond Drilling		Roto-Percussive Drilling	
		No. Holes	Total Length (m)	No. Holes	Total Length (m)
		Vale			
1989-1994	-	65	11,812	60	2,960
2002-2003	-	10	3,069	-	-
Sub-total, Vale	-	75	14,881	60	2,960
		Jaguar			
2004-2010	Phase 1	36	6,489	-	-
	Phase 2	41	12,926	-	-
	Phase 3-UG	180	11,200	-	-
	Phase 3-Surface	19	10,186	-	-
Q4 2010-2011	-	44	12,574	-	-
2012	UG-Exploration UG-Definition	31 121	4,005 9,705	-	-
2013	UG- Exploration UG-Definition	40 51	5,978 3,557	-	-
2014	UG- Exploration UG-Definition Surface Exploration	60 125 9	8,398 10,818 910	-	-
2015	UG- Exploration UG-Definition	30 12	6,477 879	-	-
2016	UG- Exploration UG-Definition	19 89	2,994 8,143	-	-
2017	UG- Exploration UG-Definition	23 150	7,081 9,534	-	-

Period	Target	Diamond Drilling No. Holes	Diamond Drilling Total Length (m)	Roto-Percussive Drilling No. Holes	Roto-Percussive Drilling Total Length (m)
2018	UG- Exploration UG-Definition	3 172	328 12,172	-	-
2019	UG-Definition UG-In-Fill UG-Exploration	83 20 22	6,206 3,293 4,822	-	-
2020	UG-Definition UG-In-Fill UG-Exploration	108 30 145	4,942 4,262 18,362	-	-
2021	UG-Definition UG-In-Fill UG-Exploration	38 47 176	1,961 6,042 24,617		
Sub-total, Jaguar		1,924	218,861	**-**	**-**

Drilling completed in the second half of 2020 evaluated the spatial location of the São Jorge orebody at Level 13, confirmed the interpreted continuity of the BA and Torre orebodies, and evaluated the grade distribution in these three orebodies. The eastern portion of the LPA orebody was also tested in 2020. From June 2020 to December 2020, a total of 9,204 m of drilling was completed for grade control and in-fill drilling targeting portions of the BF, BFII, BFIII, LPA, BA and Torre orebodies located between 300 m and -150 m. During the same period, Jaguar also completed a total of 10,524 m of evaluation drilling targeting the SW, BF, BFII, and BFIII orebodies. Portions of the BA, Torre, LFW, and São Jorge orebodies more proximal to the current Pilar workings were also drill-tested. The 2020 evaluation drilling reached orebodies between 300 m and -50 m. From June 2020 to December 2020, Jaguar completed a total of 7,838 m of external exploration drilling , aimed at testing portions of the BFIII, BFII, BF and Torre orebodies located at a further distance from the current Pilar workings. These external drill holes were located, and investigated, domains between 100 m and the elevation -275 m. Overall, 283 drill holes were completed in 2020, totalling 27,566 m in length.

In 2021, Jaguar conducted drilling campaigns focussed on providing additional geological information to support the current Pilar operations, improving the categories of the Pilar Mineral Resources, improving the reliability of the Pilar Mineral Reserves, and confirming the interpreted continuity of the known mineralized zones in greater depths. The primary objectives of the 2021 drilling campaigns were to delineate the new contours and limits of the SW, BFIII, BFII, BF, and LPA orebodies, evaluate the grade distribution of the gold mineralization in these orebodies, improve the categorization of their mineral resources, and test some geological interpretations made for greater depths.

Some additional relevant details and objectives of the 2021 drilling initiatives are listed below:

- To confirm some geological interpretations of the BA and Torre deposits, and to improve the categorization of their mineral resources (at Levels 12 and Level 13).
- To test the southern continuity of the SW deposit at Level 3 and at Level 9. At Level 2, the level of reliability of the SW deposit was also drill tested.
- At Level 14, the LFW deposit geometry to the south of the BF deposit was drill tested. Also on Level 14, the eventual geometry changes of the LPA deposit were also investigated.

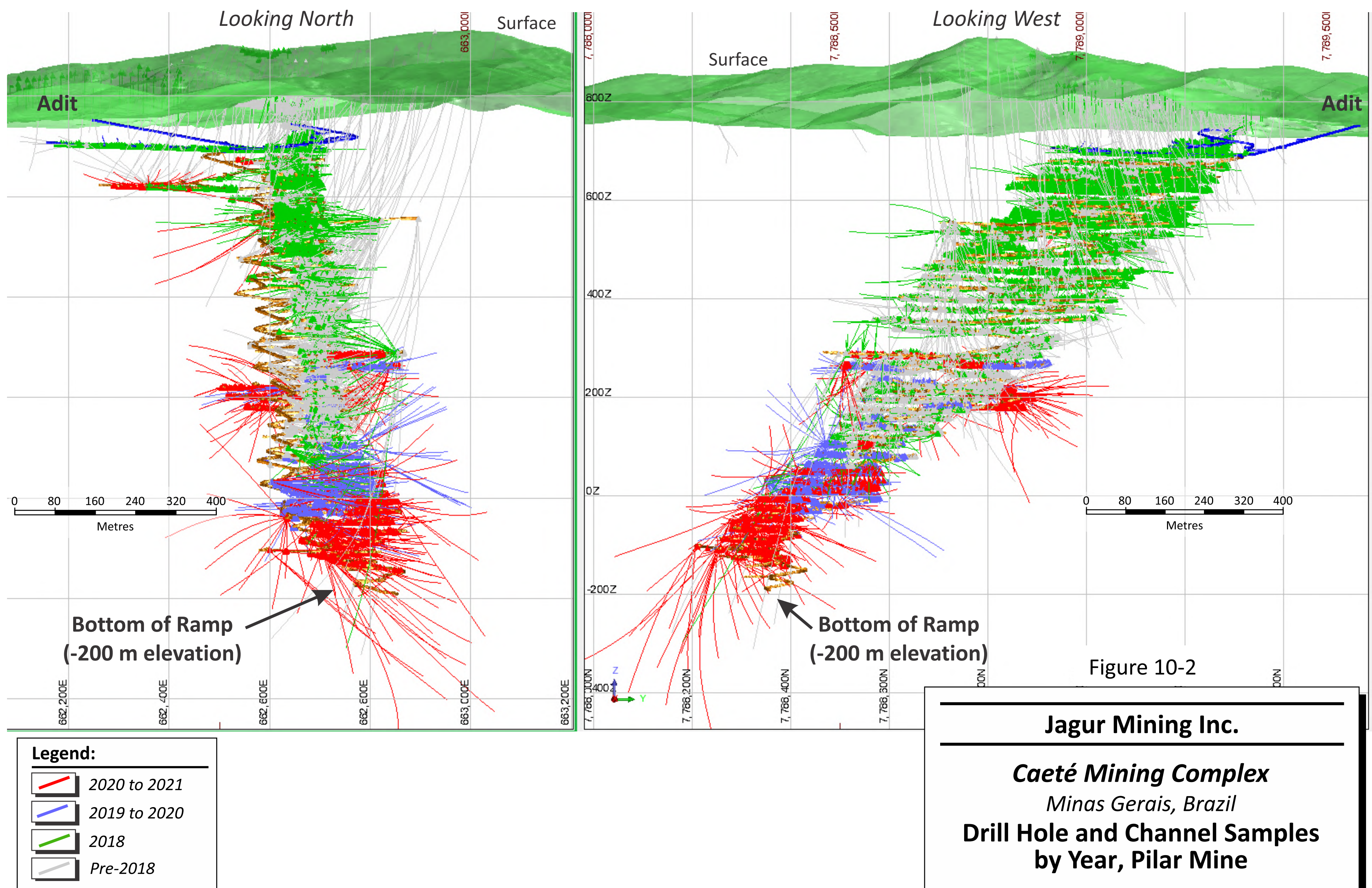
- The physical connection between the BFII and SW deposits was drill tested at Level 9.

In 2021 Jaguar completed a total of 8,003 m of grade control and in-fill drilling, targeting domains of the SW, BFIII, BFII, BF, LPA, LFW, BA, and Torre deposits located between 250 m and -150 m.

In 2021, Jaguar completed a total of 9,268 m of evaluation drilling, targeting domains of the SW, São Jorge, BFIII, LPA, and LFW deposits located between 650 m and elevation -150 m.

In 2021, Jaguar completed a total of 15,349 m of exploration drilling, targeting scattered modelled domains of the SW, BFIII, BFII, and LPA deposits located between 550 m and -500 m.

Overall, 261 drill holes were completed in 2021, totalling 32,620 m in length. The locations of the drill holes completed during the second half of 2020 and in 2021 are presented in Figure 10-2.



March 2022

Source: SLR, 2022.

Figure 10-2

Jagur Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Drill Hole and Channel Samples by Year, Pilar Mine

The 2021 underground drilling programs were executed by Jaguar (for the shorter holes) or by contractor Major Drilling Brasil Ltd. (for the longer holes) using BQ (36.5 mm) and NQ (47.6 mm) sized equipment. The locations of all 2021 diamond drill hole collars were accurately surveyed using a Total Station survey instrument, and all downhole deviations were surveyed using non-magnetic Reflex Gyro Sprint-IQ equipment. The departing drill hole orientations were determined using the Reflex™ north-seeking gyroscopic equipment. All drill holes were logged and marked for sampling according to Jaguar's Standard Operating Procedures CCA-GEO-05-01-PP-016 (Descrição Geológica de Testemunho do Sondagem) and CCA-GEO-05-01-PP-007 (Descrição Geotécnica de Testemunho do Sondagem). A selection of significant intersections from the 2021 drilling programs is provided in Table 10-3.

Table 10-3: Selected Significant Intersections, 2021 Drilling Programs, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Hole ID	From	To	Deposit	Core Length (m)	Average Grade (g/t Au)
PPL766	168.00	172.00	BF	4.00	1.42
	176.00	189.00	BF	13.00	4.74
	189.00	198.00	LPA	9.00	2.67
	202.00	235.00	LPA	33.50	2.71
	238.50	257.00	LPA	18.50	1.41
	280.00	286.50	LPA	6.00	3.91
PPL600	248.00	262.50	BA	14.50	4.29
PPL948	43.30	46.60	BF	3.30	14.94
	46.60	60.450	BF	13.85	3.23
PPL879	113.35	147.65	BF	34.30	2.90
PPL951	44.95	61.30	BF	16.35	2.70
	115.50	122.00	BF	6.50	0.86
	136.50	154.00	BF	17.50	1.62
	161.00	167.00	BF	6.40	7.06
	170.75	174.50	BF	3.75	0.75
	190.50	249.25	BF	58.75	4.91
PPL895	92.57	106.85	SW	14.28	3.83
	109.15	120.05	SW	10.90	4.02
PPL719	62.30	65.80	SW	3.50	4.59
	68.15	75.90	SW	7.75	4.08

Notes:

1. No capping values were applied when calculating the weighted average grades.
2. The estimated true widths vary due to the angle of intersection of the drill hole with the mineralized zone. Estimated true widths can vary from between 25% to 95% of the core lengths.

The SLR QP has not identified any drilling, sampling, or core recovery issues that could materially affect the accuracy or reliability of the Pilar core samples.

10.3 Córrego Brandão Deposit

In 2019, following geophysics, channel, trench, and soil sampling, Jaguar initiated an auger drilling campaign in the Córrego Brandão area. In total 46 auger holes, totalling 707 m, were completed in the Córrego Brandão area, with a focus on the gold anomalies identified in the previous exploration campaigns (Figure 10-3). The auger drilling program was carried out by the Jaguar exploration team using a portable drilling rig, model TR2, supplied by the Brazilian manufacturer Trado.

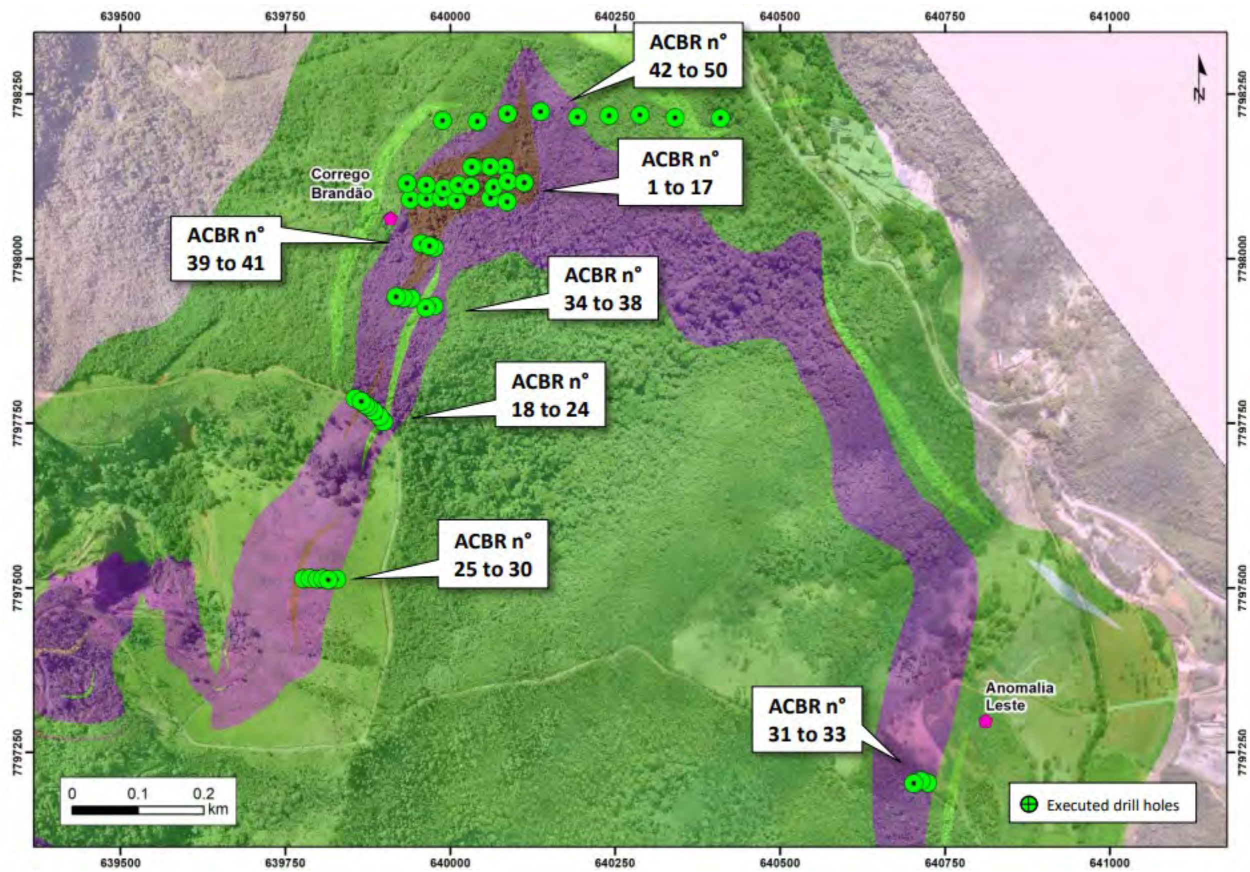


Figure 10-3: Auger Drill Holes, Córrego Brandão Deposit and Anomalia Leste Target

Surface diamond drilling commenced at Córrego Brandão in late November 2020 to evaluate the areas near term potential, and open pit (and underground) mineable Mineral Resource additions.

The portions of the Córrego Brandão deposit drilled during 2021 have tested a relatively restricted portion of the semi-regional scale fold structure mapped and targeted by Jaguar since 2020.

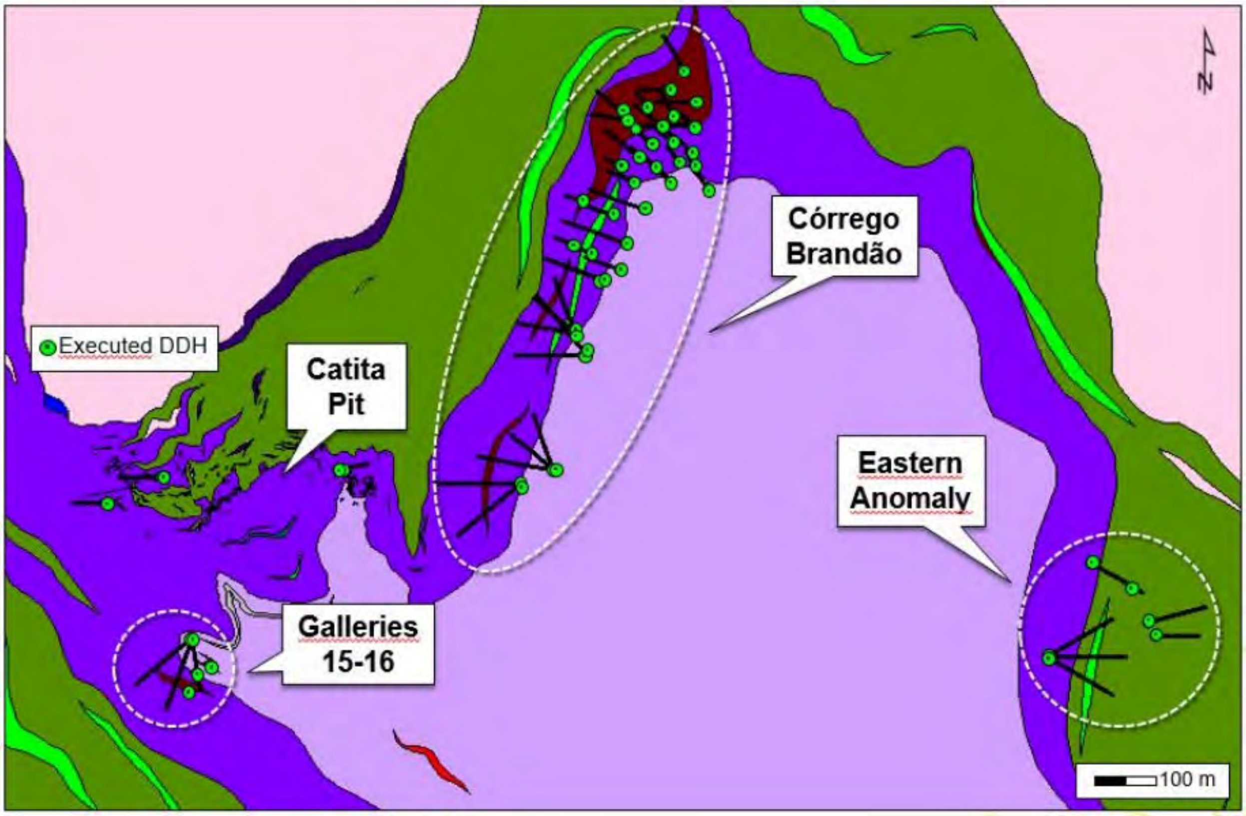


Figure 10-4: Drill Hole Campaign, Córrego Brandão Deposit

During 2021, a Córrego Brandão drilling program consisting of 44 diamond drill holes was completed, totalling 5,670.40 m. This drilling campaign has broadly defined, a strike length of approximately 500 m of potentially economic oxide gold mineralization, with average thicknesses of 20 m to 40 m. The initially intercepted mineralized zones remain widely open both laterally and down-plunge.

Table 10-4 summarizes all the Córrego Brandão drilling to date.

Table 10-4: Summary of Drilling, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Hole Type	Number	Total Length (m)
Auger	46	707
Diamond Drilling	44	5,671

10.4 Regional Exploration Drilling

During 2008 and 2009, Jaguar completed 92 drill holes (31,501 m) and 53 drill holes (8,650 m), respectively, in the Caeté Complex exploration concessions.

During Q3 2012, Jaguar completed a Phase 1 diamond drilling campaign at the Moita target, located four kilometres northwest of the Caeté Plant. A total of 16 drill holes, totalling 1,115 m, were completed to test a 400 m by 50 m mineralized zone identified by soil sampling and trenching within hydrothermally altered meta-sediments hosted by a shear zone. Drilling results confirmed the southeast down plunge extension of the mineralization.

In 2017, Jaguar completed a small program of exploration drilling on the Pacheca target (nine diamond drill holes, totalling 2,032 m) and the Cubas target (three diamond drill holes, totalling 1,951.6 m). While the results from the Cubas drilling program were generally negative, four of the drill holes completed at the Pacheca target intersected anomalous gold mineralization. A summary of the significant intersections from the 2017 drilling program at the Pacheca target is provided in Table 10-5.

Table 10-5: Summary of Significant Diamond Drilling Intersections, Pacheca Target
Jaguar Mining Inc. – Caeté Mining Complex

Hole ID	From	To	Core Length (m)	Average Grade (g/t Au)
FPCH001	45.35	55.05	9.70	0.34
	59.45	61.70	2.25	0.30
	63.50	65.50	2.00	2.81
	73.50	78.50	5.00	0.50
	86.05	89.05	3.00	0.15
	240.35	242.10	1.75	0.20
FPCH002	66.30	67.80	1.50	1.20
	72.25	73.00	0.75	0.96
	96.15	102.30	6.15	0.47
	108.60	110.60	3.30	0.49
FPCH003	85.05	85.50	0.45	0.50
FPCH004	224.10	228.10	4.00	0.28
	240.60	246.60	6.00	0.34

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Sampling Procedures

The sampling procedures used by Jaguar are as follows.

11.1.1 Surface/Exploration Channel Sampling

- Channel samples are collected from outcrops and trenches as needed.
- The sites to be sampled are cleaned with a hoe, exposing the material by scraping it.
- Structures are mapped and the lithologic contacts defined, and samples marked so that no sample has more than one lithology.
- Samples have a maximum length of one metre and are from one kilogram to two kilograms in weight.
- Each sample is collected manually in channels with average widths between five and ten centimetres, and approximately three centimetres deep, using a hammer and chisel.
- Either an aluminum tray or a thick plastic canvas drop sheet is used to collect the material.
- Samples are stored in a thick plastic bag and identified by a numbered label, which is protected by a thin plastic cover and placed with the sample.
- At the sampling site, samples are identified by small aluminum plates, labels, or small wooden poles.
- Sketches are prepared with lithological and structural information, and sample locations are surveyed.

11.1.2 Diamond Drilling Core Sampling

- Surface drilling is performed by contractors using either HQ or NQ equipment.
- Underground drilling is performed either by Jaguar or contractors using BQ, NQ, or LTK equipment.
- Drill holes are accepted only if they have greater than 85% core recovery from the mineralized zone.
- All the drill holes have their deviations measured by Maxibor, Reflex™, or equivalent survey tools.
- The cores are stored in wooden or plastic boxes of one metre length with three metres of core per box (NQ and HQ diameters) or four metres of core per box (BQ or LTK diameters).
- The number, depth, and location of each hole are identified in the boxes by an aluminum plate or by a water resistant ink mark on the front of the box.
- The progress interval and core recovery are identified inside the boxes by small wooden plates.
- During logging, all of the geological information, progress, and recovery measures are verified and the significant intervals are defined for sampling.
- Samples are identified in the boxes by highlighting their side or by labels.
- Samples are cut lengthwise with a diamond saw and hammer into approximately equal halves.

- One half of the sample is placed in a highly resistant plastic bag, identified by a label, and the other half is kept in the box at a warehouse.
- The remaining drill core from the surface based drill holes is stored at a dedicated core storage facility that is located at Roça Grande.
- For many of the underground based drill holes, samples are cut lengthwise with a diamond saw and hammer into approximately equal halves.
- For the shorter length, bazooka type drill holes completed from underground set-ups, the whole core is sampled as the core diameter does not permit splitting into halves.

11.1.3 Underground Production Channel Sampling

- The sector of the wall to be sampled is cleaned with pressurized water. Structures are mapped and lithologic contacts defined, and samples marked so that no sample has more than one lithology. Samples have a maximum length of one metre and are from two to three kilograms in weight.
- Channel samples are collected by manually opening the channels, using a hammer and small steel pointer crowned by carbide or small jackhammer.
- The channel samples have lengths ranging from 50 cm to 1.5 m, average widths between five and ten centimetres, and are approximately three centimetres deep.
- Two sets of channel samples are regularly collected on the face. One set of channel samples is collected approximately along the back once the work area has been secured. The second set of channel samples is collected at the grade height once the heading has been mucked and secured.
- Channel samples from the walls and back are collected at approximately five metre intervals. When the mineralization has very flat dips, the channel samples are collected starting at the floor level on one side and continuing over the drift back to the floor on the opposite side. In case of a steep dip, the channel samples are collected only at the roof.
- Either an aluminum tray or a thick plastic canvas placed on the floor of the drift is used to collect the material. Samples are then stored in a thick plastic bag and identified by a numbered label, which is protected by a thin plastic cover and placed with the sample.
- At the sampling site, samples are identified with paint.
- Sketches are prepared with lithological and structural information, and sample locations are surveyed.

11.2 Sample Preparation and Analysis

For surface based exploration drill holes completed prior to 2015, samples were prepared at the independent SGS laboratories in Belo Horizonte. For other drill holes and channels collected prior to 2015, samples were prepared at Jaguar’s onsite laboratories by drying, crushing to 90% -2 mm, quartering with a Jones splitter to produce a 250 g sample, and pulverizing to 95% -150 mesh. Analysis for gold is by standard fire assay procedures, using a 50 g or 30 g sample and an AAS finish.

The SGS laboratory based in Belo Horizonte meets international analytical standards and ISO 17025 compliance protocols. SGS is independent of Jaguar. Analytical results from the SGS laboratory were forwarded to Jaguar’s Exploration or Mine Departments by e-mail, followed by a hard copy.

All samples from the 2015 to 2021 drilling programs executed at Pilar and Roça Grande were analyzed for gold either at Jaguar's onsite laboratory, or by the ALS laboratory located in Belo Horizonte. Samples from the Córrego Brandão deposit were analyzed exclusively by ALS. A summary of the sample preparation and analytical packages used in 2020 and 2021 by ALS is presented in Table 11-1.

The ALS laboratory based in Belo Horizonte meets international analytical standards and ISO 17025 compliance protocols. ALS is independent of Jaguar. The Jaguar onsite laboratory is not ISO 17025 certified and is not independent of Jaguar

Table 11-1: Summary of Sample Preparation and Analytical Methods, ALS, 2021 Drilling and Sampling Programs
Jaguar Mining Inc. – Caeté Mining Complex

Department	Section	Method Code
Preparation	Pulverization	PUL-31: Pulverize split to 85% <75 µm
		PUL-QC: Testing procedure for ring pulverized material.
	Prep Miscellaneous	LOG-24: Pulp Login – Received without Barcode
		LOG 22d: Sample Login – Received without Barcode
	Crush	SPL-21d: Split Sample-duplicate
		CRU-31: Fine crushing of drill samples to greater than 70% passing 2 mm
		CRU-QC: Crushing QC test
Fire Assay	FA-AAS	Au-AA26: Ore Grade Au 50 g FA AA finish
Spectroscopy	ICP-MS	ME-MS61: 48 element four acid ICP-MS
Package	Package	PREP-31: Crush, Split, Pulverize
QAQC	Duplicate	
	Standards	
Total		

At Jaguar's onsite laboratory, samples from Pilar are dried and then crushed. A one kilogram sub-sample of the crushed material is selected for pulverization to approximately 70% - 200 mesh. The ring and puck pulverizers are cleaned after each sample using compressed air and a polyester bristle brush. The analytical protocol for all samples employs a standard fire assay fusion using a standard 30 g aliquot, with the final gold content being determined by means of AAS. The detection limit for fire assay analyses is 0.05 g/t Au. A second cut from the pulps is taken and re-assayed for those drill core samples where the grade is determined to be greater than 30 g/t Au. If the two assays are in agreement, only the first assay is reported. The AAS unit is calibrated to directly read gold grades up to 3.3 g/t Au, samples with grades greater than this are re-assayed by diluting the solute until it falls within the direct-read range.

The SLR QP has reviewed the field and underground sampling procedures and is of the opinion that they meet accepted industry standards. In the SLR QP's opinion, the sample preparation, analysis, and security procedures at the Caeté Complex are adequate for use in the estimation of Mineral Resources.

11.3 Quality Assurance and Quality Control

Jaguar carried out a program of quality assurance/quality control (QA/QC) for all Pilar channel and drill hole samples collected in 2021. The QA/QC protocols include conducting a duplicate analysis after every 20 samples, representing an insertion frequency of 5%.

Commercially sourced standard reference materials obtained from Rocklabs are inserted by the Pilar geological team into the sample stream at a frequency of every 20 samples. A list of the standard reference materials that were used for the diamond drilling programs and channel sampling is provided in Table 11-2 and Table 11-3, respectively.

Table 11-2: List of Certified Standard Reference Materials, 2021 Drill Hole QA/QC Program
Jaguar Mining Inc. – Caeté Mining Complex

Standard No.	Number Analyzed
HiSiK4	150
SL95	176
SI81	299
SF100	63
SN104	54
SG99	5
Total	747

Table 11-3: List of Certified Standard Reference Materials, 2021 Channel Sample QA/QC Program
Jaguar Mining Inc. – Caeté Mining Complex

Standard No.	Number Analyzed
HiSilK4	24
SG84	6
SI81	19
SJ95	3
Total	52

Blank samples are inserted at a rate of one in every 20 samples, representing an insertion frequency of 5%. Blank samples are composed of crushed, barren quartzite or gneiss and are used to check for contamination and carry-over during the crushing and pulverization stage.

A number of pulp samples from the channel sampling programs were forwarded to the ALS laboratory in Vespasiano, Minas Gerais, for third-party check analyses and the analytical results compared favourably with the Jaguar analyses. No duplicate sample analyses were carried out for the 2021 diamond drilling programs.

The SLR QP recommends that a selection of pulp samples from the 2021 diamond drilling programs representing approximately 2% of the total samples analyzed be selected and assayed on a remedial basis.

The results of the blanks, duplicates, and standards are forwarded to Jaguar's head office on a monthly basis for insertion into Jaguar's internal database. There, the results from the standard samples are visually scanned for out of range values on a regular basis. When failures are detected, a request for re-analysis is sent to the laboratory. Only those assays that have passed the validation tests are inserted into the main database.

SLR has reviewed the results from Jaguar's 2021 blank and standard reference materials and notes that the results are within acceptable limits. Sample control charts for the blank sample results are presented in Figure 11-1 and Figure 11-2. Sample control charts for the standard reference materials are presented in Figure 11-3 and Figure 11-4. A sample control chart for the duplicate samples taken from the 2021 channel sampling program are presented in Figure 11-5.

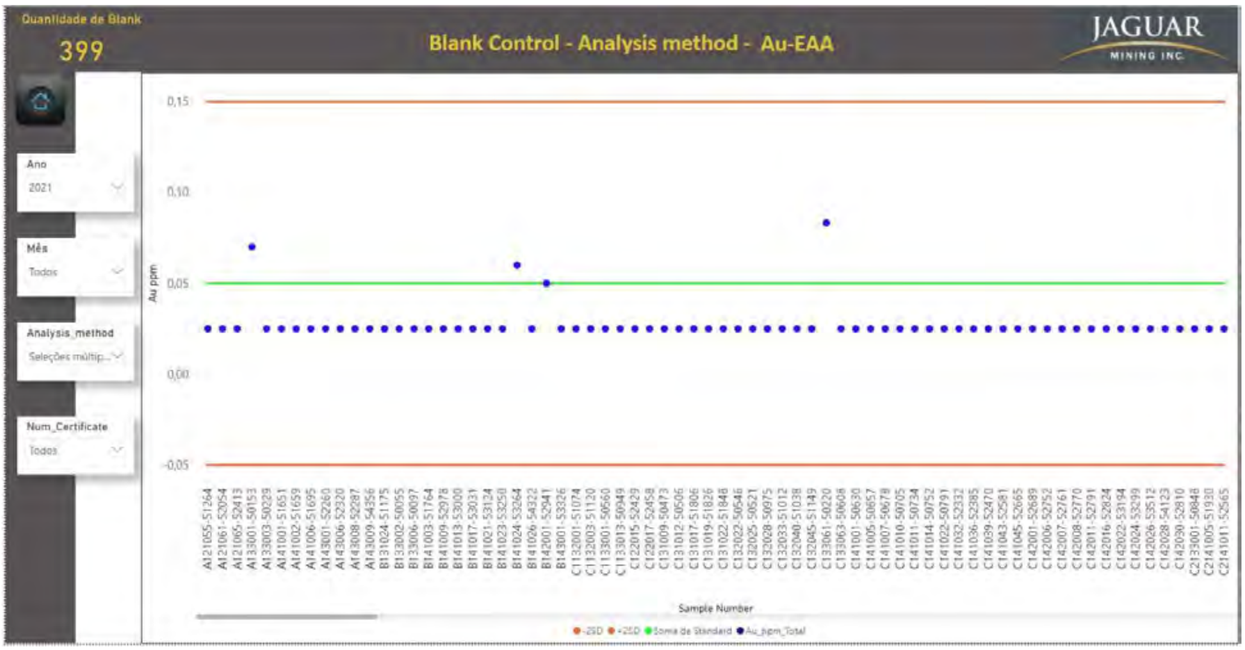


Figure 11-1: Sample Control Chart for 2021 Blank Samples, Channel Samples

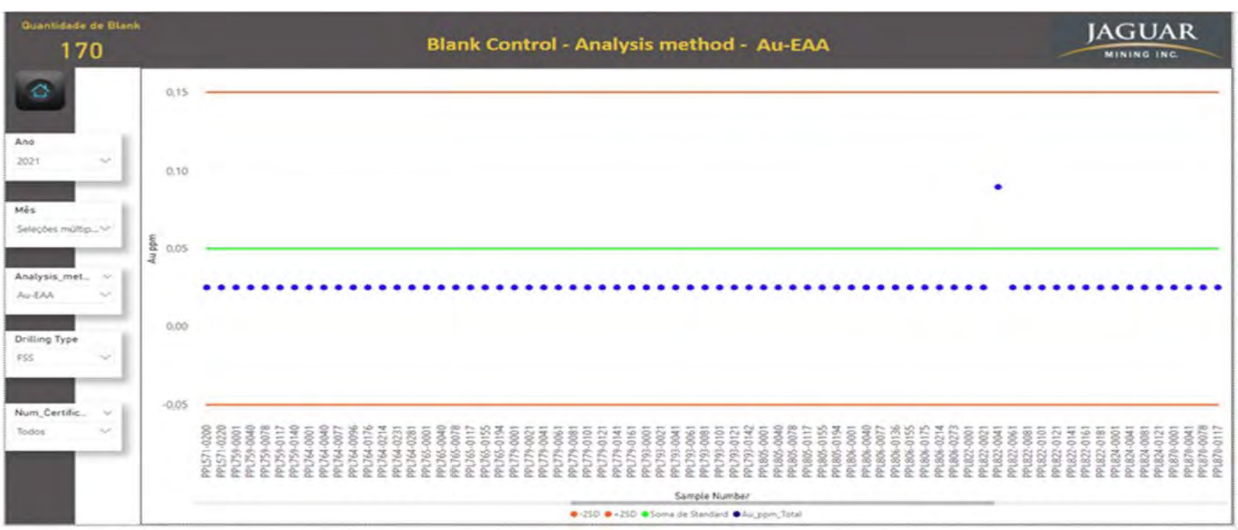


Figure 11-2: Sample Control Chart for 2021 Blank Samples, Diamond Drilling Samples

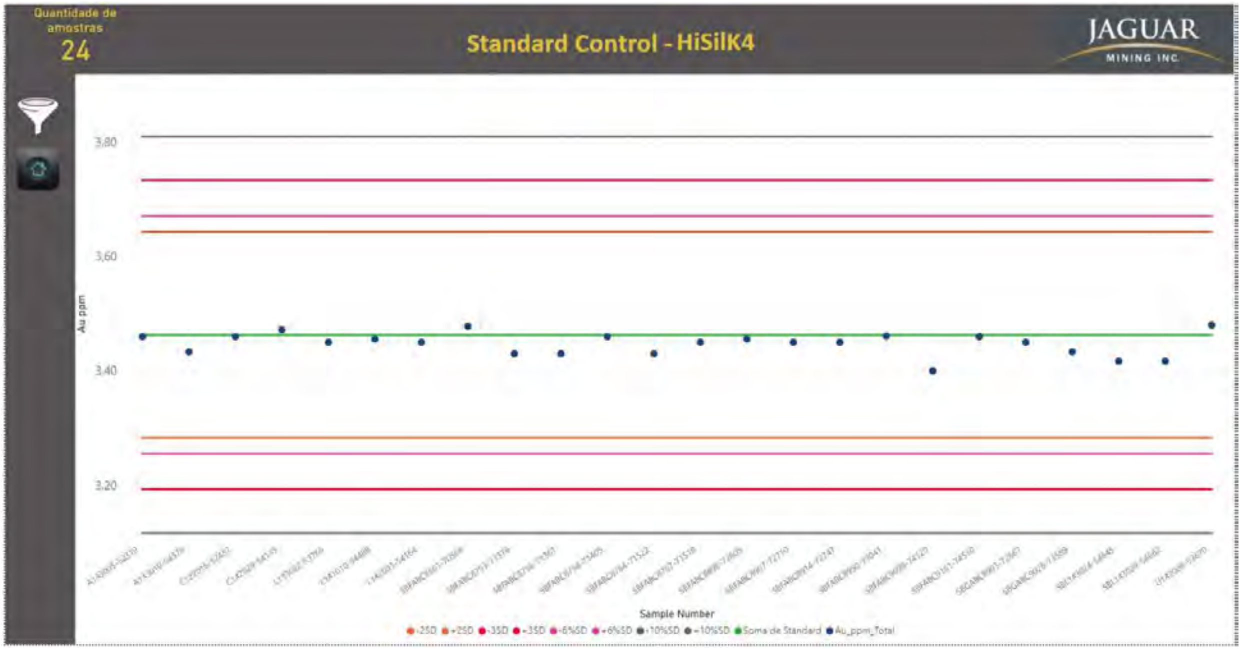


Figure 11-3: Sample Control Chart for Standard Reference HISILK4, 2021 Channel Samples

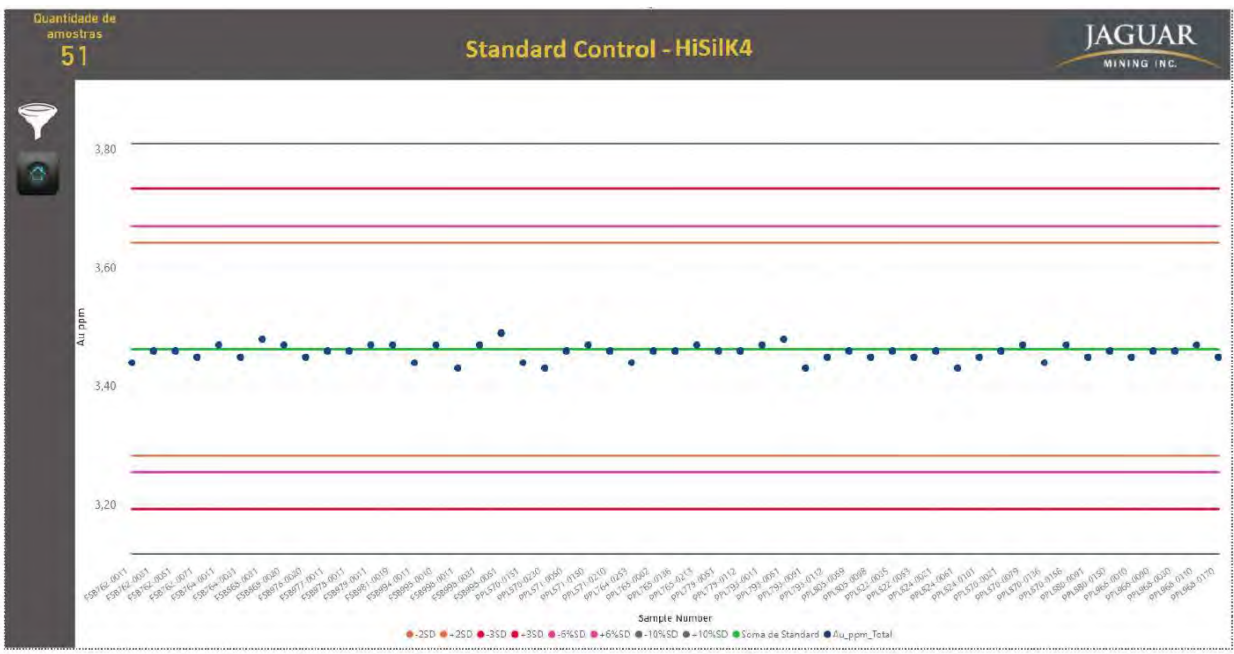


Figure 11-4: Sample Control Chart for Standard Reference HISILK4, 2021 Diamond Drill Hole Samples

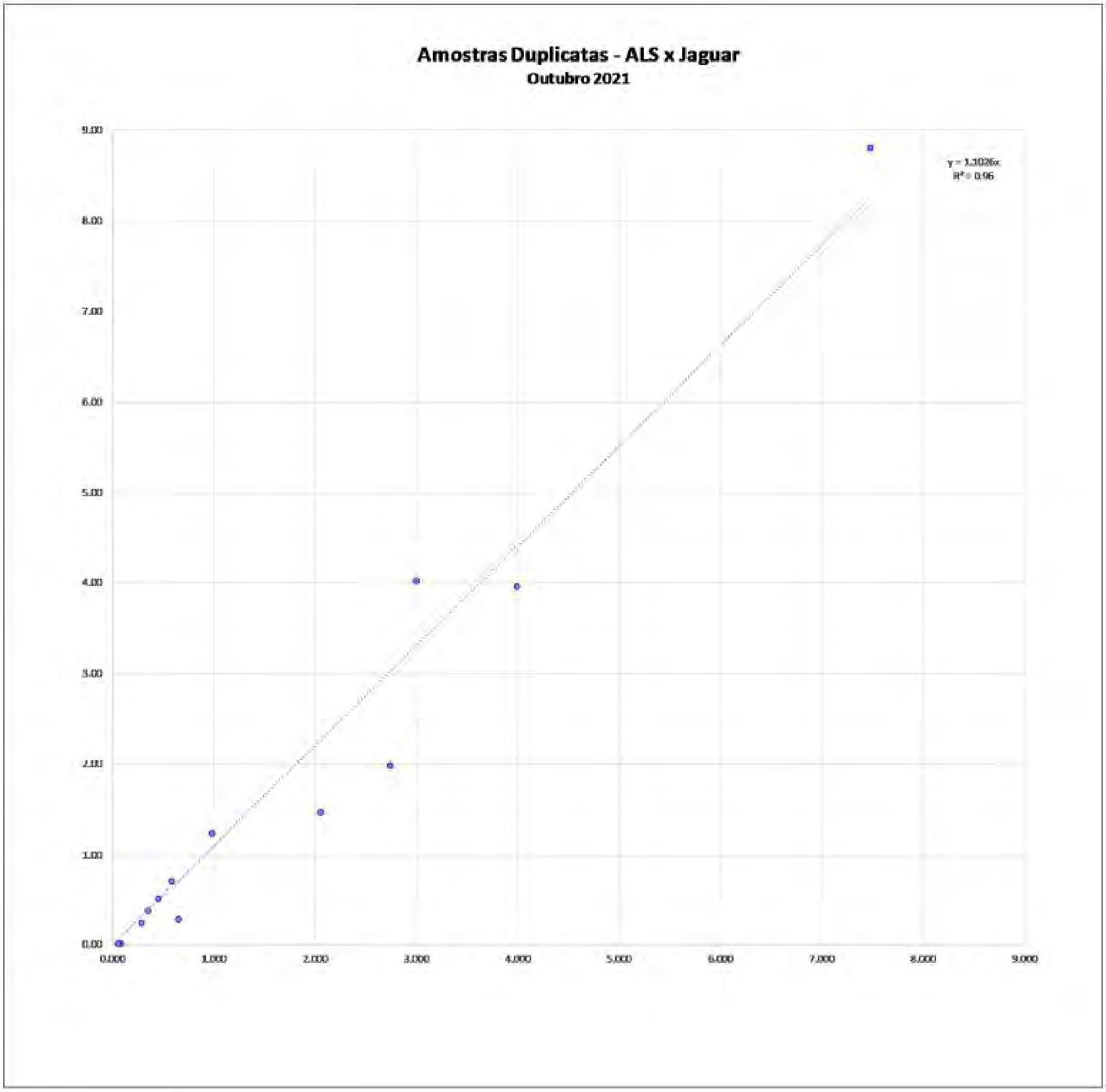


Figure 11-5: Sample Control Chart for Duplicate Samples, 2021 Channel Samples

In the SLR QP's opinion, the QA/QC program as designed and implemented by Jaguar is adequate and the assay results within the database are suitable for use in a Mineral Resource estimate.

In light of the good performance and the results that have been achieved in 2021, the SLR QP recommends that the insertion frequency of the blank and standard reference materials be reduced to a frequency of approximately one blank and one standard reference material sample for every 50 sample assays.

12.0 DATA VERIFICATION

The SLR QP's validation checks of the Caeté Complex drilling and sampling database provided by Jaguar included:

- Site visits in 2014, 2017, and 2022 to personally inspect the style and structural complexity of the gold mineralization and host rocks of the Caeté Complex.
- Carried out a site visit to the Jaguar onsite laboratory where the sample preparation and analytical procedures and equipment were reviewed.
- Carried out independent validation of the Pilar drill hole database by means of spot checking as described in RPA (2016, 2018, 2019, 2020).
- Carried out independent validation of the Córrego Brandão drill hole database by means of spot checking 11 of the 44 total drill holes included in the database.
- Carried out independent validation of the Pilar drill hole database by means of spot checking 11 drill holes completed in the 2021 drilling programs.
- Carried out independent validation of the Roça Grande drill hole database by means of spot checking as described in RPA (2018) including 32 drill holes checked in 2022.
- Checked collar locations relative to either the digital topographic surface or the location of the underground excavation digital model as appropriate.
- Reviewed drill hole and sample orientations (azimuth/dip) relative to the location of the mineralized zones.
- Completed validity checks for out of range values, overlapping intervals, and mismatched sample intervals.
- Reviewed the reasonableness of the geological interpretations relative to the nature of the previously extracted mineralization.
- Reviewed the mineralization wireframes to ensure that a minimum mining width was honoured.
- Reviewed the coding of the mined out material in the block model to ensure a reasonable match with the excavation model.
- Carried out a small program of check assaying on 21 mineralized samples from drill hole PPL454B. The results were presented in RPA (2018). Carried out a small program of check assaying on six mineralized samples from six different Córrego Brandão auger holes. The results are presented in Table 12-1.

Table 12-1: Summary Check Assay Results - Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Hole ID	From	To	Sample #	Original Value (g/t Au)	ALS (g/t Au)	Difference (g/t Au)	Difference (%)
ACBR0003	2.00	3.00	ACBR0003-0003	1.55	1.50	-0.05	-3.23%
ACBR0004	14.00	15.00	ACBR0004-0016	13.70	13.45	-0.25	-1.82%
ACBR0006	8.00	9.00	ACBR0006-0010	0.63	0.60	-0.03	-4.76%
ACBR0011A	6.00	7.00	ACBR0011A-0007	0.53	0.82	0.29	54.53%
ACBR0012	8.00	9.00	ACBR0012-0009	0.26	0.27	0.01	3.46%
ACBR0014	9.00	10.00	ACBR0014-0011	1.34	1.34	-0.01	-0.37%

No material errors were noted for the Pilar Collar, Survey, Lithology, or Assay records reviewed. The SLR QP did observe some minor discrepancies on the order of one metre between the location of the older collars of some underground based drill holes and the excavation models. These discrepancies were likely due to survey errors in the determination of either the drill hole collars or the excavation models and may contribute to local errors in the mine design and reconciliation phases of the mining operation.

The SLR QP observes that the surface and underground drill hole collar locations are reasonable and channel samples are appropriately located with respect to the existing underground infrastructures. The SLR QP is of the opinion that the drilling and sampling databases are appropriate to be used in the preparation of Mineral Resource and Mineral Reserve estimates.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

The following information on mineral processing and metallurgical testing on the Complex, which includes Roça Grande and Pilar, was extracted from TechnoMine's FS (the Amended FS) dated October 2010 (Machado, 2010).

13.1 Mineralization

In the Pilar and Roça Grande deposits, the mineralized rocks occur within BIFs and shear zones, represented by disseminated gold bearing sulphides associated with silicic-sericitic-carbonic solutions originating from hydrothermal activity. Gold is associated with sulphides (arsenopyrite, pyrite, and pyrrhotite) or occurs as free gold in the quartz veins or in the contact quartz/sericite schist.

13.2 Mineral Processing and Metallurgical Test Work

In 2009, Jaguar constructed a centralized leaching, CIP-adsorption-desorption-recovery (CIP-ADR) metallurgical plant, the Caeté Plant, to process the sulphide, transition, and oxide ore from Pilar and Roça Grande. Operation of the Caeté Plant commenced in 2010.

Jaguar carried out additional investigative metallurgical test work to assess the inclusion of a flotation plant before the CIP-ADR plant to reduce the mass of solids (flotation concentrate only) to be leached. The flotation tailings would be cyanide-free and could then be used as backfill material at the underground mines. In 2009, comprehensive testing, including gravity separation, flotation, leaching, and adsorption tests, was carried out by FLSmidth-Dawson Laboratories Inc (Dawson) in Salt Lake City, Utah, USA. The testing by Dawson was conducted on a representative sample of mill feed (the Dawson sample) containing 40% Roça Grande sulphide, 40% Pilar sulphide, and 20% Roça Grande oxide ore. Test results reported in 2009 indicated that the CIP-ADR plant would need to treat only 10% of the solids mass contained in the mill feed, while 90% of the material would be available (fully cyanide-free and geotechnically appropriate) to feed the backfill plant.

Based on the Dawson test work, TechnoMine estimated the overall gold recovery to be:

$$\text{Recovery} = 54\% + (46\% \times 0.90 \times 0.93 \times 0.985) = 91.9\%$$

- Gravity recovery = 54%
- Flotation recovery = 90%
- Leaching recovery = 93%
- ADR recovery = 98.5%

This information was included as part of the process design criteria for the expansion of the Caeté Plant. The plant expansion is based on increasing the capacity of the bottleneck tails filtration, rather than upstream processing. Based on the Amended FS, the first phase of the Caeté Plant was built with a design capacity of 720,000 tpa. The second phase would expand throughput to 1.1 million tonnes per annum (Mtpa), however, this second expansion phase was not carried out.

13.3 Metallurgical Test Work

13.3.1 TESTWORK Desenvolvimento de Processo Ltda (2019)

The following summary is taken from TESTWORK Desenvolvimento de Processo Ltda (TDP) (2019). Laboratory tests were performed with samples from the orebodies within Pilar, designated: BF, BF II, BF III, TORRE, LPA1, LPA2, and LPA3. The tests were carried out in the TDP laboratory, located in the city of Nova Lima, Minas Gerais, Brazil.

The objectives of the work were to:

- Anticipate the behaviour of the orebodies in the gold recovery circuits of the Caeté Plant.
- Confirm the adequacy of these circuits, due to the new characteristics of the ores.
- Identify any possible optimizations of the existing processes.

The test flowsheet is presented in Figure 13-1. The leaching tests were performed to determine gold recovery and obtain a correlation with the results of the current plant process, i.e., gravimetric concentration followed by flotation and leaching of flotation concentrate. If this correlation is obtained, simple leaching tests may give a good indication of the overall recovery of the ore in the process circuit. The tests were carried out at an 80% passing size (P_{80}) of 106 µm, 75 µm, and 53 µm.

The description of the tests and conditions are largely extracted from TDP (2019).

Gravimetric concentration tests were performed using a Knelson MD3 concentrator. The gravity concentrates obtained were dried, weighed, and subjected to intensive leaching in bottle roll tests. After intensive leaching, the concentrates were filtered and the solids were washed and mixed, to simulate plant product and conditions. The intensive leaching test conditions are presented in Table 13-1. Final test solutions were sent for chemical analysis.

Table 13-1: Intensive Leaching Test Conditions
Jaguar Mining Inc. – Caeté Mine Complex

Parameter	Condition
NaCN concentration	10,000 mg/L
pH of the solution (adjusted with NaOH)	12
% solids	27
Contact time	24 hours

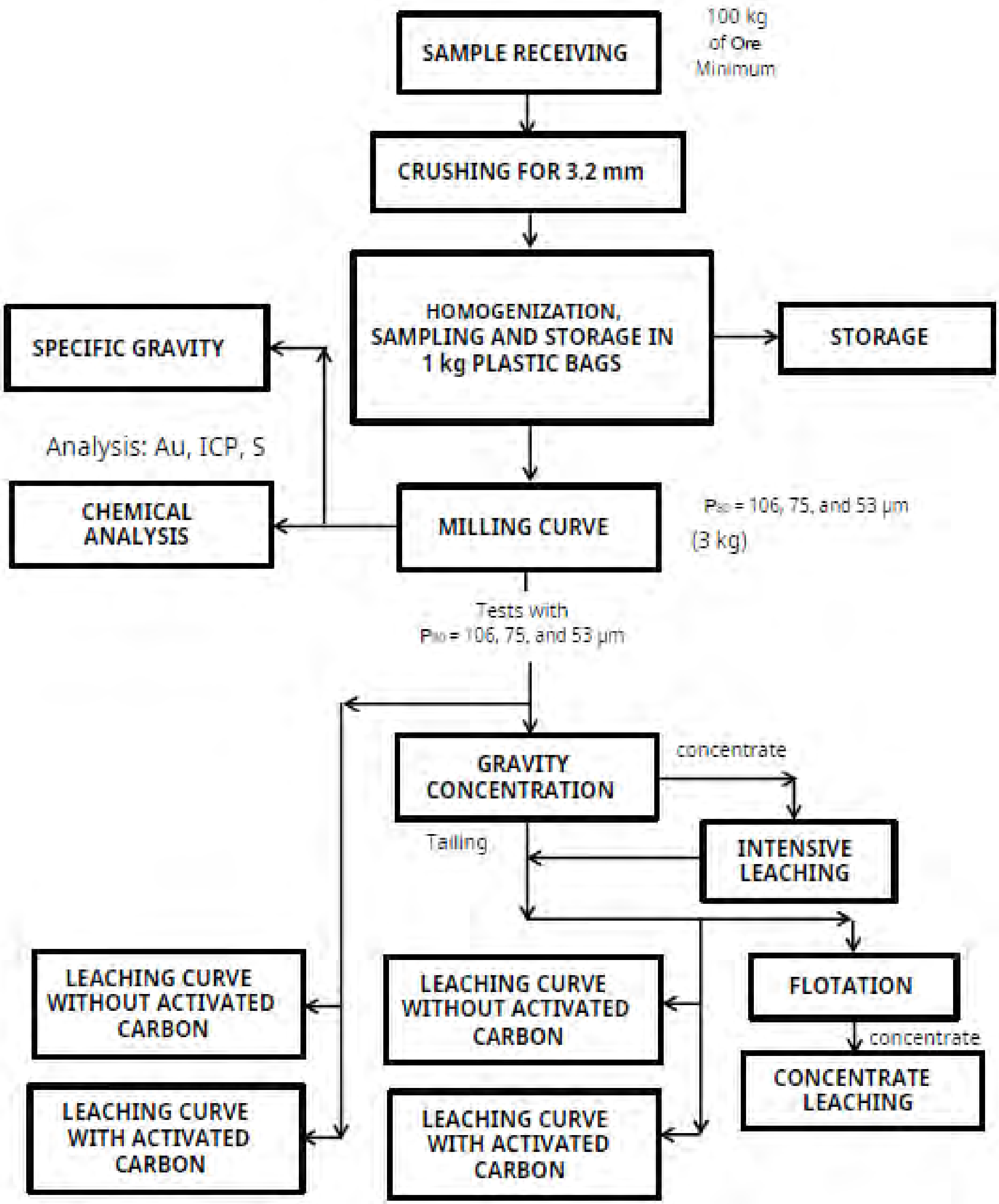


Figure 13-1: Metallurgical Test Work Flowsheet

Bottle roll tests were performed for direct leaching and carbon-in-leach (CIL) tests to determine if the ores would be refractory. Direct leaching and CIL tests were performed with and without gravity concentration and the test conditions are presented in Table 13-2 and Table 13-3, respectively.

Table 13-2: Direct Leaching Test Conditions
Jaguar Mining Inc. – Caeté Mine Complex

Parameter	Condition
NaCN concentration	1,000 mg/L initial dose and adjusted according to consumption
pH of the solution (adjusted with lime)	11
% solids	50
Contact time	24 hours
Sampling times	2, 4, 8, 24 hours
Controls:	pH, DO, E_h

Notes:

1. DO – dissolved oxygen, E_h – Redox potential

The initial concentration of 1,000 mg/L NaCN was selected because most ores consume less quantities of cyanide. During the first hours of testing, samples of solution were taken to determine the concentration of gold and NaCN and the adjustment of the cyanide concentration was performed to maintain the cyanide concentration above 500 mg/L. In each sample, the presence of ferrocyanide and thiocyanate was qualitatively determined.

The CIL tests were performed in the same manner as direct leaching, but with activated carbon being added to the pulp from the start of leaching. Table 13-3 presents the CIL test conditions.

Table 13-3: CIL Test Conditions
Jaguar Mining Inc. – Caeté Mine Complex

Parameter	Condition
NaCN concentration	1,000 mg/L initial dose and adjusted according to consumption
pH of the solution (adjusted with lime)	11
% solids	50
Type of activated carbon	G210
Carbon concentration	18 g/L of pulp
Contact time	24 hours
Sampling times	2, 4, 8, 24 hours
Controls:	pH, DO, E_h

Flotation tests were performed with the ore samples according to the work scheme illustrated in Figure 13-2.

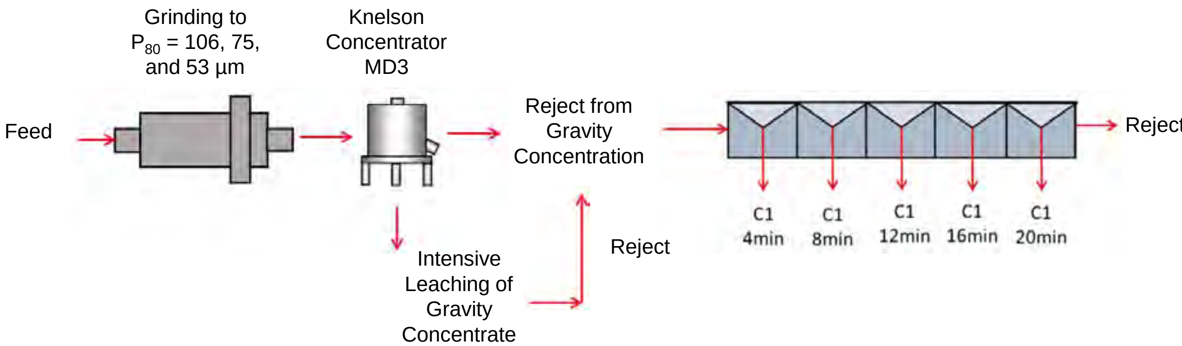


Figure 13-2: Flotation Test Scheme

After gravimetric concentration, the tailings were collected in a bucket until the tailings from the intensive leaching tests could be generated. The intensive CIP tailings were then mixed with the tails rejected from gravity concentration prior to flotation testing.

All flotation tests were performed using one kilogram of gravity concentration tailings. Table 13-4 summarizes the flotation reagents and dosages used in testing.

Table 13-4: Reagents Used in Flotation Tests
Jaguar Mining Inc. – Caeté Mine Complex

No.	Reagents	Purpose	Dosage	Use
1	Copper Sulphate	Activator	40 and 50 g/t	Caeté
2	Dithiophosphate (DTF)	Collector	20 g/t	Caeté
3	Mercaptobenzothiazole (MBT)	Collector	50 g/t	TDP
4	Sodium Isobutyl Xanthate (SIBX)	Collector	80 g/t	TDP
5	Potassium Amyl Xanthate (PAX)	Collector	80 g/t	TDP
6	Flotanol	Frother	4.5 g/t	Caeté
7	INT 102	Frother	42 g/t	TDP

Reagents 1, 2, and 6 are used in the Caeté Plant and the other reagents were recommended for use by TDP to optimize gold recoveries. The reagent dosages recommended by TDP are widely used in diagnostic flotation testing.

Flotation tests were carried out with a residence time of 20 min, with sampling of the froth every four minutes, to generate data related to:

- Gold and Sulphur recovery versus time
- Gold and Sulphur recovery versus floatation mass
- Gold and Sulphur content versus floatation mass

Leaching tests performed on the flotation concentrates used the same leaching conditions as set out in the plant circuit (Table 13-5).

Table 13-5: Conditions in Leaching Tests
Jaguar Mining Inc. – Caeté Mine Complex

Parameter	Condition
Pre-lime time	15 hours / pH = 8
Alkaline pre-lime time	8 hours / pH = 11
Leach contact time	8 hours
Leach pH	11
% solids	35
NaCN concentration	5.6 kg/t of concentrate corresponding to the 3,000 mg/L initial dose and adjusted according to consumption
CIP contact time	24 hours
pH of the CIP	11
% solids	35
Type of carbon	G210
Carbon concentration	18 g/L of pulp
Controls:	pH, DO, E_h

13.3.1.1 Test Work Results

The assayed and calculated head gold grade contents of the analyzed samples are presented in Figure 13-3.

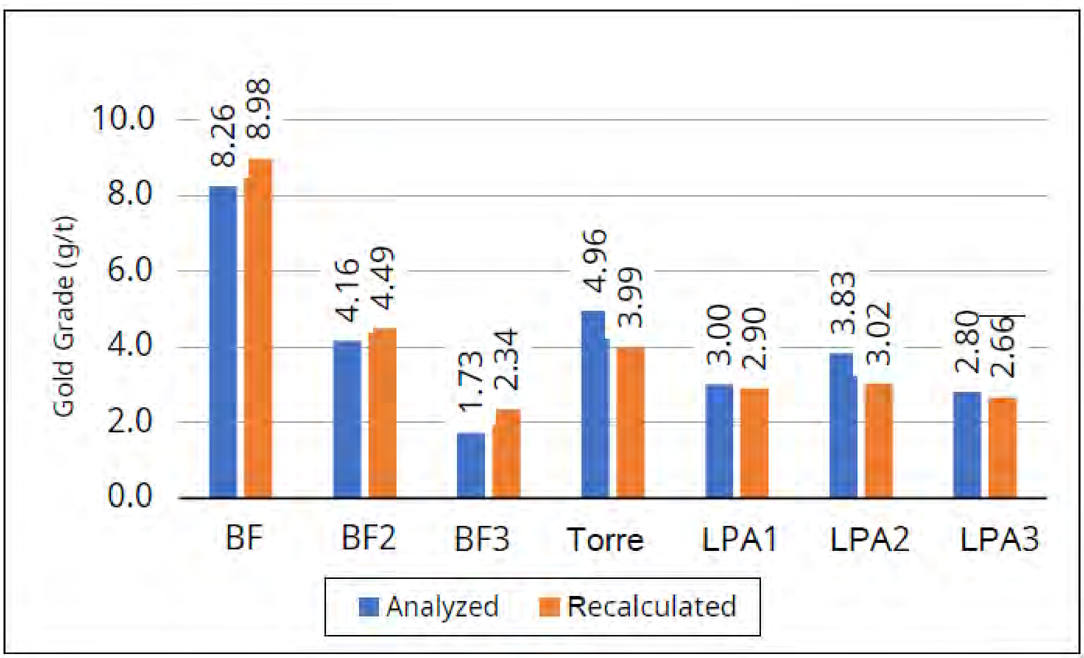


Figure 13-3: Assayed versus Calculated Head Grade Correlation

The averages of all the results of the gravimetric concentration tests, performed prior to the leaching and flotation tests, showed similar results, independent of the grind. The results are presented in Figure 13-4.

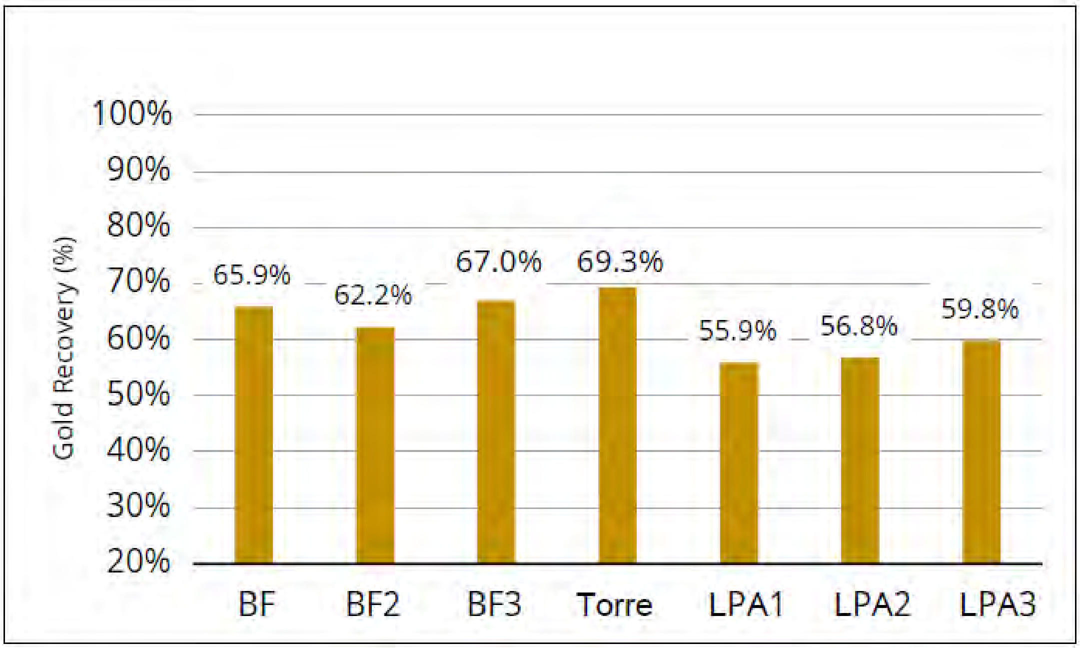


Figure 13-4: Overall Gravity Gold Recoveries

The high recoveries of free gold could justify the variation in the assayed versus calculated head gold content of the various tests previously presented in Figure 13-3.

Figure 13-5 and Figure 13-6 present the overall recovery and gold tailings averages of leaching tests (direct, CIL, with and without gravimetric concentration).

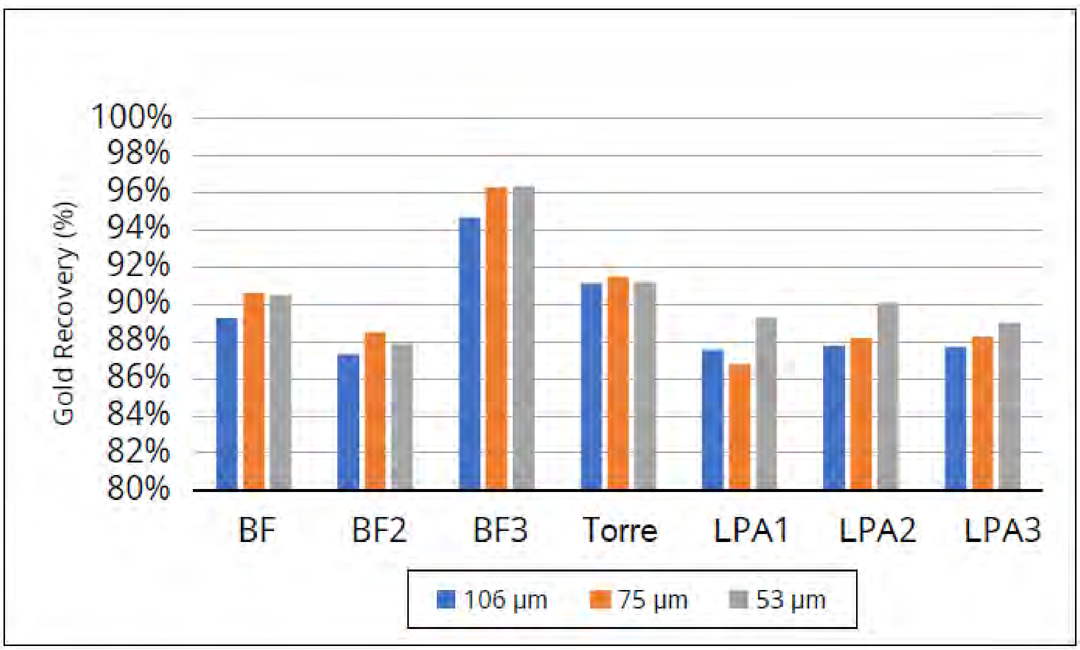


Figure 13-5: Leaching Test Recovery

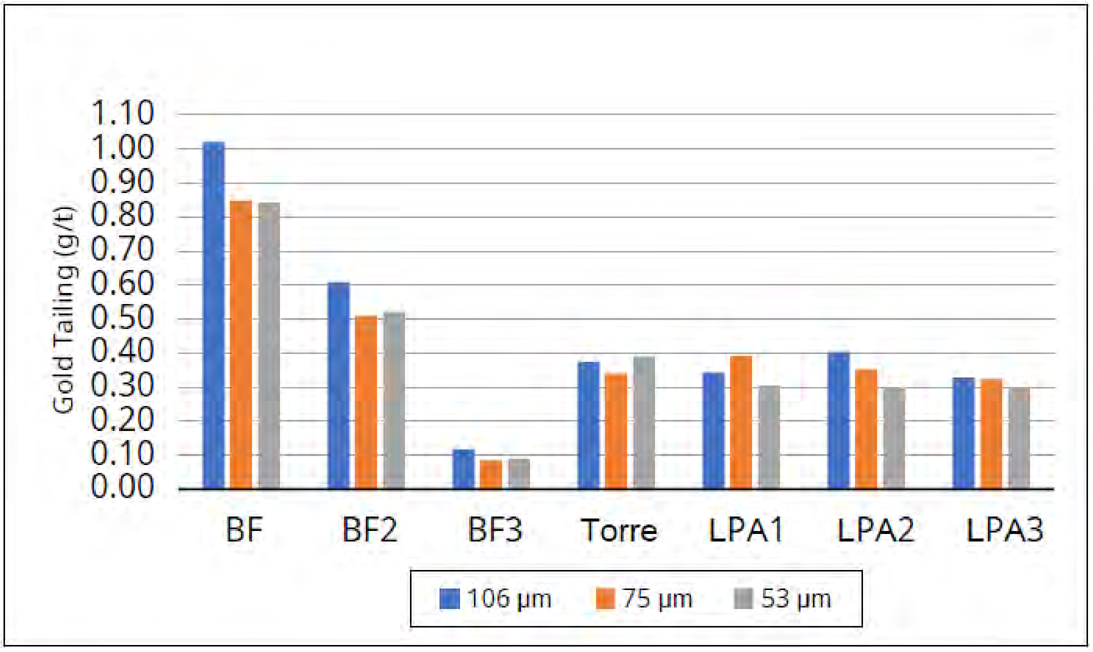


Figure 13-6: Leaching Tests Tails Gold Values

The results indicate that grinding equal to or below P_{80} 75 µm reduces tailings values. The final recovery is naturally influenced by the head content of the tests, demonstrating that the assessment of the contents of the tailings is important.

Figure 13-7 and Figure 13-8 present the gold recovery and gold tailings values in the flotation tests.

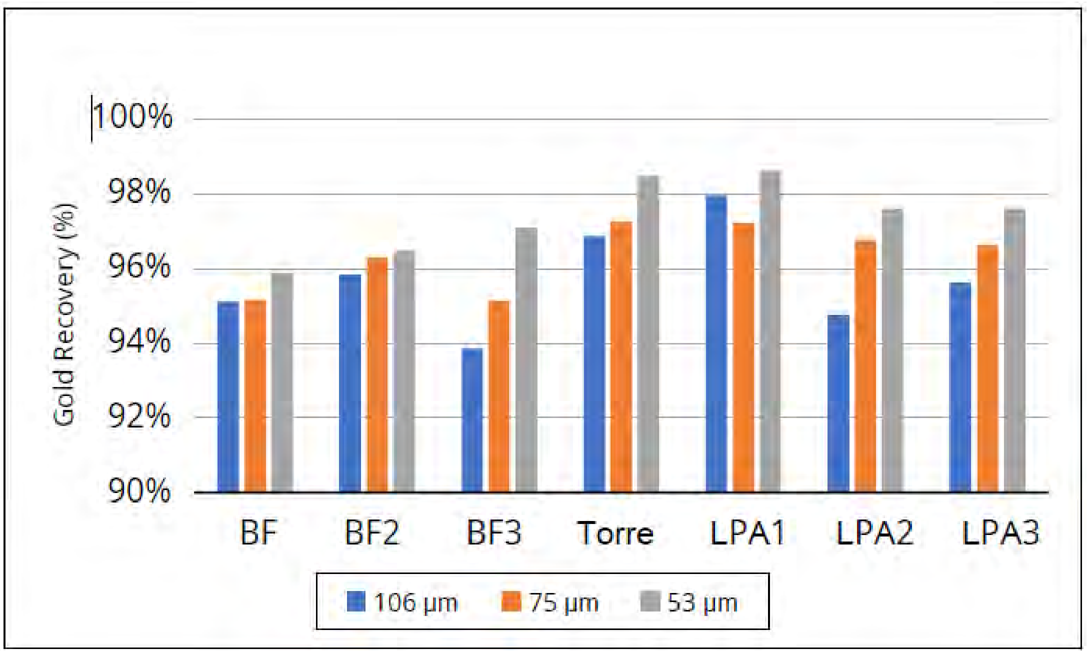


Figure 13-7: Gold Flotation Recovery

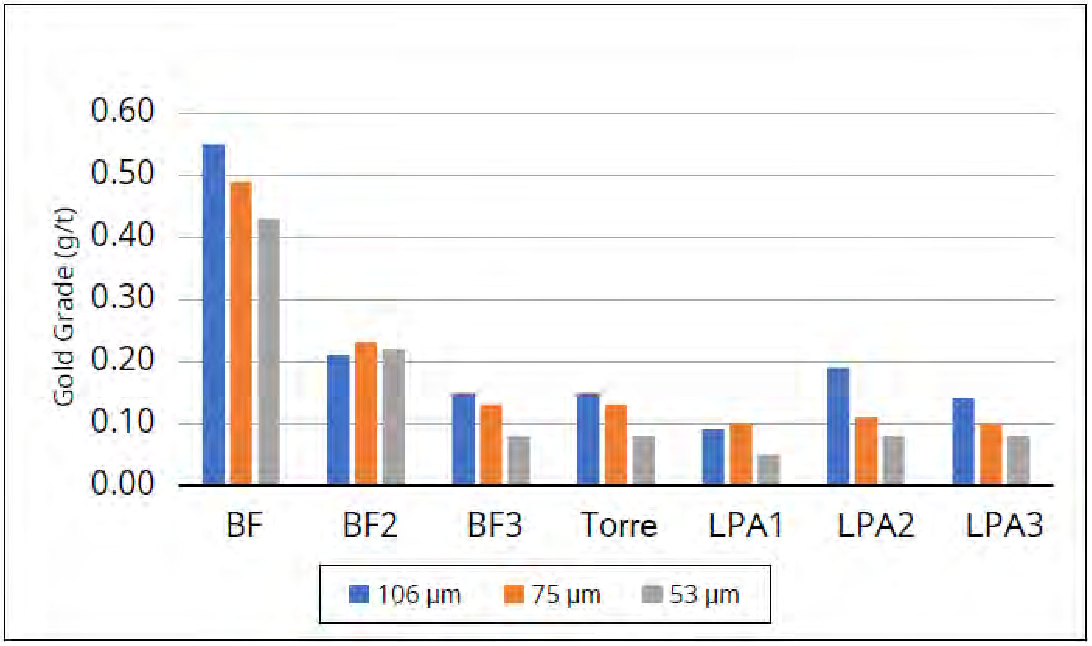


Figure 13-8: Flotation Tails Gold Values

The results indicate that a finer grind (P_{80} = 53 µm) reduces the gold content in tailings in flotation tests with a consequent increase in overall recovery (gravimetric concentration + flotation).

Figure 13-9 and Figure 13-10 present the gold recoveries and CIP tailings in leaching of flotation concentrates generated in flotation tests with P_{80} = 75 µm. Leaching was performed simulating the leaching circuit of the Caeté Plant.

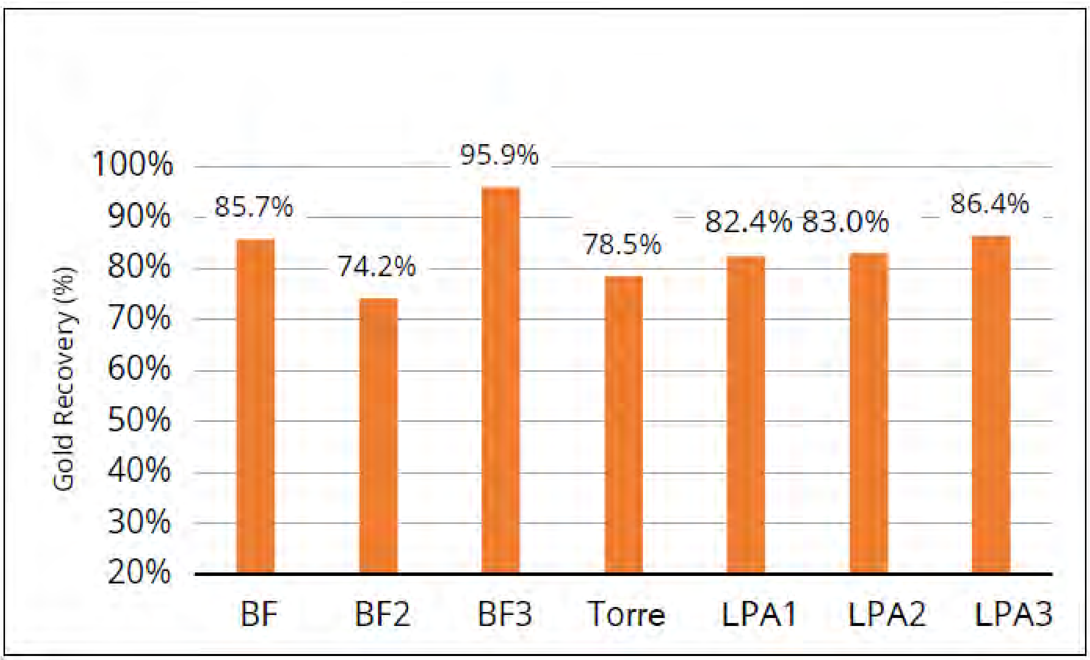


Figure 13-9: Flotation Concentrate Leach Recovery

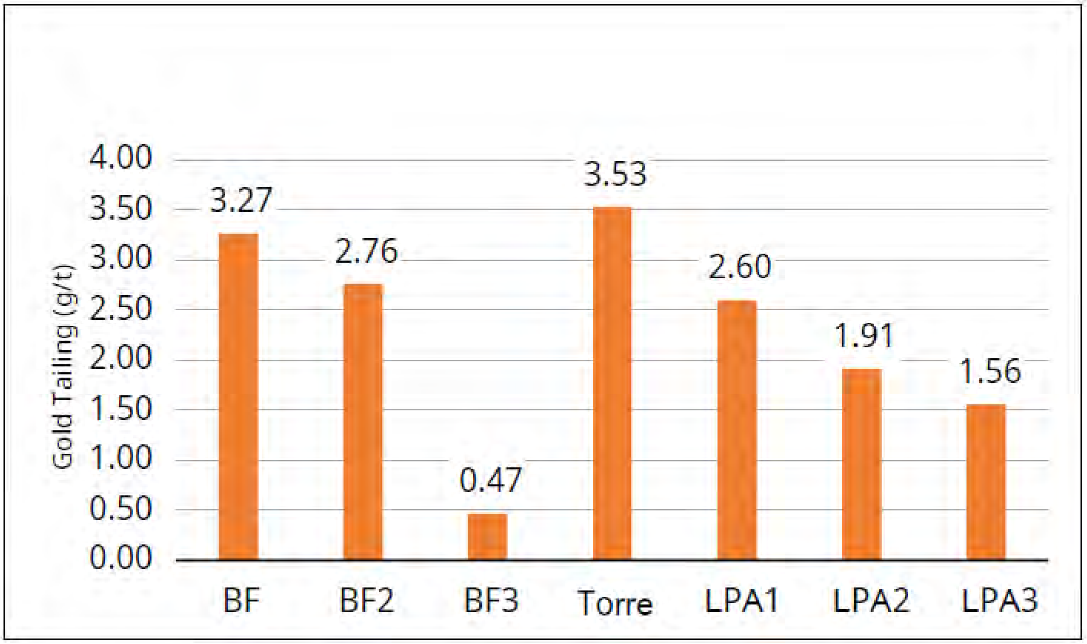


Figure 13-10: Flotation Concentrate CIP Tailing Gold Values

Figure 13-11 and Figure 13-12 present the calculated overall recoveries and the tailings assays, simulating the overall process circuit (gravity + flotation + leaching).

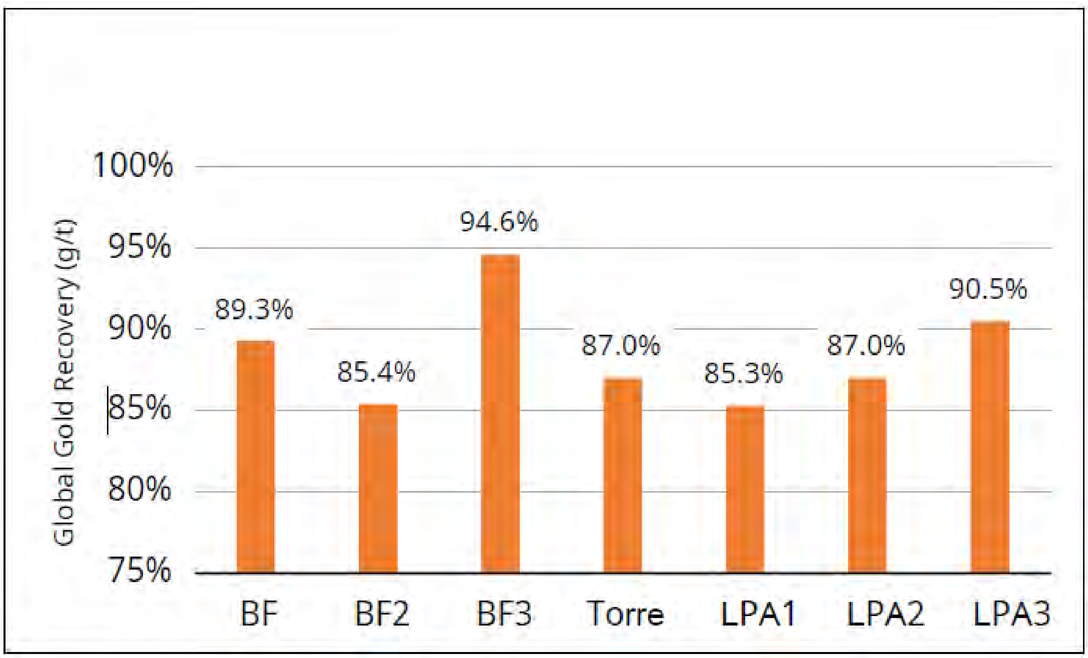


Figure 13-11: Overall Gold Recoveries

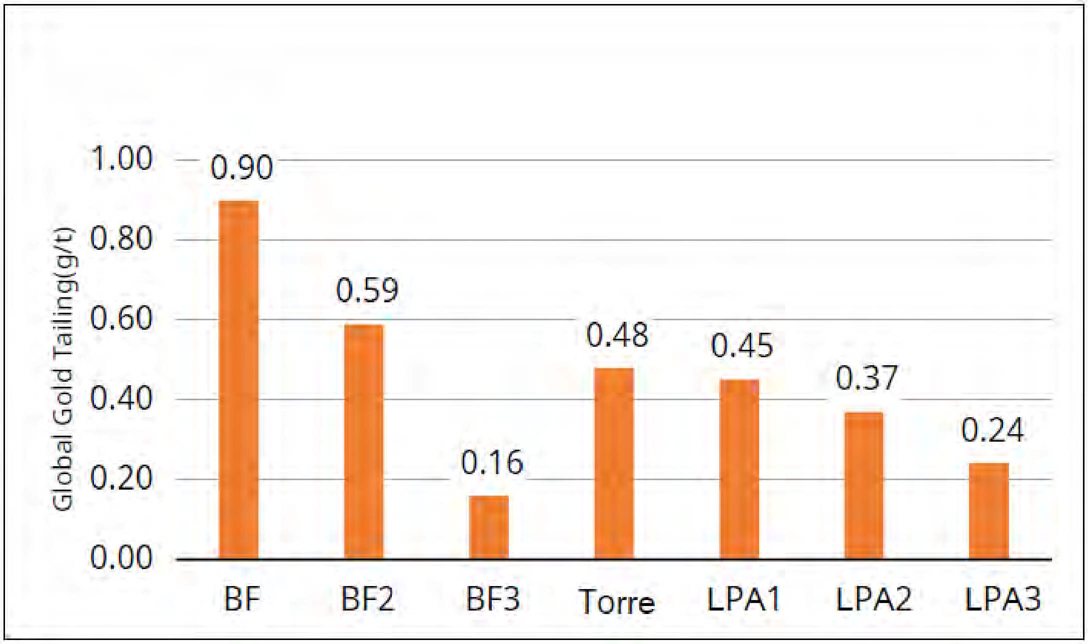


Figure 13-12: Tails Assays

Figure 13-13 presents the comparison of overall recoveries of flotation tests with the overall recoveries of leaching tests, at P_{80} 75 µm.

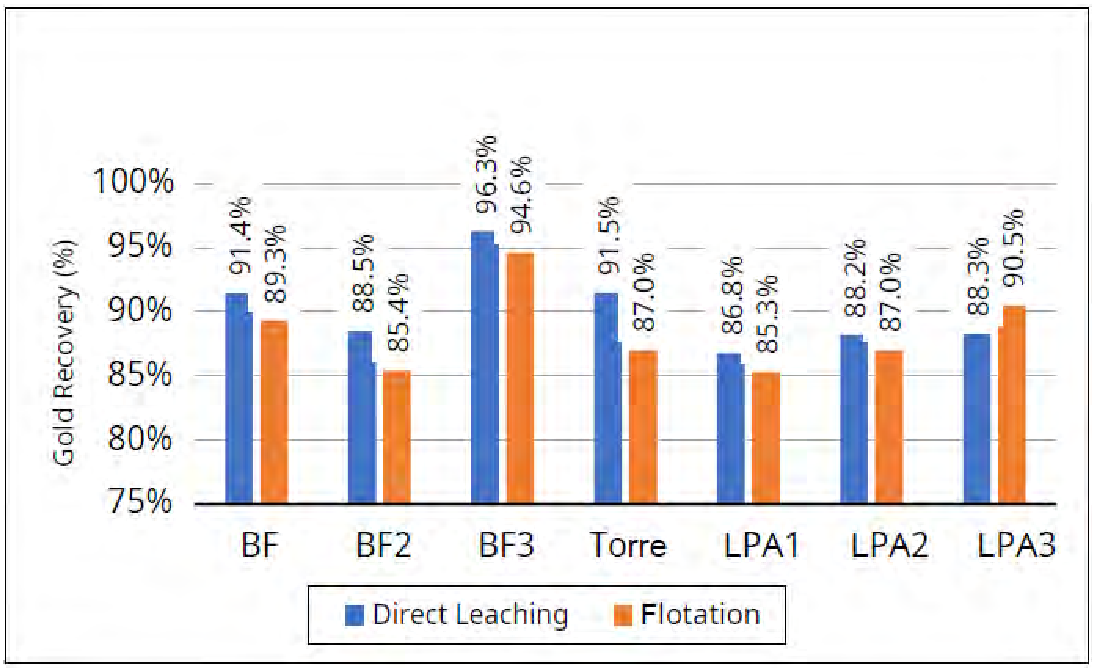


Figure 13-13: Flotation Gold Recovery

Figure 13-13 illustrates that there is a good correlation between direct leaching tests and flotation test results (gravimetric concentration + flotation + concentrate leaching). Further test work with additional sampling may be warranted to confirm the correlation.

Figure 13-14 and Figure 13-15 present the correlations between flotation and leach gold recovery and flotation and CIP tailing assays.

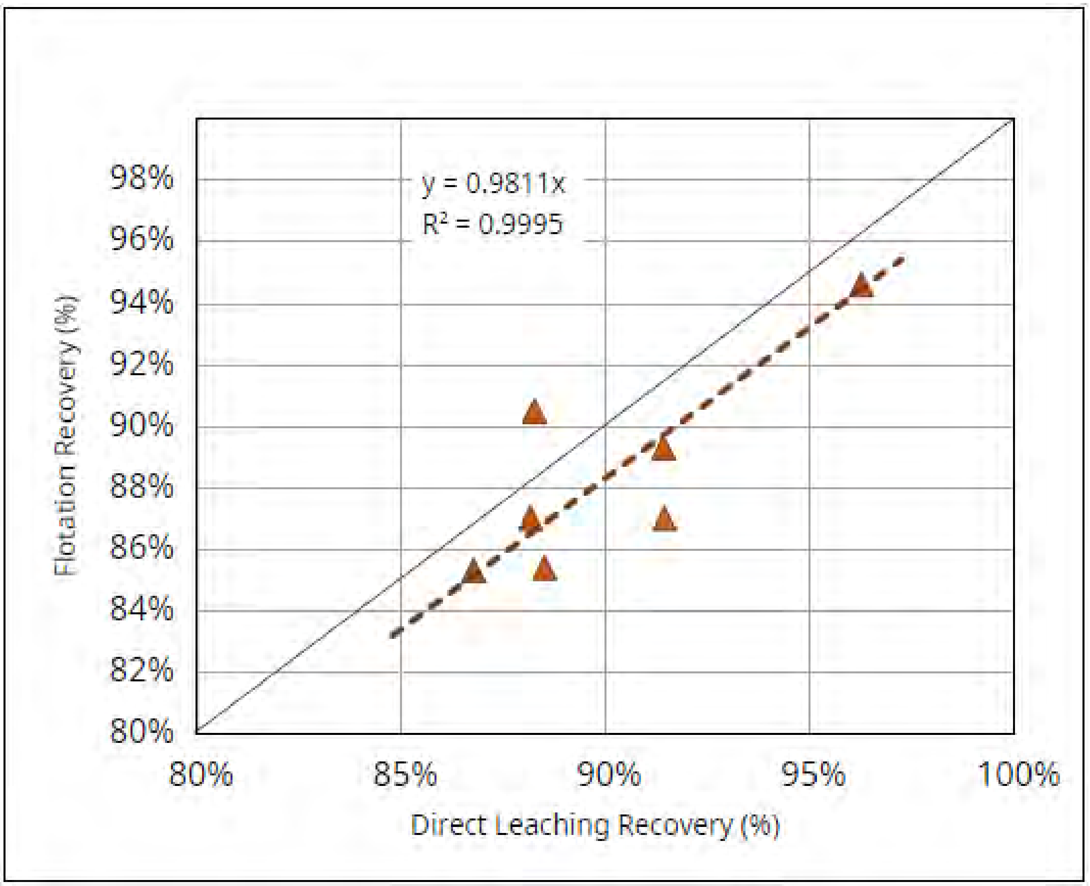


Figure 13-14: Flotation/Leach Recovery Correlation

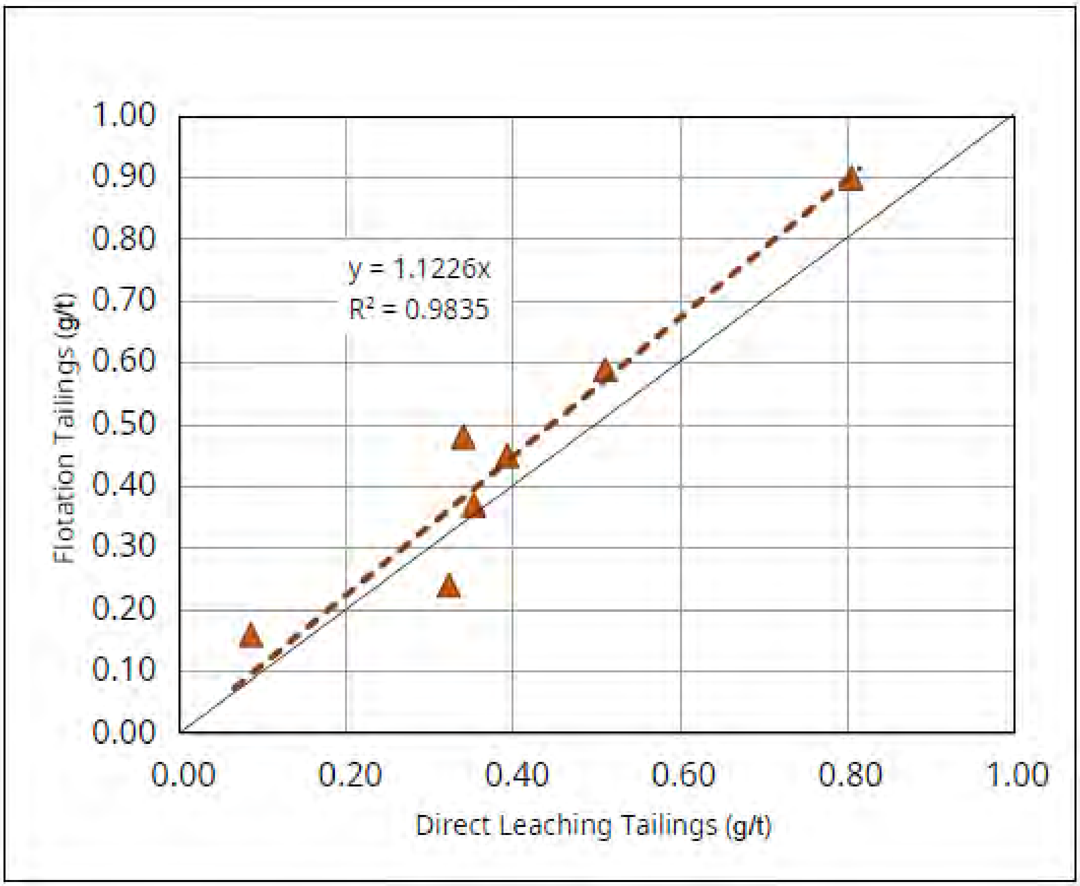


Figure 13-15: Flotation/CIP Tailing Assay Correlation

Final flotation circuit recoveries can be estimated (Equation 1) with simple leaching tests with approximately 2% less accuracy than leaching test results. This will be important when conducting further work to better understand the Pilar metallurgy.

- Equation 1: Plant Recovery = 0.9811 * Recovery in Direct Leaching (P_{80} = 75µm)

The Caeté Plant tailings value can also be estimated using the tailings value of the direct leaching test according to Equation 2.

- Equation 2: Plant Tailings = 1.1226 * Direct Leaching Tailings (P_{80} = 75µm)

13.3.1.2 Conclusions

Based on the objectives of the test work, TDP's final conclusions were reported as follows:

Objective: Anticipate the behaviour of mineralization in the gold recovery circuits of the Caeté Plant.

- Test work demonstrated that there is a difference in the behaviour and recovery of gold within the same orebody, especially in the BF orebody.
- Gold recoveries in the gravimetric concentration ranged from 55% to 69%.
- All orebodies had global gold recoveries above 85%, reaching 95%.

- The estimation of Caeté Plant gold recoveries can be made by simple direct leaching tests using equations 1 and 2.

Objective: Identify the adequacy of the circuits of the Caeté Plant, due to the new characteristics of the ores.

- The Caeté Plant circuits are suitable for the treatment of the tested ores.
- Recovery variations are characteristic of the ores.
- Flotation tests indicated that there is the possibility of increased recovery using SIBX or PAX. Plant trials should be carried out.
- A slight increase in the flotation mass may also have a beneficial effect on the circuit and an improvement in overall recovery.

Objective: Identify the possibility of optimizing existing processes.

- Final optimization tests were to be performed with samples from the BF, BF II, BF III, and Torre deposits; there was not enough material from sample LPA.
- The tests were to focus on flotation concentrate leaching, with the goals of simplifying the circuit and reducing cyanide and reagent consumption by eliminating ferrocyanide formation in the leaching circuit. By pre-conditioning the pulp with oxygen and controlling the pH between 7.5 and 8.5, ferrocyanide formation in the leaching process can be reduced. Tests conducted in parallel demonstrated the elimination of ferrocyanide formation to be possible.

13.3.2 AMTEL Ltd. (2020)

In February 2020, AMTEL Ltd. (AMTEL) completed a gold deportment study on a concentrate leach-CIP residue sample, labelled RCP (AMTEL, 2020), with the following results:

- General Mineralogy
  - The RCP residue is sulphide-rich containing 51 wt% pyrrhotite, 19.7 wt% arsenopyrite, and smaller quantities of sphalerite (0.8 wt%), chalcopyrite (0.4 wt%), and pyrite (0.3 wt%).
  - Two varieties of pyrrhotite are present: monoclinic (magnetic) and hexagonal (non-magnetic).
  - Monoclinic pyrrhotite is the more abundant, at nearly a 2 to 1 ratio of the monoclinic to hexagonal pyrrhotite. Pyrrhotite is a strong cyanicide (i.e., oxygen/cyanide consumer in leach), particularly the monoclinic variety as it is more reactive.
  - Rock minerals comprise 28% of the RCP mass: carbonates (9 wt%), quartz (8 wt%), illite (8 wt%), feldspars (2 wt%), and carbonaceous material (1.4 wt%).
- Gold Mineralogy
  - Gold occurs in four forms:
    - Water soluble gold salts: solubilized gold not loaded onto activated carbon (i.e., dries out in the solids)
    - Gold grains: gold-silver alloys with an average composition of 90 wt% Au and10 wt% Ag. Gold grains were observed free, attached, and enclosed. Free and attached grains (exposed) are directly leachable. Enclosed (locked) particles require finer grinding to be recovered.

- Solid solution gold: atomically distributed gold in a mineral crystal structure. In the RCP residue, it is hosted by arsenopyrite. This gold is refractory to direct cyanidation.
- Surface bound gold: gold adsorbed on the surface of carbonaceous matter present in the sample.

The gold deportment in the RCP residue is presented in Figure 13-16 and Figure 13-17. The following assessment was made.

- Water soluble gold salts are insignificant, accounting for only 0.1% of the sample grade.
- Exposed gold grains (free + attached) contribute only 2% of the RCP residue grade, one half as free gold particles and one half attached to other minerals.
- Free gold grains are small with an average grain size of 6 µm.
- Free gold grains contain more silver compared to unliberated gold grains, silver likely prevented complete dissolution of these gold particles.
- Attached gold particles are associated with arsenopyrite, pyrrhotite, and rock.
- Enclosed gold grains carry 26% of the gold in RCP residue.
- Enclosed gold grains are primarily carried by arsenopyrite. These grains are tiny with an average grain size of 3.5 µm.
- Gold locked in arsenopyrite is grind-sensitive, however, significant liberation occurs only by very fine to ultra-fine grinding.
- Solid solution gold contributes 70% of the gold in RCP residue and is essentially carried by arsenopyrite. Arsenopyrite occurs in three morphological varieties, each contains gold in solid solution form. The overall concentration of solid solution gold in arsenopyrite is 15.3 ppm Au.
- Solid solution gold sets the absolute minimum residue grade after ultra-fine grinding and cyanide leaching to approximately 3.0 g/t Au.
- Surface gold on carbonaceous matter contributes 2% of the RCP grade. Approximately, 50% of the carbonaceous matter particles are free in the slimes fraction (< 7 µm) while the remaining particles are disseminated in rock. In either occurrence, carbonaceous matter did not preg-rob (adsorb) significant gold.

AMTEL reported the following conclusions:

- The plant leach circuit performed adequately.
  - There are insignificant water soluble gold salts in the RCP residue, indicating that all the gold dissolved in cyanide was recovered onto the activated carbon.
  - There is very minor exposed leachable gold (residual free and attached gold grains), indicating that leach conditions are optimized.
- There is very minor preg-robbed gold onto the carbonaceous matter, indicating that gold preg-robbing was controlled or carbonaceous matter in the ore is not the preg-robbing type.

Further reducing the RCP grade requires:

- Considerably finer grinding to expose more of the gold locked in arsenopyrite.
- Oxidative sulphide treatment (pressure oxidation, roasting, or bio-oxidation) to recover the solid solution gold in arsenopyrite.

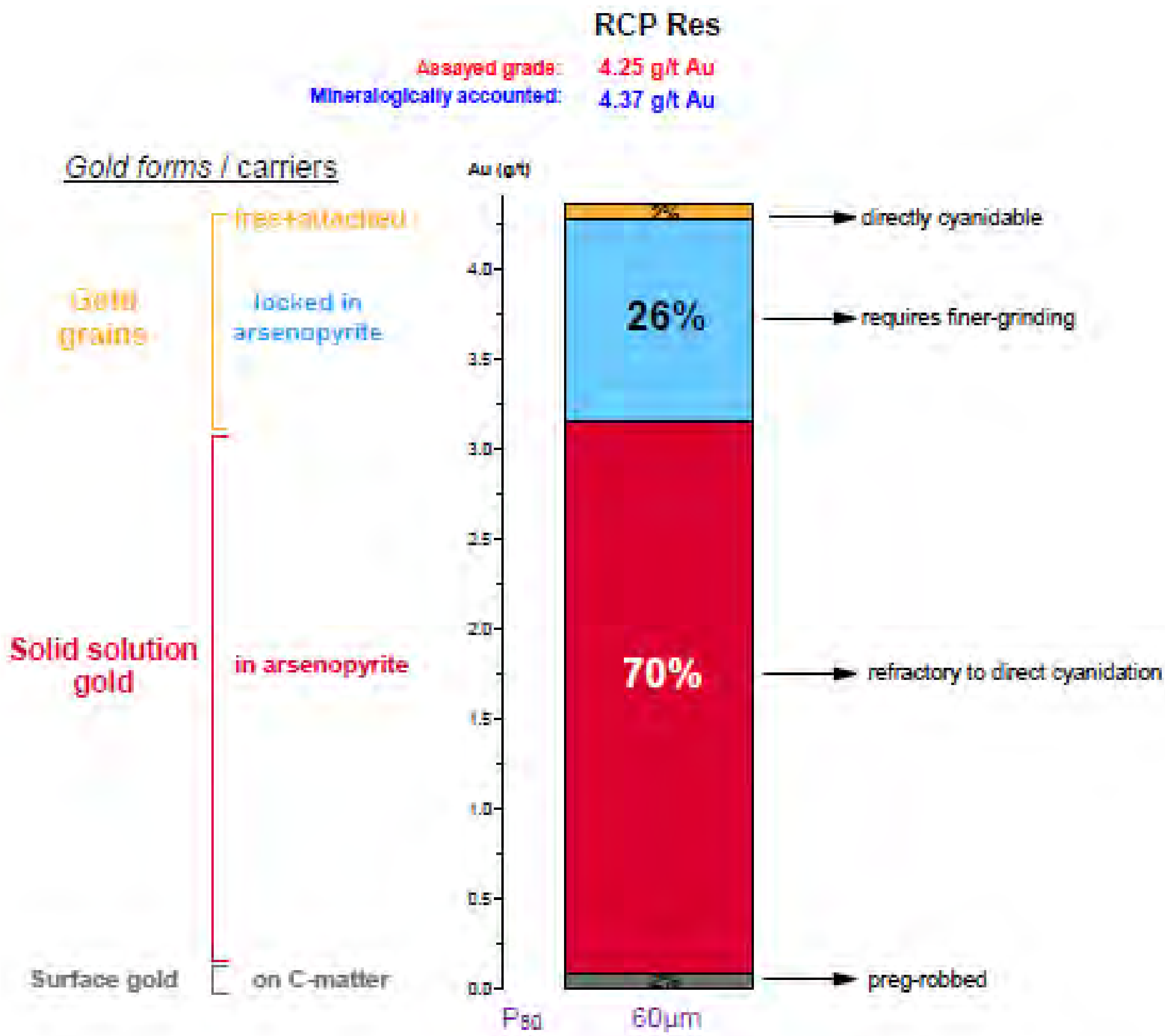


Figure 13-16: Gold Deportment

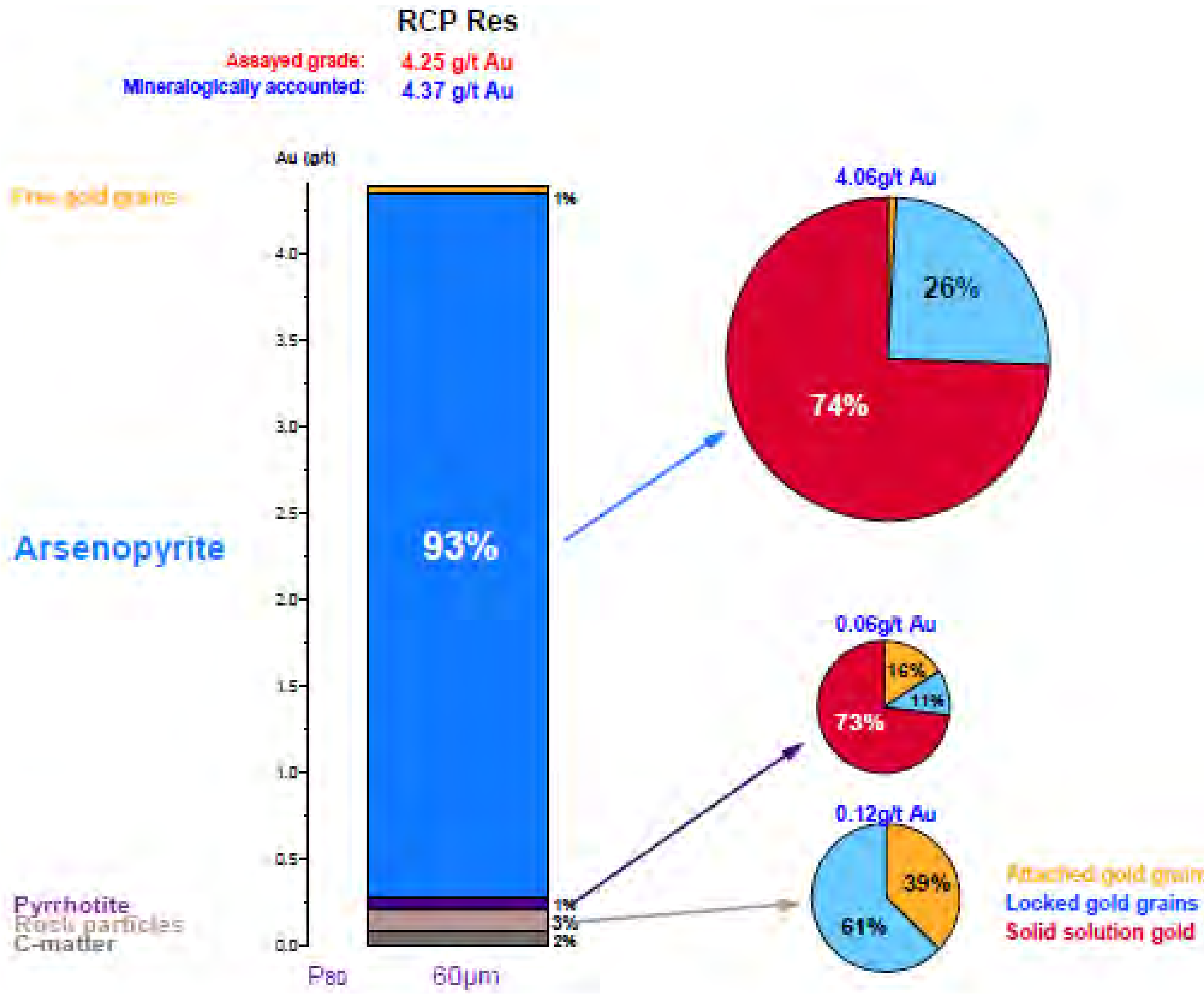


Figure 13-17: Gold Distribution by Mineral Carrier

13.4 Conclusions

In the SLR QP's opinion, to the extent known, the test samples are representative of the various types and styles of mineralization and the mineral deposit as a whole, and there are no processing factors or deleterious elements that could have a significant effect on potential economic extraction.

The SLR QP finds that the test work was comprehensive and encourages Jaguar to continue with testing, as needed.

14.0 MINERAL RESOURCE ESTIMATE

14.1 Summary

SLR has audited and accepted the Roça Grande, Pilar, and Córrego Brandão Mineral Resource estimates prepared by Jaguar. Table 14-1 summarizes the Mineral Resources as of December 31, 2021 based on a US$1,800/oz Au price and exchange rate of R$5.50: US$1.00. A cut-off grade of 1.80 g/t Au was used to report Roça Grande Mineral Resources, while 1.66 g/t Au was used for Pilar. For the reporting of Córrego Brandão Mineral Resources cut-off grades of 0.38 g/t Au and 0.74 g/t Au were used for oxide and fresh material, respectively.

Table 14-1: Summary of Mineral Resources as of December 31, 2021
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
	Roça Grande		
Measured	197	3.42	22
Indicated	765	4.02	99
Sub-total M+I	962	3.90	121
Inferred	889	4.08	117
	Pilar		
Measured	2,338	3.91	294
Indicated	1,499	3.60	173
Sub-total M+I	3,837	3.79	467
Inferred	2,125	4.21	288
	Córrego Brandão		
Measured	-	-	-
Indicated	-	-	-
Sub-total M+I	-	-	-
Inferred	1,072	1.48	51
	Total Caeté Complex		
Measured	2,535	3.87	316
Indicated	2,264	3.74	272
Sub-total M+I	4,799	3.81	588
Inferred	4086	3.46	456

Notes:

1. Canadian Institute of Mining, Metallurgy and Petroleum (CIM) for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions) were followed for Mineral Resources.

2. Underground Mineral Resources are estimated at a cut-off grade of 1.80 g/t Au for Roça Grande and 1.66 g/t Au for Pilar. Open pit Mineral Resources at Córrego Brandão are estimated using cut-off grades of 0.38 g/t Au and 0.74 g/t Au for oxide and fresh material, respectively.
3. Mineral Resources are estimated using a long term gold price of US$1,800/oz Au and an average long term foreign exchange rate of R$5.50 : US$1.00.
4. A minimum mining width of two metres was used for the estimation of underground Mineral Resources at Roça Grande and Pilar. A pit shell based on the Lerchs-Grossman algorithm was used for the estimation of Córrego Brandão Mineral Resources.
5. Bulk densities assigned to Pilar Mineral Resources are variable for each wireframe. Bulk densities of 2.00 t/m^3 and 2.25 t/m^3 were assigned to Roça Grande oxide and transition and fresh material, respectively, 2.87 t/m^3 for RG01, RG02, RG03, and RG06 fresh material and 2.75 t/m^3 for RG07 fresh material. Bulk densities of 1.31 t/m^3 or 1.4 t/m^3 and 2.92 t/m^3 were assigned to Córrego Brandão oxide and fresh material, respectively.
6. Gold grades are estimated using ordinary kriging (OK) for Roça Grande, Pilar, and Córrego Brandão.
7. No Mineral Reserves are currently present at Roça Grande or Córrego Brandão. Mineral Resources are inclusive of Mineral Reserves for Pilar.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. Numbers may not add due to rounding.

The SLR QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that could materially affect the Mineral Resource estimates.

14.1.1 Roça Grande

The Roça Grande block model is based on drilling and channel sample data using a data cut-off date of December 31, 2018, after an internal audit. The database comprises 943 drill holes and 8,619 channel samples. The Roça Grande Mineral Resource estimate was generated from a block model constrained by three-dimensional (3D) wireframe models that were constructed using a minimum width of one metre. The purpose of the minimum width criteria was to identify areas of high grade mineralization that could be candidates for extraction using highly selective underground mining methods.

Gold grades were estimated with the OK using composited, capped assays. A capping value of 30 g/t Au was applied for the RG01 and RG06 mineralized zones while capping values of 17 g/t Au, 13 g/t Au, and 60 g/t Au were applied for the RG02, RG03, and RG07 mineralized zones, respectively. The wireframe models of the Roça Grande mineralization and excavated material were constructed using the excavation information as of December 31, 2018 with only local adjustments completed in 2021 for RG01 and RG02. Roça Grande was placed on care and maintenance in Q1 2018.

Mineralized material for each mineralized zone was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, observed continuity of the mineralization, drill hole and channel sample density, and previous production experience with these orebodies. Reporting polygons were created to ensure that the "reasonable prospects for eventual economic extraction" (RPEEE) requirement of the CIM (2014) definitions was met. These reporting polygons were used to appropriately code the block model and prepare the Mineral Resource reports.

14.1.2 Pilar

The updated Pilar block model is based on drilling and channel sample data using a data cut-off date of December 31, 2021. The database comprises 2,564 drill holes and 25,377 channel samples. The Pilar Mineral Resource estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of two metres. Gold grades were estimated with OK interpolation and inverse distance cubed (ID^3) algorithms using composited, capped assays. Various capping values were applied to each of the different orebodies, ranging from 60 g/t Au for the BA orebody to 20 g/t Au for the LFW and LHW orebodies. The wireframe models of the excavated material for Pilar were constructed using the information as of December 31, 2021.

Mineralized material for each orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, observed continuity of the mineralization, drill hole and channel sample density, and previous production experience with this deposit. Reporting volumes were created using the Hexagon HxGN MinePlan 3Dv.15.30 mine modelling software package (MinePlan 3D) or using the functions available through the Deswik mine modelling software package to ensure that the RPEEE requirement of the CIM (2014) definitions was met. These reporting volumes were used to appropriately code the block model and prepare the Mineral Resource reports.

14.1.3 Córrego Brandão

The block model for Córrego Brandão is based on drilling and channel sample data using a data cut-off date of June 8, 2021. The database comprises 44 diamond drill holes, 46 auger holes, and 13 trench and channel samples. Jaguar did not use the auger drilling data for the mineral resource grade estimation. The Córrego Brandão Mineral Resource estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of two metres.

Gold grades were estimated using OK with composited, capped assays. A capping value of 9.0 g/t Au was applied for the oxide mineralization while a capping value of 7.0 g/t Au was applied for the mineralization in the fresh material.

Due to limited drilling, all the Mineral Resources in the Córrego Brandão deposit were classified as Inferred and constrained by an optimized pit shell so that the RPEEE requirement of the CIM (2014) definitions was met.

14.2 Roça Grande Mine

14.2.1 Resource Database

Roça Grande drilling and sampling practices involved the initial delineation of the various mineralized zones using surface and underground drill holes at a nominal spacing of 25 m to 50 m. Underground sampling was then used to delineate the RG01 and RG07 mineralized zones only, as no underground development has been carried out on the RG02, RG03, and RG06 mineralized zones. As development of the underground access progressed on the RG01 and RG07 mineralized zones, a series of channel samples were collected in two locales (one set on the face and the other set along the back) for each round. The average sample spacing along development drifts was five metres. Channel samples collected during excavation of the open pit mines in the RG02, RG03, and RG06 mineralized zones were also included in the drill hole database.

Jaguar maintains an internal database using the MX_Deposit database software package provided by the Geosoft group to store and manage all the digital information for all of its operations. The internal databases were previously maintained using the BDI software package. The Roça Grande drill hole and channel sample information was extracted from this internal database into separate files for use in preparation of the Roça Grande Mineral Resource estimate.

The cut-off date for the drill core and channel sample assays is December 31, 2018. Though no further diamond drilling has been carried out at Roça Grande, collection of channel sample information in support of limited production activities was continued through to Q1 2018 when Roça Grande was placed on a care and maintenance. The drill hole and channel sample information was grouped into five sets to reflect the known mineralized zones at Roça Grande. Drilling and sampling was carried out using the UTM Datum Córrego Alegre, Zone 23S grid coordinate system.

A summary of the Roça Grande drilling and channel sampling information is provided in Table 14-2.

Table 14-2: Description of the Roça Grande Database as of June 30, 2015, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Data Type	Description
Collars, Drill Holes	943 (total 128,148 m)
Collars, Chip & Channel Samples	8,619 (total 82,531 m)
Survey, Drill Holes	28,749
Survey, Chip & Channel Samples	82,321
Lithology, Drill Holes	15,720
Lithology, Chip & Channel Samples	37,254
Assays, Drill Holes	41,974
Assays, Chip & Channel Samples	87,055

The database included a number of assay records representing intervals of no sampling, lost core, lost sample, or no core recovery, some of which are contained within the mineralized wireframes. Jaguar elected to pursue a conservative approach by inserting a very low gold value of 0.01 g/t Au for these intervals with no assays available.

The SLR QP notes that the controls on the gold mineralization at Roça Grande are well understood and that the mineralized zones are well drilled and sampled. The drilling and sampling protocols employed by

Jaguar permit the identification and delineation of the mineralized areas with confidence. Drilling and sampling practices are carried out to a high standard. The SLR QP is of the opinion that the Roça Grande drill hole and sampling database is suitable for use in preparation of Mineral Resource estimates.

14.2.2 Geological and Mineralization Interpretations

The interpreted 3D wireframe models of the Roça Grande gold mineralization have been prepared using geology information and assay values from surface and underground drill holes, and channel sample data. Wireframe models of the gold distribution for the various mineralized zones were created using the Datamine StudioRM Version 1.11.200.0 software package (Datamine). With the exception of the RG01 and RG07 wireframes, no changes have been made to the other Roça Grande mineralized wireframes, RG02, RG03, and RG06, for this current Mineral Resource estimate.

Wireframe limits were drawn using a cut-off grade of 0.50 g/t Au and a nominal minimum width of one metre. The purpose of the minimum width criteria was to identify any areas of high grade mineralization that could be candidates for extraction using highly selective underground mining methods. The wireframe models were clipped to the original, pre-mining topography surface.

Primary underground Roça Grande production was from the RG01 and RG07 lenses prior to the mine being placed on care and maintenance in 2018. The RG01 lens is a shallow dipping stratiform deposit that is generally associated with an iron formation assemblage comprised of carbonate, oxide, and sulphide facies iron formation, chert, clastic sediments (including graphitic argillite), and fine grained tuffaceous units. The average strike of the lens is to azimuth 75° and the average dip is 40° to 50° to the south (Figure 14-1). The RG07 lens, in contrast, is composed predominately of vein quartz, which is oriented sub-parallel to the RG01 mineralized lens. Mineralization in the RG01 lens has been outlined along a strike length of approximately 500 m and down plunge for approximately 1,500 m (approximately 400 m vertically below surface). The RG01 and RG07 lenses are accessed via a ramp and a system of levels that provides access to a depth of approximately 230 m vertically from surface. The bottom of the ramp is currently located approximately 300 m vertically from surface. Mineralization in the RG01 lens has been defined by drilling below the lowest working level, and with additional drilling, good potential remains for identifying additional mineralization along the down-plunge projection.

Separate surfaces were created to represent the bottom of the weathered material as well as representing the bottom of the transitional weathering zone. It is important to note that due to the presence of deeply penetrating fault structures, the bottom of the transition zone has been interpreted to penetrate deeper near the RG01 and RG02 lenses. This interpretation is supported by the rock quality information gained in the Vale railroad tunnel, the ramp access from the RG01 mine to the RG02 lens, and from drill holes that tested the RG02 lens, which were collared from the RG02 decline.

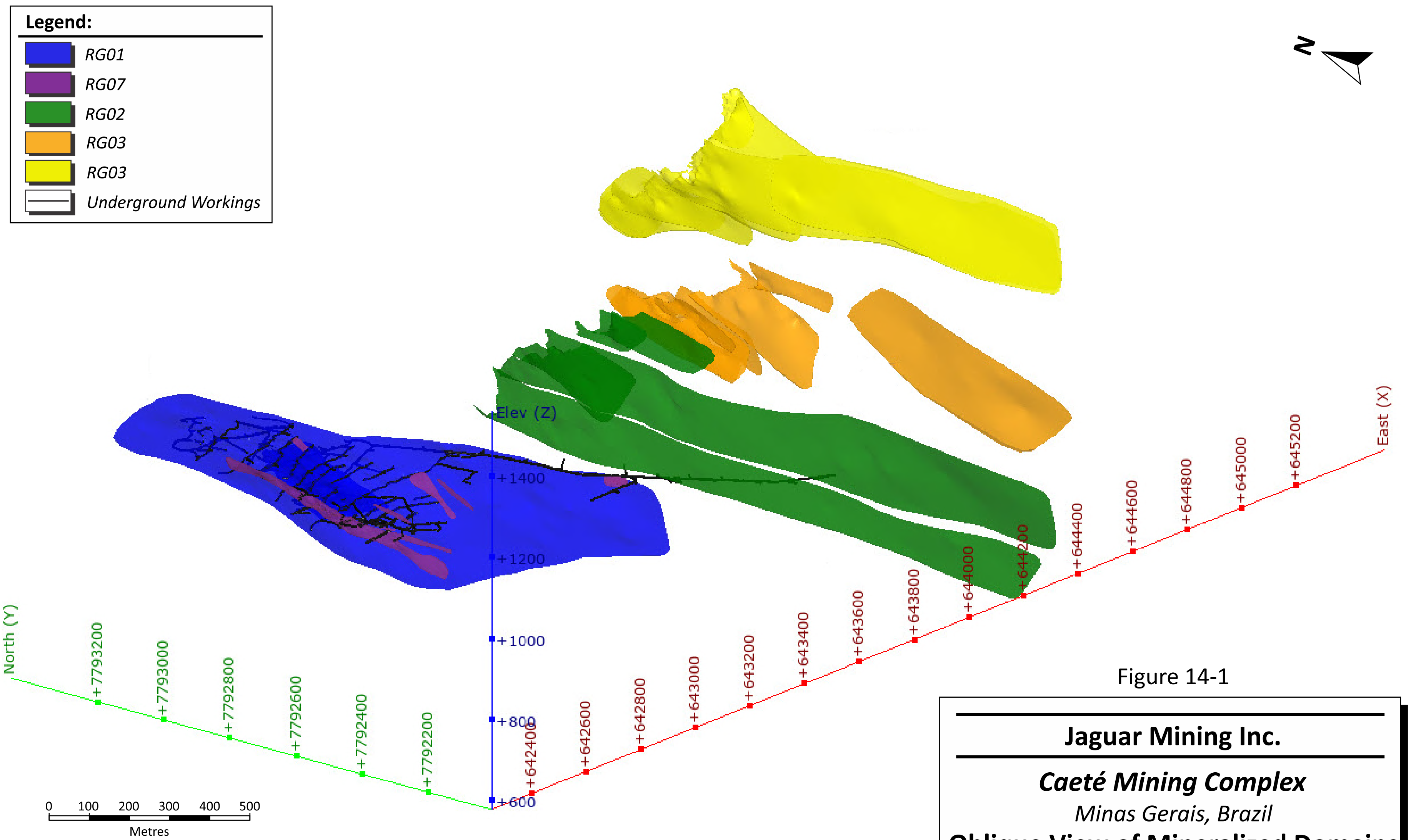


Figure 14-1

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Oblique View of Mineralized Domains and Underground Workings, Roça Grande Mine

March 2022

Source: SLR, 2022.

14.2.3 Topography and Excavation Models

A topographic surface of the Roça Grande area, as of May 2020, was used to code the block model for the portions of the RG02, RG03, and RG06 mineralized zones that have been excavated by means of open pit mining methods. A wireframe model of the completed underground excavations as of December 31, 2018, was prepared and was used to code the block model for the portions of the RG01 and RG07 lenses that have been mined out as of that date. No changes have been made to either the topographic surface model or the model of the underground excavations for this current Mineral Resource estimate.

Mineralization at Roça Grande is accessed via a ramp with a bottom elevation at approximately 1,110 MASL. The bottom of the ramp is currently at an elevation of approximately 915 MASL. Due to the dip of the mineralization, the primary mining method employed during operations was the drift and fill method. In total, five levels have been developed to access the RG01 and RG07 lenses (Table 14-3). An attempt was made to access the RG02 lens by deepening and extending the RG01 ramp, however, the attempt was stopped due to poor ground conditions. A second ramp was excavated with the portal located in the hanging wall of the RG02 lens at an elevation of approximately 1,035 MASL. The bottom of this ramp is at an elevation of approximately 945 MASL and has not penetrated the RG02 mineralized lens.

A railroad tunnel has been constructed by Vale in support of its mining operations in the area. A digital model of this tunnel has been prepared, which demonstrates that it penetrates the mineralized wireframe of the RG02 lens (Figure 14-1).

Table 14-3: Description of the Roça Grande Mine Levels
Jaguar Mining Inc. – Caeté Mining Complex

Level	Floor Elevation (MASL)
Crown Pillar	1,220
1	1,160
2	1,120
3	1,044
4	970
5	922

14.2.4 Resource Assays

The Roça Grande mineralization wireframe models were used to code the drill hole database and identify the raw assay samples, or resource assays, that are contained within the mineralized wireframes. These samples were extracted from the database into their respective domains, and then subjected to statistical analyses by means of histograms, probability plots, and decile analyses. A total of 22,811 samples were contained within the mineralized wireframes. The resource assay statistics are summarized in Table 14-4, and selected probability plots are provided in Figure 14-2 and Figure 14-3.

Table 14-4: Resource Assay Descriptive Statistics, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Parameter	RG01		RG02		RG03		RG06		RG07	
	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap
Count	18,418	18,418	532	532	1,259	1,259	651	651	1,960	1,960
Minimum (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Maximum (g/t Au)	88.17	30.00	102.00	17.00	28.41	13.00	115.80	30.00	385.00	60.00
Mean (g/t Au)	2.40	2.38	3.02	2.44	1.48	1.42	2.42	2.15	5.45	5.09
Sample Variance	14.84	13.72	59.16	13.50	5.85	5.03	40.13	19.92	202.94	108.59
Standard Deviation	3.85	3.70	7.69	3.67	2.42	2.24	6.33	4.46	14.25	10.42
CV	1.65	1.55	2.54	1.50	1.79	1.58	2.93	2.07	2.66	2.05
Capping Value (g/t Au)	30.00		17.00		13.00		30.00		60.00	

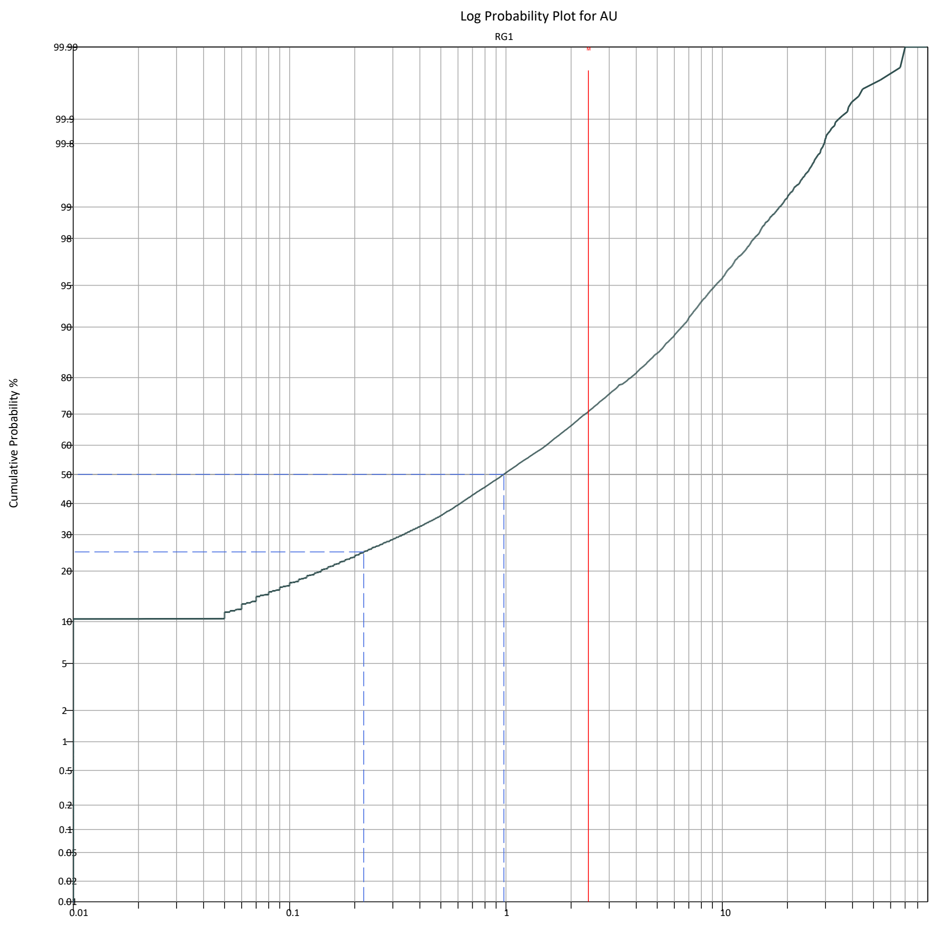


Figure 14-2: RG01 Resource Assay Probability Plot.

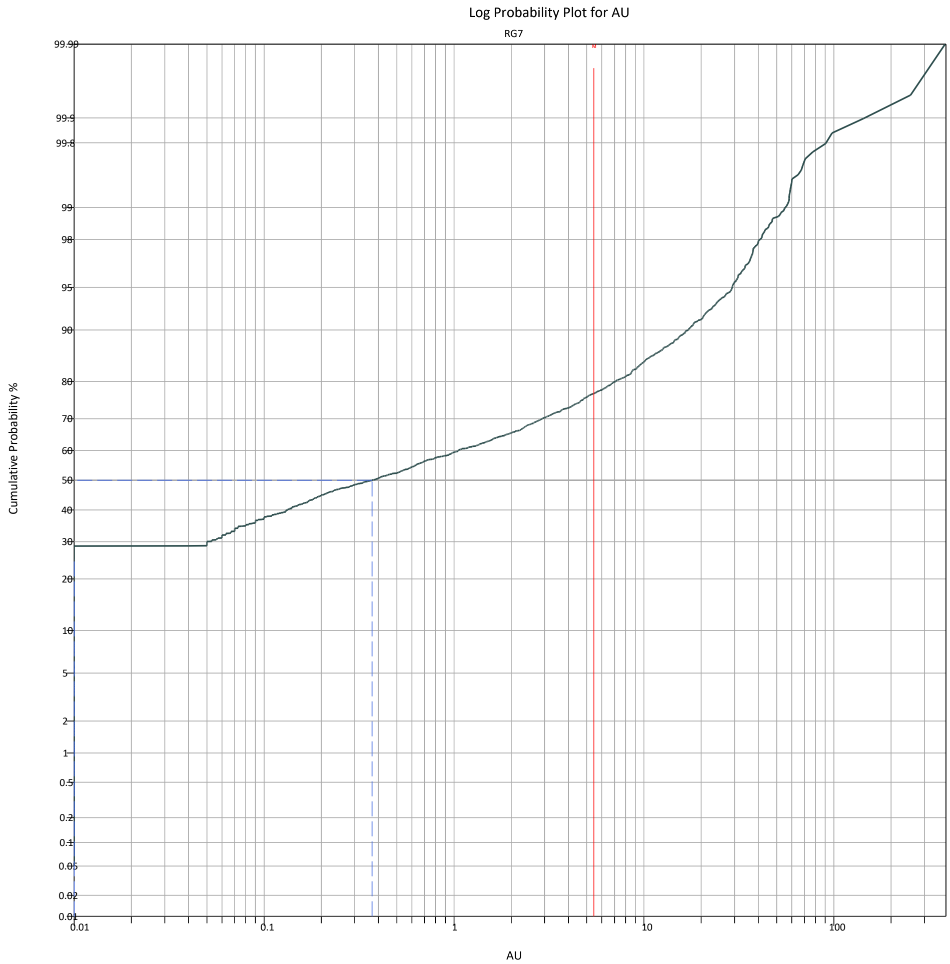


Figure 14-3: RG07 Resource Assay Probability Plot

14.2.5 Treatment of High Grade Assays

Based on the SLR QP's review of the Roça Grande resource assay statistics, the SLR QP is of the opinion that a capping value of 30 g/t Au is appropriate for the RG01 and RG06 mineralized zones and a capping value of 17 g/t Au, 13 g/t Au, and 60 g/t Au is appropriate for the RG02, RG03, and RG07 mineralized lenses, respectively. The selection of capping values can be re-examined in light of grade reconciliation information and adjusted accordingly as necessary.

Capping values were applied to the raw assay samples in the appropriate mineralized domains prior to compositing.

14.2.6 Compositing

Selection of an appropriate composite length began with examination of the descriptive statistics of the resource assays and preparation of sample length frequency histograms. Consideration was also given to the size of the blocks in the model.

Many of the sample lengths in the various mineralized wireframes were observed to be approximately one metre in length. Consequently, on the basis of the available information, the SLR QP is of the opinion that a composite length of one metre for all samples is reasonable. Resource assays were composited to a nominal one metre length, and composites less than 0.50 m (representing 3% of the total length) were discarded. The descriptive statistics of the composites are provided in Table 14-5.

Table 14-5: Composite Descriptive Statistics, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Parameter	RG01	RG02	RG03	RG06	RG07
Count	15,686	476	1,240	580	1,643
Minimum (g/t Au)	0.01	0.01	0.01	0.01	0.01
Maximum (g/t Au)	30.00	17.00	13.00	30.00	60.00
Mean (g/t Au)	2.31	2.47	1.31	1.97	5.14
Sample Variance	10.13	12.42	3.96	14.88	88.48
Standard Deviation	3.18	3.53	1.99	3.86	9.41
CV	1.38	1.43	1.52	1.96	1.83

14.2.7 Trend Analysis

14.2.7.1 Grade Contouring

As an aid in conducting variography studies of the continuity of the gold grades in the Roça Grande mineralized domain models, a short study to examine the overall trends was conducted. The gold grade thickness (GT) product was generated using Leapfrog and the results are presented in Figure 14-4 and Figure 14-5.

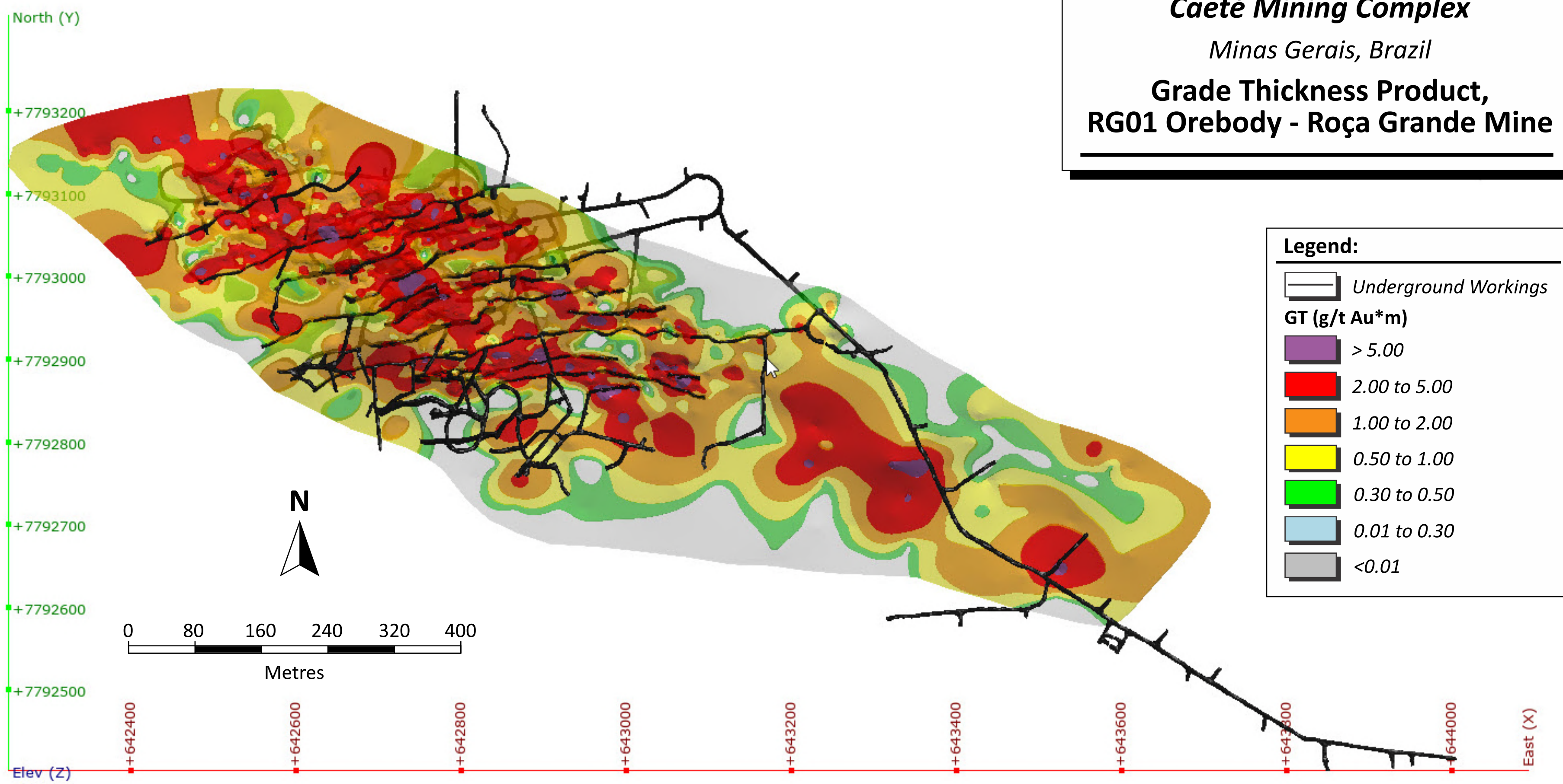
Figure 14-4

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Grade Thickness Product,
RG01 Orebody - Roça Grande Mine



March 2022

Source: SLR, 2022.

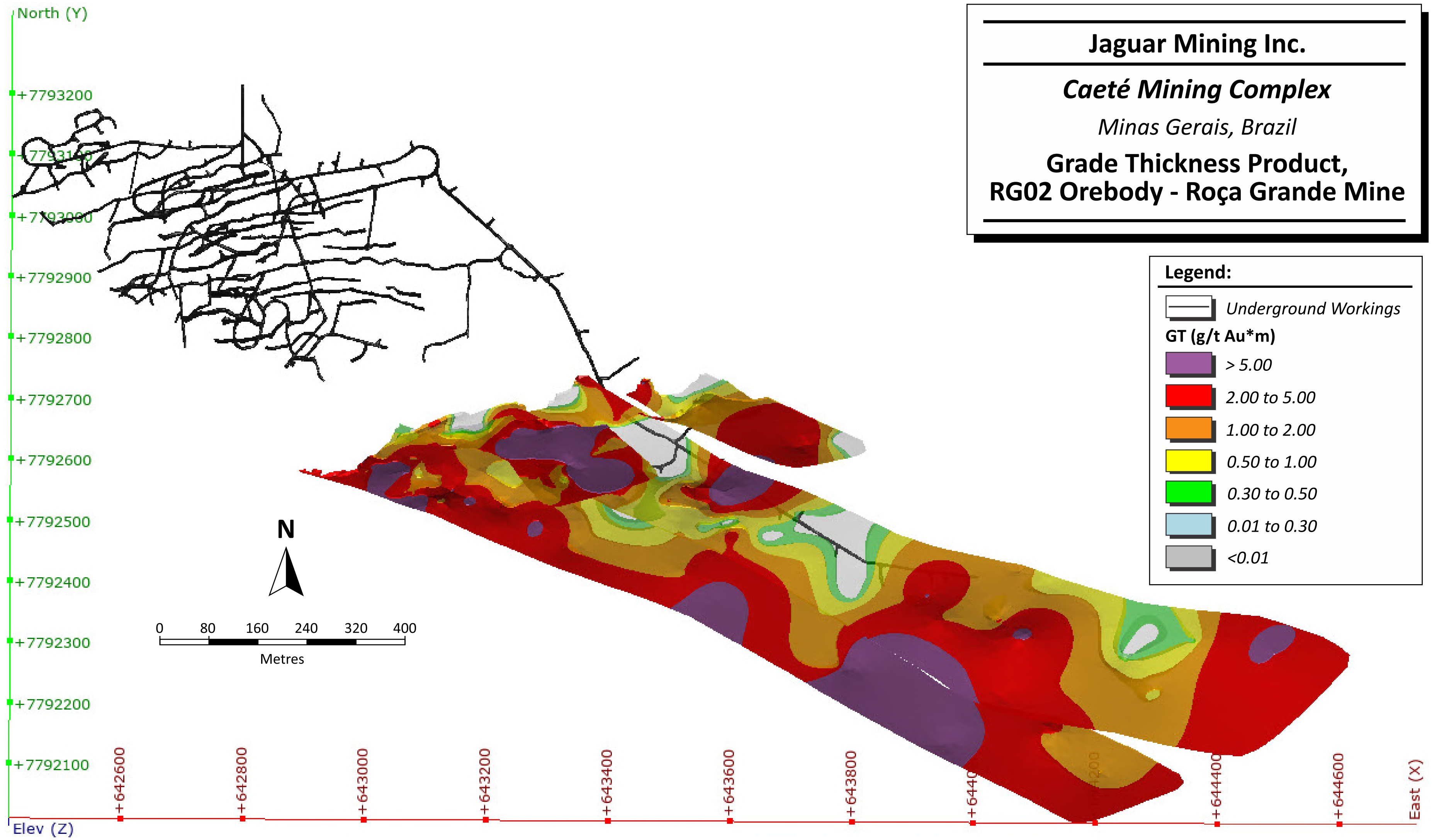
Figure 14-5

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Grade Thickness Product, RG02 Orebody - Roça Grande Mine



March 2022

Source: SLR, 2022.

As is demonstrated in Figure 14-4 and Figure 14-5, an overall down-plunge of the gold GT product is present for the RG01 and RG02 orebodies. The trends further along the down-plunge projection are not as well defined, as the density of drill hole and channel sample information is lower in these areas.

14.2.7.2 Variography

Jaguar began its analysis of the spatial continuity by constructing separate downhole and directional variograms using the composite data for each of the orebodies, with the objective of determining an appropriate value for the global nugget (C0). The analysis proceeded with the evaluation of any anisotropies that may be present in the data, which resulted in successful variograms with reasonably good model fits. The Datamine variography package was used to construct the variograms. A summary of the variogram parameters derived for each of the five orebodies is presented in Table 14-6. An example of a variogram for RG01 is presented in Figure 14-6.

Table 14-6: Summary of Variography and Interpolation Parameters, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Parameter	RG01	RG02	RG03	RG06	RG07
Nugget C0	0.48	0.48	0.45	0.27	0.59
Major Axis C1 Sill/ Range (m)	0.14/12	0.14/12	0.46/50	0.5/60	0.1/38
Major Axis C2 Sill/Range (m)	0.38/79	0.38/79	0.09/79	0.23/90	0.31/117
Model Type	Spherical	Spherical	Spherical	Spherical	Spherical
Orientation	110/-25/-30	110/-20/-40	110/-25/-40	130/-37/-40	115/-35/-30
Anisotropy Ratio (Major/Semi-Major)	2.93	2.64	3.95	1.50	5.85
Anisotropy Ratio (Major/Minor)	6.58	15.80	5.27	2.50	9.50
Minimum Number of Samples	3	3	3	3	3
Maximum Number of Samples	8	8	8	8	8
Max. No. of Samples per Hole	2	2	2	2	2
Max. No. of Samples per Quadrant	2	2	2	2	2
Search Ellipse Axis Ranges (m)					
Main	79	38	56	63	117
Secondary	27	30	20	60	20
Minor	12	5	15	24	4

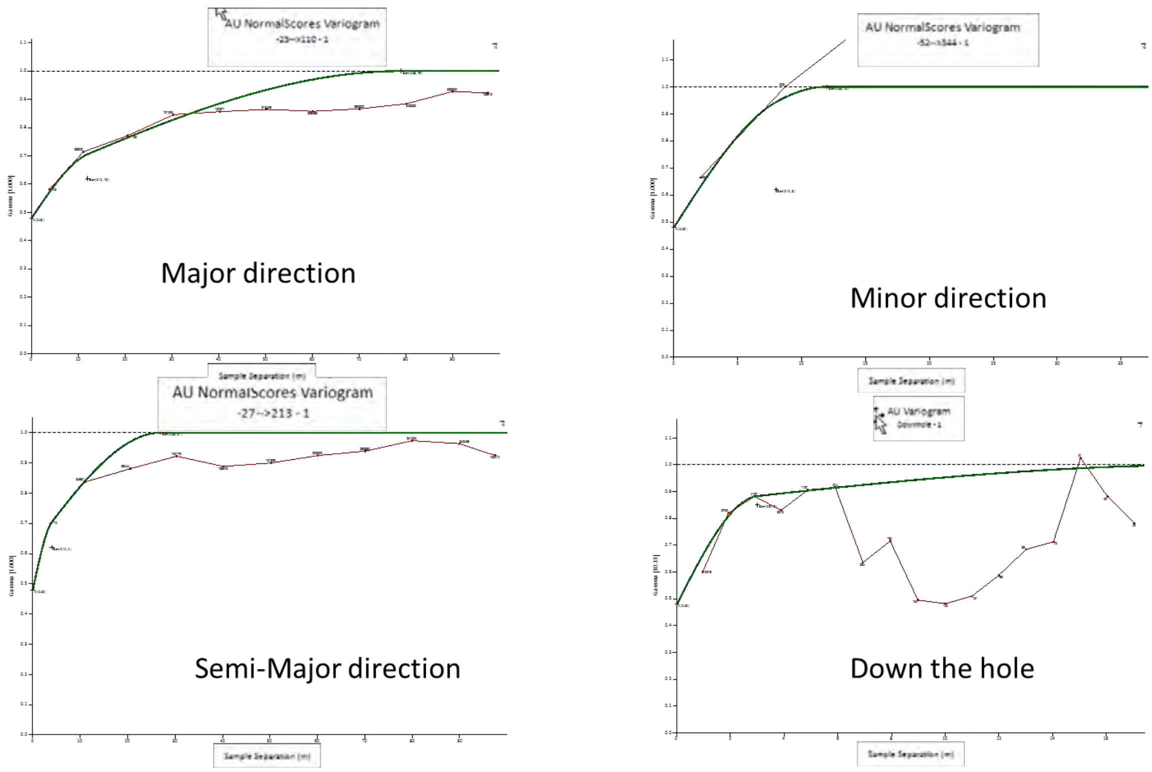


Figure 14-6: Variogram for RG01

14.2.8 Bulk Density

In 2015, Jaguar initiated a program of bulk density measurements on the various lithologies that are present at Roça Grande. Density measurements were made on representative samples of drill core from intervals of iron formation and quartz vein that are located within the mineralized wireframes, along with measurements carried out on samples of adjoining waste rock units. Density measurements were carried out at the Jaguar onsite laboratory located at Roça Grande using the water displacement method. A total of 261 density measurements were completed in 2015. A density of 2.00 t/m^3 was applied to all material located above the oxidized surface and a density of 2.25 t/m^3 was applied to all material located in the transition zone between the oxidized and fresh rock surfaces. A summary of the density values used in the Roça Grande block model is presented in Table 14-7.

Table 14-7: Summary of 2015 Density Measurements, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Weathering Zones	Iron Formation RG01, 2, 3, & 6 (t/m^3)	Quartz Vein RG07 (t/m^3)	Waste Rock (t/m^3)
Oxidation Zone Mean	2.00	2.00	2.00
Transition Zone Mean	2.25	2.25	2.25
Fresh Rock Mean	2.87	2.75	2.73

14.2.9 Block Model Construction

An unrotated sub-blocked model was constructed using Datamine, with parent cell sizes of 2 m x 2 m x 2 m, in the UTM Datum Córrego Alegre, Zone 23S grid coordinate system. The selection of the block size for this model was based upon the block sizes previously employed at Roça Grande. The Roça Grande block model origin, dimensions, and attribute list is provided in Table 14-8.

Table 14-8: Block Model Definition, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Type	Units	Northing (Y)	Easting (X)	Elevation (Z)
Minimum Coordinates	m	7,791,900	642,200	706
Maximum Coordinates	m	7,793,700	645,600	1,636
Number of Parent Blocks		1,700	900	465
Parent Block Size	m	2	2	2
Sub-Block Size	m	1	1	1
Rotation	°	0.0	0.0	0.0

14.2.10 Search Strategy and Grade Interpolation Parameters

Gold grades were estimated into the blocks by means of OK interpolation (Table 14-9). A total of three interpolation passes were carried out using distances derived from the variography results and search ellipse parameters presented in Table 14-9. For the first pass, search distances corresponded to full variogram ranges, for the second pass, the search distances were twice the variogram ranges, and during the third pass, search distances ten times the variogram ranges were employed in order to populate the entire block model and define exploration potential.

Table 14-9: Summary of Search Strategies, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Search Parameter	Pass #1	Pass #2	Pass #3
Minimum number of composites	3	3	2
Maximum number of composites	8	8	8
Maximum number of composites per drill hole	2	2	-
Ellipse Type	Quadrant	Quadrant	Quadrant
Minimum number of quadrants with samples	1	1	1
Maximum number of composites per quadrant	2	2	8

Hard boundaries were used to limit the use of composites between each domain and their respective wireframes, as each domain is comprised of multiple mineralized zones. Only data contained within the respective wireframe was used to estimate the grades of the blocks coded by that wireframe

Portions of the mineralized wireframes that extend beyond the Roça Grande property boundary were appropriately coded in the block model and omitted from the Mineral Resource statement.

14.2.11 Block Model Validation

Block model validation consisted of comparing the volume of the coded blocks in the block model against the volume report of the respective wireframe models as a high level check that the block model has been correctly coded for each of the wireframes. In general, the block model volumes compared well with the wireframe volumes for all domains.

A second validation exercise consisted of comparing the average grades from the capped composites against the average block model estimated gold grades as a comparison of the global average grades. In general, the block estimated mean grades compared well with the average of the capped composites for all domains with slightly higher averages in the block model except for the RG01 domain (Table 14-10). The SLR QP attributes this difference to the relatively small number of composites that are used to interpolate some of the sub-domains.

A third validation exercise consisted of comparing the mill production statistics with the predicted volumes of diluted and recovered tonnes and grade from the block model for the period of January 2014 to March 2015 (Table 14-11). The reconciliation results demonstrated that there was a reasonable correlation between the block model predicted tonnages and grades against the mill production statistics for the period examined.

Additionally, swath plots were used to compare the informing data with the estimated grades by OK. Samples of swath plots for the RG01 and RG02 domains are presented in Figure 14-7 and Figure 14-8.

Table 14-10: Block Model Validation Results, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Parameter	Units	RG01	RG02	RG03	RG06	RG07
			Block Model:			
Minimum	g/t Au	0.01	0.01	0.02	0.01	0.01
Maximum	g/t Au	17.36	14.68	9.46	19.53	54.51
Mean	g/t Au	1.65	3.12	1.44	2.36	6.80
			Capped Composites:			
Minimum	g/t Au	0.01	0.01	0.01	0.01	0.01
Maximum	g/t Au	30.00	17.00	13.00	30.00	60.00
Mean	g/t Au	2.31	2.47	1.31	1.97	5.14
Difference in Mean	%	-29	26	10	20	32

Table 14-11: Model to Mill Comparison, January 2014 to March 2015, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Month	MODEL			MILL		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2014						
January	16,407	2.25	1,186	14,916	2.29	1,096
February	11,007	2.26	801	12,030	3.16	1,223
March	12,390	1.59	632	14,155	2.17	988
April	16,426	1.74	920	15,563	1.88	942
May	10,079	1.56	506	12,032	2.19	846
June	14,624	2.18	1,027	12,617	2.50	1,015
July	15,416	2.15	1,063	14,702	2.74	1,295
August	15,045	2.12	1,024	14,174	2.59	1,180
September	17,511	2.28	1,284	15,589	2.40	1,203
October	14,650	2.01	948	16,296	2.41	1,263
November	14,182	1.90	867	14,857	2.30	1,097
December	11,566	1.64	611	15,043	2.24	1,083
Total - 2014	169,303	2.00	10,868	171,975	2.39	13,231
2015						
January	10,293	1.59	527	11,426	2.12	778
February	11,676	2.29	859	12,755	2.19	897
March	11,111	2.02	721	11,742	2.41	909
Total - 2015	33,080	1.98	2,106	35,923	2.24	2,585

Period	Variance			Factors		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2014	+2,672	+0.39	+2,363	1.02	1.12	1.22
M-T-D 2015	+2,843	+0.26	+479	1.09	1.13	1.23

Note:

1. Numbers may not add due to rounding.

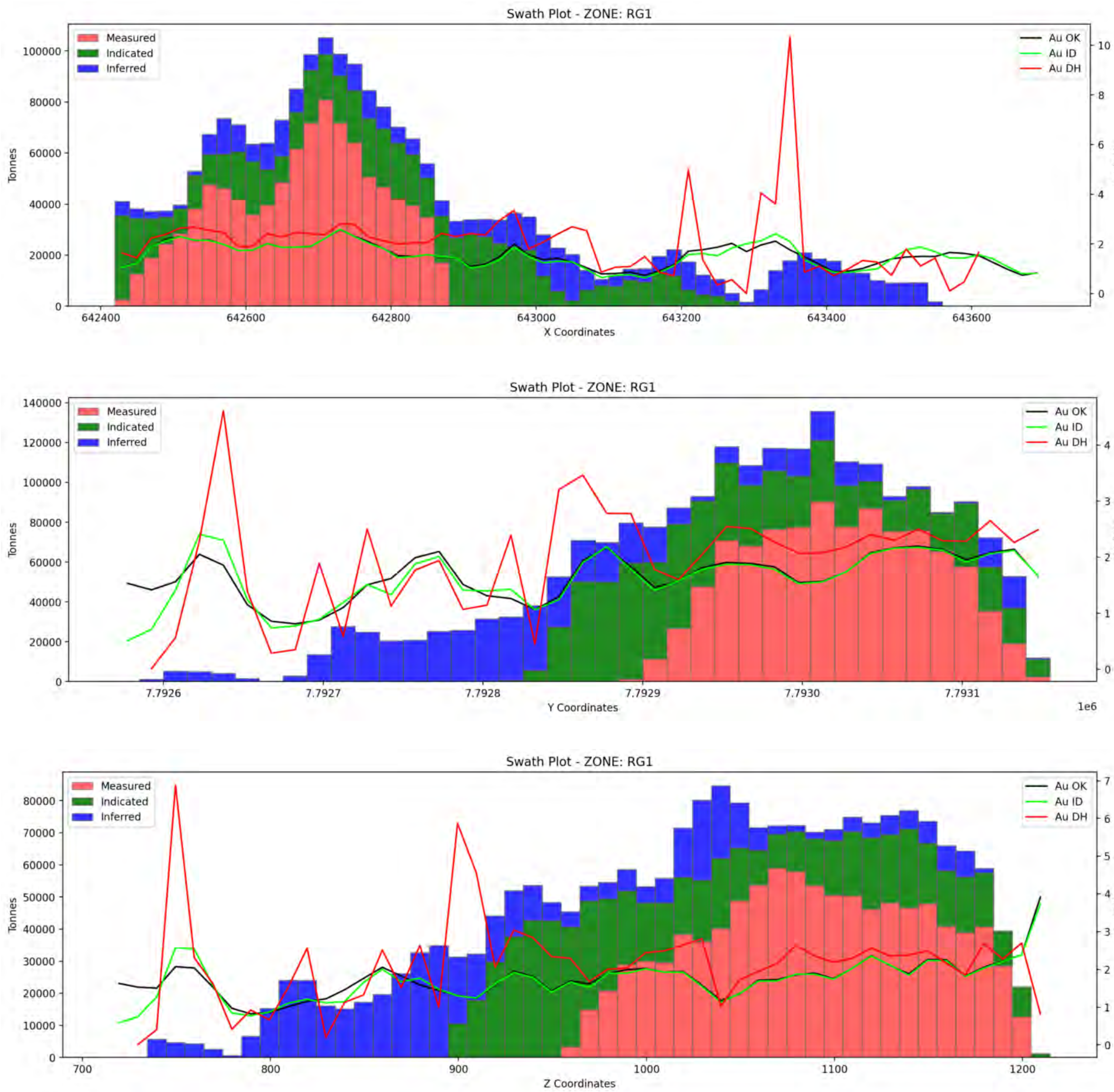


Figure 14-7: Swath Plots for RG01 Orebody

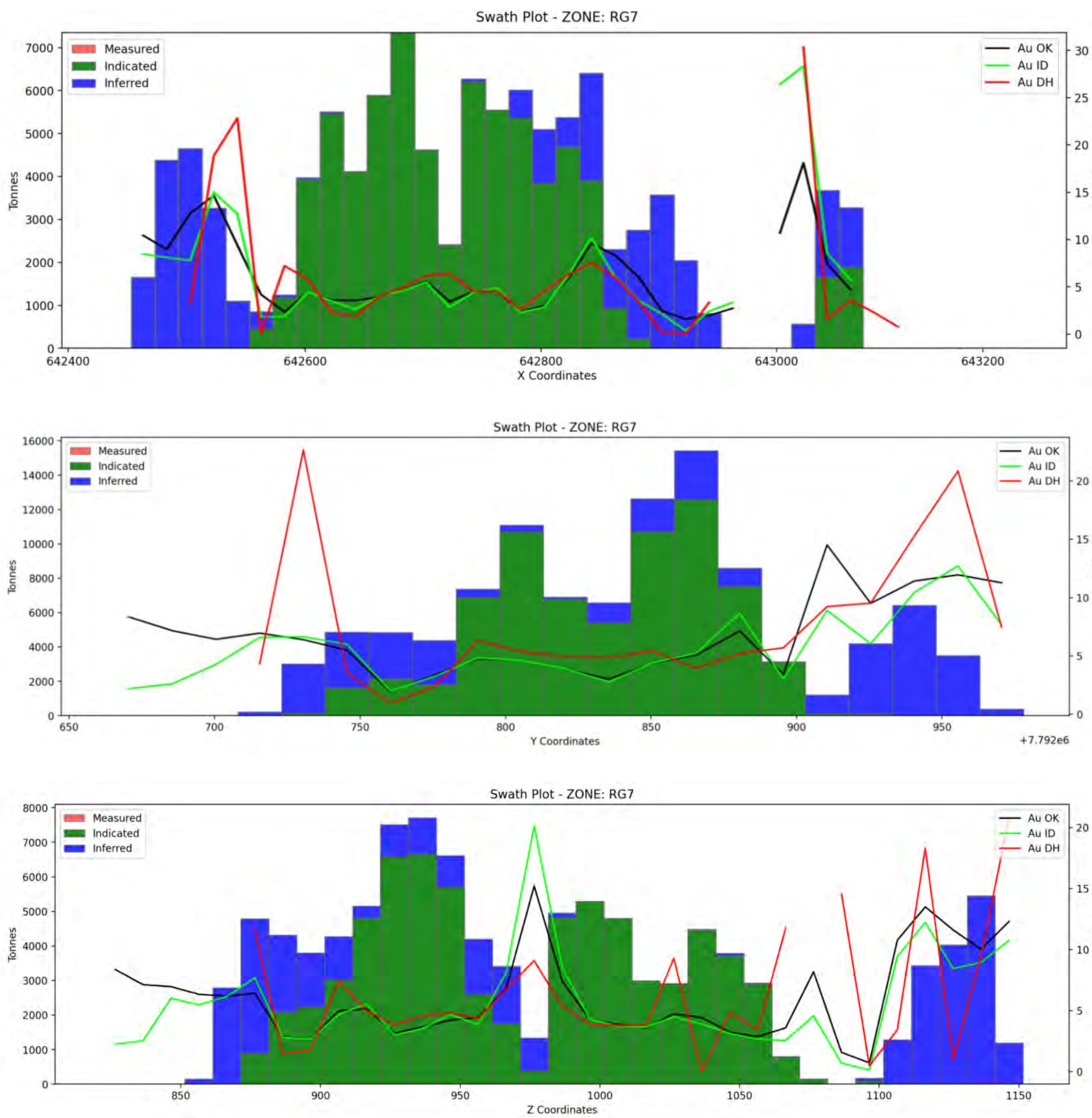


Figure 14-8: Swath Plots for RG07 Orebody

14.2.12 Mineral Resource Classification

Definitions for resource categories used in this Technical Report are consistent with CIM (2014) definitions.

Mineralized material for each Roça Grande wireframe was initially classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, demonstrated continuity of the gold mineralization, density of drill hole and chip sample information, and presence of underground access.

Measured Mineral Resources comprise material within the RG01 domain that is located between developed levels and that has been estimated using Pass #1. Indicated Mineral Resources comprise material that has been estimated using Pass #1 and demonstrated good continuity of mineralization. Inferred Mineral Resources comprise material that has been estimated using Pass #2. The initial classification step produced areas in the classification matrix where the classifications were not consistent and contiguous. Consequently, clipping polygons were used in a final stage of the process to edit the initial classification assignments to ensure continuity and consistency of the final classified blocks in the model. Jaguar employs an additional block model code to denote areas considered to display good exploration potential for use in the decision process. These areas are used for exploration purposes only.

14.2.13 Cut-Off Grade

Metal prices used for Mineral Reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources. For Mineral Resources, metal prices used may be slightly higher than those for Mineral Reserves. A cut-off grade of 1.80 g/t Au was used for reporting the Roça Grande Mineral Resources. This cut-off grade was calculated using a gold price of US$1,800/oz Au, an average gold recovery of 87%, average exchange rate of R$5.50 : US$1.00, and actual cost data for Roça Grande.

14.2.14 Mineral Resource Reporting

There are no Mineral Reserves present at Roça Grande for the current reporting period. The Mineral Resource reports were prepared using underground resource reporting shapes that were generated using a cut-off value of 1.80 g/t Au.

The Roça Grande Mineral Resources are presented in Table 14-12, while plan views of the Mineral Resources for the RG01 and RG02 domains are presented in Figure 14-9 and Figure 14-10, respectively.

Table 14-12: Summary of Mineral Resources as of December 31, 2021, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Measured	197	3.42	22
Indicated	765	4.02	99
Total M+I	962	3.90	121
Inferred	889	4.08	117

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported within underground resource reporting shapes, which were generated using a cut-off grade of 1.80 g/t Au.
3. Mineral Resources are estimated using a long term gold price of US$1,800/oz Au and an average long term foreign exchange rate of R$5.50 : US$1.00.
4. A minimum mining width of two metres was used.
5. Bulk densities of 2.00 t/m^3 and 2.25 t/m^3 were assigned to Roça Grande oxide and transition and fresh material, respectively, 2.87 t/m^3 for RG01, RG02, RG03, and RG06 fresh material and 2.75 t/m^3 for RG07 fresh material.
6. Gold grades are estimated using OK interpolation.
7. Mineral Resources are reported after depletion for past open pit and underground mining.
8. No Mineral Reserves are currently present at Roça Grande.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

The SLR QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Roça Grande Mineral Resource estimate.

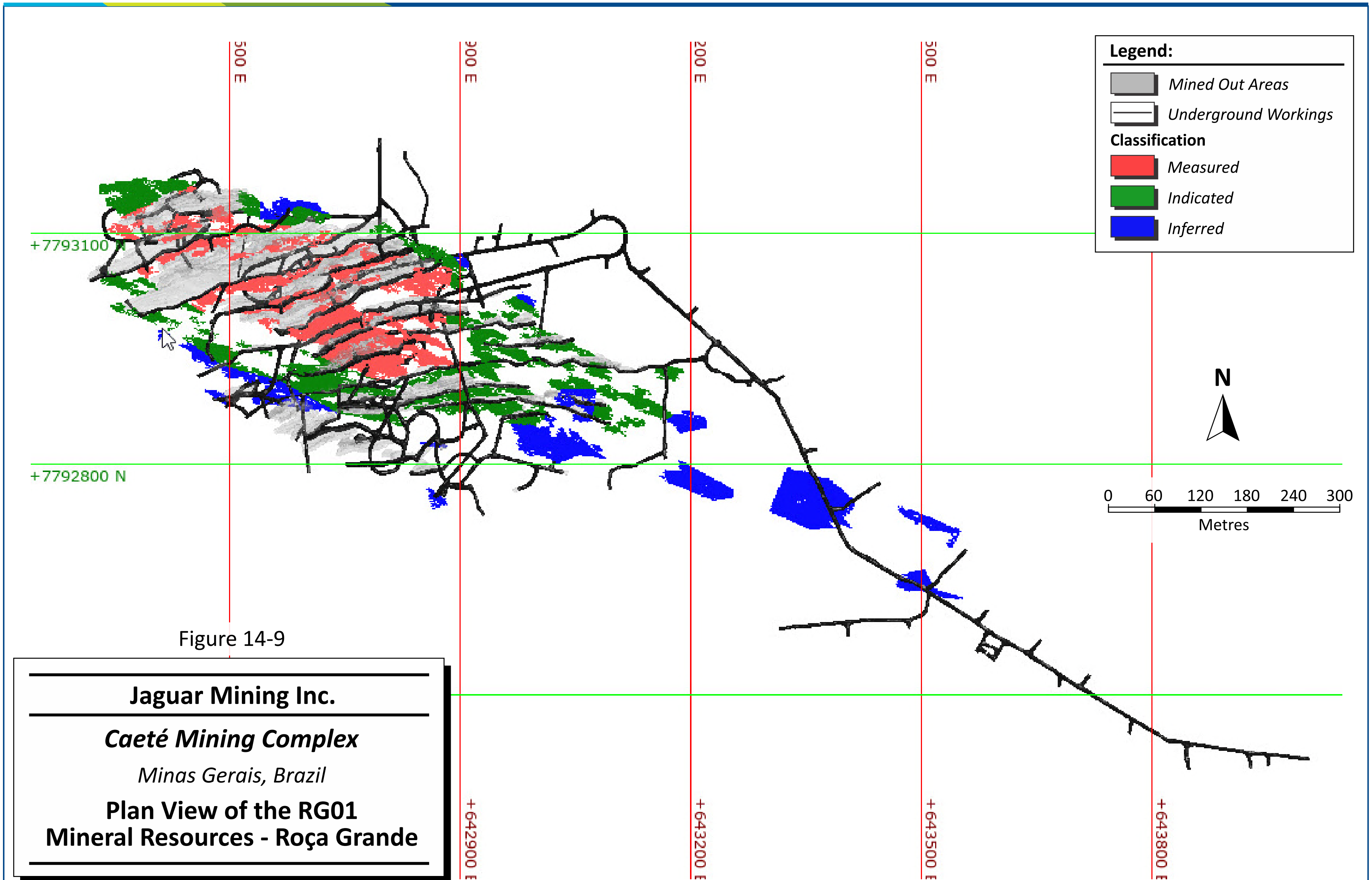


Figure 14-9

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Plan View of the RG01 Mineral Resources - Roça Grande

March 2022

Source: SLR, 2022.

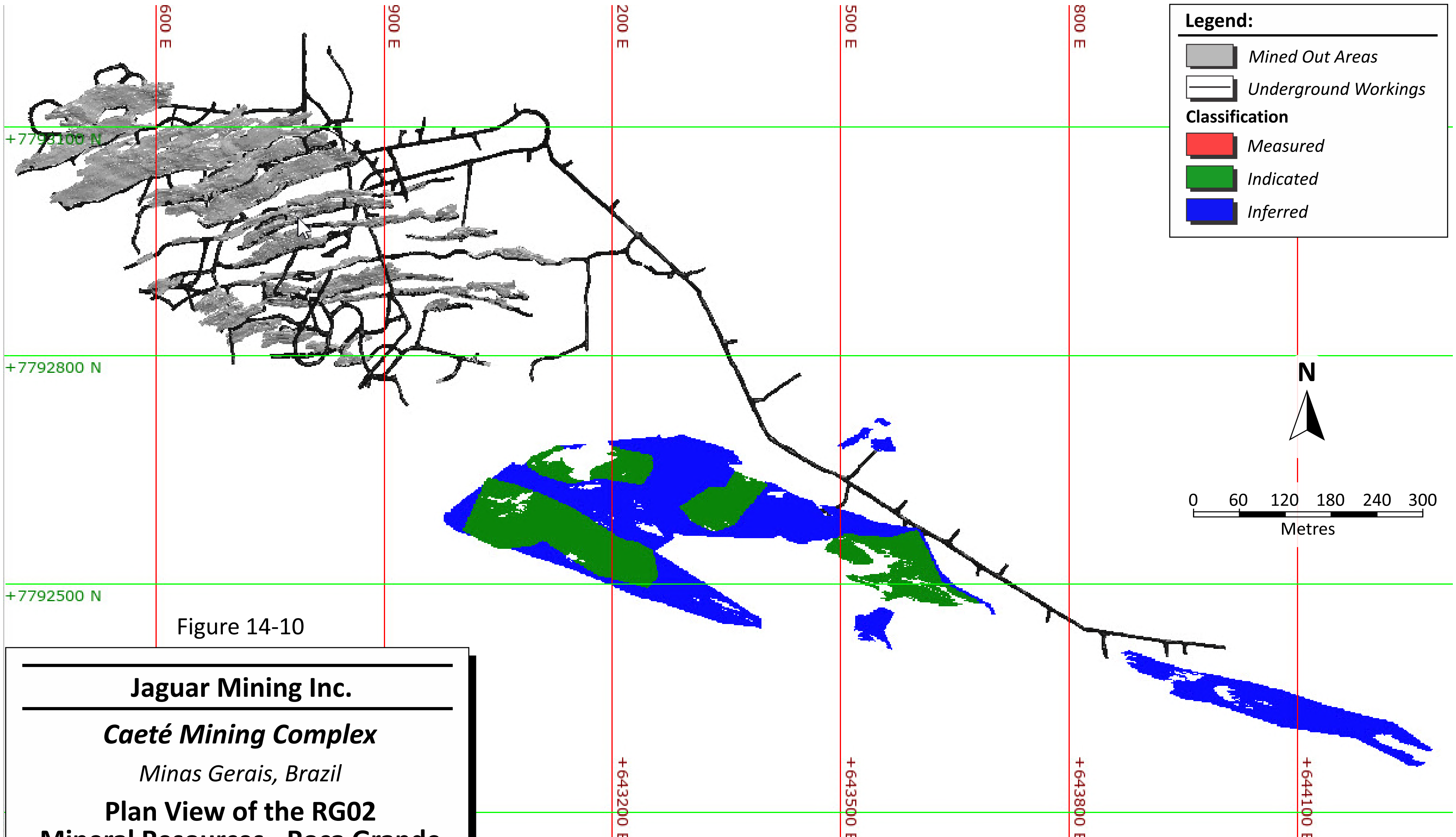


Figure 14-10

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Plan View of the RG02 Mineral Resources - Roça Grande

March 2022

Source: SLR, 2022.

14.3 Pilar Mine

14.3.1 Resource Database

Current Pilar drilling and sampling practices involve the initial delineation of the various mineralized zones using surface and underground drill holes at a nominal spacing of 25 m to 50 m. Underground drilling is used to delineate the down-plunge projection of the Pilar mineralization. As development of the underground access progresses, a series of channel samples are collected in two locales (one set on the face and one set along the back) for each round. The average channel sample spacing along development drifts is five metres (Figure 14-11).

Jaguar maintains an internal database using the MX_Deposit database software package provided by the Geosoft group to store and manage all the digital information for all of its operations. The internal databases were previously maintained using the BDI software package. The Pilar drill hole database contains drill hole and channel sample information that is coded according to the following conventions:

- AUGER & ACU Auger holes (Open pit mine)
- CN Channel samples
- FP Reverse circulation drill holes
- FSB In-fill and definition drill holes
- GSW SW orebody drift drill holes
- PILF Surface based exploration drill holes (prior owners)
- PMS Surface based exploration drill holes (completed by Jaguar)
- PPL Exploration and in-fill drill holes (underground)
- RC Reverse circulation drill holes
- SBF Face channel samples
- SBJ Jumbo drill holes

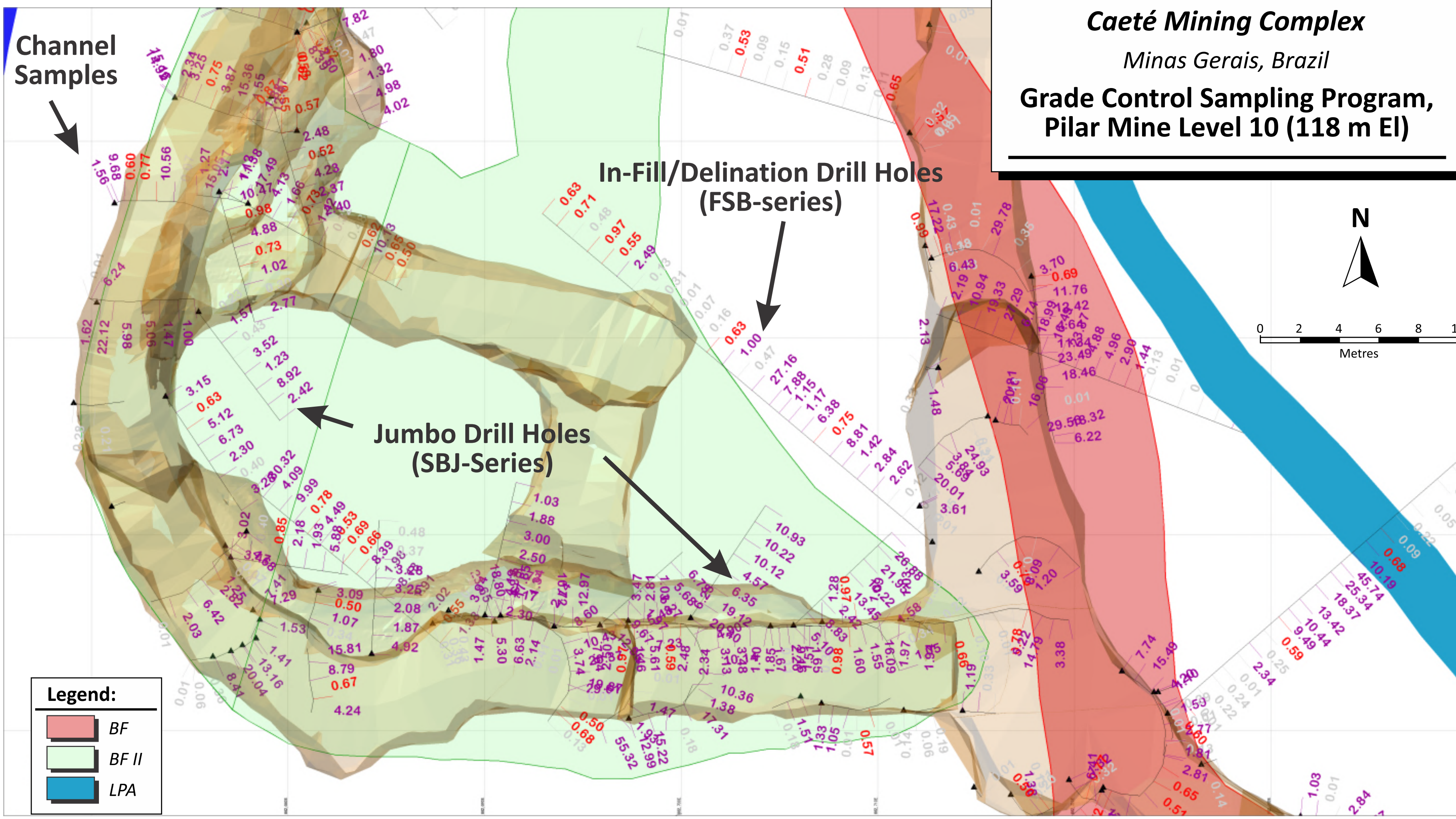
Figure 14-11

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Grade Control Sampling Program, Pilar Mine Level 10 (118 m El)



March 2022

Source: SLR, 2022.

Pilar drill hole and channel sample information was extracted from the internal database into separate files for use in the preparation of the Pilar Mineral Resource estimate. This drill hole information was modified slightly so as to be compatible with the format requirements of MinePlan 3D and was imported into that software package by Jaguar. A number of new tables and variables were created during the estimation process to capture such information as the intersection information between the drill holes and the wireframe models, density readings, capped assay values, and composite values.

The cut-off date for the assays in the drill hole database is December 31, 2021. Drilling and sampling were carried out using the UTM Datum Córrego Alegre, Zone 23S grid coordinate system.

The SLR QP recommends that future Pilar Mineral Resource estimates be carried out using a drill hole database cut-off date of September 30 of the reporting year so as to allow adequate time to complete the estimation workflow.

A summary of the drilling and channel sampling information is provided in Table 14-13 while a comparison to the database used to prepare the previous Pilar Mineral Resource estimate is presented in Table 14-14. The locations of the recently completed drill holes and channel samples are presented in Figure 10-2.

Table 14-13: Description of the Pilar Mine Database as of December 31, 2021
Jaguar Mining Inc. – Caeté Mining Complex

Data Type	Number of Records
Collars (2,564 drill holes and 25,377 chip/channel samples)	27,941
Survey	158,269
Lithology	128,939
Assays	232,515
Composites (within wireframe boundaries)	69,607
Weathering Code	87,523
Density (Inside wireframes: 1,533, Waste: 3,198)	4,731

Table 14-14: Comparison of Drill Hole Databases, May 19, 2020 versus December 31, 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Item	Count as at May 19, 2020	Count of Newly Collected Data	Count as at December 31, 2021
Drill Holes (DH)	1,941	623	2,564
FSB-series	-	130	-
PPL-series	-	218	-
SBJ-series	-	275	-
Channel Samples (CH)	22,716	2,661	25,377
SBF/SBG-series	-	1,743	-
SBL-series	-	20	-
Other	-	898	-
Total, DH + CH	24657	3,284	27,941

The database included a number of assay records representing intervals of no sampling, lost core, lost sample, or no core recovery, some of which are contained within the mineralized wireframes. Depending upon the specific local conditions, these unsampled intervals can introduce an undesired positive bias upon the grade estimations. Jaguar therefore elected to pursue a conservative approach by inserting a very low gold value of 0.01 g/t Au for these intervals of null values.

The SLR QP recommends that a resampling program be undertaken for those unsampled intervals located within the mineralized wireframe boundaries if sufficient drill core or rejects are available.

Detailed review by the onsite geologists of the drill hole database revealed the presence of a number of older drill holes for which the collar, deviation, or downhole distances presented a poor correlation with the body of the surrounding drill hole and channel sample information or with newly acquired information. These drill holes and channel samples were identified by a unique flag code (Flag = 0 or 2) in the assay and composite tables and were not used in either preparation of the mineralization wireframes or estimation of the block gold grades. The assay table was also coded in such a manner that the jumbo drill holes (SBJ-series) were not used in the estimation process as the quality of the sample material has been deemed to be unreliable for use in estimation of the Mineral Resources.

A summary of the excluded drill holes and channel samples is presented in Table 14-15.

Table 14-15: Summary of Drill Holes Excluded from Estimation, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Drill Hole Series	Number Excluded (Flag=0 or 2)	Number Retained for Estimation (Flag=1)
CN	5	25,377
FSB	145	753
GSW	13	5
PILF	53	5
PMS	25	70
PPL	104	727
SBJ	597	-
Total	942	26,937

The SLR QP recommends that Jaguar continue to correct the erroneous or anomalous information (not used in the estimation of Mineral Resources) for older drill holes that are located in the as-yet unmined portions of the Pilar deposit. For suspect drill holes for which remedial corrections are not possible, the SLR QP recommends that the holes be transferred from the active database into a database that is dedicated specifically for these suspect records.

The SLR QP notes that Jaguar's understanding of the host stratigraphy, structural setting, and controls on the gold mineralization at Pilar is increasing with time. This understanding permits an increased degree of success when designing exploration and in-fill drilling programs. The drilling and sampling protocols employed by Jaguar permit the identification and delineation of the mineralized areas with confidence. Drilling and sampling practices are carried out to an acceptable standard. The SLR QP is of the opinion that the drill hole and sampling database is suitable for use in preparation of Mineral Resource estimates.

14.3.2 Geological and Mineralization Interpretations

The Pilar geological team has initiated a mine site program of detailed lithological, mineralization, and structural mapping, the goal of which is to improve the understanding of the nature and distribution of the main lithological units, mineralization, and structures, and their relationship to the Pilar mineralization. This program has been successful in demonstrating that the Pilar gold mineralization is hosted in a variety of host rock types such as BIF (e.g., BA, BF, BF II, and BF III deposits), mafic metavolcanics (LFW deposit), and mafic/ultramafic metavolcanics (e.g., Torre deposit). While the Pilar host rocks have all been affected by an amphibolite grade metamorphic event, the textures observed in the mineralized zones suggest that the gold mineralization has not been subjected to amphibolite grade metamorphism and thus represents a younger event.

The SLR QP is of the opinion that the geological work carried out for the Torre mineralized zone has demonstrated that material quantities of potentially economic mineralization can be hosted by lithologies other than the BIFs at Pilar. As past exploration activities have been largely focussed on evaluating the gold bearing potential of the BIF units, the SLR QP is of the opinion that the potential for the remaining host rocks has been under-evaluated. The SLR QP recommends that Jaguar evaluate the gold bearing potential of the mafic metavolcanic and the ultramafic metavolcanic units within Pilar. A detailed understanding of the paragenetic history of the various phases of gold mineralization will be key in this undertaking.

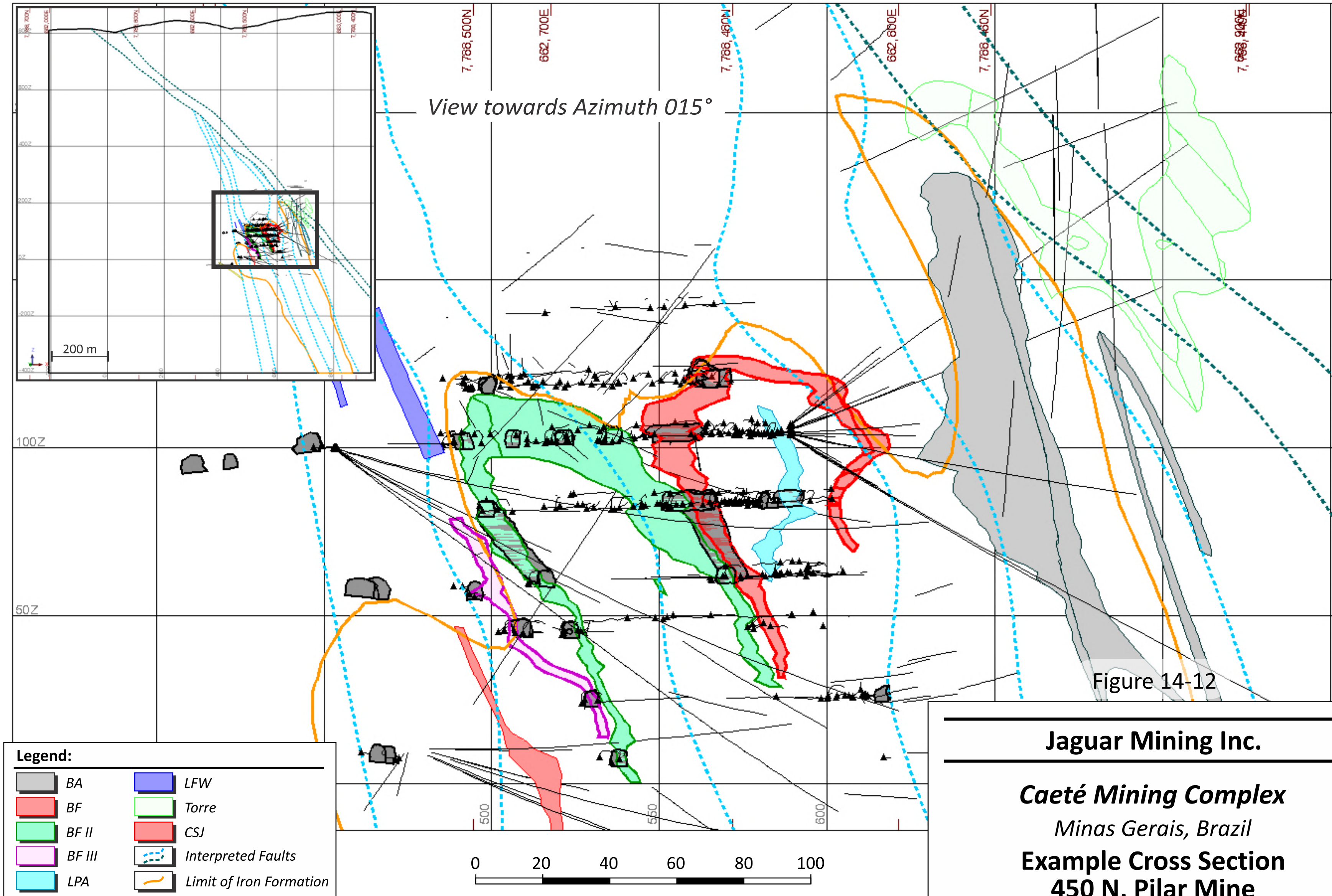
The mapping programs have clearly demonstrated that the entire stratigraphic sequence and gold mineralized zones have been affected by a period of west-northwest to east-southeast compression (deforming event 1 (D1)) that has transposed all of the host rocks and mineralized zones into a series of broad, open folds at surface, to a series of compact, tightly folded structural slices at depth.

The observation that the gold bearing zones have been affected by this D1 folding event presents clear evidence that the gold mineralizing event took place prior to this deformation event. The observation that some of the mineralized zones (e.g., the LPA deposit) are approximately parallel to the D1 axial plane orientation suggests that a second gold mineralizing event may have occurred. All host rocks and mineralized zones are affected by a series of late-stage reverse faults.

A series of 3D wireframe models were constructed for the various mineralized domains in either MinePlan 3D or LeapFrog using all relevant geology information and assay values from surface and underground drill holes, channel sample data, and geological and structural information collected from geological mapping activities, as available. Mineralized wireframes created using MinePlan 3D were prepared from digital interpretations that were prepared in plan view at two metre intervals for the domains affected by the D1 folding event. Mineralized wireframes created using Leapfrog were created using the vein modelling tool to create fully rendered volumes in 3D. The pre-existing lithological and structural models were used as guides for creating the updated mineralization wireframes (Figure 14-12).

The SLR QP recommends that the lithologic and structural models be updated to reflect the current information and level of understanding of the nature of the folding and faulting of the Pilar host rock units.

A series of hanging wall and footwall surfaces were used for those domains that are less affected by the D1 folding event and exhibit more tabular forms. A total of 11 mineralized domains have been modelled using a nominal cut-off grade of 0.5 g/t Au across a nominal minimum width of two metres (Figure 14-13).



March 2022

Source: SLR, 2022.

Figure 14-12

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Example Cross Section 450 N, Pilar Mine

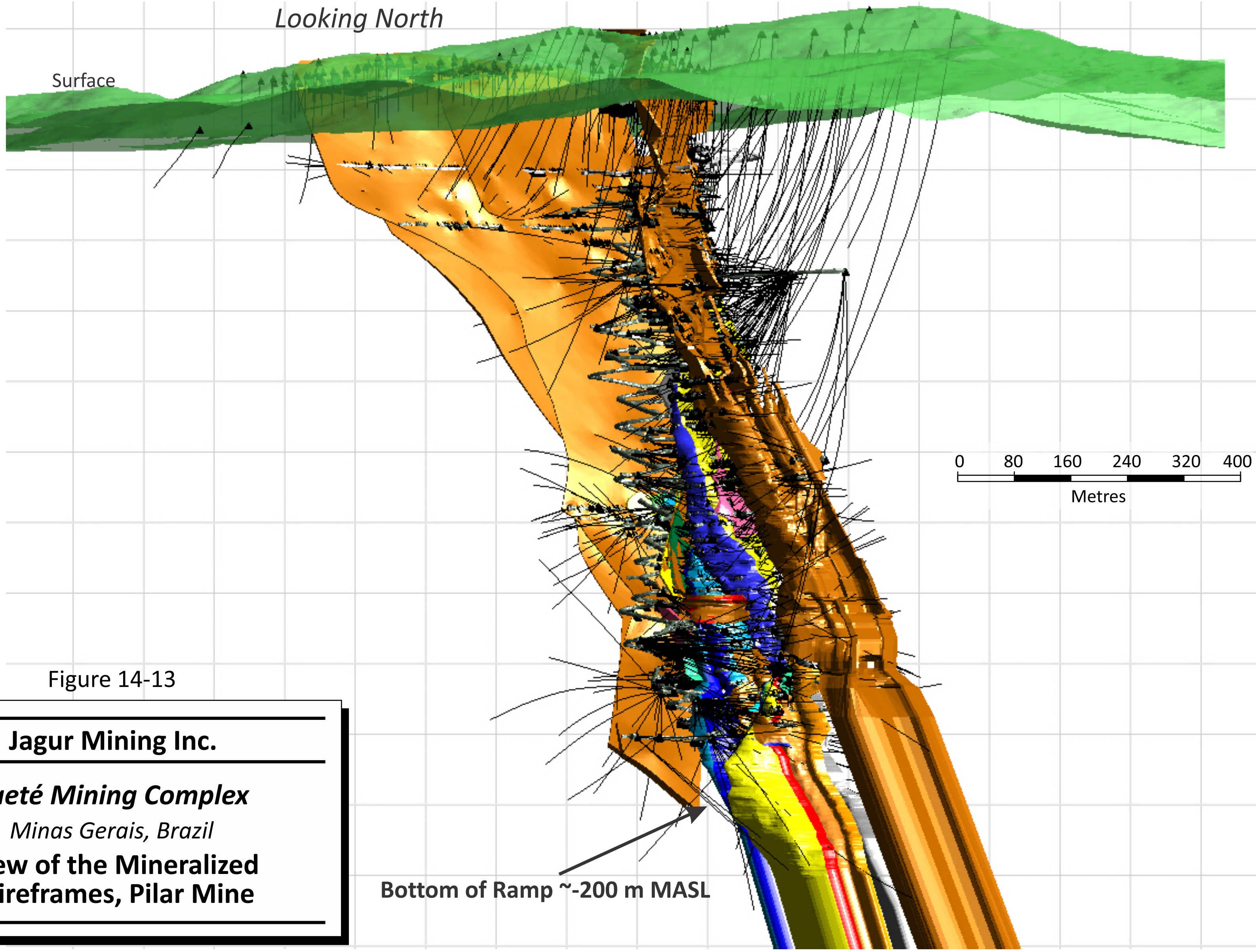


Figure 14-13

Jagur Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

View of the Mineralized Wireframes, Pilar Mine

March 2022

Source: SLR, 2022.

These mineralized wireframes reflect the current understanding of the spatial distribution and structural controls on gold mineralization. The Pilar gold mineralization has been traced by drilling and channel sampling from surface (approximately 800 MASL) to approximately -250 MASL, a distance of approximately one kilometre.

All of the mineralized lenses, with the exception of the SW orebody, are located to the east of the São Jorge fault. Generally, the mineralized lenses are sub-parallel to each other, have an average strike of 015° to 030° at surface, and dip steeply to the east with an average dip of 65°. Available drill hole information suggests that the dip of the mineralized zones remains relatively constant, however, the strike of the domains gradually rotates through a northerly to north-northwesterly orientation with increasing depth. Current information indicates that many of the mineralized domains are folded to varying degrees into open to isoclinal folds with fold axes that plunge at approximately -40° to the southwest (approximately azimuth 210° to 225°). Some of the mineralized zones (LFW and the SW orebody) are interpreted to be more tabular in form. The LPA zone resides in the axial plane of the folded BF zone and thus provides evidence for multiple ages of gold mineralization. Newly acquired drill hole information indicates that the orientation of the mineralization in the BF II domain and in the lower extensions of the Torre domain rotates into a more southwesterly orientation with increasing depth, suggesting the possibility of a second deforming event (D2).

Each of the domains were subdivided into a series of integer codes that were created in order to enable the use of soft boundaries for grade estimation in the block model (Table 14-16). Of the 11 domains, BA, BF, and BF II account for a significant portion of the remaining Pilar Mineral Resources.

Table 14-16: Description of the Mineralized Domains, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Domain	Block Model Codes (ROCK)
BA (110)	111 to 116
BF (120)	121 to 127
BF II (130)	131, 132, 133, 136, and 137
BF III (140)	141, 142, and 143
LFW	201 to 215 700 to 704
LPA	301 to 305
LHW	401 to 403
Torre	501 to 506
SW Orebody	601 to 605
CSJ	801

The SLR QP recommends that the cut-off grade strategy used for the preparation of the mineralization wireframes be amended to better reflect the potentially economic in situ gold grades. At a minimum, the mineralization wireframes should be created using a cut-off grade closer to the reporting cut-off grade. By adopting this strategy it is anticipated that a lower number of below cut-off grade composite samples will be used in the estimation of the block gold grades, which will result in less dilution being included in the Pilar Mineral Resource estimate.

14.3.3 Topography and Excavation Models

A topographic surface of the Pilar area, current as of May 2015, was used to code the block model. The topographic map includes two open pit mines that are now depleted. A wireframe model of the completed underground excavations (development and stopes) as of December 31, 2021, was prepared and used to code the block model for the portions of the mineralized zones that have been mined out.

Pilar mineralization is accessed via a ramp with a collar elevation at approximately 750 MASL. As of December 31, 2021, the bottom of the ramp was at an elevation of approximately -200 MASL. There are two mining methods currently in use, longitudinal sublevel open stoping (SLOS) and mechanical cut and fill. Mechanical cut and fill mining is used when ore geometry does not favour SLOS. In all, 16 levels have been developed to access the various mineralized zones (Table 14-17).

Table 14-17: Description of the Pilar Mine Levels
Jaguar Mining Inc. – Caeté Mining Complex

Level	Bottom Elevation (MASL)
1	690.5
2	615.2
3	544
4	485
5	417.3
6	330.5
7	263.5
8	220.3
9	168.6
10	114.7
11	59
12	4
13	-52
14	-109
15	-167
16	-224
17 (planned)	-282
18 (planned)	-339
19 (planned)	-397

14.3.4 Resource Assays

Mineralization wireframe models were used to code the drill hole database and identify the raw assay samples, or resource assays, that are contained within the mineralized wireframes. These samples were extracted from the database into their respective domains, and then subjected to statistical analyses by means of histograms, probability plots, and decile analyses. A total of 73,059 samples were contained within the mineralized wireframes. The resource assay sample statistics and the selected capping values are summarized in Table 14-18. Selected histograms are presented in Figure 14-14 to Figure 14-16.

Table 14-18: Resource Assay Descriptive Statistics, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Item	BA		BF		BF II		BF III	
	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap
Length-Weighted Mean (g/t Au)	2.95	2.93	3.19	3.16	4.40	4.69	2.26	2.20
Median (g/t Au)	0.92	0.92	1.03	1.03	1.67	1.67	1.24	1.24
Mode (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation (g/t Au)	7.13	6.64	7.57	7.19	8.25	7.40	8.49	7.09
CV	2.42	2.27	2.37	2.27	1.87	1.72	3.75	3.22
Sample Variance	51.0	44.2	57.3	51.7	68.0	54.7	72.2	50.2
Minimum (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Maximum (g/t Au)	276.17	60.00	197.5	60.00	158.33	45.00	133.38	45.00
Count	17,553	17,553	19,113	19,113	14,344	14,344	1,233	1,233
Capping Value (g/t Au)		60		60		45		45

Item	LFW		LPA		LHW		Torre	
	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap
Length-Weighted Mean (g/t Au)	1.03	0.96	3.66	3.46	1.44	1.37	1.14	1.11
Median (g/t Au)	0.81	0.81	1.36	1.36	0.77	0.77	0.62	0.62
Mode (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation (g/t Au)	4.85	3.01	8.04	6.98	4.61	3.04	5.80	5.01
CV	4.70	3.13	2.20	1.96	3.20	2.20	5.09	4.53
Sample Variance	23.6	9.06	64.7	48.7	21.2	9.2	33.7	25.1
Minimum (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Maximum (g/t Au)	131.99	20.00	171.16	50.00	116.00	20.00	128.33	40.00
Count	3,985	3,985	4,995	4,995	1,633	1,633	5,592	5,595
Capping Value (g/t Au)		20		50		20		40

Item	SW		São Jorge2	
	Au Raw	Au Cap	Au Raw	Au Cap
Length-Weighted Mean (g/t Au)	1.01	1.00	1.70	1.59
Median (g/t Au)	0.39	0.39	0.56	0.56
Mode (g/t Au)	0.01	0.01	0.03	0.03
Standard Deviation (g/t Au)	4.61	4.28	2.87	2.28
CV	4.55	4.26	1.68	1.44
Sample Variance	21.2	18.3	8.2	5.2
Minimum (g/t Au)	0.01	0.01	0.01	0.01
Maximum (g/t Au)	106.00	40.00	18.73	10.00
Count	4,440	4,440	171	174
Capping Value (g/t Au)		40		10

Note:

1. Capping values for the BF III domain are preliminary.
2. Capping values for the São Jorge domain are preliminary.

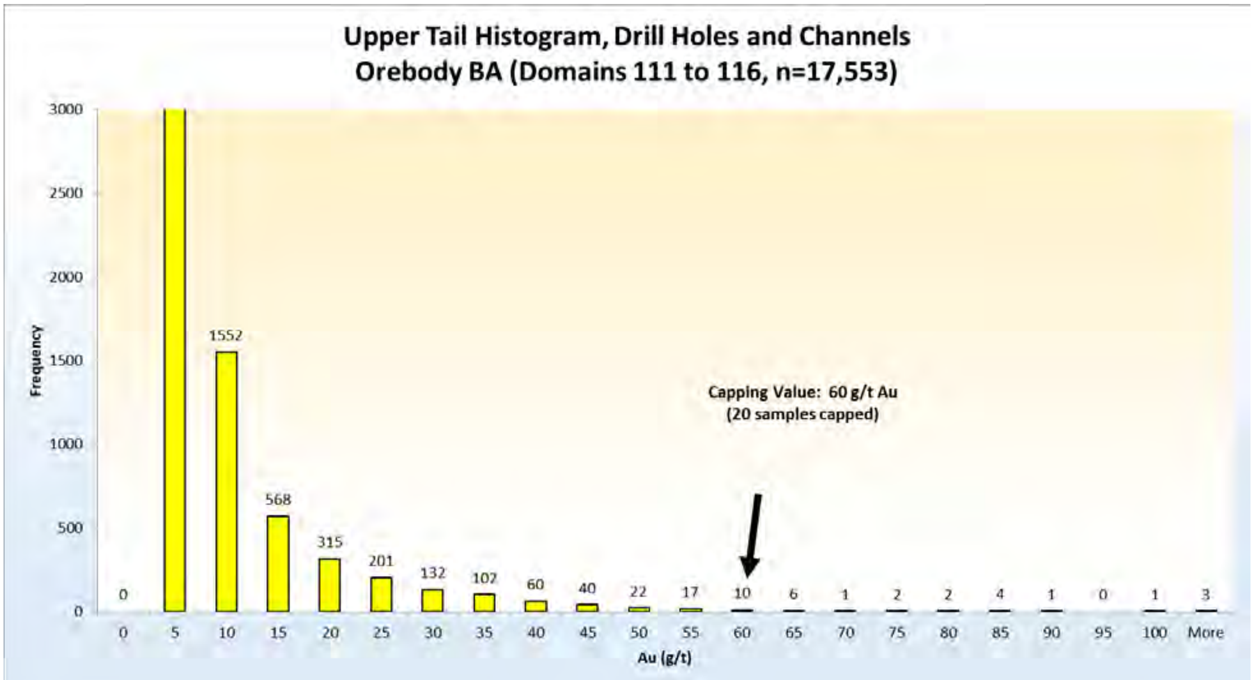


Figure 14-14: Orebody BA Resource Assay Frequency Histogram

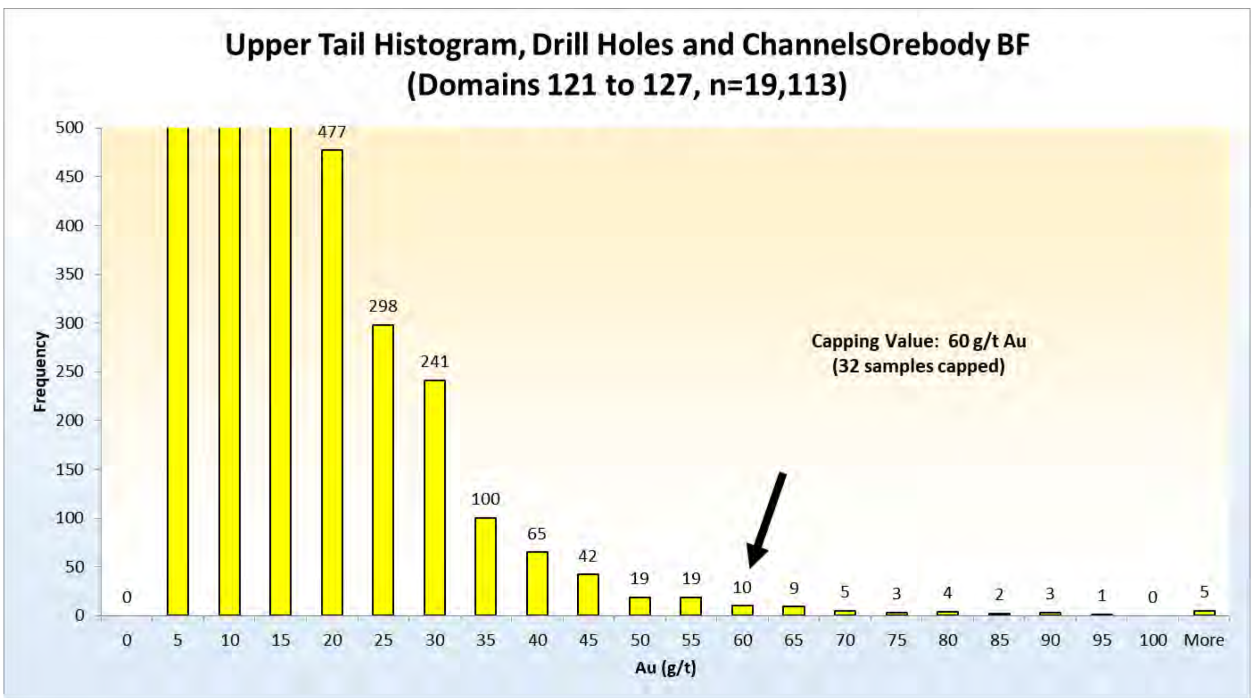


Figure 14-15: Orebody BF Resource Assay Frequency Histogram

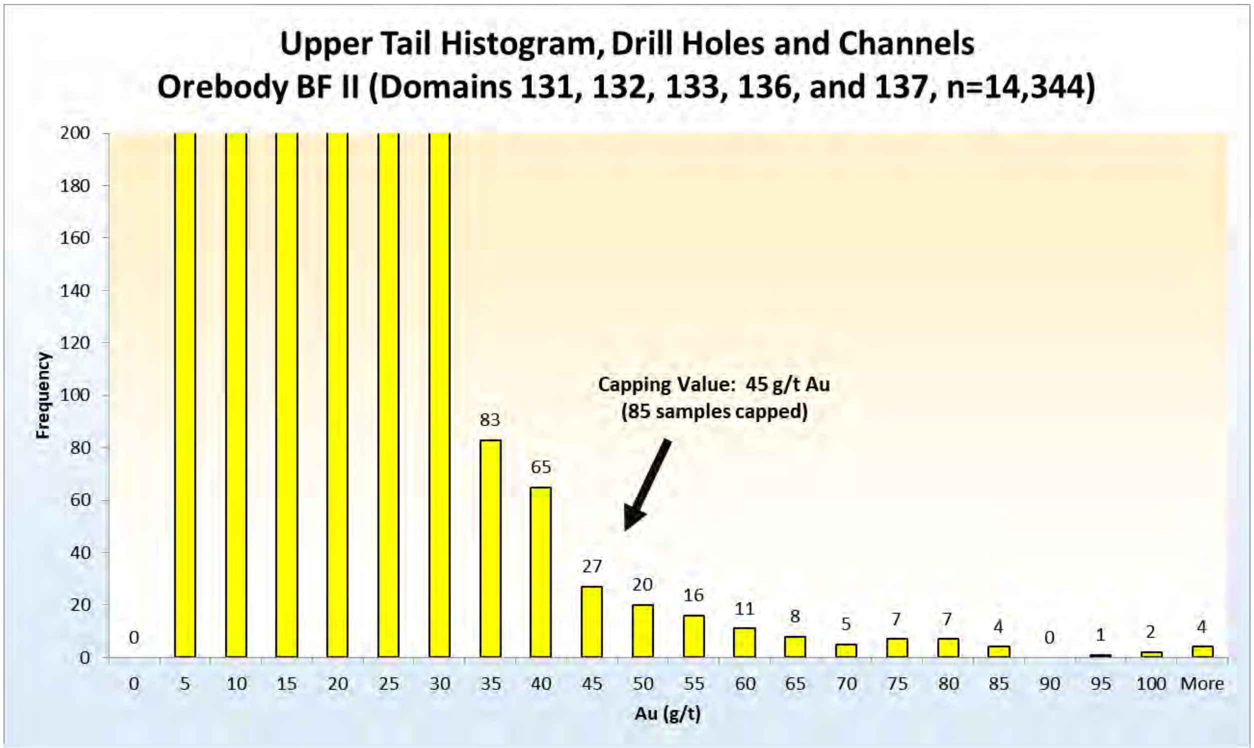


Figure 14-16: Orebody BF II Resource Assay Frequency Histogram

14.3.5 Treatment of High Grade Assays

In order to reduce the influence of high grade sample values, a simple capping approach was applied. In this method, the grades of the resource assays contained within the respective mineralized wireframes deemed to represent anomalously high grades are reduced to a maximum value, the capping grade. A summary of the capping values, as well as a summary of the descriptive statistics for the capped sample populations for each of the mineralized wireframes, is presented in Table 14-18. These capping values remain unchanged from those applied at Pilar in previous years, apart from increasing the capping value for the LPA domain to 50 g/t Au from the previous value of 30 g/t Au.

The SLR QP notes that the proposed capping values for the BF III and the São Jorge domains are considered to be preliminary estimates, as this mineralization has only recently been identified and thus little production reconciliation information is available for these domains.

The SLR QP recommends that the reconciliation data between the estimated block model grades and the as-mined grades be reviewed for the BF III orebody. Subject to the results of this review, the capping value applied to the samples from this deposit may be increased.

14.3.6 Compositing

The selection of an appropriate composite length began with an examination of the channel, grade control, and diamond drill hole sample lengths contained within the mineralized wireframe outlines (Figure 14-17). Many of the sample lengths in the various mineralized wireframes ranged from 0.5 m to 1.5 m or greater. Consequently, on the basis of the available information, the SLR QP is of the opinion that a composite length of one metre for all samples is reasonable. All samples contained within the mineralized wireframes were composited to a nominal one metre length using the MineSight best-fit function. The descriptive statistics of the composite samples are provided in Table 14-19.

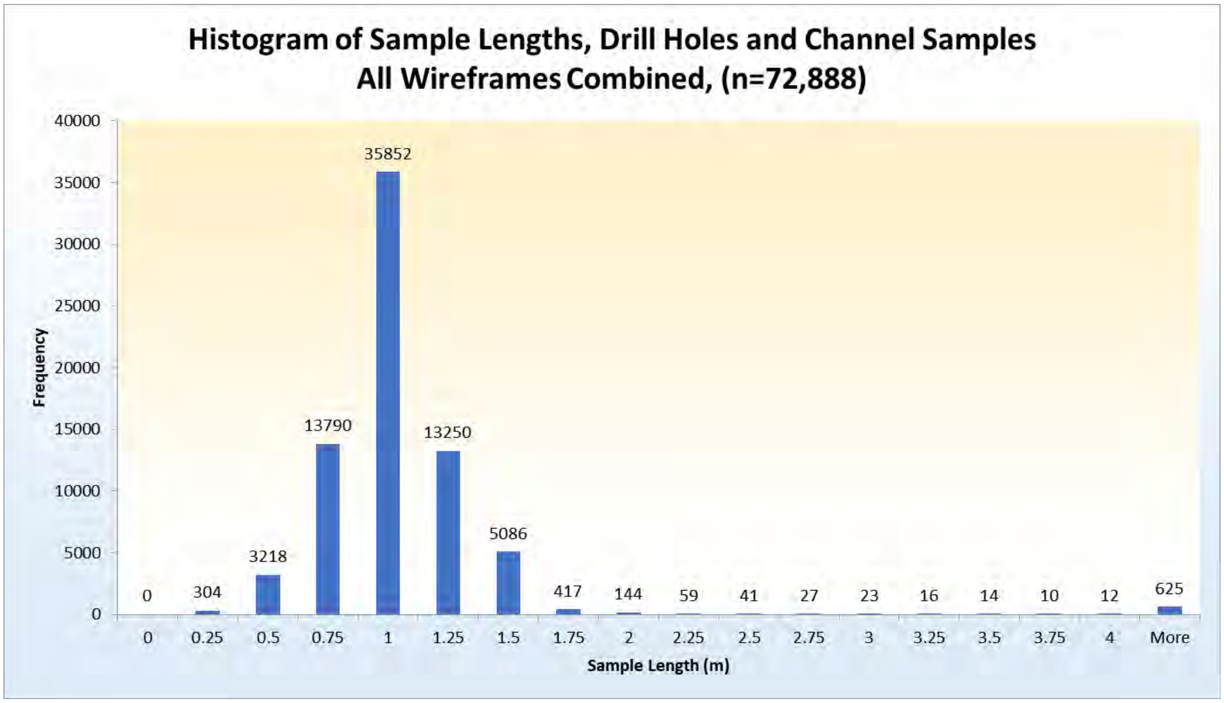


Figure 14-17: Histogram of Sample Lengths, Pilar Mine

Table 14-19: Descriptive Statistics of the Composite Samples, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Item	BA		BF		BF II		BF III	
	Comp NoCap	Comp Cap	Comp NoCap	Comp Cap	Comp NoCap	Comp Cap	Comp NoCap	Comp Cap
Mean (g/t Au)	3.42	3.39	4.09	4.06	4.90	4.80	3.85	3.78
Median (g/t Au)	1.20	1.20	1.58	1.58	2.24	2.24	1.47	1.47
Mode (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation (g/t Au)	6.44	6.05	6.67	6.37	7.23	6.58	6.26	5.85
CV	1.89	1.78	1.63	1.57	1.48	1.37	1633	1.55
Sample Variance	41.5	36.6	44.5	40.5	52.3	43.3	39.2	34.3
Minimum (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Maximum (g/t Au)	236.04	60.00	175.58	60.00	159.65	45.00	66.03	45.00
Count	18,501	18,501	18,951	18,951	13,305	13,305	1,031	1,031

Item	LFW		LPA		LHW		Torre	
	Comp NoCap	Comp Cap	Comp NoCap	Comp Cap	Comp NoCap	Comp Cap	Comp NoCap	Comp Cap
Mean (g/t Au)	2.10	1.87	4.43	4.32	2.01	1.90	1.99	1.93
Median (g/t Au)	0.88	0.88	1.82	1.82	0.92	0.92	0.64	0.64
Mode (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation (g/t Au)	8.81	2.79	7.45	6.48	3.74	2.80	4.76	4.14
CV	4.20	1.49	1.68	1.50	1.86	1.47	2.40	2.15
Sample Variance	77.7	7.77	55.4	42.0	13.95	7.81	22.7	17.2
Minimum (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Maximum (g/t Au)	507.50	20.00	16362	50.00	58.42	20.00	128.33	40.00
Count	3,981	3,981	4,896	4,896	1,430	1,430	6,934	6,934

Item	SW		São Jorge	
	Comp NoCap	Comp Cap	Comp NoCap	Comp Cap
Mean (g/t Au)	2.12	2.10	1.71	1.60
Median (g/t Au)	0.52	0.52	0.68	0.868
Mode (g/t Au)	0.01	0.01	0.03	0.03
Standard Deviation (g/t Au)	4.24	4.05	2.54	2.10
CV	2.00	1.93	1.49	1.32
Sample Variance	17.796	16.4	6.47	4.4
Minimum (g/t Au)	0.01	0.01	0.01	0.01
Maximum (g/t Au)	77.31	40.00	17.44	10
Count	3,878	3,878	165	165

14.3.7 Trend Analysis

14.3.7.1 Grade Contouring

As an aid in understanding the distribution and continuity of the gold grades in the mineralized domain models, a short study to examine the overall trends was conducted. For this exercise, a selection of wireframe domains containing the greatest quantities of gold were selected. The resulting gold grades were digitally contoured using Leapfrog and the results are presented in Figure 14-18 to Figure 14-20.

Review of these longitudinal projections suggests that the samples with gold grades above the 3.0 g/t Au to 5.0 g/t Au range appear to occur as somewhat isolated pods measuring approximately 15 m to 30 m in size that have a slightly preferred elongation along the down-plunge orientation of the folded mineralized wireframes, possibly influenced by the F1 fold axes. Lower grade samples generally exhibit a more pronounced preferred elongation along the down-plunge orientation of the folded mineralized wireframes.

14.3.7.2 Variography

Overall, the analysis of the spatial continuity of the gold grades for the various Pilar mineralized wireframes remained unchanged from that presented in RPA (2018). Example variograms for the BA, BF, and BF II domains were presented in RPA (2018). Example correlograms for selected domains are presented in Figure 14-21 and Figure 14-22. A summary of the variogram parameters derived for each of the Pilar mineralized domains is presented in Table 14-20. A summary of the MineSight rotation angle convention is presented in Figure 14-23.

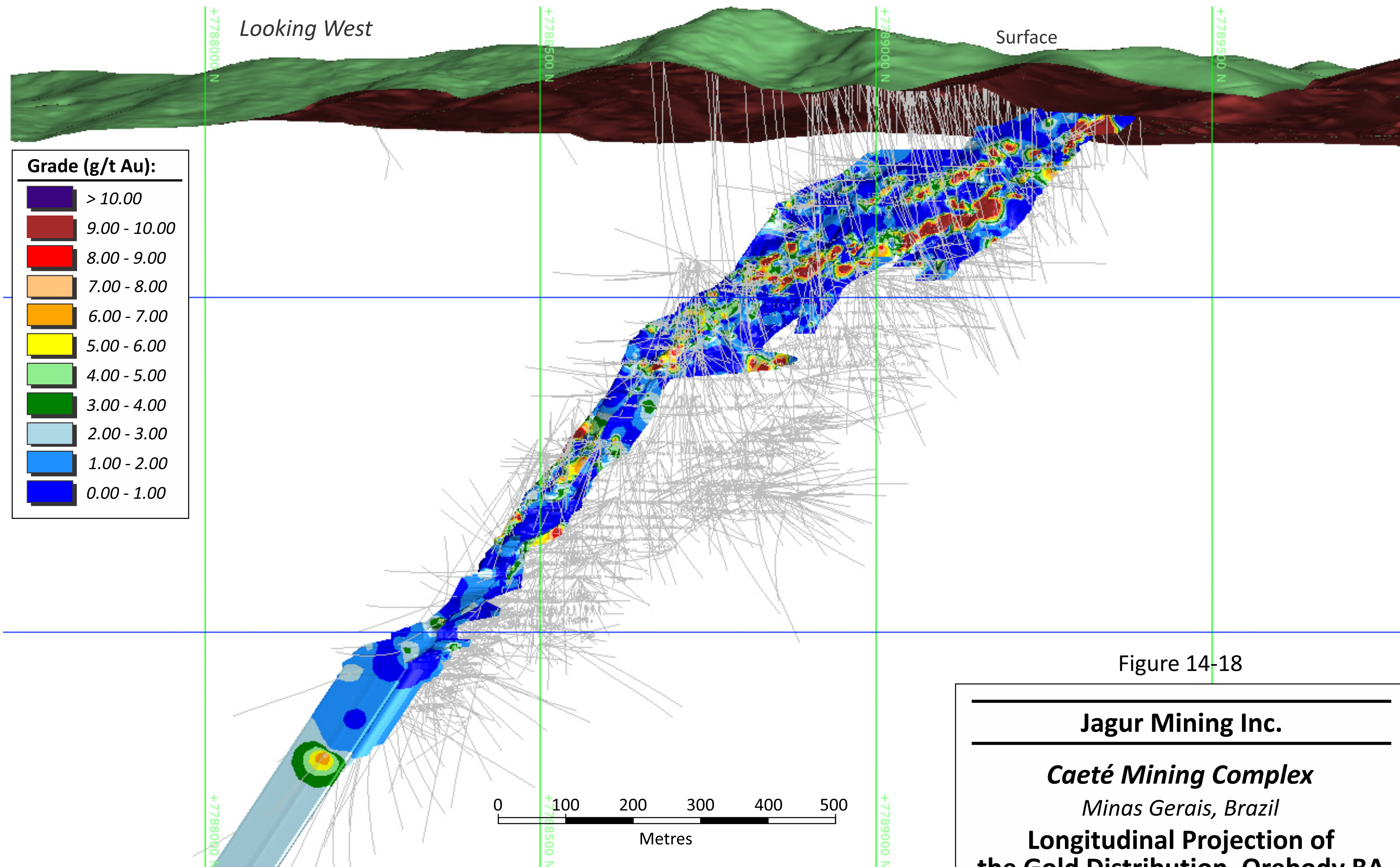


Figure 14-18

Jagur Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Longitudinal Projection of the Gold Distribution, Orebody BA

March 2022

Source: SLR, 2022.

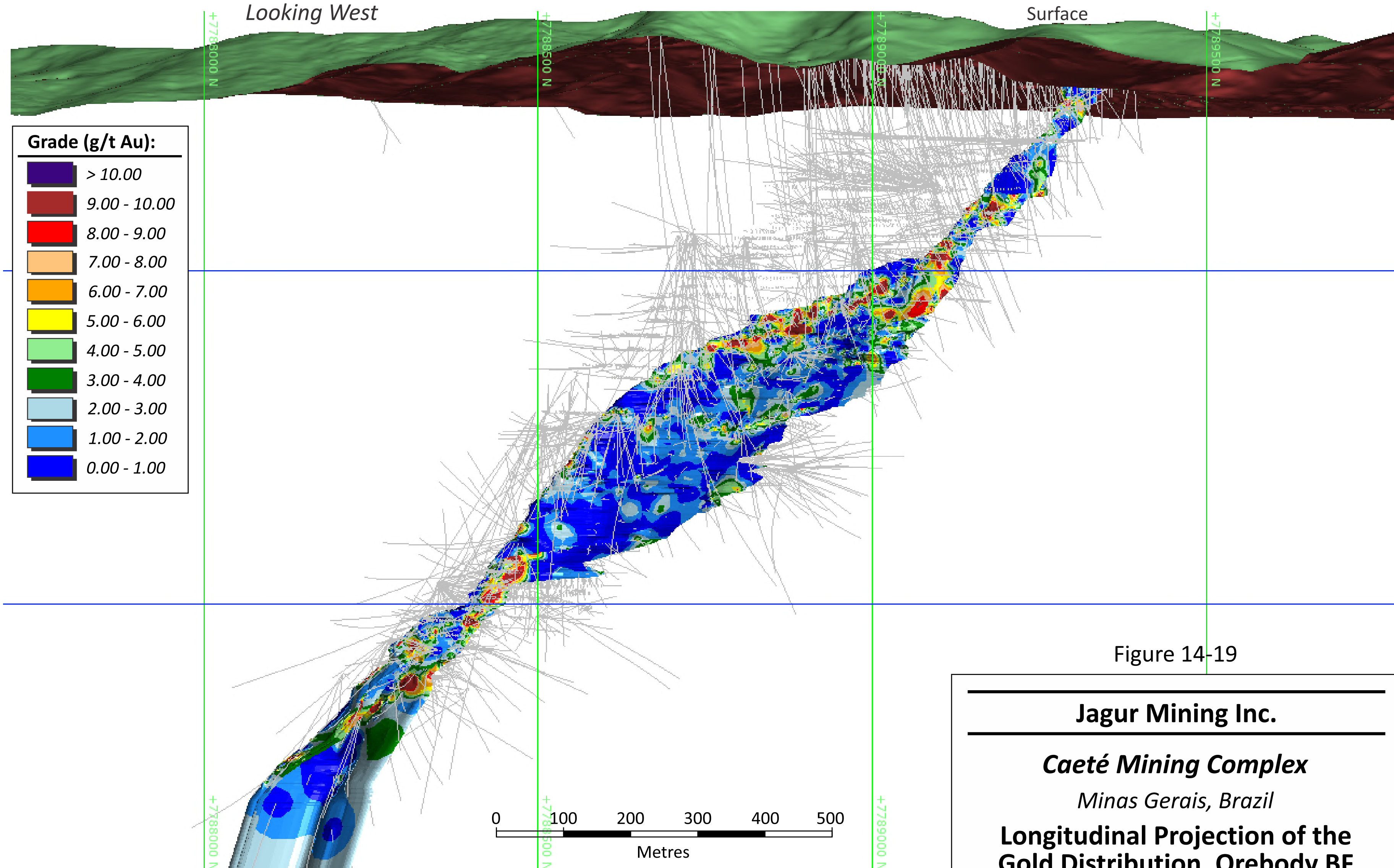


Figure 14-19

Jagur Mining Inc.

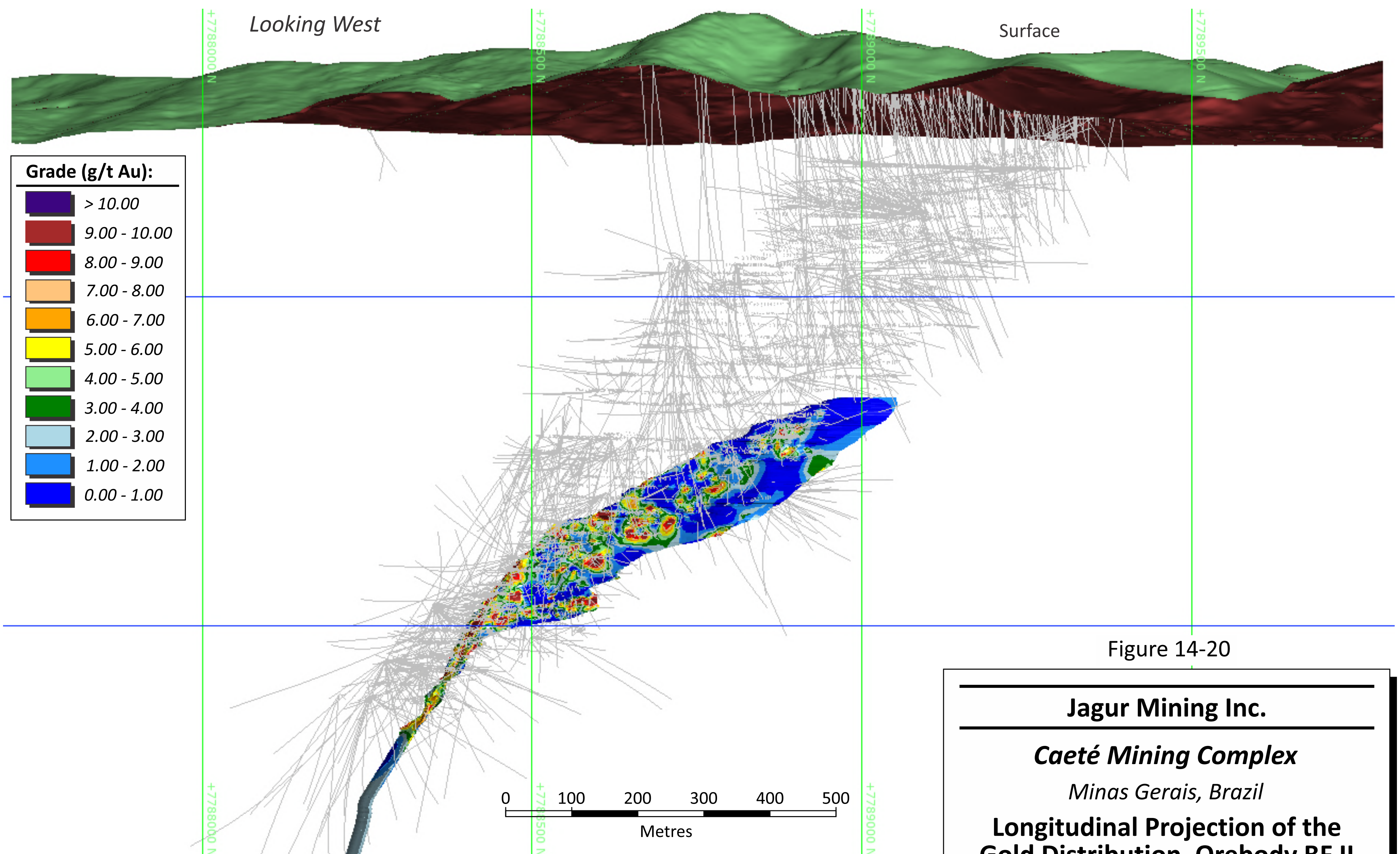
Caeté Mining Complex

Minas Gerais, Brazil

Longitudinal Projection of the Gold Distribution, Orebody BF

March 2022

Source: SLR, 2022.



March 2022

Source: SLR, 2022.

Figure 14-20

Jagur Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Longitudinal Projection of the Gold Distribution, Orebody BF II

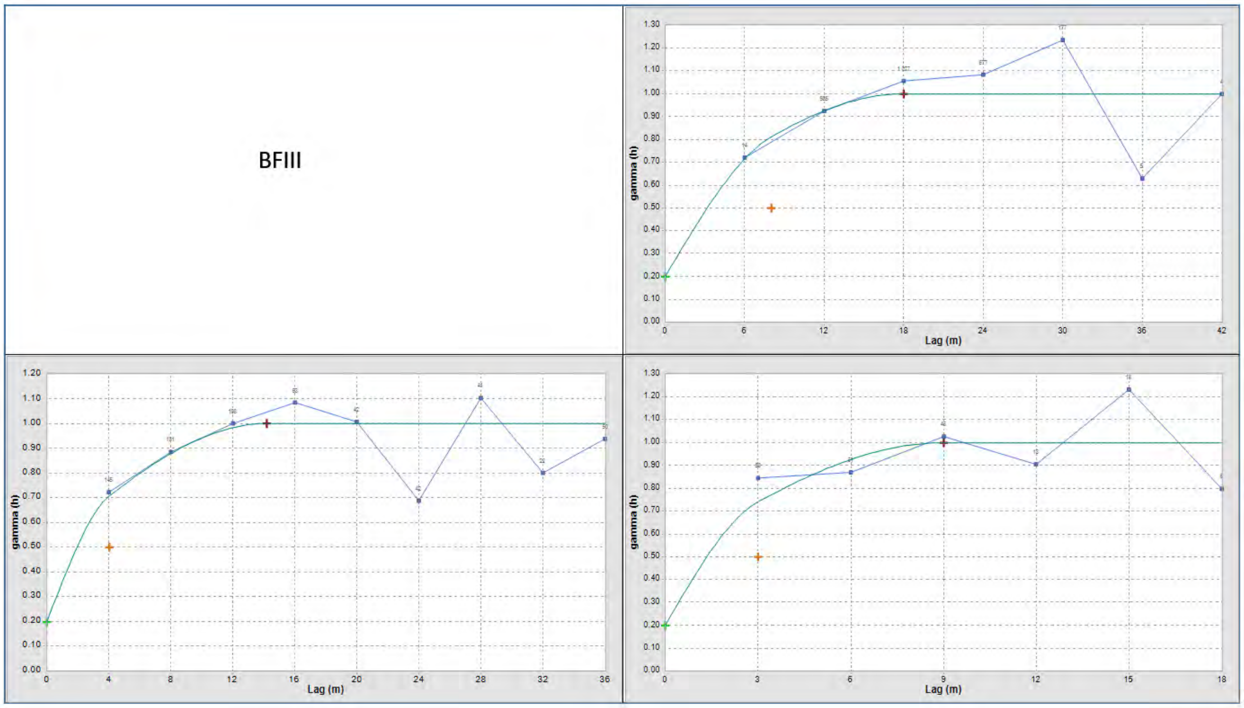


Figure 14-21: Correlogram Models for the BF III Domain

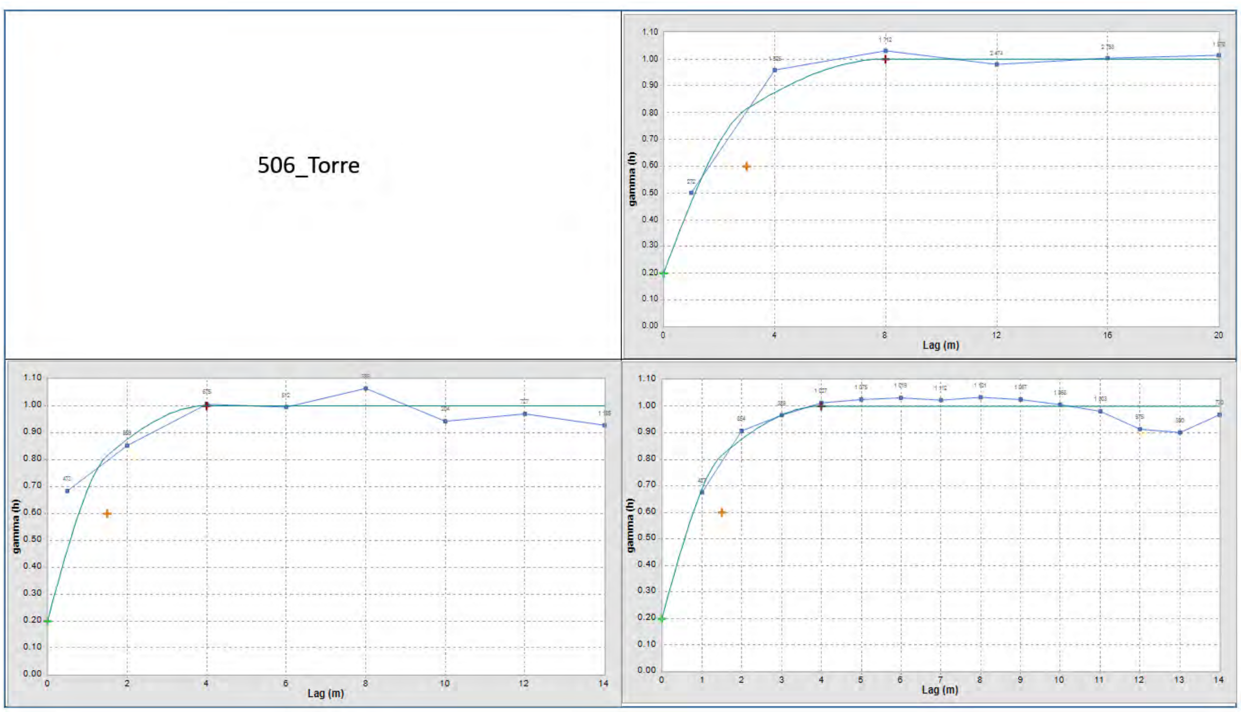


Figure 14-22: Correlogram Models for the Torre 506 Domain

Table 14-20: Summary of Variography and Interpolation Parameters, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Item	BA (111&112)	BA (113&114)	BF	BFII	LPA	LFW	LHW	SW
Nugget (C0)	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.3
Sill Major Axis (C1)	0.5	0.4	0.4	0.5	0.5	0.5	0.3	0.4
Sill Major Axis (C2)	0.2	0.4	0.4	0.3	0.3	0.4	0.4	0.3
Model Type	Sph	Sph	Sph	Sph	Sph	Sph	Sph	Sph
Orientation	080/-65/-40	080/-65/-40	350/50/-65	350/50/-65	350/40/-60	110/-60/35	090/-65/-60	135/-55/00
Anisotropy Ratio (Major/Semi-Major)	2.5	2.3	1.7	1.8	5.8	3.5	1.3	1.5
Anisotropy Ratio (Major/Minor)	7.0	5	5.0	2.3	7.0	17.5	2.0	3.8
Distances:								
Structure1 Major (m)	50	21	30	20	56	60	5	36
Structure1 Semi-Major (m)	21	11	20	12	8	12	2	15
Structure1 Minor (m)	5	3	3	8	5	1.1	1.3	8
Structure2 Major (m)	70	30	50	35	70	70	8	45
Structure2 Semi-Major (m)	28	13	30	20	12	20	6	30
Structure2 Minor (m)	10	6	10	15	10	4	4	12
Item	**BF III**	**Torre (501)**	**Torre (502)**	**Torre (503)**	**Torre (504)**	**Torre (505)**	**Torre (506)**	**CSJ (801)**
Nugget (C0)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Sill Major Axis (C1)	0.3	0.5	0.4	0.4	0.5	0.5	0.4	0.3
Sill Major Axis (C2)	0.5	0.3	0.4	0.4	0.3	0.3	0.4	0.5
Model Type	Sph	Sph	Sph	Sph	Sph	Sph	Sph	Sph
Orientation	0/30/-40	10/60/0	0/60/0	340/40/-70	310/70/0	330/0/-10	120/0/-60	240/-20/30
Anisotropy Ratio (Major/Semi-Major)	1.2	1.3	2.0	3.1	5.7	1.25	2.0	1.1
Anisotropy Ratio (Major/Minor)	2.0	4.0	2.2	4.2	6.7	2.5	2.0	1.8
Distances:								
Structure1 Major (m)	8	5	12	42	22	18	3	10
Structure1 Semi-Major (m)	4	6	7	4	3.5	4	1.5	3
Structure1 Minor (m)	3	1.5	3	4	3.5	3	1.5	3
Structure2 Major (m)	18	20	40	50	40	20	8	22
Structure2 Semi-Major (m)	14	15	20	16	7	16	4	20
Structure2 Minor (m)	9	5	18	12	6	8	4	12

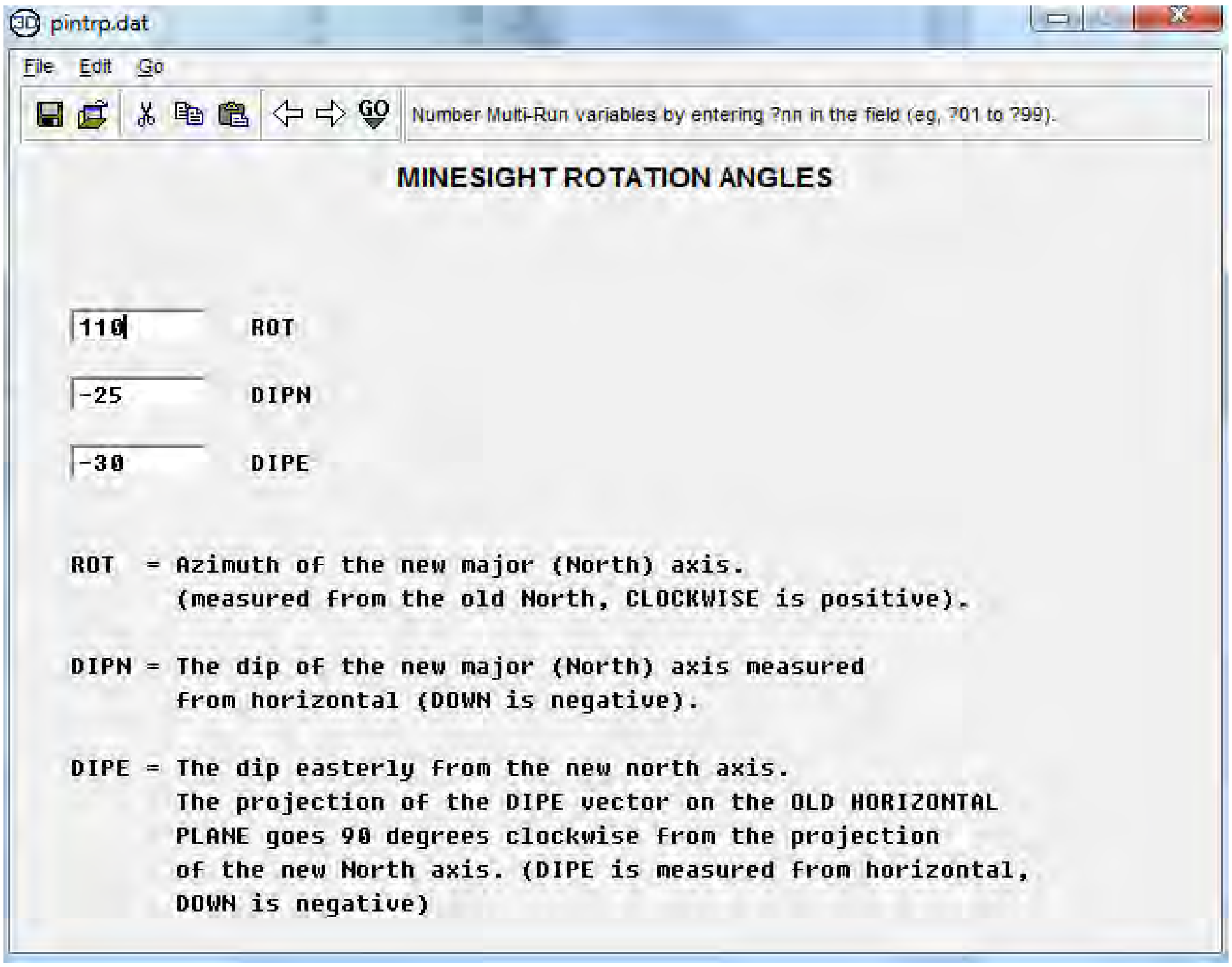


Figure 14-23: Minesight Rotation Angle Convention

14.3.8 Bulk Density

Jaguar has continued its program of collecting bulk density measurements on the various lithologies present at Pilar through 2021. Density measurements were made on representative samples of drill core from intervals of iron formation and quartz veins located within the mineralized wireframes, along with measurements carried out on samples of adjoining waste rock units. Density measurements were carried out at the Jaguar onsite laboratory located at Roça Grande using the water displacement method. In all, the density database contains values for 4,731 density measurements, as of December 31, 2021. Of these, a total of 1,533 density measurements were used to prepare the Pilar Mineral Resource estimate. A summary of the average bulk densities used for the current Pilar Mineral Resource estimate is presented in Table 14-21. The average bulk densities for each of the mineralized wireframes were used to code the block model. The distribution of sample densities for selected mineralized wireframes are presented in Figure 14-24 to Figure 14-27.

Review of the various histograms of the bulk density values contained within the mineralized wireframe outlines suggests that the rock types within these wireframes are composed of either a single, silicate based rock type (e.g., Torre) or are composed of a mixture of silicate based rock types and various iron formation facies (e.g., BA, BF, and BF II).

The SLR QP recommends that Jaguar continue to collect bulk density values for samples within the mineralized wireframe outlines, especially for zones with a low number of density values.

The SLR QP also recommends that Jaguar prepare wireframe models of the major lithological units as aides in coding the density values to the block model.

Table 14-21: Summary of the Density Measurements as of December 31, 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Orebody	Bulk Density (g/cm^3)	Number of Data Entries
BA	3.06	145
BF	3.16	379
BFII	3.08	374
BFIII	3.13	32
LFW	2.86	174
LPA	3.16	63
LHW	2.90	31
TORRE	2.83	249
SW	3.12	86
WASTE	2.92	3,198

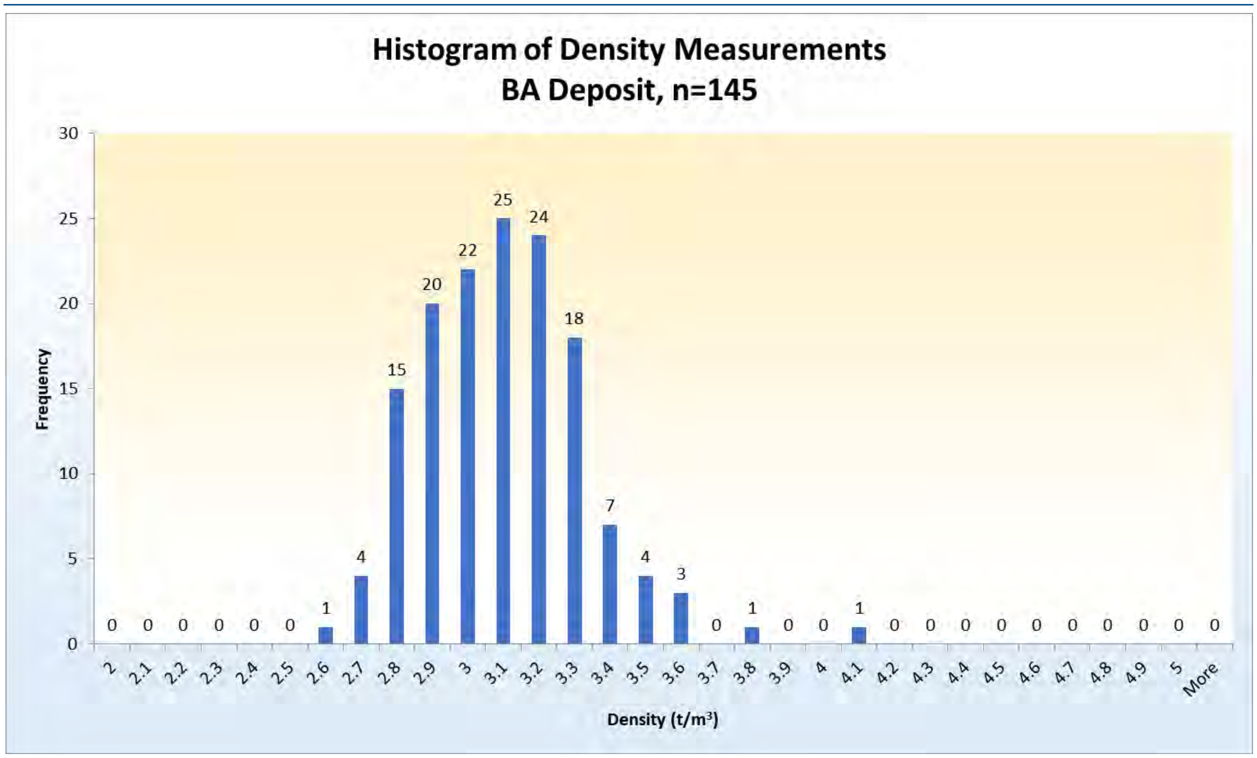


Figure 14-24: Histogram of Density Values, Orebody BA

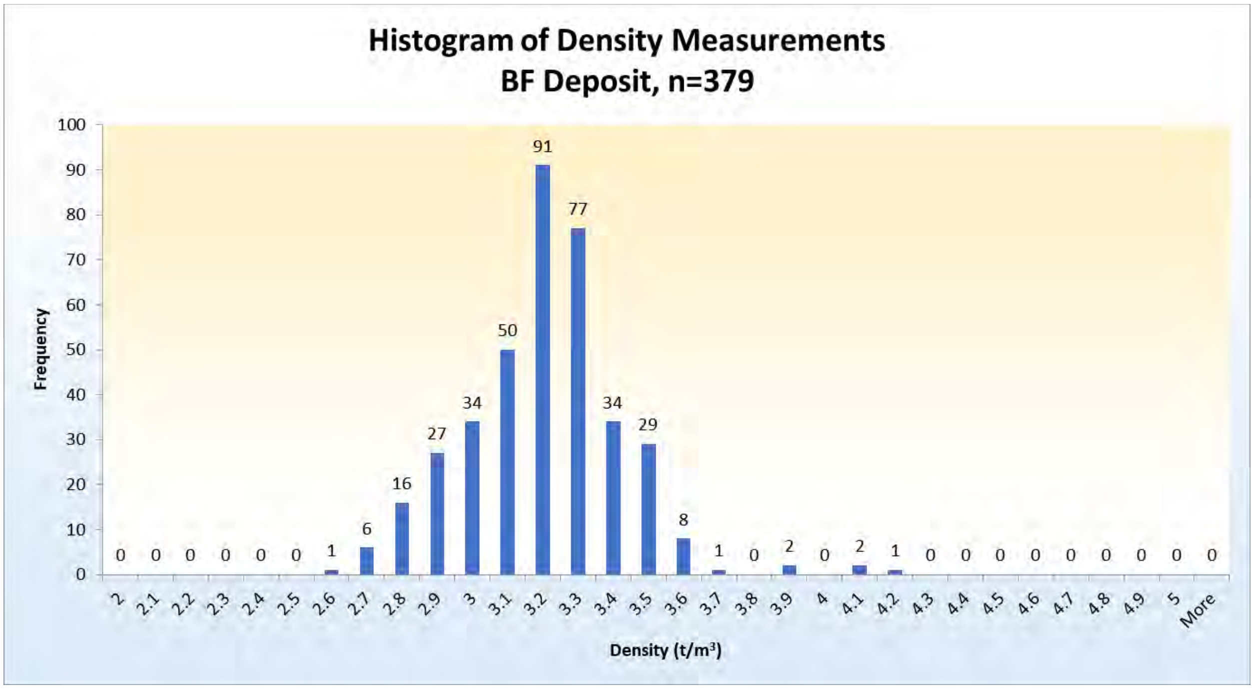


Figure 14-25: Histogram of Density Values, Orebody BF

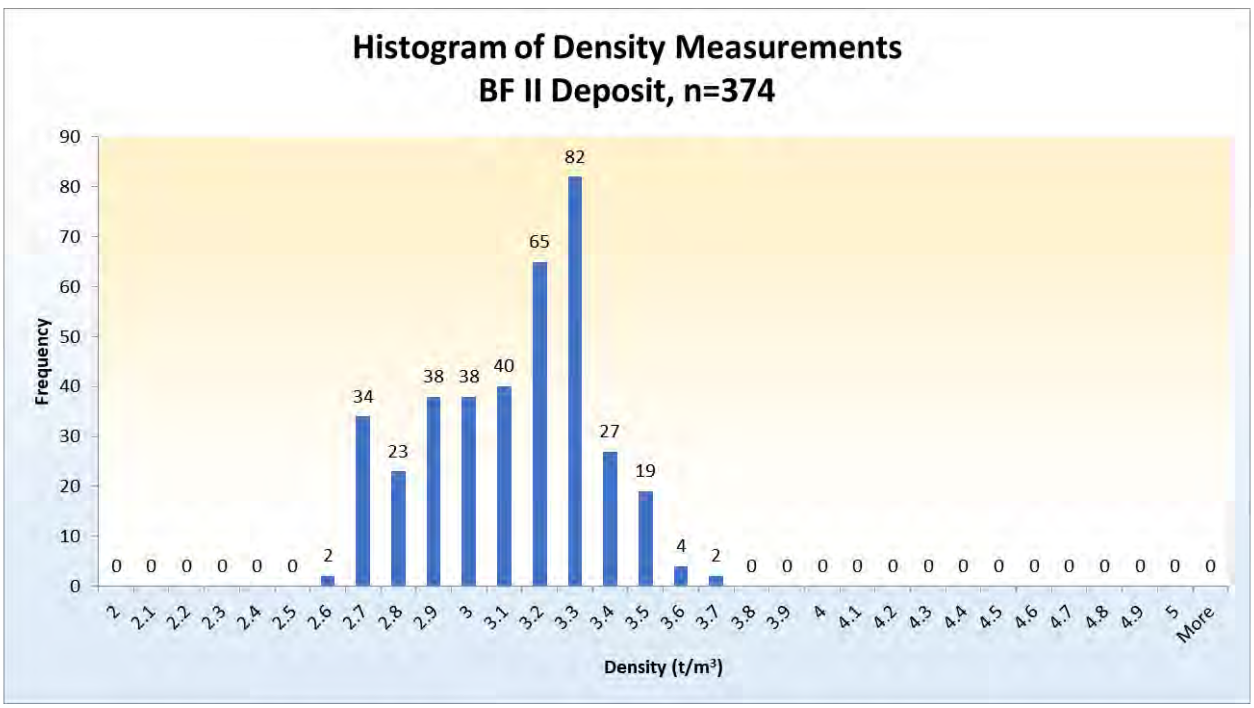


Figure 14-26: Histogram of Density Values, Orebody BF II

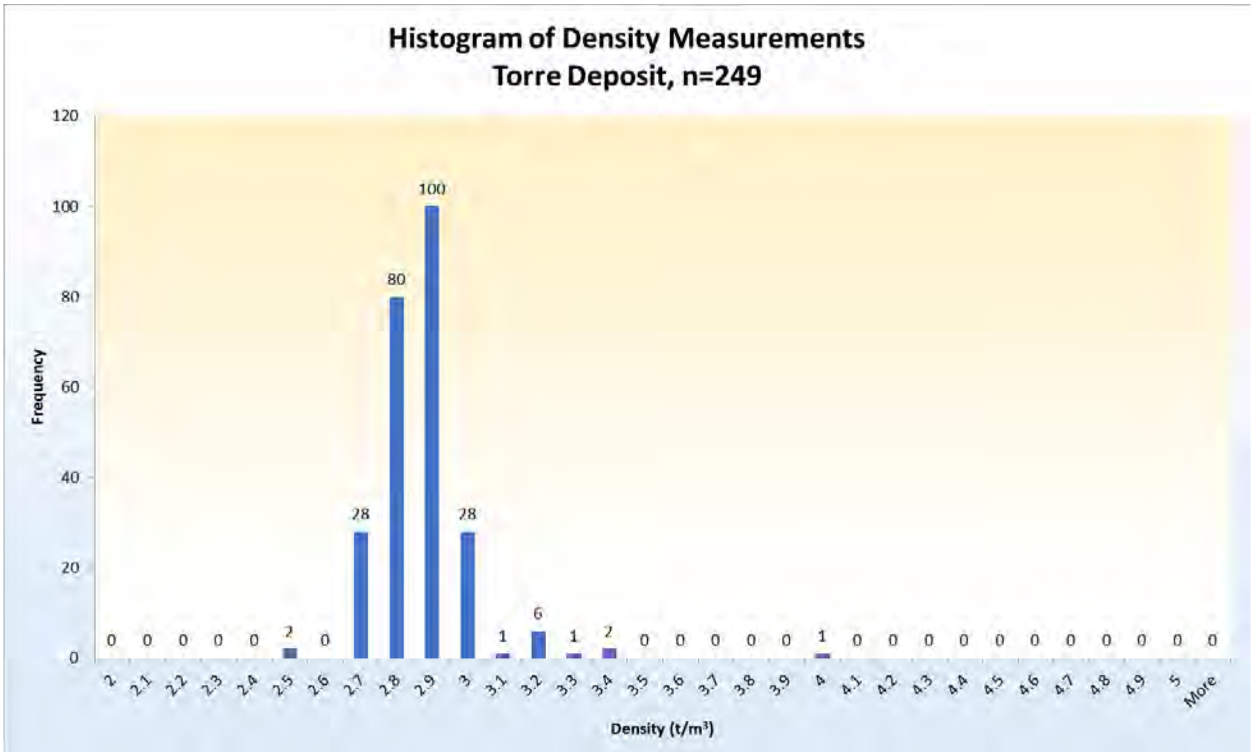


Figure 14-27: Histogram of Density Values, Orebody Torre

14.3.9 Block Model Construction

The Pilar block model was constructed by Jaguar using MinePlan 3D and comprised an array of 4 m x 4 m x 4 m blocks using sub-blocking with a minimum block size of 1 m x 1 m x 1 m. The Pilar block model is oriented parallel to the coordinate grid system (i.e., no rotation or tilt). The selection of the block sizes for this model were completed so as to minimize the variation when compared with the block model strategy previously employed at Pilar. The Pilar block model origin, dimensions, and attribute list is provided in Table 14-22. A number of attributes were created to store information such as rock code, material densities, estimated gold grades, final mineral resource classification, mined out material, and resource polygons (Table 14-23).

Table 14-22: Block Model Definition, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Type	Units	Northing (Y)	Easting (X)	Elevation (Z)
Minimum Coordinates	m	7,787,700	662,000	-800
Maximum Coordinates	m	7,789,500	663,300	1,000
Parent Block Size	m	4	4	4
Sub-block Size	m	1	1	1
Rotation	°	0.000	0.000	0.000

Table 14-23: Block Model Attributes, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Attribute Name	Type	Decimals	Description
auokc	Real	2	Estimated grade by OK
avd	Real	2	Average distance of informing samples
class	Real	0	Initial classification (1=Measured, 2=Indicated, 3=Inferred)
clod	Real	2	Distance to closest informing sample
dens	Real	2	Density
fthd	Real	2	Distance to farthest informing sample
mined	Real	0	Mined out code (-1=in situ, 1=development, lower levels, 2=stopes, 5=development, upper levels)
ndh	Real	0	Number of drill holes for grade estimate
nq	Real	0	Number of quadrants
nsmp	Real	0	Number of samples for grade estimate
rclas	Real	0	Reclassified Mineral Resource classification
rock	Real	0	Domain code (See Table 14-16)
rsrc	Real	0	Mineral Resource flag (1=Meas, 2=Ind, 3=Inf)
rsrv	Real	0	Mineral Reserve flag (1=Proven, 2=Probable)
topo%	Real	0	% of block below topography surface

14.3.10 Search Strategy and Grade Interpolation Parameters

Gold grades were estimated into the blocks by means of OK. A total of four interpolation passes at different ranges were carried out for each of the mineralized wireframes using distances derived from the variogram results and the search ellipse parameters presented in Table 14-24. For the first pass, search distances corresponded to half of variogram ranges, full variogram range for the second pass, the search distances were twice the variogram ranges for the third pass, and during the fourth pass, search distances were extrapolated, varying by orebody, in order to populate the entire block model and define exploration potential In general, all search ellipses were oriented along the overall down-plunge direction of the mineralized domains (Figure 14-28 to Figure 14-30).

Hard domain boundaries were generally used along the contacts of the mineralized domain models. Only data contained within the respective wireframe model was used to estimate the block grades within the wireframe in question, and only those blocks within the wireframe limits were allowed to receive grade estimates. Soft boundaries were used to estimate the grades within the various mineralized wireframe domains. Mineralized wireframes were partitioned into structural sub-domains so as to represent the spatial orientation of the specific segment of the target mineralized wireframe (Figure 14-31). Composite grades from adjoining sub-domains were allowed to be considered for the estimation of grades within the specific sub-domain being estimated so as to avoid the creation of step-change type artifacts in the estimated grades at the sub-domain boundaries. Care was taken to avoid smearing gold grades across the limbs of isoclinally folded domains.

In addition to the use of soft internal structural domain boundaries, the SLR QP recommends that Jaguar consider the use of a dynamic anisotropy method for estimation of grades so as to reflect the gold grade variations more accurately at the local scale.

Table 14-24: Summary of the Estimation Strategy, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Search Parameters	Pass #1	Pass #2	Pass #3	Pass #4
Minimum Number of Composites	3	2	1	1
Maximum Number of Composites	16	16	16	16
Maximum Number of Composites per Drill Hole	2	2	4	8
Special Selection	Split Quadrant	Split Quadrant	Split Quadrant	Split Quadrant
Minimum Number of Quadrants with Samples	2	2	1	1
Maximum Number of Composites per Quadrant	2	2	4	8

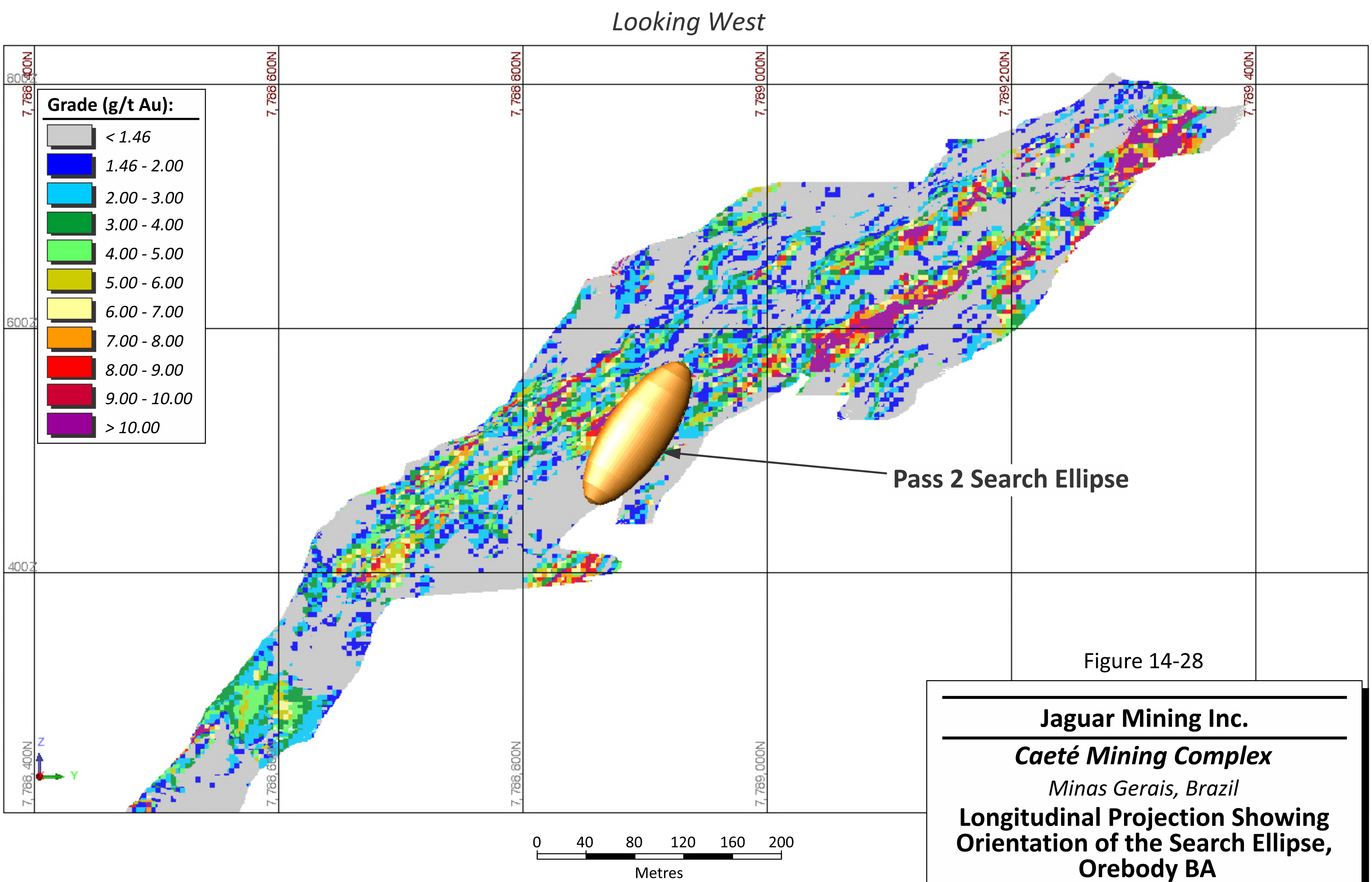


Figure 14-28

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Longitudinal Projection Showing Orientation of the Search Ellipse, Orebody BA

March 2022

Source: SLR, 2022.

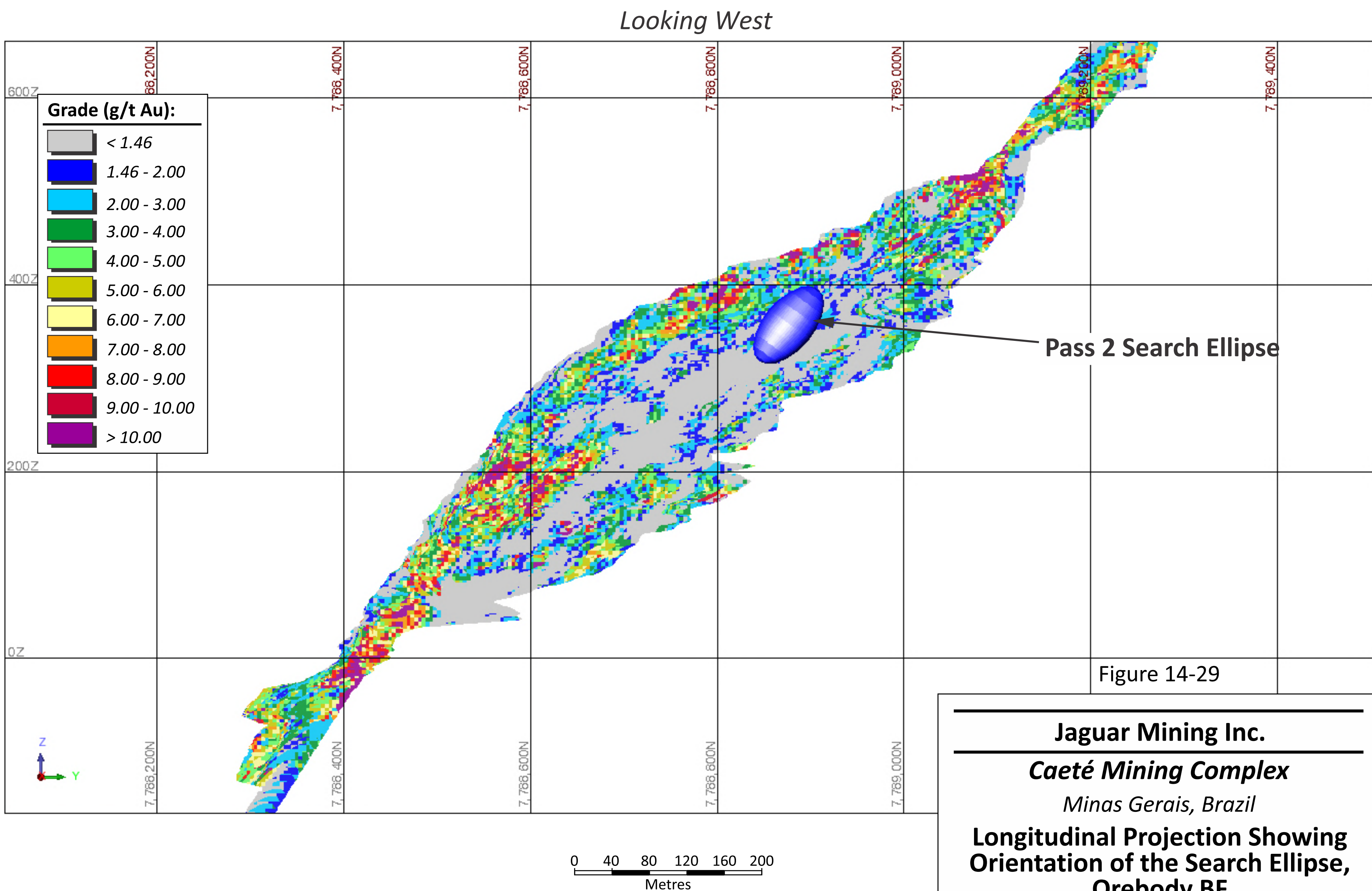


Figure 14-29

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Longitudinal Projection Showing Orientation of the Search Ellipse, Orebody BF

March 2022

Source: SLR, 2022.

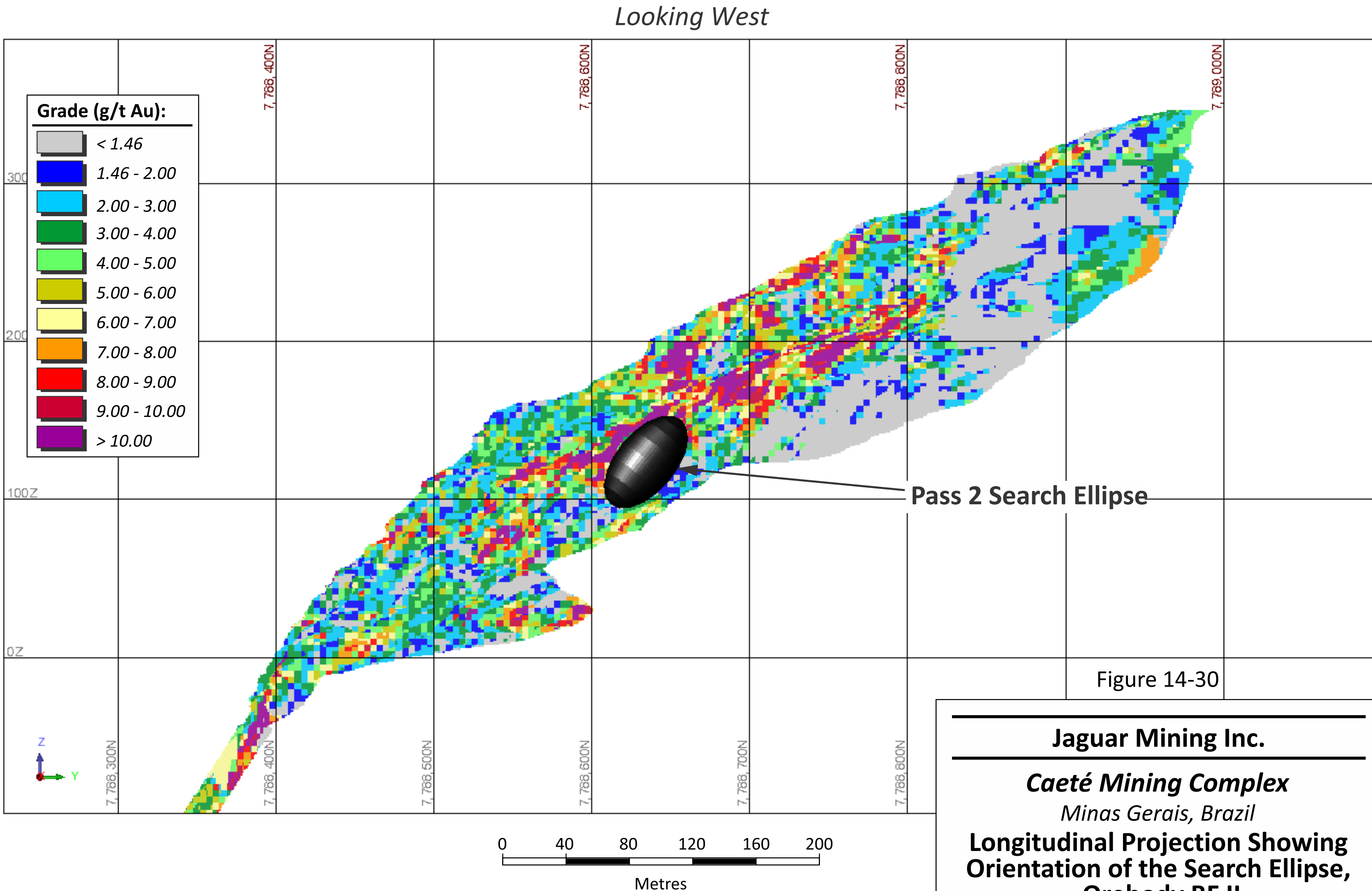


Figure 14-30

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Longitudinal Projection Showing Orientation of the Search Ellipse, Orebody BF II

March 2022

Source: SLR, 2022.

Figure 14-31: Example of Wireframe Sub-Boundaries for Soft Domain Estimation, Pilar Mine

14.3.11 Block Model Validation

14.3.11.1 Global Estimate

Block model validation exercises consisted of comparing the volume of the coded blocks in the block model against the volume report of the respective wireframe models as a high level check that the block model has been correctly coded for each of the wireframes (Table 14-25). The discrepancy in the volumes for the Torre wireframe can be attributed to the observation that the wireframe models have not been clipped to the topographic surface, and so the volume for this wireframe model is slightly over-stated.

Table 14-25: Comparison of Block Model and Wireframe Volumes, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Wireframe ID	Wireframe Volume (m^3)	Block Model Volume (m^3)	Difference (BM-Wf)	% Difference
BA_110	1,675,200	1,645,325	-29,875	-2
BF_120	2,093,500	2,092,382	-1,118	0
BF II_130	983,120	982,718	402	0
BF III_140	404,360	403,933	-427	0
LFW_200	622,630	627,386	4,756	1
LPA_300	548,810	548,172	-638	0
LHW_400	168,910	168,514	-396	0
SW_600	2,349,900	2,348,000	-1,900	0
CSJ_800	44,212	444,158	-54	0

A second validation exercise consisted of evaluating the accuracy of the global estimate by comparing the descriptive statistics from the composites against the block model gold grades (Table 14-26). In general, the estimated mean block grades for some of the mineralized domains were lower than the composites.

Table 14-26: Comparison of Block Model and Composite Sample Average Grades, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Wireframe ID	Capped Composite Average (g/t Au)	Block Average (g/t Au)	Difference (BM-Comps)	% Difference
BA_110	3.39	2.81	-0.58	-17
BF_120	4.06	3.18	-0.88	-22
BF II_130	4.80	3.76	-1.04	-22
BF III_140	3.78	2.69	-1.09	-29
LFW_200/700	1.87	1.55	-0.32	-17
LPA_300	4.32	3.25	-1.07	-25
LHW_400	1.90	1.52	-0.38	-20
Torre_500	1.93	1.67	-0.26	-13
SW_600	2.10	1.92	-0.18	-9
CSJ_800	1.60	1.14	-0.46	-29

14.3.11.2 Local Estimate

14.3.11.2.1 Swath Plots

Evaluation of the accuracy of the local estimate was carried out by constructing a series of swath plots that compared the average composite grades to the average estimated block model grades in plan and section. Swath plots for selected wireframes are presented in Figure 14-32 to Figure 14-35.

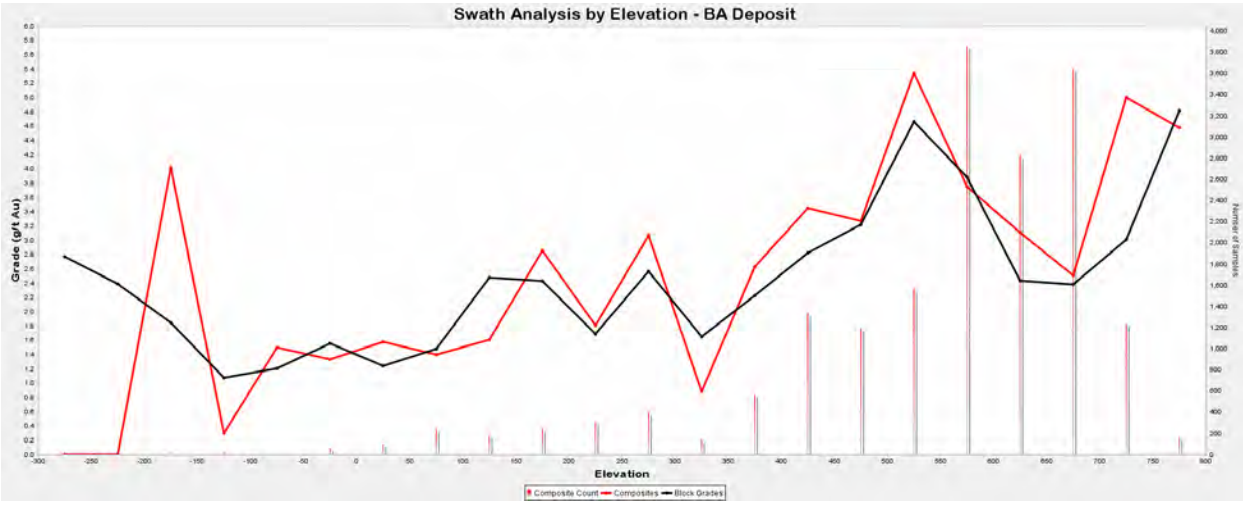


Figure 14-32: Swath Plot by Elevation, Orebody BA

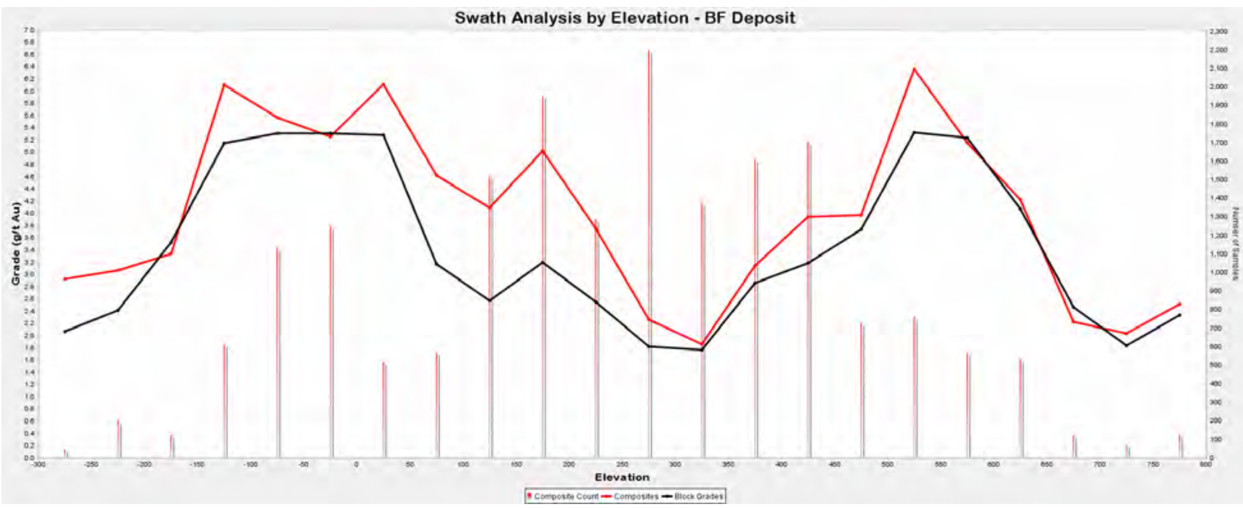


Figure 14-33: Swath Plot by Elevation, Orebody BF

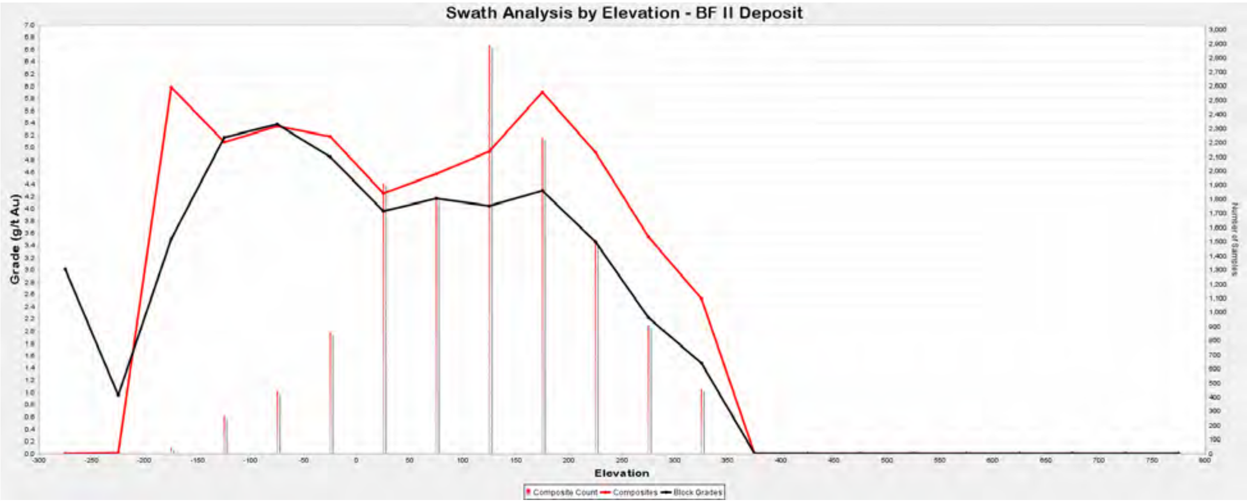


Figure 14-34: Swath Plot by Elevation, Orebody BF II

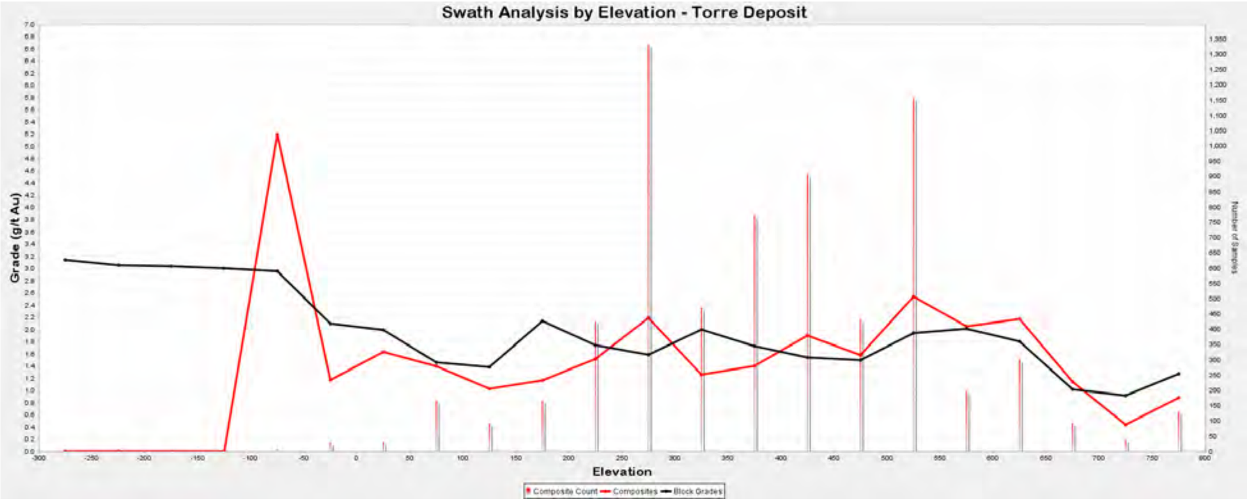


Figure 14-35: Swath Plot by Elevation, Orebody Torre

14.3.11.2.2 Visual Comparisons

The accuracy of the local estimate was also examined visually by comparing the contoured grade distributions from the drill hole and channel sample information to the estimated block grades (Figure 14-36 and Figure 14-37). Although this approach is inherently subjective in nature and is subject to any errors and biases inherent in the preparation of either the contoured sample grades or the estimated block grades, the method is effective at providing a rapid independent comparison of the grade distributions between the informing samples and the estimated block grades. For the Pilar deposits examined by this method, there is good overall agreement between the contoured sample grades and the estimated block grades.

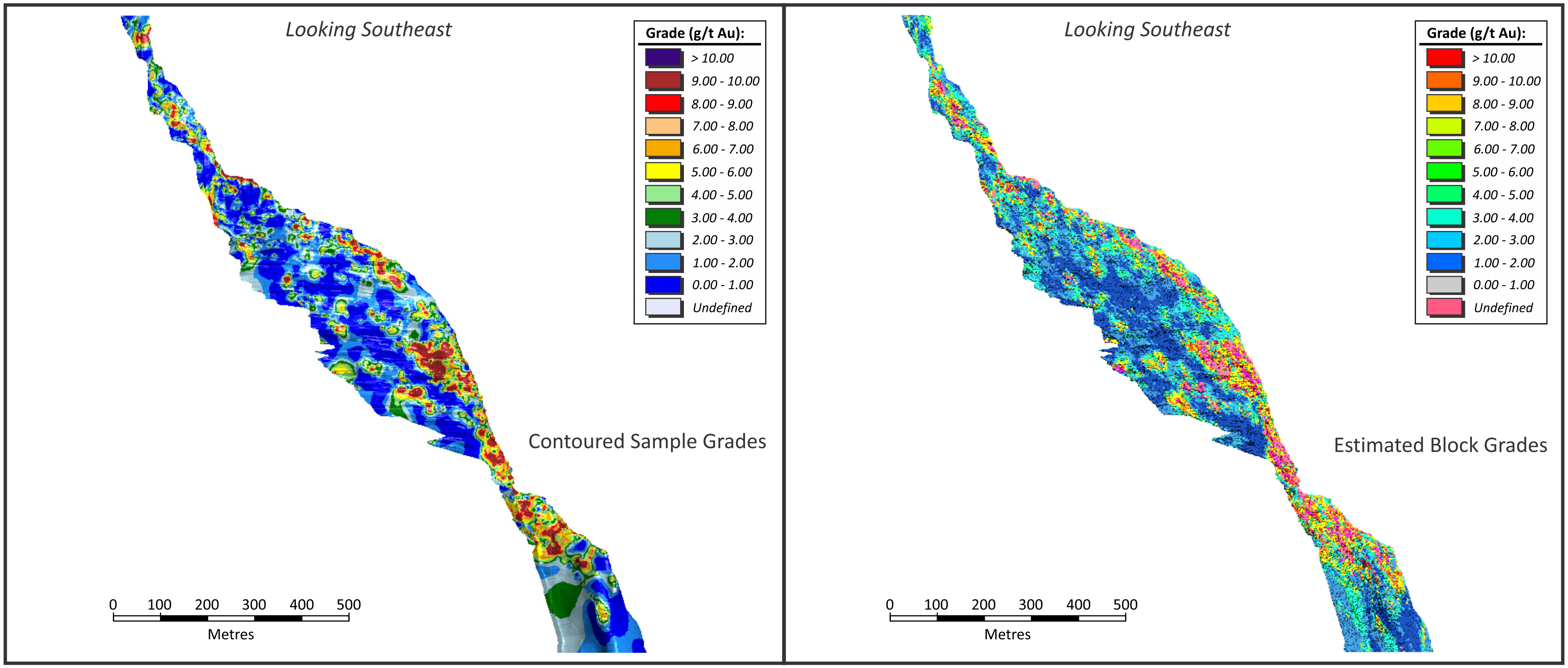


Figure 14-36

Jagur Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Comparison of Contoured Sample Grades with Estimated Block Grades, Orebody BF

March 2022

Source: SLR, 2022.

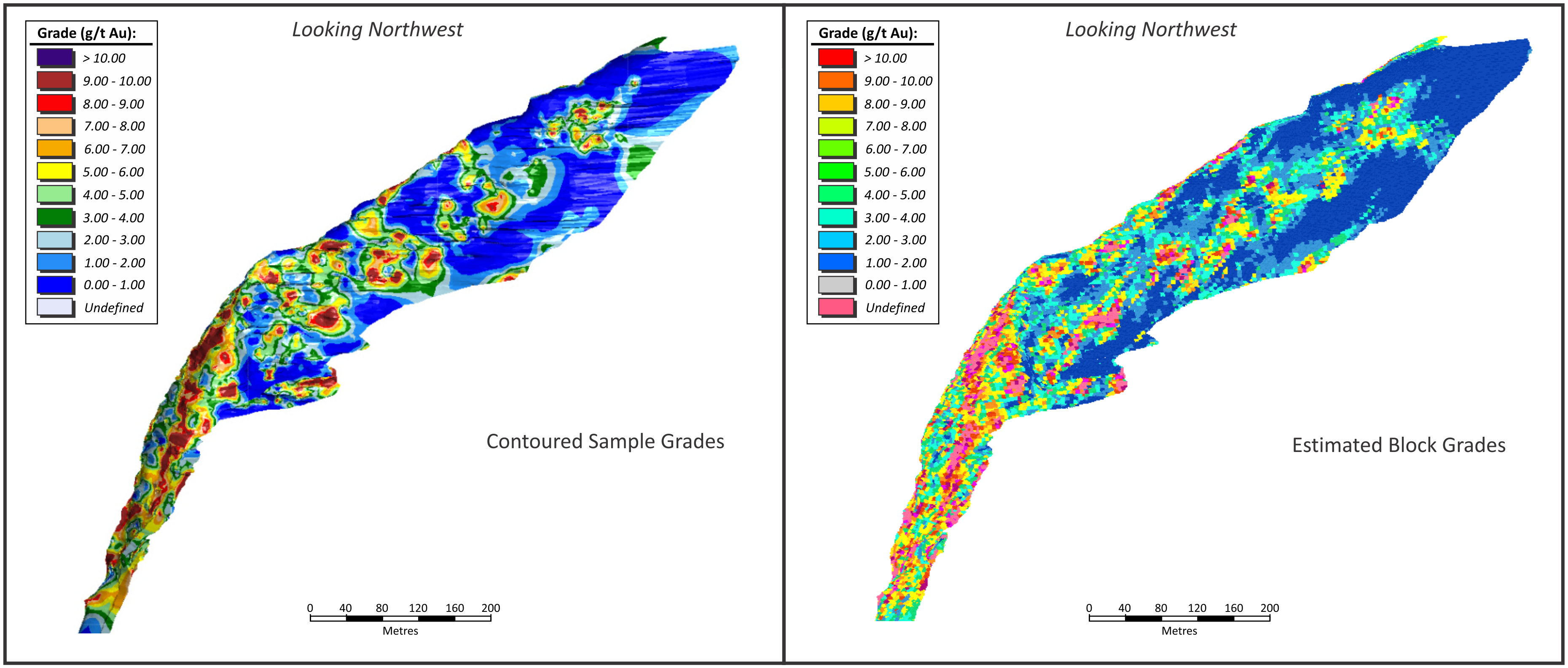


Figure 14-37

Jagur Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Comparison of Contoured Sample Grades with Estimated Block Grades, Orebody BF II

March 2022

Source: SLR, 2022.

14.3.11.2.3 Grade Distribution Curves

A final method of block model evaluation included a comparison of the informing composite sample grade distribution shapes with the estimated grade distribution shapes in the block model. This approach has the advantage of providing both a qualitative, visual product for review as well as quantitative data so as to allow for an analysis of the magnitude of any variances that may be observed.

Review of the example curves presented in Figure 14-38 to Figure 14-40 indicated that the average grade of the estimated block grades are all less than the average grades of the informing capped composite samples. Variances between the informing capped composite samples and the estimated block grades are also observed at the lower end of the grade range, wherein the lower gold grades are under-represented by the estimated block grades.

While this may be in part due to a clustering effect that is inherent in the capped composite sample data, close inspection of the curve shapes demonstrates that the estimated block grades all under-represent the higher grade values that are present in the informing sample data. This can be attributed to the smoothing effect inherent in the OK estimation algorithm as well as in part to the selection block grade estimation search ellipse parameters.

The SLR QP recommends that studies be undertaken to investigate options for achieving a better correlation between the distribution of informing composite sample gold grades and estimated block grades.

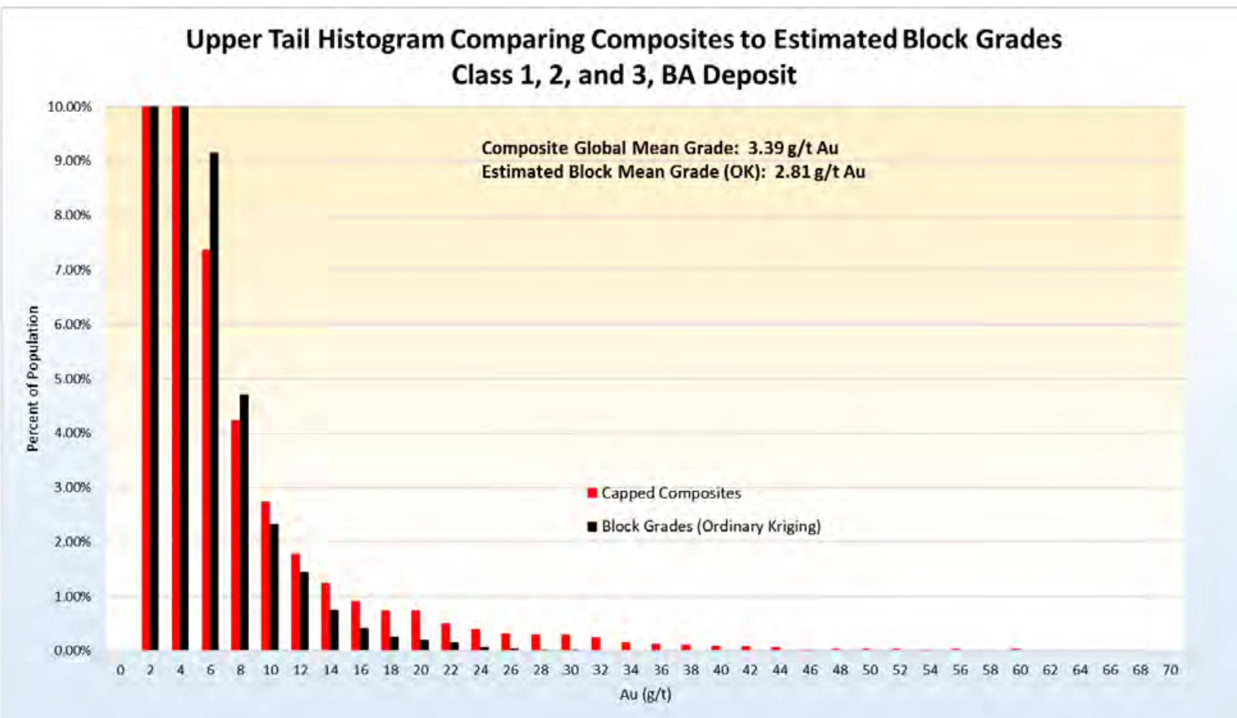


Figure 14-38: Comparison of Gold Grade Distributions, Orebody BA

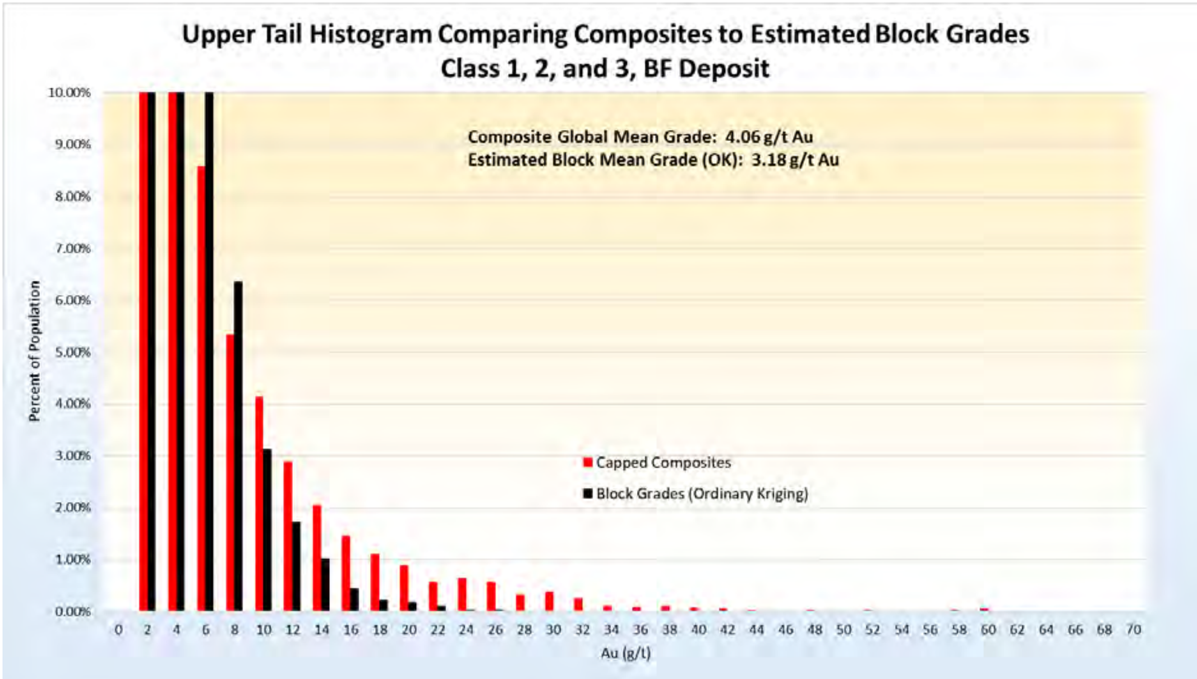


Figure 14-39: Comparison of Gold Grade Distributions, Orebody BF

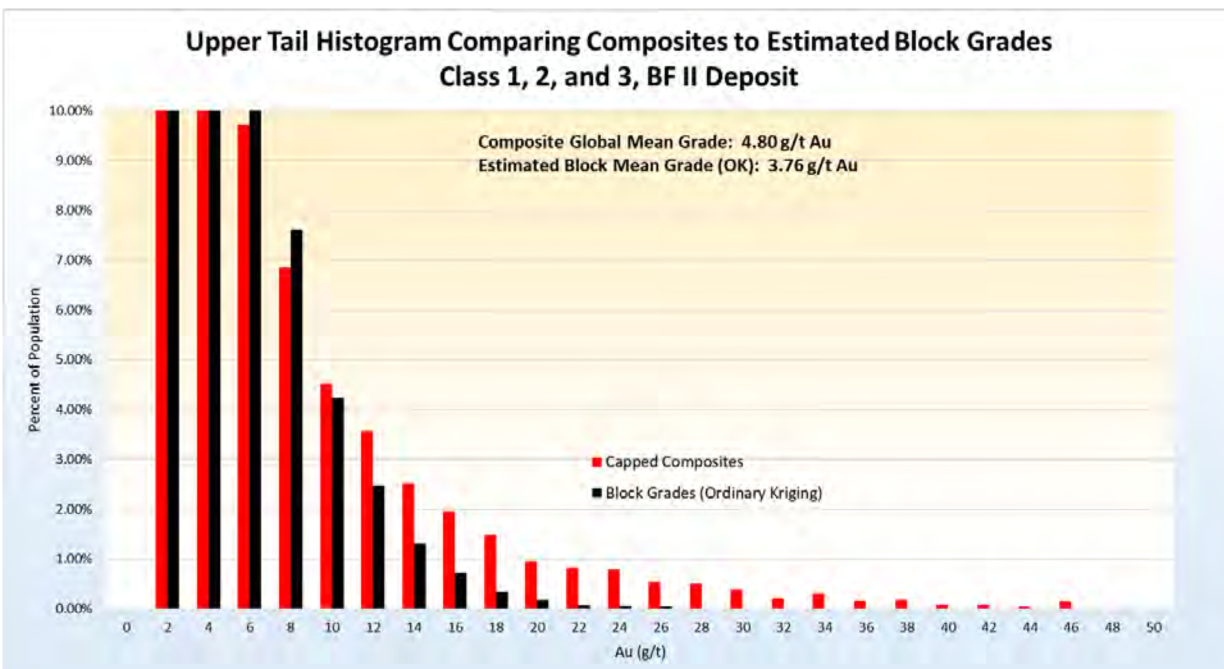


Figure 14-40: Comparison of Gold Grade Distributions, Orebody BF II

14.3.11.3 Reconciliation to Production

A comparison of the estimated block model tonnes and grade with mill production statistics was only available for the period of January 2020 to December 2021 (Table 14-27). The Pilar material flow begins with the transportation of the broken development muck and stope tonnes to the surface, where the material is placed in a temporary laydown area for sampling. The material is then transported overland by truck to the Caeté Plant.

The monthly tonnage and grade figures derived from the block models utilized the as-mined excavation solids models for the development and stopes completed in, 2020 and 2021 to constrain the reports. The mined out volumes were created using data collected using a Cavity Monitoring Survey (CMS) and/or total station survey equipment. In a limited number of instances, the shape and size of the excavated volumes could not be surveyed due to equipment failures, timing, or safety issues. The SLR QP recommends that in the event of no CMS model being available for a given excavation volume, the design shape for the excavations in question (suitably modified for the estimated amount of overbreak) be used as a proxy when preparing the reconciliation reports.

The grade of all blocks that are located outside of the mineralized wireframe models (ostensibly the waste materials) has been set to a value of zero for the 2020 and 2021 block models. This approach results in the inclusion of all waste tonnes (both planned and unplanned dilution) as well as the recovered ore tonnes. The data represents the fully diluted, recovered tonnes and grade as predicted from the block model and is appropriate for comparison with plant feed grade.

Considering that Jaguar incorporates all grade control drilling and channel sampling data into the workflow for estimation of the Mineral Resources, accomplishing a reconciliation study according to the methods presented in Parker (2004) is not possible. To address this situation, Jaguar has adopted a slightly modified workflow as suggested in RPA (2017, 2019, 2019b, and 2020) when carrying out reconciliation studies. In this approach, the excavation volumes from the January 2020 to December 2021 period are applied against the block model completed at year end 2020, and the resulting tonnes and grades are compared against the Caeté Plant production data for the January 2020 to December 2021 period. As these excavation volumes are querying areas in the year end 2020 block model for which no grade control data was available, the SLR QP considers this approach to examine the predictive capabilities as well as the accuracy of the estimation procedures and parameters in place as of year end 2020. The SLR QP considers this approach of using the year end 2020 block model for reconciliation reporting similar to an F3 reconciliation study as presented by Parker (2004). The SLR QP is of the opinion that this approach can provide a means of measuring the accuracy of the data, sample density, workflows, and estimation parameters that Jaguar uses to prepare Mineral Resource estimates for the period under examination (24 months in this case). This approach also allows the formation of an opinion on the forward accuracy of the current block model, as the procedures and parameters are similar to those used for the previous block model. A summary of the predicted versus actual gold production for the January 2021 to December 2021 period is presented in Figure 14-41 and a summary of the F3 reconciliation factors is presented in Figure 14-42.

Table 14-27: Reconciliation Data by Quarter, January 2020 to December 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Period	Mine Report			Plant Feed			Block Model YE 2020			Block Model Year End 2021		
	Mass (t)	Au (ppm)	Ounces (oz Au)	Mass (t)	Au (ppm)	Ounces (oz Au)	Mass (t)	Au (ppm)	Ounces (oz Au)	Mass (t)	Au (ppm)	Ounces (oz Au)
2020												
Q1	101,151	3.65	11,879	101,151	3.98	12,953	85,032	4.93	13,478	84,564	4.96	13,491
Q2	104,450	3.73	12,524	104,450	4.59	15,418	81,675	5.31	13,950	85,117	5.51	15,073
Q3	110,667	4.14	14,733	110,667	4.26	15,174	70,079	5.54	12,482	85,524	5.73	15,766
Q4	117,357	3.83	14,467	117,357	3.72	14,045	98,850	5.25	16,689	120,452	5.17	20,011
2021												
Q1	103,656	3.58	11,946	102,420	3.37	11,099	60,389	4.66	9,043	95,915	4.59	14,157
Q2	112,917	3.57	12,947	114,153	3.62	13,284	42,737	4.43	6,084	102,121	4.82	15,841
Q3	118,636	3.47	13,221	118,636	3.65	13,941	51,229	4.65	7,654	90,749	5.51	16,076
Q4	112,218	4.27	15,418	112,218	4.14	14,948	61,196	7.10	13,972	91,028	6.02	17,614
Annual Totals												
2020	433,625	3.84	53,604	433,625	4.13	57,590	335,636	5.24	56,600	375,657	5.33	64,341
2021	447,427	3.72	53,532	447,427	3.70	53,272	215,551	5.30	36,753	379,813	5.21	63,688

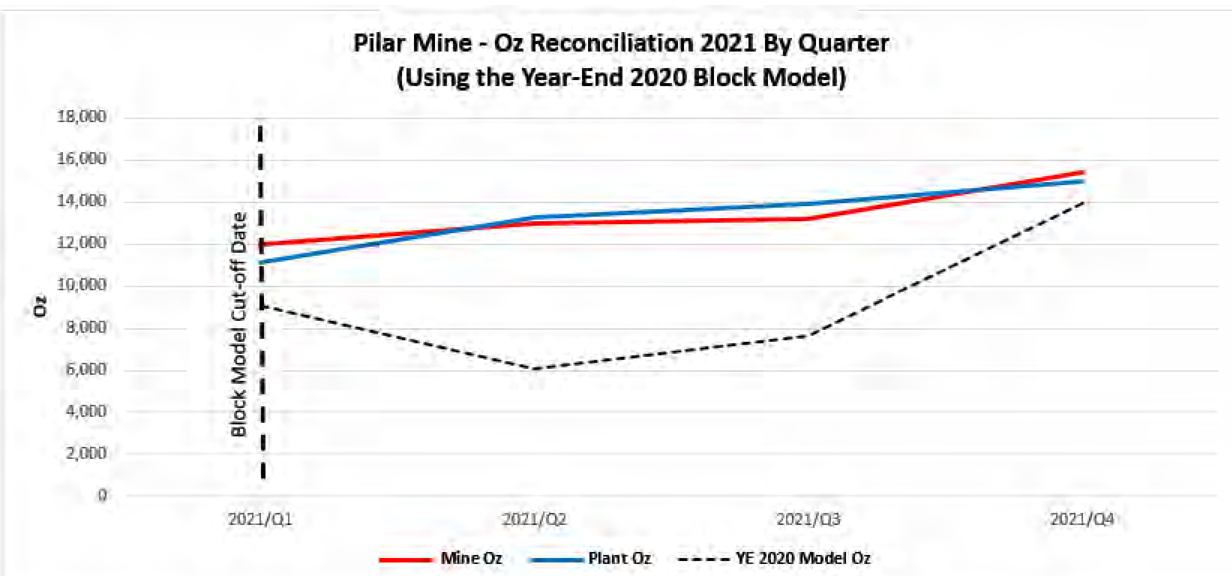


Figure 14-41: Comparison of Predicted versus Actual Gold Production, Pilar Mine, January 2021 to December 2021

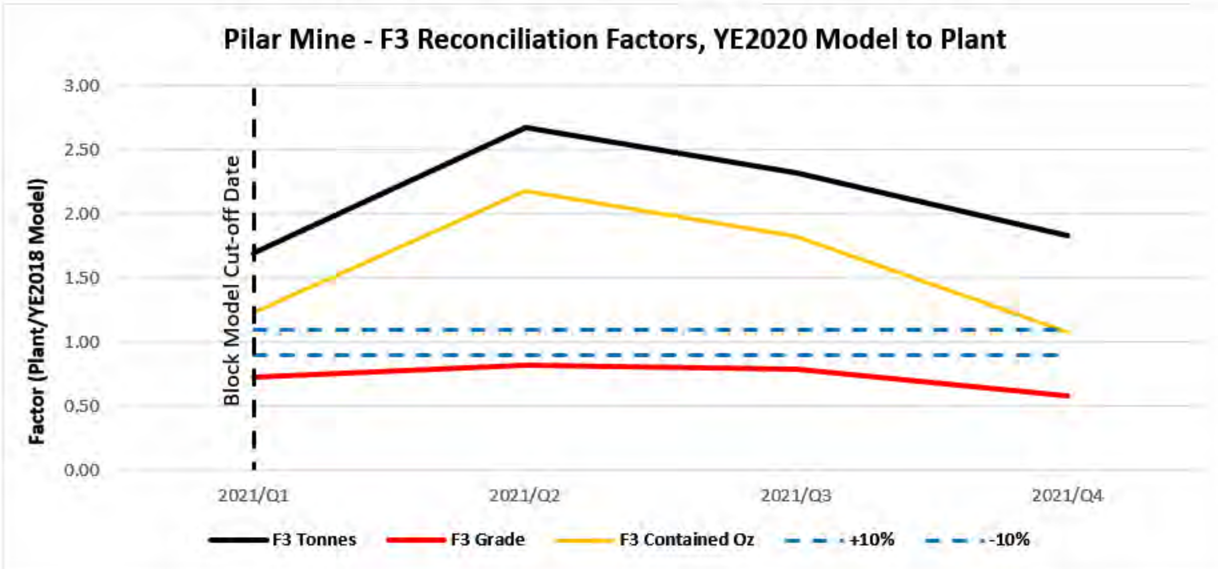


Figure 14-42: F3 Reconciliation Factors, Pilar Mine, January 2021 to December 2021

Jaguar has carried out a second reconciliation study which uses the recently completed block model for year end 2021 to compare against the Caeté Plant production data. In this study, the excavation volumes from the January 2020 to December 2021 period were applied against the current block model completed at year end 2021 and the resulting data was compared against the Caeté Plant production data for the same period. In this manner, the accuracy of the Pilar grade control programs and reporting procedures are examined against the Caeté Plant production data for a period of 24 months. SLR considers this approach to be comparable to the F2 reconciliation as presented by Parker (2004). A summary of the predicted versus actual gold production for the January 2020 to December 2021 period is presented in Figure 14-43 and a summary of the F2 reconciliation factors is presented in Figure 14-44.

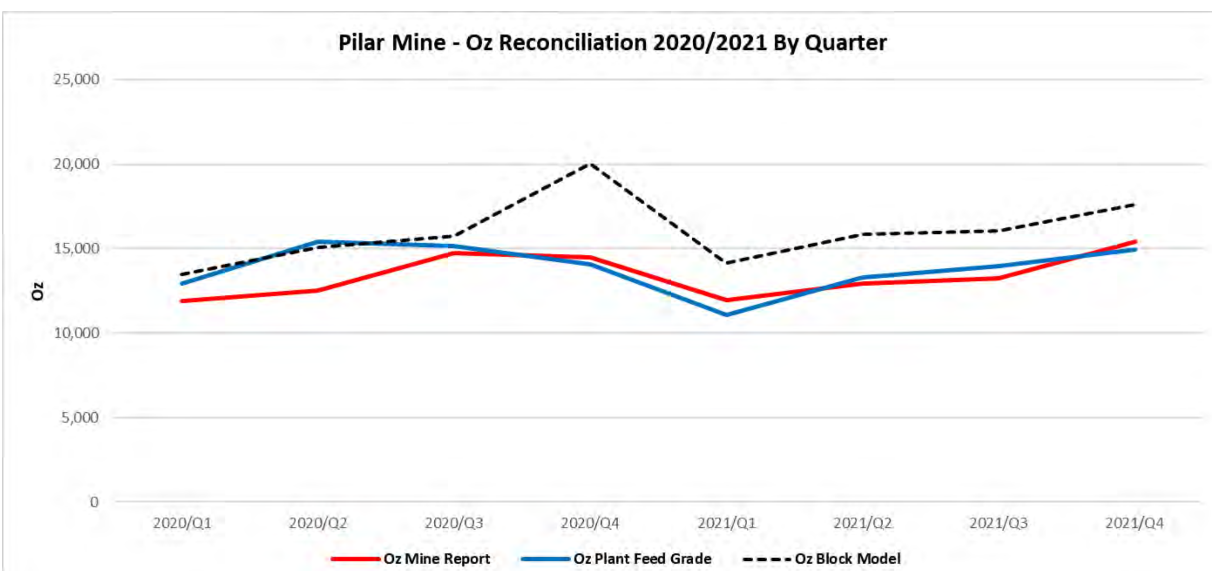


Figure 14-43: Comparison of Predicted versus Actual Gold Production, Pilar Mine January 2020 to December 2021

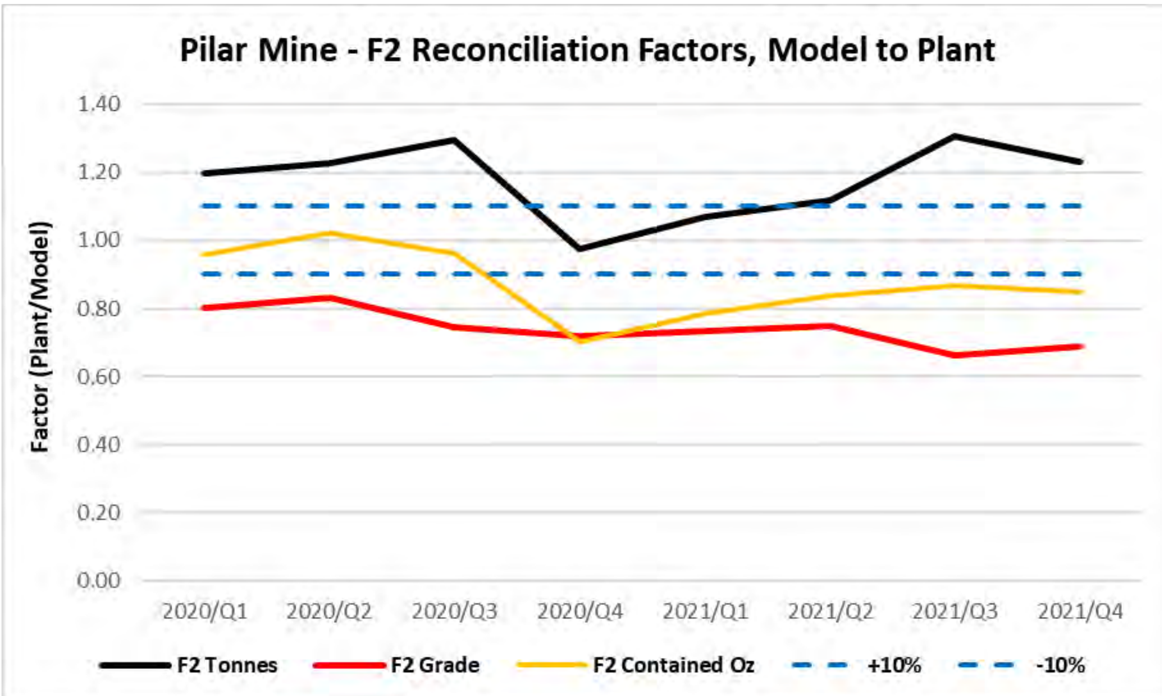


Figure 14-44: F2 Reconciliation Factors, Pilar Mine January 2020 to December 2021

As has been demonstrated, the year end 2021 block model has predicted lower tonnages than were processed by the Caeté Plant. The block model predicted grades are generally higher than the plant feed grades.

14.3.12 Mineral Resource Classification

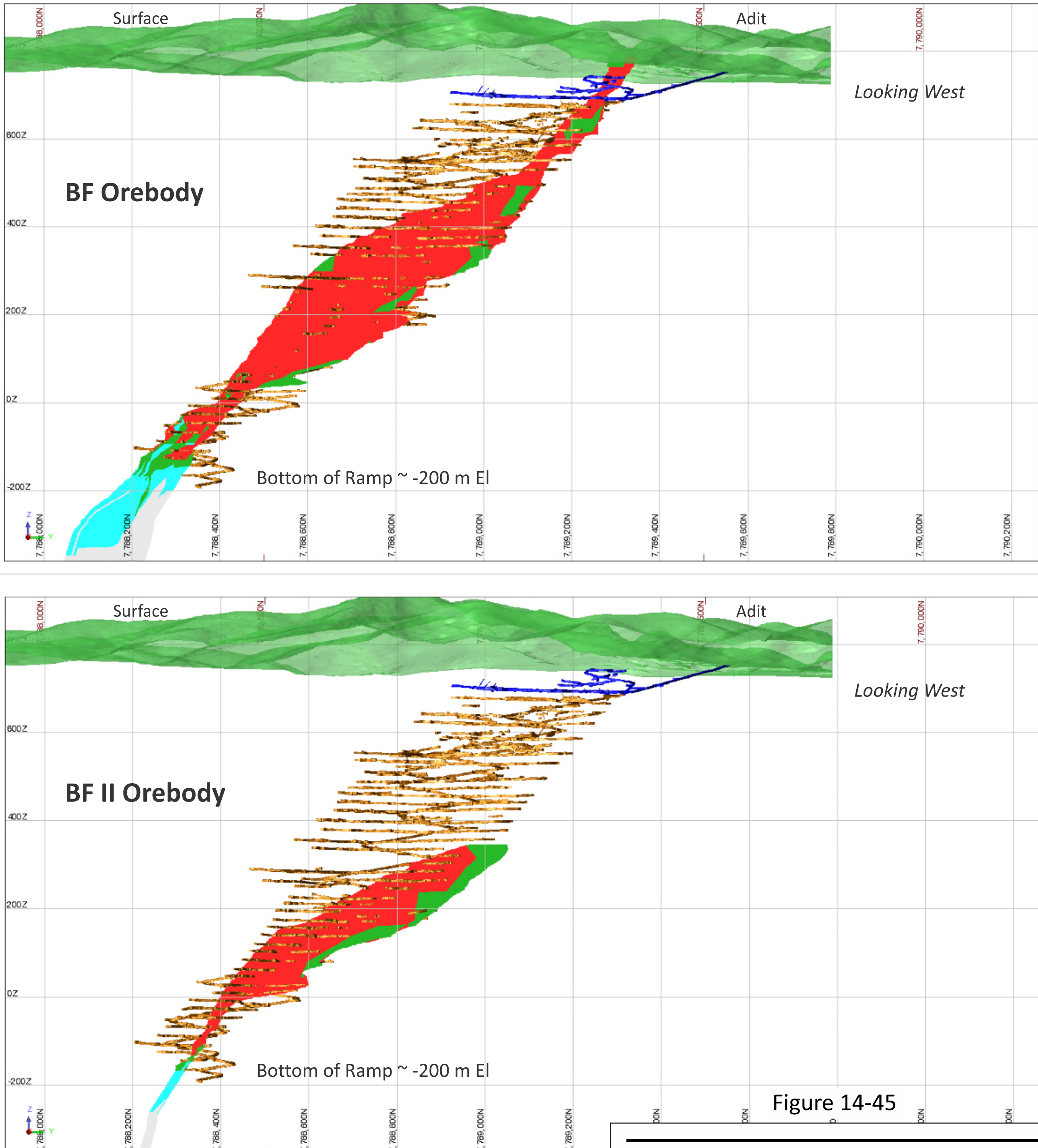
Definitions for resource categories used in this Technical Report are consistent with CIM (2014) definitions.

Mineralized material for each Pilar wireframe was initially classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, demonstrated continuity of the gold mineralization, density of drill hole and chip sample information, and presence of underground access.

On the basis of these criteria, Measured Mineral Resources initially comprised material estimated using Pass #1 and located between developed levels. Indicated Mineral Resources initially comprised material estimated using Pass #2, and Inferred Mineral Resources initially comprised material estimated using Pass #3. Jaguar employs an additional block model code to denote areas considered to display good exploration potential for use in the decision process, and this material was defined by those grades that were estimated with Pass #4.

Following the initial classification, a clean up step was applied to arrive at a final classification stage so as to ensure continuity and consistency of the classified blocks in the model. This clean up step was applied by manually creating a series of clipping polygons, which were subsequently used to assign the final classification codes into the block model. Figure 14-45 presents an example of the final classification layouts for the BF and BF II Domain.

The final classifications were then updated following the preparation of the reporting panels used as criteria for preparing the Mineral Resource statements. In some instances, the reporting panels were observed to contain blocks of different classification codes. For these panels, the classifications for blocks contained within the reporting panels were updated to reflect the majority classification codes of the blocks in those panels.



Legend:
- *Measured*
- *Indicated*
- *Inferred*

0 120 240 360 480 600
Metres

March 2022

Source: SLR, 2022.

Figure 14-45

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Example of the Mineral Resource Classification, BF and BF II Domains

14.3.13 Cut-Off Grade

A cut-off grade of 1.66 g/t Au was used for reporting Pilar Mineral Resources. This cut-off grade was calculated using a gold price of US$1,800/oz Au, average gold recovery of 87%, average exchange rate of R$5.50 : US$1.00, and total operating cost of R$460/t . The operating costs were derived from the actual costs incurred by the operations during 2021.

Considering the current metal price environment and outlook, the SLR QP recommends that Jaguar evaluate the impact of a higher metal price on the cut-off grade and the resulting estimated Mineral Resources.

14.3.14 Mineral Resource Reporting

Pilar Mineral Resources are inclusive of Mineral Reserves. The Pilar Mineral Resources are located as remnants above Level 7 (265 elevation) or as additional mineralized areas below or beyond the current underground development. Three-dimensional reporting volumes were prepared to aid in the reporting of the Mineral Resources to ensure that the RPEEE requirement of the CIM (2014) definitions was met. These reporting volumes were prepared using either MinePlan 3D native functions and workflows or the functions available through the Deswik mine modelling software package. A summary of the principle input parameters used to prepare the reporting volumes is presented in Table 14-28. Reporting volumes were prepared in either plan, section, or longitudinal views, as appropriate. Reporting volumes were drawn to include continuous volumes of blocks whose estimated grades were above the stated cut-off grade and were not located in mined out areas. These reporting volumes were also used to exclude isolated blocks with limited to no spatial continuity but containing grades above the nominated cut-off. Blocks with estimated grades above the stated cut-off grade, but located along either the hanging wall, footwall, or otherwise in close proximity to an excavated stope volume, were also excluded. These reporting volumes were used to appropriately code the block model and were used as criteria to report the Pilar Mineral Resources.

The SLR QP recommends that the reporting volumes for the remaining Pilar mineralization above Level 17 be reviewed and re-evaluated in consideration of the current metal price environment and short term outlook.

The SLR QP recommends that the input parameters and workflows used to prepare the reporting volumes be updated to more accurately reflect volumes of material in the block model that are candidates for classification as Mineral Resources.

Table 14-28: Summary of Principal Input Parameters for Mineral Resources Reporting Panels, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Parameter	Value
Gold Price	US$1,800/oz
Exchange Rate	R$5.50:US$1.00
Cut-off Grade	1.66 g/t Au
Anticipated Mining Method	Sublevel Stoping
Default Density	3.1 t/m^3 (Ore), 2.9 t/m^3 (Waste)
Panel Height	19.5 m / 19.5 m / 12.5 m
Panel Length	5 m
Panel Minimum Width	2 m
Panel Maximum Width	30 m
Panel Minimum Pillar	10 m
Dilution	0.5 m (HW and FW)
Minimum Dip	45°
Mining Recovery	95%
Metallurgical Recovery	87.6 %

Notes:

1. HW = Hanging wall; FW = Footwall

The SLR QP is of the opinion that these procedures, constraints, and reporting volumes are sufficient to satisfy the RPEEE requirement of the CIM (2014) definitions. The current Pilar Mineral Resources are presented in Table 14-29 and Table 14-30.

The SLR QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Pilar Resource estimate.

The SLR QP is of the opinion that the Pilar Mineral Resource estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014) definitions.

Table 14-29: Summary of Mineral Resources as of December 31, 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Measured	2,338	3.91	294
Indicated	1,499	3.60	173
Total M+I	3,837	3.79	467
Inferred	2,125	4.21	288

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported within resource reporting shapes which were generated using a cut-off grade of 1.66 g/t Au.
3. Mineral Resources are estimated using a long term gold price of US$1,800/oz Au and an average long term foreign exchange rate of R$5.50 : US$1.00.
4. Bulk densities used are variable for each mineralized wireframe.
5. A minimum mining width of two metres was used.
6. Gold grades are estimated using OK.
7. Mineral Resources are inclusive of Mineral Reserves.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. Numbers may not add due to rounding.

Table 14-30: Mineral Resources by Domain as of December 31, 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
	Orebody BA:		
Measured	396	4.30	55
Indicated	176	3.80	22
Sub-total M+I	573	4.15	76
Inferred	31	3.70	4
	Orebody BF:		
Measured	734	4.22	99
Indicated	198	4.19	27
Sub-total M+I	931	4.21	126
Inferred	293	4.33	41
	Orebody BF II:		
Measured	428	4.07	56
Indicated	61	4.09	8
Sub-total M+I	489	4.07	64
Inferred	29	3.16	3

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
	Orebody BF III:		
Measured	28	4.29	4
Indicated	33	4.34	5
Sub-total M+I	61	4.32	8
Inferred	79	3.63	9
	Orebody Torre:		
Measured	75	2.99	7
Indicated	286	3.28	30
Sub-total M+I	361	3.22	37
Inferred	288	3.74	35
	Orebody SW:		
Measured	224	3.44	25
Indicated	637	3.45	71
Sub-total M+I	861	3.45	95
Inferred	1,330	4.37	187
	Remaining Domains:		
Measured	454	3.29	48
Indicated	108	3.36	12
Sub-total M+I	562	3.30	60
Inferred	75	4.04	10
	Total Pilar Mine:		
Total Measured	2,338	3.91	294
Total Indicated	1,499	3.60	173
Total M + I	3,837	3.79	467
Total Inferred	2,125	4.21	288

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported within resource reporting shapes which were generated using a cut-off grade of 1.66 g/t Au.
3. Mineral Resources are estimated using a long term gold price of US$1,800/oz Au and an average long term foreign exchange rate of R$5.50 : US$1.00.
4. Bulk densities used are variable for each mineralized wireframe.
5. A minimum mining width of two metres was used.
6. Gold grades are estimated using OK.
7. Mineral Resources are inclusive of Mineral Reserves.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. Numbers may not add due to rounding.

14.3.15 Factors Affecting the Mineral Resources

Mineral Resources, which are not Mineral Reserves, do not have demonstrated economic viability. At the present time, the SLR QP is not aware of any environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues that may have a material impact on the Pilar Mineral Resource estimate other than those discussed below.

Factors that may affect the Pilar Mineral Resource estimates include:

- Metal price and exchange rate assumptions.
- Changes to the assumptions used to generate the cut-off grade used for construction of the mineralized wireframe domain.
- Changes to geological and mineralization shape and geological and grade continuity assumptions and interpretations.
- Due to the natural variability inherent with gold mineralization, the presence, location, size, shape, and grade of the actual mineralization located between the existing sample points may differ from the current interpretation. The level of uncertainty in these items is lowest for the Measured Mineral Resource category and is highest for the Inferred Mineral Resource category.
- Changes to the understanding of the current geological and mineralization shapes and geological and grade continuity resulting from acquisition of additional geological and assay information from future drilling or sampling programs.
- Changes in the treatment of high grade gold values.
- Changes due to the assignment of density values.
- Changes to the input and design parameter assumptions that pertain to the assumptions for creation of underground constraining volumes.

14.3.16 Comparison with Previous Mineral Resource

A comparison of the current Pilar Mineral Resources with the previous Mineral Resources effective as of May 31, 2020, is presented in Table 14-31.

Table 14-31: Comparison of Mineral Resources, May 31, 2020 versus December 31, 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Mineral Resources as at May 31, 2020			
Measured	2,266	4.39	319
Indicated	1,751	4.28	241
Sub-total M+I	4,017	4.34	561
Inferred	1,254	4.52	182
Mineral Resources as at December 31, 2021			
Measured	2,338	3.91	294
Indicated	1,499	3.60	173
Sub-total M+I	3,837	3.79	467
Inferred	2,125	4.21	288
Difference			
Sub-total M+I	-4.5%	-12.7%	-16%
Inferred	69.5%	-6.9%	58.2%

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources were estimated at cut-off grades of:
   a. 1.46 g/t Au in 2020.
   b. 1.66 g/t Au in 2021.
3. Mineral Resources are estimated using a long term gold prices and long term foreign exchange rates of:
   a. US$1,500/oz Au and R$3.70 : US$1.00 in 2020.
   b. US$1,800/oz Au and R$5.50 : US$1.00 in 2021.
4. Bulk densities used are variable for each mineralized wireframe.
5. A minimum mining width of approximately two metres was used.
6. Gold grades are estimated using OK.
7. Mineral Resources are inclusive of Mineral Reserves.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. Numbers may not add due to rounding.

14.4 Córrego Brandão Deposit

14.4.1 Resource Database

The Córrego Brandão database used to estimate resources includes 44 core drill holes (5,671 m), 46 auger boreholes (707 m), and 14 trench and channel samples (237 m) at nominal spacing of 20 m to 50 m. Auger drilling was used to help wireframe mineralization in the oxidized material, however, they were excluded during gold grade interpolation. The cut-off date for the Córrego Brandão database is June 8, 2021. Table 14-32 summarizes drilling and trench sampling information.

Table 14-32: Description of the Córrego Brandão Deposit Database as of June 8, 2021
Jaguar Mining Inc. – Caeté Mining Complex

Data Type	Description
Collars, Core Drill Holes	44 (total 5,671 m)
Collars, Auger Drill Hole	46 (total 707 m)
Collars, Channel Samples	14 (total 237 m)
Survey, Core Drill Holes	1,804
Survey, Auger Drill Hole	46
Survey, Chip & Channel Samples	197
Lithology, Drill Holes	852
Lithology, Auger Drill Hole	656
Lithology, Chip & Channel Samples	205
Assays, Drill Holes	4,755
Assays, Auger Drill Hole	722
Assays, Chip & Channel Samples	205

The missing values in the assay database were replaced by very low gold value of 0.0025 g/t Au. Drilling and sampling practices are carried out to a high standard. The SLR QP is of the opinion that the Córrego Brandão core drill hole and trench sampling database is suitable for use in the preparation of Mineral Resource estimates.

14.4.2 Geological and Mineralization Interpretations

The interpreted 3D wireframe models of the Córrego Brandão gold mineralization have been prepared using geological information, assay values, drilling, and trenches based on a cut-off value of 0.3 g/t Au and nominal minimum width of two metres. Wireframes for gold distribution in oxide and fresh materials were prepared using MinePlan 3D. In total, one domain was generated in oxides and nine vein like domains were generated in fresh material (Figure 14-46). All wireframes were clipped to the topography surface. A separate surface was also created to represent the bottom of the weathered material.

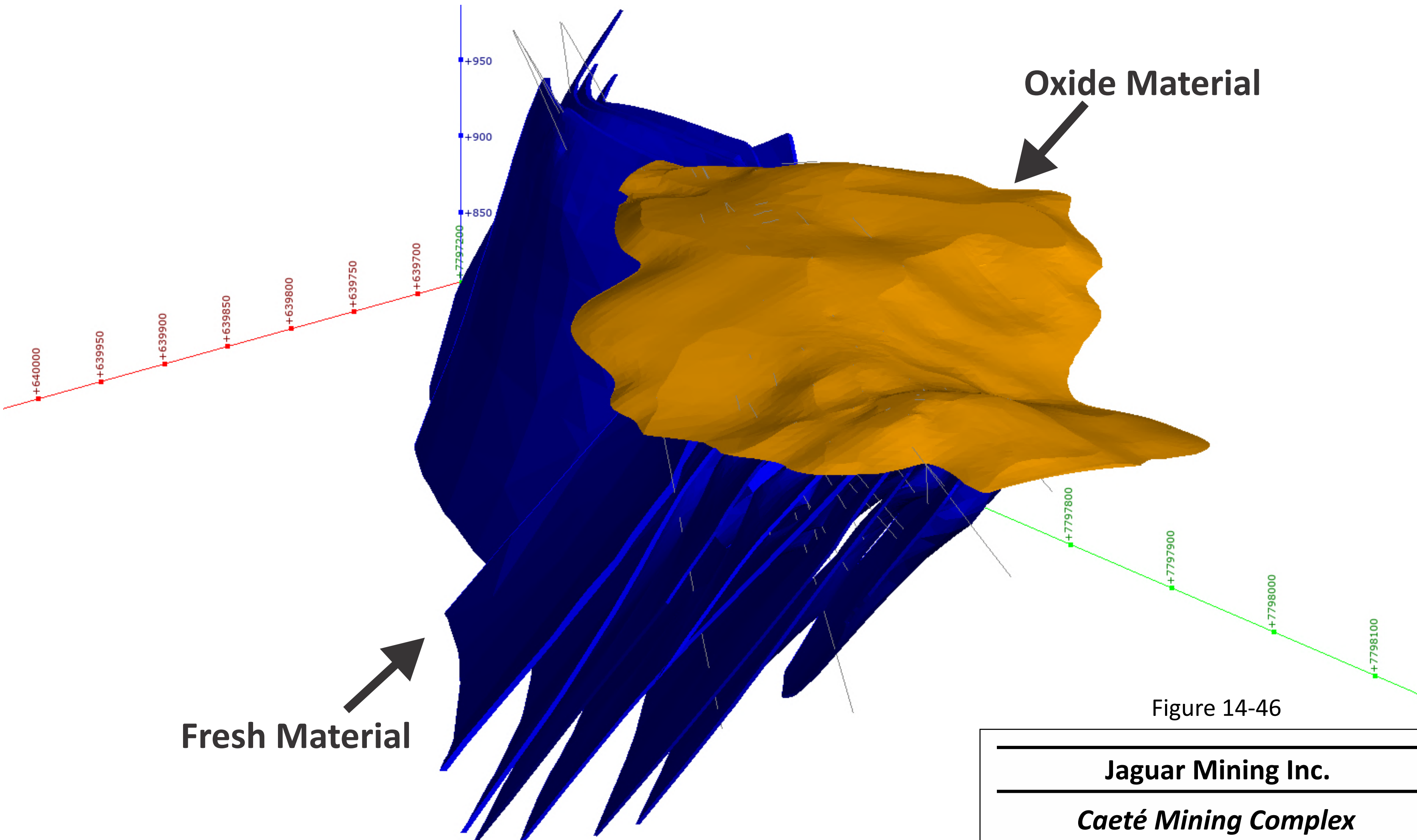


Figure 14-46

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Oblique View of Mineralized Domains, Córrego Brandão Deposit

March 2022

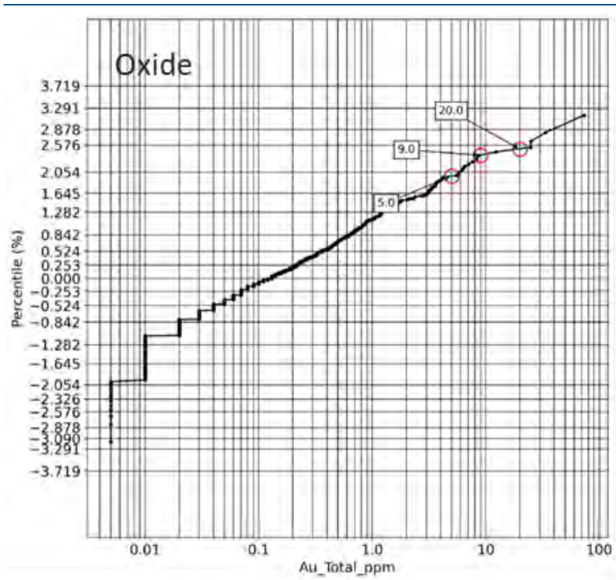
Source: SLR, 2022.

14.4.3 Resource Assays

The Córrego Brandão mineralization wireframe models were used to code the drill hole database and identify the raw assay samples, or resource assays, contained within the mineralized wireframes. These samples were extracted from the database into their respective domains, and then subjected to statistical analyses by means of histograms, probability plots, and decile analyses. A total of 5,167 samples were contained within the mineralized wireframes. The resource assay statistics are summarized in Table 14-33 and probability plots are presented in Figure 14-47.

Table 14-33: Resource Assay Descriptive Statistics, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Item	Oxide		Fresh	
	Au Raw	Au Cap	Au Raw	Au Cap
Count	621	621	723	723
Minimum (g/t Au)	0.01	0.01	0.01	0.01
Maximum (g/t Au)	73.40	9.00	24.10	7.00
Mean (g/t Au)	0.69	0.50	0.66	0.59
Sample Variance	12.18	1.53	2.90	1.25
Standard Deviation	3.49	1.24	1.70	1.12
CV	5.08	2.45	2.58	1.89
Capping Value (g/t Au)	9.00		7.00	



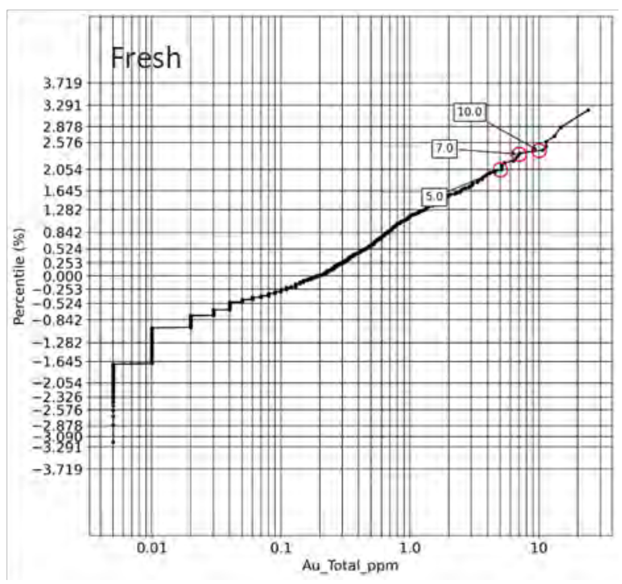


Figure 14-47: Resource Assay Probability Plots

14.4.4 Treatment of High Grade Assays

Based on the SLR QP's review of the Córrego Brandão resource assay statistics, the SLR QP is of the opinion that a capping value of 9.0 g/t Au is appropriate for the oxide mineralization and a capping value of 7.0 g/t Au is appropriate for mineralized lenses in fresh material. Capping values were applied to the raw assay samples in the appropriate mineralized domains prior to compositing.

14.4.5 Compositing

Prior to grade interpolation, the assay data within each of the individual mineralized domains were combined into one metre downhole composites. After review of the available information, the SLR QP is of the opinion that a composite length of one metre for all samples is reasonable. The descriptive statistics of the Córrego Brandão composites are provided in Table 14-34.

Table 14-34: Composite Descriptive Statistics, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Item	Oxide	Fresh
Count	650	750
Minimum (g/t Au)	0.01	0.01
Maximum (g/t Au)	7.00	9.00
Mean (g/t Au)	0.60	0.50
Sample Variance	1.10	1.26
Standard Deviation	1.05	1.12
CV	1.76	2.26

14.4.6 Variography

Variogram analyses were completed for oxide and fresh domains separately. The analysis proceeded with the evaluation of any anisotropies that may be present in the data, which resulted in successful correlograms with reasonably good model fits. MinePlan 3D variography package was used to construct the correlograms. A summary of the variogram parameters derived for both domains is presented in Table 14-35. A sample correlogram for an oxide mineralized domain is presented in Figure 14-48.

Table 14-35: Summary of Variography and Interpolation Parameters, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Orebody	Oxide	Fresh
Nugget C0	0.20	0.15
C1 Sill	0.40	0.45
C1 Sill Ranges Major/Semi/Minor (m)	19/9/4	52/42/2.4
C2 Sill	0.40	0.40
C2 Sill Ranges Major/Semi/Minor (m)	32/30/20	65/55/10
Model Type	Spherical	Spherical
Orientation	130/40/90	165/65/25
Anisotropy Ratio (Major/Semi-Major)	2.93	2.64
Anisotropy Ratio (Major/Minor)	6.58	15.80
Minimum Number of Samples	3	3
Maximum Number of Samples	8	8
Max. No. of Samples per Hole	2	2

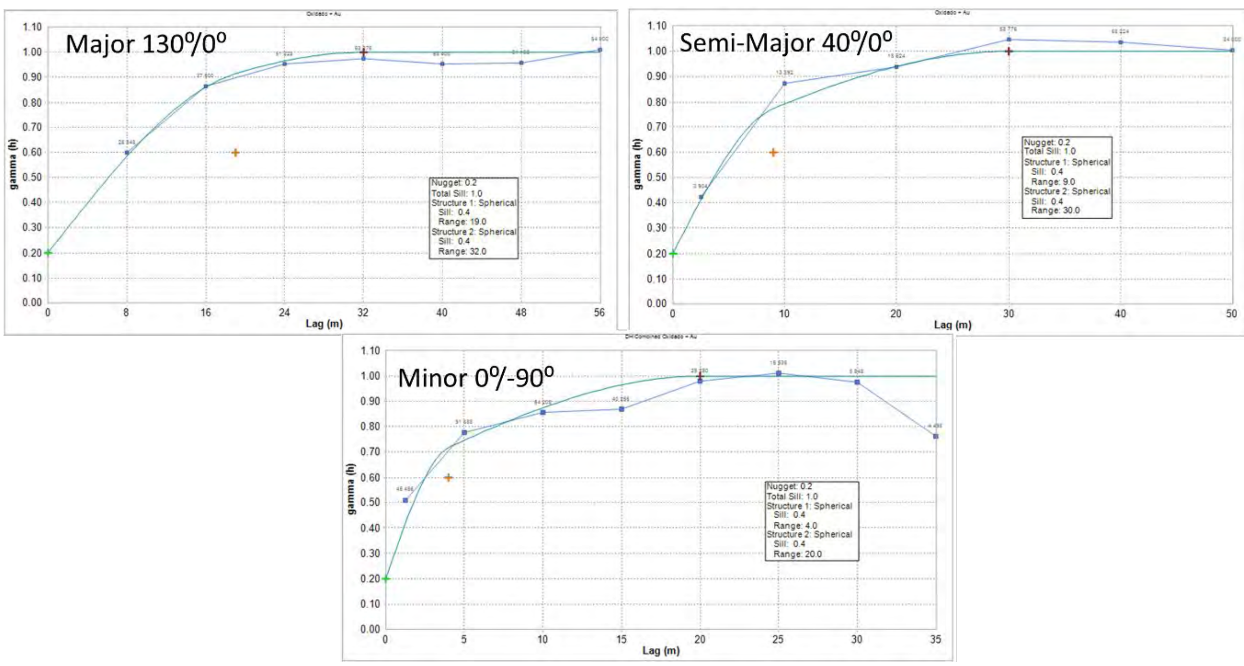


Figure 14-48: Correlogram for Oxide Mineralization

14.4.7 Bulk Density

The Córrego Brandão block model was coded with density values of 1.31 t/m^3 or 1.4 t/m^3 and 2.92 t/m^3 for oxide and fresh material, respectively.

14.4.8 Block Model Construction

An unrotated sub-blocked model was constructed using Datamine with parent cell sizes of 6 m x 6 m x 6 m in the UTM Datum Córrego Alegre, Zone 23S grid coordinate system. The Córrego Brandão block model origin, dimensions, and attribute list is provided in Table 14-36.

Table 14-36: Block Model Definition, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Type	Units	Northing (Y)	Easting (X)	Elevation (Z)
Minimum Coordinates	m	7,795,750	638,190	500
Maximum Coordinates	m	7,799,950	641,430	1,22
Number of Parent Blocks		540	700	117
Parent Block Size	m	6	6	6
Sub-Block Size	m	1	1	1
Rotation	°	0.0	0.0	0.0

14.4.9 Search Strategy and Grade Interpolation Parameters

Gold grades were estimated into the blocks by means of OK and nearest neighbour (NN) interpolation algorithm (Table 14-37). A total of three interpolation passes were carried out using distances derived from the variography results and search ellipse parameters presented in Table 14-35. For the first pass, search distances corresponded to half of the variogram ranges, for the second pass, variogram ranges were used, and during the third pass, one and half times the variogram ranges were employed in order to populate the entire block model and define exploration potential.

Table 14-37: Summary of Search Strategies, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Search Parameter	Pass #1		Pass #2		Pass #3	
	Oxide	Fresh	Oxide	Fresh	Oxide	Fresh
Minimum number of composites	3	3	2	2	1	1
Maximum number of composites	8	8	6	8	4	8
Maximum number of composites per drill hole	2	2	-	-	-	-
Search Ellipse - Major	16	30	32	65	48	100
Search Ellipse – Semi-Major	15	25	30	55	45	75
Search Ellipse - Minor	10	5	20	10	30	15

Hard boundaries were used to limit the use of composites between each domain and their respective wireframes, as fresh rock domains were comprised of nine orebodies. Only data contained within the respective wireframes were allowed to estimate the grades of the blocks coded by that wireframe.

The SLR QP recommends that Jaguar consider the use of a dynamic anisotropy method for estimation of grades so as to reflect the gold grade variations more accurately at the local scale.

14.4.10 Block Model Validation

Block model validation consisted of comparing the volume of the coded blocks in the Córrego Brandão block model against the volume report of the respective wireframe models as a high level check that the block model has been correctly coded for each of the wireframes. The Córrego Brandão block model volumes compared well with the wireframes volume where the difference for oxide material was less than 0.1% and for the fresh material was 1%.

As part of the Córrego Brandão block model validation, the SLR QP compared the average grades from the capped composites against the average estimated gold grades block modelled by OK and NN. In general, the block estimated mean grades compared well with the average of the capped composites for both domains (Table 14-38). The SLR QP attributes the lower mean grade in blocks estimated by OK in oxide material to the use of declustered composites.

Table 14-38: Block Model Validation Results, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Item	Oxide			Fresh		
	Cap Comps	OK	NN	Cap Comps	OK	NN
Minimum (g/t Au)	0.01	0.01	0.01	0.01	0.01	0.01
Maximum (g/t Au)	9.00	5.58	9.00	7.00	7.00	7.00
Mean (g/t Au)	0.50	0.38	0.39	0.60	0.59	0.54
Sample Variance	1.27	0.30	0.66	1.09	0.43	0.89
Standard Deviation	1.13	0.55	0.81	1.05	0.65	0.94
CV	2.26	1.82	2.67	1.77	1.23	1.90
Difference in Mean	-	-23.82%	-	-	-1.66%	-

Additionally, swath plots were used to compare the informing data with the estimated grades by OK. The swath plots for the oxide domain are illustrated in Figure 14-49.

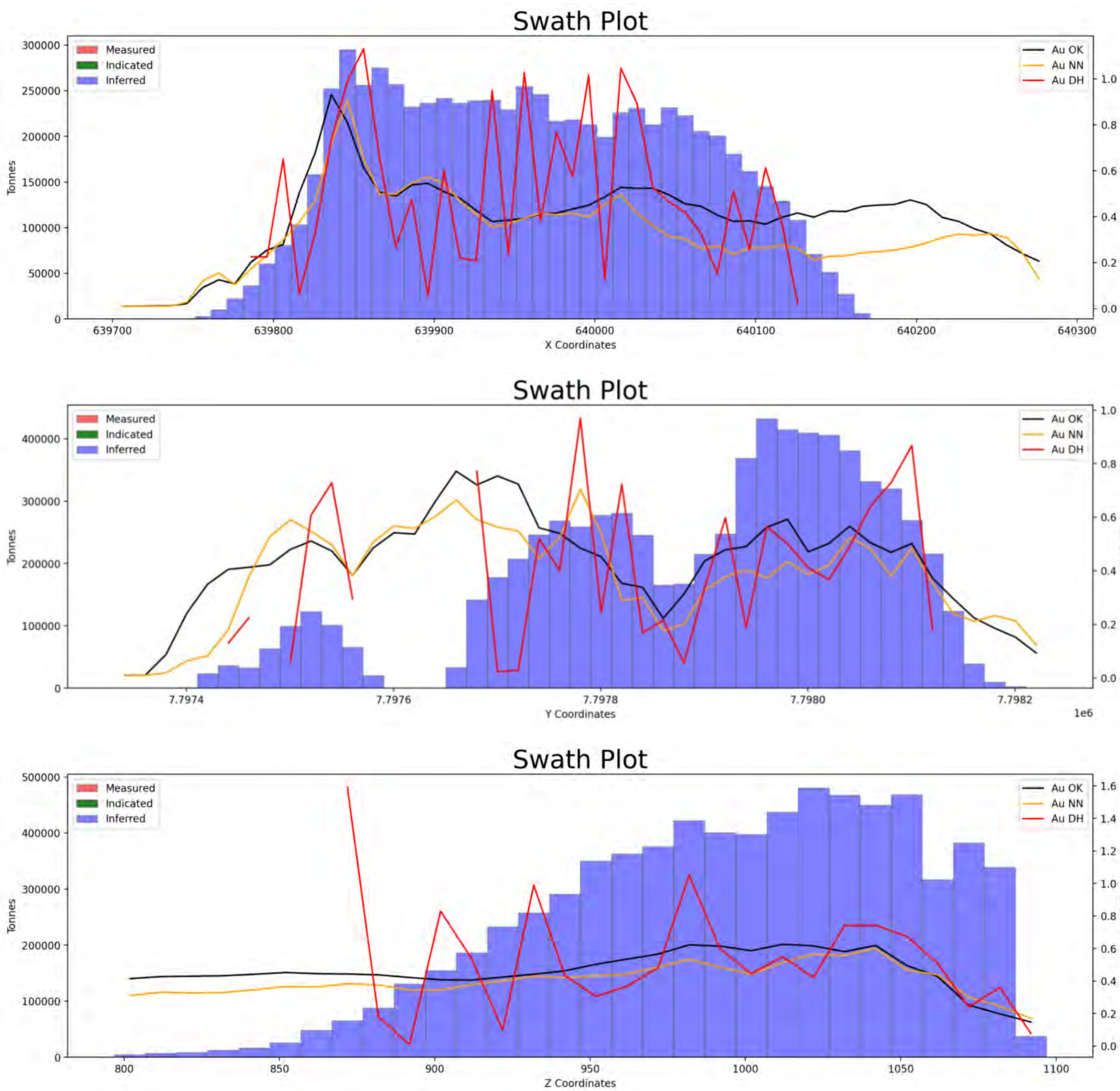


Figure 14-49: Swath Plots for Oxide Mineralization

14.4.11 Mineral Resource Classification

Definitions for resource categories used in this Technical Report are consistent with CIM (2014) definitions. All the reported Córrego Brandão Mineral Resources are classified as Inferred due to limited core drilling.

14.4.12 Cut-Off Grade

Metal prices used for Mineral Reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources. For Mineral Resources, metal prices used may be slightly higher than those for Mineral Reserves. The Córrego Brandão Mineral Resources are reported within a pit surface generated by optimization using the Lerchs-Grossmann algorithm (Table 14-39). Cut-off grades of

0.38 g/t Au and 0.74 g/t Au for oxide and fresh material, respectively, were estimated using a gold price of US$1,800/oz Au, an average gold recovery of 80% for oxide and 87% for fresh material, and an exchange rate of R$5.50 : US$1.00. Allowances for mining costs were included in the estimate.

Table 14-39: Summary of Optimization Parameters, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Parameters	Unit	Absolute Value
Mining Cost – Ore	US$/t	2.50
Mining Cost – Waste	US$/t	2.25
Process Cost RG Plant - Fresh	US$/t	28.59
Additional Freight Costs - Fresh	US$/t	1.13
Process Cost Heap Leaching - Oxide	US$/t	9.00
General and Administration (G&A)	US$/t	3.98
Recovery Fresh (Near Plant)	%	87
Recovery Oxide (Heap Leaching)	%	80

14.4.13 Mineral Resource Reporting

This is the first Mineral Resource reported for the Córrego Brandão deposit, which was discovered in 2019. This initial, optimized pit constrained Inferred Mineral Resource contains over 1.0 Mt at 1.48 g/t Au and 51,000 oz Au. There are no Mineral Reserves present at the Córrego Brandão deposit for the current reporting period.

The SLR QP is of the opinion that these procedures, constraints, and reporting volumes are sufficient to satisfy the CIM (2014) definitions of RPEE.

The Córrego Brandão Mineral Resources are presented in Table 14-40.

Table 14-40: Summary of Mineral Resources as of December 31, 2021, Córrego Brandão Deposit
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Inferred	1,072	1.48	51

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are reported within an optimized pit surface and reported using a cut-off grades of 0.38 g/t Au and 0.74 g/t Au for oxide and fresh material, respectively.
3. Mineral Resources are estimated using a long term gold price of US$1,800/oz Au and an average long term foreign exchange rate of R$5.50 : US$1.00.
4. A pit shell based on the Lerchs-Grossman algorithm was used for the estimation of Mineral Resources.
5. Bulk density values of 1.31 t/m^3 or 1.4 t/m^3 and 2.92 t/m^3 were assigned to Mineral Resources for oxide and fresh material, respectively.
6. Gold grades are estimated using OK interpolation.
7. No Mineral Reserves are currently present at Córrego Brandão.
8. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
9. Numbers may not add due to rounding.

The Córrego Brandão gold mineralization remains open in all directions and the SLR QP understands that further exploration and evaluation drilling to both expand the current Mineral Resource and convert it to Measured and Indicated categories is planned during 2022.

The SLR QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Córrego Brandão Mineral Resource estimate.

15.0 MINERAL RESERVE ESTIMATE

15.1 Summary

SLR has audited and accepted the Pilar Mineral Reserves estimate prepared by Jaguar. Table 15-1 summarizes the Pilar Mineral Reserves as of December 31, 2021 based on a gold price of US$1,650/oz Au and cut-off grade of 2.11 g/t Au. Figure 15-1 presents the Pilar Mineral Reserves. There are no reported Mineral Reserves for Roça Grande or Córrego Brandão.

Table 15-1: Summary of Mineral Reserves as of December 31, 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Proven	1,221	3.80	149
Probable	887	3.59	102
Total	2,108	3.71	251

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 2.11 g/t Au.
3. Mineral Reserves are estimated using an average long term gold price of US$1,650/oz Au and a foreign exchange rate of R$5.50:US$1.00.
4. A minimum mining width of two metres was used.
5. Bulk density is 2.89 t/m^3.
6. Numbers may not add due to rounding.

The SLR QP is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Pilar Mineral Reserve estimate.

The Pilar Mineral Reserves consist of selected portions of the Pilar Measured and Indicated Mineral Resources that are within designed stopes and associated development. The stope design was completed by Deswik Brasil. In the SLR QP's opinion, the Pilar Mineral Reserve estimates were prepared in a professional and diligent manner and comply with CIM (2014) definitions.

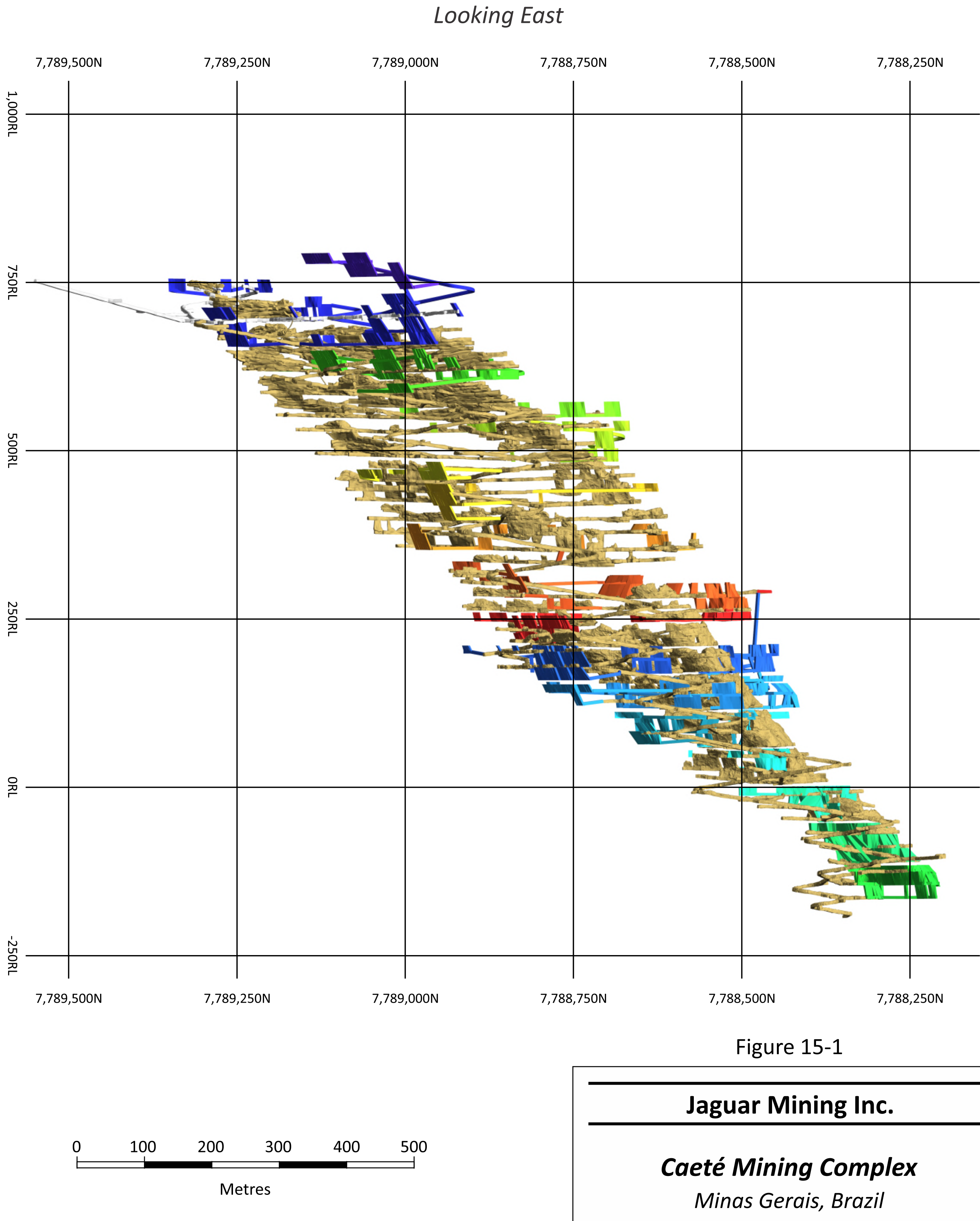


Figure 15-1

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Pilar Mineral Reserves

March 2022

Source: Jaguar Mining Inc., 2022.

15.2 Mineral Reserves by Domain

Table 15-2 presents the Pilar Mineral Reserves by domain as of December 31, 2021.

Table 15-2: Mineral Reserves by Domain as of December 31, 2021, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Orebody	Proven Reserves			Probable Reserves			Proven & Probable Reserves		
	ROM (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)	ROM (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)	ROM (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
BA	119	3.64	14	118	3.41	13	237	3.52	27
BF	365	4.2	49	133	4.05	17	498	4.16	67
BFII	298	4.07	39	55	3.77	7	353	4.03	46
BFIII	14	4.66	2	21	4.21	3	35	4.39	5
Torre	30	2.99	3	138	3.25	14	167	3.2	17
SW	178	3.44	20	338	3.6	39	516	3.54	59
Others	218	3.19	22	85	3.39	9	303	3.24	32
Total	1,221	3.80	149	887	3.59	102	2,108	3.71	251

Notes:

1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 2.11 g/t Au.
3. Mineral Reserves are estimated using an average long term gold price of US$1,650/oz Au and a foreign exchange rate of R$5.50:US$1.00.
4. A minimum mining width of two metres was used.
5. Bulk density is 2.89 t/m^3.
6. Numbers may not add due to rounding.

Dilution is addressed in two manners, internal to mine designs and external factoring. Internal, or planned, dilution is included in the mining shapes where they extend beyond the resource wireframe. Mining shapes are designed to be operationally achievable and respect minimum mining widths. Additional volumes included in this manner average approximately 15% across the Pilar Mineral Reserves.

External, or unplanned, dilution accounts for overbreak during blasting, minor ground failures in open stopes, and backfill mucked from the stope floors.

Dilution for the stopes is 0.5 m for the hanging wall and footwall. For ore development, a dilution of 0% is added.

Total dilution included in the Pilar Mineral Reserves averages approximately 25%, which reflects the measured results from mining over the last two years.

The implementation of stope pillars in low grade areas has proven to reduce stope dilution. An example of stopes (taken from Jaguar's Turmalina Mine) is presented in Figure 15-2.

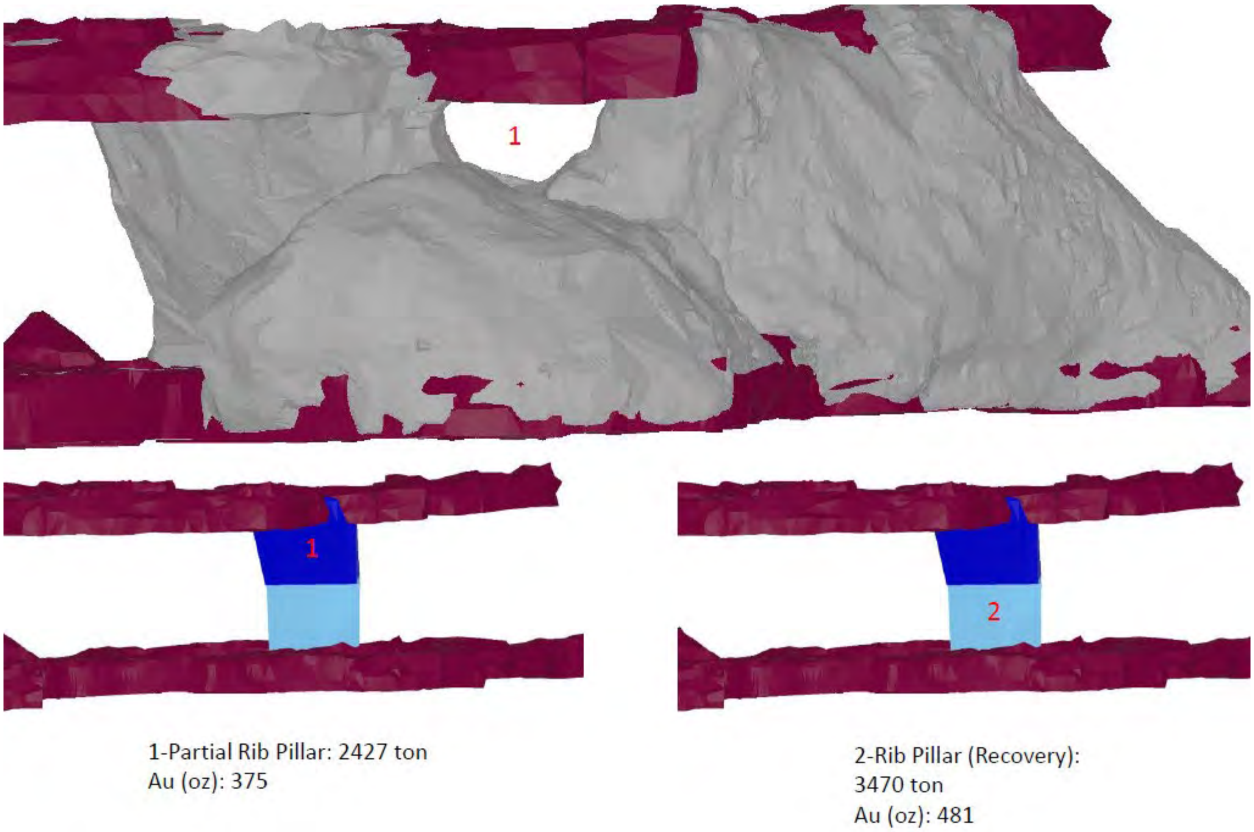


Figure 15-2: Typical Stope Pillar

In order to reduce external dilution, stope pillars (1) are added in low grade areas as shown in Figure 15-2, and a rib pillar is initially planned between the two stopes. Once the stope on the left is mined, the lower portion (2) of the rib pillar is recovered by drilling from the lower drill horizon, and then the next stope is mined.

Previously, stope drilling was carried out from the upper and lower drill drifts. This caused excess dilution where the two patterns intersected. Currently, the procedure is to only drill with down holes from the upper drill drift, except where the stope pillar is used.

15.3 Extraction

The following extraction factors were used for Pilar:

- Mining Recovery (Rib Pillars): 50%
- Mining Recovery (other stopes): 95%
- Mining Recovery (development): 100%

15.4 Cut-Off Grade

Pilar Mineral Reserves were estimated using a break-even cut-off grade of 2.11 g/t Au, calculated using the following inputs, as well as the data presented in Table 15-3:

- Gold price of US$1,650/oz Au
- Exchange rate of R$5.50:US$1.00
- Metallurgical recovery of 87%

Metal prices used for Mineral Reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources. For Mineral Resources, metal prices used are slightly higher than those for Mineral Reserves. Exchange rates are based on bank forecasts. Metallurgical recovery is consistent with recent operating results, as are operating costs. The values in Table 15-3 are based on 2021 actuals with an 8% increase. The SLR QP also notes that the exchange rate was increased from R$4.50 to R$5.50 in the current life of mine plan (LOMP). Though this has affected the value of the costs in US dollars, most of Jaguar's costs are in Brazilian Reais.

Table 15-3: Pilar Cut-Off Grade Inputs
Jaguar Mining Inc. – Caeté Mining Complex

Item	Value (US$/t)
Mining	47.08
Processing	28.25
G&A	7.96
Refining	0.34
Total Cost	83.62
Sustaining Mine Development Cost	13.91
Total Unit Cost	97.44

Break-Even Cut-off Grade	Total Unit Cost Gold price * 0.03215 * Gold Recovery
=	US$86.90/t US$1,650/oz * 0.03215 * 87%
=	2.11 g/t Au

Based on these numbers, a cut-off grade of 2.11 g/t was used for stope optimization. An incremental cut-off grade of 1.81 g/t Au was estimated using variable costs only, and is applied for development and stopes in which the infrastructure to access it is already in place. The mill has excess production capacity, not otherwise put to use.

16.0 MINING METHODS

16.1 Summary

Pilar currently produces at a rate of approximately 1,200 tpd, with ore being transported 45 km by truck to the Caeté Plant for processing. The Pilar gold mineralization occurs in a shear zone, which dips on average 50° to 60°. The mineralization is structurally complex, with intense folding and displacements (up to one metre) associated with local faulting. Consequently, the vein can change direction, pinch, and swell over relatively short distances. Though the orebody's hanging wall and footwall contacts are visually distinguishable, an assay wall can occur within the formation. The Pilar deposit extends from 250 m to 350 m along strike.

Figure 16-1 presents a longitudinal section of Pilar.

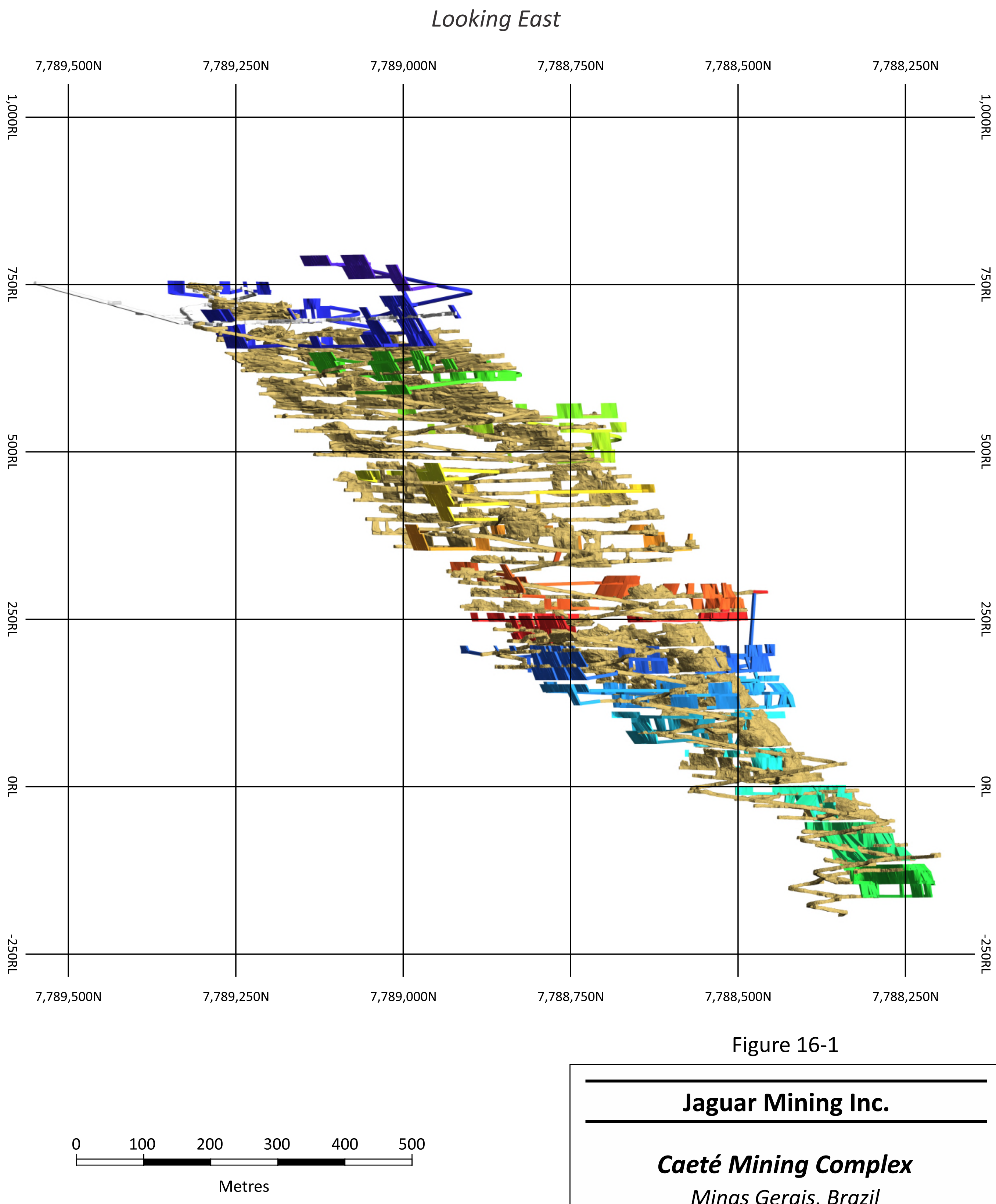


Figure 16-1

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Pilar Mine Longitudinal Section

March 2022

Source: Jaguar Mining Inc., 2022.

16.2 Mine Design Parameters

Table 16-1 presents the design parameters used to elaborate the Pilar mine plan associated with the Mineral Reserve estimate.

Table 16-1: Mine Design Parameters
Jaguar Mining Inc. – Caeté Mining Complex

Parameters	Units	Values
	Stope Design	
Mining Method		Sublevel Stoping
Default Density - Ore	t/m^3	3.1
Default Density - Waste	t/m^3	2.9
Stope Height	m	19.5/19.5/12.5
Stope Length	m	5
Stope Width Minimum	m	2
Stope Width Maximum	m	30
Stope Pillar Minimum	m	10
Dilution	m	0.5 (FW) / 0.5 (HW)
Minimum Dip	degrees	45
	Mine Design	
Rib Pillar Width	m	5.00
Maximum Span	m	25-30
Maximum Span - Side	m	40-50
Level Height	m	57.50
Sill Height	m	6
Distance Stope - Ramp	m	40
Distance Between Tunnels	m	10
Decline/Incline Maximum Grade	%	15.00
Minimum Ramp Turning Radius	m	20
Ore Drive Maximum Grade	%	2.50

Parameters	Units	Values
	Development Cross Sections	
Ramp	m	5.0 x 5.3
Crosscut	m	5.0 x 5.0
Ore Drive	m	4.0 x 4.5
Sump	m	4.0 x 4.5
Electrical Substation	m	4.0 x 4.5
Refuge Station	m	4.5 x 4.0
Ventilation Drift	m	4.0 x 4.5
Raise	m	3 (diameter)
	Mine Factors	
Overbreak Stope	%	-
Overbreak Development	%	-
Extraction	%	95
Extraction- Rib Pillar	%	50
Extraction - Development (Slash)	%	100
Metallurgical Recovery:	%	87.62
	Productivities	
Slot	days	5
Ground Support	drilled m/hr	36.7
Mucking	tph	82
Backfilling	tpd	1,000
Ramp	m/month	60
Crosscut	m/month	40
Ore Drive	m/month	40
Sump	m/month	40
Electrical Substation	m/month	40
Refuge Station	m/month	40
Ventilation Drift	m/month	40
Raise	m/month	40

16.3 Mining Methods

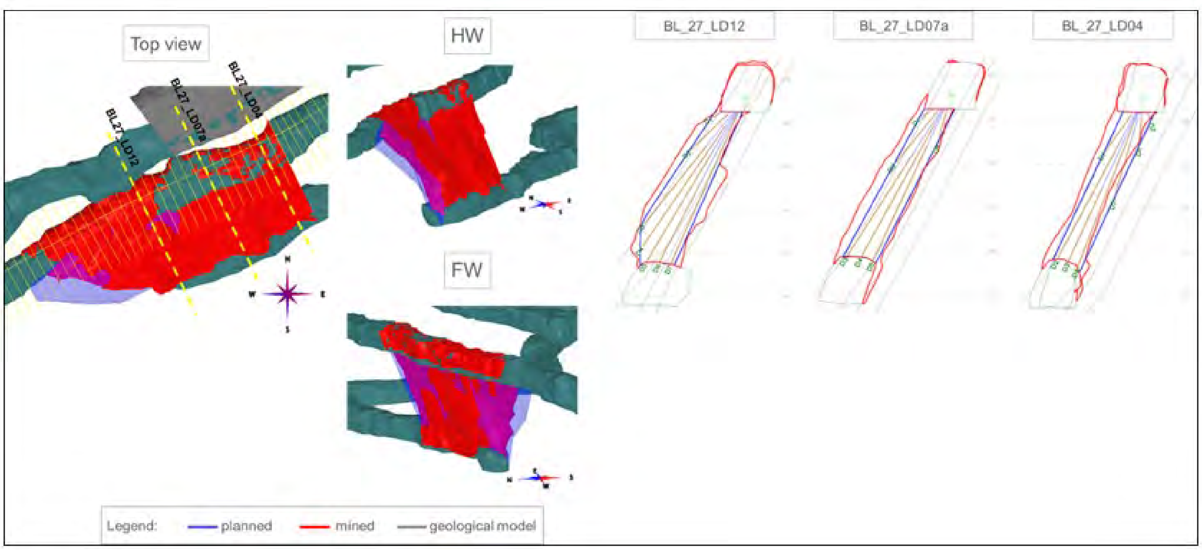
The primary mining method utilized at Pilar is SLOS with delayed backfill, with mechanical cut and fill mining used when ore geometry does not favour SLOS. The Pilar deposit is mined in horizons between sublevels. Each horizon is mined in retreating fashion, starting at the end of the mineralized zone, and progressing towards the central crosscuts.

Figure 16-2 illustrates a typical SLOS layout in plan and section views. Access to the stopes is provided by sublevel development driven from the ramp, with sublevel intervals of 20 m. Crosscuts near the mineralized zone centre are advanced to the hanging wall contact at each level and sublevel. From there, ore drives are driven in both directions along strike, under geological control for alignment, exposing the footwall and hanging wall contacts until reaching the limits of the deposit. This approach provides for two working faces per sublevel.

The hanging wall is supported with cable bolts before stoping begins. Stope mining on a horizon retreats from the ends of the Pilar deposit towards the central access. The stopes are up to 50 m long along strike and are separated by three to five metres wide rib pillars, depending on the thickness of the zone. When there are adjacent stopes in parallel, pillars measuring five metres high by five metres long are strategically left in the stope to reduce external dilution.

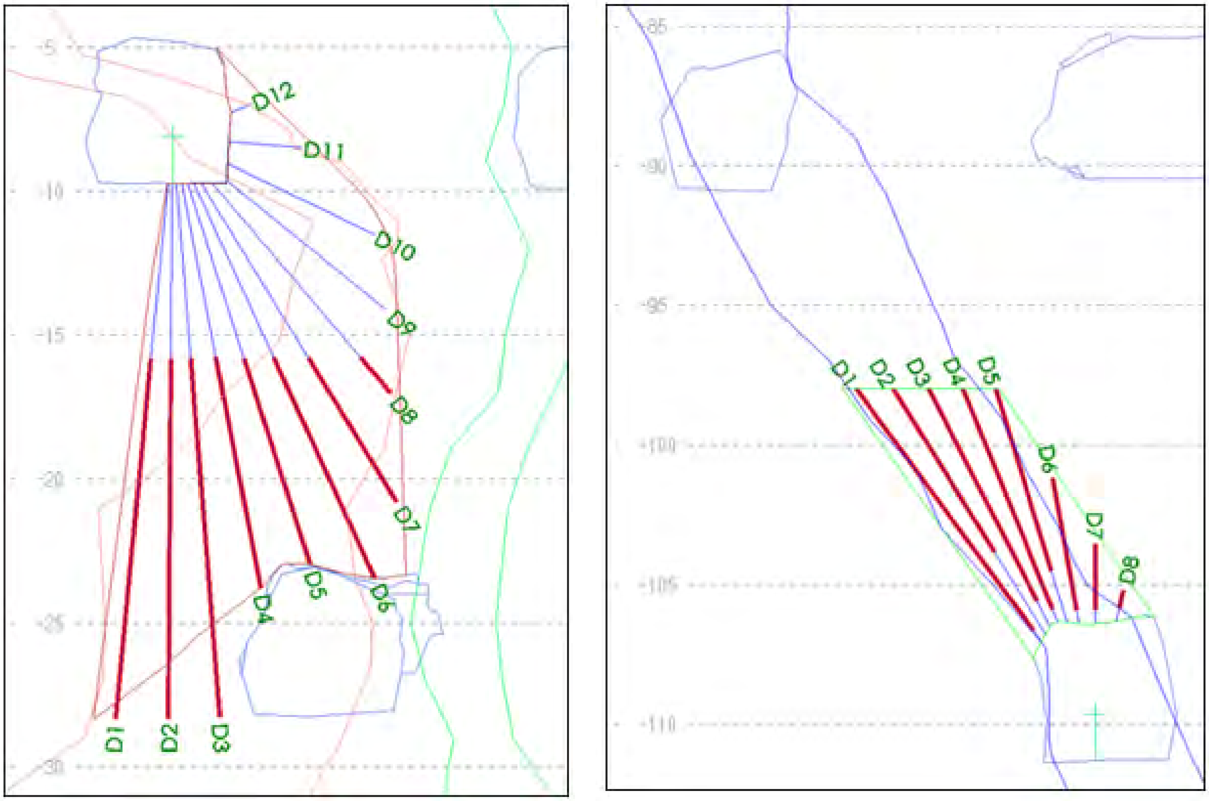
Figure 16-3 provides an example of a typical fan drilled with downholes. When the stope is mined out, the opening is backfilled with unconsolidated rockfill consisting of development waste. The waste volume generated by mine development matches well with the required backfill volume. Occasionally, waste rock is either hauled to surface or from surface to an underground stope being filled due to timing discrepancies.

Mining then proceeds upward to the next sublevel, and the sequence is repeated until the sill pillar is reached. The horizons between sill pillars are mined in a bottom-up sequence, and a three metre thick sill pillar is left between levels. Figure 16-3 presents how the top lift of a SLOS sequence is drilled off with upholes, leaving a sill pillar below the next upper mining level. Stopes are mined from several levels simultaneously, thereby providing the required number of active workplaces to meet production targets.



Source: Jaguar, 2022

Figure 16-2: Typical Stope Layout



Longhole Fan with Downholes

Longhole Fan with Upholes

Source: Jaguar, 2022

Figure 16-3: Typical Longhole Fan Layout

16.4 Geomechanics

The following discussion summarizes a 2015 geotechnical study conducted by Mauri Lopes Ferreira, a geologist and geotechnical specialist with Geotechnica e Mecânica de Rochas Ltda. The purpose of the study was to evaluate the feasibility of mining the Pilar deposit with SLOS using RocLab software by Rocscience Inc. The analysis used geotechnical data applicable to Level 7 of Pilar. Table 16-2 presents a selection of data inputs for the five geotechnical domains identified in that part of the Pilar deposit. Table 16-3 presents the results obtained through the analysis with the software. Figure 16-4 and Figure 16-5 present the stability of stopes with hanging walls for the third and fourth geotechnical domains, respectively. Based on the investigation, the Lopes (2015) concluded that the SLOS method was well suited for Level 7 of the Pilar deposit.

Table 16-2: Selected Data Inputs from Pilar for Rock Strength Analysis Using RocLab Software
Jaguar Mining Inc. – Caeté Mining Complex

Geotechnical Domain	RQD	Q Index	RMR Index	GSI Index
1st Domain - Host Rock	90	133.33	82	82
2nd Domain - Iron Formation Ore	50	11.11	63	68
3rd Domain - Iron Formation Ore	90	333.33	85	85
4th Domain - Host Rock	50	27.75	66	68
5th Domain - Host Rock	50	11.11	55	60

Source: Lopes, 2015

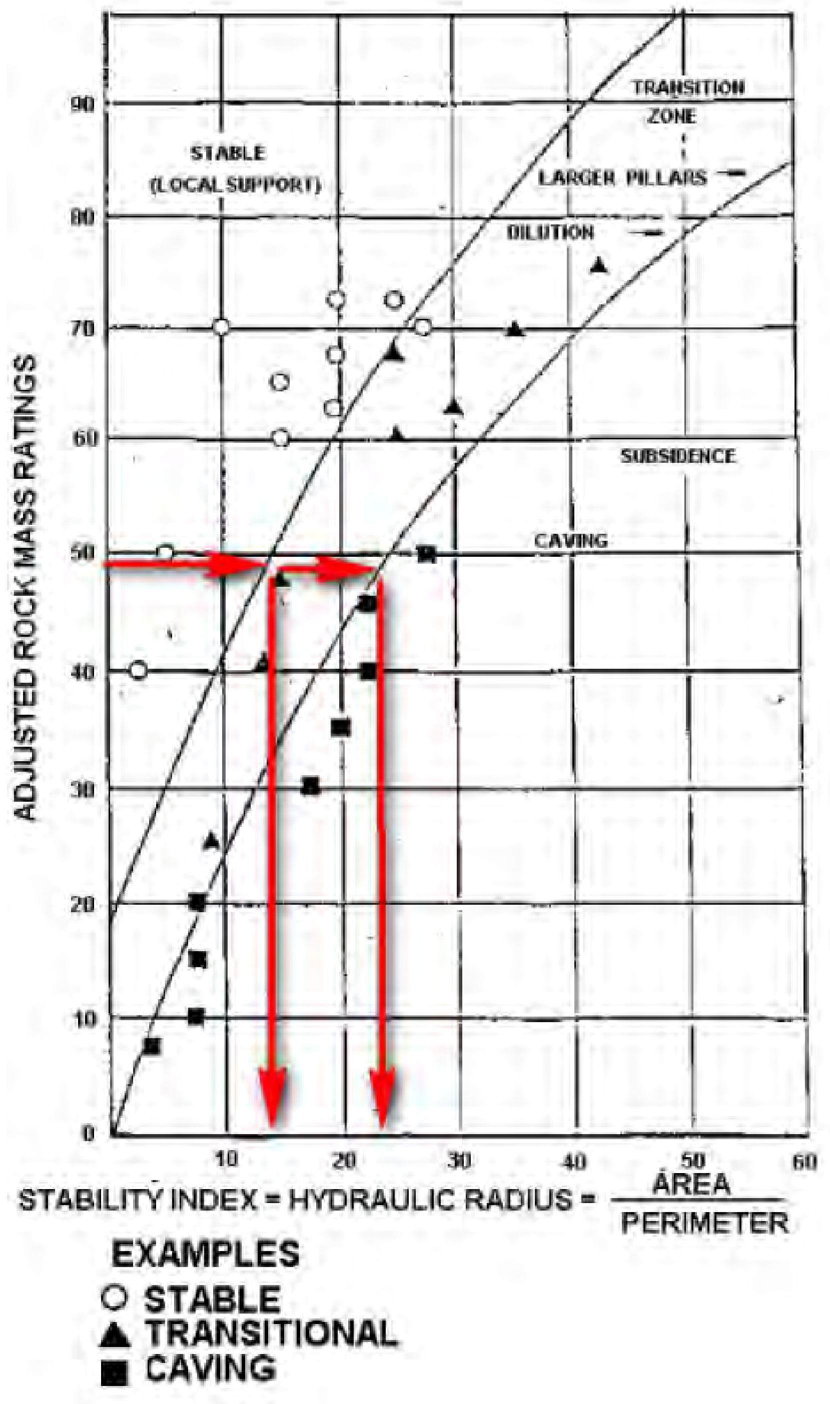
Table 16-3: Results for Rock Strength Analysis Using RocLab Software
Jaguar Mining Inc. – Caeté Mining Complex

Geotechnical Domain	mi[1]	mb[2]	S[2]	Cohesion[3] (MPa)	Friction Angle (°)	Global Strength (Mpa)	Modulus of Deformation (GPa)
1st Domain - Host Rock	13	6.84	0.1363	14.74	41.9	66.22	63.10
2nd Domain - Iron Formation Ore	13	3.47	0.0164	9.907	36.62	39.42	21.13
3rd Domain - Iron Formation Ore	20	11.70	0.1889	27.66	46.68	139.00	74.99
4th Domain - Host Rock	20	5.94	0.0229	19.28	41.28	85.19	25.12
5th Domain - Host Rock	7	1.68	0.0117	1.137	32.73	4.687	6.240

Source: Lopes, 2015

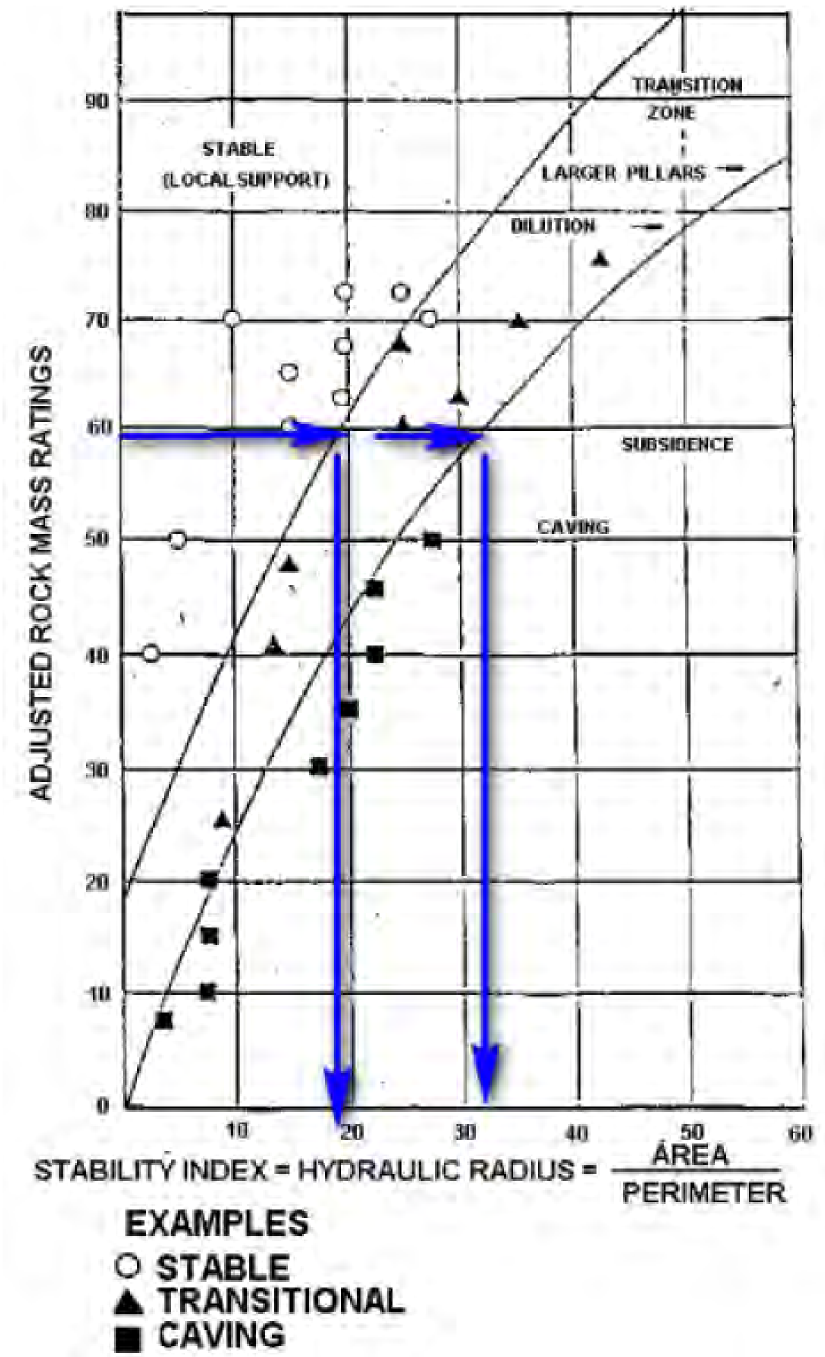
Notes:

1. Hoek-Brown Classification
2. Hoek-Brown Criterion
3. Mohr-Coulomb Fit



Source: Lopes, 2015

Figure 16-4: Stability Evaluation of a Stope with Hanging Wall – Pilar 3rd Geotechnical Domain



Source: Lopes, 2015

Figure 16-5: Stability Evaluation of a Stope with Hanging Wall – Pilar 4th Geotechnical Domain

16.5 Ground Support

Table 16-4 provides the Pilar ground support procedures. Ground support generally consists of 2.4 m long bolts, which are either resin grouted rebar or Swellex depending on the excavation type. Screening is installed if required by the ground conditions. Cable bolts are installed at intersections and stope hanging walls.

Table 16-4: Ground Support Procedures
Jaguar Mining Inc. – Caeté Mining Complex

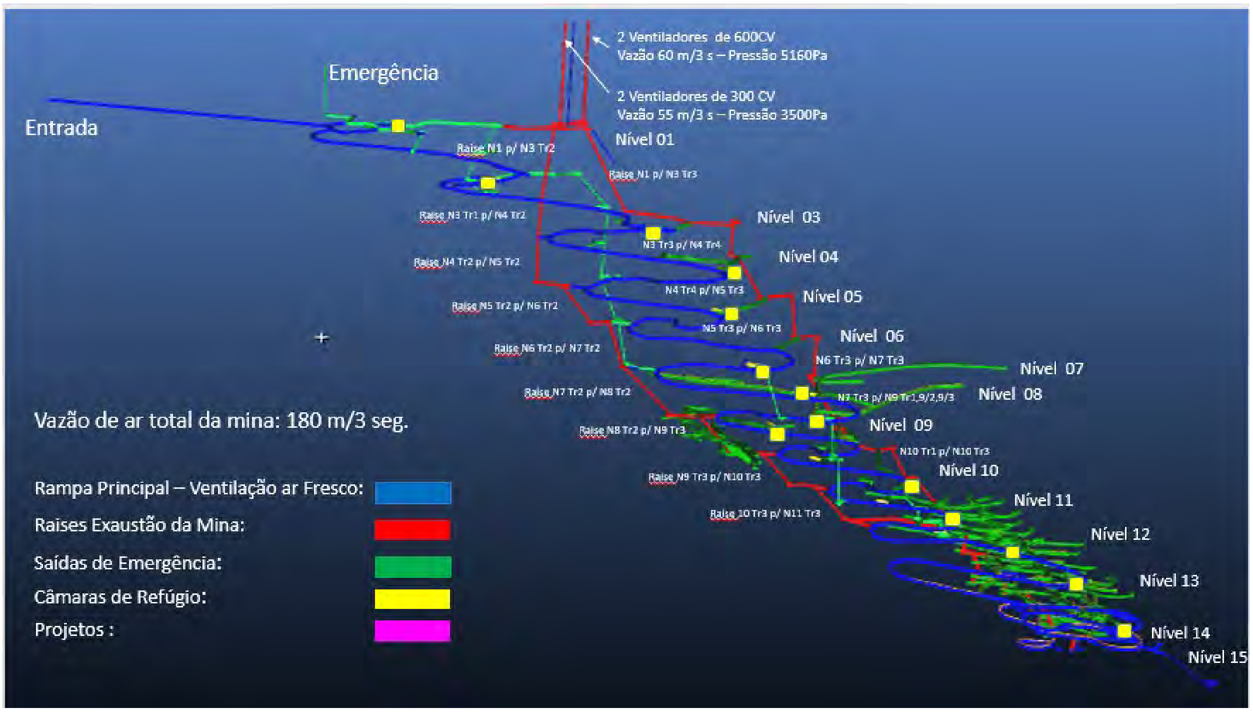
Excavation Type	Ground Support
Ramp	• 2.4 m resin grouted rebar bolts on 1.5m x 1.5m staggered pattern • Screen installed if ground conditions require it.
Sublevel Development	• 2.4 m Swellex bolts on 2.0m x 2.0m staggered pattern • Screen installed if ground conditions require it.
Crosscut	• 2.4 m resin grouted rebar bolts on 2.0m x 2.0m staggered pattern • Screen installed if ground conditions require it.
Intersection with Ramp	• 2.4 m resin grouted rebar bolts on 1.5m x 1.5m staggered pattern • 4.0 m cement grouted cable bolts on 2.0m x 2.0m staggered pattern • Screen installed if ground conditions require it.
Intersection on sublevel	• 2.4 m Swellex bolts on 2.0m x 2.0m staggered pattern • 4.0 m cement grouted cable bolts on 2.0m x 2.0m staggered pattern • Screen installed if ground conditions require it.
Ore drive	• 2.4 m Swellex bolts on 2.0m x 2.0m staggered pattern • Screen installed if ground conditions require it.
Stope	• Cement grouted cable bolts, variable lengths, and patterns • Screen installed if ground conditions require it.

16.6 Mine Infrastructure

Figure 16-6 illustrates the Pilar mine infrastructure. Pilar is accessed via a five metre by five metre ramp situated in the deposit's footwall. All ore is hauled to surface via the ramp, the portal's elevation is 760 MASL. Pilar is divided into levels, with Level 1 situated at 690 MASL. The level spacing is 75 m vertical, with Level 2 at 615 MASL, Level 3 at 540 MASL, and so on.

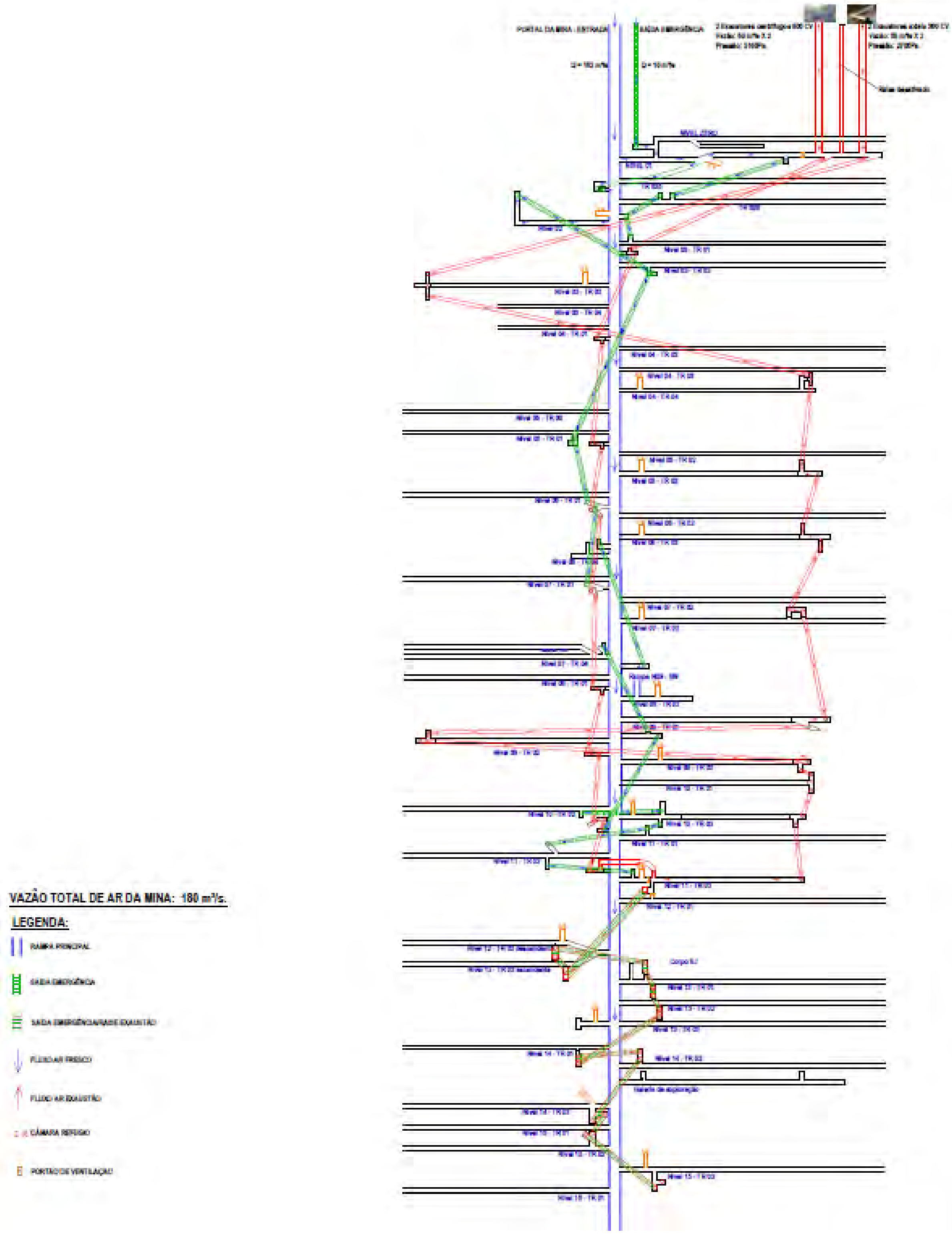
Pilar's ventilation system is a pull type system (Figure 16-7). Intake air is drawn down through the ramp, and return air is exhausted via two ventilation raises. Each of these raises has two ventilation fans at the collar. Auxiliary fans and ventilation ducting provide ventilation on the levels.

Figure 16-8 illustrates the Pilar dewatering system. Water is pumped level to level and then to surface using submersible pumps.



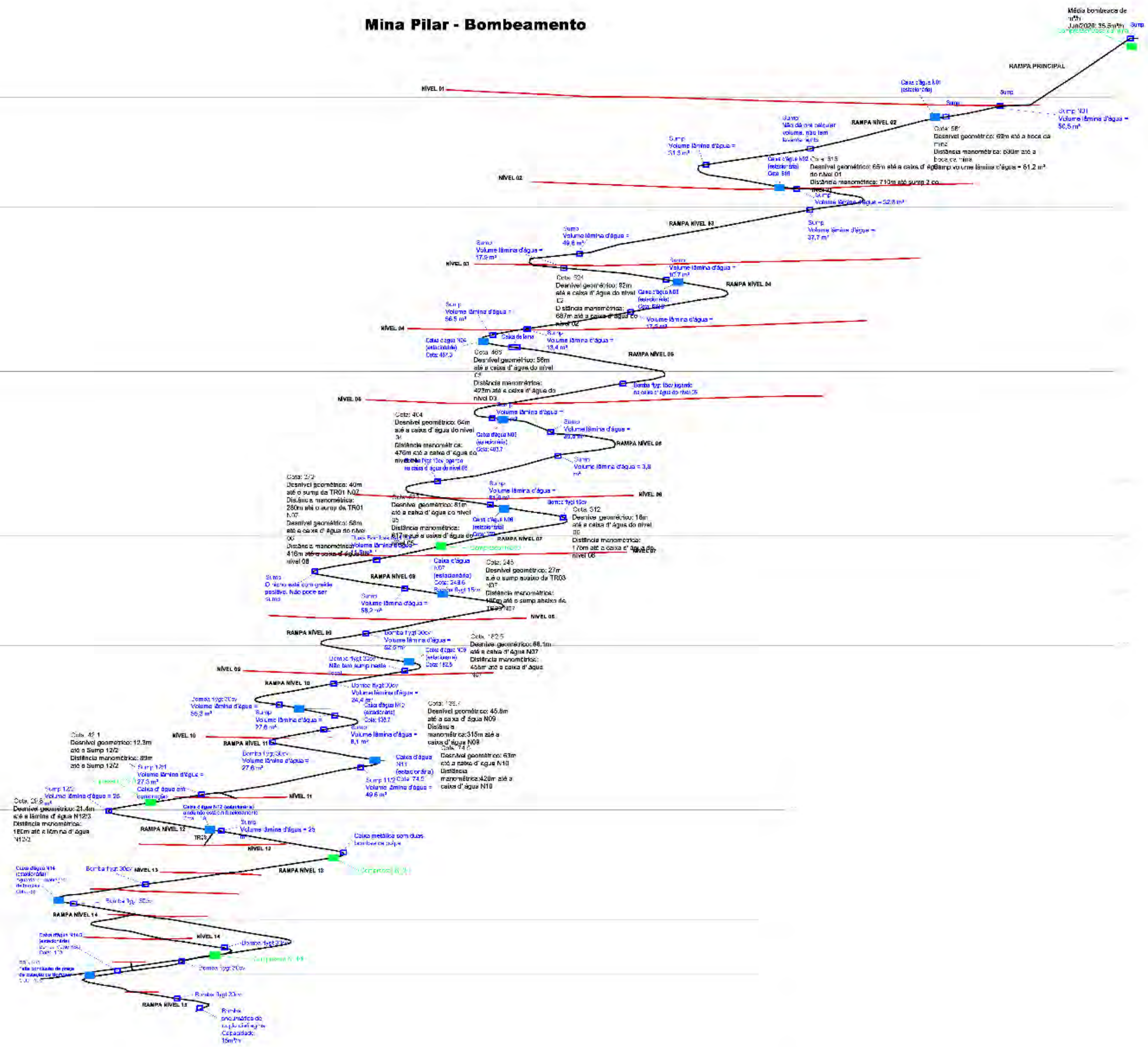
Source: Jaguar, 2022

Figure 16-6: Mine Infrastructure



Source: Jaguar, 2022

Figure 16-7: Ventilation System



Source: Jaguar, 2022

Figure 16-8: Mine Dewatering System

16.7 Mine Equipment

Table 16-5 lists both the company and contractor owned mobile mine equipment. Pilar is highly mechanized, with development and mining activities accomplished using a fleet of two boom, electric hydraulic jumbos. Two jumbos are used for face drilling and two for bolting. Pilar has three DL421 longhole drill rigs to carry out production drilling, and cable bolting, as well as five load-haul-dump units (LHDs) with 10 t tramming capacity. For haulage, Pilar has a fleet of seven Volvo A30G articulated dump trucks.

The development contractor has two Sandvik jumbos, three Volvo L120 front-end loaders, and seven Mercedes Benz 30 t trucks.

Table 16-5: Mine Equipment
Jaguar Mining Inc. – Caeté Mining Complex

Equipment Type	Make	Model	Characteristics	Quantity	
				Jaguar	Contractor
Wheeled loader	Volvo	L90	Platform for geology	1	-
Diamond drill	Epiroc	Diamec U6	Exploration	-	2
Diamond drill	Epiroc	Diamec 232	Short term	1	-
Diamond drill	Epiroc	Diamec 252	Short term	1	-
Diamond drill	Epiroc	Diamec U4	In-fill	2	-
Skid steer loader	NewHoland	-	-	1	-
Pickup truck	Toyota	Hilux	Diesel	4	2
Pickup truck	Mitsubishi	L200	Diesel	-	1
Jumbo	Sandvik	DD421	Coverage 60 m^2	4	-
Longhole drill rig	Sandvik	DL421	Max hole depth 54 m	3	-
Bolter	-	-	-	2	-
LHD	Epiroc	R1030	10 t tramming capacity	5	-
Articulated dump truck	Volvo	A30G	29 t payload	7	-
Motor grader	Caterpillar	140G	3.6 m blade	1	-
Scissor lift	-	-	-	4	-
Backhoe loader	-	-	-	3	-

16.8 Manpower

Table 16-6 summarizes the Jaguar personnel at Pilar, and Table 16-7 presents the contractor employees. Pilar operates on four six hour shifts daily, complying with government regulations limiting workers to six hours per day underground.

Table 16-6: Jaguar Employees, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Area	Quantity
Mine	191
Mine Maintenance	89
Technical Services	79
Engineering	1
Exploration	1
Growth Projects	-
G&A	50
Total	411

Table 16-7: Contractor Employees, Pilar Mine
Jaguar Mining Inc. – Caeté Mining Complex

Function	Company	Quantity
Environment	AAS	2
Sustaining Engineering	BARCELOS	3
Medicine	CENTROMED	5
Property Security	MG SEG	10
Maintenance	HIDRAUMAQUINAS	1
Manpower Support	IPIRANGA	16
Transportation	J&L	4
Maintenance	LEO FONSECA	4
Drilling	MAJOR	13
Explosives	ORICA	2
Mine Equipment	SANDVIK	1
Mine Development	TONIOLO	118
Engineering	TRACBEL	1
Total		180

16.9 Life of Mine Plan

Stope and development designs, and production scheduling were carried out by Deswik Brasil using Deswik mine design software and modified by Jaguar to deplete for stopes mined out as of December 31, 2021.

The LOMP production schedule covers a mine life of 4.5 years based on Mineral Reserves and is summarized in Table 16-8.

Table 16-8: Pilar LOMP Production Schedule
Jaguar Mining Inc. – Caeté Mining Complex

	Unit	Total	2022	2023	2024	2025	2026
Total Mill Feed	000 t	2,108	456	480	480	480	212
Grade	g/t Au	3.71	3.90	3.69	3.69	3.66	3.51
Gold Ounces	000 oz Au	252	57	57	57	57	24
Recovery	%	87.0	87.0	87.0	87.0	87.0	87.0
Production	000 oz Au	219	50	50	50	49	21
Primary Development	m	5,295	1,772	1,318	2,125	80	0
Secondary Development	m	8,905	4,256	2,826	1,512	252	59
Total Development	m	14,200	6,028	4,144	3,637	332	59

Production rates in the LOMP are forecast to be 1,350 tpd. The increase of production is based on the addition of a fourth shift and haulage equipment to move ore to surface. The mining sequence provides two active stopes per sublevel, with simultaneous access to multiple levels.

The excavation quantities scheduled in the LOMP limit the development for a crew to 60 m/month. There is approximately 14,200 m of development required for the LOMP. The SLR QP is of the opinion that the scheduled development rates are reasonable.

In 2021, Pilar produced 447,427 t and 53,532 oz Au (Table 16-9). Production in 2020 was interrupted due to the COVID 19 pandemic. The current production of 1,350 tpd has been demonstrated to be achievable in the short term and, in the SLR QP's opinion, this rate can be maintained over the LOMP.

Table 16-9: Quarterly Mine Production Reconciliation, Pilar Mine 2020 and 2021
Jaguar Mining Inc. – Caeté Mining Complex

Period	Mine Report		
	Tonnes (t)	Grade (g/t Au)	Production (oz Au)
2020/Q1	101,151	3.65	11,879
2020/Q2	104,450	3.73	12,524
2020/Q3	110,667	4.14	14,733
2020/Q4	117,357	3.83	14,467
Total 2020	433,625	3.84	53,604
2021/Q1	103,656	3.58	11,946
2021/Q2	112,917	3.57	12,947
2021/Q3	118,636	3.47	13,221
2021/Q4	112,218	4.27	15,418
Total 2021	447,427	3.72	53,532

As mining advances at depth, Pilar will approach its maximum output due to truck haulage cycle times and ventilation limitations. Exploration is continuing at depth and laterally and production is available on multiple levels allowing for multiple mining fronts.

Even with increased production, the Caeté Plant is still under capacity, leaving the possibility of cost savings through batch processing and toll milling.

17.0 RECOVERY METHODS

The Caeté Plant has a design capacity of 720,000 tpa of ROM ore.

The process flowsheet consists primarily of the following unit operations (Figure 17-1):

- Crushing
- Grinding
- Gravity Gold Recovery
- Flotation
- Flotation Concentrate Leaching and CIP
- Gold Recovery
- Detoxification
- Tailings Disposal

A summary of the Caeté Plant production history and recovery has been presented in Section 6 of this Technical Report.

17.1 Crushing

Pilar ore is transported by trucks to the crushing circuit and placed in the ROM stockpile. The crushing circuit is comprised of a CJ411 - 111 kW primary jaw crusher in open circuit, and secondary (CH440-223 kW) and tertiary (CH440 223 kW) cone crushers operating in closed circuit.

ROM stockpile ore is fed to the jaw crusher with a front end loader through a grizzly and vibrating feeder. The jaw crusher discharge feeds a multi deck screen (3,500 mm x 1,800 mm – with three panel decks consisting of 75 mm, 35 mm, and 16 mm apertures, respectively top to bottom), the undersize of each deck feeds secondary crushing, tertiary crushing, or the final product conveyor respectively. The secondary cone crusher operates in closed circuit with a double deck screen (5,700 mm x 2,400 mm – with two panel decks consisting of 35 mm and 16 mm apertures). Product from the double deck screen either recirculates back to the secondary crusher, feeds the tertiary crusher, or proceeds to the final product conveyor. The tertiary cone crusher operates in closed circuit with a single deck screen (3,500 mm x 1,800 mm – with a 16 mm panel deck aperture), with the oversize recycling to the crusher and undersize product going to the final product conveyor, which discharges onto the crushed ore stockpile. The final maximum particle size of the crushing process is 16 mm.

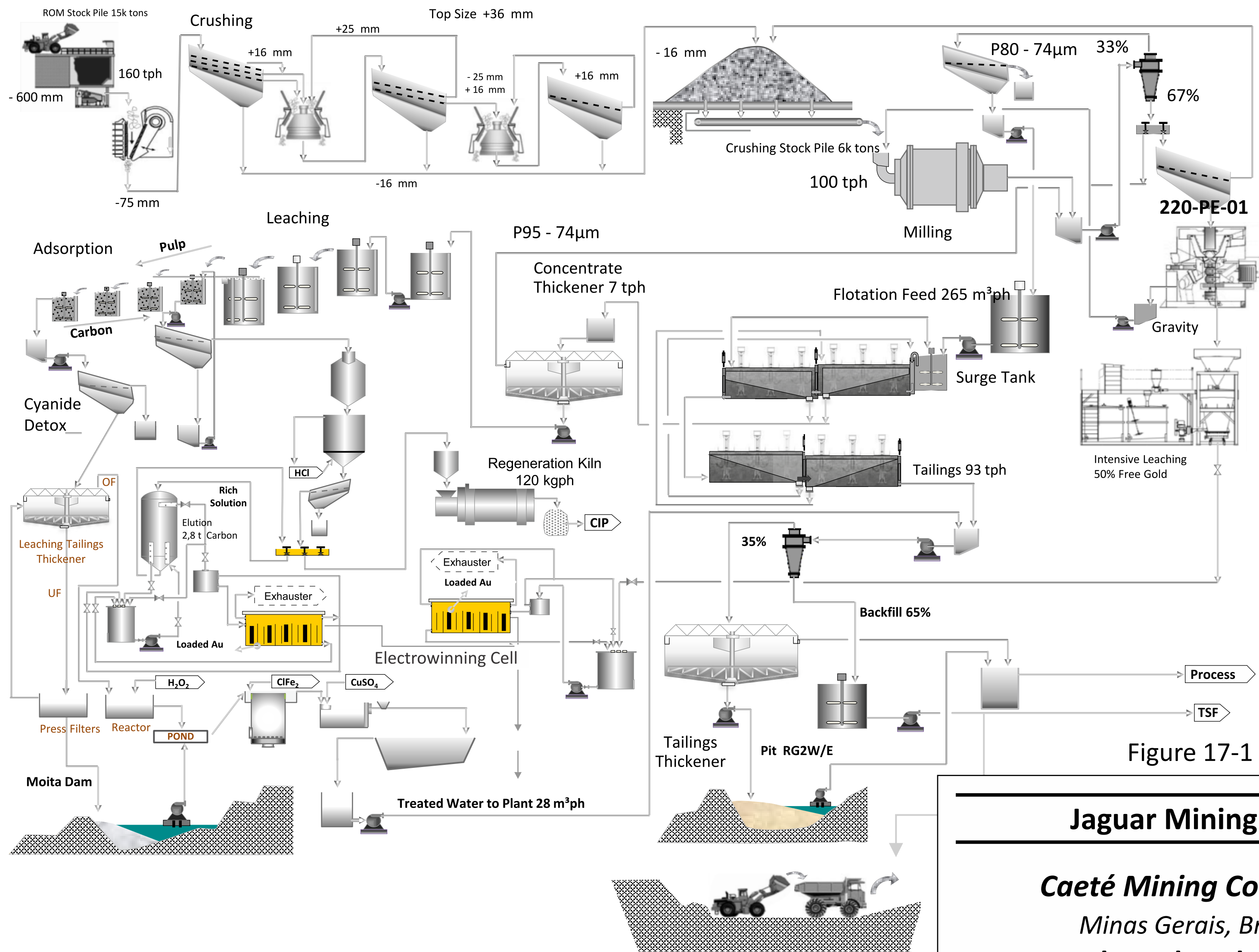


Figure 17-1

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Plant Flowsheet

March 2022

Source: Jaguar Mining Inc., 2020.

17.2 Grinding and Gravity Gold Recovery

The grinding circuit consists of a 2,240 kW ball mill (5 m diameter [ø] x 6 m effective grinding length [EGL]) with a capacity of up to 100 tonnes per hour (tph), operating in closed circuit with a set of five hydrocyclones operating in parallel. The overflow from the hydrocyclones (-200 mesh or -74 µm) proceeds to the flotation circuit, and the underflow (+200 mesh or +74 µm) either feeds the gravity concentration circuit (75%) or is recycled to the ball mill feed (25%).

Gravity concentration uses a Knelson centrifugal gravity concentrator to recover fine particles of free gold. The gravity concentrate proceeds to an Acacia intensive cyanidation reactor (Acacia), from which the gold bearing solution is pumped directly to a dedicated set of electrolytic cells. Precipitate from the cells is processed into doré bars in the refinery.

17.3 Flotation

The flotation circuit consists of a series of twelve 14.1 m^3 (500 ft^3) flotation cells, the first three operating as roughers, three operating as primary scavengers, three operating as secondary scavengers, and the last three operating as tertiary scavenger cells. The concentrate produced by the primary scavenger cells is returned to the roughers, and the secondary and tertiary scavenger concentrate is recirculated to the primary scavenger circuit. The final gold bearing concentrate (82% to 87% -325 mesh or -45 µm), from the rougher concentrate is sent to a concentrate thickener to achieve an underflow density of approximately 40% solids (w/w). The thickener overflow is recycled for use as process water.

Tailings from the tertiary scavenger cells are sent to a series of hydrocyclones for separation. The cyclone underflow is sent back to Pilar to be used as backfill, and the cyclone overflow is sent to a tailings thickener, with the thickened underflow pumped to the RG02 West or East (W/E) TSFs. The thickener overflow is recycled for use as process water.

17.4 Leaching and Carbon-in-Pulp Gold Recovery

17.4.1 Leaching

The concentrate thickener underflow slurry (40% solids w/w) is pumped to three starter tanks for pre-oxidation using oxygen and lime only and then to one leaching tank using cyanide, lime, and oxygen.

The lime is used to maintain the pH above 10.0 to 10.5, in order to minimize the generation of hydrogen cyanide gas. Cyanide is used to dissolve the gold from the solids in the slurry. Cyanide can be added to any of the leach tanks as required.

Oxygen is introduced through spargers to enhance the dissolution of gold and the oxidation of unstable sulphides (e.g., pyrrhotite). This oxidation reduces cyanide consumption and increases gold recovery.

The slurry from the last leach tank flows by gravity to a series of four agitated CIP tanks that are arranged in series.

17.4.2 Carbon-in-Pulp

The four CIP tanks allow slurry to flow from tank to tank, while retaining activated carbon in each tank. The carbon adsorbs the gold cyanide complex created in the leach tanks.

The slurry flows downstream from Tank 1 to Tank 4, while the carbon is pumped counter currently from Tank 4 to Tank 1. The pumping frequency is determined by the loading of gold on the carbon. The highest loaded carbon from Tank 1 is pumped over a screen, with the slurry returning to the tank and the loaded carbon proceeding to gold desorption. In order to expand throughput to 1.1 Mtpa, two additional CIP tanks would be required.

Slurry exiting the last CIP tank passes through a safety screen that recovers any carbon that may have left the tank, and then to a detoxification circuit to partially destroy residual cyanide.

17.5 Gold Recovery

The loaded carbon is transferred to a desorption column. A hot solution (approximately 98°C) of 1.5% caustic soda and 0.5% cyanide concentration is pumped upwardly through the elution column to desorb the gold cyanide complex from the carbon.

The gold bearing solution leaves the top of the column and feeds an electrolytic cell(s), where the gold is deposited onto steel wool and stainless steel cathodes. The solution from the electrolytic cell is pumped back to the heating tank and reused. The solution is recirculated through the electrolytic cell for approximately 24 hours to remove most of the gold from solution.

After the desorption cycle, the sludge is washed from the stainless steel wool cathodes and pumped to a pressure filter. The cake is dried in an oven and sent to the refinery for production of doré bars containing approximately 80% to 90% gold. The doré bars are sent to a refinery for further refining.

The carbon goes through an acid wash step using a 5% hydrochloric acid solution to remove carbonates prior to elution. After elution, the carbon is then regenerated at 700°C in a kiln to remove organic material and return the ability of the carbon to adsorb gold. This regenerated carbon is pumped to the last tank in the CIP circuit. Periodically, fresh carbon is added to the tank, as some degradation of the carbon occurs, resulting in the need for replacement.

17.6 Tailings

The flotation tails are cycloned, thickened, and sent to the RG02W/E TSF for decanting. Thickener overflow is pumped directly back to the Caeté Plant. The decanted flotation tailings are dry stacked by loader and truck.

Tailings from the CIP circuit are treated for cyanide removal and piped to the Moita TSF, a lined tailings facility in an exhausted open pit in which a dam was constructed to increase the storage capacity. The CIP tailings filtration and water treatment plant construction were completed in the second half of 2020. The filtered and detoxified tailings are dry stacked.

Reclaim water from the TSF is treated to recover gold and for further cyanide destruction, before being returned to the Caeté Plant.

The tailings capacity for the RG02W TSF is 633,531 m^3, and the tailings capacity for the Moita TSF is 66,181 m^3.

Proposed expansions and upgrades to the Caeté Plant include the construction of a filter plant, which will be commissioned in April 2022. All the CIP tailings will be filtered and stacked in the Moita TSF commencing in April 2022. The Moita TSF is anticipated to reach its storage capacity near the end of 2024. A new TSF will be required to continue the disposal of filtered tailings in 2025.

17.7 Detoxification

The detoxification step was modified and began operating in September 2020. The new detoxification process sends the slurry from the carbon safety screen to a leaching tailings (LT) thickener. LT thickener underflow is sent to a set of pressure filters, from where the solids are trucked to the Moita TSF. The filtrate is sent back to the LT thickener.

The LT thickener overflow is pumped to a series of two pre-treatment ponds. Hydrogen peroxide is added to this flow. The pre-treatment ponds are used to reduce the cyanide concentration through the use of ultraviolet radiation from the sun.

Water reclaimed from the pre-treatment ponds initially passes through a carbon filled tank to recover any soluble gold left in solution. The activated carbon is periodically recovered and sent to the gold recovery circuit for gold removal. Overflow from this tank proceeds to a tank where ferrous chloride and lime are added, to reduce the arsenic content in the water. The reaction forms a ferric arsenate precipitate, contained in a slurry that is sent to a Lamella type thickener, where flocculant is added to help settle the precipitate. The underflow from this thickener is sent back to the LT thickener feed, where it mixes with the CIP tailings.

The Lamella thickener overflow is treated with a copper sulphate solution and flocculant and allowed to settle in a series of decantation tanks. Overflow from the last tank is pumped to the flotation tailings thickener for use as required. The tanks are cleaned periodically as required to remove any solids.

17.8 Energy, Water, and Process Materials Requirements

Power requirements for the processing facilities are approximately 21,800 MWh and are not anticipated to change significantly in the foreseeable future.

Water is supplied from the Marembá do André Tunnel. Water consumption is not expected to change significantly from the recent historical water usage (520,400 m^3) and no supply concerns have been noted.

Key reagents used in the process include hydrated lime, cyanide, caustic soda, copper sulphate, ferrous chloride, hydrochloric acid, and liquid oxygen.

The annual reagent consumptions are presented in Table 17-1.

Table 17-1: Annual Reagent Consumptions
Jaguar Mining Inc. – Caeté Mining Complex

Reagent	Units	Quantity
Grinding media	t	625
Hydrochloric acid	kg	83,430
Caustic soda	kg	59,450
Copper sulfate	kg	573,605
Ferrous chloride	kg	114,079
Lead nitrate	kg	17,000
Carbon	kg	28,050
Sodium cyanide	t	365
Liquid oxygen	m^3	2,108,151
Hydrated lime	t	311
Flocculant	kg	5,225

17.9 Manpower

The total number of personnel at the Caeté Plant is 109 (69 plant and 40 maintenance).

18.0 PROJECT INFRASTRUCTURE

The Caeté Complex includes the nominal 2,050 tpd Caeté Plant with separate TSFs for both fine flotation tailings and CIP tailings. Electrical power supply is provided through the national power grid. The Caeté Plant is located at Roça Grande at an elevation of approximately 1,250 MASL, as presented in Figure 18-1.

An administration complex is located at the entrance to the Caeté Plant, with such ancillary buildings as offices, conference rooms, cafeteria, maintenance shops, compressors (mine and mill), a dry, a first aid station, warehouse, backfill preparation, and a water treatment plant, which is located near the Caeté Plant. The assay laboratory and process testing laboratory are also located near the Caeté Plant. Roça Grande (under care and maintenance since Q1 2018) is accessed by an adit that is located approximately 800 m to the southwest of the Caeté Plant at an elevation of approximately 1,100 MASL.

Surface infrastructure at Pilar is limited to shops, offices, cafeteria, first aid, and warehouse facilities. Pilar is accessed by an adit that is located at an elevation of approximately 750 MASL.

Trailers located at the Pilar adit provide local storage and office space. The explosives and blasting accessories warehouses are located 3.5 km away from the mine area, in compliance with the regulations set forth by the Brazilian Army.

Figure 18-1

Jaguar Mining Inc.

Caeté Mining Complex

Minas Gerais, Brazil

Roça Grande Site Facilities

March 2022

Source: Google Earth, 2022.

19.0 MARKET STUDIES AND CONTRACTS

19.1 Markets

Gold is traded freely at widely known prices, consequently, the prospects for the sale of any production of the metal are virtually assured. The Pilar Mineral Reserve estimate uses a gold price of US$1,650/oz Au. This price was used because it permits direct comparability between this Technical Report and the previous ones. The significant increase in the gold price at the time of writing will enable Jaguar to evaluate opportunities for incorporating lower grade material into mining and operation plans. However, it is not in the scope of this Technical Report to comment on the potential impacts of materially higher gold price scenarios.

19.2 Contracts

The SLR QP reviewed recent costs for transportation, security, insurance, and sales of doré, and considers them to be within industry norms.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

The information presented in this section is based on documentation provided by Jaguar and meetings with mine site personnel via teleconference.

20.1 Environmental Studies and Key Environmental Issues

Environmental impact assessments (EIAs) were completed for Pilar in 2006 and Roça Grande in 2007. Environmental management plans (Plano de Controle Ambiental or PCA for its acronym in Portuguese) were developed in 2008 for the Pilar and Roça Grande operations based on the EIAs. The PCAs outline the identified potential impacts on the physical, biological, and social environments, mitigation measures applicable to construction and operations, and environmental monitoring programs to verify the effectiveness of the mitigation measures and compliance with applicable environmental standards.

Industrial effluents are pumped to the treatment plant, located near the Caeté Plant, in order to adjust their quality for reuse in ore processing and/or for discharge of treated effluent to the environment. A second water treatment plant was constructed in 2020 as part of the new CIP tailings filtration system. Sanitary wastewater is collected and directed to anaerobic filter systems. The final sanitary wastewater treated effluent is directed to soil infiltration systems, when possible, or to natural drainage. According to meetings with Jaguar's staff, in general, acid rock drainage and metal leaching are not an issue for the Caeté Complex. Only the CIP tailings deposited in the lined Moita TSF have a high potential for acid generation. The most recent geochemical characterization was carried out in 2021 for flotation tailings and involved kinetic testing (Crono, 2022). The flotation tailings were classified as Class II (non-hazardous, non-inert) according to the ABNT NBR 10.004/2004 norm. Monitoring of groundwater quality at Roça Grande was recommended by Crono Engenheros Consultores Ltda. and initiated by Jaguar in 2021.

Environmental monitoring is carried out by Jaguar at Roça Grande and Pilar according to the obligations defined in the environmental permits, and includes surface water quality, groundwater quality, air quality, and ambient noise monitoring. Fauna is also monitored in the Roça Grande area due to its proximity to a natural park classified as a protected area. Installation of piezometers to monitor groundwater at Roça Grande commenced in 2021, a total of 10 piezometers are planned to be installed by June/July 2022.

Water quality measured parameters are compared against maximum permissive limits from the Brazilian environmental legislation and any deviations are discussed in the reports. Observed exceedances predominately pertain to dissolved iron, manganese, and dissolved oxygen. Water quality monitoring reports are prepared quarterly for Roça Grande and annually for Pilar. These reports are submitted to the National Environmental and Sustainable Development Agency (SUPRAM for its acronym in Portuguese).

A fauna report for Roça Grande is prepared annually and captures the two annual campaigns (dry season and rainy season). This report is also submitted to SUPRAM.

Results of air quality and ambient noise monitoring are only reported internally. Air quality monitoring is carried out at two stations, one located at Pilar and one at Roça Grande. Ambient noise monitoring is carried out at seven stations, four located at Pilar and three at Roça Grande.

A due diligence review of environmental aspects was conducted by a third party (Azevedo Sette Advogados) in July 2020 for Roça Grande and September 2020 for Pilar. Jaguar implemented a total of 12 corrective actions to address the recommendations resulting from the review and indicated that the environmental performance is now more robust. Four corrective actions have been completed and eight are ongoing. Out of the eight ongoing corrective actions, seven are planned for completion in 2022. One corrective action is planned for completion in 2024 (hydrogeological studies to assess potential water quality contamination associated with RG01 and RG02 and implement remedial actions, as needed). Results from the environmental monitoring programs and environmental performance are now presented to the Jaguar Board of Directors quarterly.

Jaguar indicated that no environmental issues representing a risk to the Caeté Complex operations have been identified in the past two years. Similarly, Jaguar indicated that no environmental compliance issues associated with water quality, air quality, noise, and fauna have been raised by the authorities for the Caeté Complex in the past two years (the period reviewed by SLR).

20.1.1 Environmental Management System

In 2021 Jaguar initiated a program of processes management standardization covering environment, safety, and production components of the operation. The strategic plan was organized in four areas: permits, management, site controls, and emergencies. Procedures developed in 2021 include, among others, water management, effluent management, noise management, waste management, control of chemical products, reporting of environmental accidents, and an education plan.

Procedures for permitting guidelines, permitting suppliers and pest control were completed in February 2022. Procedures planned by Jaguar for development in 2022 include document control, management of acid rock drainage, disposal of medical waste, and emergency response planning.

20.2 Mine Waste Management

20.2.1 Current Tailings Management Operations

Flotation circuit tailings are classified into underflow (coarse) and overflow (fine) tailings at the Caeté Plant. Flotation tailings are thickened and deposited as a slurry in the historical RG02W and RG02E open pits. The storage capacity of RG02W was enhanced with the construction of Dyke 1 in 2011. Flotation tailings deposition alternates between RG02W and RG02E. After a period of deposition in one basin, tailings are drained and then excavated and relocated to the nearby tailings dry stack. This process is repeated as tailings deposition alternates between basins.

Approximately 10% of the total tailings are from the CIP circuit and are hydraulically deposited and stored in the Moita TSF.

Tailings from the CIP circuit are treated for cyanide removal and piped to the Moita TSF. Reclaim water from the Moita TSF is treated to recover gold and for further cyanide destruction, before being returned to the Caeté Plant.

Jaguar has indicated that external consultants are retained to complete safety inspections of the RG02W Dyke 1 and the Moita TSF dam twice a year. The most recent inspections were carried out by GeoHydroTech Engenharia (GeoHydroTech) on July 15, 2021 and the inspection reports were issued in September 2021. Stability analysis was carried out and documented in the inspection reports. GeoHydroTech (2021a) presented the following conclusions regarding the RG02W Dyke :

- In general, the RG02W Dyke appears to be in good condition and in proper working order, with well maintained accesses.

- The stability conditions of the RG02W Dyke meet the safety criteria prescribed by NBR 13.028/2017 (drained and pseudostatic conditions) and by ANM Resolution No. 13 (undrained conditions), considering the peak resistance of the tailings. The factors of safety resulting from the analyses indicate that the RG02W Dyke exhibits satisfactory physical and structural safety conditions.
- The reservoir attenuation capacity and the minimum freeboard of one metre must be monitored and met by Jaguar.
- Flood route modelling has been completed for storm event durations up to 12 hours. GeoHydroTech recommended that additional modelling be conducted for durations up to 24 hours in order to confirm that the critical duration is eight hours.
- GeoHydroTech recommended conducting additional analyzes regarding verification of the conveyance capacity of the overflow structure, and the conveyance capacity of the surface drainage channels according to requirements stated in regulation NBR 13.028/2017.
- There is no energy dissipation structure at the end of the overflow conveyance structure. GeoHydroTech recommended verifying whether erosion is occurring at the end of the structure and considering the implementation of a stilling basin to prevent erosion.

GeoHydroTech (2021b) presented the following conclusions regarding the Moita TSF dam:

- In general, the Moita TSF dam appears to be in good condition and in proper working order, with well maintained accesses.
- The stability conditions of the Moita TSF dam meet the safety criteria prescribed by NBR 13.028/2017 (drained and pseudostatic conditions) and ANM Resolution No. 13 (undrained conditions).
- The factors of safety resulting from the analyses indicate that the Moita TSF dam exhibits satisfactory physical and structural safety conditions.
- The reservoir attenuation capacity and minimum freeboard of one metre must be monitored and met by Jaguar.

The SLR QP has relied on the statements and conclusions of reports by Jaguar and its consultants and provides no conclusions or opinions regarding the stability or performance of the dams and impoundments used for tailings storage.

20.2.2 Planned Tailings Management Operations

Proposed expansions and upgrades at the Caeté Plant include the construction of a filter plant, which will be commissioned in April 2022. All CIP tailings will be filtered and stacked in the Moita TSF starting in April 2022. The Moita TSF is anticipated to reach its storage capacity near the end of 2024. Filtered tailings disposal in the Moita TSF will be carried out in four stages, following a sequence that will render portions of the Moita TSF inactive to allow progressive reclamation. Final closure will take place after 2024. A new TSF will be required to continue the disposal of filtered tailings in 2025. An external consultant is currently conducting a site selection study, followed by the engineering design to be completed in 2022. It is anticipated that the location of the new TSF will be near the existing facilities at Roça Grande. Upon completion of the engineering design, Jaguar will prepare the environmental study required for a permitting application. Jaguar is targeting submission of the application to the regulators in early 2023.

Disposal of flotation tailings in RG02 will transition to RG06 in 2022. A new TSF will also be required for flotation tailings after 2025 once the mined-out RG06 pit is filled with tailings. Jaguar is planning to advance the engineering design and permitting application for the new TSF for disposal of flotation tailings in parallel with the replacement facility for the Moita TSF.

20.2.3 RG-2 Open Pit Tailings Storage Facilities

RG-2W was constructed in two stages with the second stage being built with the upstream dam construction method. In compliance with the new Brazilian regulations, Jaguar completed decharacterization of the upstream raise of the RG02W structure in 2020. The decharacterization works included excavation of tailings and removal of the five metre tall upstream dam raise (Walm, 2020). The remaining RG02W dam, referred to as Dyke 1, is a six metre tall soil embankment closing off the western perimeter of the depleted open pit. Dyke 1 has one piezometer for phreatic surface monitoring and is not equipped with an emergency spillway (Diefra, 2020).

The RG02E open pit is also used for tailings management, however, the tailings are entirely contained within the depleted open pit and below the natural ground level. As a result, the RG02E TSF has no containment dam and presents a low risk for the accidental release of tailings.

20.2.4 Moita Tailings Storage Facility

The Moita TSF is a lined slurry deposition facility at Roça Grande. The TSF occupies part of a depleted open pit with a containment dam on the southern perimeter referred to as the Moita dam. The Moita dam is up to 19 m tall and 388 m long with 2H:1V slopes (Tetra Tech, 2020a). The Moita dam was constructed in a single raise. The basin has underdrains to collect seepage from the TSF and piezometers to monitor the phreatic surface in the dam.

A safety report by Tetra Tech (2020a) raised a number of concerns pertaining to maintenance and monitoring of the Moita TSF. Tetra Tech also identified that the Moita TSF does not have an effective overflow control mechanism, however, hydraulic deposition of tailings in Moita will cease by approximately April 2022 and the remainder of the TSF will be infilled with filtered tailings. After filling is completed, the Moita TSF will be covered with a geomembrane and closed. Construction of an emergency spillway to prevent overtopping of the dam has been completed by Jaguar.

20.2.5 Filtered Tailings Stacks

Currently dry tailings are deposited in the existing waste rock facility at Roça Grande (see RG01 on Figure 18-1). Although not filtered, the existing tailings 'dry' stack is comprised of tailings that have been hydraulically placed, drained, excavated, and then stacked in a dump as is typical of filtered tailings facilities. Filtered tailings from the filter plant to be commissioned in April 2022 will be placed in the Moita TSF. A study for the expansion of the RG01 TSF, which included geotechnical analysis, was conducted in 2017 by MLF Geomecanica.

It is noted that no deposition plans, designs, operation and maintenance, or governance documentation for the existing or proposed filtered tailings stacks were reviewed by SLR.

20.2.6 RG06 Tailings Facility

In 2021, MSOL developed the project for in-pit filling disposal of flotation tailings in open pits RG06A and RG06B (Figure 18-1). The project was submitted to the regulator for approval and the new permit LAS RAS 3.566/2021 was granted in November 12, 2021. The civil works to prepare the open pit for tailings disposal commenced in December of 2021 with the construction of the internal and surface drainage infrastructure.

20.3 Environmental Permitting

20.3.1 Roça Grande Mine

20.3.1.1 Tailings Dams

MSOL began its mining activities at Roça Grande in August 2006 under Corrective Operation Licence No. 333/2006 (COPAM process number 10022/2003/001/2005). COPAM is the Council for Environmental Policy in the State of Minas Gerais. This operating licence included the permit to operate a processing plant to treat oxidized gold ore from the mines in the Sabará, Caeté, and Santa Barbara project areas, as well as feed from the RG02 open pit at Roça Grande.

The processing plant was decommissioned due to changes required in the mineral treatment process as the oxidized ore reserves were depleted. The processing of sulphide gold ores from the Caeté Complex underground mines required construction of a new treatment plant that used the CIP-ADR process. This plant, the Caeté Plant, has been permitted through the process COPAM No. 10022/2003/002/2007.

As a result, an updated design was required for the disposal of tailings. An application for the preliminary licence for tailings disposal was accepted by SUPRAM on July 7, 2007. A site visit was subsequently carried out by SUPRAM on October 4, 2007. The operating licence was issued on November 29, 2007 (Certificate No. 029/2007, COPAM process 10022/2003/003/2007). This licence certified the environmental feasibility of storage of the process tailings in the previously excavated open pit mines at the RG02 deposit (RG02W and RG02E).

Although the two historic open pit mines were previously permitted for storage of process tailings from the first processing plant under the preliminary licence issued on November 29, 2007, MSOL required an updated licence for the construction of a new TSF for disposal of CIP tailings (the Moita TSF).

The installation licence was issued on May 11, 2009 (Certificate No. 077/2009, COPAM process 10022/2003/004/2008).

Construction and commissioning of the Moita TSF was carried out through a separate licensing process. After all construction was completed, an operating licence was requested on March 25, 2010 and Certificate No. 117/2010 was issued on May 31, 2010 (COPAM process 10022/2003/008/2010). The operating licence is currently under revalidation process. Under Brazilian regulations the mining operations are authorized to continue while the revalidation process is being carried out by the regulatory agency. At the end of the process the licence is either revalidated or cancelled by the environmental authority. Cessation of operations is only triggered if the licence is cancelled.

20.3.1.1.1 RG02W Tailings Storage

In previous environmental studies, it was proposed that the tailings from the new process plant (the Caeté Plant) would be returned to the mines for use as backfill material in the stopes, however, it was determined that the storage volume in the mines was insufficient to accept the full volume of tailings generated. Therefore, an additional TSF area was required for the tailings from the flotation circuit which did not contain cyanide. A volume of approximately 418,000 m^3 was estimated to be required. The tailings were to be transported to the RG02W TSF by means of pipelines. It is important to note that the RG02W open pit does not have conventional tailings dam characteristics such as embankments, as it was excavated for the purposes of mining.

The application for the construction of the RG02W first embankment was submitted on January 29, 2010 and the construction licence was issued on May 31, 2010 under Certificate No. 114/2010 (COPAM process 10022/2003/007/2010). The licence process was formalized by MSOL on June 23, 2010. A provisional operating licence (APO) for the RG02W TSF was issued on July 7, 2010 and the operating licence was issued on August 30, 2010 as Certificate No. 201/210 (COPAM process 10022/2003/010/2010). According to law, RG02W became a tailings dam after this first embankment. This operating licence is currently in the process of revalidation.

On May 16, 2013, MSOL initiated the licensing process for raising the RG02W dam using the upstream method. The regulatory agency granted concurrent preliminary and construction licences (LP + LI). This lift raised the height of the RG02W dam to an elevation of 1,296 MASL and increased the storage capacity of the RG02W TSF by 354 m^3 to a total capacity of 884 m^3. The LP + LI was issued on October 29, 2013 under Certificate No. 170/2013 (COPAM process 10022/2003/016/2013). On July 14, 2015, MSOL requested an operating licence for the new lift to 1,296 MASL, however, this licence was not granted and the additional volume was not used. A new regulation from February 2019 prohibited upstream dam raising in Brazil.

Jaguar completed decharacterization of the upstream raise of the RG02W structure in 2020. The decharacterization works included excavation of tailings and removal of the five metre tall upstream dam raise (Walm, 2020).

20.3.1.1.2 RG02E Tailings Storage

On April 12, 2011, MSOL applied for concurrent preliminary and construction licences for the expansion of the RG02E TSF, which is located within the former RG02 open pit.

In September 2011, SUPRAM surveyed the RG02 open pit and the licence was issued on April 10, 2012. The operating licence was requested on October 7, 2013 and since January 27, 2014, the RG02E TSF has operated through an APO. The final operation permit for RG02E was granted in 2020 through certificate LAS RAS 058/2020.

20.3.1.1.3 RG06 Tailings Storage

The new permit LAS RAS 3.566/2021 (administrative process SEI 2090.01.0004742/2021-80) was granted on November 12, 2021 for disposal of flotation tailings in RG06A and RG06B. This permit is valid for 10 years until November 29, 2031.

20.3.1.2 Process Plant

Amended operation licence 333/2006 (COPAM process 10022/2003/001/2005) authorized the operation of the Caeté Plant to process oxide gold ores. Due to the change of the process flowsheet to process the new feed stock from the underground mines, an application for a construction licence was filed with SUPRAM on April 17, 2007. SUPRAM surveyed the proposed plant site on July 2, 2007 and determined that the proposed new plant would occupy the same footprint as the previous plant and that there would be no further disturbance to either the surface or the vegetation.

The construction licence for the new processing plant was issued on January 4, 2008, under Certificate No. 097/2008 (COPAM process 1002/2003/002/2007). On March 25, 2010, MSOL made application for the operating licence, which was subsequently issued on May 3, 2010, under Certificate number 090/2010 (COPAM process 10022/2003/009/2010). An application for revalidation of the operating licence was submitted by MSOL in January 2014, which is currently under review by the environmental regulatory agency (COPAM process 1002/2003/020/2014).

20.3.1.3 Underground Mine

Underground mining activity at Roça Grande was authorized through two operating licences: licence LO 035/2008 related to the RG01 deposit and licence LO 036/2008 relates to the development of the RG02 deposit.

Operating licence 035/2008 (COPAM process 10022/2003/012/2011) was issued on April 16, 2008 and authorized the execution of underground mining activities on claim 831.057/2010. Prior to this operating licence, MSOL had an Operation Environmental Authorization (AAF), No. 01109/2007, for the underground mining activity. The operating licence is currently under revalidation process through COPAM process 10022/2003/015/2012.

Operating licence 036/2008 (COPAM process 22352/2011/005/2011) was requested on February 11, 2008 and was issued on April 16, 2008. This licence authorized the execution of underground mining activities on claim number 831.056/2010. It is to be noted that prior to this operating licence, Jaguar had AAF No. 01109/2007 for the underground mining activity. The operating licence is currently under revalidation process through COPAM process 22352/2011/006/2012, however, in May 2018, the environmental agency was officially informed about the temporary stoppage of the RG01 mine and its respective environmental licence.

20.3.1.4 Open Pit Mines

On April 9, 2010, MSOL formalized the previously issued concurrent LP + LI for the expansion of the existing open pit mines on claim 831.056/2010. This licence pertains to open pit mining activity on the RG03 and RG06 deposits.

Both LP + LI were administered under Certificate No. 173/2010 (COPAM process 22352/2011/003/2011) and the APO for the open pit expansions was issued on October 7, 2011. No activities are currently taking place at the open pit mines and the LP + LI request remains under revalidation process by the environmental agency.

20.3.1.5 Waste Rock Storage

The initial waste materials from the Roça Grande open pit mines were placed on waste piles previously constructed by Vale. The operating licence for that activity was issued on September 22, 2009.

SUPRAM issued the operating licence on November 30, 2009 under Certificate No. 298/2009 (COPAM process 1002/2003/005/2009). Revalidation of the operating licence was requested by MSOL on August 23, 2013 (COPAM process 1002/2003/018/2013), and this application is currently under review by SUPRAM.

On May 8, 2010, MSOL requested the LP + LI for the second expansion of the waste rock piles, as additional storage capacity was required after evaluation of the mining plans for the integrated operations. The LP + LI was issued on September 26, 2011 under Certificate No. 253/2011 (COPAM process 10022/2003/017/2013). An APO was issued on February 2017.

Disposal of tailings in the dry stack pile is authorized under new permit LO 30/2021 obtained on August 2, 2021, valid for 10 years until July 30, 2031 (administrative process 10022/2003/017/2013).

A summary of the Roça Grande environmental licences is provided in Table 20-1.

Table 20-1: List of Existing Licences, Roça Grande Mine
Jaguar Mining Inc. – Caeté Mine Complex

Enterprise	Certificate Number	Process Number (PA COPAM)	ANM	Issue Date (DD/MM/YYYY)	Expiry Date (DD/MM/YYYY)	Observation
Tailings Dam – "Cava do Moita"	LO 117/2010	10022/2003/008/2010	NA	31/05/2010	31/05/2014	This licence is under revalidation since 2014, COPAM process 10022/2003/020/2014
Tailings Dam – "RG02W"	LO 218/2010	10022/2003/010/2010	NA	30/08/2010	30/08/2014	This licence is under revalidation since 2014, COPAM process 10022/2003/020/2014
Tailings Dam – "RG02E"	LAS RAS 058/2020	10022/2003/019/2013	NA	25/05/2020	25/05/2030	New permit
Plant	LO 090/2010	10022/2003/009/2010	NA	03/05/2010	03/05/2014	This licence is under revalidation since 2014, COPAM process 10022/2003/020/2014
Underground mining – RG-01	LO 035/2008	10022/2003/012/2011	831.057/2010	16/04/2008	16/04/2012	This licence is under revalidation since 2012, COPAM process 10022/2003/015/2012
Underground mining – RG-02	LO 036/2008	22352/2011/005/2011	831.056/2010	16/04/2008	16/04/2012	This licence is under revalidation since 2012, COPAM process 22352/2011/006/2012
Open pit – ANM 831.056/2010	APO	22352/2011/004/2011	831.056/2010	07/10/2011	NA	Application for an operating licence under review by environmental agency. This licensing process refers to RG-03 and RG-06
Waste dump – First Expansion	LOC 298/2009	10022/2003/005/2009	NA	30/11/2009	30/11/2013	This licence is under revalidation since 2013, COPAM process 10022/2003/018/2013
Waste dump – Second Expansion	LAS RAS 30/2021	10022/2003/017/2013	NA	02/08/2021	30/07/2031	New permit

Enterprise	Certificate Number	Process Number (PA COPAM)	ANM	Issue Date (DD/MM/YYYY)	Expiry Date (DD/MM/YYYY)	Observation
In-pit tailings disposal at RG06A and RG06B	LAS RAS 3.566/2021	2090.01.0004742/2021-80	NA	12/11/2021	29/11/2031	New permit
Surface water pumping	Outorga 02725/2010	07024/2007	NA	11/11/2010	27/10/2015	This licence is under revalidation since 2015, process 31767/2015. "Captação túnel Marembá" or "Captação túnel do Andre´"

20.3.2 Pilar Mine

The mining title for Pilar (claim 830.463/1983) was initially held by Vale, which initiated the environmental licensing process in 1999 and obtained a preliminary licence for the open pit mining of the oxidized ore. Due to strategic changes at the time, Vale decided to not move forward with the mining project.

In 2003, Vale transferred the mineral rights to MSOL which resumed the environmental licensing process for the implementation of the open pit mining project. MSOL obtained the preliminary licence, construction licence, and finally, the operating licence on June 27, 2006, through the COPAM process 00132/1999/003/2005.

In preparation for permitting Pilar, MSOL acquired a preliminary licence for the activity through COPAM process 00132/1999/004/2007. SUPRAM issued the preliminary licence on August 16, 2007 under Certificate No. 021/2007.

MSOL subsequently carried out the required environmental studies and applied for a construction licence under COPAM process number 00132/1999/006/2008. SUPRAM issued the construction licence for the mining and processing of sulphide ores by the CIP-ADR process flowsheet on August 25, 2008 under Certificate No. 152/2008.

On September 22, 2009, MSOL applied for an operating licence which was subsequently issued by SUPRAM on June 30, 2010 under Certificate No. 153/2010 (COPAM process 00132/1999/007/2009). On February 23, 2016, MSOL applied for revalidation of the operating licence, through COPAM process 00132/1999/009/2016.

The process of revalidation of the operating licence was conducted in 2021. The new LO 006/2021 was granted on November 24, 2021, valid for six years until November 23, 2027. In addition, permit LAS RAS 1.299/2021 was issued on November 25, 2021 (administrative process SEI 1370.01.0001756/2020-03) for the expansion of Pilar's underground mine production by 100,000 tpa. This permit is valid until November 23, 2027 (same as LO 006/2021). A list of the existing Pilar environmental licences is presented in Table 20-2.

Table 20-2: List of Existing Licences, Pilar Mine
Jaguar Mining Inc. – Caeté Mine Complex

Enterprise	Certificate Number	Process Number (PA COPAM)	ANM	Issue Date (DD/MM/YYYY)	Expiry Date (DD/MM/YYYY)	Observation
Underground mining	LO 006/2021	00132/1999/009/2016	830.463/1983	24/11/2021	22/10/2027	400,000 tpa
Underground mining	LP+LI+LO 1299/2021	1370.01.0001756/2020-03	830.463/1983	25/11/2021	16/10/2027	Increase to 100,000 tpa
Fuel station	LAS RAS 1.921/2021	1370.01.0022188/2021-72	NA	08/06/2021	08/06/2031	
Surface water pumping	Outorga 0508541/ 2021	09155/2011	NA	29/10/2021	22/10/2027	Conceição River 100.8 m^3/hr
Surface water pumping	Outorga 1505567/ 2021	04902/2021	NA	08/07/2021	08/07/2031	Canela de Ema 19.8 m^3/hr
Water well	Outorga 1500917/ 2018	1706/2013	NA	24/11/2018	24/11/2023	Water well 1.4 m^3/hr
Lowering water level for mining	Outorga 1507799/ 2020	05804/2016	NA	10/10/2020	10/10/2030	Maximum pumping rate of 98 m^3/hr

20.4 Social or Community Requirements

The Caeté Complex includes two underground mines, Roça Grande, and Pilar, located in Minas Gerais, Brazil. There are three primary communities near these sites, Caeté, Santa Barbara, and Barão de Cocais. This section presents the results of the social review based on a review of Jaguar's policies, programs, social risk management systems, and/or social performance against relevant International Finance Corporation (IFC) Performance Standards (PS). When possible, available documentation was reviewed and in order to supplement this, discussions with Jaguar staff were utilized to fill information gaps to the extent possible. This social review does not represent a detailed audit of Jaguar's compliance with IFC PSs or specific guidelines, but an overview of available information and is organized according to the following IFC 2012 PSs:

- PS1: *Social and Environmental Assessment and Management Systems* requires that companies identify, assess, and mitigate the social and environmental impacts and risks they generate throughout the lifecycle of their projects and operations. From a social perspective, the requirement includes: a comprehensive social assessment, identification of critical social impacts and risks, community consultation and engagement, information disclosure, mitigation plans to address impacts and risks, and development of an organizational structure with qualified staff and budgets to manage the overall social management system.
- PS2: *Labour and Working Conditions* incorporates the International Labour Organization conventions that seek to protect basic worker rights and promote effective worker/management relations.
- PS4: *Community Health and Safety* declares the project's duty to avoid or minimize risks and impacts to community health and safety and addresses priorities and measures to avoid and mitigate project related impacts and risks that might generate community exposure to risks of accidents and diseases.
- PS5: *Land Acquisition and Involuntary Resettlement* considers the need for land acquisition or involuntary resettlement of any individual, family or group, including the potential for economic displacement.
- PS7: *Indigenous Peoples* considers the presence of Indigenous groups, communities, or lands in the area that may be directly or indirectly affected by projects or operations.
- PS8: *Cultural Heritage*. This standard is based on the Convention on the Protection of the World Cultural and Natural Heritage. The objectives are to preserve and protect irreplaceable cultural heritage during a project's operations, whether or not it is legally protected or previously disturbed and promote the equitable sharing of benefits from the use of cultural heritage in business activities.

It is noted that PS3 *Resource Efficiency and Pollution Prevention* and PS6 *Biodiversity Conservation* correspond to environmental performance standards. Environmental management and performance are discussed at the beginning of Section 20.

20.4.1 Social and Environmental Assessment and Management Systems

As a corporation, Jaguar has a strong commitment to sustainability, as documented in its 2018 Sustainability and Impact Report. Jaguar tracks and reports upon its corporate and site performance according to the 2015 United Nations Sustainable Development Goals, which are listed in Table 20-3.

Table 20-3: Most Important Sustainable Development Goals for Jaguar Mining and Stakeholders
Jaguar Mining Inc. – Caeté Mining Complex

1. No Poverty	10. Reduced Inequalities
2. Zero Hunger	11. Sustainable Cities and Communities
3. Good Health and Well-Being	**12. Responsible Consumption and Production**
4. Quality Education	13. Climate Action
5. Gender Equality	**14. Life Below Water**
6. Clean Water and Sanitation	**15. Life on Land**
7. Affordable and Clean Energy	**16. Peace Justice and Strong Institutions**
8. Decent Work and Economic Growth	17. Partnership for the Goals
9. Industry Innovation and Infrastructure	

Note:

1. Bold items were marked as the most important themes for Jaguar and its Stakeholders in 2018

Through ongoing stakeholder, engagement, and issues mapping, Jaguar reports that in 2018, the bolded themes in Table 20-3 were identified as the most important themes globally to Jaguar and its stakeholders. The SLR QP understands that an updated sustainability report has been prepared by Jaguar and is currently under internal review.

At Roça Grande and Pilar, community questions, feedback, and complaints are tracked and monitored. Up to the time of writing this report, in 2022, most of the feedback received at the sites were positive, with most of the negative complaints focused on nuisance effects such as dust, vibration, and odour. Other questions pertained to business and job opportunities. Jaguar has tracking systems and reports to demonstrate its commitment to stakeholder and issue management and performance measurement.

20.4.2 Labour and Working Conditions

Jaguar has a commitment to support the local economy and its workforce. At Roça Grande and Pilar, most of its employees have been hired from the local communities. In total, at the Caeté Complex, approximately 80% of its direct employees are residents of local communities.

Corporately, Jaguar has a Safety Management System which includes:

- Safety and Environment Committee
- Emergency Brigade
- SIPATMIN (Jaguar's Internal Mining Accident Prevention Week)
- Ergonomics
- Safety Inspections
- Safety Campaigns

All Caeté Complex employees are part of a collective bargaining agreement. Jaguar has indicated that recently, increased worker compensation has improved employee satisfaction. Jaguar has stated that there is a strong desire among employees to develop their careers. To this end, training and licensing opportunities are made available to staff to ensure the development of transferrable skills.

Employees at the Caeté Complex work on a shift basis and there is no on-site labour camp.

20.4.3 Community Health and Safety

Jaguar works towards maintaining a strong relationship with the communities surrounding the Caeté Complex with the objective of maintaining its "social license to operate". Jaguar has made several commitments to help improve community life and the social environment. This is evident at the Caeté Complex through the development of several community programs under the "Seeds of Sustainability" program. This program helps fund a variety of social and cultural projects, environmental education initiatives, annual social events, and career development opportunities. It is estimated that the "Seeds of Sustainability" program reaches approximately 1,500 people in the local communities through both large and small projects. In the 2018 Sustainability Report, some of these projects included:

- 81st Cavalcade of Brumal
- Weaving the Cavalhada Weaves / Pallets / Santa Barbara Multisectoral Fair
- Caminho Melhor and Projecto Dito sports equipment donation
- Road maintenance
- Genesis Project
- Launch of the movie Herança – A Cavalhada em Brumal
- Solidarity Christmas Social Action of the District São Vicente
- Caeté Women's / Mothers' Day
- Anniversary of the city / Cultural events
- Easter event and Children's Day
- Tire Park Project

The SLR QP understands that an updated sustainability report has been prepared by Jaguar and is currently under internal review.

20.4.4 Land Acquisition and Involuntary Resettlement

There have been no recent land acquisitions or mining operations that have required any community or family resettlement.

20.4.5 Indigenous Peoples

Jaguar indicated that the Caeté Complex is not located in or adjacent to any Indigenous People's Territory.

20.4.6 Cultural Heritage

No information was available on Chance Find Procedures, which might be applicable as operations continue.

20.5 Mine Closure Requirements

Six months before the mine is exhausted, Jaguar must present a Mine Closure Plan ("Plano de Fechamento de Mina", or PAFEM) to SUPRAM for approval, according to the "Deliberação Normativa COPAM No. 220/2018" published on March 21, 2018 by State of Minas Gerais. This regulation also enforces that all mining activities in Minas Gerais include a rehabilitation plan of disturbed areas.

In 2021 Jaguar developed the internal procedure PGS-MA-23.7-JAG for closure management of mined areas. This procedure aims to establish guidelines for temporary suspension of mine operations and subsequent maintenance, for rehabilitation of disturbed areas, and for definition of steps to carry out the decommissioning process and mine closure.

An external consultant, Brandt Meio Ambiente (Brandt), has been retained by Jaguar to develop closure plans for all Jaguar mining units. The development of all the closure plans will be completed by 2024, however, the closure plans for Roça Grande and Pilar are scheduled for completion in 2022. As part of this scope of work, Brandt will conduct a review of the asset retirement obligation (ARO) for Jaguar.

Jaguar commissioned an infilling and cover plan for the Moita TSF (Tetra Tech, 2020b), scheduled to commence implementation in 2022 and reach completion near the end of 2024. The technical report for the proposed cover presents the overall concept together with the geotechnical studies and analyses, and hydrological-hydraulic assessments developed to support the Moita cover project. The construction of the proposed cover involves filling the volumetric capacity of the TSF with filtered tailings, placing topsoil and carrying out re-vegetation on the final tailings surface. The plan also involves construction of a spillway designed to safely manage the flood resulting from the 10,000 year storm event and prevent dam overtopping. The spillway has already been constructed by Jaguar.

The tailings in-pit disposal plan in RG06 which will result in filling of pits RG06A and RG06B by the end of 2025 is an illustration of progressive closure implemented by Jaguar.

Progressive rehabilitation and final closure activities have been scheduled for the LOMP. The total cost of closure, including progressive rehabilitation, is US$8.08 million. The breakdown of the cost is presented in Table 20-4.

Table 20-4: Closure Cost Estimates
Jaguar Mining Inc. – Caeté Mine Complex

Description	2022	2023	2024	2025	2026	2027	2028	2029	Total
					(US$ 000)				
Waste Pile	39	46	46	20	14	35	-	35	235
Pit	-	-	-	-	-	-	-	-	-
Dam	-	94	94	94	-	-	-	-	283
Infrastructure	1,971	743	603	401	186	35	9	-	3,948
Plant	9	61	125	125	113	283	283	81	1,080
G&A	-	258	289	300	304	197	192	140	1,680
Contingency	-	169	72	127	122	83	85	194	852
Total	2,019	1,372	1,230	1,068	739	632	569	449	8,078

21.0 CAPITAL AND OPERATING COSTS

The Caeté Complex's life of mine (LOM) capital and operating costs were estimated in R$ based on recent operating results and Jaguar budgets. The amounts were converted to US$ using an exchange rate of R$5.50 : US$1.00 for 2021.

21.1 Capital Costs

Table 21-1 presents the estimated capital and closure costs over the Caeté Complex's LOM. In addition, Table 21-2 presents the average unit capital costs used in the cut-off grade analysis.

Table 21-1: LOM Capital Cost Summary
Jaguar Mining Inc. – Caeté Mining Complex

Area	Units	Total	2022	2023	2024	2025	2026	2027	2028
Sustaining Capital									
Primary Development	US$ 000	19,113	6,396	4,757	7,670	290	-	-	-
Equipment	US$ 000	13,640	4,606	3,011	3,011	3,011	-	-	-
Engineering	US$ 000	6,402	1,601	1,601	1,601	1,601	-	-	-
Exploration	US$ 000	11,503	2,876	2,876	2,876	2,876	-	-	-
Subtotal Sust. Capital	US$ 000	50,659	15,479	12,245	15,158	7,778	-	-	-
Other Capital									
Working Capital	US$ 000	-	9,160	392	478	183	(5,062)	(3,412)	(1,740)
Growth Capital	US$ 000	7,325	3,053	3,053	610	610	-	-	-
ARO/Closure	US$ 000	7,784	1,945	1,322	1,185	1,029	2,302	-	-
Total Capital Cost	US$ 000	65,768	29,637	17,012	17,431	9,600	(2,760)	(3,412)	(1,740)

Source: Jaguar, 2022

Table 21-2: Average Unit Capital Costs
Jaguar Mining Inc. – Caeté Mining Complex

Cost Category	Unit Cost (US$/t)
Primary Development	13.81
Exploration / Brownfield	1.01
Equipment / Engineering	12.47
Reclamation/Closure (ARO)	1.57
Non Sustaining	13.96
Total Capital Costs	42.82

Source: Jaguar, 2022

21.2 Operating Costs

Table 21-3 presents the LOM operating costs for the Caeté Mining Complex. These costs were prepared by Jaguar based on recent actual costs and include mining, process, and G&A expenses.

Table 21-4 presents the unit operating costs that were used in the cut-off grade analysis and to calculate the values in Table 21-3. Operating costs are estimated as the unit costs multiplied by the tonnages in the Life of Mine Production schedule in Section 16 of this Technical Report.

Table 21-3: LOM Operating Costs
Jaguar Mining Inc. – Caeté Mining Complex

Area	Units	Total	2022	2023	2024	2025	2026
Mining (Underground)	US$ 000	99,259	21,490	22,599	22,587	22,599	9,984
Processing	US$ 000	59,550	12,893	13,558	13,551	13,558	5,990
G&A	US$ 000	17,491	3,787	3,982	3,980	3,982	1,759
Total Operating Cost	US$ 000	176,300	38,170	40,140	40,117	40,140	17,733

Source: Jaguar, 2022

Table 21-4: Unit Operating Cost
Jaguar Mining Inc. – Caeté Mining Complex

By Cost Type	US$/t milled
Mining	
Labour	13.49
Maintenance	7.83
Electricity	1.66
External Services	11.54
Mining Materials	8.71
Mining Taxes	3.87
Subtotal Mining	47.08
Processing	
Labour	5.30
Maintenance	1.96
Electricity	4.04
External Services	5.43
Plant Consumables	11.52
Subtotal Processing	28.25
G&A	8.30
Total	83.62

Source: Jaguar, 2022

22.0 ECONOMIC ANALYSIS

This section is not required as Jaguar is a producing issuer, the property is currently in production, and there is no material expansion of current production. The SLR QP reviewed a LOMP cash flow model that confirms the economic viability of the Mineral Reserves, at a gold price of US$1,650/oz and an exchange rate of R$5.50 : US$1.00.

23.0 ADJACENT PROPERTIES

There are no adjacent properties relevant to the Caeté Complex.

24.0 OTHER RELEVANT DATA AND INFORMATION

24.1 Roça Grande Mine

Roça Grande is a past producing underground mine situated in the Roça Grande unit of the Caeté Complex. Roça Grande operated from 2010 to 2018 using the mechanized cut and fill method. During operations Roça Grande experienced challenges with surface and groundwater inflows. In Q1 2018, as part its strategy to refocus on improvements to the Turmalina and Pilar mines and exploration growth activities, Jaguar made a strategic decision to suspend the Roça Grande operations. Jaguar has commenced a review of the Roça Grande asset with a view to evaluating the various financial and technical scenarios that may lead to recommencement of production from this area.

Roça Grande has potential for reactivating as an operating mine, upgrading Inferred Resources to the Indicated and Measured categories, and converting Mineral Resources to Mineral Reserves. The following are considered favourable for reactivation:

- Knowledge of the deposit based on experience/operating history.
- Caeté Plant and other surface infrastructure is already available on site.
- Existing underground development that can be rehabilitated and reused.

However, Roça Grande has two significant challenges:

- A history of heavy surface and groundwater inflows.
- The Roça Grande deposit's configuration, consisting of narrow shallow dipping veins, is not favourable for mechanized mining methods or avoiding excessive waste dilution.

SLR recommends Jaguar implement the following measures to advance the reactivation of Roça Grande and upgrade its mineral inventory:

1. Conduct a prefeasibility study (PFS) to demonstrate the Roça Grande deposit's economic viability in support of declaring Mineral Reserves. Prior to a PFS, complete a preliminary economic assessment (PEA) to define the best approach for mining the Roça Grande deposit.
2. Conduct hydrogeological and mine dewatering studies to determine the best strategy for controlling water inflows.
3. Investigate alternative methods for mining narrow shallow dipping veins, such as the Shallow Angle Mining System (SAMS) developed by MINRAIL Inc.
4. Plan on using smaller sized mining equipment than was previously utilized, to minimize dilution.
5. Plan on using resue mining in ore development and cut and fill stopes, to also minimize dilution.

24.2 Córrego Brandão Deposit

The Córrego Brandão deposit is situated in the Roça Grande unit of the Caeté Complex, approximately five kilometres from the Caeté Plant and Roça Grande.

The following are considered favourable for advancing Córrego Brandão as a potential development project:

- Located near the Caeté Plant and other infrastructure.
- Potentially mineable as an open pit.

SLR recommends Jaguar implement the following measures to expand the Mineral Resource and upgrade Inferred Resources to the Measured and Indicated categories:

1. Complete additional diamond drilling.
2. Conduct a PEA to define the best approach for developing and mining the Córrego Brandão deposit.

25.0 INTERPRETATION AND CONCLUSIONS

Jaguar was successful in replacing Mineral Reserves depleted by production in 2021, through in-fill drilling and conversion of Mineral Resources to Mineral Reserves. Estimated Mineral Reserve contained ounces have increased 16% compared to the previous estimate.

Mineral Resources are considerably in excess of Mineral Reserves, reflecting good future potential to develop new areas and more fully utilize the capacity of the Caeté Plant.

The SLR QPs offer the following conclusions by area.

25.1 Geology and Mineral Resources

- The Caeté Complex Mineral Resource estimates were prepared in accordance with CIM (2014) definitions.
- Measured and Indicated Mineral Resources total 4.8 Mt at an average grade of 3.81 g/t Au, containing 588,000 oz Au, and Inferred Mineral Resources total 4.1 Mt at an average grade of 3.5 g/t Au, containing 456,000 oz Au.

25.1.1 Roça Grande Mine

- Roça Grande production was approximately 200 tpd until Q1 2018, when it was placed on care and maintenance. No additional work has been completed at Roça Grande since the last disclosure of Mineral Resources.
- Roça Grande Mineral Resources were estimated based on drilling and channel sample data using a data cut-off date of December 31, 2018, after an internal audit. The wireframe models of the Roça Grande excavated volumes were also constructed using information available as of December 31, 2018, with only local adjustments completed in 2021 for RG01 and RG02.
- At a cut-off grade of 1.80 g/t Au, the Roça Grande Measured and Indicated Mineral Resources total approximately 962,000 t, at an average grade of 3.90 g/t Au, containing approximately 121,000 oz Au. In addition, Roça Grande Inferred Mineral Resources total approximately 889,000 t, at an average grade of 4.08 g/t Au, containing approximately 117,000 oz Au.
- Jaguar commenced diamond drilling at Roça Grande in August 2006. Following the completion of the first exploratory holes drilled at the RG01/07, RG02, RG03, and RG06 mineralized zones, Jaguar carried out an in-fill program to delineate these zones. No drilling has been completed at Roça Grande since 2015, however collection of channel sample information in support of limited production activities was continued through 2018. The drill hole and channel sample information were grouped into five sets to reflect the known mineralized zones at Roça Grande.
- Two important BIF horizons are present at Roça Grande, the North Structure (Structure 1) which hosts the RG01 mineralized body and the South Structure (Structure 2) which hosts the RG02, RG03, and RG06 mineralized bodies. The RG07 mineralized body is located immediately in the hanging wall of Structure 1 and is predominately hosted by a quartz vein. The bedding is well defined by the carbonate-facies iron formation and chert observed in the BIF horizons, with an overall azimuth strike of 070° to 080°, and dipping approximately 30° to 35° south.
- Gold mineralization is more commonly associated with BIF horizons. In the RG01, RG02, RG03, and RG06 mineralized bodies, gold mineralization is developed approximately parallel to the primary bedding and is related to centimetre scale bands of massive to disseminated pyrrhotite

and arsenopyrite. Gold mineralization usually increases along the hanging wall contact of the iron formation sequence and is hosted by carbonate-facies iron formation. The grades generally decrease towards the footwall where the iron formation becomes more silica-rich.

- In conjunction with the information gathered from the production reconciliation through 2015, the block model validation activities carried out for the year end 2021 Roça Grande Mineral Resource model indicate that the drilling and sampling procedures and the Mineral Resource estimation modelling workflows are successful at producing reliable long term block models for Roça Grande.

25.1.2 Pilar Mine

- Pilar has been in continuous production since 2008 and has produced a total of approximately 554,000 oz Au as of December 31, 2021.
- The Pilar Mineral Resource estimate was prepared based on drilling and channel sample data using a data cut-off date of December 31, 2021. The wireframe models of the Pilar excavated volumes were constructed using information available as of December 31, 2021.
- At a cut-off grade of 1.66 g/t Au, the Pilar Measured and Indicated Mineral Resources total approximately 3.8 Mt, at an average grade of 3.79 g/t Au, containing approximately 467,000 oz Au. In addition, Pilar Inferred Mineral Resources total approximately 2.1 Mt, at an average grade of 4.21 g/t Au, containing approximately 288,000 oz Au.
- The underground diamond drilling campaigns carried out in the second half of 2020 and throughout 2021 have been largely focussed on providing information on the extents of the gold distribution of the known mineralized zones such as the BA, BF, BF II, and BF III deposits as well as improving the reliability of the Mineral Resource estimates for the Southwest (SW) deposit. The drilling programs have been successful in locating gold mineralization down to the -300 m elevation in the LPA deposit, a distance of approximately 1,100 m below the surface.
- A program of detailed lithological, mineralization, and structural mapping carried out in 2019 and 2020 successfully demonstrated that the gold mineralization is hosted in a variety of rock types such as BIFs (e.g., BA, BF, BF II, and BF III deposits), mafic metavolcanics (LFW deposit), and mafic/ultramafic metavolcanics (e.g., Torre deposit). As past exploration activities have been largely focussed on evaluating the gold bearing potential of the BIF units, the SLR QP is of the opinion that the potential for the remaining host rocks has been under-evaluated.
- The mapping programs have clearly demonstrated that the entire stratigraphic sequence located to the east of the São Jorge Fault and gold mineralized zones have been affected by a period of west-northwest to east-southeast compression (D1) that has transposed all of the host rocks and mineralized zones into a series of broad, open folds at surface, to a series of compact, tightly folded structural slices at depth.
- The observation that the gold bearing zones have been affected by this D1 folding event presents clear evidence that the gold mineralizing event took place prior to this deformation event. The observation that some of the mineralized zones (e.g., the LPA deposit) are approximately parallel to the D1 axial plane orientation suggests that a second gold mineralizing event may have occurred. All host rocks and mineralized zones are affected by a series of late-stage reverse faults.
- The geometry of the mineralization located in the SW deposit suggests that this mineralization has not been affected by a post-mineralization deformation event, indicating that the age of this deposit may be younger than that of such deposits as BA, BF, BF II, and BF III.

- Drill hole information collected during the 2020 and 2021 drill programs clearly indicates that the down-dip extensions of the SW deposit may merge at depth with the BIF hosted deposits.
- The continuity and distribution of gold grades for selected mineralized wireframe domains were examined by means of contoured longitudinal projections. Review of the longitudinal projections for these selected domains suggests that the samples with gold grades above the 3.0 g/t Au to 5.0 g/t Au range appear to occur as somewhat isolated pods measuring approximately 15 m to 30 m in size that have a slightly preferred elongation along the down-plunge orientation of the folded mineralized wireframes, possibly influenced by the F1 fold axes. The lower grade samples generally exhibit a more pronounced preferred elongation along the down-plunge orientation of the folded mineralized wireframes.
- In conjunction with the information gathered from the production reconciliation over the past number of years, the block model validation activities carried out for the year end 2021 Pilar Mineral Resource model indicate that the drilling and sampling procedures and the Mineral Resource estimation modelling work flows are successful at producing reliable long term block models for Pilar.

25.1.3 Córrego Brandão

- The Córrego Brandão deposit was discovered in 2019 following regional exploration in the Roça Grande area.
- The Córrego Brandão block model is based on drilling and channel sample data using a data cut-off date of June 8, 2021.
- The initial Mineral Resource for Córrego Brandão is reported within an optimized open pit surface generated using cut-off grades of 0.38 g/t Au and 0.74 g/t Au for oxide and fresh material, respectively. The Inferred Mineral Resources at Córrego Brandão total approximately 1.1 Mt at an average grade of 1.48 g/t Au, containing approximately 51,000 oz Au.
- Surface exploration including geological mapping, aerial geophysics (drone-based magnetics), soil and chip sampling, auger drilling, and trenching have been successful in locating gold mineralization at the Córrego Brandão deposit.
- The 2021 diamond drilling campaign that was carried out to test a relatively restricted portion of the semi-regional scale fold structure mapped and targeted by Jaguar since 2020 has confirmed that the Córrego Brandão deposit has near-surface open pit potential to add feedstock to the nearby Caeté Plant.
- Córrego Brandão economic gold mineralization corresponds to a highly altered and mineralogically “exotic” conformable horizon approximately 20 m to 40 m in true thickness that occurs at the sheared contact between a meta-mafic volcanic package and a meta-ultramafic volcanic package.
- Recent mapping and semi-regional reconnaissance activities completed in the Córrego Brandão area confirmed weathered and surficial high grade mineralization which corresponds to a dark brown, magnetic, argillaceous, and somewhat pulverulent material that resembles the Lapa Seca lithological unit, where deeply weathered. The Lapa Seca lithostratigraphic unit hosts the very large Morro Velho gold deposit in the Iron Quadrangle district.
- High gold grade intersections in diamond and auger holes were identified to be related with a highly magnetic iron rich mafic lithological unit, initially described as a chlorite rich BIF, contained within a folded mafic to ultramafic greenstone sequence. The BIF is approximately six metres to

10 m wide, appearing to be mineralized across this width and with high grades associated with both, the upper and lower contacts

- High grade and extensive mineralization zones appear to occur where there are visible concentrations of smaller scale parasitic folding to the higher amplitude, easily mappable, overturned plunging synforms and antiforms. The economic mineralized zones and bodies at the Córrego Brandão deposit appear to plunge and progress spatially with double-plunging orientations, as a result of a refolded and re-oriented structural pattern of a previous/earlier structural deformation event.

25.2 Mining and Mineral Reserves

- The Caeté Complex Mineral Reserve estimates were prepared in accordance with CIM (2014) definitions.
- Proven and Probable Mineral Reserves total 2.1 Mt at a grade of 3.71 g/t Au, containing 251,000 oz Au.
- The Pilar deposit is suitable for SLOS, considering the orebody's configuration and geotechnical characteristics.
- Pilar's mining method is longitudinal SLOS with delayed backfilling.
- Once mined out, stopes are backfilled with rockfill consisting of waste from mine development.
- Longhole drilling is predominately with downholes, however, upholes are drilled when leaving a sill pillar above the top lift of a stoping sequence.
- Access to the underground levels is via ramp.
- The stopes are accessed via sublevel development driven from the ramp, with a sublevel interval of 20 m.
- Pilar's ventilation system is pull type with intake air drawn down the ramp and return air exhausted via two ventilation raises. Each of these raises has two main ventilation fans installed at its collar.
- The mining operations area has a workforce of approximately 590. Jaguar personnel comprise approximately 70% of the workforce and the remainder are contractor employees.
- Complying with Brazilian legislation, Pilar operates on four six-hour long shifts daily.
- Roça Grande is presently on care and maintenance, and no Mineral Reserves are currently estimated for it.

25.3 Mineral Processing

- The processing circuit unit operations are reasonable to recover gold as expected and provide for adequate throughput.
- Recent test work was aimed at identifying differences between the Pilar orebodies, designated: BF, BF II, BF III, TORRE, LPA1, LPA2, and LPA3.
  - Minor variations by orebody were observed, with gold recoveries ranging from 85% to 95%. A weighted average recovery for the reserve orebodies is 89%.
  - Flotation tests indicated that there is the possibility of increased recovery using SIBX or PAX.
- Further test work is underway to identify options for optimizing the existing processes.

25.4 Infrastructure

- The current Caeté Complex infrastructure is sufficient for the operation.

25.5 Environment

- No environmental issues were identified from the documentation available for the SLR QP's review. The Caeté Complex complies with applicable Brazilian permitting requirements. The approved permits and the licence renewals address the Brazilian authority's requirements for mining extraction and operation activities.
- Environmental monitoring is carried out by Jaguar at Roça Grande and Pilar according to the obligations defined in the environmental permits. These include surface water quality, groundwater quality, air quality, and ambient noise. Fauna is also monitored in the Roça Grande area. In 2021, Jaguar initiated groundwater quality monitoring at Roça Grande, with the intent of obtaining field data to determine if groundwater contamination has taken place in the receiving environment.
- The SLR QP's review of social or community requirements indicates that, at present, the Caeté Complex represents a positive contribution to sustainability and community well being. Jaguar continues to develop a strong relationship with the nearby communities and stakeholders. Jaguar's commitment to community development and programs is demonstrated through its ongoing investments in the "Seeds of Sustainability" program. Information on any existing or potential archeological resources was not provided at the time of this review, nor were any site-specific policies or guidelines.

26.0 RECOMMENDATIONS

The SLR QPs offer the following recommendations by area.

26.1 Geology and Mineral Resources

26.1.1 Geological and Sampling Data

1. Select and assay on a remedial basis a selection of pulp samples from the 2021 diamond drilling programs representing approximately 2% of the total samples analyzed.
2. Reduce the insertion frequency of the blank and standard reference materials to approximately one blank and one standard reference material sample for every 50 sample assays.
3. Maintain the same list of standard reference materials to better monitor their performance over the sampling periods.

26.1.2 Mineral Resources

1. Undertake a resampling program for the unsampled intervals located within the Pilar mineralized wireframe boundaries if sufficient drill core or reject material is available.
2. Continue to correct the erroneous or anomalous information (not used in the estimation of Mineral Resources) for older drill holes that are located in the as-yet unmined portions of the Pilar deposit. For the suspect drill holes for which remedial corrections are not possible, the SLR QP recommends that these holes be transferred from the active database into a database that is dedicated specifically for these suspect records.
3. Prepare future Pilar Mineral Resource estimates using drill hole data available as of September 30th of the current year so as to allow adequate time to complete the estimation workflow.
4. Evaluate the gold bearing potential of the mafic metavolcanic and the ultramafic metavolcanic units within Pilar.
5. Update the lithologic and structural models to reflect the current information and level of understanding of the nature of the folding and faulting of the host rock units at Pilar, Roça Grande, and Córrego Brandão.
6. Review the reconciliation data between the estimated block model grades and the as-mined grades for the BF III orebody. Subject to the results of this review, the capping value applied to the samples from this deposit may be increased.
7. Continue to collect bulk density values for samples within the mineralized wireframe, especially for zones with a low number of density values.
8. Complete in-fill drilling to upgrade the Inferred Mineral Resources at Córrego Brandão.
9. Prepare wireframe models of the major lithological units as aides in coding the density values to all of the block models.

10. Consider the use of a dynamic anisotropy method for estimation of grades so as to reflect the gold grade variations more accurately at the local scale, particularly in the highly deformed sulphide mineralization at Córrego Brandão.
11. When no CMS model is available for a given excavation volume, use the design shape for the excavations in question (suitably modified for the estimated amount of overbreak) as a proxy when preparing the reconciliation reports.
12. Review and re-evaluate the reporting volumes for the remaining remnant mineralization above Level 7 in consideration of the current metal price environment and short term outlook.
13. Update the input parameters and workflows used to prepare the reporting volumes to more accurately reflect the volumes of material in the block model that are candidates for classification as Mineral Resources.
14. Undertake studies including change of support to investigate options for achieving a better correlation between the distribution of informing composite sample gold grades and estimated block grades.

26.2 Mining and Mineral Reserves

1. Continue efforts to exploit opportunities in the upper areas of Pilar to increase the LOMP. There are additional Mineral Resources in the old workings that can potentially be mined at reduced haulage distances. A detailed mining plan and costing is required.
2. Conduct drilling to re-establish a buffer of one mining level (three sublevels) between the Pilar LOMP and the defined resource limits at depth.
3. Conduct a geotechnical study to update the one completed by Lopes in 2015.
4. Conduct a PFS to demonstrate the Roça Grande deposit's economic viability in support of declaring Mineral Reserves. Prior to a PFS, complete a PEA to define the best approach for mining the Roça Grande deposit.
5. Conduct hydrogeological and mine dewatering studies to determine the best strategy for controlling water inflows at Roça Grande.
6. Investigate alternative methods for mining narrow shallow dipping veins at Roça Grande, such as the SAMS developed by MINRAIL Inc.
7. Plan on using smaller sized mining equipment than was previously utilized at Roça Grande, to minimize dilution.
8. Plan on using resue mining in ore development and cut and fill stopes at Roça Grande, to also minimize dilution.
9. Conduct a PEA to define the best approach for developing and mining the Córrego Brandão deposit.

26.3 Mineral Processing

1. Conduct plant trials to optimize flotation reagents.
2. Continue metallurgical test work and include samples from the SW orebody (which makes up one third of the Mineral Reserves) to assess variations in metallurgical performance.

3. Study the long term stability of ferric arsenate, in relation to the ongoing operation of the Moita TSF.

26.4 Environment

1. Continue to review management and mitigation corrective actions, as applicable, based on the data collected from the environmental monitoring programs. In particular, evaluate the groundwater quality at Roça Grande, based on the results of the monitoring program initiated by Jaguar in 2021, to determine if and how the site affects groundwater quality and quantity, and implement mitigation measures as needed.
2. Install piezometers and displacement monitoring instrumentation for the existing and proposed filtered tailings stacks.
3. Monitor the long term displacement and phreatic levels within filtered tailings stacks to observe trends and confirm physical stability.
4. Monitor seepage from all TSFs to confirm chemical stability.
5. Complete the standardization of management processes in 2022 according to the mapped strategy that was initiated in 2021.

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28.0 DATE AND SIGNATURE PAGE

This report titled "Technical Report on the Caeté Mining Complex, Minas Gerais, Brazil" with an effective date of December 31, 2021 was prepared and signed by the following authors:

(Signed & Sealed) ***Reno Pressacco***

Dated at Toronto, ON
March 31, 2022

Reno Pressacco, M.Sc., (A)., P.Geo.
Associate Principal Geologist

(Signed & Sealed) ***Dorota El-Rassi***

Dated at Toronto, ON
March 31, 2022

Dorota El-Rassi, M.Sc., P.Eng.
Consultant Geologist

(Signed & Sealed) ***Renan G. Lopes***

Dated at Toronto, ON
March 31, 2022

Renan G. Lopes, M.Sc., MAusIMM CP(Geo)
Consultant Geologist

(Signed & Sealed) ***Jeff Sepp***

Dated at Toronto, ON
March 31, 2022

Jeff Sepp, P.Eng.
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(Signed & Sealed) ***Brenna J.Y. Scholey***

Dated at Toronto, ON
March 31, 2022

Brenna J.Y. Scholey, P.Eng.
Principal Metallurgist

(Signed & Sealed) ***Luis Vasquez***

Dated at Toronto, ON
March 31, 2022

Luis Vasquez, M.Sc., P.Eng.
Senior Environmental Consultant and
Hydrotechnical Engineer

29.0 CERTIFICATE OF QUALIFIED PERSON

29.1 Reno Pressacco

I, Reno Pressacco, M.Sc.(A)., P.Geo., as an author of this report entitled "Technical Report on the Caeté Mining Complex, Minas Gerais, Brazil", with an effective date of December 31, 2021, prepared for Jaguar Mining Inc., do hereby certify that:

1. I am an Associate Principal Geologist with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON, M5J 2H7.
2. I am a graduate of Cambrian College of Applied Arts and Technology, Sudbury, Ontario, in 1982 with a CET Diploma in Geological Technology, Lake Superior State College, Sault Ste. Marie, Michigan, in 1984, with a B.Sc. degree in Geology and McGill University, Montreal, Québec, in 1986 with a M.Sc.(A) degree in Mineral Exploration.
3. I am registered as a Professional Geologist in the Province of Ontario (Reg. #939). I have worked as a geologist for a total of 36 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Preparation, reviews, and reporting as a consultant for Mineral Resource estimates on numerous exploration and mining projects around the world.
   - Numerous assignments in North, Central and South America, Europe, Russia, Armenia, and China for a variety of deposit types and in a variety of geological environments; commodities including Au, Ag, Cu, Zn, Pb, Ni, Mo, U, PGM, REE, and industrial minerals.
   - Vice president positions with Canadian mining companies.
   - A senior position with an international consulting firm, and
   - Performing as an exploration, development, and production stage geologist for a number of Canadian mining companies.
   - Preparation of Mineral Resource estimates for open pit and underground mines for the three prior years.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I most recently visited the Roça Grande Mine on December 14, 2017 and the Pilar Mine on December 13, 2017. I had previously visited the Roça Grande Mine on November 22, 2014 and the Pilar Mine on November 21, 2014.
6. I am responsible for Sections 1.1.1.1, 1.1.2.1, 14.3, 25.1, and 26.1, and contributions to Section 27.0 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have previously prepared public domain Mineral Resource estimates and Technical Reports for the properties that are the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 1.1.1.1, 1.1.2.1, 14.3, 25.1, and 26.1 of the Technical Report, for which I am responsible, contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 31st day of March, 2022

(Signed & Sealed) ***Reno Pressacco***

Reno Pressacco, M.Sc.(A)., P.Geo

29.2 Dorota El-Rassi

I, Dorota El-Rassi, M.Sc., P.Eng., as an author of this report entitled "Technical Report on the Caeté Mining Complex, Minas Gerais, Brazil", with an effective date of December 31, 2021, prepared for Jaguar Mining Inc., do hereby certify that:

1. I am Consultant Geologist with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of the University of Toronto in 1997 with a B.A.Sc.(Hons.) degree in Geological and Mining Engineering and in 2000 with a M.Sc. degree in Geology and Mechanical Engineering.
3. I am registered as a Professional Geological Engineer in the Province of Ontario (Reg.# 100012348). I have worked as a geologist for a total of 25 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report on exploration and mining projects for due diligence and regulatory requirements
   - Mineral Resource estimates on a variety of commodities including gold, silver, copper, nickel, zinc, PGE, and industrial mineral deposits
   - Experienced user of Gemcom, Leapfrog, Phinar's x10-Geo, and Gslib software
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the Caeté Complex.
6. I am responsible for Sections 1.3.4 to 1.3.6, 7.0 to 11.0, 14.1, 14.2, and 14.4, and contributions to Section 27.0 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Sections 1.3.4 to 1.3.6, 7.0 to 11.0, 14.1, 14.2, and 14.4 of the Technical Report, for which I am responsible, contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 31st day of March, 2022

(Signed & Sealed) ***Dorota El-Rassi***

Dorota El-Rassi, M.Sc., P.Eng.

29.3 Renan G. Lopes

I, Renan G. Lopes, M.Sc., MAusIMM CP(Geo) as an author of this report entitled "Technical Report on the Caeté Mining Complex, Minas Gerais, Brazil", with an effective date of December 31, 2021, prepared for Jaguar Mining Inc., do hereby certify that:

1. I am Consultant Geologist with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave Toronto, ON M5J 2H7.
2. I am a graduate of University of São Paulo, São Paulo, Brazil, in 2010 with a Bachelor of Science degree in Geology and in 2016 with a Master of Science degree.
3. I am registered as a Chartered Professional with the Australasian Institute of Mining and Metallurgy (AusIMM CP(Geo)) (Reg.# 328085). I have worked as a geologist for a total of 11 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - The preparation of mineral resources of gold and copper projects and operations in South America.
   - Senior Geologist responsible for peer reviewing the geological modelling, estimative workflow, and mineral resources classification of several projects for precious and base metals and industrial minerals.
   - Responsible for the implementation of geological modelling and estimation best practices on various mining projects.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Pilar and Roça Grande mines and Córrego Brandão deposit from January 24 to 28, 2022.
6. I am responsible for Section 12.0 and contributions to Section 27.0 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Section 12.0 of the Technical Report, for which I am responsible, contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 31st day of March, 2022

(Signed & Sealed) ***Renan G. Lopes***

Renan G. Lopes, M.Sc, MAusIMM CP(Geo)

29.4 Jeff Sepp

I, Jeff Sepp, P.Eng., as an author of this report entitled "Technical Report on the Caeté Mining Complex, Minas Gerais, Brazil", with an effective date of December 31, 2021, prepared for Jaguar Mining Inc., do hereby certify that:

1. I am a Consultant Mining Engineer with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of Laurentian University, Sudbury, Ontario in 1997 with a B.Eng. degree in Mining.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg.# 100139899). I have worked as a mining engineer for a total of 25 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Mine planning, open pit and underground mine design and scheduling, ventilation design and implementation for numerous projects in Canada, USA, Turkey, Saudi Arabia, United Kingdom, Mali, Tanzania, Ghana, and Sweden.
   - Senior mining consultant at MineRP Canada Limited.
   - Mining engineer/ventilation specialist for a number of Canadian mining companies, including CVRD Inco (now Vale) and Cameco Corp.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Pilar and Roça Grande mines on December 11, 2018.
6. I am responsible for Sections 1.1, 1.1.1.2, 1.1.1.4, 1.1.2.2, 1.2, 1.3.1 to 1.3.3, 1.3.7, 1.3.8, 1.3.10, 1.3.11, 1.3.13, 1.3.14, 2.0 to 6.0, 15.0, 16.0, 18.0, 19.0, 21.0 to 24.0, 25.2, 25.4, and 26.2, and contributions to Section 27.0 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 1.1, 1.1.1.2, 1.1.1.4, 1.1.2.2, 1.2, 1.3.1 to 1.3.3, 1.3.7, 1.3.8, 1.3.10, 1.3.11, 1.3.13, 1.3.14, 2.0 to 6.0, 15.0, 16.0, 18.0, 19.0, 21.0 to 24.0, 25.2, 25.4, and 26.2 of the Technical Report, for which I am responsible, contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 31st day of March, 2022

(Signed & Sealed) ***Jeff Sepp***

Jeff Sepp, P.Eng.

29.5 Brenna J.Y. Scholey

I, Brenna J.Y. Scholey, P.Eng., as an author of this report entitled "Technical Report on the Caeté Mining Complex, Minas Gerais, Brazil", with an effective date of December 31, 2021, prepared for Jaguar Mining Inc., do hereby certify that:

1. I am Principal Metallurgist with SLR Consulting (Canada) Ltd., of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of The University of British Columbia in 1988 with a B.A.Sc. degree in Metals and Materials Engineering.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #90503137) and British Columbia (Reg. #122080). I have worked as a metallurgist for a total of 34 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Reviews and reports as a metallurgical consultant on numerous mining operations and projects for due diligence and regulatory requirements.
   - Senior Metallurgist/Project Manager on numerous base metals and precious metals studies for an international mining company.
   - Management and operational experience at several Canadian and U.S. milling, smelting and refining operations treating various metals, including copper, nickel, and precious metals.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I did not visit the Caeté Mining Complex.
6. I am responsible for Sections 1.1.1.3, 1.1.2.3, 1.3.9, 13.0, 17.0, 25.3, and 26.3, and contributions to Section 27.0 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 1.1.1.3, 1.1.2.3, 1.3.9, 13.0, 17.0, 25.3, and 26.3 of the Technical Report, for which I am responsible, contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 31st day of March, 2022

(Signed & Sealed) *Brenna J.Y. Scholey*

Brenna J.Y. Scholey, P.Eng.

29.6 Luis Vasquez

I, Luis Vasquez, M.Sc., P.Eng., as an author of this report entitled "Technical Report on the Caeté Mining Complex, Minas Gerais, Brazil", with an effective date of December 31, 2021, prepared for Jaguar Mining Inc., do hereby certify that:

1. I am Senior Environmental Consultant and Hydrotechnical Engineer with SLR Consulting (Canada) Ltd, of Suite 501, 55 University Ave., Toronto, ON M5J 2H7.
2. I am a graduate of Universidad de Los Andes, Bogotá, Colombia, in 1998 with a B.Sc. degree in Civil Engineering, and in 1999 with a M.Sc. degree in Water Resources Engineering.
3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #100210789). I have worked as a civil engineer on mining related projects for a total of 17 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Reviews and reports as an environmental consultant on numerous mining operations and projects for due diligence and regulatory requirements.
   - Preparation of numerous environmental impact assessments for mining projects located in Canada, and Perú for regulatory approval.
   - Preparation of multiple mine closure plans for mining projects in Canada and Perú.
   - Preparation of several scoping, prefeasibility, feasibility, and detailed design level studies for projects located in North America, South America, the Caribbean, and Asia with a focus on planning, design and safe operation of water management systems and waste disposal facilities.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I did not visit the Caeté Complex.
6. I am responsible for Sections 1.1.1.5, 1.1.2.4, 1.3.12, 20.0, 25.5, and 26.4, and contributions to Section 27.0 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, Sections 1.1.1.5, 1.1.2.4, 1.3.12, 20.0, 25.5, and 26.4 of the Technical Report, for which I am responsible, contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 31st day of March, 2022

(Signed & Sealed) ***Luis Vasquez***

Luis Vasquez, M.Sc., P.Eng.

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