NI 43-101 Technical Report

Feasibility Study – Monte do Carmo Gold Project

Tocantins State, Brazil

Submitted to: Cerrado Gold Inc.

Effective Date of Report: December 15, 2023

Effective Date of Resource: November 2, 2023

Prepared by Qualified Persons:

Ricardo Alvares de Campos Cordeiro (Min Eng), MAIG

Claude Bisaillon, P. Eng.

Tim Fletcher, P. Eng.

Daniel Gagnon, P. Eng.

André-François Gravel, P. Eng.

Branca Horta de Almeida Abrantes, B.Sc. (Geogr.), MAIG

Ghislain Prévost, P. Eng.

Ryan Wilson, P. Geo.

TOTAL SOLUTIONS OFFERING

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This Report contains estimates, projections and conclusions that are forward-looking information within the meaning of applicable laws. Forward-looking statements are based upon the responsible Qualified Person's ("QP") opinion at the time they are made but, in most cases, involve significant risks and uncertainty. Although each of the responsible QPs has attempted to identify factors that could cause actual events or results to differ materially from those described in this Report, there may be other factors that could cause events or results to not be as anticipated, estimated or projected. There can be no assurance that forward-looking information in this Report will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements or information, Accordingly, readers should not place undue reliance on forward-looking information. Forward-looking information is made as of the effective date of this Report, and none of the QPs assume any obligation to update or revise it to reflect new events or circumstances, unless otherwise required by applicable laws.

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1 EXECUTIVE SUMMARY

1.1 General

The Monte do Carmo Gold Project ("MDC Project", or the "Project") is located in the state of Tocantins in Brazil near the town of Monte do Carmo. The main focus of exploration at the Project is the Serra Alta deposit. The Project is 100% owned by Cerrado Gold Inc., and it entails the construction of a new mine, processing facility, and associated infrastructure all to be located in the vicinity of the deposit. The site is located in close proximity (approximately 2 km away) from the town of Monte do Carmo (population about 8,000), and also near the larger settlements of Porto Nacional (~45 km away, population about 50,000) and the state capital of Palmas (~100 km away, population about 300,000).

Cerrado Gold engaged DRA Americas Inc. and others (as detailed below), to prepare this Technical Report to describe and summarize the Project, and specifically the Feasibility Study work and other activities which have been recently conducted to support Cerrado Gold's plan to bring the Project into production. In addition to Cerrado Gold themselves, several consultants have been working on various aspects of the Project to assist and advise Cerrado Gold.

In terms of preparation of this Technical Report, the following consultants contributed to the completion the component Technical Report sections:

DRA Americas Inc. (DRA): Property description and location, accessibility, climate, local resources, infrastructure and physiography, history, geological setting and mineralization, deposit types, exploration, drilling, sample preparation, data verification, mineral resource/reserve estimates, mining methods, adjacent properties, market studies and contracts, capital and operating costs for mining, economic analysis, and overall report compilation.

GE21 Consultoria Mineral Ltda. (GE21): mineral processing, metallurgical testing, recovery methods, project infrastructure, environmental studies, permitting, and social / community impact.

Extima: Capital costs for processing and infrastructure facilities (under the supervision of GE21).

Ícone – Inoue Tecnologia, Engenharia e Comércio: engineering design for Chapter 17 (under the supervision of GE21).

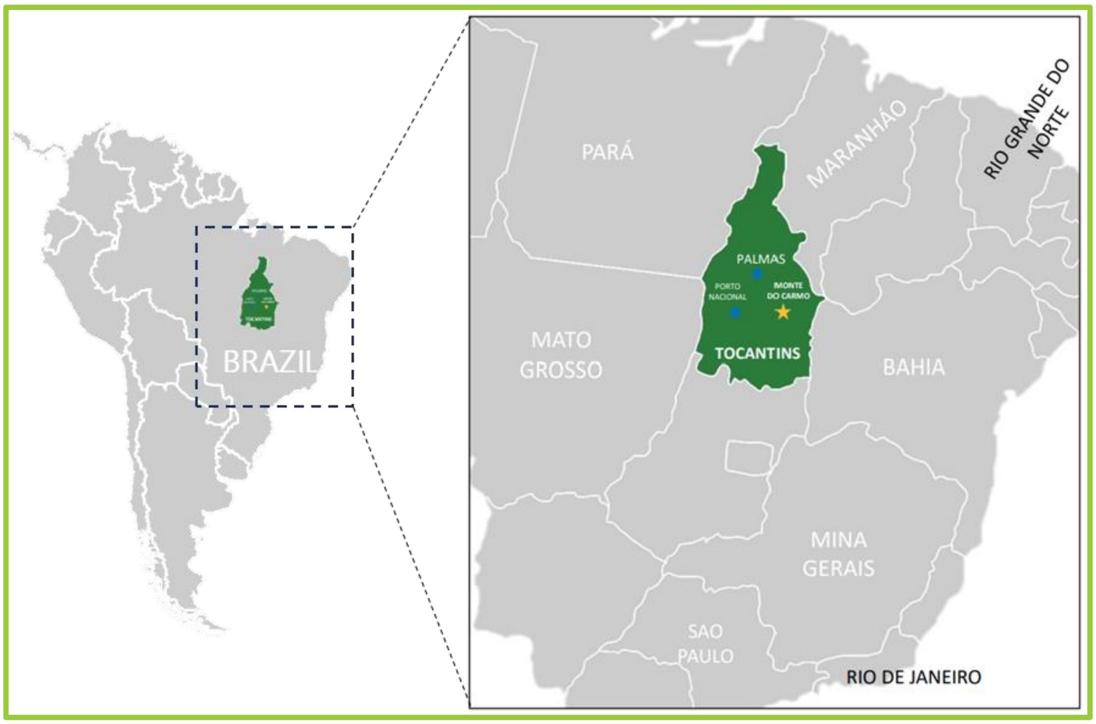
1.2 Property Description and Location

1.2.1 Location

The Project is located in the state of Tocantins, Brazil, immediately east of the town of Monte do Carmo. The Serra Alta Deposit is located at 10° 45' 4" south latitude and 48° 4' 20" west longitude. Monte do Carmo (~8,000 inhabitants) is located 45 km by road east of the city of Porto Nacional

(~50,000 inhabitants). Porto Nacional is 60 km by road south of the state capital of Palmas (~300,000 inhabitants) and 780 km by road north of Brasilia, the capital of Brazil (Figure 1.1).

Figure 1.1 – Project Location Map

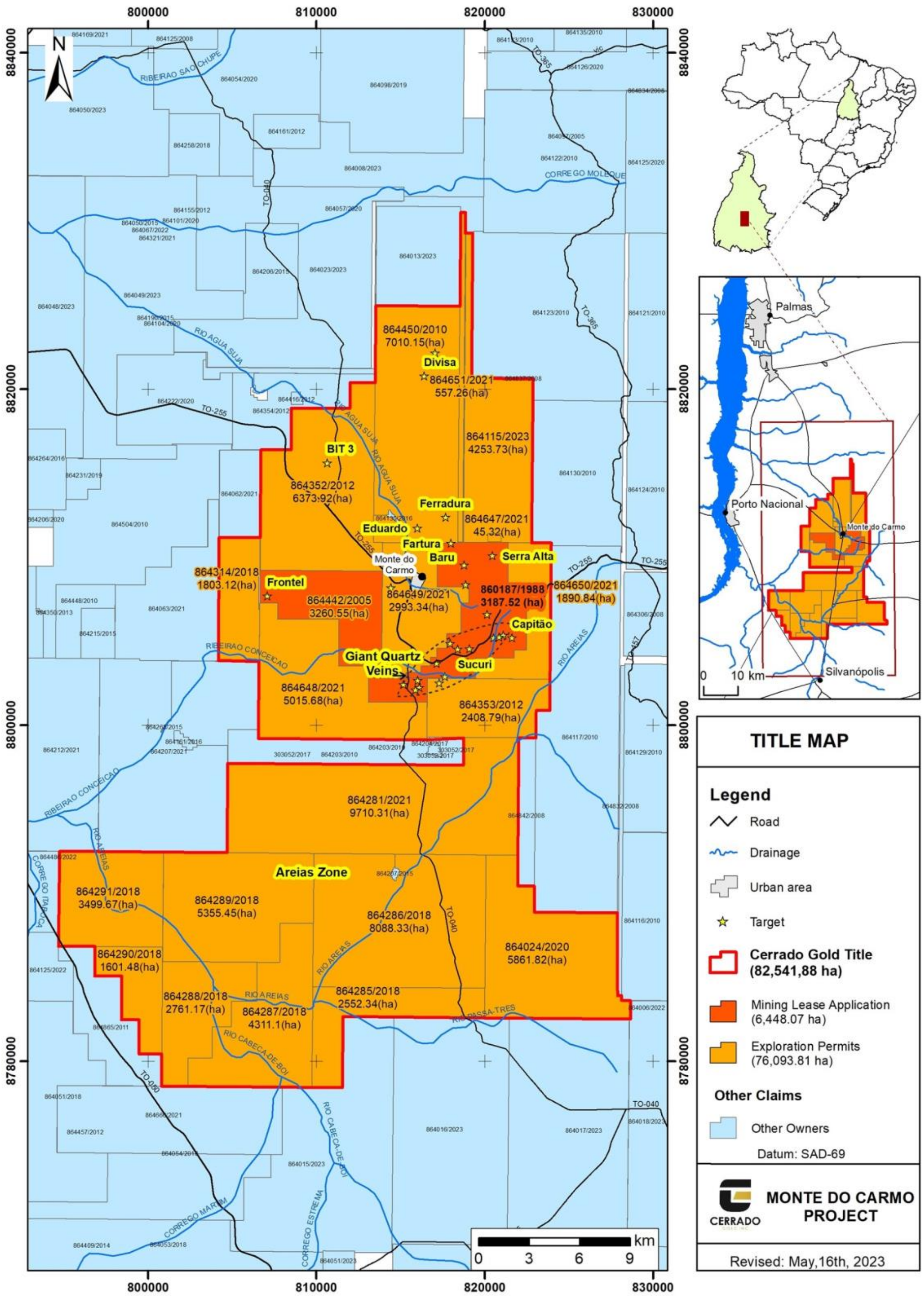


Source: Cerrado Gold, 2023

1.2.2 CONCESSIONS

The MDC project consists of 21 concessions, as shown in Figure 1.2, all of which were acquired by Cerrado Gold from either Serra Alta Mineração Ltda (20) or Serra Alta Participações Imobiliárias (1). Cerrado Gold is the 100% owner of the MDC Project.

Figure 1.2 – Concessions and Exploration Targets



Source: Cerrado Gold, 2023

1.3 Environmental Studies

For the Company's operations, it is necessary to obtain licenses and authorizations from various government authorities. Regarding the environmental license, the Company already has a prior license, which attests to the environmental viability of the Project. This license, numbered 27/2023, was obtained on May 26, 2023. The installation license, with respect to granting and suppression authorization was requested from the environmental agency on September 9, 2023; the Company is awaiting the issuance of the license, so that it is possible to move to the exploration request phase. Delays or failure to obtain such licenses and authorizations or failure to comply with the terms of any licenses and authorizations that the Company obtains may have a material adverse effect on the Company.

1.4 Geology and Mineralization

The regional geology of the Monte do Carmo area is characterized by multiple volcanic-sedimentary sequences with a number of intrusive suites spanning from the Lower to Upper Proterozoic eras, as well as younger Paleozoic sedimentary successions. The Serra Alta deposit itself is hosted by a cupola of the Monte do Carmo Granite (Paleoproterozoic Ipueiras Intrusive Suite) within the Neoproterozoic Araguaia Belt of Tocantins state, located within the broader Trans-Brazilian Lineament.

At the deposit scale, the Monte do Carmo Granite, along with other later felsic and mafic-ultramafic layered intrusions, intrudes felsic volcanic rocks of the Santa Rosa Suite with an overlying (faulted contact) discontinuous quartzite remnant, possibly of the Upper Proterozoic Monte do Carmo Formation. The entire package is in turn unconformably overlain by flat-lying Paleozoic (Meso-Neo Devonian) ferruginous sediments of the Pimenteiras Formation, subject to relatively intense subaerial weathering (i.e., laterite and saprolite development).

The Serra Alta deposit is interpreted as an intrusion-related gold system, with mineralization associated with hydrothermally altered and locally veined granitic rocks. Abundant mineralized shoots are clearly controlled by varying densities of vein and veinlet swarms that are weakly enriched in sulphides (pyrite, galena, sphalerite and chalcopyrite). The deposit currently comprises eight (8) main zones that span approximately 2 km of strike length (oriented 190° to 195°) with an overall width of ~600 m, and dip moderately to steeply (55° to 75°) to the west-northwest with a vertical extent on the order of 200 m. In general, individual mineralized lenses (i.e., shoots) range from approximately 5 m to greater than 30 m in width.

Sheeted vein sets mostly follow the overall deposit trend; however, the presence of multiple mineralized vein orientations indicates a more complex system that evolved over several mineralization and deformation events, as evidenced by the structural history of the area. There are two main northeast-trending (~N30°E) faults that flank the mineralization at Serra Alta, with a series of smaller east-west (± 30°) faults that delimit the deposit into discrete structural blocks; as such, each zone was modelled and estimated individually to respect these constraining features. The lateral extent of the sheeted vein swarms is wider towards the intrusive contact between the main granitic host rocks and overlying felsic volcanics; this intrusive contact acts as a cap throughout much of the deposit.

In terms of expansion potential, while the Serra Alta deposit has generally been well-tested, prospective areas of interest to extend mineralization remain both to the east and north, as well as to depth. Additionally, the Monte do Carmo region remains highly prospective for exploration potential with multiple high-priority targets already identified within the Cerrado land package.

1.5 Mineral Processing and Metallurgical Testing

From 2018 to 2023, the Monte do Carmo Project underwent extensive metallurgical test work to develop an effective process design for its gold deposit. The test work, conducted by facilities including Testwork Desenvolvimento de Processo Ltda, SGS Mineral Services in Brazil, Metso Brazil, FLSmidth, Westech Industrials Equipment, and JKTech, covered a broad range of areas, from mineral processing development to gravity recoverable gold testing, sedimentation, filtration, and SMC test analysis. The findings from these tests, detailed in a series of reports, confirm the suitability of the ore for various concentration methods without significant extraction concerns.

A significant amount of metallurgical test work has been completed on point samples and metallurgical composites related to the Project including:

- Ore variability in terms of lithology, gold head grade, sulphur head grade, depth, and sample blending.
- Detailed chemical analyses of ore feeds, flotation concentrates, and flotation tailings.
- Comminution testing including SMC, Bond crushing and ball milling indices, abrasion index.
- Whole ore cyanide leach and cyanide leach of flotation concentrates.
- Flotation including batch rougher, scavenger and cleaner stages.
- Gravity recoverable gold extraction and vendor modelling
- Thickening testing of ore feed, flotation concentrate, leached residue, and flotation tailing.
- Filtering of tailings.
- Cyanide detoxification (several methods) and aging test work on tailings and effluent.
- Environmental and geotechnical testing of residue.

The ore at the Monte do Carmo Project is compatible with conventional gold recovery processes. The ore responds well to both direct carbon-in-leach (CIL) and flotation/CIL processes, with low reagent consumption and optimal particle size at 80% passing 106 µm. Despite the potential for higher gold recoveries with direct CIL, the feasibility study chose a combination of flotation and cyanide leaching of flotation concentrates, motivated by the potential agricultural use of flotation circuit tailings and benefits in cost and waste management.

FLSmidth conducted gravity recovery testing, showing that the ore is highly amenable to gravity recovery with significant Gravity Recoverable Gold (GRG) content and coarse particle size distribution.

The average annual plant head grade is estimated in 1.62 g Au/t.

The orebody displays moderate hardness for ball milling with a Bond Ball Mill Work Index predominantly in the mid to upper-17 kWh/t range, and is characterized as soft to moderate and mildly abrasive per SMC Test® results.

A circuit feed size of P_{80} of 106 µm results in the optimum flotation and CIL gold recoveries. Cyanidation tests across various campaigns have shown consistent high recovery rates, indicating no contaminants or preg-robbing effects, with silver recovery also within acceptable ranges.

Cyanide optimization trials at SGS successfully reduced total cyanide to concentrations below the target of < 0.2 mg/L CN_{WAD}, with ongoing tests aimed at further refinement to align with specified guidelines using various methods and reagents.

Gold balancing has been conducted, underpinned by laboratory testing data. With a notable Gravity Recoverable Gold (GRG) presence, the FS recovery model predicts a total gold recovery rate of 95.7% across the mine's lifespan. This projection takes into account all test work and includes considerations for operational losses such as carbon attrition, soluble gold, and operational efficiencies for each circuit evaluated.

The Monte do Carmo Project features a solid process design underpinned by comprehensive test work. Further optimization is recommended to continually improve the design's efficacy and environmental sustainability. These enhancements are part of routine test work and design practices and are anticipated to be executed without major technical or financial concerns.

1.6 Mineral Resources Estimate

The Mineral Resources Estimate (MRE) was established using data from boreholes drilled and sampled up to December 31, 2022. The in-pit resource estimate for the Serra Alta deposit includes Measured and Indicated Resources of 15,304 kt @ 1.65 g/t Au for 812 koz, and Inferred Resources of 345 kt @ 1.36 g/t Au for 15 koz; the underground portion includes Measured and Indicated Resources of 3,054 kt @ 2.03 g/t Au for 199 koz, and Inferred Resources of 708 kt @ 2.24 g/t Au for 51 koz.

The MRE has been prepared using a marginal cut-off grade of 0.26 g/t Au for the in-pit resources; underground resources include low-grade blocks falling within underground reporting shapes to reflect realistic mining logistics. Both the open-pit and underground resources are reported using a gold price of US$ 1,850.

The MRE statement for the Serra Alta Deposit prepared by DRA is summarized in Table 1.1. Additional details on mining and processing modifying factors are also provided in the adjoining footnotes.

Table 1.1 – Serra Alta Deposit (Brazil) – Mineral Resources Summary, DRA Global Limited, October 31, 2023

Description	Category	Tonnage (kt)	Average Grade (g/t Au)	In-Situ Ounces (koz Au)
Open-Pit[3,4,5]				
	Measured	2,014	1.73	112
	Indicated	13,290	1.64	700
	Measured + Indicated	**15,304**	**1.65**	**812**
	Inferred	345	1.36	15
Underground[6,7,8]				
	Measured	42	1.66	2
	Indicated	3,012	2.04	197
	Measured + Indicated	**3,054**	**2.03**	**199**
	Inferred	708	2.24	51
Total				
	Measured	2,056	1.73	115
	Indicated	16,302	1.71	897
	Measured + Indicated	**18,358**	**1.72**	**1,012**
	Inferred	1,053	1.95	66

Description	Category	Tonnage (kt)	Average Grade (g/t Au)	In-Situ Ounces (koz Au)

Notes:

1. The Mineral Resource Estimate has been estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definitions Standards for Mineral Resource and Mineral Reserve in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects. Mineral Resources which are not Mineral Reserves, do not have demonstrated economic viability.
2. Inferred Mineral Resources are exclusive of the Measured and Indicated Resources.
3. In-pit Resources are constrained by a Pseudoflow optimized pit shell using HxGn MinePlan^tm 3D (v. 15.80-3).
4. Pit shell was developed using a 50-degree pit slope, gold sales price of US$1,850/oz, mining costs of US$2.60/t, stockpile rehandling costs of US$0.60/t, processing costs ofUS$10.14/t, tailings costs of US$1.45/t, G&A costs of US$2.43/t, process recovery of 96.5%, refining costs of US$12.00/oz, transportation costs of US$10.74/oz, discount rate of 5%, and assumed production rate of 1.920 Mtpa.
5. In-pit estimates are reported in-situ, at a marginal cut-off grade of 0.26 g/t Au.
6. Underground mining stope optimization was performed using Deswik^tm (v. 2023.2.762).
7. Stope shapes were developed using a gold sales price of US$1,850/oz, mining costs of US$24.18/t, processing costs of US$10.14/t, tailings costs of US$1.45, G&A costs of US$2.43/t, process recovery of 95.3%, refining costs of U$12.00/oz, transportation costs of US$10.74/oz, and assumed production rate of 1,500 t/d.
8. Underground resources were estimated using a cut-off grade of 0.69 g/t Au; however, the reported in-situ figures include low-grade blocks estimated within underground reporting shapes.
9. Resource estimations were interpolated using Inverse Distance Weighting (IDW^3); Similarly, variable densities were interpolated using IDW^2.
10. The effective date of the Mineral Resource Estimate is October 31, 2023.
11. Figures have been rounded to an appropriate level of precision for the reporting of Mineral Resources. As a result, totals may not compute exactly as shown.

1.7 Mineral Reserve Estimate

The Mineral Reserve Estimate was established using the Mineral Resource Estimate with the effective date of October 31, 2023. The total Mineral Reserve Estimate of the Serra Alta deposit includes Proven Reserves of 2.0 Mt @ 1.68 g/t Au for 109,000 oz (in-situ) and Probable Reserves of 14.8 Mt @ 1.66 g/t Au for 787,000 oz (in-situ). The reserve estimate has been prepared using a cut-off grade of 0.28 g/t Au for the in-pit reserves, and 0.8 g/t Au for the underground reserves. Both the open-pit and underground reserves are reported using an assumed gold sales price of US$ 1,700. Additional details on mining and processing factors are provided in the footnotes for the tables below.

The open pit design includes 14,344 kt of Proven and Probable Mineral Reserves at a grade of 1.62 g/t Au. To access these reserves, 112.5 Mt of waste rock must be mined resulting in a stripping ratio of 7.8 to 1.

The underground design includes 2,451 kt of Proven and Probable Mineral Reserves at a grade of 1.90 g/t Au. To access these reserves, 800 m twin ramps will be developed from a mine portal located in the Central Pit. A total of 19,400 m of lateral development in ore and waste will be required during the underground operation. The mining method selected is long hole transverse open stoping with cemented rockfill with minimum stope width of 3 m and maximum height of 20 m.

The table below presents the mineral reserves for both the open pit and underground mine.

Table 1.2 - Serra Alta Deposit (Brazil) - Mineral Reserve Estimate, DRA Global Limited. October 31, 2023

	Category	Tonnage (kt)	Average Grade (g/t Au)	In-Situ Ounces (koz Au)
Open Pit [5, 6, 12]				
	Proven	1,976	1.68	107
	Probable	12,368	1.61	639
	Total Proven and Probable	**14,344**	**1.62**	**746**
Underground [7, 8, 13]				
	Proven	39	1.81	2
	Probable	2,412	1.91	148
	Total Proven and Probable	**2,451**	**1.90**	**150**
Total				
	Proven	2,015	1.68	109
	Probable	14,780	1.66	787
	Total Proven and Probable	**16,795**	**1.66**	**895**

Notes:

1. The Mineral Reserves have been estimated respectively by the Open Pit and Underground Reserves QPs.
2. The Mineral Reserves have been estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definitions Standards for Mineral Resource and Mineral Reserve in accordance with National Instrument 43-101 - Standards of Disclosure for Mineral Projects.
3. Mineral Reserves are included in the Mineral Resources Estimate.
4. Open Pit Mineral Reserves were developed by a Pseudoflow optimized pit shell using HxGn MinePlan® software.
5. The pit shell was developed using a 50-degree pit slope, gold sales price of US$1,700/oz, mining costs of US$2.60/t, processing costs of US$10.14/t, tailing cost of US$1.45/t, G&A costs of US$2.43/t, refinery and transportation costs of US$22.74/oz, 96.5% process recovery and an assumed production rate of 1.92 Mtpa.
6. Underground Reserves were developed using Deswik™ software.
7. Underground stopes were developed using a gold sales price of US$1,700/oz, average underground mining costs of US$26.41/t, processing costs of US$10.14/t, tailing cost of US$1.45/t, G&A costs of US$2.43/t, refinery and transportation costs of US$22.74/oz, 95.3% process recovery and an assumed underground production rate of 1,600 t/d.
8. The Mineral Reserves are inclusive of mining dilution and ore loss.
9. Contained gold estimate has not been adjusted for metallurgical recoveries.
10. Open Pit Mineral Reserves are estimated using a marginal cut-off grade of 0.28 g/t Au.
11. Underground Mineral Reserves are estimated using a mining cut-off grade of 0.8 g/t Au.
12. Effective date of the Mineral Reserve Estimate is October 31, 2023.
13. Figures have been rounded to an appropriate level of precision for the reporting of Mineral Reserves. As a result, totals may not compute exactly as shown.

1.8 Mining Methods

The MDC Project integrates an open-pit mine alongside an underground operation, aiming for an average production rate of 1.92 million tonnes per annum (Mtpa) of Run-of-Mine (ROM) material. The surface mining operations will be conducted using an owner-operated fleet comprising hydraulic excavators, front-end loaders, haul trucks, and corresponding ancillary equipment.

1.8.1 Open Pit

Three open pits (South, Central and Gogo Pits) will be mined over the nine-year operating mine life, with an additional one year of pre-production mining to be undertaken where waste material is mined for construction and ore stockpiling ahead of process plant commissioning. The mining equipment fleet will be owner-operated and will include outsourcing of certain support activities such as explosives manufacturing and blasting. Production drilling and mining operations will take place on 5 m and 10 m bench heights. The primary loading equipment will consist of 95 t hydraulic excavators (6.0 m^3 bucket size) and front-end wheel loaders (6.1 m^3 bucket size). The loading fleet is matched with a fleet of 50 t haulage trucks. A fleet of 48 t excavators will be used to excavate the narrow-thickness ore zones to mitigate additional dilution.

Peak open pit mining production will be 23 Mtpa of combined ore and waste (63,000 t/d). Total material moved over the LOM is expected to be 127 Mt of which 14.3 Mt is ore.

The open pit operation includes two waste rock dumps, one immediately to the east and one to the south of the open pits.

1.8.2 Underground Mine

The underground mining operations planned for the Project will use longitudinal long-hole and transverse long-hole methods, targeting LOM extraction of 2.37 Mt of ore with an average diluted grade of 1.95 g/t Au over five years. The underground operations will start in Year 4 of the open-pit mining. The geotechnical parameters emphasize favourable ground conditions for stope dimensioning with granite (73%), felsic volcanics (24%), and quartzite rock mass (3%).

The underground mine plan foresees ore extraction of 90%, production drilling of 76 mm in-the-hole hammer drills and bulk emulsion products for blasting. Ore handling involves 14 t Load-Haul-Dump (LHD) scoop with remote-control capabilities. The primary backfill material, cemented rock fill (CRF), is sourced mainly from open-pit waste rock.

The development schedule is set to ensure a consistent ore feed to the concentrator. The mine layout incorporates a twin decline accessing the underground deposit, with strategically spaced levels at 25 m intervals housing essential infrastructure like ventilation raises, electrical bays, and sumps. The production schedule aims for an average throughput of 1,600 t/d, reaching full capacity by the third quarter of year 5.

Ventilation is designed to provide ample fresh air to production levels. The system utilizes the twin ramp for intake and exhaust, avoiding the need for additional ventilation raises to the surface. Key components include a main exhaust fan, air raises for circulation, and a control system to optimize energy usage of fans.

- Infrastructure within the underground mine includes:
- water management system;

- air distribution through steel pipes;
- electrical networks;
- communication systems;
- refuges for safety and breaks;
- storage areas for materials and explosives; and
- a fleet of equipment for various tasks during the development and production phases.

1.9 Recovery Methods

The process route was defined considering the results of the process development test work as described in Section 13 of this Technical Report.

The engineering design provided process design, process flow diagrams (PFDs), mass and water balances, equipment lists, general arrangement drawings (GAs), preliminary piping and instrumentation diagrams (P&IDs) and single line electrical drawings. However, information and data from similar projects were also considered, as well as information obtained from manufacturers by quotation.

The flowsheet incorporates the following major process operations:

- Three-stage crushing and primary crushing stockpile.
- Single stage ball mill grinding and classification.
- Gravity concentration and intensive leaching.
- Flotation of tailings from gravity concentration (rougher and scavenger stages).
- Carbon-in-leach (CIL) of the flotation concentrate.
- Desorption, regeneration and gold room.
- Cyanide detoxification, tailings thickening, filtration and disposal.
- Fresh and reclaim water supply.
- Reagents preparation and distribution.

Table 1.3 presents ore characteristics and general data of the Monte do Carmo Project.

Table 1.3 – Ore Characteristics and General Data

Description	Unit	Value
Ore Characteristics		
Gold grade (average)	g/t	1.62
Ore SG	t/m³	2.6
3/8" crushed ore bulk density	t/m³	1.6
3/8" crushed material angle of repose	degrees	36

General Plant Data		
Tonnes processed	Mtpa	1.92
Gold recovery (average over life of mine)	%	95.7
Crushing		
Run of Mine (ROM) - maximum size	mm	800
Crushing circuit product size (P_{80})	mm	9
Stockpile capacity (live)	h	12
Grinding		
Bond ball mill Work Index	kWh/t	17.5
Grinding product size (P_{80})	µm	106
Gravity concentration and intensive leaching		
Gravity concentration	type	2 x KC-QS30
Intensive leach reactor	type	1 x CS 2000
Flotation		
Rougher flotation design residence time	min	10
Scavenger flotation design residence time	min	10
Design flotation mass pull	%	10
Pre-leach thickening		
Thickener underflow density	% w/w	40
Thickener ultra-high-rate	ø (m)	3
CIL		
Residence time	h	24
CIL tanks	-	6
CIL Slurry Density	% w/w	40 - 50
Detoxification		
Detoxification Type		INCO
Number of stages		2
Tailings Handling		
Tailings Thickener Underflow Density	% w/w	50 to 55
Tailings Filter Product Moisture	% w/w	22
Deposition Method	-	Manually (Truck)

1.10 Project Infrastructure

1.10.1 Location and Access

The Project is located near the municipality of Monte do Carmo, in the state of Tocantins, Brazil. TO-255 is the public road that connects the Project to the town of Monte do Carmo. The main access from the public road TO-255 to the main gate and the parking lot is 1.9 km long. Internal roads between the various site facilities are approximately 4.5 km long.

1.10.2 Power Supply and Distribution

A 138 kV transmission line with a simple circuit will supply the main substation. The new line will connect Isamu Ikeda Power Plant to the site. The main transformer will lower voltage to 13.8 kV, and further stepdown will be provided for other process, utility, lighting, and miscellaneous supply.

The plant will have 3 secondary substations (Milling, Primary Crushing, and Metallurgy). Emergency power for essential loads will be supplied by a 500 kVA, 440 V diesel generator.

Installed power (13,500 kW) will be sufficient for the expected power demand (10500 kW).

1.10.3 Plant Control System (PCS) and Communication System

The automation system will promote efficient and safe control of the plant. Field instruments and valves will be wired either to the PCS or to the specialty PLCs. Process video cameras will assist the operator's view of the process.

An integrated cabling system will be used, supported by hybrid network architecture, i.e., optical fibre for the backbone and copper twisted pair cable for the local network. The single-mode fibre optic cable will be used for low-loss and high-bandwidth optical systems.

1.10.4 Compressed Air System

The compressed air system at site will consist of two 900 kPa rotary screw compressors (one duty, one standby) with integrated dryer, filter and distribution network for the various usage points.

1.10.5 Buildings

The various buildings and structures on site will consist of:

- Process Plant – various buildings (primary crushing, secondary and tertiary crushing, grinding, leaching, thickener and reagents, elution and gold refining).
- Fresh Water and Process Water Tanks.
- Reagents Complex - one warehouse and three process buildings.
- Maintenance Workshop.
- Disposable Material Building.
- Plant Operation Office.
- Warehouse.
- Laboratory.
- Gate House and Security Buildings.

- Truck Driver Support Building.
- Administration Office (with adjacent First Aid and Fire Department).
- Locker Room Building.
- Canteen.

An environmental area (plant nursery, recycling, education programs) will be located near the gate.

1.10.6 Water Systems

The water management system for the Project includes:

- Site Pond,
- Open Pit Sump,
- Sump (located at filtered tailings stack), and
- Water Transfer Pumps and Pipelines.

These components will facilitate water transfer around the site, with a secure backup fresh water supply from Sueiro Creek.

The main source of process water will be reclamation from tailings thickeners and filtration.

Potable water will be supplied to the process plant by treating filtered fresh water in a vendor-supplied water treatment plant.

Sewage from the administration area will be collected and sent by gravity to a treatment plant.

1.10.7 Fire Protection

A network of fire hydrants will be placed in the industrial area for fire protection purposes. Three pumps (two electric, one diesel) and a fire water tank will circulate and store fire water.

1.10.8 Explosives Magazines

The stocks of explosives, accessories and emulsion will be located North of Waste Pile 1 at a safe distance. The structures will be fenced, and alarms and lightning protection will be installed.

1.10.9 Mining Operation Area

The mining operation area (offices, workshops, warehouse, parking) is located near the main gate and close to the waste pile.

1.10.10 Fuel Tanks

Three tanks will provide diesel oil storage sufficient for three days. The mining contractor (primary consumer) will be responsible for managing diesel consumption.

1.10.11 Waste Piles with Co-deposition of Tailings

Two waste piles will be generated at the site for open pit mine waste rock and tailings, as follows:

- Waste Pile 1 (north of plant) – contains mine waste rock (60%) and filtered tailings.
- Waste Pile 2 (south of pit) – contains mine waste rock (40%).

1.11 Market Studies and Contracts

No specific market studies have been commissioned by Cerrado Gold nor its affiliates or consultants, in relation to this Project.

There are no material contracts or agreements in place as of the effective date of this Report. Cerrado Gold has not hedged, nor committed any of its production pursuant to an off-take agreement.

1.12 Capital and Operating Costs

The Project scope covered in this Report is based on the construction of a greenfield mining and processing facility with an average mill feed capacity of 1.92 Mtpa of ore.

The capital (CAPEX) and operating (OPEX) cost estimates related to the mine, the concentrator, and all required facilities and infrastructure have been developed by DRA and GE21 or consolidated from external sources.

The CAPEX and OPEX are reported in United States Dollars ($). The reference period for the cost estimate is 4^{th} Quarter 2023.

1.12.1 Capital Cost Estimate Summary

The Capital Cost Estimate (CAPEX) consists of direct and indirect capital costs for the Project, including the open pit and underground mine sites, and the processing plant and infrastructure. Sustaining capital is also included. The estimates include contingency and other costs as indicated.

Table 1.4 presents a summary of the initial and sustaining CAPEX for the Project.

Table 1.4 – Capital Cost Summary

Description	Initial CAPEX (millions of US$)	Sustaining CAPEX (millions of US$)	Total CAPEX (millions of US$)
Direct Costs			
Mining	50.0	66.0	116.0
Processing Plant	71.8	0.0	71.8
Infrastructure	25.5	0.0	25.5

Description	Initial CAPEX (millions of US$)	Sustaining CAPEX (millions of US$)	Total CAPEX (millions of US$)
Sub-Total Direct Cost	**147.3**	**66.0**	**213.3**
Sub-Total Indirect Cost	**18.3**		**18.3**
Sub-Total Direct Cost + Indirect Cost	**165.6**	**66.0**	**231.6**
Closure Costs		**15.0**	**15.0**
Contingency	**15.8**		**15.8**
TOTAL	**181.4**	**81.0**	**262.4**

Further details of the capital cost estimate are described in Section 21.

1.12.2 Operating Cost Estimate Summary

The OPEX has been developed for the Project and covers Mining, Processing, Tailings Disposal and Administration. The sources of information used to develop the OPEX include in-house databases and outside sources particularly for materials, services and consumables. The LOM average OPEX, given as dollars per tonne of ore milled, is summarized in Table 1.5.

Table 1.5 – Operating Cost Summary

Description	Avg OPEX (US$/t)
Mining *	17.01
Processing	9.11
Filtered Tailings / Co-Disposal	1.45
General and Administration	2.21
Total	**29.78**

* weighted average of open pit and underground mining

Further details of the operating cost estimate are described in Section 21.

1.13 Economic Analysis

An economic analysis based on the production and cost parameters of the Project was carried out and the results are summarized in Tables 1.6 and 1.7. The Project generates an after-tax NPV of US$390M at a 5% real discount rate, an after-tax IRR of 34% and the after-tax payback period is 2.1 years from commencement of production. All figures are in US$ currency.

Table 1.6 – Financial Analysis Assumptions

Description	Unit	Value
Gold Price Assumptions		
Gold Sales Price	$/oz	1,750
Payable Metal	%	99.99
Refinery Charges	$/oz	12.00
Freight And Insurance	$/oz	10.74
Production		
Steady State Ore Throughput	Mtpa	1.92
Average Annual Au Production	k oz per annum	95,212
Life of Mine	**years**	**9.0**
Life on Mine Au Recovery	%	95.64
Total Ore Mined – Open Pit	Mt	14.3
LOM Average Stripping Ratio	x	7.84
Total Ore Mined – Underground	Mt	2.5
Total Recovered Gold (Payable)	ounces	856
Operating Costs		
Open Pit Mining	US$/tonne	13.73
Underground Mining	US$/tonne	3.28
Processing	US$/tonne	9.11
Water and Tailings Management	US$/tonne	1.45
G&A	US$/tonne	2.21
Total Operating Costs	US$/tonne	29.78
Total Cash Costs	US$/oz	583.7
All-in Sustaining Cost (AISC)	***US$/oz***	***686.6***
Capital Costs		
Initial Capital Cost	US$ M	165.6
Contingency	US$ M	15.8
Total Upfront Capital Cost	US$ M	181.4
Sustaining Capital Cost	US$ M	66.0
Closure Cost	US$ M	15.0
Total Capital Cost	***US$ M***	***262.4***

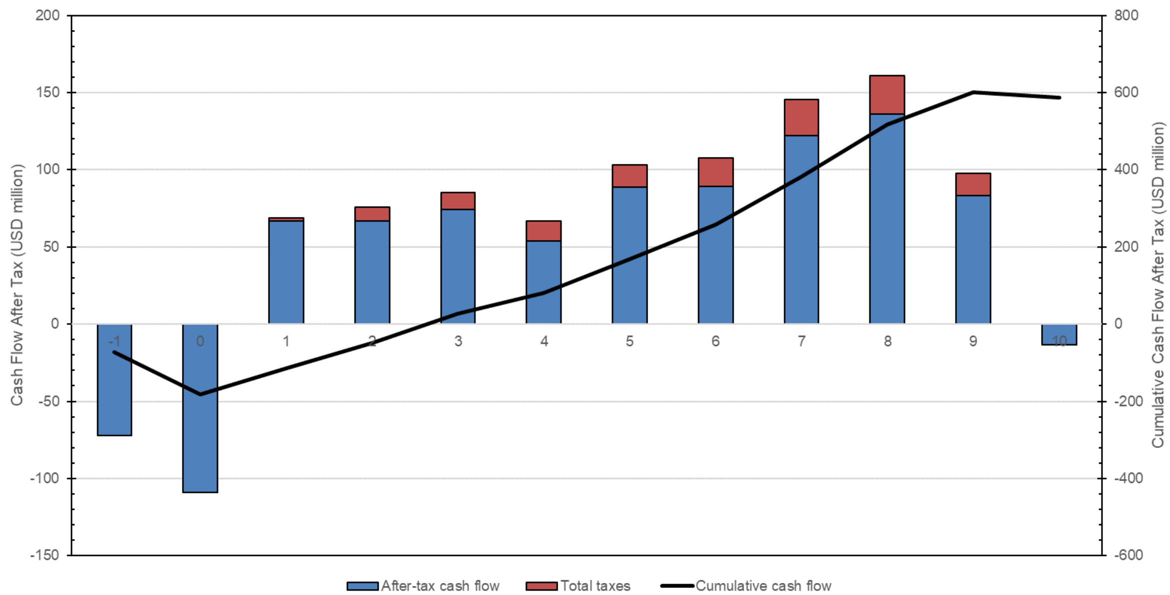
Table 1.7 – Financial Analysis Summary

Financial Results	Unit	Pre-Tax	After-Tax
NPV @ 5%	US$ M	466	390
IRR	%	37	34
Payback Period	Year	2.0	2.1

1.13.1 Project LOM Cash Flow

The annual Project cash flows are presented in Figure 1.3.

Figure 1.3 – Project Discounted Cash Flow (After-Tax)



Source: DRA, 2023

1.14 Findings / Conclusions

Further details on all findings and conclusions described below are provided in Section 25.

1.14.1 Mineral Resource Estimate

An updated MRE was completed for the Serra Alta deposit using new information from continued drilling and exploration work since the effective date of the last technical report (July 21, 2021; GE21, 2021). The resources reported herein used a database cut-off (i.e., freeze) date of December 31st, 2022. The MRE is presented in Section 1.6.

It is DRA's opinion that the geological interpretation and related data are valid for the estimation of Mineral Resources. The assumptions made and methodology applied are considered reasonable and representative of typical intrusion-related gold mineralization systems.

DRA considers the reported Mineral Resources to have been prepared in accordance with current CIM standards, definitions and guidelines for Mineral Resources Estimation.

DRA is also currently unaware of any legal, title, environmental, permitting, taxation, socio-economic, geopolitical or other factor that may materially affect the MRE presented herein.

1.14.2 Environmental

An Environmental Impact Assessment (EIA) was prepared for the Project in July 2022. The EIA considered the characteristics of the influenced areas, details of the Project, the proposed plans for implementation and operation. On this basis, environmental impacts were predicted and evaluated.

The EIA verified that the identified negative impacts would not be impediments to the implementation of the Project. Negative impacts will continue to be monitored and appropriately mitigated, prevented, and / or controlled. Since none of the impacts resulted in any environmental non-compliances, the Project was deemed viable by the team responsible for the EIA.

From a social perspective, the MDC Project will generate local taxes and jobs (1,000 estimated at the peak of construction). The operation of the mine and maintenance of equipment will be carried out by a specialized company hiring the required personnel for the following areas: administrative, mine, processing plant and Health, Safety, Environment and Community.

Based on the analyzed documents and the technical studies carried out, as well as the Preliminary License granted, the MDC Project is environmentally viable and compliant with applicable legal regulations. Cerrado Gold still needs to complete subsequent licensing stages to acquire an installation license.

1.14.3 Metallurgical Testing

Since 2018, comprehensive ore characterization for the Monte do Carmo Project has been conducted, revealing consistently low variability and high gold recovery rates between 95% and 99%, with tailings averaging 0.02 g/t Au.

The metallurgical test work supports a process design incorporating gravity concentration, followed by flotation of tailings and leaching of the flotation concentrate, optimizing for both recovery and environmental considerations.

Neutralization tests have confirmed the suitability of the oxidation method, utilizing industry-standard dosages and residence times, with hydrogen peroxide being the selected oxidant. As the project advances, further tests are planned to enhance the efficiency of the process. This approach ensures a robust and well-vetted process design.

1.14.4 Recovery Methods

A robust process design has been developed for the Monte do Carmo Project, leveraging well-established technologies and processes that are validated by test work. The design has demonstrated its effectiveness through a series of comprehensive metallurgical evaluations, including comminution, gravity recovery, flotation, and cyanide detoxification trials.

The process plant will have a design capacity of 1.92 Mtpa and will involve various processing steps, including: crushing, ball mill grinding, gravity concentration, flotation, pre-leach thickening, CIL, desorption, carbon washing and regeneration and gold room. The design also includes tailings detoxification and filtration. Filtered tailings will be transported and disposed of in a waste pile, which contains co-deposited filtered tailings and mine waste rock.

The proposed process flowsheet uses well proven technologies in the gold processing industry, and no significant risks or deleterious elements are expected in the feed.

The Feasibility Study was based cyanide leaching of flotation concentrates, which reduces ore mass in CIL and detoxification to approximately 10% of the ROM, with benefits for the environment (potential to produce an agricultural byproduct). Notwithstanding this, the option to proceed with direct CIL is also supported by metallurgical test work, and may result in improved overall gold recovery.

As the project progresses into subsequent design stages, there will be a focus on the optimization of each component: refining the comminution circuit to accommodate the ore's moderate hardness, enhancing the gravity circuit to capitalize on the high Gravity Recoverable Gold (GRG) content, fine-tuning the flotation process to manage mass reduction for leaching, and advancing the detoxification process. Each of these steps is aimed at maximizing operational efficiency, gold recovery rates, and environmental protection, with the anticipation of seamless integration without significant technical or financial concerns.

1.14.5 Site Infrastructure

The designed infrastructure will meet and support operational requirements. Water supply will be provided from rainfall collection and pumping from local sources. The infrastructure includes access roads, power supply, water supply, combined waste and tailings storage, and facilities to support production.

1.14.6 Project Economics

The Project's capital cost (presented in Section 1.12) was estimated to a suitable degree of accuracy for a Feasibility Study, and is suitable for establishing a project budget. The capital cost estimate includes amounts for sustaining capital costs, closure, and contingency.

Operating costs were similarly estimated to a suitable degree of detail and accuracy. There is thus confidence in the overall economic feasibility of the mine plan.

1.15 Recommendations

Further details on all recommendations described below are provided in Section 26.

1.15.1 Geology, Sampling, and Sample Analysis

- **Geology** - Continue to improve understanding/interpretation of small-scale structural elements that could affect zone delineation/continuity or give rise to previously unidentified zone/trend extensions (i.e., new exploration targets).
- **Geology** - Conduct in-depth structural study of the various (± mineralized) vein orientations identified throughout the deposit to better constrain paragenetic relationships and local deformation history recorded by the host granite and identified shear zones.
- **Resources** - Additional infill drilling to increase confidence in the current resource base.
- **Resources** - Additional extension/expansion drilling to add new Resources to the Inferred category for future upgrading.
- **Exploration** - Conduct additional lithogeochemical studies to help identify pathfinder elements and assess mass balance of alteration fronts (i.e., zonation) towards the development of new exploration targeting strategies.
- **Exploration** - Continue regional exploration programs focused on proximal targets/satellites.
- **Exploration** - Consider Mobile Metal Ion (MMI) soil geochemistry testwork to help with earlier stage exploration targeting.
- **Sampling** - Maintain recently started (2023) trial program to replace ¼ core duplicate samples with pulp and coarse reject duplicates to assess the effects on reproducibility/precision due to nugget effect.
- **Sampling** - Continue to reinforce all SOPs with geological and technical staff.
- **Sample Analyses** - Consider test program to increase sample mass via laboratory preparation protocols.

1.15.2 Environmental

- Continue the environmental licensing process, to meet the technical and procedural control requirements for operation of the Project, while ensuring its sustainability.

1.15.3 Mining

- Perform further review of groundwater conditions and dewatering plan to protect the Project in the event of severe rainfall and flooding potential.
- Perform additional trade-offs between contractor vs. owner fleets, or even a contractor / owner-operator partnership.
- Conduct additional studies to better measure swell factor of both granite and sediments.
- Further explore the potential to use larger mining trucks.

- Continue optimizing mine plan by varying design of phases, mining strategies, etc.
- Continued operational geotechnical drilling to confirm expected lithologies in pit walls.
- Supplement geotechnical laboratory testing database with additional sampling for all lithologies and expected rock conditions.
- Investigate potential compartmentalization of groundwater, and update slope stability analyses models once the updated groundwater conditions data is available.
- Install piezometers in existing holes or in new holes outside the pit footprint to monitor water levels over the life of mine.
- Perform bench stability analyses to look for potential to increase bench heights, BFAs, etc.
- Perform studies on the impact of blasting on the rock during development of first few benches.

1.15.4 Recovery Methods and Metallurgical Testing

In the pursuit of achieving optimal performance and sustainability in the Monte do Carmo Project, a series of recommendations have been made to further enhance various aspects of the mineral processing design. These recommendations are geared towards ensuring efficiency, maximizing gold recovery, and upholding environmental standards. The key areas of focus include:

- Comminution Circuit Refinement: During design to optimize the comminution circuit to suit the ore's moderate hardness, enhancing throughput and reducing energy consumption.
- Gravity Circuit Optimization: During design to optimize the gravity circuit, focusing on the high Gravity Recoverable Gold (GRG) content to maximize gold recovery from this fraction.
- Flotation Process Tuning: During design to optimize the flotation process to effectively manage the mass reduction for leaching, ensuring optimal recovery rates.
- Detoxification Process Advancement: Completing optimization tests for the detoxification process to exceed environmental standards and operational efficiency.
- Tailings Disposal Optimization: Evaluating and optimizing tailings strategies for environmental and operational efficiency.
- Assessment of Process Water: Confirming that the site process water does not adversely affect flotation performance, ensuring consistent recovery rates.
- Addressing Variability in Head Analysis and Geology: Due to the significant variability in head analysis, geology, and back-calculated grades, a comprehensive protocol for sampling, custody, and analytical methods is recommended to accurately characterize the ore and its gold content.

These recommendations aim to seamlessly integrate each process component into the overall design without significant technical or financial challenges, thereby positioning the Monte do Carmo Project for successful and sustainable operations.

1.15.5 Project Infrastructure

- Infrastructure as-designed meets technical and environmental standards. Thus, it is recommended to maintain the structures as-designed, without making substantial changes.
- Site-wide geotechnical investigations are recommended.

2 INTRODUCTION

DRA was retained by Cerrado Gold Inc. (Cerrado Gold) to prepare this independent Technical Report in collaboration with various consulting companies, including Estima and GE21. The purpose of this Technical Report is to support the disclosure of Feasibility Study work performed for the Monte do Carmo Project ("MDC Project" or the "Project"), in accordance with NI 43-101 guidelines.

The consultants contributed to completion of the component Technical Report sections as follows:

- **DRA Americas Inc.** (DRA): Property description and location, accessibility, climate, local resources, infrastructure, physiography, history, geological setting and mineralization, deposit types, exploration, drilling, sample preparation, data verification, mineral resource/reserve estimates, mining methods, adjacent properties, market studies and contracts, capital and operating costs for mining, economic analysis, and overall report compilation.
- **GE21 Consultoria Mineral Ltda.** (GE21): mineral processing, metallurgical testing, recovery methods, project infrastructure, environmental studies, permitting, social / community impact.
- **Extima**: Capital costs for processing and infrastructure facilities (under the supervision of GE21).
- **Ícone – Inoue Tecnologia, Engenharia e Comércio**: engineering design for Chapter 17 (under the supervision of GE21).

Cerrado Gold is an exploration mining company based in Toronto, Canada. Its business focus is on acquisition, exploration, and development of precious metal prospects in South America, including advancement to production of the MDC Project in the Tocantins state of Brazil.

2.1 Sources of Information

The information described in Section 3 and documents listed in Section 27 were used to support this Technical Report. Excerpts or summaries of documents authored by other consultants are indicated in the text.

The authors' assessments of the Project are based on published material, pre-existing reports, project development work specifically performed by consultants, and data, professional opinions and unpublished material provided by Cerrado Gold. The authors reviewed all relevant data provided by Cerrado Gold and/or by its agents.

The authors also consulted other sources of information, namely annual information forms, internal and external project reports, press releases and previous technical reports.

The authors reviewed and appraised all information used to prepare this Technical Report and believe that such information is valid and appropriate considering the status of the project and the purpose for which this Technical Report is prepared. The authors have researched and documented the conclusions and recommendations herein.

The main information used to complete this report includes the following:

- GE21's Independent Technical Report ("Update Preliminary Economic Assessment for Serra Alta Deposit" – Effective Date: July 21, 2021 – Report Date: September 30, 2021), which GE21 indicated was based on:
  - Micon's Mineral Resource Estimate Report ("An Updated Mineral Resource Estimate for the Serra Alta Deposit at the Monte do Carmo Project, Tocantins State, Brazil" – Effective Date: July 21, 2021 – Report Date: September 17, 2021);
  - Final Report Laboratory Testwork Process Development for Gold Recovery from Recovery from Cerrado Gold Ore (June 2021 – REPORT "Final Report Metallurgical Tests with Samples from the Orebodies of the Project: Serra Alta");
  - GE21's Independent Technical Report ("Preliminary Economic Assessment for Serra Alta Deposit, Tocantins State, Brazil" – Effective Date: April 23, 2020 – Report Date: October 14, 2020);
  - Micon's Mineral Resource Estimate Report ("A Mineral Resource Estimate for the Serra Alta Deposit at the Monte do Carmo Project, Tocantins State, Brazil" – Effective Date: December 5, 2018 – Report Date: April 3, 2019);
  - Micon's Mineral Resource Estimate Report ("A Mineral Resource Estimate for the Serra Alta Deposit at the Monte do Carmo Project, Tocantins State, Brazil" – Effective Date: December 5, 2018 – Amended: September 28, 2020);
  - Final Report Laboratory Testwork Process Development for Gold Recovery from Cerrado Gold Ore (May 2018 – REPORT No 007-2018 CERRADO REV. 0);
- Information collected by the QPs from Cerrado Gold and collected, observed, and noted from visits to the Cerrado Gold site in Tocantins, Brazil;
- Recent (2021, 2022, 2023) metallurgical test work reports as described in Section 13;
- Cerrado Gold database.

Much of the background information of the project (specifically that contained in Sections 4 to 6 of this Technical Report) was extracted from the previous Technical Report on this property (GE21's 2021 Technical Report listed above) and updated as necessary. The historical information from this previous report was accepted as written at that time.

2.2 Qualified Persons

The Qualified Persons (QPs) listed in Table 2.1 are responsible for the preparation of this Technical Report, and their certificates are also contained herein. The following QPs have completed property site visits:

- Ricardo Alvares de Campos Cordeiro (Min Eng), MAIG, completed a site visit May 17 to 20, 2022;
- Claude, Bisaillon, P. Eng., completed a site visit September 13 to 15, 2023;
- Daniel Gagnon, P. Eng., completed a site visit September 25 to 28, 2023;
- Ghislain Prévost, P. Eng., completed a site visit September 13 to 15, 2023;
- Ryan S. Wilson, P. Geo., completed a site visit September 13 to 15, 2023.

Table 2.1 – List of Responsible QPs

Name	Title, Company	Responsible for Section(s)
Ricardo Alvares de Campos Cordeiro (Min Eng), MAIG	Mining Engineer, GE21 Consultoria Mineral Ltda.	13, 17, 18, and portions of 1, 21, 25, 26, and 27
Claude, Bisaillon, P. Eng.	Senior Geotechnical Engineer, DRA Americas Inc.	Portions of 1, 16, 25, and 26
Tim Fletcher, P. Eng.	Senior Project Manager, DRA Americas Inc.	2, 3, and 24, portions of 1, 25, 26, and 27, and overall report compilation
Daniel Gagnon, P. Eng.	Senior Vice President of Mining and Geology, DRA Americas Inc.	19 and 22, and portions of 1, 21, 25, and 26
Andre-Francois Gravel, P. Eng.	Mining Engineer, DRA Americas Inc.	Portions of 1, 15, 16, 21, 25, and 26
Branca Horta de Almeida Abrantes, B.Sc. (Geogr.), MAIG	Geographer, GE21 Consultoria Mineral Ltda.	20, and portions of 1, 25, 26, and 27
Ghislain Prévost, P. Eng.	Principal Mining Engineer, DRA Americas Inc.	Portions of 1, 15, 16, 21, 25, and 26
Ryan S. Wilson, P. Geo.	Geological Mining Specialist, DRA Americas Inc.	4 to 12, 14, 23, and portions of 1, 25, and 26

For all sections, Cerrado Gold participated and assisted in preparing the Report under the supervision of the QPs named above.

2.3 Currency, Units of Measure, and Abbreviations

2.3.1 Currency

In this Report, all currency amounts are United States Dollars (“US$”, “USD” or “$”) unless specifically stated otherwise.

2.3.2 Units of Measure

Unless otherwise stated, quantities / units of measure in this Technical Report are generally stated in metric in the International System of Units ("SI"), including:

- Area – square metres (m^2);
- Length / distance – microns (µm), millimetres (mm), metres (m), and kilometres (km);
- Volume – millilitres (mL), litres (L), and cubic metres (m^3);
- Mass – milligrams (mg), grams (g), kilograms (kg), and tonnes (t).

By convention gold weight is typically expressed in ounces (oz) unless otherwise stated.

Abbreviations for units of measurement utilized in this Technical Report are listed in the following table.

Table 2.2 – Measurement Units

Symbol / Unit	Meaning
%	Percent
$	US dollars
$/t	US dollars per tonne
$/oz	US dollars per troy ounce
$/kg	US dollars per kilogram
$/a	US dollars per year
°	Degrees
°C	Degrees Celsius
µm	Microns, micrometres
A	Amperes
a	Annum, year
cm	centimetres
cm/s	Centimetres per second
d	Day
g	Grams
g/L	Grams per litre
g/t	Grams per tonne
h	Hours
ha	Hectares
HP	Horsepower

Symbol / Unit	Meaning
kg	Kilograms
kg/t	Kilograms per tonne
km	Kilometres
kPa	Kilopascals
kV	Kilovolts
kVA	Kilovolt-amperes
kW	Kilowatts
kWh	Kilowatt-hours
kWh/t	Kilowatt-hours per tonne
kWh/a	Kilowatt-hours per year
L	Litres
m^3	Cubic metres
m^3/t	Cubic metres per tonne
m	Metres
Ma	Million years
mg/L	Milligrams per litre
min	Minutes
mm	Millimetres
mL	Millilitres
Mm^3	Million cubic metres
Moz	Million ounces
Mt	Million tonnes
Mtpa	Million tonnes per year
MVAr	Megavolt amperes reactive
MVA	Megavolt amperes
MW	Megawatts
MWh	Megawatt-hours
Nm^3/h	Normal cubic metres per hour (measure of gas volume)
oz	Ounces (troy ounce)
oz/ton	Ounces per ton
Pa	Pascals
pH	Power of hydrogen (measure of solution acidity)
ppm	Parts per million (used for concentration)
t	Tonnes (metric)

Symbol / Unit	Meaning
t/d	Tonnes per day
t/m^3	Tonnes per cubic metre
ton	Imperial short tons
USGPM	US gallons per minute
v/v	Volume-by-volume concentration basis
V	Volts
w/v	Weight-by-volume concentration basis
w/w	Weight-by-weight concentration basis
wt %	Weight percent

2.3.3 Abbreviations

Other acronyms, abbreviations, and symbols used in this Technical Report are as follows:

Table 2.3 – Acronyms, Abbreviations, and Symbols

Abbreviation / Symbol	Meaning
>	Greater than
<	Less than
#	Number
3D	Three dimensional
AACE International	Association for the Advancement of Cost Engineering
AC	Alternating current
Ag	Silver
Ai	Bond abrasion index
AISC	All-in sustaining costs
Al	Aluminum
amsl	Above mean sea level
APP	Permanent Preservation Area
As	Arsenic
ASTM	American Society for Testing and Materials
Au	Gold
AusIMM	Australasian Institute of Mining and Metallurgy
Avg	Average
Ba	Barium

Abbreviation / Symbol	Meaning
BDL	Below detection limit
Be	Beryllium
BFA	Bench face angle
BH	Bench height
Bi	Bismuth
BW	Bench width
BWi	Bond ball mill work index
C	Carbon
Ca	Calcium
CAPEX	Capital expenditure, capital cost
CCTV	Closed circuit television
Cd	Cadmium
CIL	Carbon-in-Leach
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
Cl	Chlorine
CM	Construction management
CN_{TOT}	Cyanide (total)
CN_{WAD}	Cyanide (weak acid dissociable)
Co	Cobalt
CO	Carbon monoxide
CO_2	Carbon dioxide
COEMA	State Environmental Council
COG	Cut-off grade
CONAMA	National Environmental Council of Brazil
Cr	Chromium
CRF	Cemented rock fill
CRM	Certified Reference Material
Cu	Copper
CWi	Crusher work index
DC	Direct current
DCS	Distributed control system
DRA	DRA Americas Inc.
E	East
E, I&C	Electrical, instrumentation & control

Abbreviation / Symbol	Meaning
EBITDA	Earnings before interest, tax, depreciation, and amortization
EIA	Environmental Impact Assessment
EP	Engineering and procurement
EPCM	Engineering, procurement & construction management
F	Fluorine
FAR	Fresh air raise
Fe	Iron
F_{80}	80^{th} percentile passing of feed
FEL	Front-end loader
G&A	General and administrative
GPS	Global Positioning System
H_2O_2	Hydrogen peroxide
Hg	Mercury
HMI	Human-machine interface
HV	High voltage
I/O	Input-output
ICP-MS	Inductively coupled plasma – mass spectometry
IRA	Inter-ramp angle
IRR	Internal Rate of Return
ISO	International Organization for Standardization
K	Potassium
La	Lanthanum
LAN	Local area network
LCT	Locked cycle test
LHD	Load-Haul-Dump
Li	Lithium
LI	Licença de Instalação (Installation License)
LO	Licença de Operação (Operation License)
LOM	Life-of-mine
LP	Licença Prévia (Preliminary License)
LV	Low voltage
MAIG	Member of the Australian Institute of Geoscientists
MBSS	Metabisulphite (sodium metabisulphite)
MCC	Motor control centre

Abbreviation / Symbol	Meaning
MDC	Monte do Carmo
MEL	Mechanical equipment list
Mg	Magnesium
MIBICOL	Methyl isobutyl carbinol (reagent)
Mn	Manganese
Mo	Molybdenum
MRE	Mineral resource estimate
MSM	Monte Sinai Mineração Ltda.
MSO	Mineable stope optimizer
MV	Medium voltage
N	North
Na	Sodium
NATURATINS	Nature Institute of the State of Tocantins
NE	Northeast
Ni	Nickel
NI 43-101	National Instrument 43-101
NPV	Net present value
NSR	Net Smelter Return
NW	Northwest
O/F, o/f	Overflow
OP	Open pit
OPEX	Operating expenditure, operating cost
P	Phosphorus
P&ID	Piping and instrumentation diagram
P_{100}	100% passing
P_{80}	80th percentile passing of product
P. Eng.	Professional Engineer
P. Geo.	Professional Geologist
Pb	Lead
PCS	Process control system
PF	Power factor
PFD	Process flow diagram
PGE	Platinum group element
PLC	Programmable logic controller

Abbreviation / Symbol	Meaning
QA/QC	Quality assurance / quality control
QP	Qualified person
RAR	Return air raise
RF	Rock fill
RIRGS	Reduced intrusion-related gold system
ROM	Run-of-mine
RTK	Real Time Kinetic
S	Sulphur
S/R	Strip ratio
SAG	Semi-autogenous grinding
Sb	Antimony
Sc	Scandium
SD	Standard deviation
Se	Selenium
SE	Southeast
SG	Specific gravity
SiO_2	Silica
Sn	Tin
SOP	Standard operating procedure
Sr	Strontium
SW	Southwest
Th	Thorium
Ti	Titanium
Tl	Thallium
TSF	Tailings storage facility
TSX-V	TSX Venture Exchange (stock exchange)
U	Uranium
U/F, u/f	Underflow
UG	Underground
US, USA	United States, United States of America
V	Vanadium
VFD	Variable frequency drive
VSD	Variable speed drive
W	Tungsten

Abbreviation / Symbol	Meaning
W	West
WBS	Work breakdown structure
Zn	Zinc
Zr	Zirconium

3 RELIANCE ON OTHER EXPERTS

This Technical Report has been prepared by DRA and others for Cerrado Gold. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to the authors at the time of Report preparation;
- Assumptions, conditions, and qualifications as set forth in this Report; and
- Data, reports, and other information supplied by Cerrado Gold and other third-party sources.

The authors believe the information supplied to be reliable, but do not guarantee the accuracy of conclusions, opinions, or estimates that rely on third-party sources for information that are outside their respective areas of technical expertise. Responsibilities for the various components of the Summary, Conclusions and Recommendations are dependent on the associated sections of the Report from which those components were developed.

The authors have relied on Cerrado Gold for information on tenements location and status, surface rights, ownership, agreements and royalties described in Section 4 of this Report.

The authors have relied upon and disclaim responsibility for information provided by Cerrado Gold, related to legal status or legal title to any permit, or to the legality of any underlying agreements for the subject properties regarding mineral rights, claim tenure, and surface rights.

This information is used in support of the property claim tenure and contracts and agreements described in Section 4, in support of the mineral resource estimates in Section 14, the mineral reserve estimates in Section 15 and the economic analysis in Section 22.

The authors have not independently verified ownership or mineral title beyond information that was provided by Cerrado Gold. The Property description presented in this Report is not intended to represent a legal or any other opinion as to title.

As the overall compiler of the Technical Report, DRA relied on the following reports and opinions for information that is either outside the area of technical expertise of DRA or outside of DRA's mandate for this Project:

- Property description, location, accessibility, climate, local resources, infrastructure, physiography, and history information provided in the previous Technical Report for the Project.
- Information on mineral processing, metallurgical testing, recovery methods, tailings, and project infrastructure provided by GE21.
- Capital and operating costs for recovery methods, and project infrastructure provided by GE21.
- Information on environmental studies, permitting, and social or community impact provided by GE21.
- Information on commodity pricing and markets provided by Cerrado Gold.

- Data and documentation from Cerrado Gold in respect of Mineral Rights and Tenure (Section 4) and Capital and Operating Costs (Section 21).

Any other use of, or reliance on, this Report by any third party is at that party's sole risk.

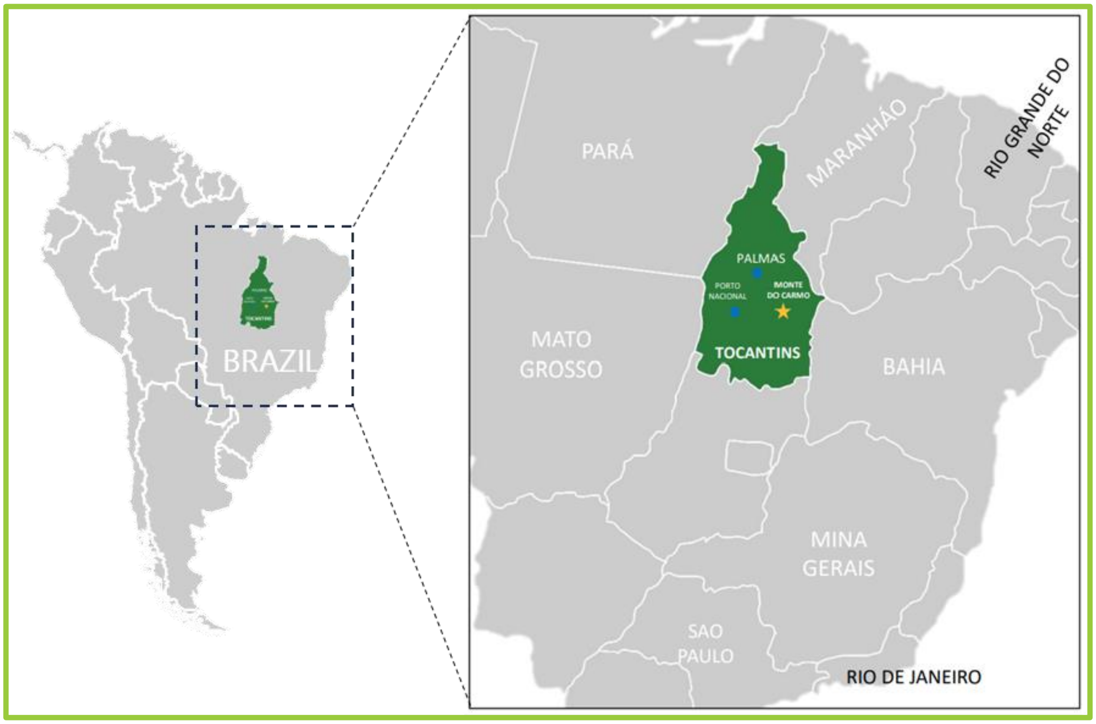
4 PROPERTY DESCRIPTION AND LOCATION

4.1 Project Location

The MDC Project is located in the State of Tocantins, Brazil, immediately east of the town of Monte do Carmo. The Serra Alta deposit, the main focus of exploration at the project is located at 10° 45' 4" south latitude and 48° 4' 20." west longitude. Monte do Carmo (~8,000 inhabitants) is located 45 km east of the city of Porto Nacional (~50,000 inhabitants). Porto Nacional is 60 km by road south of the state capital of Palmas (~300,000 inhabitants) and 780 km north of Brasilia, the federal capital (Figure 4.1).

The concessions map of Figure 1.2 depicts more localized details of the MDC Project location.

Figure 4.1 – Tocantins State (Brazil) Location Map



Source: Cerrado Gold, 2023

Elevation in the vicinity of the town of Monte do Carmo varies between approximately 300 m and 600 m above sea level (MASL).

4.2 Concessions

Registration of mining and exploration concessions is controlled by the National Department of Mineral Production (DNPM), now known as the National Mining Agency (ANM).

Brazil has a straightforward and transparent system for issuing exploration permits. It can be accessed online at: http://www.anm.gov.br/assuntos/ao-minerador/cadastro-mineiro.

A company can apply for any property online, and the application is guaranteed upon online registration, where an electronic protocol receipt is generated in the SEI (Electronic Information System).

When a property application is made, the ANM records a number for the application (e.g., 864.442/2005), which will then await approval (usually about three months). If the application is all in order, it will be approved and published in the Federal Official Gazette (DOU), which has a unique sequential number (Alvará, e.g., 9,239). Once published in the DOU, the application becomes a permit, and its first three-year period begins. For the next three years, annual fees will be charged, and exploration is permitted. Sixty (60) days before the three-year expiry date, a request for extension can be made, which must be supported by a Technical Report.

The extension may be granted in approximately one to two years, usually for an additional three-year period, although sometimes less. For this reason, clear and maintained communications with ANM is paramount.

The MDC Project consists of 21 concessions as shown in Table 4.1 and Figure 1.2. The principal mineralized targets at the Project are also shown on Figure 1.2. From the total of 21 concessions, 20 are currently held by Serra Alta Mineração Ltda (SAML) and one by Serra Alta Participações Imobiliárias (SAP). The MDC Project is owned by the Brazilian entity SAML, which in turn is 100% owned by Cerrado Gold.

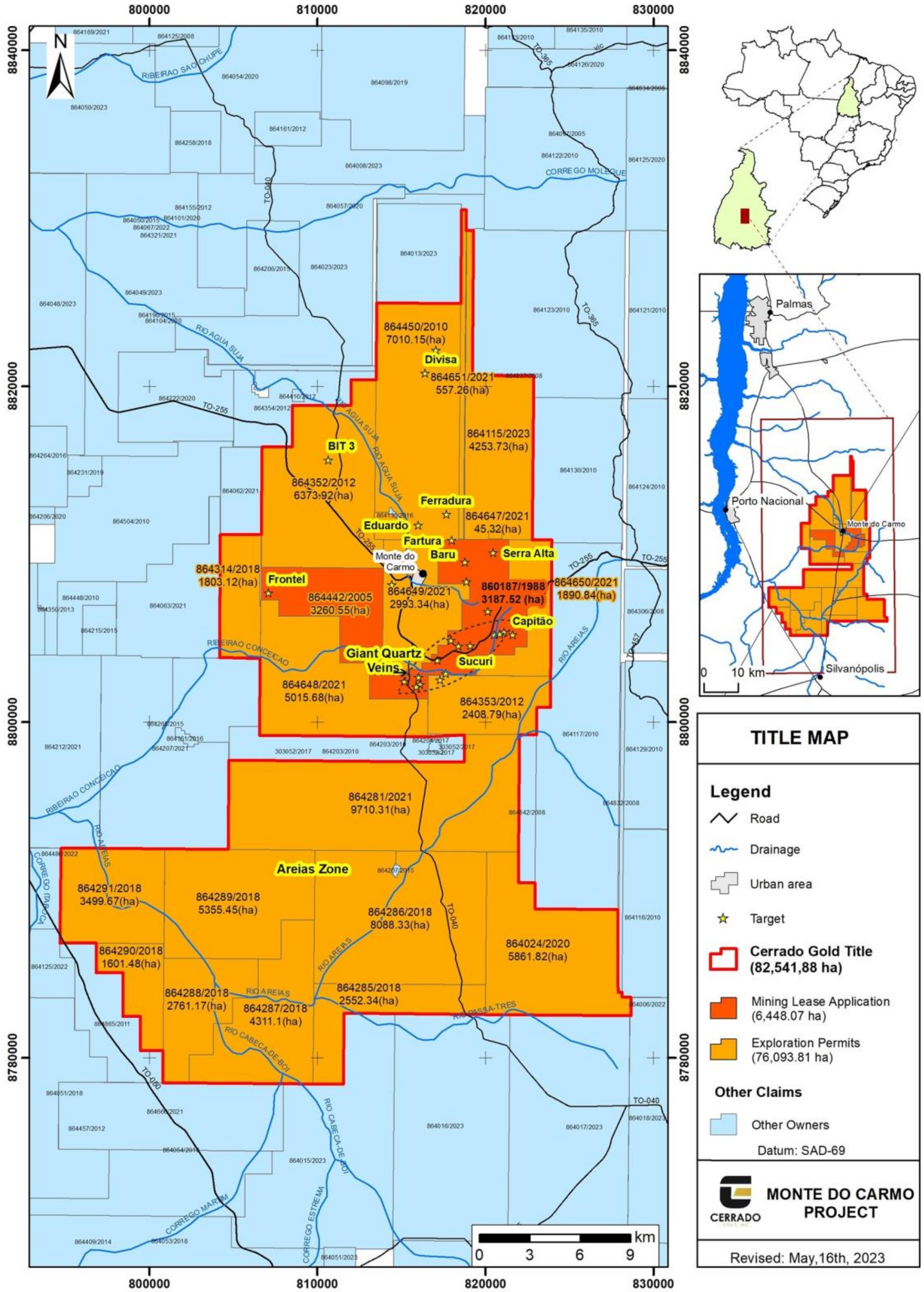
Table 4.1 – Monte do Carmo Project Concessions

ANM N°	Claim Date	Area (ha)	Alvará N°	Alvará Date DOU	End Date of the Alvará	Owner	Annual Tax Due Date	Targets	Observations
860.187/1988	1-Mar-88	3,187.52	11124	07-Jul-09		SAML		Serra Alta, Conceição Giant Qtz Veins, Fartura	Final report approved March 2017
864.442/2005	7-Nov-05	3,260.55	9239	08-Sep-09		SAML		Giant Qtz Veins	Final Report approved March 2018
864.450/2010	3-Aug-10	7,010.15	16921	13-Jan-15		SAML		Ferradura	Final Report Submitted (Pending ANM Approval)
864.352/2012	12-Sep-12	6,373.92	1690	24-Feb-16	Feb-27-24	SAML	31-Jan	Bit-03	Renewed Concession
864.353/2012	12-Sep-12	2,408.79	1691	24-Feb-16	Feb-27-24	SAML	31-Jan	Giant Qtz Veins	Renewed Concession
864.285/2018	14-Nov-18	2,552.34	1225	29-Mar-19		SAML	31-Jul	Areia Zone	Concession Renewal Filled (Pending ANM Approval)
864.286/2018	14-Nov-18	8,088.33	1226	29-Mar-19		SAML	31-Jul	Areia Zone	Concession Renewal Filled (Pending ANM Approval)
864.287/2018	14-Nov-18	4,311.10	2121	29-Apr-19		SAML	31-Jul	Areia Zone	Concession Renewal Filled (Pending ANM Approval)
864.288/2018	14-Nov-18	2,761.17	1227	29-Mar-19		SAML	31-Jul	Areia Zone	Concession Renewal Filled (Pending ANM Approval)
864.289/2018	14-Nov-18	5,355.45	1228	29-Mar-19		SAML	31-Jul	Areia Zone	Concession Renewal Filled (Pending ANM Approval)

864.290/2018	14-Nov-18	1,601.48	1229	29-Mar-19		SAML	31-Jul	Areia Zone	Concession Renewal Filled (Pending ANM Approval)
864.291/2018	14-Nov-18	3,499.67	1230	29-Mar-19		SAML	31-Jul	Areia Zone	Concession Renewal Filled (Pending ANM Approval)
864.314/2018	6-Dec-18	1,803.12	2124	29-Apr-19		SAML	31-Jul	Areia Zone	Concession Renewal Filled (Pending ANM Approval)
864.024/2020	12-Feb-20	5,861.82	2004	25-May-20		SAML	31-Jul	Areia Zone	Renewable up to 2026
864.281/2021	18-Jun-21	9,710.30	8063	20-Oct-21		SAML	31-Jul	Areia and Giant Vein	Renewable up to 2027
864.647/2021	29-Nov-21	45.32	795	01-Feb-22		SAML	31-Jul	Almirante	Renewable up to 2028
864.648/2021	29-Nov-21	5,015.68	2079	24-Mar-22		SAML	31-Jul	Frontel East	Renewable up to 2028
864.649/2021	29-Nov-21	2,993.34	2080	24-Mar-22		SAML	31-Jul	Serra Alta West	Renewable up to 2028
864.650/2021	29-Nov-21	1,890.84	2081	24-Mar-22		SAML	31-Jul	Serra Alta East	Renewable up to 2028
864.651/2021	29-Nov-21	557.26	2082	24-Mar-22		SAML	31-Jul	Almirante	Renewable up to 2028
864.115/2023	14-Apr-23	4,253.73	4234	16-May-23		SAP	31-Jul	Almirante	Renewable up to 2028
Total		**82,541.88**							

Source: Cerrado Gold, 2023

Figure 4.2 – Concessions and Exploration Target Locations



Source: Cerrado Gold, 2023

At the end of the sixth year of valid title, and before the final day, a company must submit a Final Exploration Report. Once the Final Report has been approved by the ANM (which is also published in the DOU), it is accepted that a potentially viable deposit has been discovered on that property. The company then has a term of one year within which to submit an Economic Assessment of the Project (PAE, which is similar to a Preliminary Economic Assessment under NI 43-101). In the case of concessions 860.187/88 and 864.442/05, the PAE was submitted in March 2018. In the PAE, extensions to both concessions were requested and approved in October 2018. Once the PAE has been approved by the ANM, the company may then request the Final Mining Lease, which is also issued by ANM.

After the mining lease is granted, a company must submit a simplified production report every year, or it may ask for an extension to the mining lease, providing a reason for not being in production. Mining leases have no time limit.

Production taxes are payable on mining leases. The gold tax is now 1% of net revenue. An additional royalty equivalent to 50% of gold tax (in this case 0.5%) is paid to the landowner.

4.3 Agreements

The MDC Project was acquired from Monte Sinai Mineração Ltda. (“Monte Sinai” or “MSM”) in April 2018. Liabilities assumed on acquisition relate to expenses incurred by Monte Sinai prior to the acquisition, are payable directly to Monte Sinai, have no fixed terms of repayment, and bear no interest. All liabilities were paid by Cerrado Gold prior to the end of the 2022 calendar year.

The terms of the acquisition provide for a 2% Net Smelter Return (NSR) royalty granted to the former owners of the Project. The royalty can be reacquired by the Company for US$2,000,000.00. The Company did not measure or recognize a contingent liability in relation to the NSR royalty.

In December 2020, the Company exercised its option to buy back the 2% NSR royalty for a total purchase price (aggregate cash consideration) of US$1,250,000.00 and recognized $100,000.00 advance as of December 31, 2020. The balance schedule included US$650,000.00 to be paid in March 2021, with the last payment of US$500,000.00 expected to be paid in May 2021 upon which the Company would obtain the rights to the NSR royalty.

As per the terms of the MDC Acquisition Agreement dated April 20, 2018 and the Royalty buyback agreement, the sellers of the Project have the right to a payment of US$1,500,000.00 if an aggregate of 2,500,000 oz of gold are identified in a Mineral Resource Estimate in accordance with NI 43-101. The Company has not measured or recognized a contingent liability in relation to the above payments.

4.4 Permits

Currently only exploration activities are taking place. Small-scale mining operated by Monte Sinai was already suspended at the time of the previous Technical Report and have since been completely discontinued. The License of Operation (LO, a permit issued by the state environmental agency) has been terminated. According to the State of Tocantins Environmental Board (Coema), pure exploration activities involving core drilling, trenching, mapping, etc. do not require specific permits.

The mine permitting process in Tocantins has three stages, the preliminary license ("LP"), the installation license ("LI"), and finally the license to operate ("LO"). The granting of the LP is an important milestone in the licensing process as it outlines all the basic parameters of the project to be accepted by all parties, including the local community and relevant regulatory bodies. The subsequent installation license allows for the commencement of construction activities for the project. The final licence, the LO, is granted upon completion of construction and at commencement of operations.

MDC gold project has already received the LP from the Instituto Natureza do Estado do Tocantins ("NATURATINS") the state environmental regulatory authority, which has authority to grant state permits. The company filed the LI Application in September 2023 and expects to have it granted in the first quarter of 2024.

4.5 Environmental Liabilities

The main environmental concerns are linked to the historical mining activities of the *bandeirantes* from the 1600s and 1700s, as well as recent *garimpeiro* / artisanal mining activities of the late 1900s.

The primary issues are associated with the use of mercury by the *garimpeiros* and their small-scale construction activities, along with piles of rocky rubble left behind by Portuguese explorers.

To face the responsibilities associated with mining activities and the use of mercury, Cerrado Gold took immediate action. Firstly, Cerrado Gold began a formal process of communication with the National Mining Agency (ANM) to inform them about illegal mining activities taking place within areas covered by their concession titles.

By reporting this information, Cerrado Gold demonstrated its commitment to transparency and compliance with regulations. This step allows ANM to be aware of the situation and take appropriate measures to combat illegal activities.

It is important that Cerrado Gold proactively engage in discussions with relevant stakeholders, including local communities, environmental organizations, and government agencies, to determine the most effective approach. Further details regarding the mitigation of environmental and social impacts are described in Section 20 of this Report.

4.6 Significant Factors and Risks

Significant risks and opportunities for the Project are identified and described in Section 25 of this Technical Report.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Accessibility

The Monte do Carmo Project is located in the central region of Brazil, in the state of Tocantins, about 100 km by road from the state capital of Palmas (population ~300,000). Palmas has an international airport with several daily flights to Brasilia, Goiânia and São Paulo with onward connections world-wide.

The site is just outside the town of Monte do Carmo (population ~8,000), which is accessed via a paved road (Highway TO-255) 45 km east from the city of Porto Nacional (population ~50,000). A field office is established at the project site.

5.2 Local Resources and Infrastructure

The principal industry in this region of Tocantins state is agriculture. Large fields of soybeans and corn lie to the west of the town of Monte do Carmo. Cattle ranching is another common activity in the area. Monte do Carmo itself is surrounded on two sides by cuestas (mesa-like features) upon which there is little agriculture.

The principal purpose of the city of Porto Nacional is to support the agricultural industry. All of the basic project needs can be sourced there. Permits for the project, such as those from the ANM, environmental agencies and others, can be applied for directly in the state capital (Palmas).

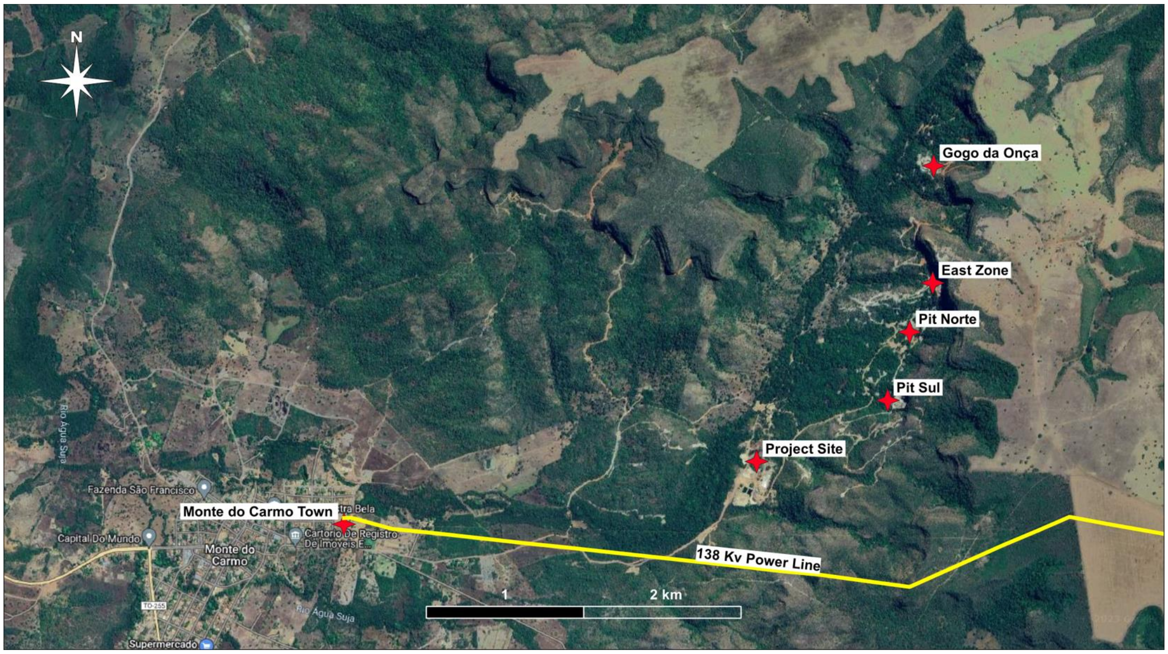
Porto Nacional has significant basic and necessary infrastructure, including a paved landing strip with capacity for landing large airplanes. However, it does not have refueling capacity.

The Tocantins River is dammed down-stream (north) of Palmas to feed the Lajeado Hydroelectric Power Plant. The river is flooded and quite wide from there to the south of Porto Nacional.

To the east of Monte do Carmo, near the municipality of Ponte Alta, high voltage power is available from the Izamu Ikeda power plant (30 MVA) located on the Balsas River, a tributary of the Tocantins River. A high-voltage power line from this plant crosses the concession containing Serra Alta (860.187/88), approximately 500 m south of the main Project facilities (see Figure 5.1).

From 2012 to 2017, MSM operated a small mill with gravity recovery and reported a processed tonnage of 60,361 t at a recovered grade of 1.508 g/t Au. The material milled was sourced from the Serra Alta Deposit. The mill has been dismantled but the foundations and tailings are still present.

Figure 5.1 – Satellite View of Monte do Carmo and Serra Alta Area



Source: Cerrado Gold, 2023

Cerrado Gold has a field office at the site of the former mining operation at Serra Alta. This consists of an office building, cafeteria, workshop, fuel station and change house/bathroom (Figure 5.2). The tailings from the milling operation are visible in the lower left corner of the figure. Cerrado Gold has also completed an open air, covered core logging facility with attached offices and core sawing room (Figure 5.3, also visible in Figure 5.2).

Ample labour is available in the nearby towns and cities. Some of the field labourers have been preferentially hired in the local communities, in accordance with the company's policies of providing local benefits.

While the local industry is dominated by agriculture, Brazil is a country with an extensive mining industry. Experienced mining professionals, skilled trades and labourers are available from nearby states.

Figure 5.2 – Aerial View of Serra Alta Field Office Facilities (from drone)

Source: Cerrado Gold, 2023

Figure 5.3 – Cerrado Gold Core Logging Area and Office

Source: Cerrado Gold, 2023

5.3 Climate

A rainy tropical climate prevails in the Monte do Carmo area, equivalent to type Aw in the classification of Köppen - wet summer and dry winter (Radambrasil, 1981). Two (2) distinct seasons are noted:

- Rainy season from September/October to April, and
- Dry season from May to August/September.

Annual rainfall ranges from 1,600 mm to 2,100 mm. Relative humidity exceeds 80% in the rainy season, but falls to less than 30% in the dry season. Annual temperatures range from 21°C to 37°C, with September being the hottest month of the year (30°C average) and February being the coldest (27°C average).

5.4 Water Resources

The local drainage network reflects the lithological constitution and structure of the underlying bedrock. The sedimentary rocks of the Parnaíba Basin represent an important porous aquifer, whereas only small aquifers prevail in the impermeable crystalline basement rocks, restricted to the fractured portions of the substrate (Radambrasil, 1981).

The Monte do Carmo area is drained by the headwaters of small tributaries on the east bank of the Tocantins River. Locally, the streams (Sucuri, a tributary of the Água Suja, and Conceição) are tributaries of the Areias River which drains to the Tocantins River.

The sandy aquifer provides strong flows of good quality, clear water. The predominant water courses are controlled by the local rock units and structure. In the Serra do Carmo (the cuestas near the town), they often occupy rugged stream beds, with small waterfalls (Figure 5.4).

Figure 5.4 – Overlying Sedimentary Rock Cuesta and Waterfalls

Source: Micon, 2018

Rudimentary extraction of gold, begun in the 18th century, had severe impacts on the local waters, as seen in the Água Suja stream. Currently, in the nearby areas, there are impacts from large scale mechanized agriculture, with consumption for irrigation and contamination of surface and groundwater by soluble fertilizers and pesticides.

5.5 Geomorphology

The Monte do Carmo region encompasses the western border of the Parnaíba Sedimentary Basin, deposited on the crystalline basement which hosts the local gold mineralization. Two (2) geomorphological domains are identified, as characterized by Radambrasil (1981):

- On the crystalline basement rocks, the Tocantins Depression was developed. The depression is composed of flat to gently undulating land, with elevations of approximately 200 m to 300 m. There are isolated remnants of the overlying sediments with flattened tops and elevations of about 500 m or greater (e.g., Lajeado hill, east of Porto Nacional). Periplanar surfaces occur at the western end of the domain. The drainage valleys have different orders of magnitude, usually with limited depth and flat bottoms.
- Where the sedimentary rocks have not largely eroded away, lies the residual plateau of Tocantins. These are extensive plateaus bordered by escarpments (see Figure 5.4), with elevations between 350 m and 600 m, at the top (cuestas) of the sediments.

The boundary between the two domains is marked by a front of cuestas (an asymmetric hill with gentle slopes on one side and a steep slope on the other, resembling a mesa from the steep side). These are notable in the landscape east of Monte do Carmo. In this context lies the hydrothermally altered granite of the Serra Alta Deposit, once mined by the Portuguese *Bandeirantes* and more recent *garimpeiros*. Locally, the base of the cliffs located at the edge of the sediments (which extend eastward) is relatively rugged terrain. The elevation of the exposed mineralized granite varies between 350 m and 470 m.

5.6 Soil

The local soils are derived from the weathering of the underlying rocks. In tropical climates, they tend to be acidic with poor fertility due to nutrient leaching. Sandstones and quartzites result in sandy soils, while granitoid rocks produce more clay-rich soils. In turn, basic volcanic rocks tend to result in more fertile soils.

In general, they are chemically poor soils with physical characteristics that are restrictive to conventional agricultural use. However, when corrected for their chemical limitations, they allow for mechanized agriculture and the production of soybeans and corn.

5.7 Vegetation

The local vegetation cover is typical of savannas (Radambrasil, 1981). There is a great diversity of species, characteristic of the Cerrado biome. In the crystalline basement terrains, there is a predominance of grassy Cerrado (open tree savanna), with forests along the valleys and on the slopes of the Carmo mountain range (the *cuestas*). On the flat lying sediments to the east, only thin cover is found, without tree cover.

In recent decades, large areas of vegetative cover were removed for the establishment of pastures and mechanized farms. Initially, these housed a rich and varied fauna: jaguars, anteaters, wolves, deer, alligators, diversified snakes, macaws, hawks, etc. Pressed by this agricultural occupation, the fauna now tend to seek shelter, although precarious, in the intact portions of savanna east of Monte do Carmo.

The original vegetation cover was characterized by Radambrasil (1981):

- **Open tree savanna without gallery forest**: Covers the Tocantins residual plateau. It includes low grasses and small tortuous trees with thick bark, bright coriaceous leaves or protected with hairs, suitable for vegetation adapted to low nutrient conditions (especially phosphate and nitrogen).
- **Open tree savanna with gallery forest**: The dominant physiography in the crystalline terrains of the Tocantins depression. The forests denote permanent humidity and greater accumulation of nutrients, favoured along the water courses and on the cliffs of the Carmo mountain range. The monotonous landscape of the Cerrado fields is interrupted by sinuous strings of forest or by the presence of rainforest.

These forests are composed of arboreal elements with habits different from the surrounding species, representing real forest refuges. They are of variable dimensions and composition, but the vegetation is always high and dense.

6 HISTORY

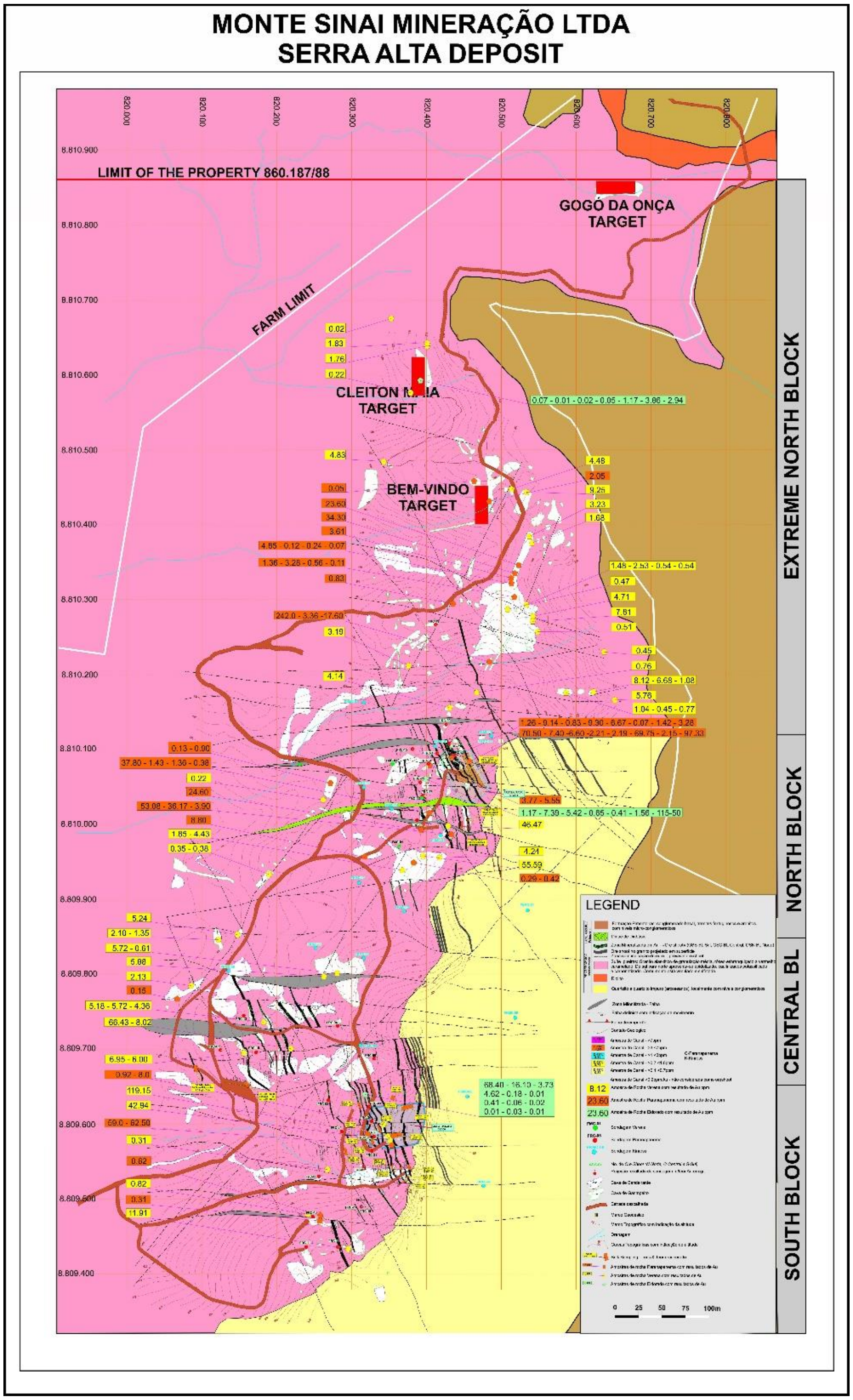
6.1 Introduction

It is understood that gold was originally discovered in the Monte do Carmo area during the 18th century. At that time, early explorers and developers known as *Bandeirantes* were opening up the interior regions of Brazil, often using river access on major waterways such as the Tocantins River. They used slave labour to recover gold, mostly from alluvial and weathered saprolitic rocks. *Bandeirante* workings are found at Serra Alta.

During the 1980s, the area experienced an influx of artisanal gold miners (*garimpeiros*) motivated by the recent rise in gold prices. MSM staff report that over 2,000 *garimpeiros* were working around Monte do Carmo at the time, with Serra Alta a major focus of this activity. These informal miners were ultimately compensated and moved off the concessions. No known *garimpeiro* activity was occurring on the Serra Alta concession at the time of the QP's visit.

No reliable records exist for the total gold production by the *bandeirantes* and *garimpeiros*, however, the local historical workings (pits and tunnels) at Serra Alta are extensive. The white patches on Figure 6.1 show the locations of mapped *bandeirante* and *garimpeiro* workings at Serra Alta.

Figure 6.1 – Serra Alta Map Showing Location of Mapped Artisanal Workings



Scale in metres on map grid

Source: MSM, 2012

6.2 Prior Exploration History

Modern exploration commenced in 1985 with work by Verena Mineração Ltda. (VML) and related companies. VML was incorporated in 1986 by the current directors of MSM to explore for gold in Tocantins State, particularly in the region of Porto Nacional and Monte do Carmo.

Investments in mineral exploration, by entities other than Cerrado Gold, amounted to US$4.7 M from 1985 through 1995, and over US$20.0 M from 1996 to date. Most of the investment was applied in the MDC Project area with many known occurrences of gold.

In the modern exploration history of the MDC Project, the following events took place:

- 1985 to 1988 - Commencement of exploration in the Monte do Carmo area. Large volume sampling (900 t) of large quartz veins in the southern concessions, called Giant Quartz Veins.
- 1989 - Joint venture (JV) with Rio Tinto. Investment of US$1.0 M. Work concentrated on the Giant Quartz Veins. A total of 26 veins were mapped and sampled. Four were drilled (53 diamond drill holes, totaling 3.876.30 m). Their size was considered insufficient for Rio Tinto, which, at the time, was looking for deposits with 3 million ounces or more of contained gold.
- 1989 to 1990 - Partnership with Musa Engenharia Ltda. Construction of the Torre Mine, a heap leach mining operation near Porto Nacional. The operation was abruptly interrupted by the advent of the Collor Plan (a government inflation stabilization plan, 03/15/1990), which drastically reduced the price of gold and effectively confiscated the company's working capital, making its continued operation unfeasible. About 5,000 t of mineralized material were processed.
- 1991 to 1992 - Partnership with the Paranapanema Group (PNP). Efforts focused on the Monte do Carmo region, with greater attention paid to the hydrothermally altered granite zone (Serra Alta). Investments made were equivalent to US$1.6 M, including 3,718.79 m of diamond drilling. The grades encountered were considered insufficient for continuity of the project, mainly due to the price of gold at the time.
- 1994 - Partnership with Companhia Nacional de Mineração (CNM, of the EBX Group). Invested US$1.1 M, focusing on shear zones in metavolcanic rocks, near the municipalities of Porto Nacional and Natividade.
- 1996 - Formation of Verena Minerals Corporation (VMC), aimed at attracting risk capital on a Canadian stock exchange. Investments were prioritized in the State of Tocantins, once again with emphasis on Porto Nacional and Monte do Carmo. The company remained listed on TSX-V until 2010.
- 1996 - VMC undertook an extensive and detailed 200 x 200 m magnetometer and Gama-Spectrometry Airborne Geophysics Survey covering an area of about 170 x 50 km. The data highlighted tectonic structures and mafic-ultramafic layered intrusions within the volcano-sedimentary sequence, one being the BIT-03 Target. This was partially explored by VMC. The last significant exploration work was carried out for gold in a shear zone crossing the intrusion

on the property. Selected targets for gold were then mapped and soil geochemistry, terrestrial geophysics, trenching and exploratory diamond drilling were conducted (total drilled: 7,416.95 m).

- 1998 - VMC conducted a similar airborne geophysical survey in the area of the Conceição do Tocantins target.
- 2004 - Exploration work on the Serra Alta target recommenced with detailed mapping, sampling, and diamond drilling (total drilled: 2,224 m).
- 2005 to 2008 - JV with Kinross at the Serra Alta target. Exploration work was conducted in the hydrothermally altered granite and quartz veins, with a further 5,043.05 m of diamond drilling. Investments made were the equivalent of US$3.5 M. However, the minimum target of 2 M oz of contained gold was not defined and, given the uncertainties generated by the US financial crisis in 2008, the JV was dissolved. The properties were returned along with delivery of the technical obtained data.
- 2009 - VMC suspended investments in the Monte do Carmo region and redirected its efforts to the Volta Grande Gold Project in Para State.
- 2010 - The Forbes & Manhattan Group took over VMC, changing its name to Belo Sun Mining Corp.
- 2010 - The mineral rights to the concessions in the Monte do Carmo area were transferred to MSM. MSM was engaged in the discovery and evaluation of the feasibility of operation of small to medium-sized gold deposits.
- 2012 to August 2017 - Partnership with the Paranaense Group from Parana State. Investment of approximately US$4.5 M in infrastructure and a bulk sampling gravity plant at Serra Alta which processed about 60,000 t of mineralized material and produced 2,923 oz of gold. The QP has not verified any of the production claims made by MSM.

The drilling at Serra Alta, as outlined above, is described in more detail in Section 10 of this Report.

The end of the *garimpeiro* mining on the granite at Serra Alta provided full access to areas of interest and led to the observation of relevant geological features that were previously inaccessible. This, combined with the exposures created by the mining activities of 2012 to 2017, allowed for improved understanding of the geometry and mineralization controls at Serra Alta.

Cerrado Gold became involved in the Project in September 2017, and obtained 100% ownership of the Project in 2018. Cerrado Gold has subsequently released a series of Technical Reports to document the progress of development work on the Project, including:

- April 2019 – Mineral Resource Estimate Report, by Micon;
- April 2020 – Preliminary Economic Assessment for Serra Alta Deposit, by GE21;
- June 2021 – Metallurgical Tests with Samples from the Orebodies of the Project: Serra Alta;

- July 2021 – Updated Mineral Resource Estimate for the Serra Alta Deposit at the Monte do Carmo Project, by Micon;
- July 2021 – Updated Preliminary Economic Assessment for the Serra Alta Deposit, by GE21.

6.3 Historical Drilling

From 1989 up to Cerrado Gold's involvement in the Project in 2017, a total of 150 drill holes totaling 14,630.97 m were completed on the Serra Alta, Giant Quartz Veins, Capitão and Bit-3 targets. A breakdown of these historical drilling totals at the Monte do Carmo Project is provided in Table 6.1.

Table 6.1 – Monte do Carmo Project, Historical Drilling Summary

Targets	Verena		Paranapanema		Kinross		Rio Tinto		Total Metres	Total Holes	ANM Concession
	Metres	Holes	Metres	Holes	Metres	Holes	Metres	Holes			
Serra Alta	449.90	5	2,713.57	31	3,083.30	17	0.00	0	6,246.77	53	860.187/88
Giant Quartz Veins	0.00	0	1,061.05	17	436.90	4	3,876.30	53	5,374.25	74	864.442/05
Capitão	0.00	0	0.00	0	1,086.30	8	0.00	0	1,086.30	8	860.187/88
Bit-3	1,924.00	14	0.00	0	0.00	0	0.00	0	1,924.00	14	864.352/12
Ferradura	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	864.450/10
Eduardo	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	864.450/10
Total	**2,373.90**	**19**	**3,774.62**	**48**	**4,606.15**	**30**	**3,876.30**	**53**	**14,630.97**	**150**	

Source: Micon, 2019

Of the 53 historical drill holes completed at the Serra Alta target, 39 are located in the immediate area of the current deposit, including the FRC (17 holes; Paranapanema, 1991-92), FMC (5 holes; Verena, 1997-98) and FKMC (17 holes; Kinross, 2006-07) series. Collar information for these holes is presented in Table 6.2.

Of these 39 holes, 30 are identified as passing through the interpreted mineralized shapes. However, certain flags were raised during review of the historical drilling database by the current Geology & Resources QP, especially with respect to the analytical techniques and QA/QC controls applied at the time.

None of the historical assays were completed at the present-day standards employed by Cerrado Gold, with particular emphasis on the current use of screen metallics in interpreted mineralized areas of the deposit. This is deemed an important aspect given the observed nugget effect throughout the orebody.

Moreover, the Verena holes (FMC series) were analyzed by an uncertified lab at the time with no access to the Certificates of Analysis; similarly, the Paranapanema holes (FRC series) were also initially analyzed internally. Efforts have since been made by Cerrado Gold to re-sample some of the FRC holes; however, this selection does not at present appear to have been done systematically and could potentially introduce bias.

As a result, this historical drilling was only used to support geological interpretation of the generated mineralized solids, and ultimately removed from the database for Mineral Resource estimation purposes. A series of descriptive statistics were first carried out in order to understand the potential effect(s) on individual mineralized zones, which were deemed insignificant, prior to their removal.

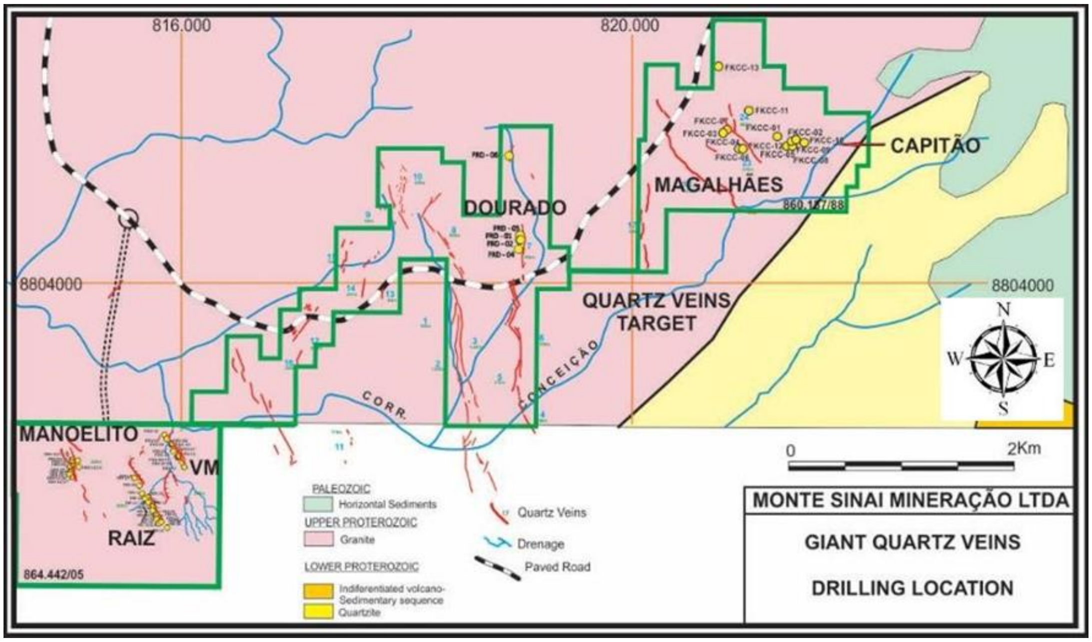
Table 6.2 – Historical Drill Hole Collar Information at Serra Alta (not included in current Mineral Resources)

Drill Hole	X Coordinate	Y Coordinate	Elevation	Drill Hole	Company	Period	Dip	Az.
FKMC-01	820411.33	8810104.66	199.30	454.57	Kinross	2006/2007	-45.00	199.30
FKMC-02	820316.20	8810162.92	310.20	449.19	Kinross	2006/2007	-50.00	310.20
FKMC-03	820419.31	8809985.31	163.30	458.52	Kinross	2006/2007	-50.00	163.30
FKMC-04	820316.37	8810049.58	201.90	435.17	Kinross	2006/2007	-50.00	201.90
FKMC-05	820135.80	8809804.50	164.35	415.60	Kinross	2006/2007	-50.00	164.35
FKMC-06	820312.27	8809705.91	220.10	478.49	Kinross	2006/2007	-40.00	220.10
FKMC-07	820476.43	8809517.50	148.10	541.51	Kinross	2006/2007	-50.00	148.10
FKMC-08	820454.60	8809636.86	145.10	563.38	Kinross	2006/2007	-50.00	145.10
FKMC-09	820518.62	8809742.03	220.10	564.49	Kinross	2006/2007	-50.00	220.10
FKMC-10	820535.03	8809885.39	220.10	561.66	Kinross	2006/2007	-50.00	220.10
FKMC-11	820252.02	8809835.35	92.70	445.45	Kinross	2006/2007	-45.00	92.70
FKMC-12	820370.53	8809884.19	163.10	469.88	Kinross	2006/2007	-45.00	163.10
FKMC-13	820310.36	8809922.33	157.10	452.46	Kinross	2006/2007	-45.00	157.10
FKMC-14	820353.64	8810020.89	142.10	445.64	Kinross	2006/2007	-45.00	142.10
FKMC-15	820316.33	8809821.40	77.75	464.53	Kinross	2006/2007	-45.00	77.75
FKMC-16	820486.61	8810117.80	231.80	489.72	Kinross	2006/2007	-40.00	231.80
FKMC-17	820486.88	8810117.52	226.20	489.69	Kinross	2006/2007	-50.00	226.20
FRC-01	820286.80	8809590.60	84.19	459.06	PNP	1991/1992	-60.00	84.19
FRC-02	820323.98	8809585.53	89.99	478.91	PNP	1991/1992	-60.00	89.99
FRC-03	820266.26	8809632.88	101.75	441.87	PNP	1991/1992	-60.00	101.75
FRC-04	820280.51	8809731.66	70.00	468.69	PNP	1991/1992	-60.00	70.00
FRC-05	820316.03	8809543.52	102.90	467.53	PNP	1991/1992	-60.00	102.90
FRC-06	820325.58	8809686.42	117.85	484.20	PNP	1991/1992	-60.00	117.85
FRC-07	820119.62	8809699.97	83.63	412.81	PNP	1991/1992	-60.00	83.63

Drill Hole	X Coordinate	Y Coordinate	Elevation	Drill Hole	Company	Period	Dip	Az.
FRC-08	820254.13	8809533.37	87.65	447.55	PNP	1991/1992	-60.00	87.65
FRC-09	820323.47	8809623.39	98.20	473.15	PNP	1991/1992	-60.00	98.20
FRC-10	820172.87	8809696.03	86.55	436.84	PNP	1991/1992	-60.00	86.55
FRC-11	820238.25	8809442.11	119.57	498.20	PNP	1991/1992	-50.00	119.57
FRC-12	820412.20	8810096.84	102.53	455.00	PNP	1991/1992	-50.00	102.53
FRC-13	820156.92	8809748.46	91.08	425.71	PNP	1991/1992	-50.00	91.08
FRC-14	820281.81	8809438.06	100.52	507.35	PNP	1991/1992	-50.00	100.52
FRC-15	820381.56	8810100.71	125.43	449.54	PNP	1991/1992	-50.00	125.43
FRC-16	820313.03	8809489.61	121.65	487.69	PNP	1991/1992	-50.00	121.65
FRC-17	820386.97	8810005.65	120.75	452.25	PNP	1991/1992	-50.00	120.75
FRC-18	820246.64	8809480.67	105.90	482.69	PNP	1991/1992	-50.00	105.90
FRC-19	820426.49	8810273.22	137.30	531.95	PNP	1991/1992	-60.00	137.30
FRC-20	820438.83	8810136.47	36.15	462.81	PNP	1991/1992	-50.00	36.15
FRC-21	820432.19	8810108.54	100.70	455.00	PNP	1991/1992	-50.00	100.70
FRC-22	820313.03	8809489.61	67.11	487.69	PNP	1991/1992	-50.00	67.11
FRC-23	820313.03	8809489.61	73.84	487.69	PNP	1991/1992	-60.00	73.84
FRC-24	820403.42	8810082.35	104.35	455.86	PNP	1991/1992	-50.00	104.35
FRC-25	820391.96	8810056.55	82.86	451.63	PNP	1991/1992	-50.00	82.86
FRC-26	820437.91	8810092.37	79.75	454.72	PNP	1991/1992	-50.00	79.75
FRC-27	820393.80	8810035.18	74.87	451.68	PNP	1991/1992	-50.00	74.87
FRC-28	820330.17	8809583.30	70.24	480.13	PNP	1991/1992	-45.00	70.24
FRC-29	820330.17	8809583.30	65.21	480.13	PNP	1991/1992	-90.00	65.21
FRC-30B	820326.58	8809603.99	11.05	479.55	PNP	1991/1992	-70.00	11.05
FMC-01	820372.56	8810116.76	85.90	445.00	Verena	1997	-45.00	85.90
FMC-02	820400.76	8810036.86	86.25	456.77	Verena	1997	-45.00	86.25
FMC-03	820361.06	8810082.56	85.45	447.73	Verena	1997	-45.00	85.45
FMC-04	820370.06	8809974.06	103.30	458.42	Verena	1997	-45.00	103.30
FMC-05	820234.16	8810081.36	89.00	429.20	Verena	1997	-45.00	89.00

The first drilling was carried out by Rio Tinto in a JV with VML in 1989. Rio Tinto completed 53 RC drill holes totalling 3,876.30 m at three of the Giant Quartz Veins, Raiz (20 holes), VM (16 holes) and Manoelito (17 holes) (Figure 6.1 and Figure 6.2).

Figure 6.2 – Giant Quartz Veins Map Showing Locations of Rio Tinto and PNP Drill Holes



Source: MSM, 2018

At the Capitão target, the surface auriferous potential was first confirmed through channel sampling. The objective of the work was to test the potential of the gold bearing granite zones and the Magalhães giant quartz veins system. Table 6.3 presents the better drill hole intercepts from drilling at Capitão (Kinross 2007).

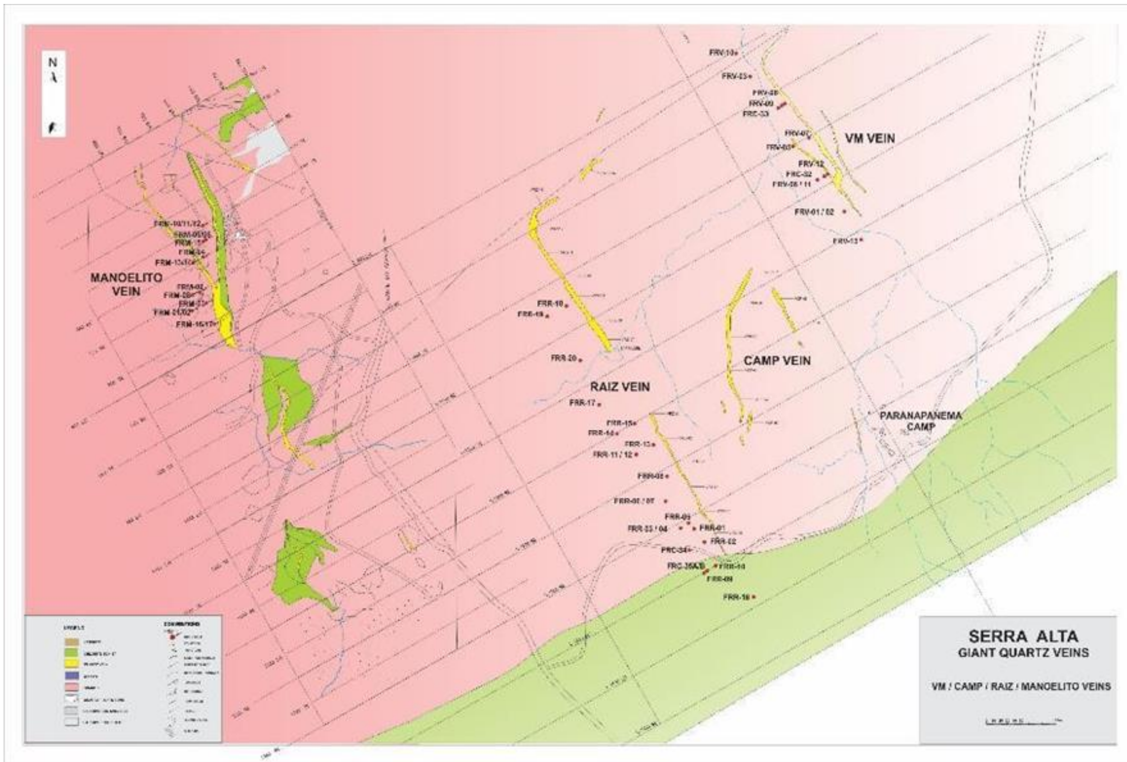
Table 6.3 – Capitão Drilling Summary

Hole Number	From (m)	To (m)	Width (m)	Au (g/t)	Peak Value (Au g/t)
FKCC-01	20.70	24.52	3.82	0.30	21.45
	52.20	73.90	21.70	1.76	
	60.40	68.74	8.34	3.73	
	64.50	68.74	4.24	6.13	
	75.70	76.60	0.90	0.97	
	94.60	96.80	2.20	1.12	
	110.44	111.34	0.90	7.91	
FKCC-02	33.55	45.50	11.95	0.36	1.29
	80.51	81.24	0.73	0.73	
FKCC-03			nothing over 0.5 g/t		

Hole Number	From (m)	To (m)	Width (m)	Au (g/t)	Peak Value (Au g/t)
FKCC-04	54.51	55.27	0.76	2.86	
FKCC-05	44.29	44.79	0.50	2.86	
FKCC-06			nothing over 0.5 g/t		
FKCC-07	19.63	20.25	0.62	5.96	
FKCC-08	2.90	5.30	2.40	1.77	4.67
FKCC-09	18.50	31.45	12.95	0.84	3.23
	51.09	61.45	10.36	0.51	
	51.09	54.20	3.11	1.13	
	59.93	60.70	0.77	0.70	
FKCC-10			nothing over 0.5 g/t		
FKCC-11			nothing over 0.5 g/t		
FKCC-12	33.10	34.10	1.00	4.07	4.07
	43.10	44.10	1.00	0.77	
	86.10	93.10	7.00	0.24	
FKCC-13			nothing over 0.5 g/t		

Figure 6.3 presents a geological map of the Raiz, VM, and Manoelito veins.

Figure 6.3 – Geology and Drill Hole Locations, Raiz, VM, and Manoelito Veins



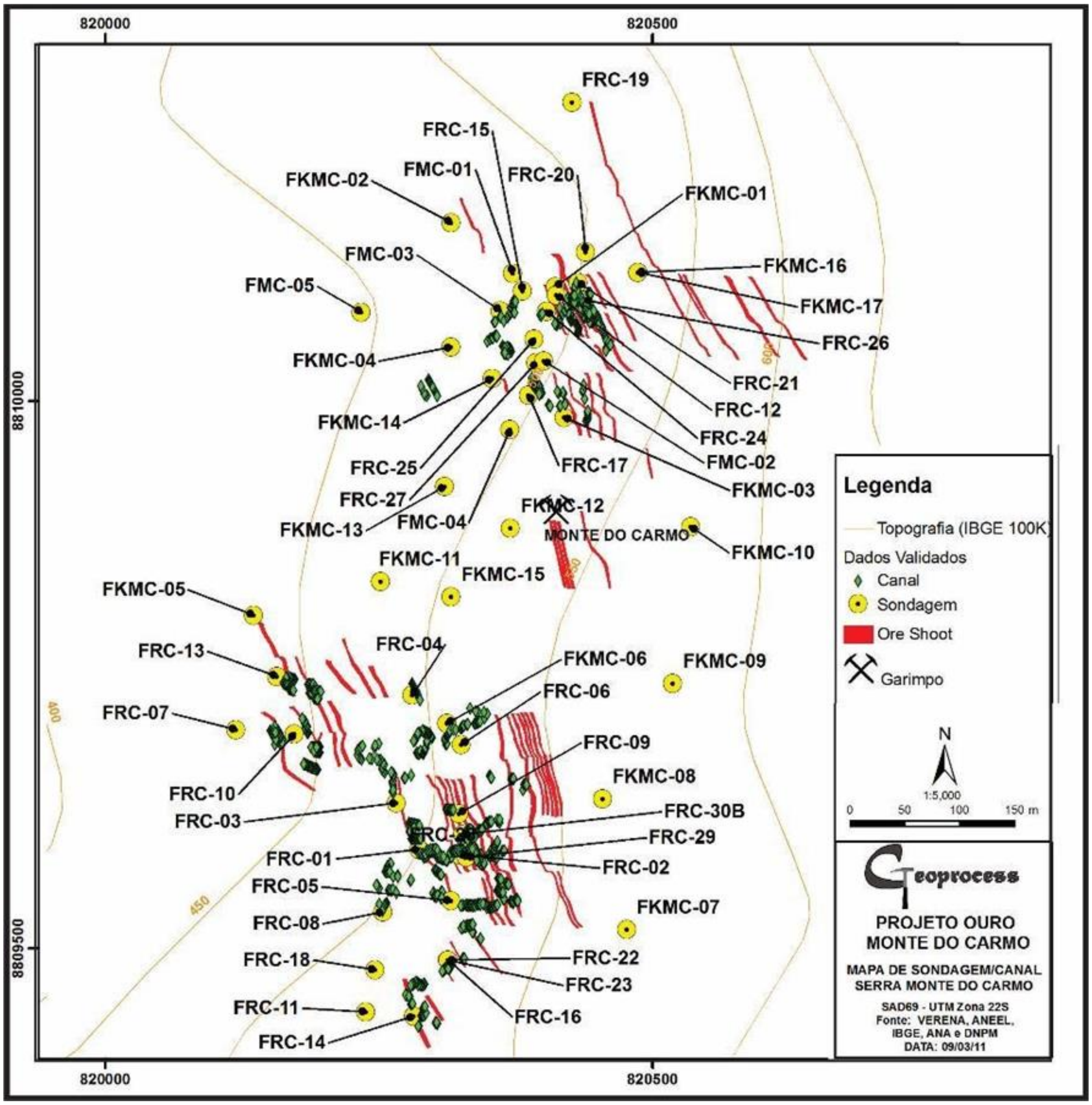
Source: MSM, 2018

In 1991 and 1992, the PNP Group, through its subsidiary Mineração Taboca, in a JV with VML, completed 47 diamond drill holes. Of these, 31 holes were drilled at the Serra Alta target (2,713.57 m, Figure 6.4) and 17 at the Giant Quartz Veins (Figure 6.1), of which two (2) drill holes targeted the VM Vein (96.53 m), four (4) targeted the Raiz Vein (247.79 m), six (6) targeted the Dourado Vein (378.19 m, Figure 6.5) and five (5) targeted the Frontel Vein (338.54 m, Figure 6.6).

In 1997/98, VMC drilled 20 holes, totalling 2,373.90 m, 14 at the Bit-3 target (1,924.0 m, Figure 6.7) and five (5) holes at the Serra Alta target (449.90 m, Figure 6.4).

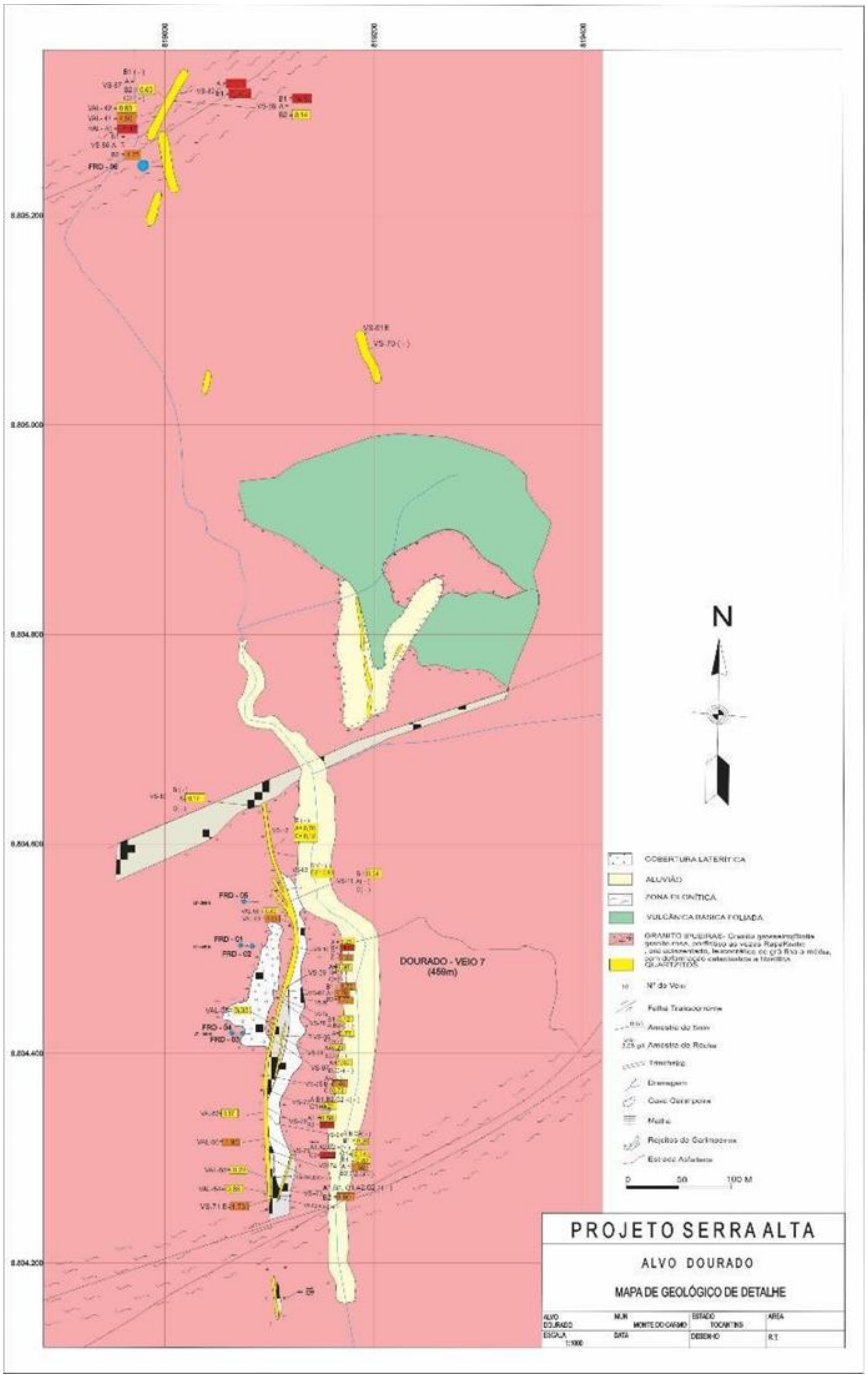
In 2006 and 2007, Kinross, in a JV with VMC, completed 30 drill holes totalling 4,606.15 m, 17 of which were at the Serra Alta target (3,083.30 m, Figure 6.3), nine (9) holes were at the Capitão target (1,085.95 m, Figure 6.1) and four (4) holes targeted the Giant Quartz Veins (436.90 m, Figure 6.8).

Figure 6.4 – Serra Alta Historical Drill Hole Locations



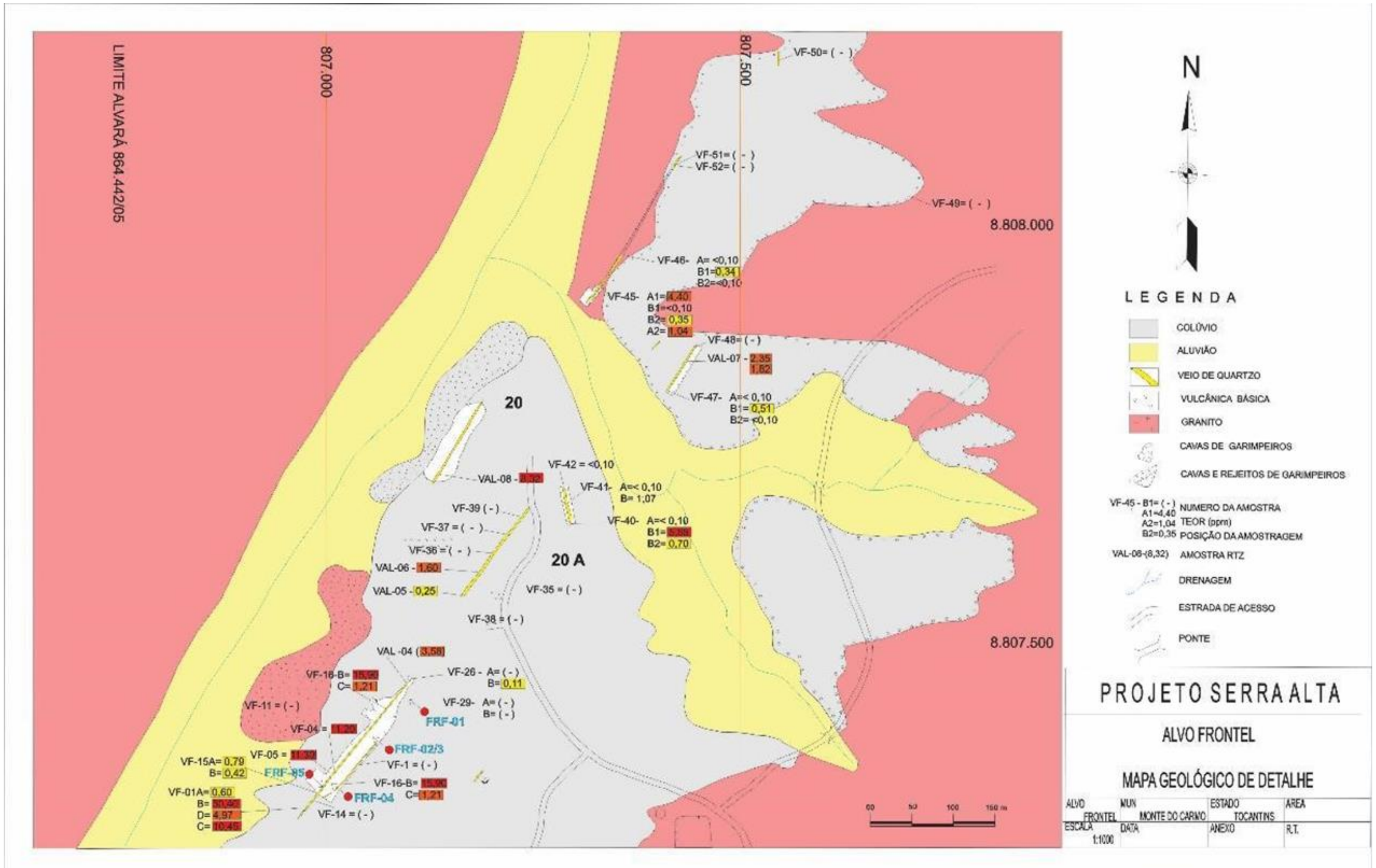
Paranapanema holes (FRC), Kinross holes (FKMC) and Verena holes (FMC).
Source: MSM, 2018.

Figure 6.5 – Dourado Vein Details, Geology and Paranapanema Drill Hole Locations



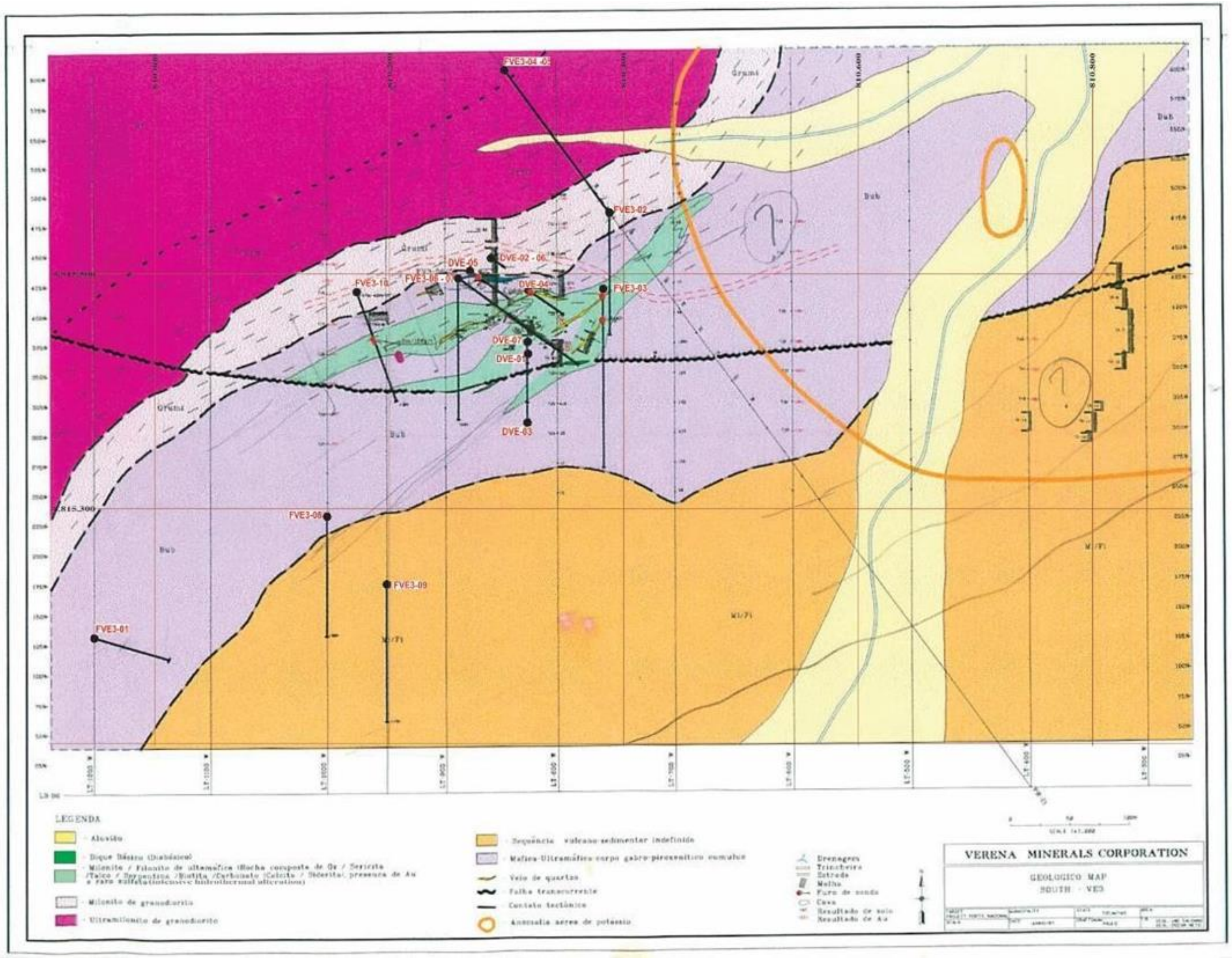
Source: MSM, 2018

Figure 6.6 – Frontel Vein, Geology and Drill Hole Locations



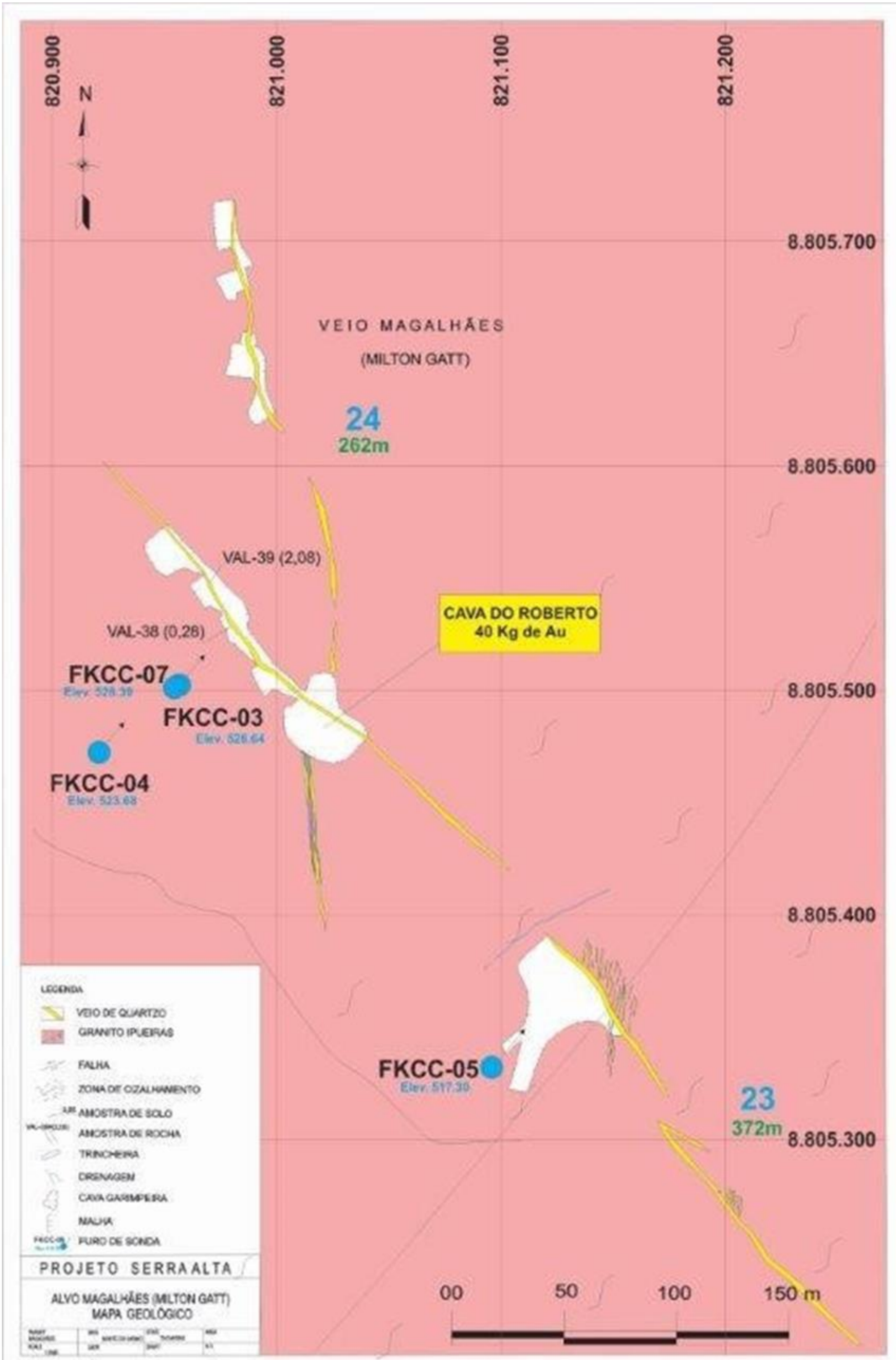
Source: MSM, 2018

Figure 6.7 – Bit-3 Geology and Verena DDH Location



Source: MSM, 2018

Figure 6.8 – Magalhaes Vein Showing Kinross Drill Hole Locations



Source: MSM, 2018

Table 6.4 shows a summary of the drill methods and core sizes used by the various companies at the MDC Project.

Table 6.4 – Drilling Type Summary

Company	Drill Contractor	Drilling Method	Core Size		Analytical Method
			Weathered Rock	Fresh Rock	
Rio Tinto	Geosol	RC	HX	NX	Fire Assay/AAS
PNP	Geosol	Diamond	NX	BX	AAS/MIBK collector
Verena	Isoagua	Diamond	NX	BX	Fire Assay/AAS

AAS = Atomic Absorption Spectrometry

Table 6.5 presents a list of significant intersections from the historical drilling at the Serra Alta deposit for documentation purposes only. As previously explained, the current QP elected to exclude these holes based on uncertainties related to sampling/analytical methods and QA/QC controls used at the time. As Serra Alta is the focus of Cerrado Gold's exploration activity going forward, results from drilling at the other targets will not be discussed further.

Table 6.5 – Significant Historical Drill Intersections from Serra Alta (not included in current Mineral Resources)

Hole Number	From	To	Length	Au (g/t)
FKMC-01	0.85	4.00	3.15	1.62
FKMC-01	9.88	32.00	22.12	3.62
FKMC-01	34.00	35.00	1.00	1.12
FKMC-01	55.00	63.50	8.50	0.19
FKMC-01	64.50	71.38	6.88	0.63
FKMC-01	85.90	87.40	1.50	0.39
FKMC-01	110.55	113.05	2.50	1.13
FKMC-01	171.15	173.15	2.00	0.38
FKMC-02	1.80	5.20	3.40	0.64
FKMC-02	31.28	34.50	3.22	1.54
FKMC-02	53.70	61.50	7.80	0.49
FKMC-02	77.70	83.50	5.80	0.47
FKMC-02	97.60	99.20	1.60	0.23
FKMC-03	3.10	4.10	1.00	0.84
FKMC-03	10.45	23.45	13.00	1.08
FKMC-03	38.21	39.30	1.09	4.21
FKMC-03	61.15	62.68	1.53	0.48
FKMC-03	73.82	76.82	3.00	0.51
FKMC-03	89.30	91.38	2.08	2.66
FKMC-03	135.30	136.80	1.50	1.23

Hole Number	From	To	Length	Au (g/t)
FKMC-04	0.00	7.57	7.57	0.90
FKMC-04	48.40	49.14	0.74	0.49
FKMC-06	23.49	24.75	1.26	1.61
FKMC-06	40.25	54.50	14.25	0.60
FKMC-06	57.60	75.57	17.97	0.49
FKMC-06	77.55	89.93	12.38	0.02
FKMC-06	108.60	109.60	1.00	0.88
FKMC-07	83.71	95.40	11.69	1.22
FKMC-07	106.81	109.81	3.00	0.50
FKMC-07	143.00	144.10	1.10	0.60
FKMC-08	74.23	84.01	9.78	2.00
FKMC-08	94.60	107.02	12.42	5.37
FKMC-08	116.92	124.36	7.44	0.56
FKMC-10	151.84	152.80	0.96	0.90
FKMC-10	193.10	196.90	3.80	0.74
FKMC-12	31.10	37.97	6.87	1.29
FKMC-12	42.00	57.80	15.80	1.82
FKMC-12	57.80	65.40	7.60	0.13
FKMC-12	65.40	70.77	5.37	0.61
FKMC-12	70.77	72.00	1.23	0.08
FKMC-12	80.15	82.10	1.95	0.12
FKMC-12	82.10	86.10	4.00	0.95
FKMC-12	149.66	150.47	0.81	2.10
FKMC-13	46.70	47.70	1.00	2.79
FKMC-13	57.74	59.74	2.00	1.33
FKMC-13	76.27	80.20	3.93	0.82
FKMC-13	96.10	98.10	2.00	0.54
FKMC-13	121.10	122.15	1.05	6.92
FKMC-13	140.10	141.10	1.00	0.39
FKMC-14	11.60	13.39	1.79	3.35
FKMC-14	90.53	94.49	3.96	0.31
FKMC-16	44.40	50.40	6.00	1.64
FKMC-16	63.00	64.00	1.00	1.29
FKMC-16	96.00	102.00	6.00	2.16
FKMC-16	121.60	135.80	14.20	2.76

Hole Number	From	To	Length	Au (g/t)
FKMC-17	41.73	47.40	5.67	3.10
FKMC-17	78.35	79.52	1.17	0.69
FKMC-17	110.90	120.00	9.10	0.68
FMC-01	17.00	19.00	2.00	0.52
FMC-01	42.00	51.00	9.00	1.18
FMC-01	54.00	56.00	2.00	3.16
FMC-01	63.00	73.00	10.00	0.33
FMC-02	1.00	3.00	2.00	2.51
FMC-02	34.00	39.00	5.00	1.73
FMC-02	41.00	59.00	18.00	0.96
FMC-02	78.00	81.00	3.00	1.48
FMC-03	0.00	1.00	1.00	0.09
FMC-03	12.00	13.00	1.00	0.44
FMC-03	46.00	51.00	5.00	1.26
FMC-03	68.00	69.00	1.00	0.66
FMC-04	30.00	36.00	6.00	0.62
FMC-04	42.00	47.00	5.00	0.53
FMC-04	56.00	60.00	4.00	0.52
FRC-02 *	23.00	26.00	3.00	0.52
FRC-02 *	28.00	31.50	3.50	2.29
FRC-02 *	48.00	49.00	1.00	0.41
FRC-02 *	66.00	72.00	6.00	5.05
FRC-04 *	12.00	14.00	2.00	0.74
FRC-05 *	0.00	0.80	0.80	2.84
FRC-05 *	80.00	81.00	1.00	0.54
FRC-06 *	21.00	22.00	1.00	0.72
FRC-06 *	33.00	46.00	13.00	0.99
FRC-06 *	49.00	65.00	16.00	1.34
FRC-06 *	68.00	78.55	10.55	0.47
FRC-09 *	0.00	0.80	0.80	4.09
FRC-09 *	5.00	8.00	3.00	0.59
FRC-09 *	23.00	28.00	5.00	0.62
FRC-09 *	51.00	53.00	2.00	0.97
FRC-09 *	67.00	68.00	1.00	0.76
FRC-09 *	77.00	80.00	3.00	0.92

Hole Number	From	To	Length	Au (g/t)
FRC-10 *	14.00	15.00	1.00	1.17
FRC-11 *	16.00	18.00	2.00	1.09
FRC-11 *	32.00	33.00	1.00	2.48
FRC-12 *	0.00	5.00	5.00	2.36
FRC-12 *	7.60	32.00	24.40	1.39
FRC-12 *	49.00	50.00	1.00	5.13
FRC-12 *	61.00	72.00	11.00	0.93
FRC-13 *	9.00	13.00	4.00	0.68
FRC-13 *	18.00	20.00	2.00	0.97
FRC-13 *	22.00	24.00	2.00	4.15
FRC-13 *	34.00	35.00	1.00	1.62
FRC-14 *	3.00	4.00	1.00	0.32
FRC-14 *	8.00	9.00	1.00	0.65
FRC-15 *	12.00	33.00	21.00	1.35
FRC-15 *	49.00	54.00	5.00	2.88
FRC-15 *	68.00	69.00	1.00	0.40
FRC-17 *	7.00	14.00	7.00	1.42
FRC-17 *	27.00	28.00	1.00	2.53
FRC-17 *	33.00	35.00	2.00	1.64
FRC-17 *	39.00	40.00	1.00	5.58
FRC-17 *	48.00	49.00	1.00	1.35
FRC-17 *	67.00	68.00	1.00	0.88
FRC-17 *	85.00	86.00	1.00	0.56
FRC-18 *	3.00	4.35	1.35	0.45
FRC-18 *	16.00	17.00	1.00	0.81
FRC-21 *	22.00	26.00	4.00	2.60
FRC-21 *	29.00	31.00	2.00	1.21
FRC-21 *	52.00	53.00	1.00	1.50
FRC-24 *	9.00	29.00	20.00	0.92
FRC-24 *	37.00	40.00	3.00	0.77
FRC-24 *	50.00	51.00	1.00	0.61
FRC-25 *	0.00	1.00	1.00	0.75
FRC-26 *	0.00	5.00	5.00	0.70
FRC-26 *	11.00	15.00	4.00	1.23
FRC-27 *	0.00	1.70	1.70	0.47

Hole Number	From	To	Length	Au (g/t)
FRC-27 *	7.50	9.00	1.50	1.55
FRC-27 *	17.00	18.00	1.00	1.71
FRC-27 *	62.00	63.00	1.00	1.04
FRC-28 *	4.00	7.00	3.00	1.64
FRC-28 *	9.00	13.00	4.00	2.14
FRC-28 *	15.00	19.00	4.00	1.05
FRC-28 *	20.00	27.00	7.00	0.93
FRC-28 *	35.00	38.00	3.00	1.12
FRC-28 *	55.00	58.00	3.00	0.91
FRC-29 *	7.50	14.00	6.50	3.54
FRC-29 *	17.00	22.00	5.00	1.23
FRC-29 *	29.00	32.00	3.00	0.92
FRC-29 *	45.00	46.00	1.00	0.24
FRC-29 *	53.40	62.00	8.60	6.57
FRC-30B *	4.00	11.05	7.05	0.45

* PNP assays performed by AAS analysis at their own laboratory. See cautionary language in the preamble of Section 11.

FRC holes - PNP, FKMC holes - Kinross, FMC holes - Verena, FSA holes - Cerrado Gold

Cerrado Gold has access to the assay certificates for the Kinross drilling. No PNP certificates are available; however, there is a PNP assay report with no sample numbers provided.

6.4 Historical Resource Estimates

There are no known Mineral Resource Estimates for the MDC Project prepared prior to the acquisition of the project by MSM. Since then, an in-house resource estimate was prepared by a consultant to MSM (Geoprocess, 2011). This estimate is not considered to be NI 43-101 compliant and has not been reviewed by the current QP of Geology and Resources. As a result, this internal initial resource is not disclosed, nor discussed in further detail, herein.

7 GEOLOGICAL SETTING AND MINERALIZATION

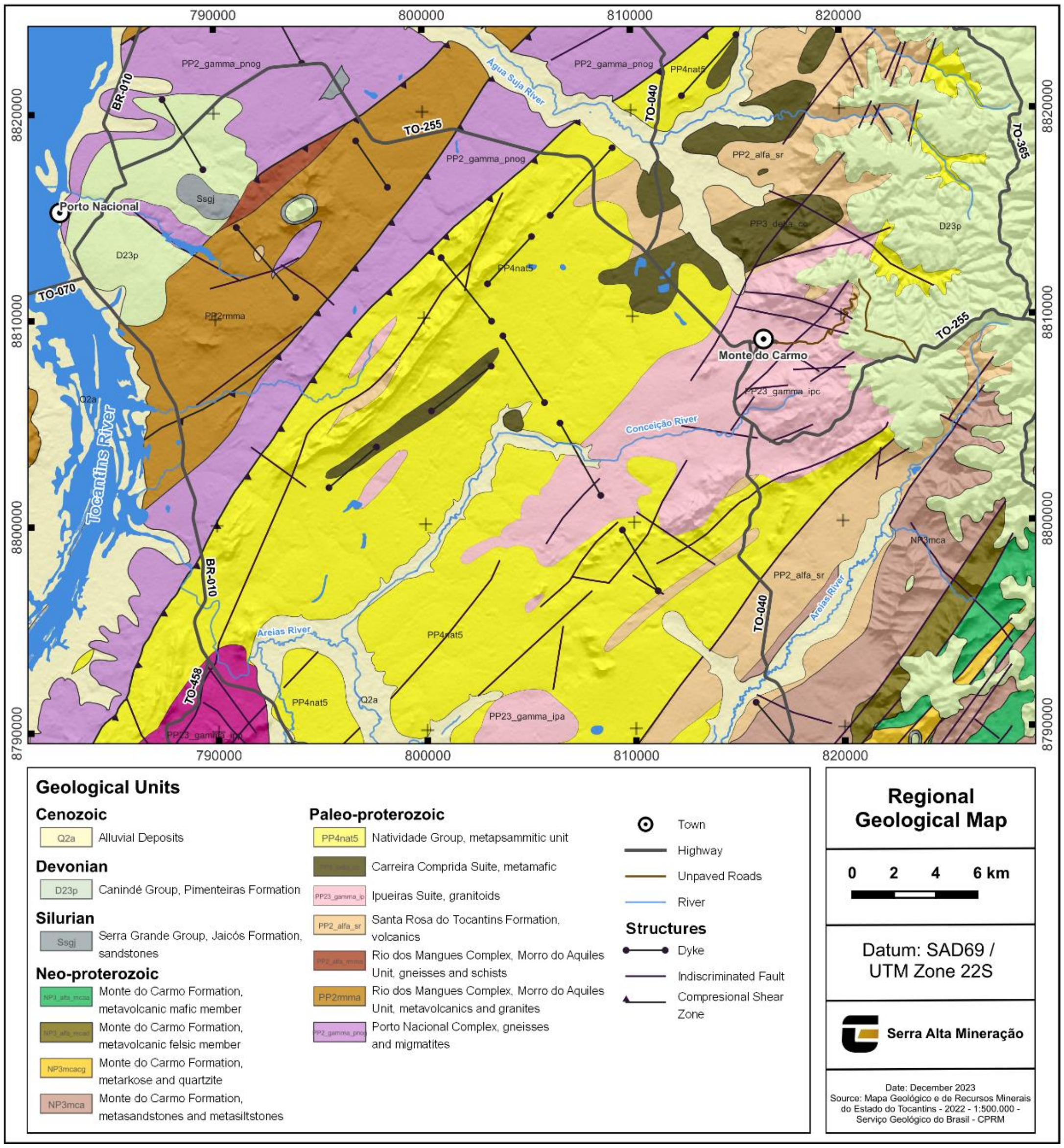
7.1 Regional Geology

7.1.1 Main Lithostratigraphic Units

The regional scale geological map, edited by IBGE (2007), provides the best reference for description of the regional geology, as shown in Figure 7.1. It is a re-evaluation of information collected by Radambrasil, updated based on data obtained from third parties (CPRM, 2004, among others). The synthesis incorporates information collected by MSM and other companies during regional exploration efforts; such details have proven important to understanding the overall geological context and related mineralization controls in the area. There are also geochronological data derived by several researchers.

The regional geological framework is characterized by a complex polyphase evolution, which forms the basement of the Neoproterozoic Araguaia Belt along the eastern edge of the Amazon Craton, in the zone of interaction with the São Francisco Craton. This orogenic belt is chiefly composed of metamorphic pelitic and psammitic sediments, felsic alkaline plutons, mafic-ultramafic bodies, and granitic rocks (Schobbenhaus et al., 1984; Bizzi et al., 2003).

Figure 7.1 – Regional Geology



Source: Cerrado Gold, 2023

The following units, listed from the base to the top of the succession, occur in the general area of interest:

a) **Porto Nacional Granulite Complex:** These are high grade metamorphic rocks consisting of orthogranulites and supracrustal rocks. The orthogranulites include enderbite, meta-hornblende gabbro-norite, charno-enderbite and charnockite. The overlying supracrustal set comprises aluminous gneiss, sillimanite-kyanite gneiss, garnet gneiss, kinzigite and gondite (CPRM, 2004). Paleoproterozoic in age, estimated between 2,300 and 2,050 Ma (IBGE, 2007).

b) **Rio dos Mangues Complex:** Composed of orthogneiss, tonalitic to partially migmatitic granodiorite, amphibolite and granitoids. Pb-Pb dating has determined the complex to be 2,127 to 2,050 Ma in age (CPRM, 2004).

c) **Carreira Comprida Gabbro (Anorthosite)**: Mafic-ultramafic layered complex composed of meta-norite, meta-diorite, meta-anorthosite, meta-quartz-diorite, meta-tonalite, meta-gabbro, meta-gabbro-norite and pyroxenite. The unit is Paleoproterozoic in age, as determined by a U-Pb date of 2072 Ma (CPRM, 2004). However, Lima et al. (2007) believe that this age corresponds to the ages of zircons inherited from an older crustal material. The authors dated the mafic rocks using the U-Pb method in zircon and found ages of 526 Ma and 533 Ma,

d) **Monte do Carmo Formation:** Volcano-sedimentary sequence formed by metamorphosed rhyolite, rhyodacite, dacite, tuffs, basic volcanic rocks, quartzites, pelites and conglomerate. Pb-Pb dating has shown the succession to be of Paleoproterozoic age, with a range of 2,130 to 2,020 Ma (CPRM, 2004).

e) **Ipueiras Intrusive Suite:** Large granitic intrusion in the Monte do Carmo area. It was described by IBGE (2007) as Paleoproterozoic, but classified by CPRM (2004) as Neoproterozoic, under the name Suíte Lajeado (see item g). MSM also referred to the unit as the Lajeado granite but considered it Paleoproterozoic in age. This 1,000 Ma discrepancy may simply result from confusion in the naming of granites; however, the granite in the Monte do Carmo area appears older than other intrusive bodies in the region based on evidence of shearing and hydrothermal activity related to auriferous mineralization (MSML, 2011a). More recent postgraduate research focused on the Serra Alta deposit has clarified the issue by determining the host granite is likely the more evolved and fractionated phase of Type I syenogranitic magmatism emplaced along Cordillera-type, convergent plate boundaries (Gomes, 2016). This work also classified the granite within the Ipueiras Intrusive Suite based on an updated U-Pb age date of 2,083 ± 21 Ma, with TDM values between 2.05–2.15 Ma and a positive εNd value (2.083). (Gomes, 2016).

f) **Lajeado Suite:** Felsic intrusions emplaced syn to late Trans-Brazilian orogeny, comprising granite, alkali-granite, porphyritic granite and other granitoids. Pb-Pb age dating cited by CPRM (2004) place this suite within the Neoproterozoic; specific examples include the Matança Granite (564–552 Ma), Lajeado Granite (546Ma) and the Palmas Granite (548 Ma).

g) **Pimenteiras Formation:** Argillites and siltstones with intercalated ferruginous sandstone and basal conglomerate lenses deposited within the Parnaíba Sedimentary Basin during the Devonian (~400–380 Ma) (CPRM, 2004; IBGE, 2007).

h) **Detritus-Lateritic Cover:** Detritus-laterite cover developed on flat terrain, comprising mainly sandstones and conglomerates. Age attributed to the end of the Neogene and early Pleistocene, estimated around 1.75 Ma (CPRM, 2004).

i) **Alluvial Deposits:** Unconsolidated sediments, comprising sands, clays and gravel lenses, deposited along river valleys during the Pleistocene to Holocene (IBGE, 2007).

7.2 Regional Lithological and Structural Mapping

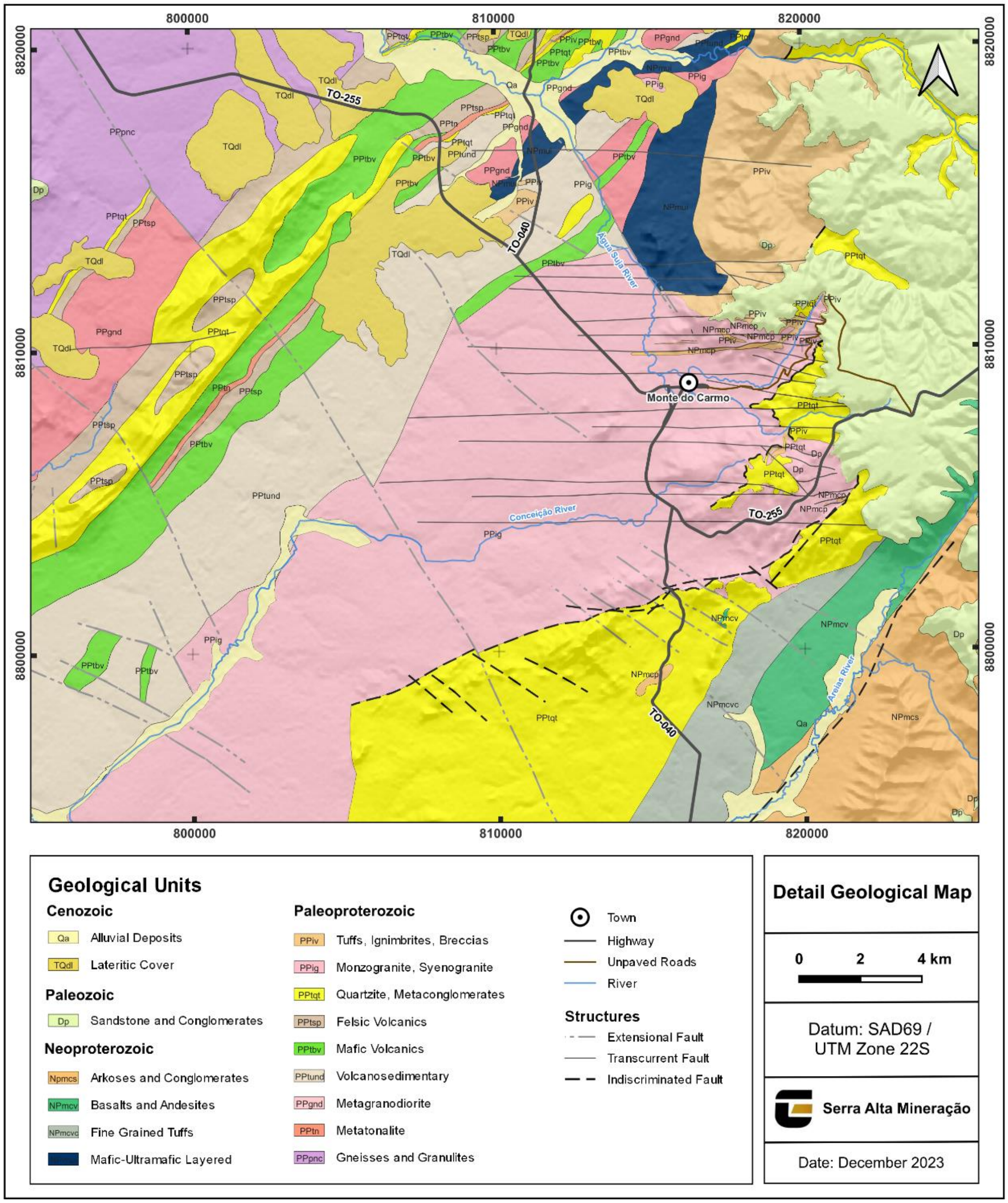
The Porto Nacional region, which covers an entire gold province, is geotectonically packed onto a transcontinental shear belt known as the Trans-Brazilian Lineament. In this area, the shear/lineament generally has an elliptical shape spanning over 170 km in length and up to 40 km in width.

Regional geological mapping, carried out by VML and MSM at a 1:100,000 scale covers most of the municipalities of Porto Nacional, Monte do Carmo, Ipueiras and Brejinho do Nazaré. In the northern portion of the block, mapping was conducted at 1:25,000 scale. Sites of interest were described by VML, its JV partners, and more recently by MSM (2011a). The geological context has been characterised with varying degrees of detail by a number of different professionals throughout the history of exploration work carried out in the Monte do Carmo region.

Mapping efforts have also been enhanced through a number of collaborative postgraduate studies, including three masters' and one doctoral level theses. In general, geological exposures are limited by the deep weathering profile and the destruction of some characteristics in *garimpeiro*-mined areas (*garimpos*). However, the *garimpos* and other old workings facilitate the location of mineral occurrences. As a result, interpretations of airborne geophysical surveys and aerial photographic images have been integrated with the field-based data.

A geological map, at 1:100,000 scale, of the most important portion of the belt is shown in Figure 7.2. This compilation map covers most of the principal target areas, concessions, major lithostratigraphic units and geotectonic features of the region.

Figure 7.2 – Regional Geological Map of Porto Nacional



Source: Cerrado Gold, 2023

As shown in Figure 7.2, the main geological packages include (from west to east) the basement Porto Nacional Granulite Complex, the Archean Porto Nacional Volcano-Sedimentary Sequence intruded by the Lower Proterozoic Ipueiras Granite and other acidic and mafic-ultramafic layered intrusions, and the continental volcano-sedimentary sequence of the Monte do Carmo Formation of Upper Proterozoic age. All of these units, formations and intrusions have been subject to the Trans-

Brazilian deformation. Due to the large central granite intrusion, the structure is characterized as a great anticlinorium.

Structural control is well defined and regionally expressed by the disposition of the abovementioned units, which are elongated subparallel to each other in a north-northeast and south-southwest direction. Each unit is frequently limited, and internally affected, by a brittle-ductile shear model, associated with predominantly transcurrent movement.

The interpretation above identifies a system of shear zones that defines the Porto Nacional Belt. Although the shear zones exhibit a somewhat anastomosing nature, they may be grouped into four main belts, including (from west to east) the Conceição, Mutum, Cachimbo and Matança shear zones.

7.3 Property Geology

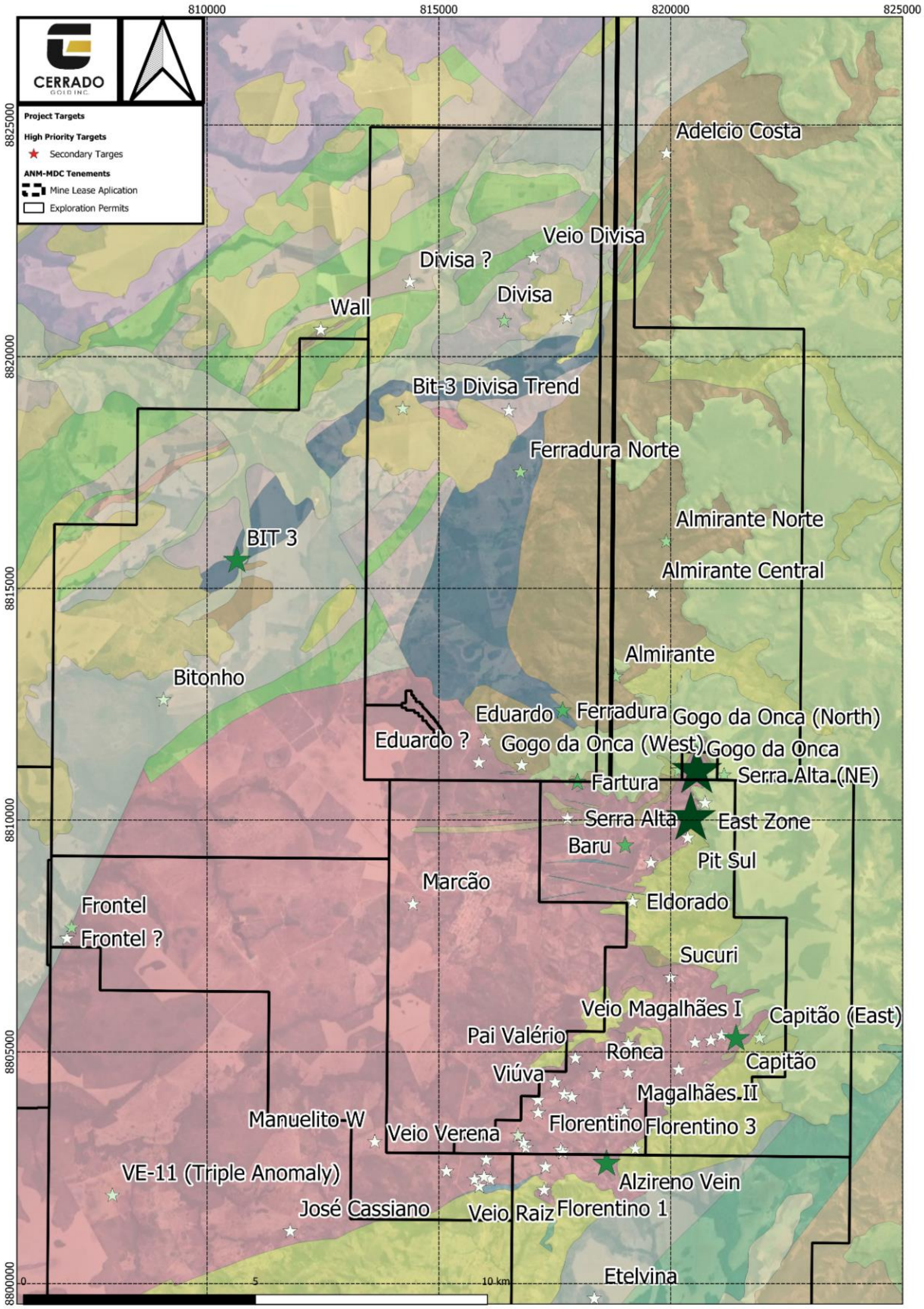
Based on the historical regional work completed, exploration targeting has since focused within 5 main concessions centered over an interpreted cupola of the Ipueiras Granite, using a reduced intrusion-related gold system model. Figure 7.3 shows the Monte do Carmo regional geological context and the Cerrado Gold properties, as well as key target areas.

The principal target of interest for Cerrado Gold is the Serra Alta Deposit which appears to have the best potential for the development of significant tonnage. As such, the remainder of this report will concentrate on Serra Alta, with only brief descriptions of other target areas.

7.3.1 Serra Alta Geology

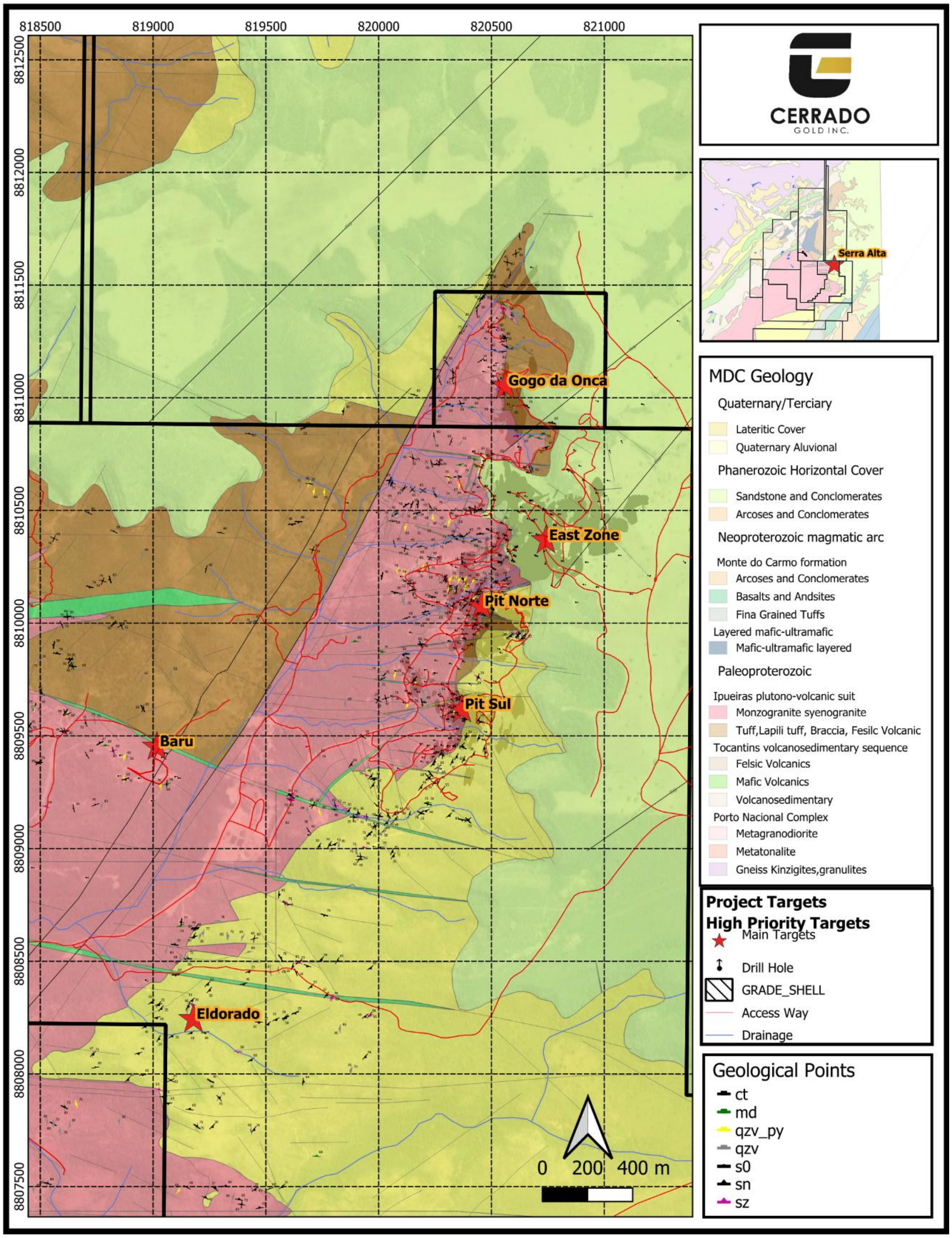
The local geology of the Serra Alta deposit area is depicted in Figure 7.4. The geology is relatively homogeneous, composed largely of a potassic granite (pink unit in Figure 7.4) of the Ipueiras Suite of upper Proterozoic age. The granite is partially covered by a remnant of quartzite (yellow unit in Figure 7.4) of the lower Proterozoic volcano-sedimentary sequence which, in turn, is covered by the Paleozoic horizontal sediments (light brown). A stratigraphic column of the succession is also provided in Figure 7.5.

Figure 7.3 – Monte do Carmo Region Geological Map Showing Property Boundaries and Important Targets



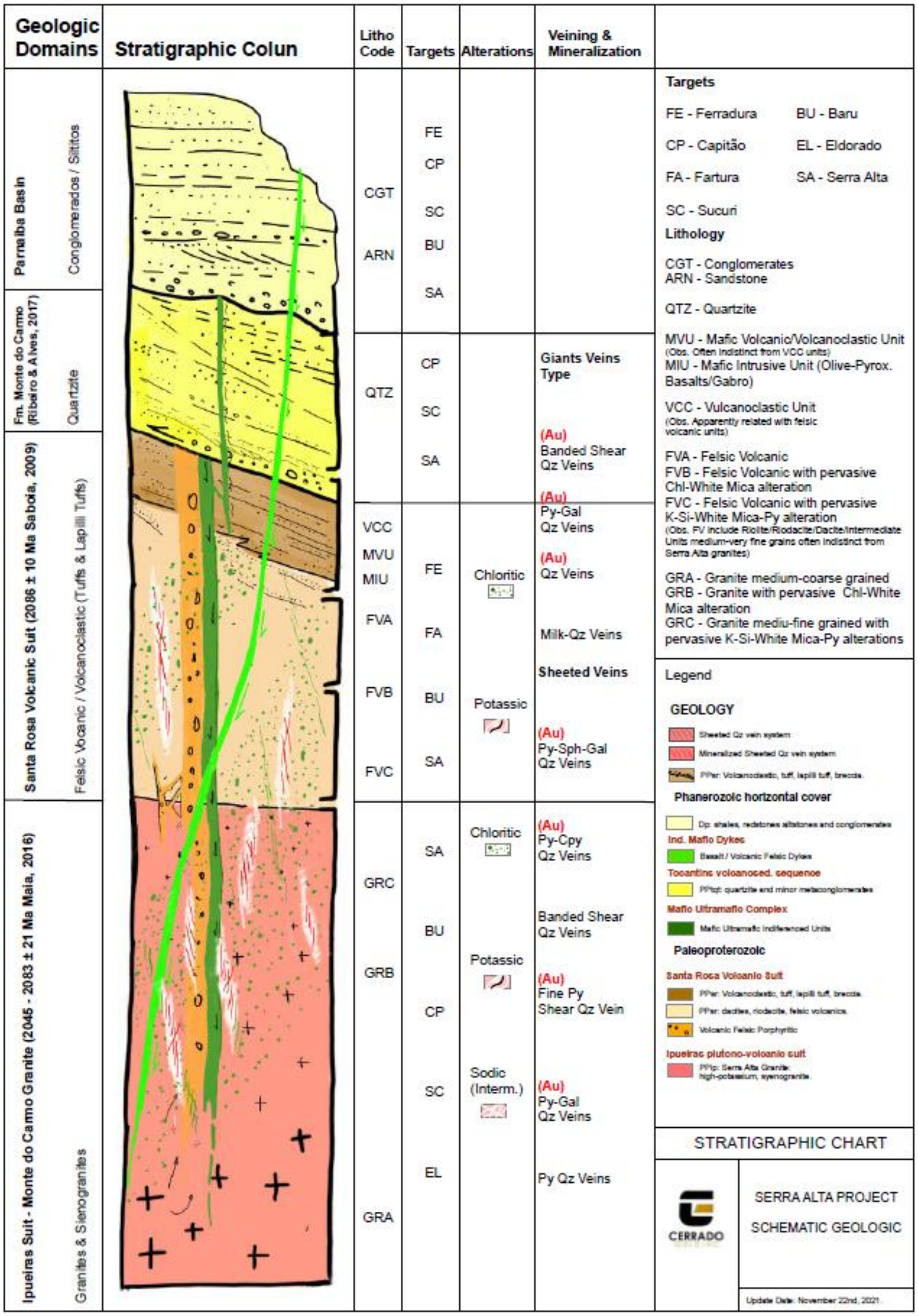
Source: Cerrado Gold, 2023

Figure 7.4 – Serra Alta Geology



Scale in metres on map grid
Source: Cerrado Gold, 2023

Figure 7.5 – Stratigraphic Column of the Serra Alta Geology

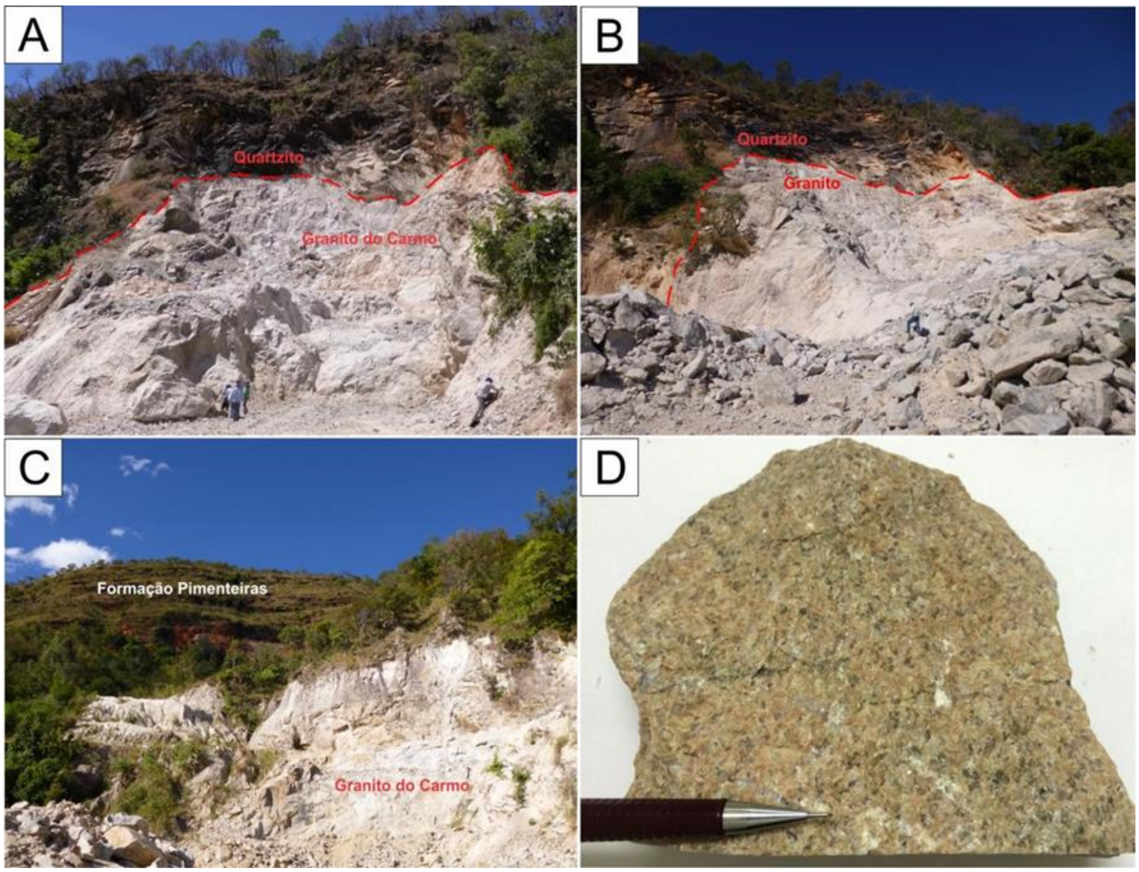


Source: Cerrado Gold, 2021

Granite

The granite is a large intrusive body aligned in a northeast-southwest direction and intruded into rocks of the Monte do Carmo volcanic-sedimentary sequence. This sequence is locally represented only by a discontinuous remnant of quartzite. To the east and north, there is more continuous cover of the Paleozoic Parnaíba Basin, represented by the Pimenteiras Formation of Meso-Neo Devonian age (Figure 7.6 A to C). The altered granite disappears under these overlying rocks.

Figure 7.6 – Serra Alta Granite Exposures



A) and B) Photographs of the South Block mining front (Serra Alta Project small scale mining) where it is possible to observe the contact between the dome of the local granite and the older quartzite; C) Photograph of the North Block mining front showing the Pimenteiras Formation covering the granite; D) Representative sample of the Monte do Carmo area granite in more preserved condition, where macroscopically the phaneritic texture of the rock can be observed.

Source: MSM, 2018.

In the Serra Alta region, the granite, in its less altered form, shows a homogeneous colour from light green to slightly pink, exhibiting inequigranular, isotropic and medium to coarse grain sizes (Figure 7.6 D). The granite is chiefly composed of potassic feldspar (40 to 60%), quartz (20 to 40%) and plagioclase (albite, An 6 to 12, 10 to 20%). Rare crystals of zircon and white mica are included in some quartz crystals (<1%). Secondary or replacement minerals occur such as muscovite, chlorite, and carbonate. The estimated modal proportions of the essential mineralogy identify the intrusion as syenogranitic in composition based on the QAP ternary diagram (Maia, Jessica, 2016).

Cerrado Gold conducted a geochronology sampling program in the granitic rocks of Serra Alta. U-pb ages were analyzed by the Instituto de Geociências, Universidade de Brasília. Two samples from the hosting granite yield ages of 2078.6 +/- 15.6 MA and 2083.5 +/- 90.7 Ma.

The granite has abundant gold-bearing zones, which have been mapped as mineralized shoots, mostly oriented 190-195º (S10-15W) and dipping moderately to steeply (55-75º) to the west-northwest (Figure 7.7). These zones vary in thickness, generally ranging from on the order of 5 m to greater than 30 m in width. Elevated gold grades are clearly associated with increased quartz veining and sulphide mineralization (Figure 7.8 A).

Within the immediate area, the main fault systems are oriented N30E and east-west (± 30º). These faults can affect the mineralized shoots with varying degrees of displacement, from cm-scale (e.g., Figure 7.8 B) up to dm-scale (e.g., offsets shown on the map in Figure 7.4). The granite has been sheared along an azimuth of N10-15E which may have helped with important quartz stringer development. Late diabase dikes are also present, cutting the granite within the fault zones.

The southeastern portion of the granite is overlain (faulted contact) by SE-dipping discontinuous quartzites (possibly of the Upper Proterozoic Monte do Carmo Formation), whereas the northern portion is directly overlain by the Devonian sediments. As a result, mineralized zones that extend to the southeast beneath the quartzites likely require consideration of an underground mining scenario due to a higher stripping ratio.

Felsic Volcanics

The Santa Rosa Volcanic Suite (Paleoproterozoic, ~2.1 Ga) is reported as a felsic volcanic expression of the Ipueiras Intrusive Suite. Within the project area, it presents as a wide variety of subvolcanic, felsic volcanic and volcaniclastic rocks with compositions ranging from rhyolites to rhyodacites and dacites. These units are typically silicified and occur along the NW-SE mineralized trend, having been identified at each of the Serra Alta, Ferradura, Fartura, and Baru targets. Well-preserved outcrop exposures have been mapped in most of these areas, particularly at the latter three targets where volcaniclastic units are highlighted.

Quartzites

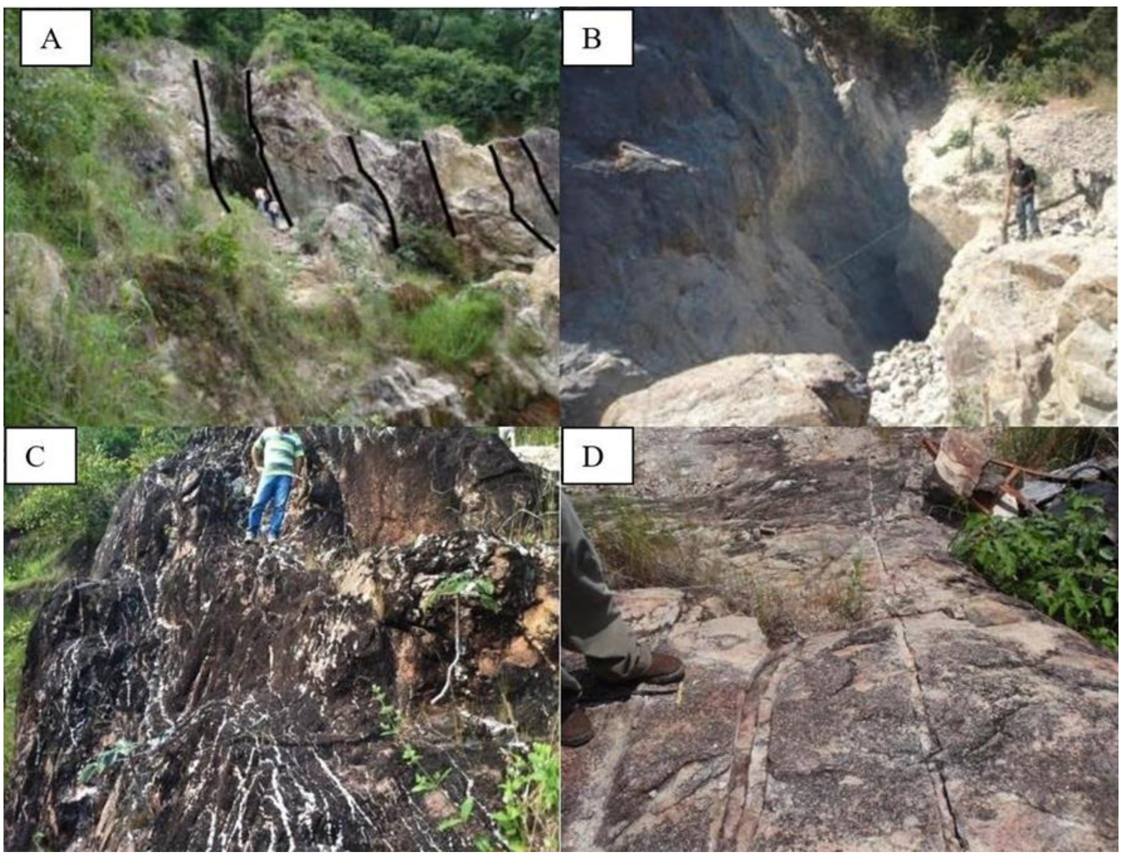
The quartzite domain occurs predominantly in the eastern portion of the Monte do Carmo Project inside the limits of the Serra Alta, Sucuri and Capitão targets. The contact with granite is defined by an erosional unconformity over silicified granitic saprolite and by west-verging low to moderate angle sheared thrust faulting.

Quartzite is a more generic denomination that encompasses well-bedded, quartz-rich sandstone to granule and pebble conglomerate, with some thin intervals of rhythmically graded sandstone-siltstone. The various rock types represent different overlapping sedimentary facies in a terrestrial fluvial to deltaic sequence. The sedimentary source material is probably the underlying exposed and oxidised granitic terrain, which has given a pink colour (from oxidation) to many of the coarser-grained sediments. Some of the coarser grained intervals containing oxidised clasts can resemble arkose and may even mistakenly be logged as granite.

Sedimentary Cover

This unit occurs in the eastern and northern limits of the Monte do Carmo Project, with thicknesses up to ~100 m. In the eastern portion, it is commonly tabular-shaped and relatively resistant to erosion. The contact with underlying Proterozoic Units (granites and quartzites) is marked by an erosional unconformity. The Parnaiba Basin is represented by rhythmically intercalated matrix-supported conglomerates, sandstones, siltstones and mudstones. The top layers are mainly composed of clays and (± Fe-rich) sandstones (lateritic development) with basal conglomerate.

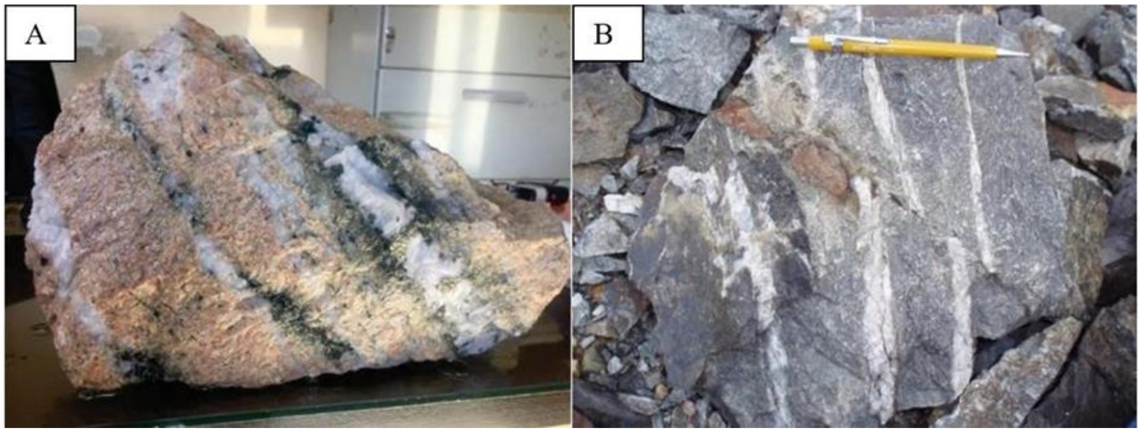
Figure 7.7 – Serra Alta Mineralized Exposures



A and B - Garimpeiro pits and typical mineralized shoots; C - Veining system within the mineralized shoot; D - Channel sample location collected with a diamond saw (on the left by PNP, on the right by Kinross).

Source MSM 2018.

Figure 7.8 – Serra Alta Mineralized Veins



A - Hand sample representing large scale steeply dipping mineralized shoots within the granite; B - Example of and east-west fault offsetting veins.

Source: MSM, 2018

7.3.2 SERRA ALTA MINERALIZATION

The Serra Alta deposit is interpreted as an intrusion-related gold system, with mineralization associated with hydrothermally altered and locally veined granitic rocks. Abundant mineralized shoots are clearly controlled by varying densities of vein and veinlet swarms that are weakly enriched in sulphides (pyrite, galena, sphalerite and chalcopyrite). The deposit currently comprises 8 main zones that span approximately 2 km of strike length (oriented 190–195º) with an overall width of ~600 m, and dip moderately to steeply (55–75º) to the west-northwest with a vertical extent on the order of 200 m. In general, individual mineralized lenses (i.e., shoots) range from approximately 5 m to greater than 30 m in width.

Sheeted vein sets mostly follow the overall deposit trend; however, the presence of multiple mineralized vein orientations indicates a more complex system that evolved over several mineralization and deformation events, as evidenced by the structural history of the area. There are two main northeast-trending (~N30ºE) faults that flank the mineralization at Serra Alta, with a series of smaller east-west (± 30º) faults that delimit the deposit into discrete structural blocks; as such, each zone requires individual modelling and estimation to respect these constraining features. The lateral extent of the sheeted vein swarms is wider towards the intrusive contact between the main granitic host rocks and overlying felsic volcanics. This intrusive contact is interpreted to act as a cap throughout much of the deposit.

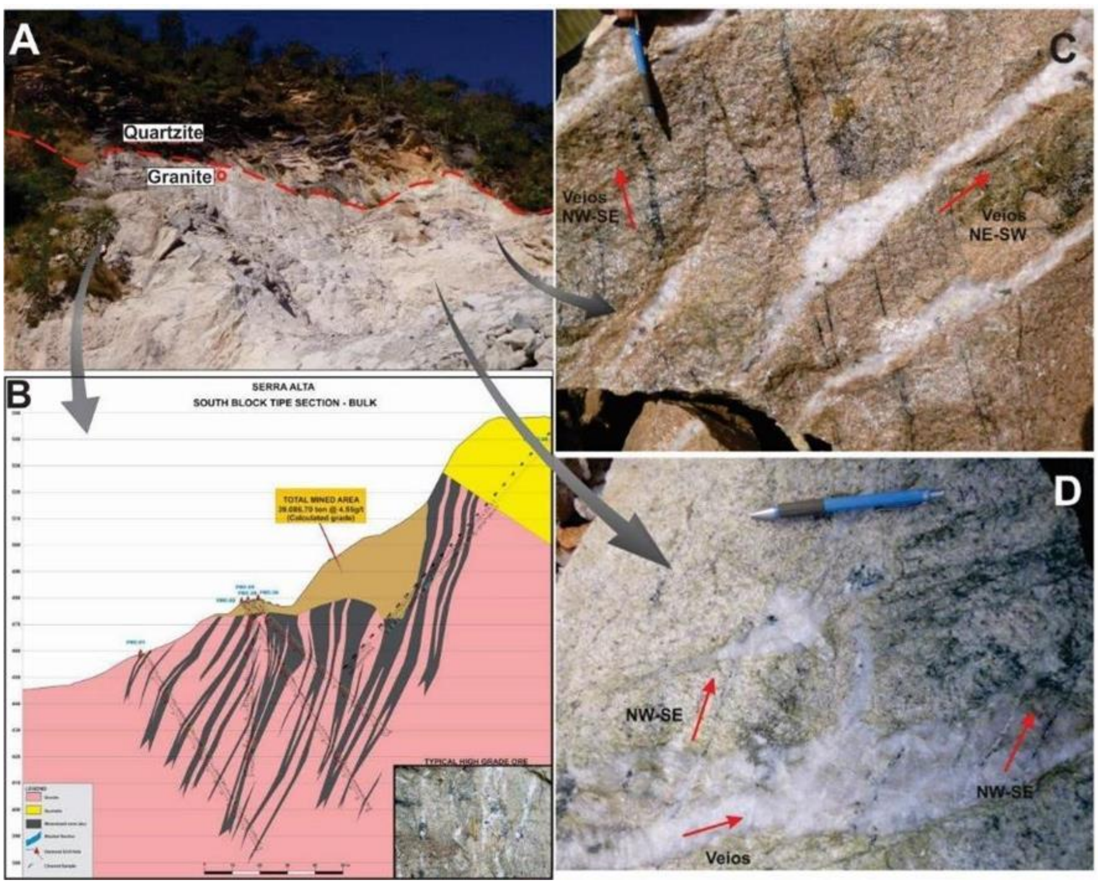
Field observations from historical small-scale mining conducted by MSM at Serra Alta (North and South Blocks) support the notion of an intrusion-related genetic model for the gold mineralization hosted in the cupola portion of the Monte do Carmo granite. Mineralization occurs within a system of veins and veinlets commonly associated with zones of hydrothermal alteration (typically phyllic-propylitic in nature). This alteration is commonly characterized by the presence of quartz, epidote, chlorite, tourmaline and sulphides (pyrite, arsenopyrite, galena, sphalerite and chalcopyrite). The sulphide content in mineralized zones is generally estimated on the order of 0.5 to 1.0% by volume.

It is notable that the presence of galena is generally considered an indicator of higher-grade gold to the Cerrado Gold geology team.

Though the granite appears host to a complex system of vein sets with multiple orientations, historical field mapping and drilling identified two main intersecting trends (NE-SW and NW-SE), which occur in most areas of the deposit (Figure 7.9). The veins/veinlets in the NE-SW-oriented set are generally mm- to cm-scale, and appear to truncate those of the older system (Figure 7.9 C). This veining is predominantly composed of moderately fractured, medium to coarse-grained milky quartz, with rare aggregates of white mica + chlorite + carbonate. Vein selvages and internal zones of expansion are often filled by sulphide minerals and free gold.

Occasionally, multiple expansion and filling phases are identified in the NW-SE system, cutting the NE-SW milky quartz vein system (Figure 7.9 D). This may represent a late stage of dilation recorded in the granite dome. It is filled with aggregates of chlorite + white mica + carbonate ± pyrite as veinlets.

Figure 7.9 – Serra Alta Vein Orientations



A) Photograph of cupola portion, where granite is in contact with quartzite, observed at South Block; B) Type Section of mineralized zone showing mineralized shoots within the granite, covered by quartzite; C) Photograph showing relation of NW-SE veinlets being cut by NE-SW ones; D) Photograph of NW-SE veins being truncated by NE-SW veins, as well as re-opening and filling of veinlets of the NW-SE system on NE-SW veins.

Source: MSM, 2018

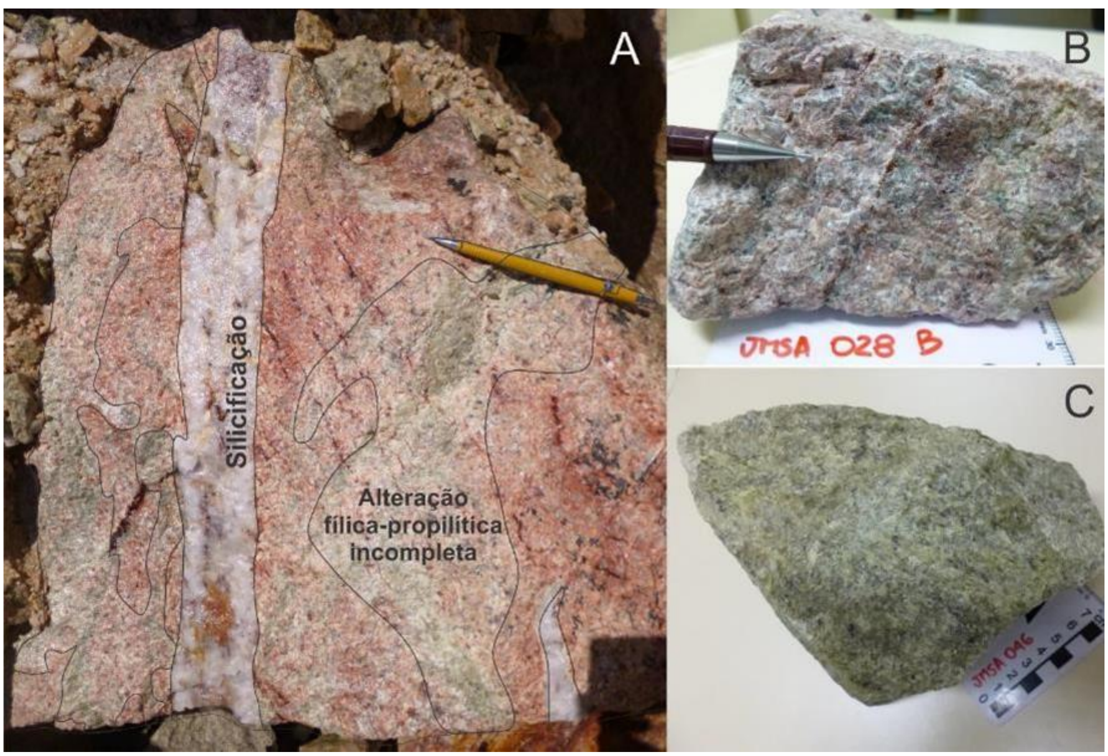
The presence of different phases of dilation is interpreted to be indicative of successive episodes of reopening and filling of cracks, which are independent, but can effectively occur simultaneously or in short succession. This characteristic favours a model based on successive fracture events in the cupola, the product of increased pressure of confined hydrothermal fluids (Jensen & Bateman, 1981; Guha et al., 1983; Foxford et al., 2000).

7.3.3 Hydrothermal Alteration

Three (3) main types of hydrothermal alteration, including phyllic/propylitic alteration, silicification and sulphidation, are identified at Serra Alta. However, these hydrothermal zones are often overlapping, making it difficult to discern relative timing for these events.

Propylitic alteration is apparently the first phase of alteration that occurred, with the pervasive substitution of primary host-rock minerals by hydrothermal minerals (Figure 7.10). The feldspars were replaced by aggregates of muscovite + chlorite + carbonate ± albite ± Ti minerals (ilmenite, rutile and titanite). This hydrothermal mineral association also occurs filling mm- to cm-scale veinlets, corresponding to the first fracturing event in the granite cupola.

Figure 7.10 – Examples of Alteration Styles



A) Sample from South Block mining front where pervasive propylitic alteration is observed within granite; B) and C) Macroscopic examples of propylitic alteration. Chlorite-epidote ± white mica are more prominent in the green areas.

Source: MSM, 2018

Hydrothermal white mica occurs in two (2) distinct forms: 1) aggregates of lamellar microcrystals, the most common form, and 2) disseminated euhedral crystals. Microlamellar aggregates of muscovite are observed both in the alteration of primary minerals and in the filling of cavities (mainly veins and veinlets), whereas euhedral crystals mostly occur as cavity fillings.

Chlorite occurs in a very similar pattern to the hydrothermal white mica 1) as aggregates of microlamellae that replace primary minerals and fill veins, veinlets, and cavities, and 2) rarely as euhedral radial crystals, with sizes ranging from 0.1 to 0.3 mm.

Carbonate typically occurs as in fine-grained alteration aggregates, as well as infilling veins, veinlets, and cavities. It normally occurs in subhedral to euhedral forms. Carbonate grains vary from very fine up to 0.5 mm in size. Analysis indicates that the carbonates are mainly calcite and dolomite, with minor siderite.

Titanium minerals also occur locally, typically as ilmenite ($FeTiO_2$), rutile (TiO_2) and titanite ($CaTiOSiO_4$).

Sulphidation is marked by the presence of pyrite, arsenopyrite, galena, sphalerite, and chalcopyrite ± covellite ± quartz, usually filling veins and veinlets. Gold can occur both as free grains and/or as fine inclusions in pyrite.

Sphalerite occurs as nodules or irregular masses on which the other sulphide minerals develop; chalcopyrite inclusions are also commonly observed. This marked presence of chalcopyrite in sphalerite is usually attributed to exsolution (Barton & Bethke, 1987); however, this may be the result of the substitution of iron in the sphalerite by chalcopyrite crystal aggregates and sphalerite with low iron content, at moderate temperatures, ranging from 200 to 400°C.

Chalcopyrite occurs mainly in association with sphalerite, as inclusions and exsolutions. It also occurs intermixed with, and adjacent to, pyrite-galena-sphalerite aggregates, forming irregular masses. Occasionally, chalcopyrite is replaced by covellite along fractures.

Galena occurs distributed in a widespread manner. It may also occur as inclusions in pyrite, sphalerite, and gold. Galena grains are typically subhedral, but also occur as irregular masses.

Pyrite is present in the deposit in three habits, usually with coarse grain sizes between 70 µm to greater than 3 cm. The most significant occurrence is as aggregates of euhedral to subhedral cubic crystals filling veinlets and fractures. Pyrite may contain gold, galena and/or chalcopyrite inclusions. Pyrite also occurs filling zones of dilation within and/or along quartz vein selvages, usually along with gold, galena, sphalerite, and chalcopyrite. Rare euhedral disseminations are also identified in proximity to quartz-sulphide veins.

Gold (or electrum) may occur associated with and/or included in pyrite ± sphalerite grains. It may also be associated with silica and phyllic/propylitic (sericite, epidote, chlorite) alteration assemblages. Electron microprobe analyses of sulphide-associated gold/electrum have indicated compositions of gold and silver ranging from 67 to 72% and 27 to 32%, respectively. Trace to minor contents of cadmium, molybdenum, iron, copper, sulphur, selenium, cobalt and nickel can also account for totals of ~0.1 to 1.2%.

Silicification appears to have been one of the last alteration phases, though multiple events are likely based on the apparent deformation history, and is characterized by the formation of mm- to cm-scale veins and veinlets. These typically comprise euhedral to subhedral milky quartz crystals ranging from 0.1 to 2.0 mm in size; recrystallisation textures are not identified as abundant. The silicification may be accompanied by sulphides (pyrite ± arsenopyrite - galena - sphalerite - chalcopyrite) and may have phengite ± carbonate ± chlorite formation along vein selvages.

Native gold associated with silicification usually occurs as isolated disseminations of free form grains with irregular shapes. Electron microprobe analyses indicate homogeneous compositions and higher concentrations of gold compared to grains associated with sulphides (Au = 88% and Ag = 11%), in addition to trace amounts of copper and molybdenum ± cobalt, selenium, iron and cadmium totalling 1%.

8 DEPOSIT TYPES

Gold is the major economically important metal in at least 11 well-characterized deposit types to date, including paleoplacer, orogenic, porphyry, epithermal, Carlin, placer, reduced intrusion-related, volcanogenic massive sulphide (VMS), skarn, carbonate replacement, and iron oxide-copper-gold (IOCG) systems (Sillitoe, 2020). In a spatio-temporal sense, major gold concentrations formed globally from mid-crustal to surface paleodepths during a period spanning the Mesoarchean to the Pleistocene (Sillitoe, 2020).

A plethora of studies have shown these gold deposits formed from the action of hydrothermal mineralizing fluids derived chiefly from metamorphic, magmatic, meteoric, seawater and/or basinal brine sources. Notably, the vast majority of Neoproterozoic and Phanerozoic deposits are interpreted to have formed in accretionary orogenic settings (Sillitoe, 2020).

Two main deposit types (+ subtypes) are currently recognized at the MDC Project:

- Reduced intrusion-related gold (± coeval sheeted veins), and
- Orogenic/lode gold (regardless of host-rock type).

Reduced intrusion-related gold systems (RIRGS) represent a newer genetic model relative to orogenic gold systems, having only been recognized by researchers since the 1990s to early 2000s as analytical capabilities improved. They can be difficult to distinguish from their orogenic counterparts due to shared/overlapping characteristics and often similar geological settings (Hart and Goldfarb, 2005; Lafrance, 2019). The problem is that intrusions may be emplaced in large deformation zones, and the associated (± sheeted) vein sets may be later sheared and mistaken for orogenic vein systems (Lafrance, 2019).

Some of the best distinguishing characteristics of RIRGS include, but are not limited to (Hart and Goldfarb, 2005):

- Regional association with accretionary orogenic terranes (particularly those with anomalous tin and/or tungsten;
- Local spatial association with cupolas and contact aureoles of relatively reduced, alkaline-leaning, and volatile-rich plutons;
- Pre- or post-deformational timing of gold deposition;
- Extremely low sulphide content (commonly <1 % by volume), and;
- Low grades of auriferous sheeted vein systems in pluton cupolas.

Based on these discriminators, the Serra Alta deposit is currently interpreted as a reduced intrusion-related gold system, sharing many similarities with some of the best recognized examples throughout the Tintina Gold Province of the northern North American Cordillera, e.g., the Fort Knox and Dublin Gulch deposits of Alaska, U.S.A. Similar attributes are also identified at the Capitao and

Fartura exploration targets. The Giant Quartz Vein (partially) and Eduardo are currently also thought of as subtype examples of RIRGS.

The Bit-3, Ferradura and Almirante, Divisa, Frontel and Giant Quartz Veins (partially) targets are interpreted as orogenic lode gold type systems hosted within varied and complex host-rock packages, including mafic-ultramafic layered intrusions (Bit-3), mafic volcanic/volcaniclastic rocks (Ferradura) and felsic volcaniclastic rocks (Almirante).

The relative location of major mineralization types identified at the Monte do Carmo Project are shown on a schematic cross-section in Figure 8.1.

8.1 Serra Alta Genetic Model

The intrusive at Serra Alta is a syenogranite with a peraluminous signature, composed predominantly of orthoclase, quartz, and albite. It has a moderate alkali content with high potassium, indicating a subalkaline composition. Despite the fact that it possesses certain affinities with A-type granites, samples of the granite studied to date also have characteristics of highly fractionated I-type granites, whose petrographic and geochemical attributes may be confused with the former. The hypothesis is that such similarities are derived from multi-stage actions involving reworked protoliths submitted to extensive fractionation.

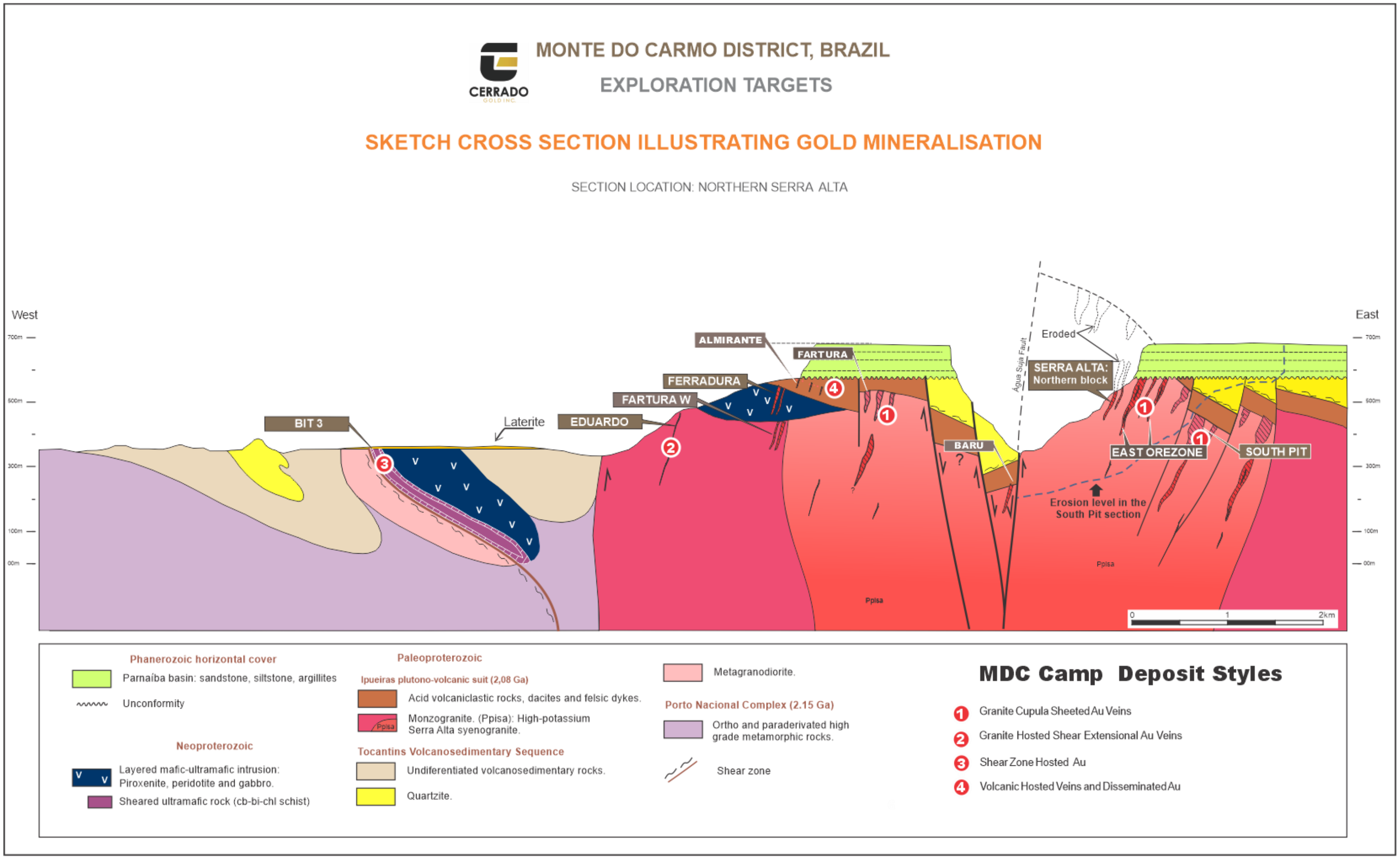
Formed in a volcanic arc to post-collisional environment, the Serra Alta granite has geochemical and petrographic similarities with granites observed in the Western Cordillera of the Andes (Pearce et al., 1984). Such intrusive bodies are emplaced in active continental margins, due to the subduction of oceanic crust under continental crust.

Geochronological data (uranium-lead and samarium-neodymium) define an age of 2,083 ± 21 Ma (MSWD = 3.3) for the crystallization of the Serra Alta granite (internal study). The calculated crystallization age can be related to late phases of the great tectono-magmatic event which occurred on the South American craton in the Transamazonic Cycle (2,100 - 1,800 Ma).

Fluid inclusion studies suggest the action of heterogeneous fluid mixing during the formation of the northeast-southwest trending mineralized veins. This hydrothermal process is interpreted as late to post-magmatic, involving fluid systems of different compositions with a wide variety of salinity and density values, which indicates the interaction of both magmatic and meteoric fluids. The conditions of fluid entrapment occurred at a temperature between 194° and 382° C and a pressure between 0.02 and 3 kbar, indicating an epi- to mesozonal environment for the formation of the deposit (Maia, 2016).

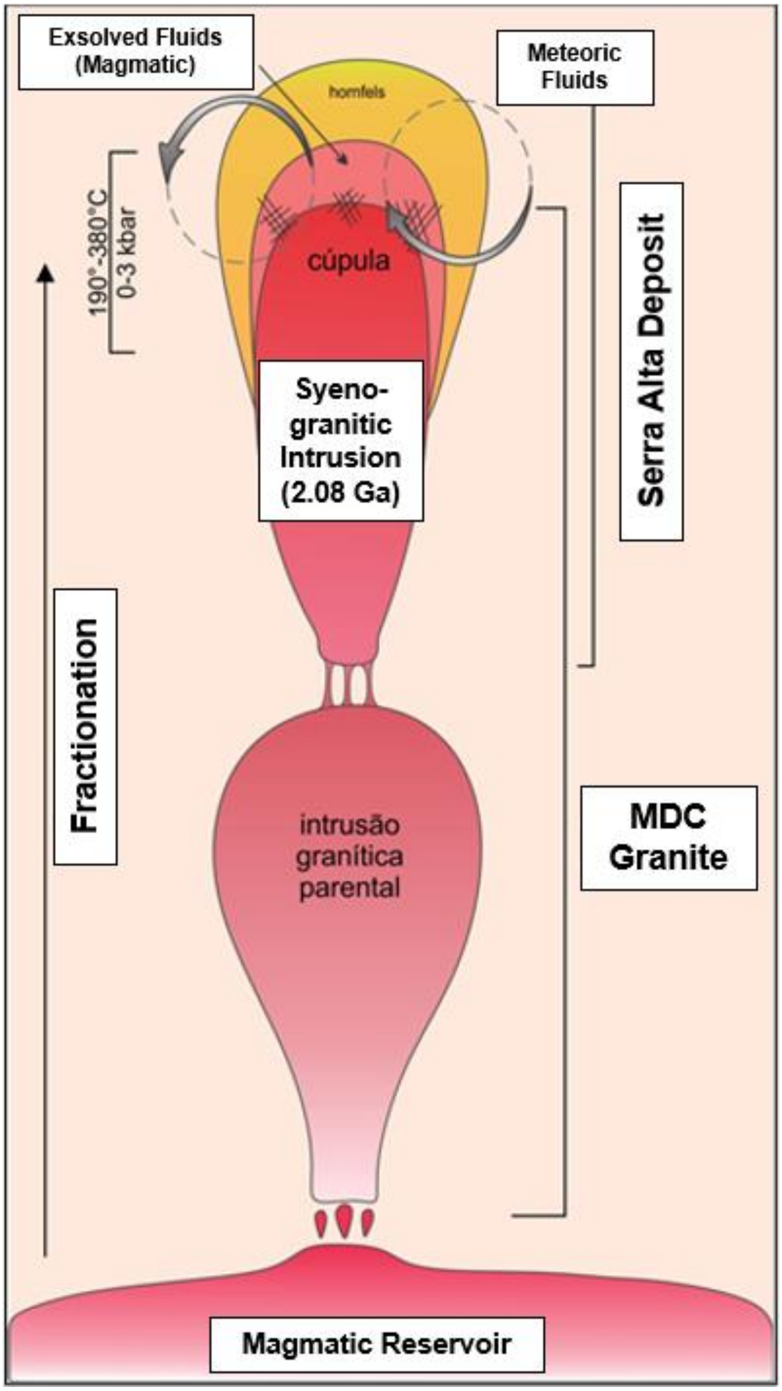
This process of magmatic evolution involved the exsolution of fluids rich in volatiles, which were hypersaline and contributed metals (gold + iron + lead + zinc + copper) to the granite cupola. The hydraulic pressure resulting from the actions of these confined fluids allowed for the cracking of the cupola, and consequently, the formation of fractures and cavities. These fluids maintained their gold content as ionic complexes, probably as AuS- or AuHS-2 species (Seward, 1984). The interaction with the meteoric solutions of low salinity favoured the lowering of temperature and changes in the composition of the fluid, which led to metal precipitation in the open spaces, thereby resulting in the gold-sulphide mineralization of the Serra Alta deposit. A schematic representation of this genetic model is shown in Figure 8.2.

Figure 8.1 – Geological Section Showing Major Mineralization Types



Source: Cerrado, 2023

Figure 8.2 – Schematic Representation of the Current Serra Alta Deposit Genetic Model



Adapted from Hart, 2007

9 EXPLORATION

Exploration work at the MDC Project and other targets in the region has been ongoing since 1985, conducted by Cerrado Gold and previously MSM, its predecessors and associated companies, as described in Section 6 of this Report. This Section concentrates on work completed at the Serra Alta Deposit, the planned focus for Cerrado Gold in terms of advanced exploration activity along the development pipeline within the region.

9.1 Exploratory Approach Adopted for the Project

Exploration work at the project has focused on targeting significant concentrations of gold, located within a cupola of the Monte do Carmo (a.k.a. Serra Alta) granite, as well as nearby large quartz veins and shear zone-hosted gold occurrences. There are no known significant alluvial deposits in the region.

The project area is marked by deep weathering, a result of its location within a tropical regime. Locally thick soils may reduce geological exposures, and weathering of the exposed rock favours the remobilization of gold in saprolite, laterite and overlying soils (Veiga, 1990).

The region has experienced extensive artisanal mining dating back to the 17th century when *Bandeirantes* first explored and developed the Brazilian interior. Later in the 20th century, with the increasing price of gold, artisanal miners (*garimpeiros*) returned to the sites mined by the *Bandeirantes*. Once the *garimpeiros* had been compensated and moved out, it was possible to inspect the mined sites and commence modern exploration.

9.2 Ownership History

Historical exploration activities carried out on the Monte do Carmo area properties by Cerrado Gold and previously MSM, its associated companies and JV partners can be summarized as follows:

- 1985 - Verena Mineração LTDA was established for the purpose of conducting mineral exploration at the site currently named as the Giant Quartz Vein Target. The company operated an artisanal mine, which is focused on a specific vein named Verena.
- 1989 - JV with Rio Tinto - investigation of 26 Giant Quartz Veins: detailed mapping; opening of large trenches; chip sampling; gold analyses by fire assay; processing of excavated material in small gravity plant (crusher, hammer mill, sluice box); exploratory drilling by reverse circulation (RC) drilling.
- 1991 - Partnership with the PNP Group. Exploration work focused on the Serra Alta granite and four of the Giant Quartz Veins (Raiz, VM, Dourado and Frontel), comprising: detailed mapping; sampling of hard rock (channel and chips); diamond drilling and assaying by atomic absorption (with MIBK analyses).
- 1994 - JV with the EBX Group. Work restricted to other regional targets in the area. In the Monte do Carmo area, informal mining remained common.

- 1996 to 1998 - Creation of Verena Minerals Corporation (VMC) and fund raising in Canada. Regional exploration scope, comprising pioneering airborne geophysical surveys (magnetometer, radiometrics); geological mapping; geochemical stream sediment sampling (fine fraction and pan concentrates). At the Serra Alta target, detailed mapping was carried out; soil sampling on a regular grid; terrestrial geophysics (magnetometer and induced polarization (IP) dipole-dipole).
- 2004 - Focus of exploration work returned to the Serra Alta target: diamond drilling (5 new holes and re-drill of 3 holes by PNP). Gold analysed by 30 g fire assay. The Giant Quartz Veins were not explored at this time.
- 2005 to 2008: JV with Kinross – Kinross took the lead on project technical data. The previous work in the area was systematically verified and, to a large extent, replicated/confirmed: stream sediment and soil sampling, trench sampling (hard rock, channel and chips), diamond drilling, gold analysis by fire assay. Adoption of accurate record keeping and technical controls, to a level Kinross considered to be NI 43-101 compliant (Kinross, 2008).
- 2009 - Exploration efforts concentrated on the Serra Alta target, with land acquisition and cessation of informal mining. Full access to the target made it possible to review geological modelling more carefully and, for the first time, the internal evaluation of the mineral resources (Geoprocess, 2011).
- 2010 Verena Minerals Corporation was taken over and Monte Sinai MIneração (MSM) became owner of the Project Mineral Titles
- 2012 to August 2017 - Monte Sinai Mineração. Construction of infrastructure and a bulk sampling gravity plant at Serra Alta. Processing of about 60,250 tons of mineralized material and production of 2,923 oz of gold.
- In 2018, Cerrado Gold executed 15,331 m of diamond drilling at the Serra Alta target. The objective was to define inferred resources in compliance with NI 43-101 standards for the maiden technical report on this property.
- In April 2019, Micon released the maiden Mineral Resource Estimate Report, which reported 813 Au koz inferred mineral resources of gold in the project.
- In October 2020, based on Micon's 2019 report, Cerrado Gold reported an After Tax NPV8% of US$377 Million and an IRR of 76% in its Preliminary Economic Assessment for the Serra Alta Deposit. An additional 7,484 m of diamond drilling was executed this year.
- In September 2021, based on updated mineral resources (effective date April 2021), the company released a review of the Preliminary Economic Assessment. It reported an After Tax NPV5% of US$617 Million with an IRR of 94.8%. This study included additional Metallurgical Tests with Samples from the Project's orebodies: Serra Alta.
- Also In 2021, Cerrado Gold continued drilling, totaling 33,917 m of diamond drilling in Serra Alta and the satellite targets Baru, Bit-3, Capitão, Eldorado, Fartura, Ferradura, Magalhães, and Sucuri.

- In 2022, the project drilled a total of 47,978 m of diamond drilling, mainly dedicated to Serra Alta target infill drilling and exploring its extensions. Diamond drilling was also performed at the satellite targets Gogo da Onça, Capitão, and Eldorado.
- In 2023, the company continued drilling at the satellite targets and Serra Alta extensions. The mineral resources declared in this report used the 31st of December 2022 as the freeze date.

9.3 Airborne Geophysical Survey

Airborne geophysical surveying was conducted in the area of interest around Porto Nacional and Monte do Carmo, in order to discriminate lithologies, structures and potential gold-bearing target zones.

The survey was performed with a magnetometer and gamma-spectrometer (MAG-GAMA) in an area covering approximately 4,500 km² (Figure 9.1 and Figure 9.2). The service was contracted by VML with Geomag SA. Prospecções Geofísicas, in 1996 (MSML, 2011a).

The survey recorded total field magnetics and discriminating radiometrics with a line spacing of 220 m and a ground clearance of 100 m, for a total of 21,520 line-km.

The final products (listed below) of the survey were presented on maps at 1:100,000 scale:

- Outline of the total magnetic field (corrected for IGRF variation).
- Pseudo-illumination of the total magnetic field.
- Total count radiometric contour map.
- Potassium radiometric contour map.
- Uranium radiometric contour map.
- Thorium radiometric contour map.
- Ternary distribution of the radiometric channels of thorium, uranium and lanthanum.
- Elevation of the terrain.

The surveys confirmed the main geological features of the area surveyed. The northeast-southwest regional structuring is clear (Figure 9.3 to Figure 9.8). Known gold occurrences coincide with lineaments marked by high magnetic responses.

Interpretation performed by *Rio Tinto Desenvolvimento Mineral (RTDM)* (1997) highlighted 68 anomalous prospective targets. Those considered to be the most important ones were systematically investigated during subsequent exploration work. Several of these anomalies have confirmed occurrences of gold.

In 1999, the results of the regional work were reprocessed by De Beers, in order to detect potential diamond-hosting bodies (kimberlites and lamproites). Sixty-six (66) anomalies were detected, of which 19 were followed up in detail, but without confirmation of the desired host lithologies (MSML, 2011a).

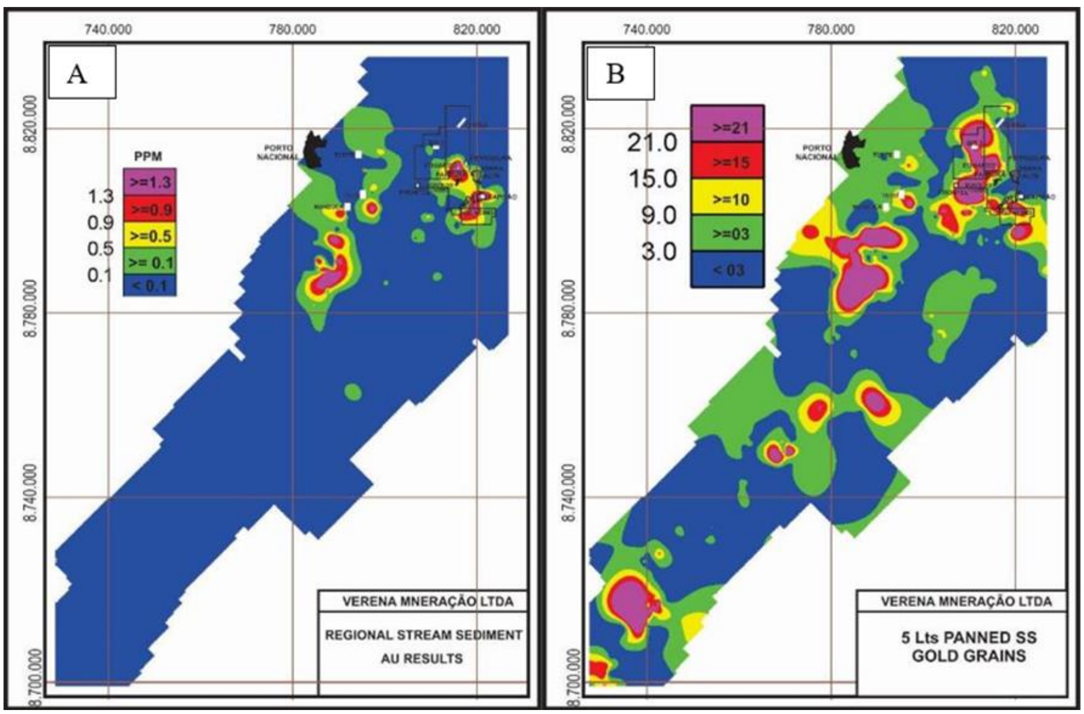
In 2022, Cerrado Gold carried out leveling of the raw airborne data, and subsequently produced a new structural interpretation for the region.

9.4 Stream Sediment Survey

Regional and detailed stream sediment surveys were carried out in 1996 by VMC, following the airborne geophysical survey. The regional work covered an area of about 1 million hectares and the results were used to support the targeting of areas of interest.

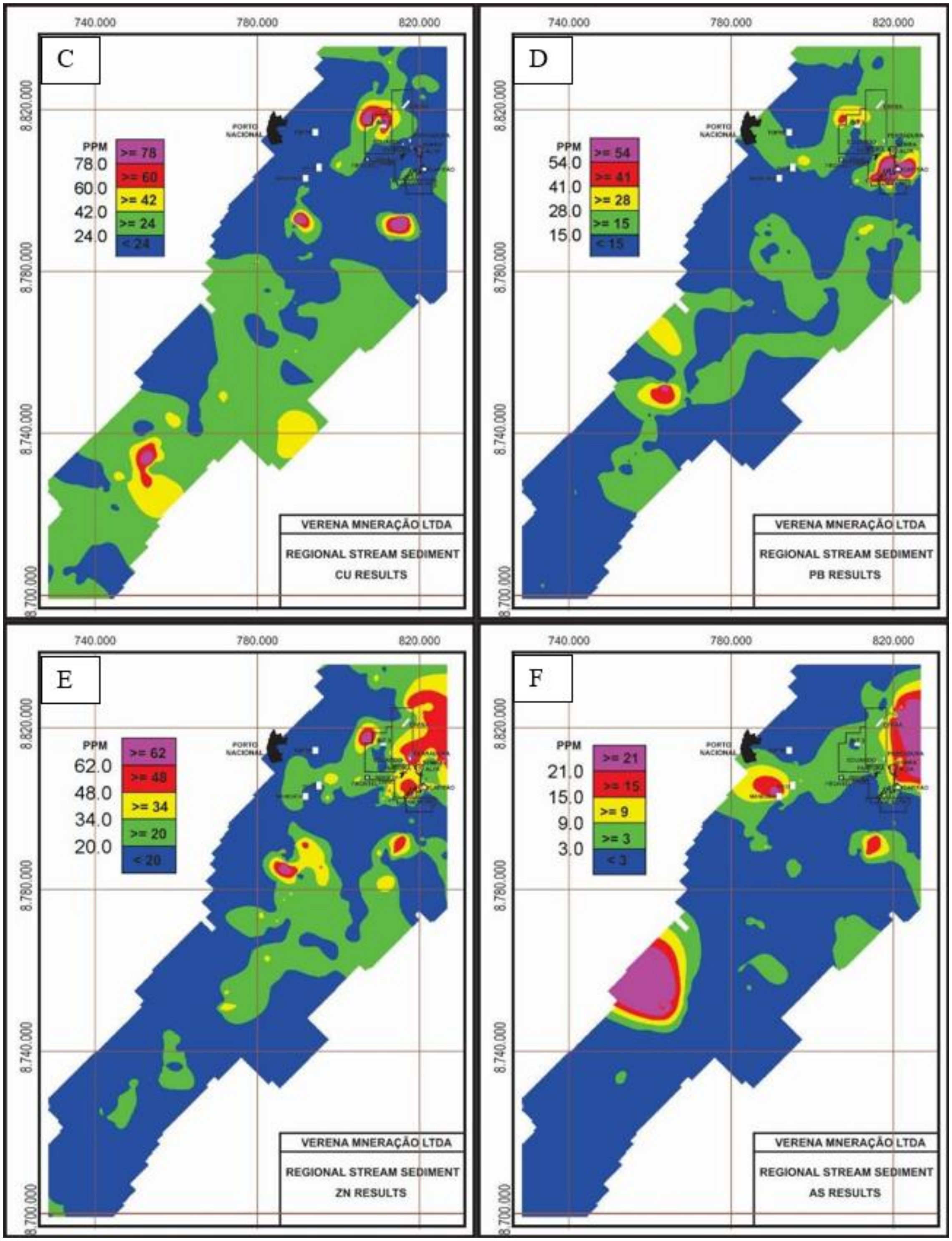
A total of 369 5 L samples were collected regionally. 2 L were split off and analyzed for gold, copper, lead, zinc and arsenic (Figure 9.2 C, D, E and F) by 30 g fire assay (Figure 9.1 A). The remaining material from each sample point was panned and the number of gold “colours” were counted (Figure 9.1 B). For each element, the results were interpreted following statistical analysis.

Figure 9.1 – (A)-Stream Sediment Au Results, (B) Au Colour Count



Source: Verena Minerals Corporation, 2005

Figure 9.2 – Regional Stream Sediment Interpretation Cu, Pb, Zn and As

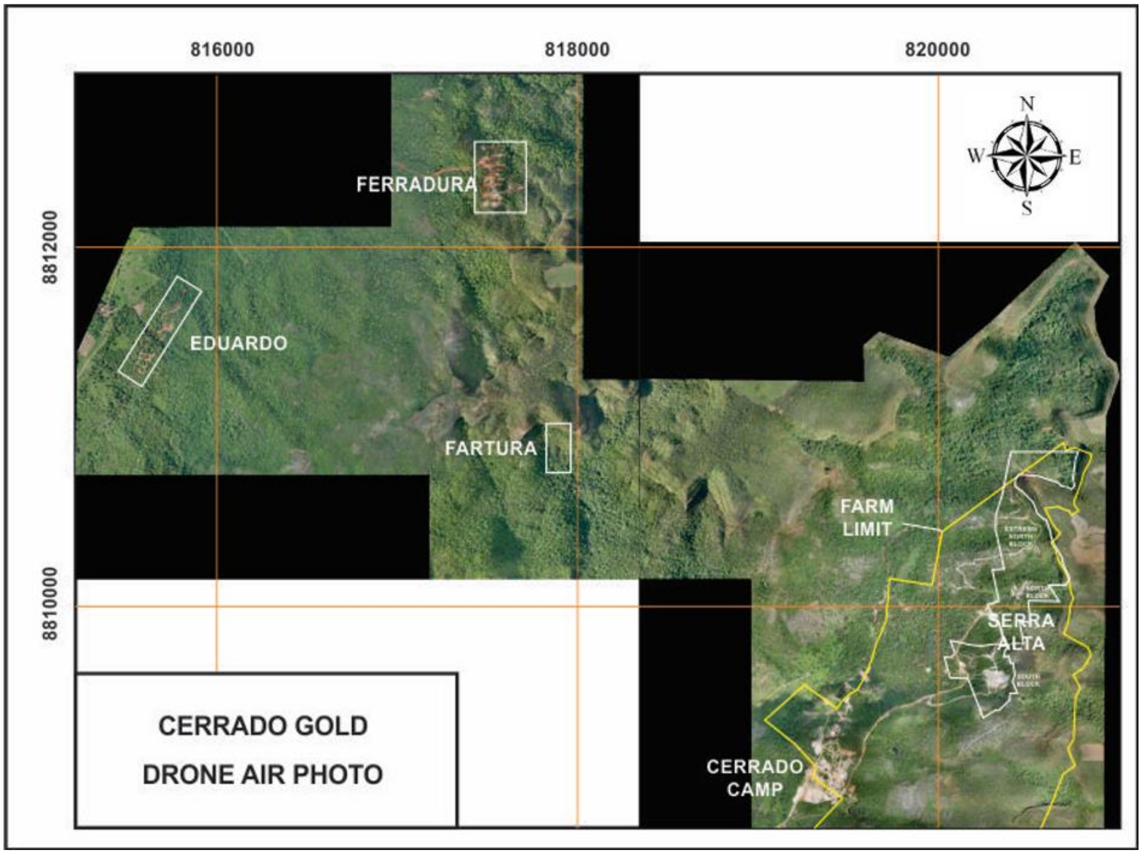


Source: Verena Minerals Corporation, 2005

9.5 Topographic Surveys

In January 2018, the services of "Drone Records" were contracted to carry out topographic surveys of the Serra Alta, Fartura, Ferradura and Eduardo targets, followed by a second survey over the Capitão and Giant Quartz Veins targets using a Lidar-equipped drone. These surveys captured the recent small-scale open pit mining completed by MSM. The drone also captured aerial photography (Figure 9.3).

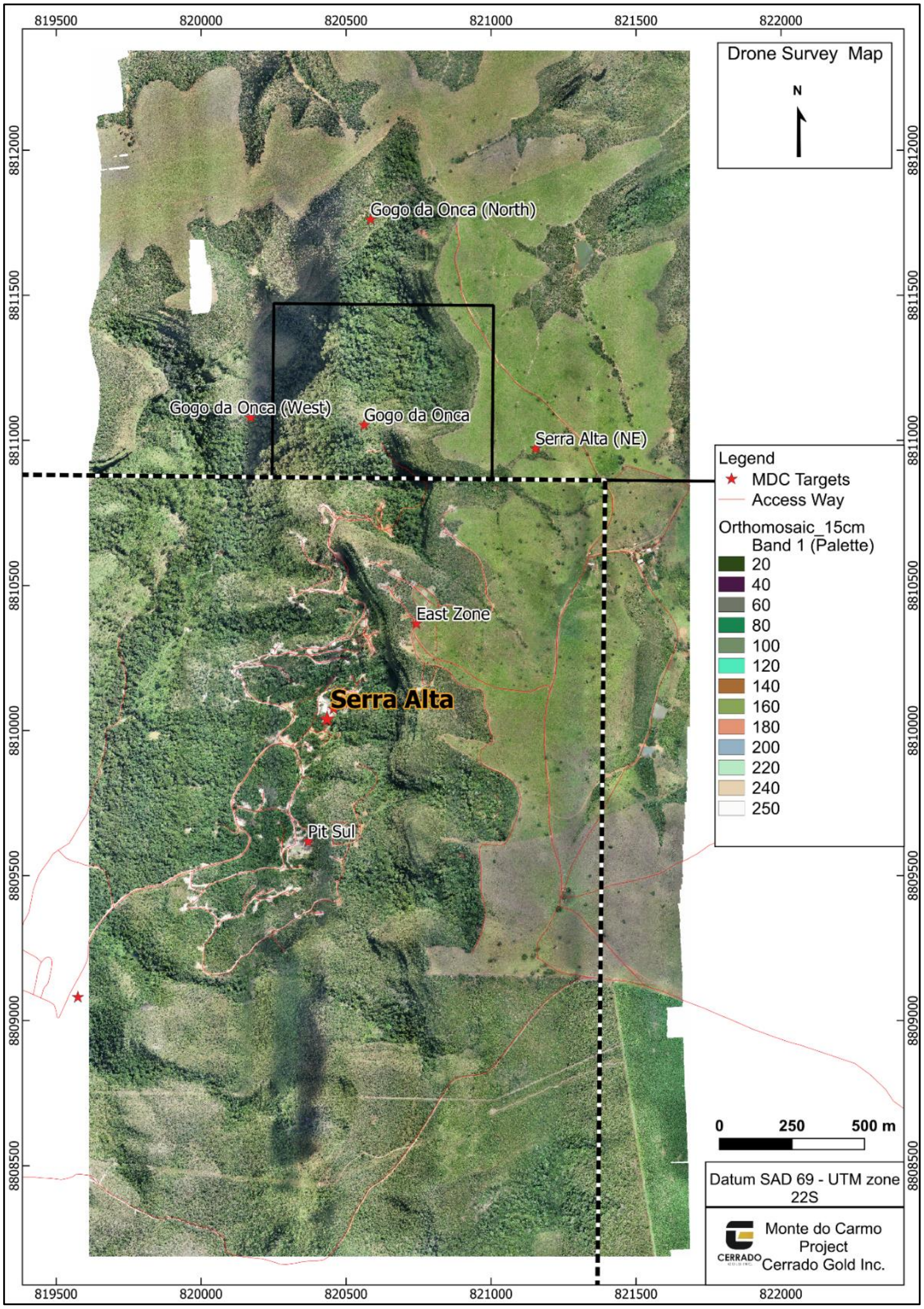
Figure 9.3 – Drone Air Photo of Serra Alta and Ferradura



Source: Cerrado Gold, 2018

In May 2021, the MDC field team conducted a topographic survey of the Serra Alta area using a "DJI Phantom 4 Pro V2.0 Plus" drone (Figure 9.4). This survey captured the current access roads, drilling pads, and provided a high-resolution image of the Serra Alta surface in an area of approximately 840 ha. The topographic surface was interpolated by aero photogrammetric calculations using ten control points and several auxiliary points surveyed with an RTK GNSS T20 GPS. The same GPS unit surveyed all the Serra Alta drill holes from "Phase I". The MDC field team also checked the collars of past drilling campaigns and observed no divergences.

Figure 9.4 – 2021 Drone Base Topographic and Imaging Survey



Source: Cerrado Gold, 2021

9.6 Chip, Channel and Grab Sampling

Channel sampling was first carried out by the PNP Group in 1991, with a total of 1,146 samples collected. In 2006, Kinross, under a joint venture with VMC, collected an additional 1,345 channel samples, but only 596 were collected within the Cerrado Gold properties. In December 2017, MSM collected 121 channel samples limited to the Serra Alta south pit. Lara Resources also collected some grab and chip samples during a due diligence visit.

Most of the channel samples in fresh rock were collected using an electric saw with a diamond disk blade, powered by a portable generator (Figure 9.5).

Figure 9.5 – Kinross Channel Samples Collected Using Electric Saw with Diamond Blade

Source: MSM, 2018

In 2006, Kinross collected a total of 618 channel samples, of which 110 were collected at Serra Alta, 45 in the North Block and 65 in South Block. Additionally, 293 samples were collected at the Capitão target and 215 at the Giant Quartz Veins.

The cut channels were 5 cm in width and 4 cm in depth, with individual sample lengths between 1 m and 2 m, honoring lithological changes. All were assayed for gold by fire assay and by a multi-element determination.

The channel samples collected at Serra Alta and Capitão were each located with a total station survey instrument. At other targets, the samples were located by GPS.

In December 2017, MSM washed much of the floor of the South pit, and cut four (4) parallel channels, 10 m apart and collected a total of 121 samples. The channels were laid out on an azimuth of N75E, roughly perpendicular to the main orientation of veining. The channels cut were 9.0 cm wide by 2.5 cm deep, with samples taken every metre. (Figure 9.6). Half of each sample was sent to the laboratory and the remainder was stored in core boxes.

Figure 9.6 – Cerrado Gold Channel Sampling

(A and B) Channel samples collection; (C) 1 m samples stored in plastic bags; (d) 1 m channel after sampling.
Source: Cerrado Gold, 2019

9.7 Exploration Completed by Cerrado Gold

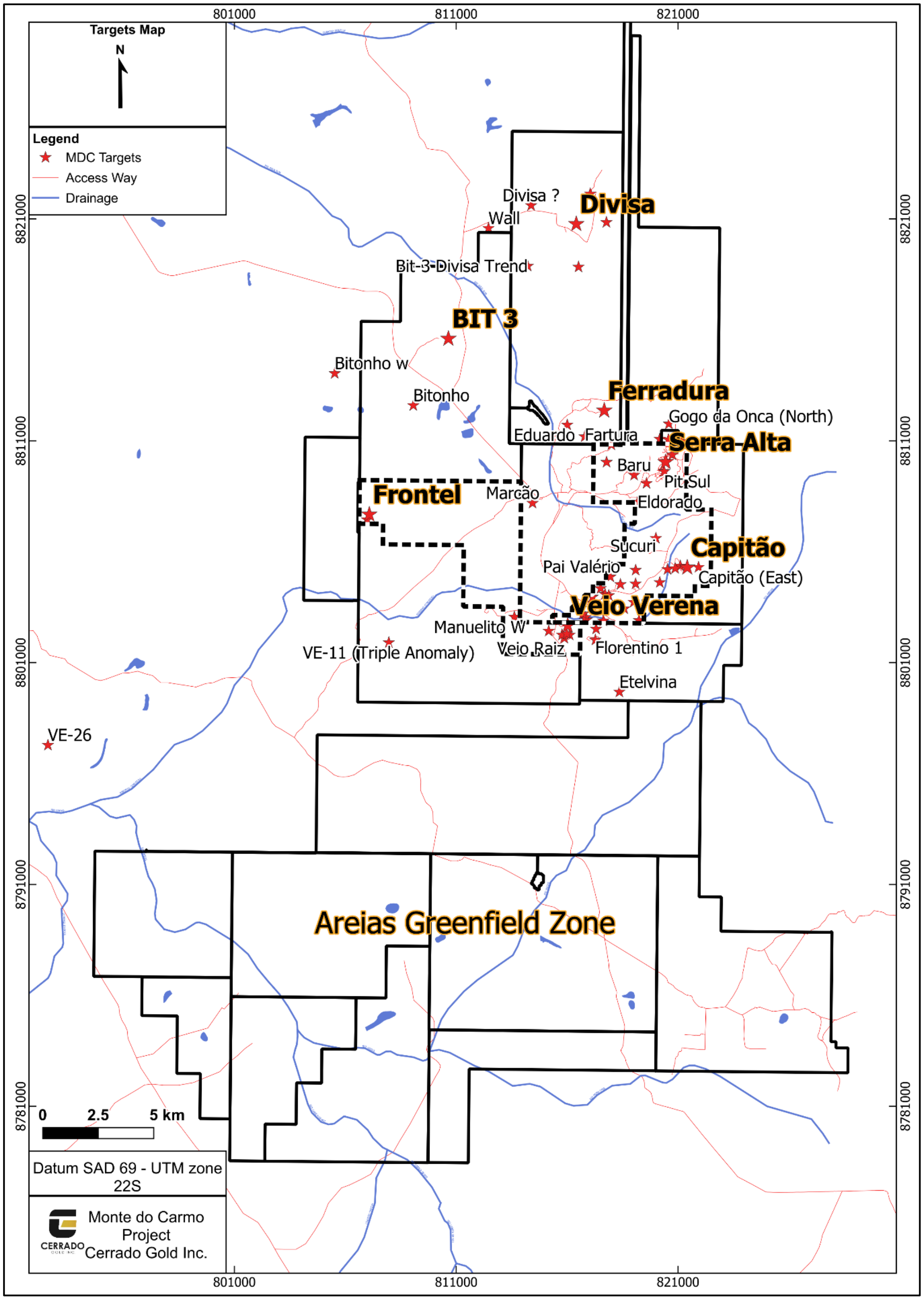
Exploration activities at the MDC Project by Cerrado Gold have focused on the Serra Alta deposit. However, several gold occurrences up to about 15 km to the south, west, and north had been previously identified, mapped, sampled and in some cases drilled in the past by other parties. Field work in these areas since 2018 has included geological mapping, geochemical surveys, structural data collection, trenching and drilling.

Cerrado Gold is evaluating the presence of economic satellite deposits near Serro Alta to grow the *in-situ* resources on site. Cerrado Gold continues to test, via drilling and trenching, the targets previously developed through historical work since acquiring the MDC Project in 2017.

In the first year, Cerrado Gold focused on the more regional Eduardo and Ferradura targets. In 2018, drilling efforts were directed at both the Serra Alta deposit and the Bit-3 target. In 2019, only limited exploration was carried out in the form of mapping and channel sampling at the Capitão, Eduardo, Fartura and Magalhes targets. All efforts in 2020 were focused on drilling off Serra Alta. In 2021, several targets were tested through drilling and trenching, including Serra Alta and the more distal Baru, Bit-3, Capitão, Eldorado, Fartura, Ferradura and Magalhães targets. Finally in 2022, both infill and extensional drilling were carried out at Serra Alta, Gogo, and Eldorado. All drilling completed to date by Cerrado Gold will be fully summarized in Section 10.

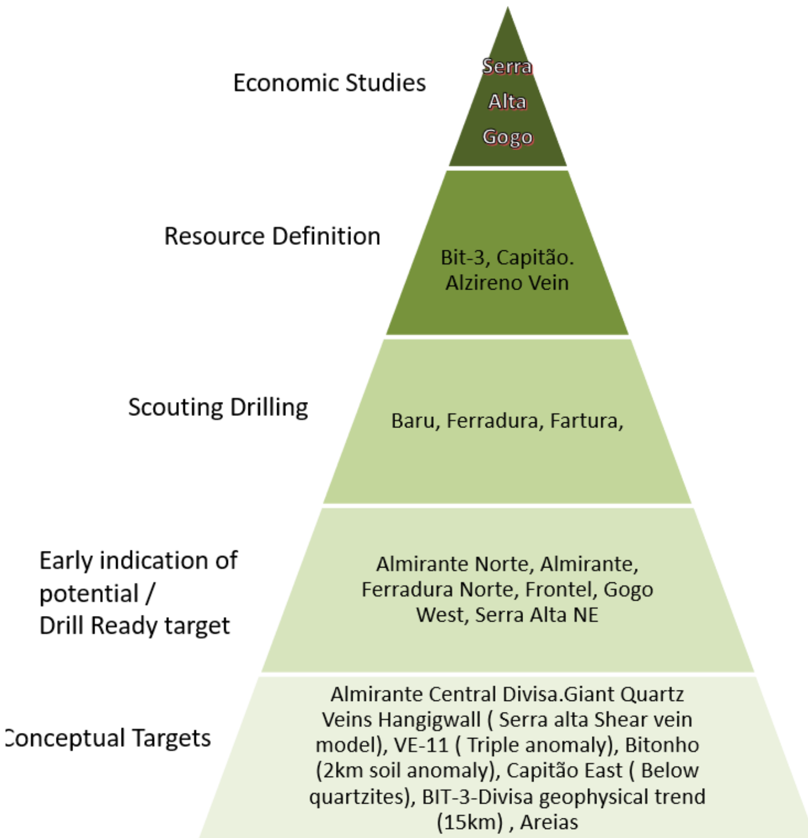
A location map of the various exploration targets at the Monte do Carmo Project is provided in Figure 9.7. These targets are ranked internally according to mineralization potential and the amount/stage of exploration performed. This classification system, outlined in Figure 9.8, is under constant review to maintain the focus of exploration work on the best potential zones according to the most up to date information. A summary of the numerous exploration campaigns carried out regionally by Cerrado Gold since 2017 is provided in Table 9.1.

Figure 9.7 – MDC Project Target Location



Source: Cerrado Gold, 2022

Figure 9.8 – MDC Project Exploration Pipeline



Source: Cerrado Gold, 2022

Table 9.1 – Monte do Carmo Regional Targets

Target	Distance to Serra Alta	Description	Work Completed
Serra Alta	0 km	The Serra Alta Deposit is a wide mineralized zone about 600 m wide with approximately 1,500 m of strike length. The zone is a corridor that contains vein swarms packaged as mineralized shoots (up to 70m thick) generally striking N000° to N010°, dipping 60° to 80° W, anomalous presence of sulfides (<1%), and visible gold. Serra Alta mineralized granite is potassic and located under quartzites and volcanics (rhyolites); all those lithologies are partially covered by the flat-lying Parnaiba sedimentary unit.	Reserves definition drilling
Serra Alta (NE)	500 m	Similar to Serra Alta outright, but the granitic body is located beneath andesites to the northeast	Exploratory drilling
Gogo	500 m	The Gogo Deposit is a mineralized zone about 100 m wide with approximately 500 m of strike length. The zone is a corridor that contains a swarm of veins, mineralized shoots generally striking N000° to N010°, dipping 60° to 80° W,	Reserves definition drilling

Target	Distance to Serra Alta	Description	Work Completed
		anomalous presence of sulfides (<1%), and visible gold. The mineralized granite is potassic and located under Volcanics (Andesites).	
Capitão	5 km	The Capitão Target is a mineralized zone about 600 m wide with approximately 500 m of strike length. The zone is a corridor that contains a swarm of veins, mineralized shoots (up to 4m thick) generally narrow striking N000° dipping 60° to 80° W, anomalous presence of sulfides (<1%), and visible gold. The mineralized granite is sodic under the quartzites, both lithologies are partially below Parnaiba Flat Sedimentary cover.	Resources definition drilling
Ferradura	3.6 km	Ferradura Target is a mineralized zone about 50 m wide with approximately 350 m of strike length. Associated with mafic volcanic/volcanoclastic. The zone is a corridor that contains veins, with tinny mineralized zones with veinlets N000°, dipping 60° W with the anomalous presence of sulfides in low proportion and gold.	Resources definition drilling
Fartura	2.5 km	The Fartura Target mineralized zone is about 5 m wide with approximately 250 m of strike length. The zone is a corridor that contains a swarm of veins, mineralized shoots generally striking N000° to N010°, dipping 60° to 80° W, anomalous presence of sulfides (<1%), and visible gold. The host of veins is a granite sodic and is partially covered by Parnaiba Flat Sedimentary unit.	Resources definition drilling
Divisa	12 km	The Divisa Target is associated with narrow shear zones and Shear Quartz Veins developed granodiorite, quartzites and mafic volcano-sedimentary rocks. This lineament is mapped along 15 km trend of soil sample gold anomalies and geophysical lineaments covered by 20m of weathered rocks and lateritic zone The mineralized zone has 1 to 3 m thickness.	Exploratory trenches and drilling
BIT-3	12 km	The Bit-3 target is associated with a shear zone developed at the contact of mafic-ultramafic layered intrusions in contact with granodiorite. The mineralized zone is 1 to 12 m thick along 350m. This contact is mapped by ground magnetometry survey along 15 km	Resources definition drilling
Frontel	14 km	The Frontel Target is associated with quartz veins dipping 87° to N300. Two mined areas by garimpeiro were identified at this zone (200 x 30m)	Exploratory drilling
Baru	1.5 km	The Baru Target is a mineralized zone about 20 m wide with approximately 250 m of strike length. The zone is a corridor that contains a swarm of veins, mineralized shoots generally striking N000° to N010°, dipping 60° to 80° W, anomalous presence of sulphides (<1%), and visible gold.	Mapping and sampling

Target	Distance to Serra Alta	Description	Work Completed
		The mineralized granite is potassic and located under Volcanics (Andesites).	
Giant Quartz Veins	8 km	30 mapped Large Shear-related veins. Commonly of considerable strike length (hundreds of metres). Oriented preferentially NW-SE. The gold mineralization is mainly concentrated in the hanging wall.	Resources definition drilling
Other Conceptual Targets	Up to 30 km	A series of geophysical, stream sediments, and soil anomalies around the Cerrado Gold Properties.	Early exploration stage

Soil Sampling

The sampling method carried out by Cerrado Gold for soil geochemistry followed all pre-established internal procedures. These include the use of tools such as a Manual Digger and Lever/Breaker to remove material from the B-horizon at varying depths. Regions with a developed lateritic profile which did not reach the correct horizon were sampled nonetheless with proper documentation. Planned sites with significant alluvial/colluvial cover, where it was also not possible to intercept the correct sampling horizon, were ultimately cancelled. All samples were packed in plastic bags and properly identified, with weights ranging between 1.5 kg and 3.5 kg. After the sample collection, all tools were cleaned between sample sites to avoid cross-contamination. Photographs of the general process are given in Figure 9.9.

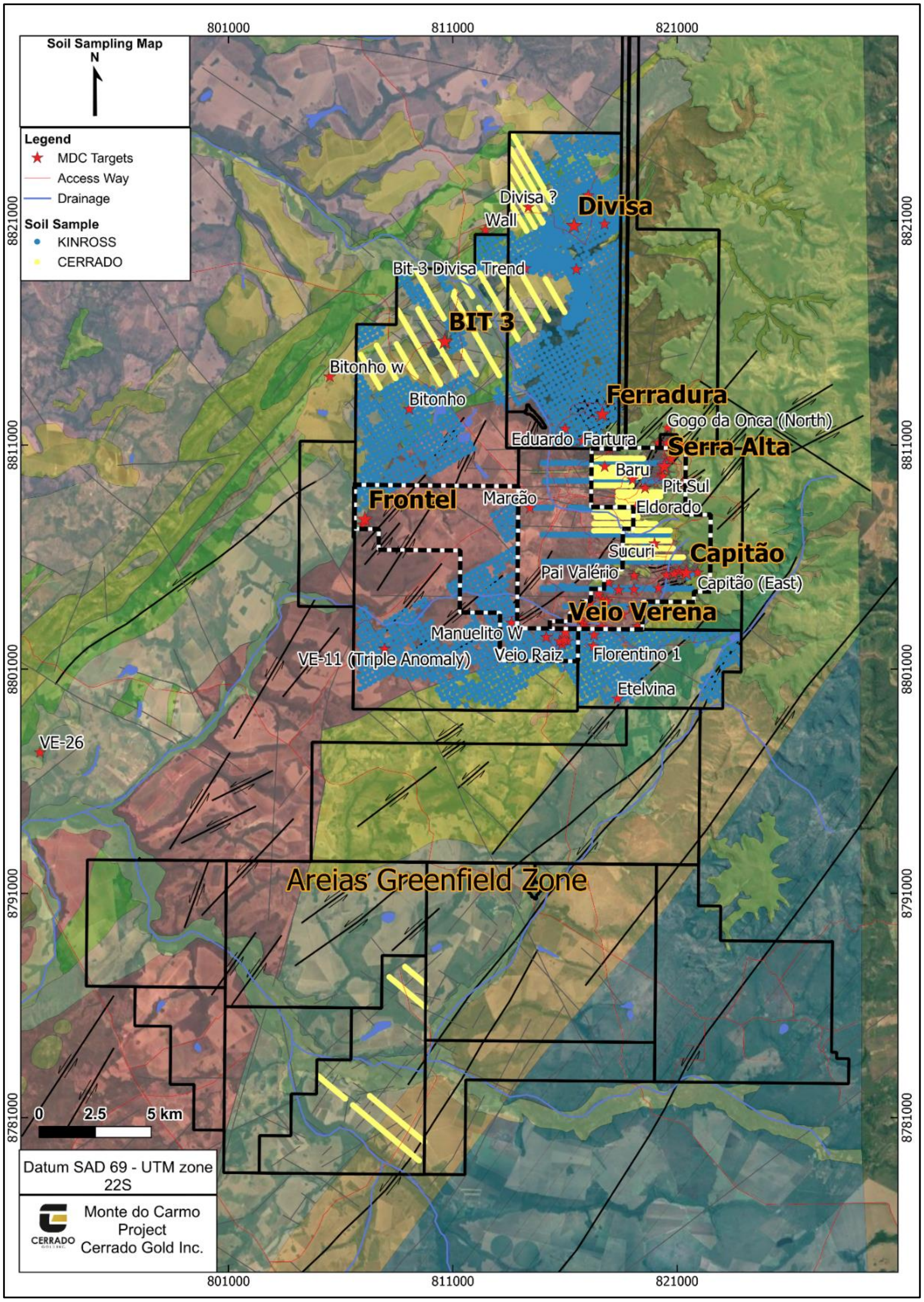
Cerrado Gold conducted the soil sampling using a grid spacing of 250 m x 250 m, with the objective of investigating for anomalous Au values but also to identify other potential metals and/or pathfinders. The analytical package used at ALS was Au-ICP22_ME-MS61r.

A compilation map of all conventional (i.e., B-horizon) soil samples collected at the Monte do Carmo Project over the years is provided in Figure 9.10. The soil geochemistry database includes samples collected by both Cerrado Gold and historically by Kinross.

Figure 9.9 – Select Images of Cerrado Gold Soil Sampling Procedures

Source: Cerrado Gold, 2022

Figure 9.10 – MDC Project Soil Sampling Compilation



Source: Cerrado Gold, 2022

Geophysics

Airborne geophysical surveying was conducted in the area of interest around Porto Nacional and Monte do Carmo, in order to discriminate the lithologies, structures and potentially auriferous hydrothermal zones.

The survey was performed with a magnetometer and gamma-spectrometer (MAG-GAMA) in an area covering approximately 4,500 km^2. The service was contracted by Verena Minerals Corporation with Geomag SA. Prospecções Geofísicas in 1996 (MSML, 2011a).

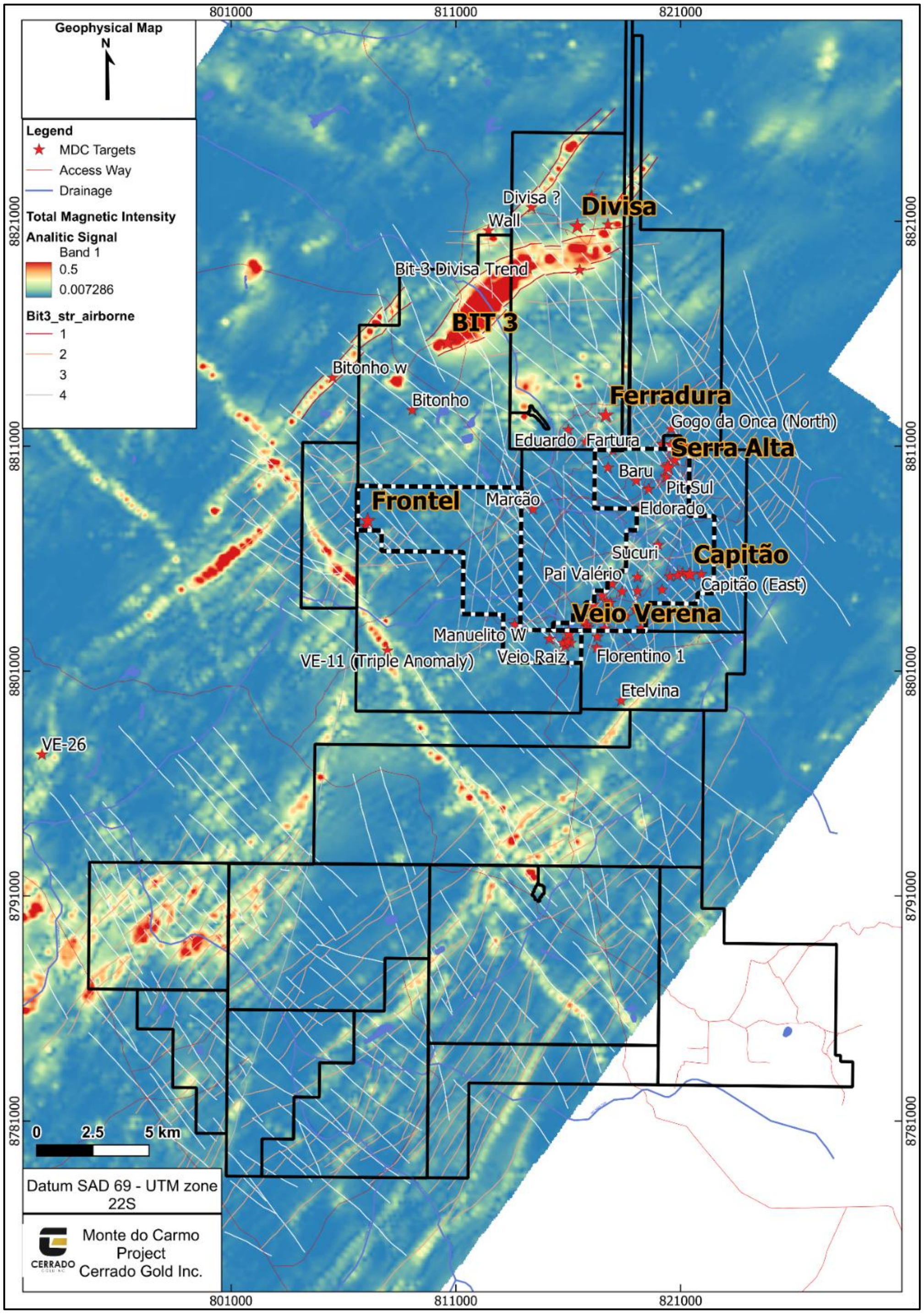
The survey recorded total field magnetics and discriminating radiometrics with a line spacing of 220 m and a ground clearance of 100 m, for a total of 21,520 line-km.

Raw geophysical data from this historical work was provided to Cerrado Gold by an external consultancy - Hernan Ugalde, Ph.D., P.Geo., Senior Consulting Geophysicist. New interpretations of the magnetic and radiometric grids were generated, from which it was possible to extract the main geological lineaments at the MDC Project and classify them into four generations to help with target delineation. Figure 9.11 illustrates these lineaments with respect to one example of the reinterpreted Total Magnetic Intensity – Analytical Signal (TMI AS); a total of 14 such products, as listed in Table 9.2, were generated by Cerrado Gold in 2022.

Table 9.2 – Reinterpreted Regional TMI-AS Signal Maps Generated by Cerrado Gold

PortoNac_BigT_UTM22S_SAD69.ers	PortoNac_Potassium_UTM22S_SAD69.ers
PortoNac_RTP_1VD_UTM22S_SAD69.ers	PortoNac_ThK_ratio_UTM22S_SAD69.ers
PortoNac_RTP_TDR_UTM22S_SAD69.ers	PortoNac_Thorium_UTM22S_SAD69.ers
PortoNac_RTP_UTM22S_SAD69.ers	PortoNac_TotalCounts_UTM22S_SAD69.ers
PortoNac_tminusT_UTM22S_SAD69.ers	PortoNac_UK_ratio_UTM22S_SAD69.ers
PortoNac_TMI_AS_UTM22S_SAD69.ers	PortoNac_Uranium_UTM22S_SAD69.ers
PortoNac_TMI_UTM22S_SAD69.ers	PortoNac_UTh_ratio_UTM22S_SAD69.ers

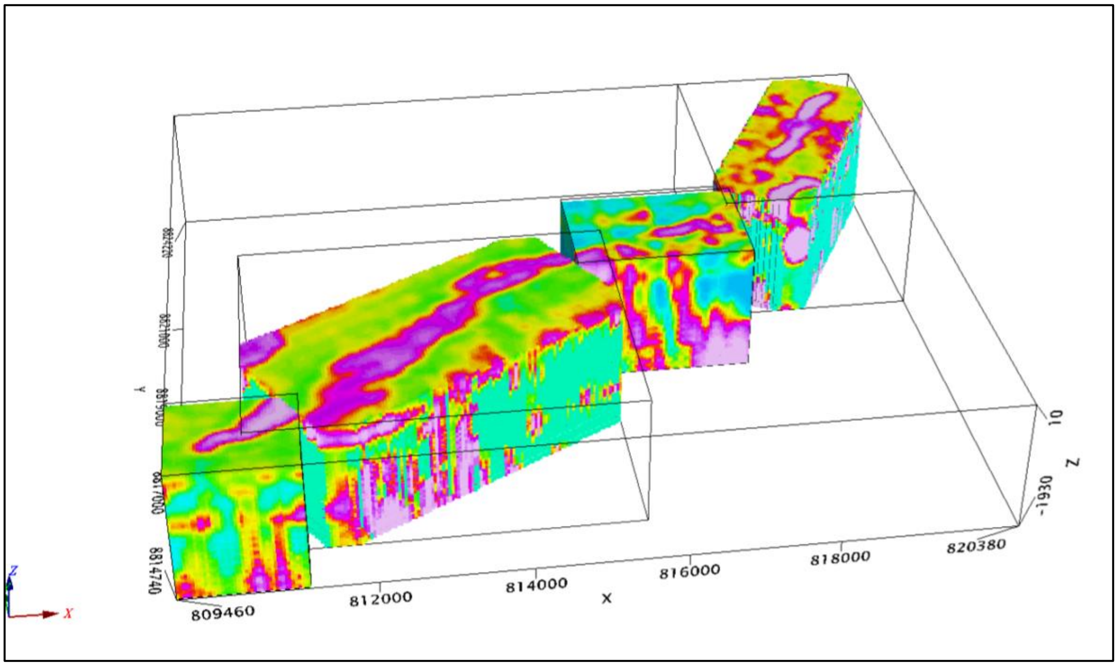
Figure 9.11 – MDC Project Geophysical Data and Lineaments



Source: Cerrado Gold, 2022

Historical ground magnetic data was also georeferenced and reprocessed at the 15 km long Bit-3/Divisa trend. A magnetic inversion was then completed using this data in order to identify and visualize potential mafic-ultramafic intrusions in the area for targeting purposes (Figure 9.12).

Figure 9.12 – MDC Project Geophysical Ground Magnetics and Magnetic Inversion on Bit-3/Divisa Target



Source: Cerrado Gold, 2022

Trenching

Since the acquisition of the Monte do Carmo Project by Cerrado Gold, a total of 6,599 m of trenching have been completed at Serra Alta and the other satellite targets. A summary of these trench metres by target is provided in Table 9.3. The goal of said trenching campaigns is generally to expose the weathered rocks below the soil, colluvium or lateritic cover. The gold is assayed by fire assay or metallic screening depending on the grade expectation.

Table 9.3 – MDC Project Total Metres* of Trenching Completed by Cerrado Gold

Target	2017	2018	2019	2020	2021	2022	Total
353		95					95
Baru					571		571
Bit-3		58					58
Capitão		39	210		114	115	478
Divisa	313					159	472
Dourado			277				277
Eldorado						40	40

Target	2017	2018	2019	2020	2021	2022	Total
Fartura		60	210				271
Ferradura	390						390
Gogó da Onça						650	650
Magalhães		488	300			52	840
Manoelito			76				76
Raiz			97			1	98
Serra Alta		680	22	51	174	586	1,512
Sucuri					648		648
Viúva			124				124
Total	**703**	**1,421**	**1,316**	**51**	**1,506**	**1,601**	**6,599**

* Totals may not sum precisely due to rounding.

10 DRILLING

10.1 Summary

The drilling operations at the MDC Project can be categorized into two distinct stages: historical and recent, i.e., exploration that has occurred since Cerrado Gold acquired the property. The historical drilling phase was conducted by previous operators between 1989 and 2008 and is extensively documented in Section 6. Drilling by Cerrado Gold began in 2017 and continues to date.

10.2 Drill Programs

Drilling by Cerrado Gold was initiated in 2017 with an early focus on the more regional Ferradura, Eduardo, and Bit-3 satellite targets. The focus shifted the following year with drilling launched at the principal Serra Alta target. Subsequently, additional drilling also resumed in 2021 on other satellite targets, with the intent to expand mineralization potential in the Serra Alta area.

10.2.1 Satellite Targets

Cerrado Gold has drilled 73 holes on satellite targets to Serra Alta (Figure 10.1). A breakdown of these holes by target area is provided in Table 10.1. Pertinent collar information for this drilling is provided in Table 10.2, in addition to a location map of the collar positions shown in Figure 10.1.

To summarize:

- In 2017 and 2018, Cerrado Gold drilled 2,008 m, including 16 holes in 3 targets: 8 holes at Ferradura, 4 at Eduardo and 4 at Bit-3.
- In 2021 and 2022, Cerrado Gold drilled 16,440 m, including 57 holes in 8 targets: 14 at Capitão, 12 at Baru, 8 at Fartura, 4 at Eldorado, 8 at Bit-3, 4 at Sucuri, 1 at Ferradura and 6 at Magalhães.

Table 10.1 – Cerrado Gold Drilling, Regional Satellite Targets

Campaign	Target	Total Metres	Total Holes	ANM Concession
2017/2018	Ferradura	1,287.65	8	864.450/2010
2017/2018	Bit-3	493.47	4	864.352/2012
2017/2018	Eduardo	227.09	4	864.450/2010
2021/2022	Capitão	5,114.52	14	860.187/1988
2021/2022	Baru	3,277.80	12	860.187/1988
2021/2022	Fartura	2,581.70	8	860.187/1988 and 864.450/2010
2021/2022	Eldorado	2,303.33	4	860.187/1988
2021/2022	Bit-3	1,670.66	8	864.352/2012

Campaign	Target	Total Metres	Total Holes	ANM Concession
2021/2022	Sucuri	708.83	4	860.187/1988
2021/2022	Ferradura	451.30	1	864.450/2010
2021/2022	Magalhães	331.77	6	860.187/1988
Total		**18,448.12**	**73**	

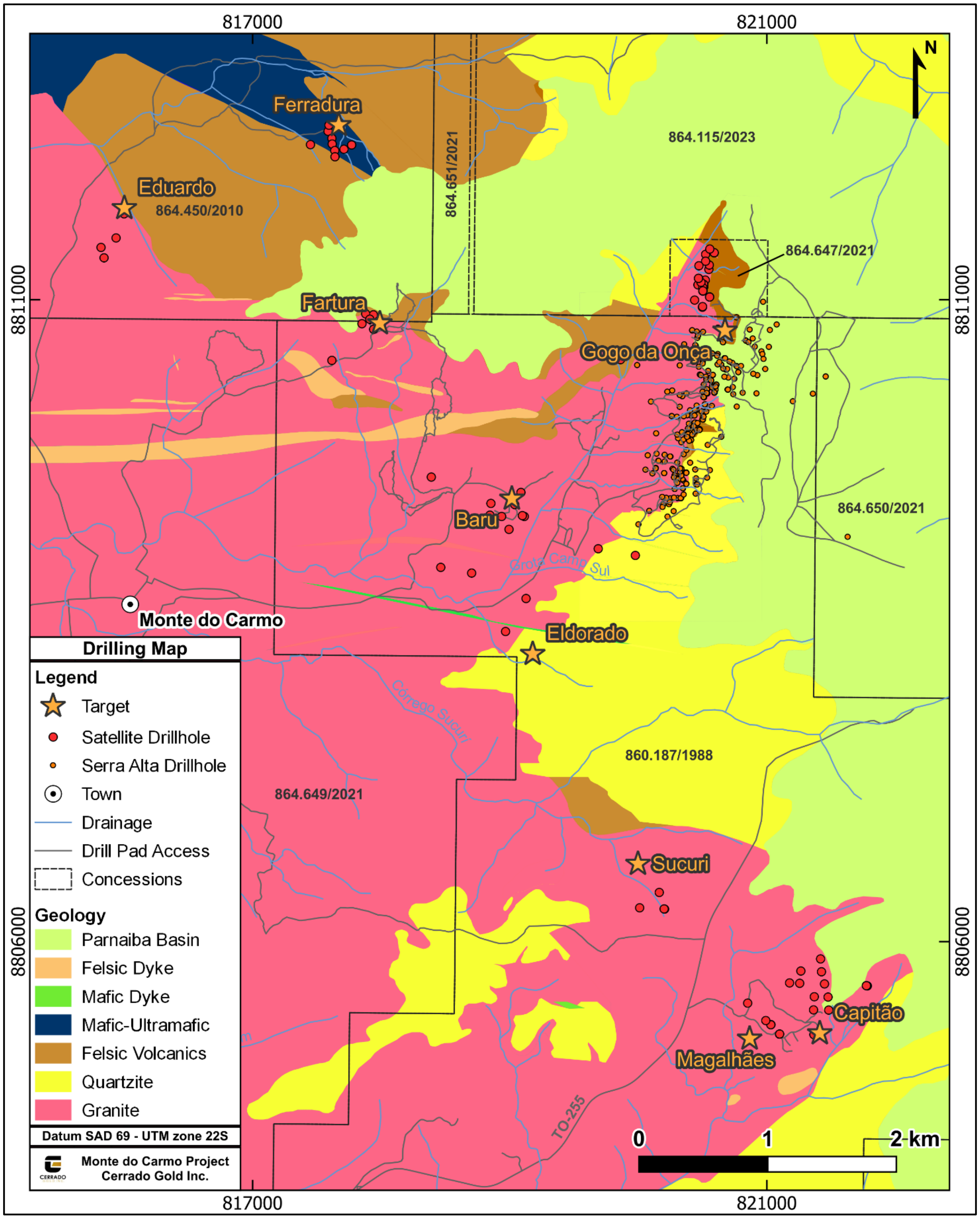
Table 10.2 – Cerrado Gold Drillhole Collar Information, Regional Satellite Targets

Target	Hole number	Easting (m)	Northing (m)	Elevation (m)	Depth (m)	Year	Azimuth	Dip
Baru	FBU-001	818,846.46	8,809,322.41	400.08	372.35	2021	88.39	-31.03
Baru	FBU-002	819,039.43	8,809,404.89	348.06	40.66	2021	89.94	-30.98
Baru	FBU-003	818,854.00	8,809,413.95	411.04	189.49	2021	91.93	-31.95
Baru	FBU-004	818,937.59	8,809,312.26	396.69	350.06	2021	91.88	-31.6
Baru	FBU-005	818,390.55	8,809,619.18	379.37	139.32	2021	90.79	-31.72
Baru	FBU-006	819,113.87	8,809,312.20	339.22	43.02	2021	90.18	-31.81
Baru	FBU-007	818,994.87	8,809,211.73	352.5	203.72	2021	90.31	-32.24
Baru	FBU-008	819,098.91	8,809,318.87	340.6	192.91	2021	91.48	-49.64
Baru	FBU-009	819,862.41	8,810,533.96	392.21	952.22	2021	281.41	-45.13
Baru	FBU-010	819,087.71	8,809,499.56	350.18	376.62	2021	100.78	-74.7
Baru	FBU-011	818,463.87	8,808,915.61	320.28	120.24	2021	99.3	-31.8
Baru	FBU-012	818,704.24	8,808,871.32	327.12	297.19	2021	100	-19.62
Capitão	FCP-001	821,363.41	8,805,468.56	549.69	327.36	2021	90	-30.74
Capitão	FCP-002	821,366.63	8,805,275.72	508.89	203.33	2021	90	-19.98
Capitão	FCP-003	821,481.73	8,805,467.03	552.31	257.84	2021	90	-30.97
Capitão	FCP-004	821,369.78	8,805,570.77	551.49	318.31	2021	90	-32.18
Capitão	FCP-005	821,449.23	8,805,670.64	570.52	529.04	2021	90.44	-31.93
Capitão	FCP-006	821,476.90	8,805,568.09	577.01	455.04	2021	90	-20.12
Capitão	FCP-007	821,256.21	8,805,675.43	541.39	298.13	2021	90	-19.63
Capitão	FCP-008	821,425.70	8,805,765.29	575.68	528.95	2021	90.32	-31.3
Capitão	FCP-009	821,774.74	8,805,657.21	558.21	292.26	2021	90.42	-49.66
Capitão	FCP-010	821,418.55	8,805,865.38	580.74	583.03	2021	89.45	-31.11
Capitão	FCP-011	821,782.23	8,805,655.10	558	102.32	2022	90	-30.97
Capitão	FCP-012	821,775.13	8,805,656.82	558.12	147.23	2022	90.17	-33.48
Capitão	FCP-013	821,265.20	8,805,771.09	554.29	729.31	2022	89.37	-32.49
Capitão	FCP-014	821,177.50	8,805,678.46	535.48	342.37	2022	90	-29.17
Eduardo	FED-01	815,821.05	8,811,408.17	302.4	81.96	2017	111.8	-58.39
Eduardo	FED-02	815,844.54	8,811,327.22	315.63	40.57	2017	288.31	-55.86

Target	Hole number	Easting (m)	Northing (m)	Elevation (m)	Depth (m)	Year	Azimuth	Dip
Eduardo	FED-03	815,938.06	8,811,482.11	319.8	53.31	2017	289.56	-52.34
Eduardo	FED-04	816,000.47	8,811,669.89	298.88	51.25	2017	287.98	-55.57
Eldorado	FEL-001	818,967.96	8,808,416.01	345.61	699.51	2021	119.96	-31.26
Eldorado	FEL-002	819,688.87	8,809,060.75	446.89	644.41	2021	102.68	-29.98
Fartura	FFA-001	817,913.60	8,810,848.19	547.99	290.98	2021	110	-31.38
Fartura	FFA-002	817,941.78	8,810,770.32	532.71	134.92	2021	100	-31.7
Fartura	FFA-003	817,940.01	8,810,883.27	543.06	327.25	2021	100	-32.77
Fartura	FFA-004	817,850.91	8,810,813.89	564.48	384.1	2021	99.18	-79.66
Fartura	FFA-005	817,880.10	8,810,890.65	558.45	182.46	2021	45	-25.16
Fartura	FFA-006	817,617.12	8,810,528.06	511.43	447.17	2021	97.89	-80.21
Fartura	FFA-007	817,685.08	8,810,934.28	584.79	659.66	2021	101.17	-70.9
Fartura	FFA-008	817,912.18	8,810,848.79	548.29	155.16	2021	105.81	-65.33
Ferradura	FFE-01	817,587.27	8,812,313.10	454.26	161.04	2017	90	-50.36
Ferradura	FFE-02	817,594.25	8,812,360.39	449.2	160.93	2017	90	-48.8
Ferradura	FFE-03	817,616.77	8,812,257.80	469.58	133.93	2017	90	-49.54
Ferradura	FFE-04	817,619.37	8,812,213.75	476.69	151.96	2017	90	-50.56
Ferradura	FFE-05	817,639.47	8,812,162.81	485.95	160.68	2017	90	-48.69
Ferradura	FFE-06	817,641.09	8,812,114.36	495.41	154.58	2017	90	-50.09
Ferradura	FFE-07	817,770.80	8,812,206.39	473.56	152.07	2017	270	-49.02
Ferradura	FFE-08	817,710.57	8,812,173.08	475.87	212.46	2017	90	-70.27
Ferradura	FFE-09	817,450.40	8,812,209.03	433.45	451.3	2021	90.75	-39.7
Bit-3	FLD-01	810,287.88	8,815,637.68	258.34	116.17	2018	160.86	-59.68
Bit-3	FLD-02	810,424.12	8,815,666.64	255.53	107.43	2018	171.78	-50.95
Bit-3	FLD-03	810,224.84	8,815,611.19	259.09	103.56	2018	158.83	-50.09
Bit-3	FLD-04	810,330.95	8,815,677.77	257.11	166.5	2018	155.76	-61.17
Bit-3	FLD-05	810,249.99	8,815,721.80	257.85	222.77	2021	155.82	-48.99
Bit-3	FLD-06	810,307.13	8,815,740.54	256.45	270.76	2021	157.71	-54.99
Bit-3	FLD-07	810,425.12	8,815,717.39	255.45	195.35	2021	155.8	-54.15
Bit-3	FLD-08	810,165.87	8,815,672.08	259.9	180.79	2021	155.53	-44
Bit-3	FLD-09	810,498.26	8,815,800.43	253.64	130.61	2021	157.83	-53.92
Bit-3	FLD-10	810,255.01	8,815,721.47	257.7	270.56	2021	157.42	-65.59
Bit-3	FLD-11	810,381.96	8,815,701.40	255.99	180.58	2021	156.94	-54.8
Bit-3	FLD-12	810,148.89	8,815,689.25	260.01	219.24	2021	155.36	-65.29
Magalhães	FMG-001	821,032.56	8,805,353.45	503.82	32.25	2021	49.71	-44.69
Magalhães	FMG-002	821,031.38	8,805,352.60	503.63	71.96	2021	51.66	-83.77
Magalhães	FMG-003	820,992.37	8,805,385.42	511.24	66.05	2021	46.72	-82.41

Target	Hole number	Easting (m)	Northing (m)	Elevation (m)	Depth (m)	Year	Azimuth	Dip
Magalhães	FMG-004	821,098.95	8,805,279.19	496.84	70.31	2021	48.38	-88.89
Magalhães	FMG-005	821,100.25	8,805,280.27	496.84	42.96	2021	50.1	-45.11
Magalhães	FMG-006	820,851.57	8,805,520.85	510.82	48.24	2021	32.21	-89.28
Sucuri	FSC-001	820,205.04	8,806,253.67	532.78	352.97	2021	105	-20.58
Sucuri	FSC-002	820,163.80	8,806,383.28	521.75	180.54	2021	90	-20.17
Sucuri	FSC-003	820,201.35	8,806,254.82	532.53	100.35	2021	108.28	-54.77
Sucuri	FSC-004	820,011.17	8,806,263.45	521.43	74.97	2021	39.74	-32.11
Eldorado	FSZ-006	819,127.45	8,808,673.02	346.75	579.96	2022	104.95	-31.83
Eldorado	FSZ-007	819,977.67	8,809,008.68	487.17	379.45	2022	100.21	-51.92

Figure 10.1 – Collar Locations for Cerrado Gold Drillholes, Regional Satellite Targets



Source: Cerrado Gold 2022

10.2.2 SERRA ALTA DRILLING

In January 2018, Cerrado Gold initiated drilling at the principal target, Serra Alta. Up until the database freeze date of December 31, 2022, the company had completed a total of 89,029 m in

361 diamond drillholes, as summarized in Table 10.3. These totals include the Gogo target, which is now part of the Serra Alta Deposit. Pertinent collar information is provided in Table 10.4, along with a location map of the collar positions shown in Figure 10.2.

Table 10.3 – Cerrado Gold Drilling, Serra Alta Deposit

Target	Total Metres	Total Holes	ANM Concession
Serra Alta	82,086.31	329	860.187/1988, 864.647/2021, 864.650/2021
Gogó da Onça	6,943.01	32	864.647/2021 and 864.115/2023
Total	**89,029.32**	**361**	

Table 10.4 – Cerrado Gold Drillhole Collar Information, Serra Alta Deposit

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Gogó da Onça	FGO-001	820508	8811098	539.5568	566.35	2022	100.86	-39.47
Gogó da Onça	FGO-002	820504	8811069	529.0319	239.31	2022	110	-20.68
Gogó da Onça	FGO-003	820512.8	8811144	536.0862	80.24	2022	100	-25.62
Gogó da Onça	FGO-004	820512.1	8811144	535.9374	200.45	2022	97.49	-34.44
Gogó da Onça	FGO-005	820521.7	8811154	535.7866	270.82	2022	79.52	-36.17
Gogó da Onça	FGO-006	820503.2	8811068	528.8602	42.04	2022	145	-20
Gogó da Onça	FGO-007	820502.5	8811069	528.8547	300.42	2022	145	-23.03
Gogó da Onça	FGO-008	820509.1	8811098	539.561	516.15	2022	100	-24.48
Gogó da Onça	FGO-009	820464.6	8811117	518.7851	222.74	2022	102.18	-38.24
Gogó da Onça	FGO-010	820470.6	8811167	511.7205	201.5	2022	105.44	-34.99
Gogó da Onça	FGO-011	820509.8	8811120	541.9538	71.97	2022	100	-32
Gogó da Onça	FGO-012	820509.1	8811120	541.9467	171.37	2022	97.36	-31.59
Gogó da Onça	FGO-013	820549.4	8811237	509.059	213.66	2022	112.27	-34.57
Gogó da Onça	FGO-014	820524.4	8811354	510.7548	250.07	2022	125	-27.99
Gogó da Onça	FGO-015	820502.7	8811069	528.8764	244.65	2022	128	-20.07
Gogó da Onça	FGO-016	820591.2	8811366	550.3068	57.11	2022	115.38	-34.31
Gogó da Onça	FGO-017	820590.7	8811367	550.3633	35.71	2022	138.86	-40.13
Gogó da Onça	FGO-018	820502.1	8811095	535.9124	207.05	2022	122	-29.8
Gogó da Onça	FGO-019	820488	8811137	526.3867	150.47	2022	105.4	-34.2
Gogó da Onça	FGO-020	820469.7	8811167	511.619	120.46	2022	80	-20.82
Gogó da Onça	FGO-021	820552.8	8811271	508.1816	227.42	2022	115.41	-34.83
Gogó da Onça	FGO-022	820503.2	8811070	528.9484	241.58	2022	132.95	-31.82
Gogó da Onça	FGO-023	820500	8810944	480.1824	201.35	2022	120	-13.8

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Gogó da Onça	FGO-024	820524.1	8811301	519.7379	250.09	2022	120.55	-37.55
Gogó da Onça	FGO-025	820472.1	8811265	476.6619	288.45	2022	118	-14.52
Gogó da Onça	FGO-026	820556.6	8811396	534.9419	204.21	2022	130	-29.08
Gogó da Onça	FGO-027	820438.9	8810998	471.3635	159.22	2022	125	-19.97
Gogó da Onça	FGO-028	820499.4	8810943	480.0834	201.44	2022	150	-14.92
Gogó da Onça	FGO-029	820468.8	8811167	511.5606	372.55	2022	314.48	-40.3
Gogó da Onça	FGO-030	820500.6	8810947	480.0018	159.82	2022	85	-14.74
Gogó da Onça	FGO-031	820555.8	8811023	537.8776	204.54	2022	145	-29.46
Gogó da Onça	FGO-032	820555.3	8811022	537.8634	269.8	2022	160	-24.34
Serra Alta	FSA-01	820412.7	8810097	454.26	104.31	2018	112	-50.85
Serra Alta	FSA-02	820156.2	8809747	425.79	92.07	2018	86.78	-51.23
Serra Alta	FSA-03	820328	8809687	482.23	118.05	2018	112	-62.06
Serra Alta	FSA-04	820304	8809574	469.93	93.08	2018	68.9	-50.67
Serra Alta	FSA-05	820318.9	8809608	466	94.96	2018	70	-49.97
Serra Alta	FSA-06	820343.8	8809603	467.66	115.69	2018	76.66	-44.86
Serra Alta	FSA-07	820334	8809631	472.12	85.99	2018	80	-50.31
Serra Alta	FSA-08	820313.5	8809628	469.92	103.87	2018	63.49	-52.6
Serra Alta	FSA-09	820440.8	8810044	467.78	123.35	2018	76.83	-50.73
Serra Alta	FSA-10	820303.1	8809732	479.36	78.5	2018	80	-45
Serra Alta	FSA-100	820866.8	8810769	659.7001	536.43	2020	110	-65.32
Serra Alta	FSA-101	820670.8	8810545	660.9475	651.08	2020	85	-45.82
Serra Alta	FSA-102	820607.1	8810339	582.366	520.56	2020	63	-31.39
Serra Alta	FSA-103	820332	8809454	514.1745	64.21	2020	102	-34.1
Serra Alta	FSA-104	820136.4	8809687	414.4033	306.9	2020	110	-31.66
Serra Alta	FSA-105	820307.3	8809456	504.6243	227.85	2020	100	-34.55
Serra Alta	FSA-106	820417.6	8809977	460.0836	411.86	2020	105.06	-32.29
Serra Alta	FSA-107	820135.2	8809687	414.6388	286.89	2020	110	-51.56
Serra Alta	FSA-108	820670.8	8810545	661.3079	505.27	2020	95	-41.98
Serra Alta	FSA-109	820607.6	8810338	582.3061	138.77	2020	95	-32
Serra Alta	FSA-11	820349	8809532	471.093	160.75	2018	75.45	-45.6
Serra Alta	FSA-110	820534.4	8810304	540.5968	480.8	2020	105	-37.95
Serra Alta	FSA-111	820767.1	8810482	661.6168	478.44	2020	100	-52.53
Serra Alta	FSA-112	820606.7	8810339	582.2969	567.65	2021	95	-34.34
Serra Alta	FSA-113	820264.3	8810294	491.5791	402.23	2021	95	-31.15
Serra Alta	FSA-114	820444.2	8810044	468.488	414.39	2021	108	-31.03

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-115	820378.7	8809933	460.3964	399.85	2021	110	-31.63
Serra Alta	FSA-116	820646.4	8810693	557.3614	384.09	2021	105	-32.9
Serra Alta	FSA-117	820836.8	8810684	661.4143	230.16	2021	110	-43.68
Serra Alta	FSA-118	820473	8810609	569.6033	347.49	2021	110	-31.19
Serra Alta	FSA-119	820346.7	8809532	471.3365	354.43	2021	105	-30.48
Serra Alta	FSA-12	820427.9	8809993	459.347	127.73	2018	87.25	-46.44
Serra Alta	FSA-120	820493.8	8810131	487.1507	157.18	2021	105	-34.19
Serra Alta	FSA-121	820658.8	8810670	559.9134	322.62	2021	110	-32.78
Serra Alta	FSA-122	820085.7	8809356	458.1333	344.29	2021	110	-44.13
Serra Alta	FSA-123	820493.5	8810131	487.1529	403.58	2021	110	-42.75
Serra Alta	FSA-124	820502.5	8810520	572.5423	311.85	2021	110	-30.31
Serra Alta	FSA-125	820459.2	8810703	565.6342	444.98	2021	110	-32.91
Serra Alta	FSA-126	820283.8	8809526	456.5799	394.03	2021	100	-30.19
Serra Alta	FSA-127	820607.2	8810339	582.2783	87.72	2021	84	-32
Serra Alta	FSA-128	820576.1	8810582	664.3943	87.65	2021	80	-45
Serra Alta	FSA-129	820674.7	8810546	660.8212	586.58	2021	95	-52.01
Serra Alta	FSA-13	820335.6	8809890	462.792	122.54	2018	119	-65.13
Serra Alta	FSA-130	820371	8809654	494.2803	459.59	2021	100	-30.81
Serra Alta	FSA-131	820608	8810339	582.3229	600.4	2021	84	-33.81
Serra Alta	FSA-132	820584.2	8810311	572.3431	609.28	2021	100	-31.46
Serra Alta	FSA-133	820574.8	8810582	664.6871	280.43	2021	80	-45.14
Serra Alta	FSA-134	820619.9	8810784	544.792	294.95	2021	95	-31.92
Serra Alta	FSA-135	820371.4	8809654	494.2195	172.02	2021	70	-32.07
Serra Alta	FSA-136	820001.7	8809251	465.1055	23.55	2021	130	-30.7
Serra Alta	FSA-137	820694.6	8810301	679.9711	425.12	2021	120	-53.12
Serra Alta	FSA-138	820411.6	8809908	484.873	154.59	2021	120	-37.97
Serra Alta	FSA-139	820330.9	8809456	513.998	198.81	2021	60	-35.14
Serra Alta	FSA-14	820373.4	8809952	455.836	70.12	2018	91.63	-50.83
Serra Alta	FSA-140	820565.8	8810368	552.5893	531.94	2021	100	-31.31
Serra Alta	FSA-141	820595	8810280	569.2616	198.26	2021	120	-31.56
Serra Alta	FSA-142	820411.7	8809908	485.1131	433.37	2021	108	-31.88
Serra Alta	FSA-143	820840	8810681	661.0405	256.93	2021	165	-52.21
Serra Alta	FSA-144	820330.8	8809456	514.0961	54.52	2021	86	-33.46
Serra Alta	FSA-145	820595.2	8810280	569.1083	161.69	2021	145	-32.79
Serra Alta	FSA-146	820513.1	8810241	508.7733	411.27	2021	105	-32.13

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-147	820330.8	8809456	514.097	397.52	2021	77	-30.92
Serra Alta	FSA-148	820411.1	8809908	484.9195	157.23	2021	75	-35.22
Serra Alta	FSA-149	820731.3	8810507	661.8629	600.79	2021	130	-38.87
Serra Alta	FSA-15	820403.2	8810139	445.993	103.97	2018	71	-49.6
Serra Alta	FSA-150	820685	8810456	671.9676	565.93	2021	130	-40.57
Serra Alta	FSA-151	820531.4	8810271	523.9523	487.71	2021	105	-30.86
Serra Alta	FSA-152	820245.9	8809423	507.3833	94.79	2021	110	-31.92
Serra Alta	FSA-153	820697.5	8810300	680.2382	513.98	2021	115	-45.24
Serra Alta	FSA-154	820189	8809387	498.0737	126.84	2021	110	-43.6
Serra Alta	FSA-155	820646.2	8809933	563.7983	506.27	2021	116	-73.06
Serra Alta	FSA-156	820731.5	8810508	661.8644	183.34	2021	118	-38.95
Serra Alta	FSA-157	820697.7	8810301	680.3243	559.08	2021	113	-45.66
Serra Alta	FSA-158	820732.1	8810509	661.911	644.86	2021	118	-39.57
Serra Alta	FSA-159	820603.1	8810325	582.3903	127.61	2021	110	-26.13
Serra Alta	FSA-16	820136.5	8809691	413.93	94.83	2018	90	-53.79
Serra Alta	FSA-160	820351	8809593	468.0341	371.77	2021	110.17	-34.64
Serra Alta	FSA-161	820452.9	8810142	467.6505	212.29	2021	110.72	-34.54
Serra Alta	FSA-162	820353.6	8809483	502.9327	210.84	2021	109.86	-40.2
Serra Alta	FSA-163	820110.3	8809648	407.4693	219.04	2021	114.93	-32.06
Serra Alta	FSA-164	820425.8	8809992	460.1171	236.19	2021	110	-20.48
Serra Alta	FSA-165	820323.1	8810489	524.7297	220.57	2021	110	-19.75
Serra Alta	FSA-166	820374.3	8809654	494.5378	330.97	2021	115	-25.03
Serra Alta	FSA-167	820388.2	8809954	459.4075	143.75	2021	110	-19.37
Serra Alta	FSA-168	820074	8809789	407.0125	100.31	2021	112.8	-31.36
Serra Alta	FSA-169	820275.5	8809354	542.8476	78.8	2021	290.22	-31.75
Serra Alta	FSA-17	820377.5	8809932	460.113	109.93	2018	98.27	-49.9
Serra Alta	FSA-170	820374.1	8809654	494.4203	300.94	2021	85	-22.58
Serra Alta	FSA-171	820251.3	8809779	447.6967	51.07	2021	100	-19.94
Serra Alta	FSA-172	820248	8809780	447.4265	45.94	2021	99.51	-74.95
Serra Alta	FSA-173	820278.1	8809460	497.6699	136.26	2021	112.79	-49.09
Serra Alta	FSA-174	820139.4	8809960	415.6599	100.22	2021	113.65	-31.6
Serra Alta	FSA-175	820202	8809650	417.9457	170.94	2021	117.25	-34.41
Serra Alta	FSA-176	820274.3	8809676	447.9992	210.63	2021	111.06	-35.5
Serra Alta	FSA-177	819991.6	8810492	400.7006	130.4	2021	110	-20.39
Serra Alta	FSA-178	820226.2	8810285	479.559	206.63	2021	109.09	-34.66

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-179	820099	8810207	457.0582	164.99	2021	100	-19.68
Serra Alta	FSA-18	820454.6	8810176	459.992	100.91	2018	76.84	-44.88
Serra Alta	FSA-180	820352.2	8809913	462.5637	217.34	2022	108.57	-44.66
Serra Alta	FSA-181	820601.3	8810300	579.3046	362.22	2022	110	-27.32
Serra Alta	FSA-182	820510.5	8810551	572.5877	625.19	2022	110	-20.22
Serra Alta	FSA-183	820537.7	8810271	524.8256	311.5	2022	105	-21.9
Serra Alta	FSA-184	820601.2	8810300	579.4027	459.15	2022	96.01	-31.41
Serra Alta	FSA-185	820479.3	8809991	476.6525	134.7	2022	102.99	-39.77
Serra Alta	FSA-186	820420.4	8809950	474.1815	221.39	2022	111.29	-34.77
Serra Alta	FSA-187	820601.2	8810300	579.1856	191.79	2022	121	-20.64
Serra Alta	FSA-188	820574.8	8810582	664.2899	280.57	2022	132.05	-57.47
Serra Alta	FSA-189	820600.1	8810300	579.0831	229.28	2022	121	-31.44
Serra Alta	FSA-19	820283.2	8809633	452.023	31.62	2018	73.55	-43.68
Serra Alta	FSA-190	820574.9	8810583	664.5164	239.55	2022	91.81	-56.1
Serra Alta	FSA-191	820403.8	8809731	551.6885	140.5	2022	127.16	-43.57
Serra Alta	FSA-192	820600.2	8810301	579.0877	330.64	2022	109.81	-32.59
Serra Alta	FSA-193	820700.9	8810395	672.7549	500.2	2022	110.83	-46.88
Serra Alta	FSA-194	820283.1	8809633	452.6531	178.17	2022	101.46	-45.39
Serra Alta	FSA-195	820202.3	8809650	417.8896	75.51	2022	101	-38
Serra Alta	FSA-196	820201.6	8809650	417.9332	154.1	2022	99.64	-38.15
Serra Alta	FSA-197	820607.4	8810338	582.0624	226.14	2022	97.68	-51.6
Serra Alta	FSA-198	820310.2	8809922	451.909	159.43	2022	90.09	-50.38
Serra Alta	FSA-199	820779.1	8810437	663.547	490.33	2022	91.5	-57.37
Serra Alta	FSA-20	820266.9	8809684	447.842	115.74	2018	68.4	-46.1
Serra Alta	FSA-201	820328.6	8809687	482.6722	180.61	2022	98.25	-34.53
Serra Alta	FSA-202	820595.3	8810280	570.1573	140.72	2022	140	-22.77
Serra Alta	FSA-203	820433	8810038	467.9286	163.33	2022	101.65	-45.57
Serra Alta	FSA-204	820371.1	8809653	494.2207	159.17	2022	122	-19.88
Serra Alta	FSA-205	820601.7	8810302	578.7715	185.79	2022	135	-27.26
Serra Alta	FSA-206	820473.3	8809996	476.313	116.66	2022	102.09	-48.15
Serra Alta	FSA-207	820337.3	8809684	483.8796	187.85	2022	102	-19.26
Serra Alta	FSA-208	820709.6	8810520	661.8704	499.03	2022	117.45	-50.45
Serra Alta	FSA-209	820439.9	8809974	465.3486	320.37	2022	117	-25.31
Serra Alta	FSA-21	820205.4	8809741	442.291	100.57	2018	87.54	-44.71
Serra Alta	FSA-211	820343.6	8809603	468.1032	135.26	2022	118.42	-55.18

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-212	820537.9	8810271	524.4891	160.89	2022	128	-19.24
Serra Alta	FSA-213	820473.4	8810609	569.662	252.29	2022	98	-28.44
Serra Alta	FSA-214	820343.7	8809603	468.0377	169.08	2022	100	-19.21
Serra Alta	FSA-215	820537.1	8810271	524.4425	259.57	2022	110.1	-45.37
Serra Alta	FSA-216	820278.3	8809617	452.9342	144.64	2022	117.25	-56.55
Serra Alta	FSA-217	820438.1	8810098	456.6842	8.85	2022	115	-25
Serra Alta	FSA-218	820532.5	8810274	524.3708	167.96	2022	107.42	-56.11
Serra Alta	FSA-219	820508.3	8810547	572.3782	237.83	2022	103.38	-35.52
Serra Alta	FSA-22	820205.2	8809793	438.034	124.79	2018	78.42	-46.94
Serra Alta	FSA-220	820437.6	8810099	456.5677	190.05	2022	115	-25.06
Serra Alta	FSA-221	820158.2	8809745	426.852	265.95	2022	122	-19.19
Serra Alta	FSA-222	820510.1	8810340	540.9602	223.42	2022	106.31	-56.91
Serra Alta	FSA-223	820675.8	8810544	660.8567	444.13	2022	105.58	-44.06
Serra Alta	FSA-224	820381.5	8810101	448.8498	58.18	2022	115	-48
Serra Alta	FSA-225	820501.2	8810504	569.7856	250.83	2022	98	-20.74
Serra Alta	FSA-226	820380.7	8810101	448.8089	136.26	2022	112.37	-47.24
Serra Alta	FSA-227	820142.7	8809801	414.5012	70.61	2022	112	-19.78
Serra Alta	FSA-228	820530.9	8810378	542.2855	205.51	2022	113.38	-61.7
Serra Alta	FSA-229	820303.5	8809950	446.1678	110.24	2022	110.75	-49.38
Serra Alta	FSA-23	820519.3	8810187	478.424	234.96	2018	78.24	-45.25
Serra Alta	FSA-230	820354	8810094	446.0615	134.75	2022	103.75	-56.03
Serra Alta	FSA-231	820340.5	8809969	449.1891	133.33	2022	118.53	-49.75
Serra Alta	FSA-232	820301	8810089	431.9117	120.56	2022	117.35	-34.41
Serra Alta	FSA-233	820614	8810564	663.6857	200.65	2022	111.85	-49.6
Serra Alta	FSA-234	820386.5	8809997	453.4553	107.55	2022	108.17	-55.05
Serra Alta	FSA-235	820558.6	8810376	549.4956	227.97	2022	115.66	-58.45
Serra Alta	FSA-236	820471.3	8810479	566.7573	331.3	2022	98	-19.25
Serra Alta	FSA-237	820441.9	8810142	460.6087	73.23	2022	109.19	-48.79
Serra Alta	FSA-238	820613.9	8810564	663.7331	220.02	2022	124.66	-49.09
Serra Alta	FSA-239	820501.7	8810068	504.8623	175.3	2022	114.27	-47.13
Serra Alta	FSA-24	820283.6	8809526	456.08	97.74	2018	80	-44.73
Serra Alta	FSA-240	820440.6	8810044	468.4602	109.13	2022	124.41	-45.52
Serra Alta	FSA-241	820567.9	8810372	552.1856	289.09	2022	121.04	-46.55
Serra Alta	FSA-242	820617.7	8810498	668.4377	268.42	2022	127.28	-56.13
Serra Alta	FSA-243	820477.3	8809986	476.5128	147.65	2022	120.83	-37.6

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-244	820375.1	8809654	494.5232	206.85	2022	104	-18.17
Serra Alta	FSA-245	820580.7	8810415	554.6017	255.35	2022	112.41	-33.39
Serra Alta	FSA-246	820544	8810447	555.0993	589.2	2022	103	-19.46
Serra Alta	FSA-247	820454	8809983	466.8768	76.01	2022	120.59	-43.91
Serra Alta	FSA-248	820778.4	8810437	663.343	480.81	2022	97.85	-54.73
Serra Alta	FSA-249	820431.2	8810016	463.697	141.28	2022	115.88	-33.18
Serra Alta	FSA-25	820250.1	8809454	499.012	97.28	2018	83.88	-46.86
Serra Alta	FSA-250	820581	8810415	554.5767	471.4	2022	96.9	-30.63
Serra Alta	FSA-251	820374.1	8809652	494.3797	110.2	2022	130	-20.31
Serra Alta	FSA-252	820506.1	8810090	499.3705	198.91	2022	103.78	-42.98
Serra Alta	FSA-253	820443.6	8809679	560.9338	112.72	2022	141.73	-70.65
Serra Alta	FSA-254	820567.5	8810372	552.1014	230.55	2022	136.61	-53.48
Serra Alta	FSA-255	820443.7	8809678	561.0145	110.77	2022	158.28	-59.96
Serra Alta	FSA-256	820580	8810416	554.5548	202.3	2022	100.39	-46.08
Serra Alta	FSA-257	820500.4	8810068	504.7885	193.32	2022	131.84	-55.21
Serra Alta	FSA-258	820592	8810276	566.926	170.29	2022	132.84	-45.28
Serra Alta	FSA-259	820311.6	8809602	466.1472	145.46	2022	89.24	-51.58
Serra Alta	FSA-26	820500.4	8810284	522.247	97.96	2018	80.37	-45.3
Serra Alta	FSA-260	820601.8	8810301	578.8274	185.45	2022	130	-22.52
Serra Alta	FSA-261	820487.7	8810413	537.3134	218.43	2022	109.83	-55.84
Serra Alta	FSA-262	820334.8	8809631	472.7188	125.2	2022	96	-19.8
Serra Alta	FSA-263	820393.9	8810035	453.4854	109.43	2022	89.51	-31.21
Serra Alta	FSA-264	820592.1	8810279	567.1156	230.98	2022	106.34	-45.26
Serra Alta	FSA-265	820520.6	8810186	479.3427	85.93	2022	102	-19.55
Serra Alta	FSA-266	820303.8	8809574	470.3467	120.68	2022	96.65	-45.05
Serra Alta	FSA-267	820506.6	8810244	508.4122	134.93	2022	125	-29.57
Serra Alta	FSA-268	820799.5	8810485	658.4707	550.07	2022	97.6	-50.35
Serra Alta	FSA-269	820517.9	8810186	479.293	87.04	2022	127.42	-47.68
Serra Alta	FSA-27	820446.8	8809490	541.343	151.22	2018	254.49	-55.67
Serra Alta	FSA-270	820324.6	8809662	478.6592	55.12	2022	141.2	-43.97
Serra Alta	FSA-271	820601.3	8810326	579.4587	220.61	2022	126	-23.67
Serra Alta	FSA-272	820508.8	8810243	508.5358	127.02	2022	118	-15.56
Serra Alta	FSA-273	820326.1	8809686	481.9183	70.22	2022	135	-19.32
Serra Alta	FSA-274	820575.4	8810319	570.8011	175.2	2022	132.27	-48.24
Serra Alta	FSA-275	820606.2	8810339	579.8702	214.03	2022	106.7	-45.56

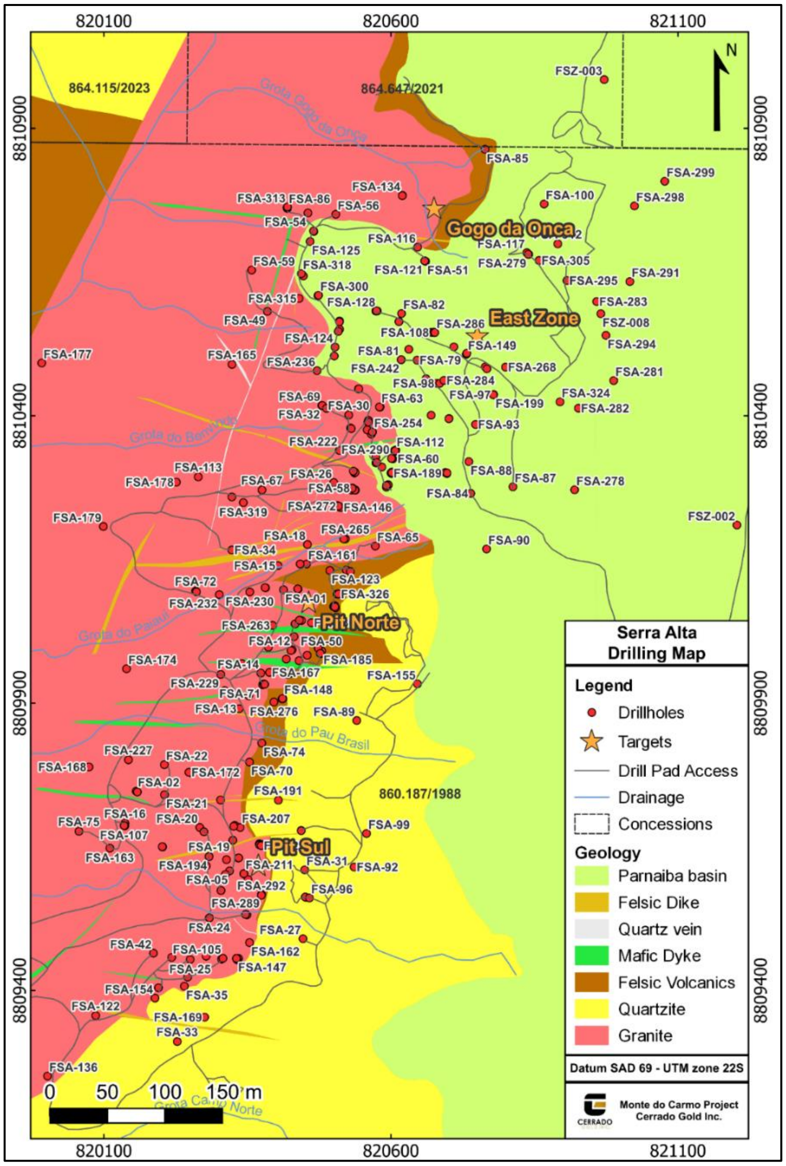
Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-276	820396.2	8809902	479.726	232	2022	97.85	-35.48
Serra Alta	FSA-277	820619.7	8810783	544.9107	750.44	2022	101.19	-35.08
Serra Alta	FSA-278	820920	8810271	678.8295	523.07	2022	94.72	-54.67
Serra Alta	FSA-279	820839.2	8810681	661.2198	454.47	2022	119.6	-60.56
Serra Alta	FSA-28	820451.8	8809562	546.927	146	2018	257.09	-55.75
Serra Alta	FSA-280	820379.9	8809933	460.6482	199.72	2022	126	-22.96
Serra Alta	FSA-281	820988.1	8810461	653.7747	551.79	2022	97.72	-52.9
Serra Alta	FSA-282	820926.6	8810413	658.5668	502.12	2022	99.79	-54.89
Serra Alta	FSA-283	820958.5	8810599	665.7802	559.24	2022	123.04	-58.05
Serra Alta	FSA-284	820692.4	8810462	671.9995	552.89	2022	97.89	-42.09
Serra Alta	FSA-285	820661.2	8810465	669.3367	507.25	2022	110.32	-41.42
Serra Alta	FSA-286	820676.3	8810545	660.7529	573.86	2022	100.75	-41.16
Serra Alta	FSA-287	820607.3	8810340	579.9578	253.87	2022	64	-23.13
Serra Alta	FSA-288	820607.3	8810339	580.0463	252	2022	85	-25.42
Serra Alta	FSA-289	820374.6	8809567	497.575	326.37	2022	84	-19.62
Serra Alta	FSA-29	820450.7	8809563	546.99	121.85	2018	85.18	-80.59
Serra Alta	FSA-290	820601	8810326	579.4722	533.53	2022	98	-26.63
Serra Alta	FSA-291	821016.3	8810634	667.3554	371.58	2022	99.93	-48.83
Serra Alta	FSA-292	820374.3	8809566	497.6473	127.21	2022	122	-27
Serra Alta	FSA-293	820500.8	8810069	504.8016	200.82	2022	133.5	-41.35
Serra Alta	FSA-294	820974.5	8810540	660.4854	433.27	2022	99.43	-54.33
Serra Alta	FSA-295	820906.5	8810635	662.7918	449.87	2022	107.97	-48.87
Serra Alta	FSA-296	820508.2	8810090	499.9475	211.12	2022	105	-27.96
Serra Alta	FSA-297	820476.9	8809987	476.5056	194.95	2022	120	-26.41
Serra Alta	FSA-298	821024.2	8810765	651.5531	519.8	2022	160.7	-49.01
Serra Alta	FSA-299	821077.1	8810808	648.3341	520.15	2022	155.74	-48.48
Serra Alta	FSA-30	820526.5	8810401	542.961	123.49	2018	74.9	-46.23
Serra Alta	FSA-300	820473.9	8810610	569.6584	200.22	2022	80	-15.01
Serra Alta	FSA-301	820500.5	8810068	504.8595	180.43	2022	135.83	-32.19
Serra Alta	FSA-302	820501	8810069	504.8165	451.44	2022	111.16	-32.12
Serra Alta	FSA-303	820508.1	8810090	499.8783	327.33	2022	105.27	-31.7
Serra Alta	FSA-304	820447.4	8810643	569.0707	200.28	2022	80	-15.06
Serra Alta	FSA-305	820857.9	8810670	661.2662	565.4	2022	108.92	-50.33
Serra Alta	FSA-306	821358.7	8810269	698.3091	549.99	2022	314.8	-49.76
Serra Alta	FSA-307	820465.7	8810721	566.8171	170.71	2022	95	-15.13

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-308	820461.4	8810040	472.5368	210.03	2022	125	-15.74
Serra Alta	FSA-309	820510.4	8810565	570.9976	180.25	2022	75	-15.4
Serra Alta	FSA-31	820449.8	8809610	558.857	122.22	2018	255.26	-55.21
Serra Alta	FSA-310	820501.8	8810069	504.783	285.6	2022	121.69	-33.78
Serra Alta	FSA-311	820510.2	8810564	571.0762	150.55	2022	95	-15.74
Serra Alta	FSA-312	820890.7	8810699	665.5067	687.87	2022	110.56	-50.39
Serra Alta	FSA-313	820419.8	8810763	555.834	164.9	2022	80	-19.6
Serra Alta	FSA-314	820501.7	8810070	504.8261	381.56	2022	110.39	-39.48
Serra Alta	FSA-315	820440	8810604	551.5122	201.58	2022	80	-19.98
Serra Alta	FSA-316	820465.2	8810722	566.7497	114.76	2022	70	-15.22
Serra Alta	FSA-317	820670.1	8810401	667.6871	340.33	2022	92.64	-54.72
Serra Alta	FSA-318	820443.9	8810647	568.6999	170.52	2022	75	-25.06
Serra Alta	FSA-319	820342.8	8810249	511.8812	132.17	2022	120	-25.39
Serra Alta	FSA-32	820479.5	8810418	537.563	130.69	2018	110.62	-49.8
Serra Alta	FSA-320	820503.7	8810066	504.8042	210.26	2022	140	-20.28
Serra Alta	FSA-321	820631.1	8810516	667.3524	260.05	2022	106.19	-49.16
Serra Alta	FSA-322	820322.8	8810259	505.2604	210.52	2022	139.03	-45.76
Serra Alta	FSA-323	820502.2	8810068	504.7904	249.95	2022	122.03	-39.85
Serra Alta	FSA-324	820894.6	8810424	659.0972	537.84	2022	84.02	-55.83
Serra Alta	FSA-326	820508.6	8810090	499.9475	243.8	2022	105.14	-37.9
Serra Alta	FSA-33	820227.7	8809311	537	175.77	2018	281.8	-45.83
Serra Alta	FSA-34	820322.8	8810167	452.969	145.23	2018	73.86	-50.86
Serra Alta	FSA-35	820240.1	8809408	508.743	109.21	2018	81.28	-49.65
Serra Alta	FSA-36	820195	8809405	498.323	62.39	2018	96.67	-44.56
Serra Alta	FSA-37	820536.5	8810301	539.735	94.95	2018	139.17	-82.07
Serra Alta	FSA-38	820218	8809458	488.377	77.46	2018	87.98	-44.89
Serra Alta	FSA-39	820560.9	8810392	548.788	68.32	2018	107.96	-59.97
Serra Alta	FSA-40	820305.1	8809455	504.06	91.84	2018	88.66	-45.25
Serra Alta	FSA-41	820529.7	8810379	541.667	58.05	2018	105.8	-59.37
Serra Alta	FSA-42	820186.2	8809465	474.482	71.49	2018	80	-48.93
Serra Alta	FSA-43	820511.2	8810241	506.651	160.02	2018	111.29	-44.81
Serra Alta	FSA-44	820501.5	8810068	504.107	34.81	2018	100	-45
Serra Alta	FSA-45	820500.4	8810069	504.178	106.56	2018	98.31	-71.36
Serra Alta	FSA-46	820522.2	8810132	490.46	57.48	2018	90.68	-45.07
Serra Alta	FSA-47	820543.5	8810447	554.227	105.16	2018	108.19	-49.3

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-48	820421.6	8809950	473.577	109.76	2018	78.31	-45.41
Serra Alta	FSA-49	820384.7	8810582	527.622	73.72	2018	107.71	-45.25
Serra Alta	FSA-50	820479.1	8809991	476.122	100.89	2018	77.38	-44.72
Serra Alta	FSA-51	820660.3	8810669	558.736	195.34	2018	108.03	-45.01
Serra Alta	FSA-52	820529.2	8810129	490.844	85.27	2018	79.61	-70.3
Serra Alta	FSA-53	820537.6	8810302	539.984	226.62	2018	104.93	-47.47
Serra Alta	FSA-54	820455.4	8810753	565.057	121.79	2018	104.9	-41.04
Serra Alta	FSA-55	820573.6	8810329	570.135	263.07	2018	107.52	-45.24
Serra Alta	FSA-56	820504	8810751	551.365	153.66	2018	89.11	-41.73
Serra Alta	FSA-57	820419.5	8810761	554.697	150.22	2018	94.66	-41.3
Serra Alta	FSA-58	820533.1	8810274	523.481	263.33	2018	105.64	-70.15
Serra Alta	FSA-59	820357.3	8810654	523.118	164.03	2018	99.71	-41.16
Serra Alta	FSA-60	820608.4	8810341	581.345	250.42	2018	67.13	-47
Serra Alta	FSA-61	820559.8	8810389	548.625	31.19	2018	107.93	-45.87
Serra Alta	FSA-62	820560.7	8810389	548.78	169.54	2018	101.49	-40.26
Serra Alta	FSA-63	820580.4	8810415	554.133	232.65	2018	91.59	-61.41
Serra Alta	FSA-64	820510.7	8810241	507.971	210.83	2018	105.52	-64.18
Serra Alta	FSA-65	820572.7	8810173	506.743	55.61	2018	78.78	-46.01
Serra Alta	FSA-66	820334.4	8809456	514.639	251.13	2018	110.05	-65.07
Serra Alta	FSA-67	820375.3	8810271	520.606	367.73	2018	112.19	-55.16
Serra Alta	FSA-68	820410.3	8809908	485.065	193.37	2018	112.24	-54.51
Serra Alta	FSA-69	820480.3	8810418	537.569	284.63	2018	97.78	-44.55
Serra Alta	FSA-70	820353.5	8809798	482.093	243.73	2018	112.72	-48.79
Serra Alta	FSA-71	820376.3	8809932	459.681	283.85	2018	115.9	-60.27
Serra Alta	FSA-72	820259.8	8810095	430.337	38.45	2018	87.92	-46.24
Serra Alta	FSA-73	820261.2	8810094	430.556	190.5	2018	100.9	-44.31
Serra Alta	FSA-74	820375	8809831	467.634	319.82	2018	110.02	-44.15
Serra Alta	FSA-75	820056.4	8809677	394.012	169.78	2018	108.13	-46.28
Serra Alta	FSA-76	820331.5	8809455	513.693	25.45	2018	85	-45
Serra Alta	FSA-77	820331.3	8809455	513.733	228.7	2018	85	-50
Serra Alta	FSA-78	820370.7	8809655	493.921	258.74	2018	107.5	-46.15
Serra Alta	FSA-79	820645.5	8810497	667.005	274.75	2018	111.42	-65.51
Serra Alta	FSA-80	820518.8	8810186	478.482	203.49	2018	90.77	-80.49
Serra Alta	FSA-81	820618.1	8810498	667.895	315.19	2018	139.61	-49.92
Serra Alta	FSA-82	820618.5	8810578	661.185	268.63	2018	104.15	-49.6

Target	Hole Number	Easting (m)	Northing (m)	Elevation (m)	Depth	Year	Azimuth	Dip
Serra Alta	FSA-83	820573.6	8810582	663.284	253.77	2018	108.73	-53.6
Serra Alta	FSA-84	820739.1	8810265	682.465	273.69	2018	7.16	-89.87
Serra Alta	FSA-85	820763.8	8810864	541.903	96.7	2018	109.93	-43.86
Serra Alta	FSA-86	820419	8810762	554.655	330.86	2018	63.3	-49.5
Serra Alta	FSA-87	820812.5	8810276	678.999	432.49	2018	96.84	-85.25
Serra Alta	FSA-88	820735.7	8810320	678.183	288.61	2018	67.24	-87.08
Serra Alta	FSA-89	820540.5	8809870	561.592	395.25	2018	108.97	-70.03
Serra Alta	FSA-90	820766.5	8810168	661.68	402.47	2018	12.72	-88.94
Serra Alta	FSA-91	820764.3	8810485	660.827	310.03	2018	109.95	-74.81
Serra Alta	FSA-92	820535.9	8809615	565.621	292.77	2018	109.3	-64.62
Serra Alta	FSA-93	820747.4	8810385	673.0139	427.75	2020	110	-65.47
Serra Alta	FSA-94	820573.6	8810318	570.5611	487.53	2020	110	-33.57
Serra Alta	FSA-95	820701.2	8810395	672.7473	274.46	2020	110	-63.61
Serra Alta	FSA-96	820457.9	8809561	548.1908	385.71	2020	110	-55.39
Serra Alta	FSA-97	820778.5	8810437	663.5598	427.57	2020	110	-65.86
Serra Alta	FSA-98	820680.2	8810457	672.121	397.37	2020	110	-64.91
Serra Alta	FSA-99	820557.5	8809673	568.1653	474.97	2020	110	-40.66
Serra Alta	FSZ-001	821629	8809154	702.6515	450.25	2022	268.89	-74.88
Serra Alta	FSZ-002	821202.8	8810210	689.4841	380.41	2022	282.21	-70.58
Serra Alta	FSZ-003	820971.5	8810985	664.0209	451.3	2022	288.9	-74.85
Serra Alta	FSZ-004	821458.3	8810403	696.4541	104.7	2022	270	-65
Serra Alta	FSZ-005	821458.5	8810403	696.5088	538.73	2022	271.93	-64.94
Serra Alta	FSZ-008	820965.7	8810578	663.2383	595.25	2022	94.23	-49.99

Figure 10.2 - Collar Locations for Cerrado Gold Drillholes, Serra Alta Deposit



Source: Cerrado Gold 2022

10.3 Geological Functions

All geological activities strictly adhere to Cerrado Gold Standard Operating Procedures (SOPs). These procedures encompass various aspects, including drilling requirements and downhole surveying, core transport and chain of custody, core photography, Rock Quality Designation (RQD) and geotechnical data capture, geological and structural descriptions, density measurements, core sampling, core storage and security, and drill collar survey methodologies.

10.3.1 Drilling Requirements and Downhole Surveys

Since January 2018, drilling was undertaken by Servitec/Foraco Serviços de Sondagem using modern CS-14 drill rigs powered by diesel-hydraulic systems (Figure 10.3). The commencement of holes involves the use of HQ-size rods, which are subsequently downsized to NQ2 when encountering fresh rock formations.

To monitor drill hole deviation, since 2017 to 2021 a non-magnetic electronic multi-shot tool called DeviFlex™, manufactured by Devico. The Deviflex™ has the capability to survey inside the drill rods. It comprises two independent measuring systems utilizing three accelerometers and four strain gauges to calculate inclination and changes in azimuth. The surveys encompass two runs (entering and exiting the hole) with deviations systematically measured every 3 m. The Gyro Master™ manufactured by SPT (Stockholm Precision Tools). Gyro Master™ is a north-seeking gyro and has the capability to survey inside the drill rods using continuous collection in real-time mode (telemetry). The Gyro Master™ exhibited greater accuracy in the survey runs compared to the DeviFlex™ tool.

Once a drill hole is finished, a 1.5-m long plastic pipe is inserted into the hole and secured in a concrete monument to mark the collar (Figure 10.4). This monument is labeled with a metal tag that provides essential information pertaining to the hole.

Figure 10.3 - Drill Rig Drilling the FNE-003

Source: Cerrado Gold, 2022

Figure 10.4 – Drillhole Collar Monument

Source: Cerrado Gold, 2022

10.3.2 Core Transport and Chain of Custody

The core is delivered from the drills twice a day: in the morning at the conclusion of the second shift and in the afternoon, typically around 14:00, prior to the completion of the first shift. The drillers transport the core to the core shack and have the geologist validation.

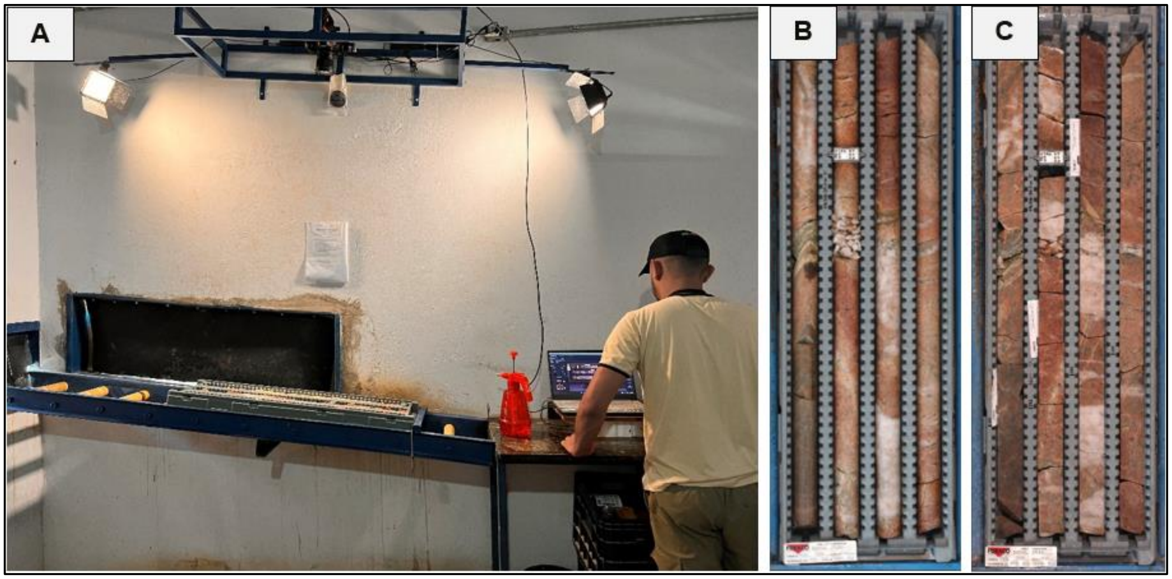
Upon arrival at the core shack, the core boxes undergo a thorough check to ensure proper labeling and correct placement of the from/to footage blocks indicating the drilled intervals.

At the conclusion of every shift, the drilling report is presented in both digital and physical formats, ensuring comprehensive documentation of the operations. Additionally, the daily report is imported into the designated database, facilitating efficient storage and retrieval of the collected data.

10.3.3 Core Photo Register

To capture photographs of the core while it is still wet, a photographic station is utilized in two steps, employing a camera and Imago Seequent™ cloud photo database technology (Figure 10.5A). The camera utilized is a Canon EOS 4D Mark IV Full Frame DSLR with a Sigma 50mm Art f/1.4 FG HSM lens. The first photo is taken upon the core's arrival at the shack (Figure 10.5B), and the second photo is captured after the core is split (Figure 10.5C). Photographs are stored in a cloud repository and accessible by web interface and modelling software.

Figure 10.5 – A) Photographic Station B) Wet Core C) Split Wet Core



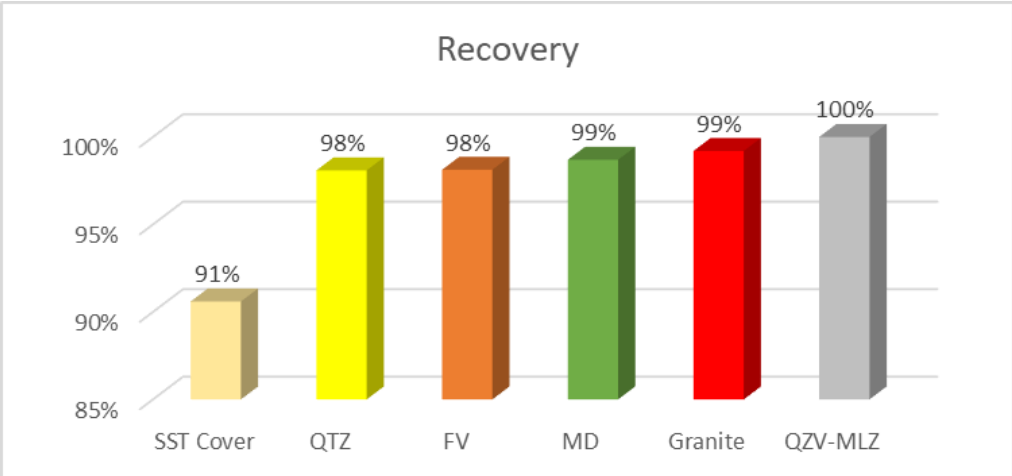
Source: Cerrado Gold, 2022

10.3.4 RQD / Geotechnical Data Capture

The logging process for capturing Rock Quality Designation (RQD) data is currently implemented in all drilling activities. Additionally, out of the total of 361 drill holes, geotechnical assessments were conducted in 24 drill holes totaling 4,106.86 m, which accounts approximately 5% of the total length drilled in the Serra Alta target.

Notably, the intervals that underwent geotechnical assessment demonstrate a recovery rate of 97%, as depicted in (Figure 10.6). This remarkable recovery rate reflects the effectiveness and accuracy of the drilling process in acquiring valuable data for further analysis and interpretation.

Figure 10.6 – Geotechnical Recovery

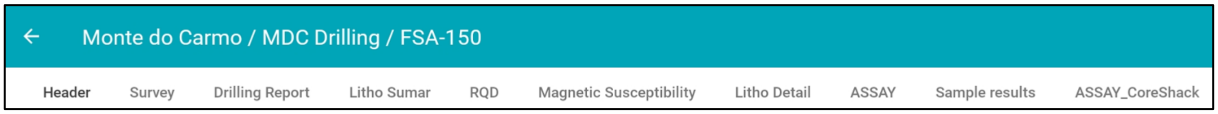


Source: Cerrado Gold, 2022

10.3.5 GEOLOGICAL DESCRIPTIONS

A geologist meticulously records the logging of drill holes using tablet with MX Deposit™ managed by Seequent. The database is stored in the cloud and accessed with individual username and password and is subdivided into tabs (Figure 10.7). In the main Header tab, the geologist adds general characteristics (Figure 10.8). The core is logged as described in the subsequent sections.

Figure 10.7 - Logging Tabs

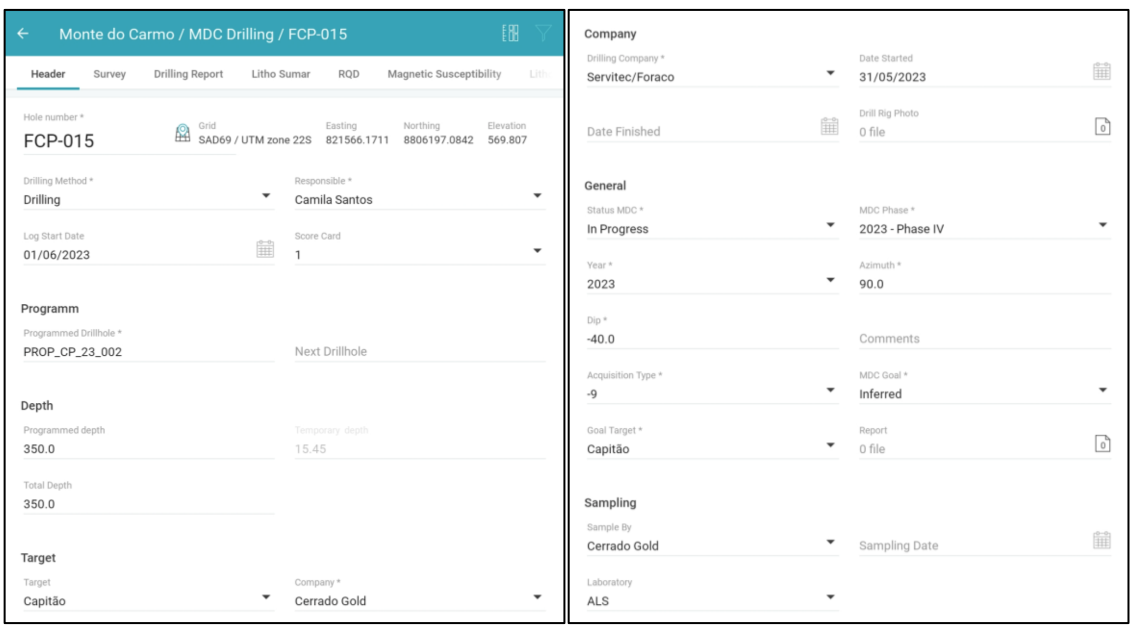


Cerrado Gold, 2022

10.3.5.1 HEADER

The Header is used to input general characteristics of the drill hole like coordinates, drilling method, responsible, log start date, score card, programmed drillhole name, depth, target, year, among others (Figure 10.8).

Figure 10.8 – Drill Log Header



Source: Cerrado Gold, 2022

10.3.5.2 LITHO DETAIL

Within the Litho Detail tab, the geologist categorizes the descriptions based on various factors such as rock type, weathering, alteration, and other distinguishing characteristics (Figure 10.9). The logging process incorporates predefined drop-down lists that aim to standardize the descriptions, thereby facilitating the geological modelling of the deposit (Figure 10.10). To aid in this standardization, the project includes a lithotheque (Figure 10.11) at the at the core logging facilities. When visible gold is found and noted, a red mark is made both on the core and in the core box to indicate its location.

Figure 10.9 - Litho Detail Tab

From *	To *	Length	Rock Code *	Weathering	QZ Vein *	Total Sulphides *	Sulphide Type	Py (%)	Py Shape	Gal (%)	Sph (%)	Cpy (%)	Struct
Struct Angle	Struct Az	Struct Dip	Alteration_1	Alteration_2	Alteration_3	Visible Gold *	Visible Gold Track	Comments	Photo	Responsible *	Date *		

Source: Cerrado Gold, 2022

Figure 10.10 – Geological Description Codes

Value	Rock Code
LDF	Landfill
SOI	Soil
TOB	Saprolite
FSAP	Fine Saprolite
CSAP	Coarse Saprolite
MGR	Fine Granite
GRD	Granite <<Vermelho>>
GRC	Granite <<Salmao>>
GRB	Granite <<Mesclado>>
GRA	Granite <<Carijo>>
GRN	Granite
FV	Felsic Volcanic
AAD	Aphanitic Acid Dyke
PAD	Porphyritic Acid Dyke
AND	Porphyritic Andesite
VCU_TF	Tuff

Value	Rock Code
VCU_BR	Volcanic Breccia
MLZ	Mylonite
BRC	Breccia
MIU	Mafic Intrusive Unit
MVU	Mafic Volcanic Unit
MD	Mafic Dike
QZV	Quartz Vein
CGE	Conglomerate
SST	Arenite (Sandstone)
SST_FE	Sandstones and claystones ferruginous
CLS	Claystones with minerals in the silt fraction, little or not stratified
QTZ	Quartzite
QTZ_L	Well bedded pinkish coarse metasandstone and thin siltier laminated intervals in QTZ
QTZ_C	QTZ matrix supported, quartz clast conglomerate
QTZ_F	Coarse granular feldspathic metasandstone and matrix supported metaconglomerate
CLXH	Chlorite Schist

Value	Rock Code
GB	Gabbro
DIO	Diorite
PX	Pyroxenite
SCH	Schist
SCXH	Sericite Schist
BTH	Biotite "Hydrothermalite"
BXH	Biotite Schist
GND	Granodiorite
HNB	Hornblendite
PD	Wherlite
LAT	Laterite
TON	Tonalito
PHY	Phylonite
NRC	No recovery

Weathering *

Search

Value	Description
0	Fresh rock
1	Low Intensity
2	Medium Intensity
3	High Intensity
-9	None

QZ Vein *

Search

Value	Code	Description
0	Not present	Utilizado quando não há presença de veio de quartzo e/ou quando ocorre 1 veio com espessura abaixo de 5mm.
1	Low Frequency	Utilizado quando há presença de 1 a 2 veios de quartzo com espessura acima de 5mm.
2	Medium Frequency	Utilizado quando a presença de ate 3 a 4 veios de quartzo com espessura acima de 5mm e/ou mais veios menores...
3	High Frequency	Utilizado quando há presença acima de 5 ou mais veios de quartzo com espessura acima de 5mm e/ou mais vei...
-9	None	

Struct

Search

Value	Description		
None		f	Fault
qzv	Quartz Vein	fr	Frature
sn	Foliation	lct	Lower Contact
zc	Shear Zone	cbv	Carbonate Vein
brc	Breccia	-9	

Total Sulphides *

Search

Value	Type	Description
0	Trace	No occurrence or traces (<1mm) of sulphides
1	Low	At least 1 sulphide grain >3mm or 8-15 sulphides <1mm 8 a 15 sulfetos <1mm.
2	Medium	8-15 sulphide grains >3mm and/or sulphides <1mm
3	High	>15 sulphide grains >3mm and/or sulphides <1mm
-9	None	

Sulphide Type

Search

Value	Description
None	
1	Structural association
2	Disseminate
3	Mixed

Py Shape

Search

Value	Description
None	
1	Cubic
2	Amorphous
3	Mixed

Visible Gold *

Search

Value	Description	Unit
0	Not Present	0
1	Fine	<0.35mm
2	Medium	0.35mm to 0.7mm
3	Coarse	>0.7mm

Visible Gold Track

Search

Value	Description
None	
LAB	VG enviado na amostra pro laboratório
BOX	VG está na amostras do box
LAB/BOX	VG na amostra do laboratório e no box

Alteration_1

Search

Value	Description		
None		fe	Ferric
chl	Chloritic	k	Potassic
ep	Epidotization	prop	Propilitic
si	Silicification	ser	Sericitic
bt	Biotitization	spt	Serpentinization
cb	Carbonate	hem	Hematitization

Cerrado Gold, 2022

Figure 10.11 – Lithotheque, Cerrado Gold Core Logging Facilities

Cerrado Gold, 2022

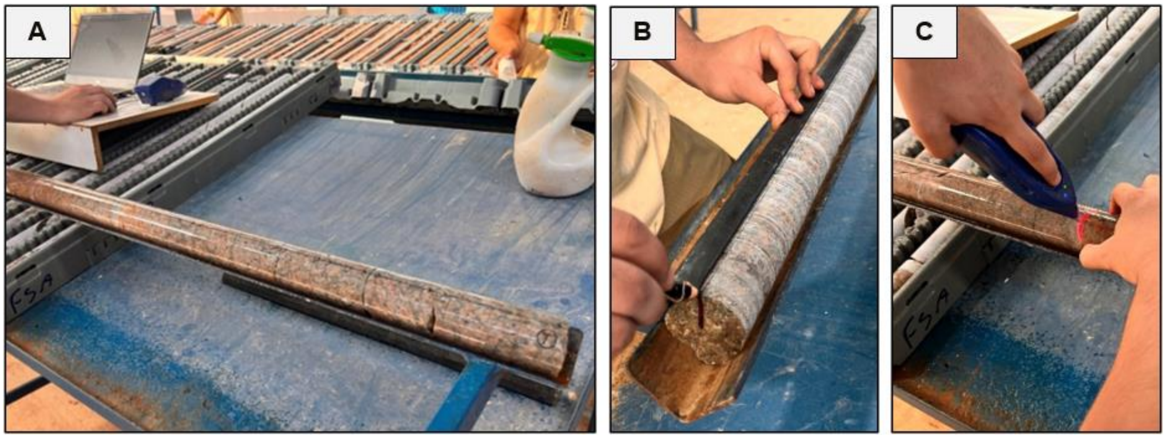
10.3.5.3 *STRUCTURAL MEASUREMENTS*

The process of collecting structural data from oriented drill core in the Cerrado region is conducted within the core shack by a structural geologist. Guided by the intervals of the cores indicated by the REFLEX ACT III™ during drilling, a top guidance line is drawn and extended to the remaining intervals. This is achieved by utilizing a gutter as a support mechanism (Figure 10.12)

The collection of structural measurements during the litho/structural logging is carried out on the oriented core using REFLEX IQ-LOGGER™ (Figure 10.12C). This advanced tool enables the geologist to digitally capture and record the structural measurements. The entire process, from data collection to storage, is conducted in a digital format, utilizing MX Deposit as the designated repository for the collected points.

By employing this systematic approach, the Cerrado Gold research team ensures accurate and efficient collection of structural data from the oriented drill core. The utilization of Reflex's IQ-Logger and the digital storage capabilities of MX Deposit enhance the quality and accessibility of the acquired data, facilitating further analysis and interpretation of the geological and structural characteristics.

Figure 10.12 – A) Core Orientation B) Orientation Line C) Structural Measurements

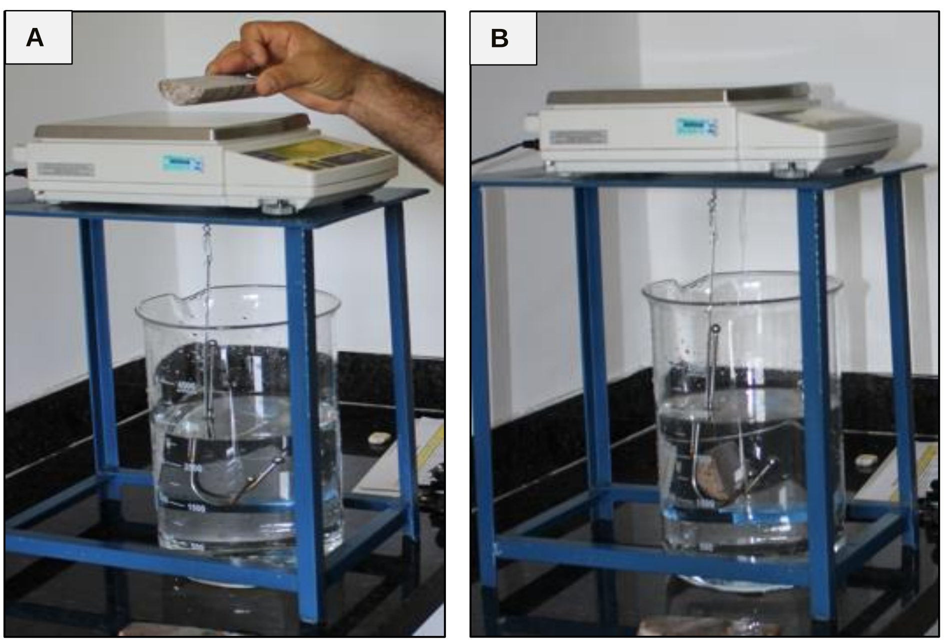


Cerrado Gold, 2022

10.3.6 DENSITY MEASUREMENTS

Cerrado Gold is currently employing the Archimedes' method to ascertain the density of core samples. This method involves a systematic collection of core samples, with one in 10 samples measured in non-mineralized zones and one sample measured for every 5 within the mineralized regions. The determination of density is achieved through a series of steps, beginning with the measurement of the weight of the dry core sample (m1), followed by the complete immersion of the core sample in distilled water and subsequent measurement of its weight (m2) (Figure 10.13). The density (ρ) of the core sample is calculated using the formula $\rho = m1 / (m1 - m2)$.

Figure 10.13 – Density Determination Equipment. a) m1=Dry Core b) Immersion Core



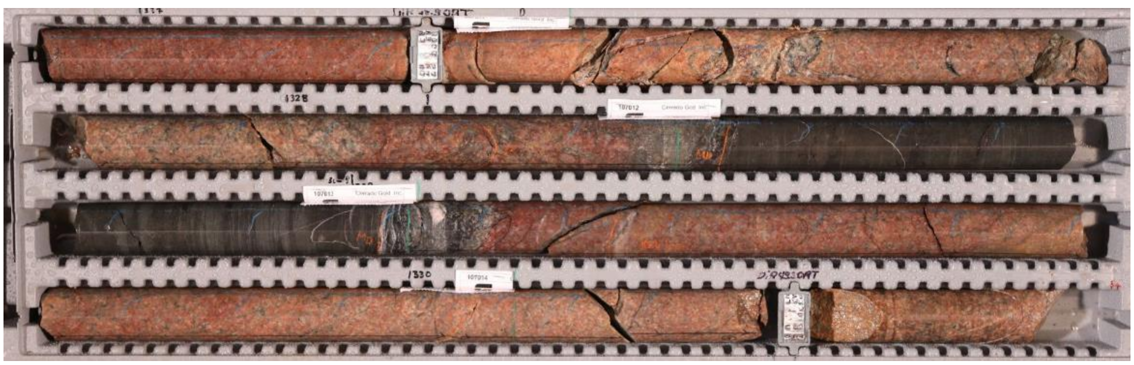
Cerrado Gold, 2022

10.3.7 DRILL CORE SAMPLING

The logging geologist arranges the samples and provides detailed descriptions of each one. Sampling is conducted on all granitic formations, and additionally in other units when altered (e.g. Felsic Volcanics) extending 5 to 10 m into the wall rock on the shoulders of the mineralization. In hydrothermally altered granite, the standard sample length is around 1 m, but sampling is not carried out across lithological or alteration boundaries. The minimum sample length employed is 80 cm in NQ2, in rare cases 30 cm in HQ and 40 cm in NQ2 due to metallic screen analysis. For unaltered granite and unmineralized wall rock, the standard sample could up to 2 m. All process has a review from a senior geologist registered in the database.

During the logging process, there are some lines marked in the core. The beginning and end points of each sample are also clearly marked on both the core and the core box with a green line. The line black indicates oriented run and the structures are marked with orange line. The blue line indicates the orientation for sawing when sampling (Figure 10.14).

Figure 10.14 – Orientation Lines in Drill Hole



Cerrado Gold, 2022

10.3.7.1 CORE SPLITTING/SAWING PROCEDURES

The project is equipped with three (3) splitting devices. The split process involves the utilization of a JD5700 350MM saw blade manufactured by Jordan for sample splitting purposes. To prevent any cross-contamination between samples, a brick is employed as depicted in Figure 10.15A. Additionally, Figure 10.15B illustrates the split process, where a clean water supply and a blue line serve as a guide for the cutting direction.

Figure 10.15 – Split Process

A) Brick to Avoid Contamination

B) Split Cutting in the Blue Line

Source: Cerrado Gold, 2022

10.4 Core Storage and Security

Geological core images are available digitally. However, the physical core is stored in a secured location out of the weather and available to be pulled any time for review. Once the core is analyzed, the drill holes are stored in the core shack (Figure 10.16).

Figure 10.16 - Core Shack Storage

Source: Cerrado Gold, 2022

10.4.1 Drill Collar Surveys

The surveying of all drill hole collars is carried out by a specialized technician or geologist. In 2017 to 2019, a total station setup was used, but this was shifted to a Real Time Kinematic (RTK) system in 2020 (Figure 10.17 to Figure 10.19). These surveys adhere to the SAD 69 datum and involve the collection of coordinates in UTM format. In order to ensure accuracy, selected old drill holes have been subjected to spot checking, none of which have shown significant differences/errors.

Figure 10.17 – RTK System Base

Source: Cerrado Gold, 2022

Figure 10.18 – RTK System Rover

Source: Cerrado Gold, 2022

Figure 10.19 – RTK System Operation

Source: Cerrado Gold, 2022

11 SAMPLE PREPARATION, ANALYSIS AND SECURITY

The information in Sections 11.1 to 11.3 is largely extracted and/or summarized from the Report available on SEDAR entitled: "Monte do Carmo Project, Tocantins State, Brazil, Independent Technical Report – Updated Preliminary Economic Assessment for Serra Alta Deposit," which is effective as of July 21st, 2021 and issued on September 30th, 2021 (the Technical Report) prepared by GE21 Consultoria Mineral Ltda. for Cerrado Gold Inc. (Cerrado Gold or the Company). Further details as documented therein remain correct and valid.

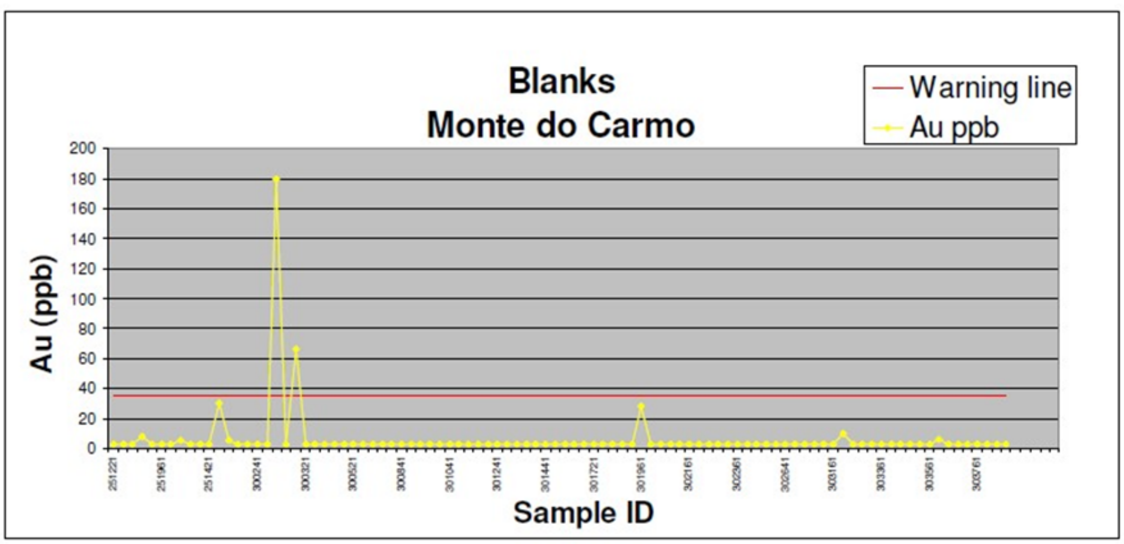
11.1 Historical Sampling

The Verena (VML and VMC) and Kinross drill programs used fire assay determination for gold analysis of samples using ½ core, sawn on site. The sample size analyzed (aliquot) was 50 g. This method involves crushing the entire sample, pulverizing between 250 and 300 g, then subsampling 50 g for fire assay (ref: AuFA50 - FA/AA 50g - Au (5ppb)) performed at SGS-GEOSOL Belo Horizonte laboratories.

The final analysis of the weight of gold recovered in the assay can be by atomic absorption spectroscopy (AAS). A QA/QC protocol was employed for the Kinross sampling. Rocklabs Certified Reference Materials (CRMs, SH24, SE19 and SF12) were inserted as standards and limestone samples inserted as blanks. The acceptable limits for standards were set at ± 2 standard deviations and 0.038 Au g/t for the blanks.

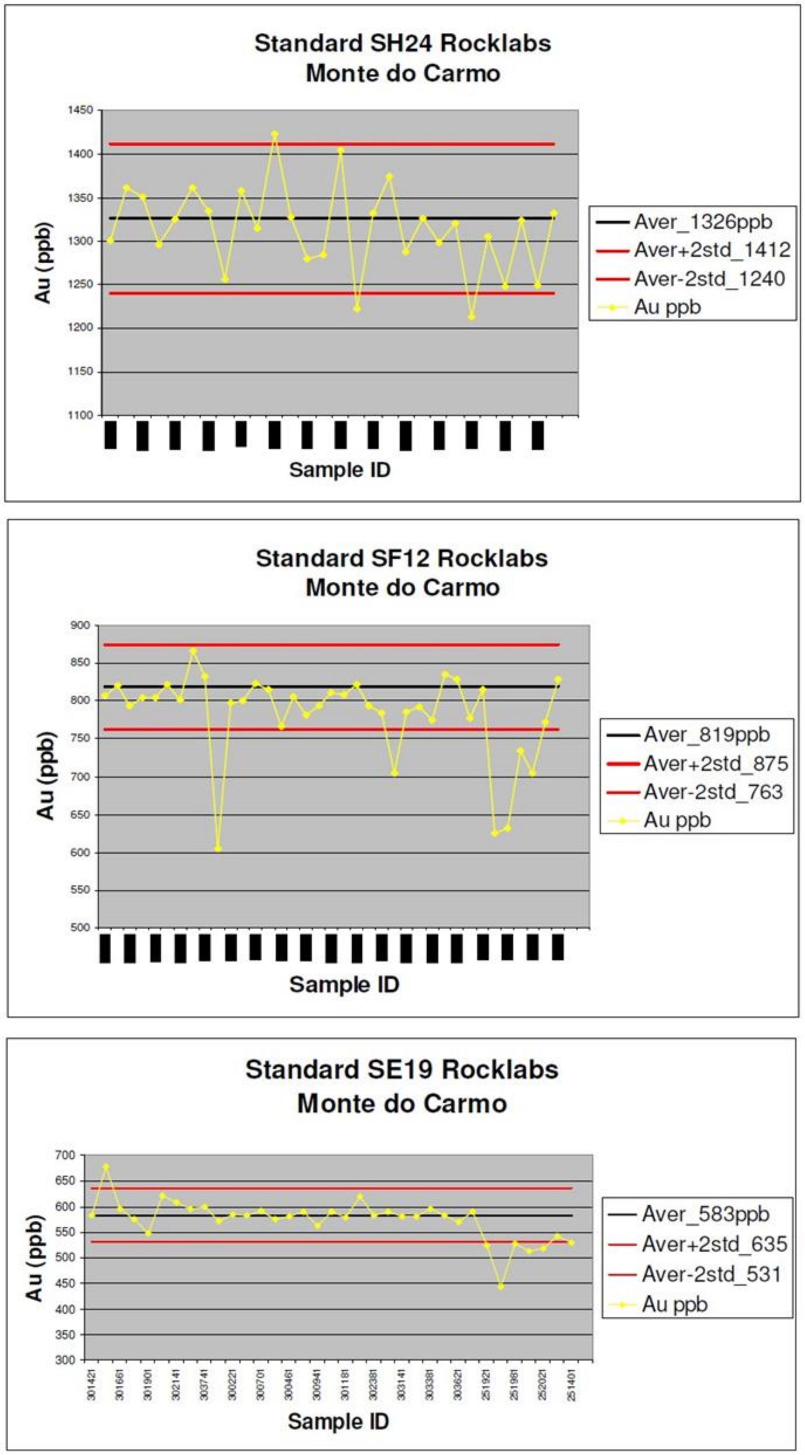
The Kinross blank and CRM control charts are shown in Figure 11.1 and Figure 11.2, respectively.

Figure 11.1 – Kinross Blank Control Charts



Source: Cerrado Gold, 2019

Figure 11.2 – Kinross CRM Control Charts



Source: Cerrado Gold 2019.

Paranapanema is reported to have analyzed its samples using only an AAS determination. This was a somewhat less expensive method in relatively common use in the 1970s and 1980s. It involved dissolution of the sample pulp in acid and determination of gold content of the resulting liquor by AAS after MIBK collection. In this method, sample aliquot size usually varied from 1 g up to about 20 g, depending on technique. The method had several disadvantages in that a 1 g sample was far too small to accurately subsample the pulp and 20 g was often too large to fully digest in the acid, thereby failing to release all of the gold. These analyses were performed in Paranapenema's own internal laboratory (ETMGN) using an unknown aliquot size.

In its Corporate Finance Manual, Appendix 3D (https://www.tsx.com/resource/en/544), the TSX Venture Exchange (TSX-V) places restrictions on the use or disclosure of the results of precious metal analyses by non-fire assay techniques, or results from an analysis by a non-Canadian laboratory.

This requires each news release, shareholder report or other public communication which includes such analyses to contain the following information:

- The analytical method used to obtain the reported results.
- The name of the laboratory at which the analyses were conducted.
- The results of any fire assay check program or the intention to conduct a fire assay check program at an independent laboratory. All results of a fire assay check program are to be published in a timely manner.

The TSX-V can require an Issuer to undertake a fire assay check program at a Canadian laboratory if the reported results are, in the TSX-V's opinion, inconsistent with historical results from the property, the geological environment or other pertinent factors.

Since most large laboratories are now multi-national, it has been Micon's experience that companies such as SGS, ALS and others are accepted as "Canadian".

There have been a couple of checks of the PNP assays by MSM and Cerrado Gold using ¼ of the remaining core. The first was by 30 g fire assay (MSM) and the latter by screen metallics fire assay (Cerrado Gold). For the MSM reassays the individual results varied significantly but, on average, the gold grade increased by 29.6%. For the Cerrado Gold re-assays, again the results were variable, but the average grade dropped from 1.04 g/t Au to 0.80 g/t Au.

MSM staff are also concerned that the PNP geologists may have been selective in their choice of which half of the core was bagged for assaying during sampling. This also has the potential for creating a bias.

As for previous technical reports, the current QP of Geology and Resources would not use these AAS results in a Mineral Resource Estimate.

The Kinross drilling employed a quality assurance/quality control (QA/QC) program. It is not certain that Paranapanema or Verena had any such program in place.

11.2 Cerrado Gold Sampling Pre-2019

11.2.1 Sampling Procedures

The following procedures were used by Cerrado Gold during sampling:

- All samples are marked and numbered on the core boxes respecting the limits defined by the geologists (lithological or alteration contacts) during core logging.
- At the end of each sample interval two sample tags, with sample numbers marked, are stapled to the core boxes.
- The core is then sawn by Cerrado Gold employees using a diamond sawn blade with the saw-cut location following the cut line marked by the geologist.
- After sawing, the left half of the core is placed into a numbered plastic sample bag with one of the sample tags (both using the same number). The other half core is returned to the box (the other sample tag remains in the box).
- Quarter core duplicate, blank and standard samples are inserted into the sample number sequence at planned intervals.
- The small plastic sample bags are placed into a larger rice bag (five (5) to ten (10) samples) and sealed for shipment to the laboratory.

11.2.2 Control Samples

Cerrado Gold has been inserting blanks, standards, and quarter-core duplicate samples into its sample stream since drill hole FSA-05. One control sample is placed every ten (10) samples so that there is one of each type every 30 samples. Cerrado Gold used a dirty limestone sourced from local quarry as blank material. The standard samples (CRMs) used were commercially sourced from ITAK (Instituto de Tecnologia August Kekulé) up to ~2019 prior to switching to those sourced from Canadian Resource Laboratories (CRL).

Once sealed, the samples are taken by company truck to Palmas where they are put on commercial transport for shipment to SGS's sample preparation laboratory in Goiania.

The samples were shipped to the laboratory, with sample submission forms specifying the size and contents of the batch, as well as the procedure code and instructions for preparation and analysis.

11.2.3 Analyses

All samples from the Monte do Carmo Project were assayed using the metallic screen fire assay technique (SGS reference FAASCR_150). In this method 1 kg of coarse crushed material is subsampled and milled to -150 mesh. The material is then screened and the plus fraction is fire assayed for gold and duplicate assays are performed on the minus fraction. For Cerrado Gold, the coarse fraction was analyzed by 50 g fire assay and the minus fraction was assayed in duplicate with 50 g pulps. Final gold determination was with AAS finish. The results of the different assays are then combined mathematically to produce a calculated final assay result.

The samples were prepared at SGS in Goiania, or at Vespasiano in Minas Gerais. Analysis was performed at SGS Vespasiano.

In situations where gold occurs within the sample as dispersed nuggets, particularly for low-grade deposits, screen metallics fire assaying is often a more appropriate analytical technique.

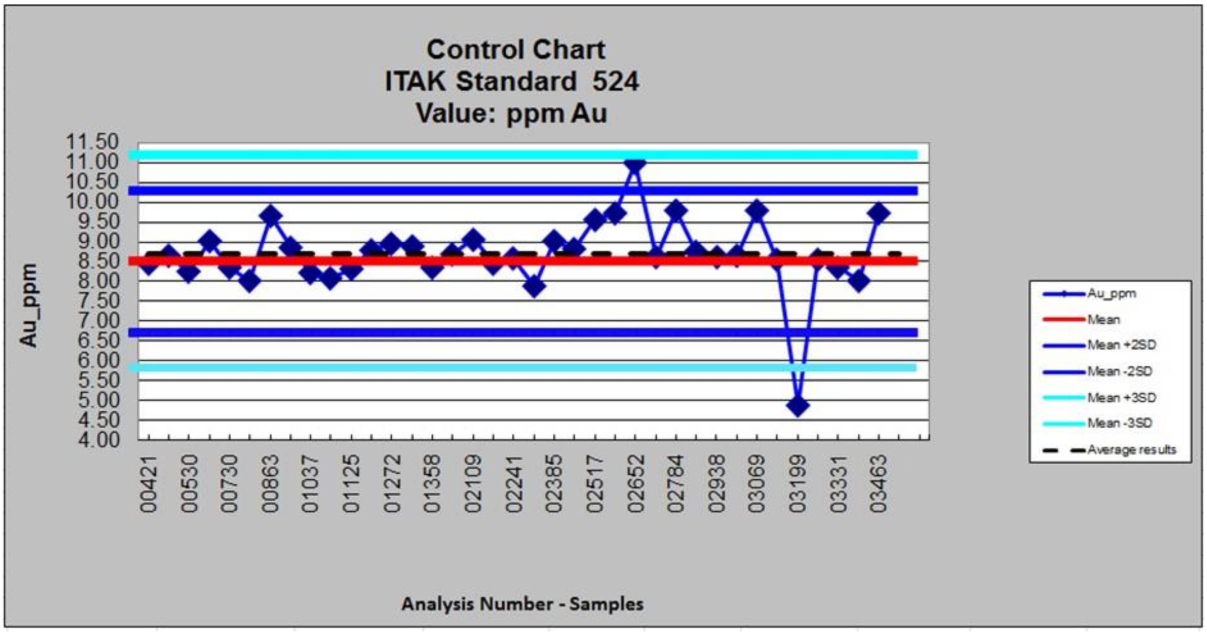
The relationship between SGS and Cerrado Gold is strictly business-oriented for contract analytical services. No Cerrado Gold employees or directors took part in the sample preparation or analyses, other than the cutting and bagging of half core.

11.2.4 Quality Assurance/ Quality Control until 2018

Cerrado Gold tracks the results of its blank, duplicate and CRM assays on industry standard control charts. The CRM control charts showed the accepted value of the standard as well as warning lines at the 2 and 3 standard deviation (SD) levels, as determined by the round robin assaying protocol which certified the materials. Any sample result falling outside of the 3 SD warning line, or two (2) samples in a row outside of the 2 SD line, are usually considered to be failures, requiring follow-up with the laboratory with possible re-assays required.

A representative CRM control chart from this period is provided in Figure 11.3.

Figure 11.3 – Example – Cerrado Gold CRM Control Chart



Source Cerrado Gold, 2018

11.2.5 Conclusions and Recommendations (Micon to 2018)

The QP of the previous Technical Report (GE21, 2021) had reviewed the analytical and QA/QC methods employed by Cerrado Gold and Kinross at Serra Alta and found them suitable for a modern gold exploration program.

While generally in agreement that the adequacy of the sample preparation, security, and QA/QC protocols from earlier Kinross programs were suitable, the current QP has elected to exclude these holes from the Mineral Resource Estimate reported herein. This decision was due to concerns with inconsistencies in analytical methods employed at the time compared to Cerrado Gold's updated protocols (as described in Section 6); this is deemed important for a large tonnage, low-grade gold deposit afflicted by gold nugget effect.

As with previous opinions, the current QP finds the analytical technique employed in the assaying of core by PNP to have been inadequate for modern gold exploration and subsequent resource estimation. Determination of gold by AAS is subject to errors introduced by incomplete digestion of the samples and/or inadequate aliquot size. As such, this data was not utilized in the current Mineral Resource update either.

11.3 Phase I Drilling (GE21), October 2018 – April 2021

The sampling procedures in this phase were again maintained, as described in Section 11.2. It should be noted that the chemical analyses were performed by two (2) different labs at this time.

In Phase 1, Cerrado Gold modified the batch structuring and analytical procedures to be in accordance with Micon's recommendations from 2018. The batch size was gradually adjusted to match the number of samples available for analysis in the laboratory.

In the beginning of the campaign, Cerrado Gold used the ALS laboratory in Lima, Peru, for sample assaying, but switched back to the SGS laboratory due to operational issues caused by the Covid-19 pandemic.

The ALS lab sends the prepared aliquots for analytical assay to their lab in Lima, Peru where the prepared samples are systematically analyzed for gold by fire assay (Au-AA24) or by metallic screen (Au-SCR24).

SGS prepared the samples in Vespasiano and, at the same facility, they were assayed for gold by fire assay with an atomic absorption spectrometry finish (FAA505) or gold by metallic screen with gravimetric finish (FAASCR_150_Au-Grav).

With less frequency, the ICP-MS analysis method was also used for trace elements in a 4-acid digestion (ALS ME-MS-61 and SGS ICP40B).

11.3.1 QA/QC

The QA/QC program in 'Phase 1' covered each chemical analysis performed on samples with the aim of promoting procedures for controlling and guaranteeing the quality and reliability of the samples that were prepared and analyzed in the laboratory.

GE21 conducted the validation of QA/QC data generated in the period from November 24, 2020, until April 4, 2021, referring to Phase 1 drilling.

The QA/QC program continued to include blanks, standards, quarter-core duplicate samples and secondary laboratory analysis. One control sample was placed every ten (10) samples so that there is one of each type in every 30 samples.

11.3.1.1 Blank Samples

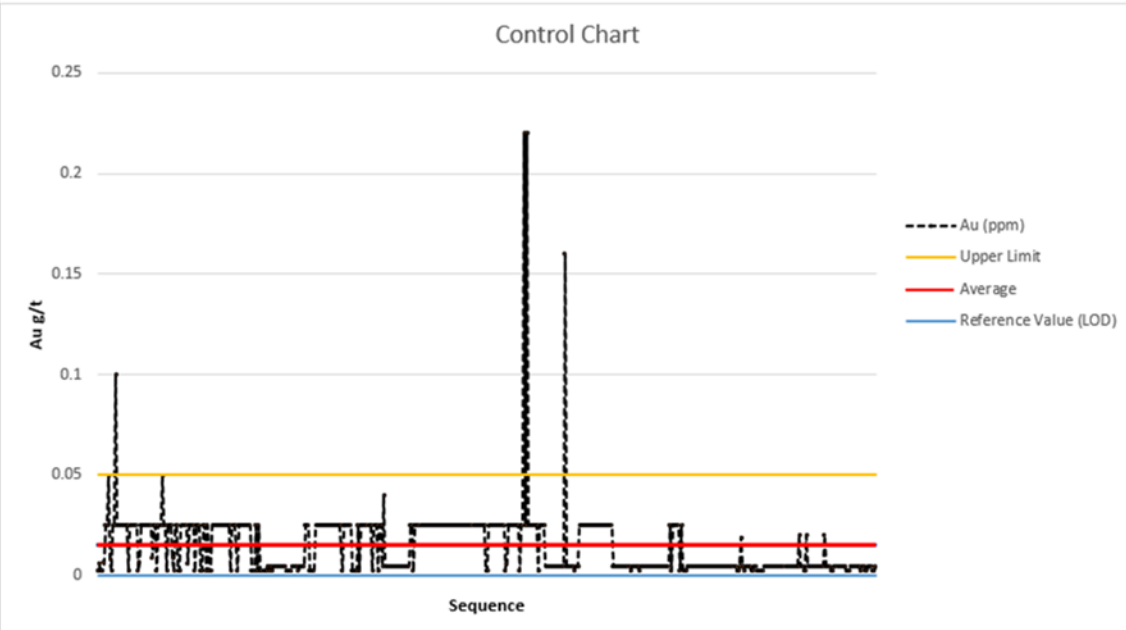
At this time, Cerrado Gold had moved to use brittle gneiss material as blank control samples, acquired from Bahia State. These samples were included with the aim of verifying the quantitative analysis undertaken by the laboratory. The internal procedure defines including blank samples with a frequency of one for every 30 samples. GE21 observed that the total of number of blank samples had a rate of 3.31% compared to the amount of samples present in Cerrado Gold's database. Figure 11.4 presents the statistics and results associated with the blank control samples used in Phase 1.

Figure 11.4 – Result of the Analysis of Blank Samples

Type of control	Blank
Reference	Internal
Variable	Au Total ppm
Number of analysis	534

Unity	g/t
Reference Value (LOD)	0.010
Standard deviation	0.018
Upper limit (5 x LOD)	0.050
Lower limit	-

Minimum	0.00
Maximum	0.22
Average	0.01
Median	0.01
Bias	49.90%



Source: GE21, 2021

Sample code 29572, with 6.2 g/t Au, was presumed as an eventual sample exchange, and was not considered as evidence of contamination in the preparation process. Due to this, the sample was removed from the analysis. Overall, results from samples that underwent these quality control procedures are considered to be within the quality control limit, except for four (4) samples that returned grades higher than 0.05 g/t.

11.3.1.2 *Standard Samples*

Cerrado Gold SOPs ensure the use of standard samples to verify a given laboratory's accuracy. The QA/QC procedure defines including a standard sample with a frequency of one for every 30 samples. GE21 observed that the total of number of CRM control samples had an insertion rate of 2.77% compared with the total database used for estimation. The CRM samples ranged from low to high gold grades, and were acquired from ITAK, CDN Resource Laboratories Ltd. and CTRS.

Based on internal controls, GE21 has established that 90% of the tested samples should be within the minimum and maximum limits, defined as within two (2) SD of the CRM certified value (or 95% confidence limits). The values of these limits are presented in Table 11.1. The analysis graphics are presented in Figure 11.5 to Figure 11.9.

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Table 11.1 – Cerrado Gold CRM Evaluation Criteria

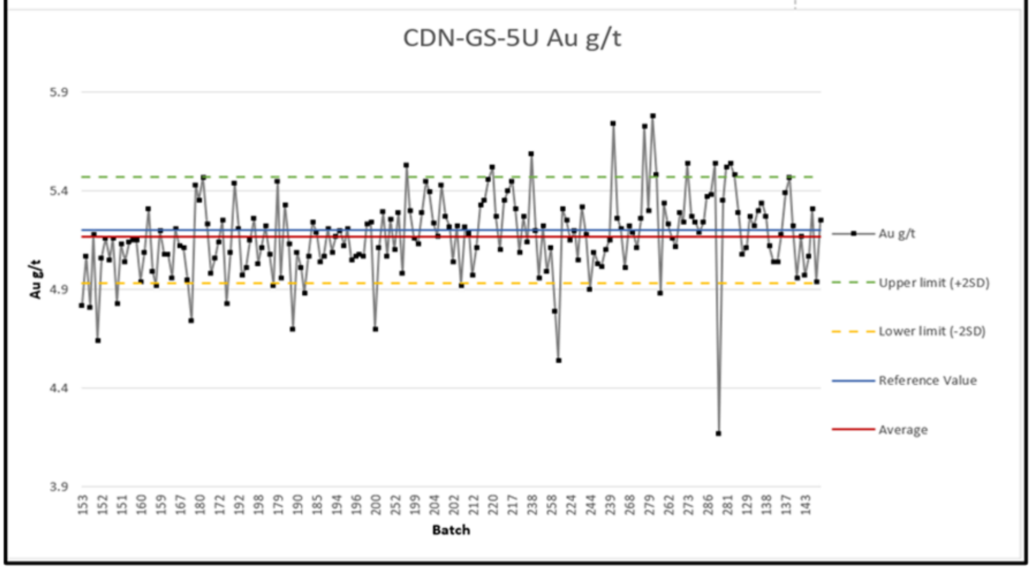
CRM ID	Certified Value (Au g/t)	Lower Limit (Au g/t)	Upper Limit (Au g/t)
		95% Confidence	
CDN-GS-5U	5.200	4.930	5.470
CDN-GS-P5C	0.517	0.469	0.565
CTRS 0902 X	7.560	7.200	7.920
ITAK 524	8.480	8.120	8.840
ITAK 590	1.348	0.988	1.708

Figure 11.5 – Results of the QA/QC Analysis of CRM CDN-GS-5U

Type of Control	Standard
Reference	CDN-GS-5U
Variable	Au total
Number of analysis	191

Unity	g/t
Reference Value	5.200
Standard desviation	0.135
Upper limit (+2SD)	5.470
Lower limit (-2SD)	4.930

Minimum	4.17
Maximum	5.78
Average	5.17
Médian	5.17
Bias	-0.63%



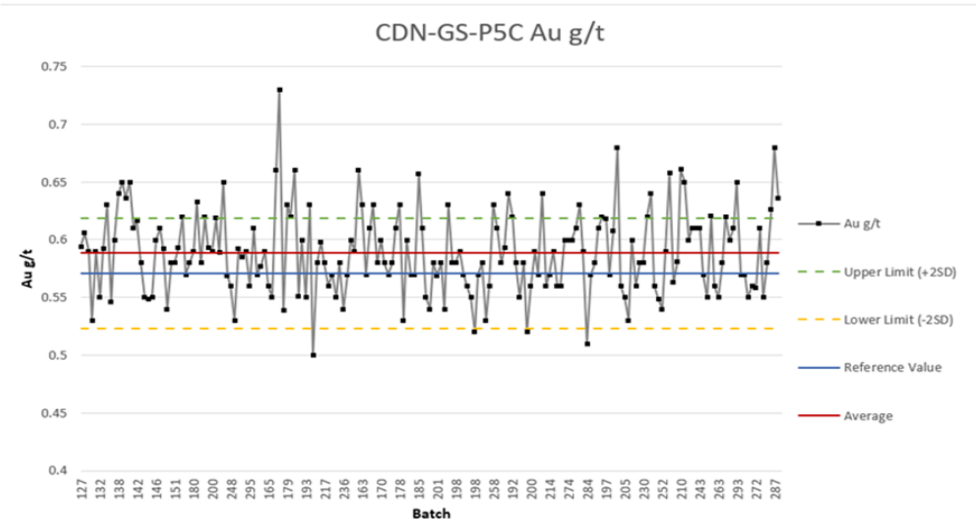
Source: GE21, 2021

Figure 11.6 – Results of the QA/QC Analysis of CRM CDN-GS-P5C

Type of Control	Standard
Reference	CDN-GS-P5C
Variable	Au Total ppm
Number of analysis	187

Unity	g/t
Reference Value	**0.571**
Standard desviation	0.024
Upper limit (+2SD)	0.619
Lower limit (-2SD)	0.523

Minimum	0.50
Maximum	0.73
Average	0.59
Médian	0.58
Bias	3.10%



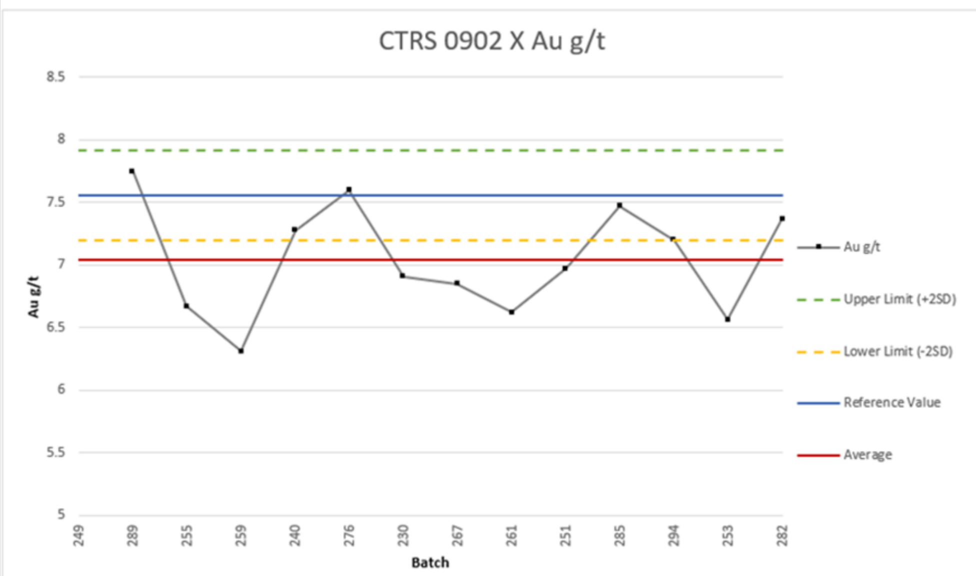
Source: GE21, 2021

Figure 11.7 – Results of the QA/QC Analysis of CRM CTRS 0902 X

Type of Control	Standard
Reference	CTRS 0902 X
Variable	Au Total ppm
Number of analysis	14

Unit	g/t
Reference Value	**7.560**
Standard desviation	0.180
Upper limit (+2SD)	7.920
Lower limit (-2SD)	7.200

Minimum	6.31
Maximum	7.75
Average	7.04
Médian	6.97
Bias	-6.83%



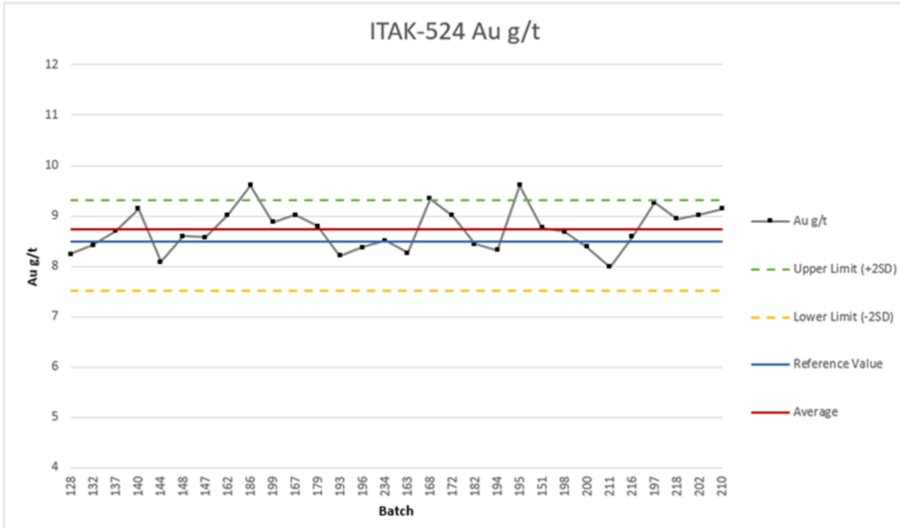
Source: GE21, 2021

Figure 11.8 – Results of the QA/QC Analysis of CRM ITAK-524

Type of Control	Standard
Reference	ITAK-524
Variable	Au Total ppm
Number of analysis	30

Unity	g/t
Reference Value	**8.480**
Standard desviation	0.180
Upper limit (+2SD)	8.840
Lower limit (-2SD)	8.120

Minimum	7.99
Maximum	9.61
Average	8.73
Médian	8.70
Bias	2.95%



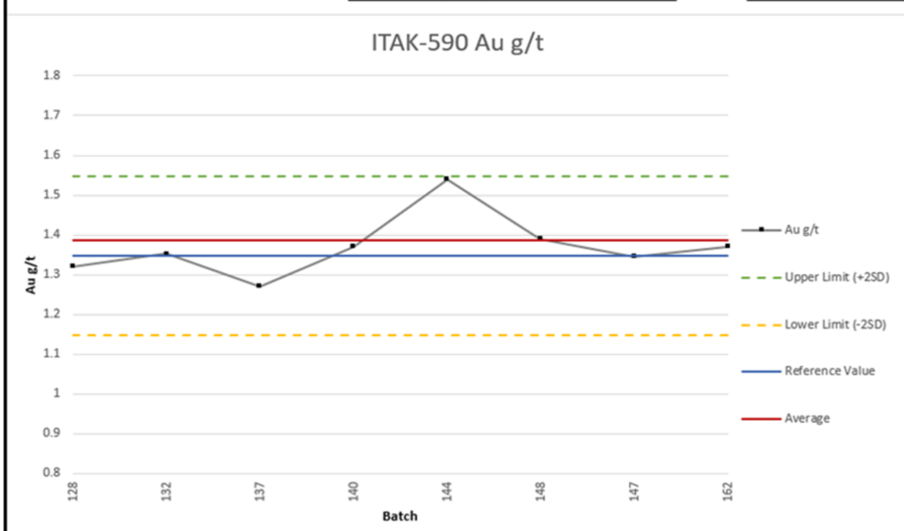
Source: GE21, 2021

Figure 11.9 – Results of the QA/QC Analysis of CRM ITAK-590

Type of Control	Standard
Reference	ITAK-590
Variable	Au Total ppm
Number of analysis	45

Unity	g/t
Reference Value	**1.348**
Standard desviation	0.180
Upper limit (+2SD)	1.708
Lower limit (-2SD)	0.988

Minimum	1.22
Maximum	1.54
Average	1.39
Médian	1.39
Bias	2.89%



Source: GE21, 2021

The existence of three (3) sample exchanges between standards in the database were detected that were corrected to be presented in the graphics. One (1) sample was removed from the analysis due to a sample exchange in the collecting or storing processes.

Overall, based on the analysis of the QA/QC results, both the SGS and ALS laboratories provided a good level of accuracy at higher gold grades, with minor accuracy issues noted for lower grades approaching the detection limit.

It was observed that both laboratories display a slight tendency to overestimate the gold values for CRM CDN-GS-P5C, probably due to equipment calibration in this grade range.

The analysis for standard CTRS 0902 X was only assayed by SGS, and a tendency to underestimate the gold grades was noticed; however, only 14 samples were assayed for this CRM. It is notable that there are two (2) other CRMs in this grade range that did not present bias. As a result, GE21 recommended evaluating the tendency of this CRM over time with its continued use.

11.3.1.3 Duplicate Samples

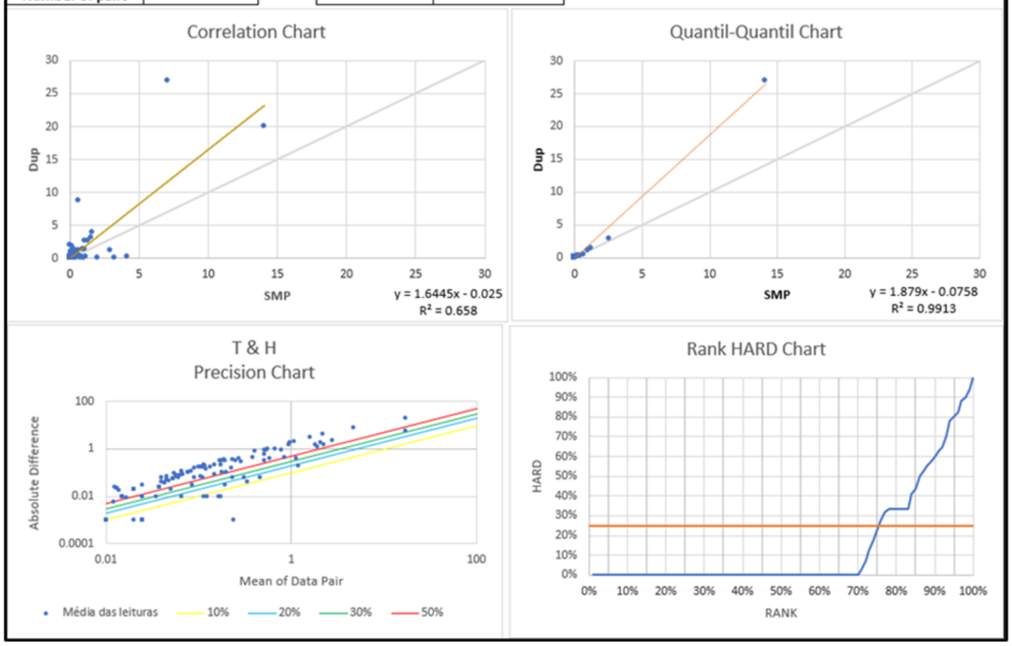
The typical QA/QC program implemented at Cerrado Gold involves sending quarter-core duplicate samples to be assayed by a laboratory. The internal procedure defines including duplicate samples with a frequency of one for every 30 samples. GE21 observed that the total of number of duplicate samples has a rate of 3.56% of the total samples present in the database.

Analysing the results of duplicate samples, the QP of the previous Technical Report (GE21, 2021) considered 25% of the relative difference as a limit of acceptability, considering the variability of the gold in the deposit, as well as the presence of coarse gold. The analysis is presented in Figure 11.10.

Figure 11.10 – Duplicate Sample Analysis

Type of control	Field Duplicate
Reference	Global
Variable	Au g/t
Accuracy limit	25%
Number of pairs	446

	SMP	DUP
Minimum	0.0025	0.0025
Maximum	14.09	26.92
Average	0.14	0.21
Median	0.03	0.03
Dentro do limite de precisão (%)	75.11%	



Source: GE21, 2021

The duplicate analysis provided a low precision in the samples' correlation, considering that only 75% of the analyses are within the limits of acceptability. The T&H graph shows that there does not exist a tendency that relates the observed low precision with a specific grade range.

11.3.1.4 Secondary Laboratory

Analyses made by a secondary laboratory were implemented as a control into Cerrado Gold's QA/QC program starting in 2018. 10% of the analyzed samples were sent to a secondary laboratory. The procedure consists of sending the coarse reject from the primary laboratory to a secondary lab for check assays. In Phase I, Cerrado Gold used ALS and SGS certified laboratories.

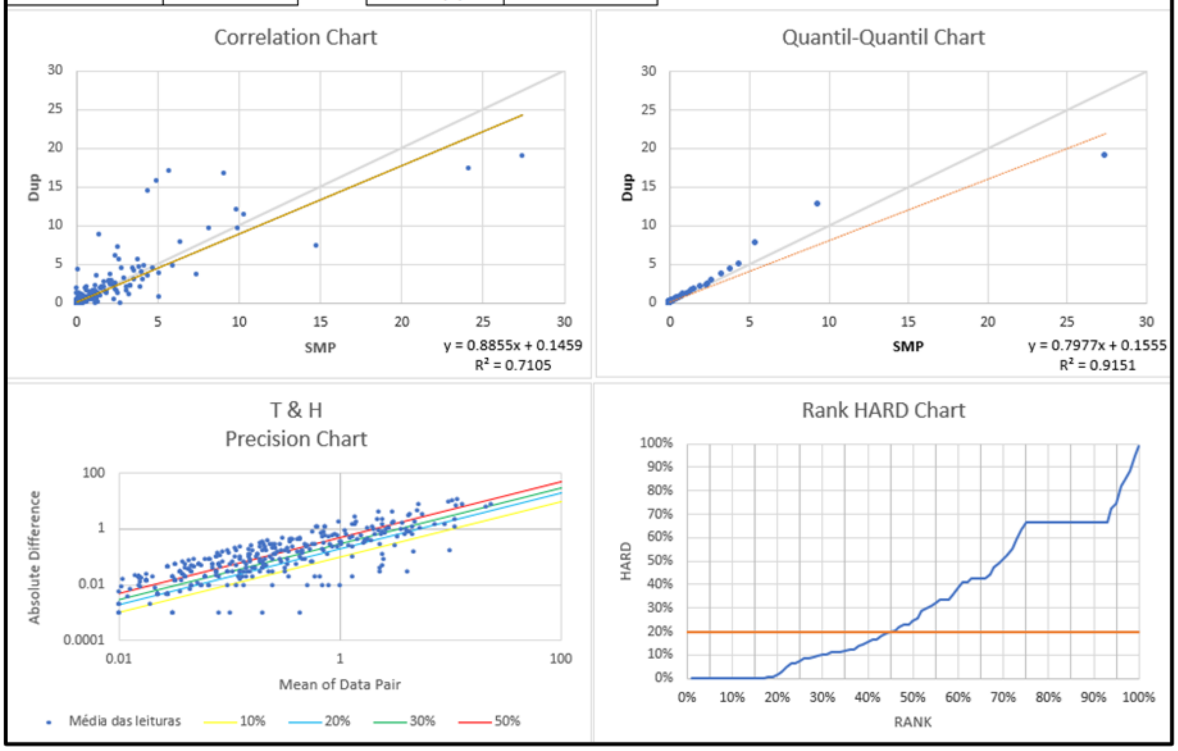
GE21 observed that the total of number of secondary samples has a rate of 2.91% of the total number of samples in the database.

In the analysis of the check assay results (obtained from the secondary lab), the QP at the time considered 20% of the relative difference as acceptable. The analysis is presented in Figure 11.11.

Figure 11.11 – Secondary Laboratory Analysis

Type of control	Secondary Lab
Unity	g/t
Variable	Au total
Accuracy limit	20%
Number of pairs	573

	SMP	DUP
Minimum	0.00	0.00
Maximum	27.40	19.00
Average	0.62	0.69
Median	0.03	0.03
Within precision limit (%)	45.38%	



Source: GE21, 2021

The secondary laboratory analysis revealed a low precision in sample correlation, considering that only 45% of the analyses are within the limits of acceptability. The T&H graph shows that the observed low precision is not specific to any particular grade range.

11.3.2 Conclusions and Recommendations (GE21 – Phase I)

GE21 performed the evaluation of data generated and concludes that the QA/QC procedures are being followed using industry best practices and concludes with aiming for improvement on the QA/QC program with the following observations:

- Overall, the QA/QC program was modified to attend to Micon's 2018 technical report recommendations.
- GE21 maintains the recommendation to create matrix-matched CRMs (analytical standards) from local mineralization.
- GE21 considers that the low precision observed in the secondary laboratory control analysis is related to the use of coarse reject, provided by the primary lab. In this way, the secondary lab

must establish a preparation process to the samples. GE21 suggests using the pulp reject as the control sample, instead of coarse reject.

- GE21 considered that the low precision presented in the quarter-core duplicates graphic is related to the high variability of the gold in the deposit and it does not represent a low laboratory analysis precision. GE21 suggests Cerrado Gold re-evaluate the continuity of this type of control once the sample is inserted in the database. When the duplicate samples occur, this implies the sampling support reducing to ¼ of core. GE21 recommends that Cerrado Gold evaluate changing the use of quarter-core duplicate to coarse and pulp duplicates.
- GE21 suspects that exchanging samples in standards and blanks could represent a failure in the sampling/database storing procedures. GE21 recommends to Cerrado Gold that it reinforce the quality assurance in the field procedures. It is also recommended to improve a pre-existing method to analyze the control results online, in the database.

11.4 Post-Phase I Drilling (Cerrado Gold & DRA), April 2021 – December 31, 2022

During the period following Phase I drilling (April 2021 onwards) until the database freeze date used for this study (December 31, 2022), Cerrado Gold maintained the same sampling and analytical procedures, as previously described in Section 11.2 and Section 11.3.

As before, two primary laboratories were utilized during this period. Samples continued to be sent to SGS for preparation and analysis beyond the Phase 1 campaign (drill holes FSA-148 to FSA-182) until early 2022, at which point Cerrado Gold elected to revert back to ALS.

As discussed in Section 11.3, samples sent to SGS are both prepared and analyzed at their facility in Vespasiano; gold assays are carried out by either fire assay with an atomic absorption spectrometry finish (FAA505), or metallic screen with gravimetric finish (FAASCR_150_Au-Grav).

At ALS, sample aliquots are prepared in a local facility and then sent for analysis at their laboratory in Lima, Peru. Gold assays here are also carried out by either fire assay (Au-AA24), or metallic screen (Au-SCR24).

11.4.1 QA/QC

The currently described QA/QC program has continued to monitor all chemical analyses for each sample type with the aim of maintaining a very high standard of quality and reliability of data received following preparation and analysis in the laboratory. Furthermore, Cerrado Gold has since moved to using MX Deposit by Seequent (a cloud solution) to store, maintain and analyze all of its data, including QA/QC, on a regular basis.

Between the current QP's site visit and the effective date of this report, DRA has completed a review of both Cerrado Gold's sampling protocols and QA/QC database, in addition to its internal data analysis and reporting requirements, over the period from April 2021 onwards.

During this time, the QA/QC program continued to include the regular insertion of blanks, standards and duplicates (¼-core), as well as regular check assay programs via a secondary laboratory. Cerrado Gold SOPs aim to insert control samples into the regular sample stream at a frequency of one every ten samples; this ensures that there is one of each type in every batch of 30 samples.

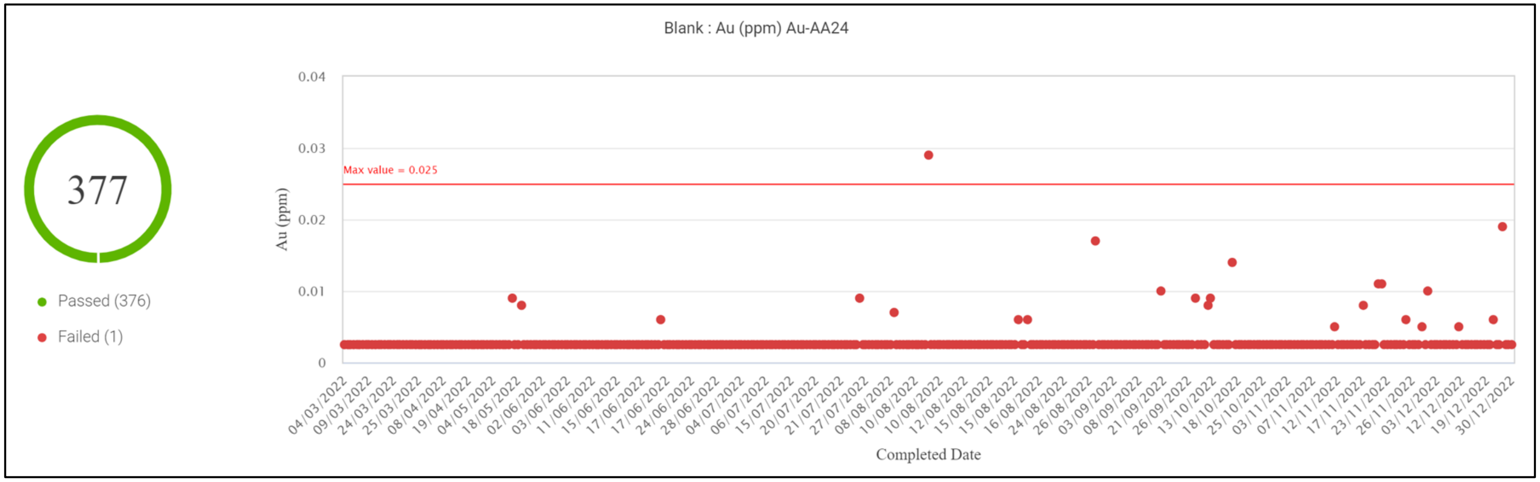
11.4.2 Blank Samples

Post-Phase I drilling, Cerrado Gold now uses a barren pegmatite material, acquired from a local quarry, for its blank control samples. These samples are introduced into the regular sample stream at a frequency of one in every batch of 30 sample; this is done primarily to test the lab for potential issues related to cross-contamination between samples. Representative plots for all of the blank control samples sent to ALS in 2022 are provided in Figure 11.12 (Au-AA24) and Figure 11.13 (Au-SCR24).

It is clear from this review that ALS is doing a very good job of maintaining clean preparatory and analytical facilities, in addition to suitable methodologies used between samples. There was only one isolated failure (out of 377) in all of 2022 for samples analyzed via fire assay, indicating no pattern or concern of cross-contamination during this time.

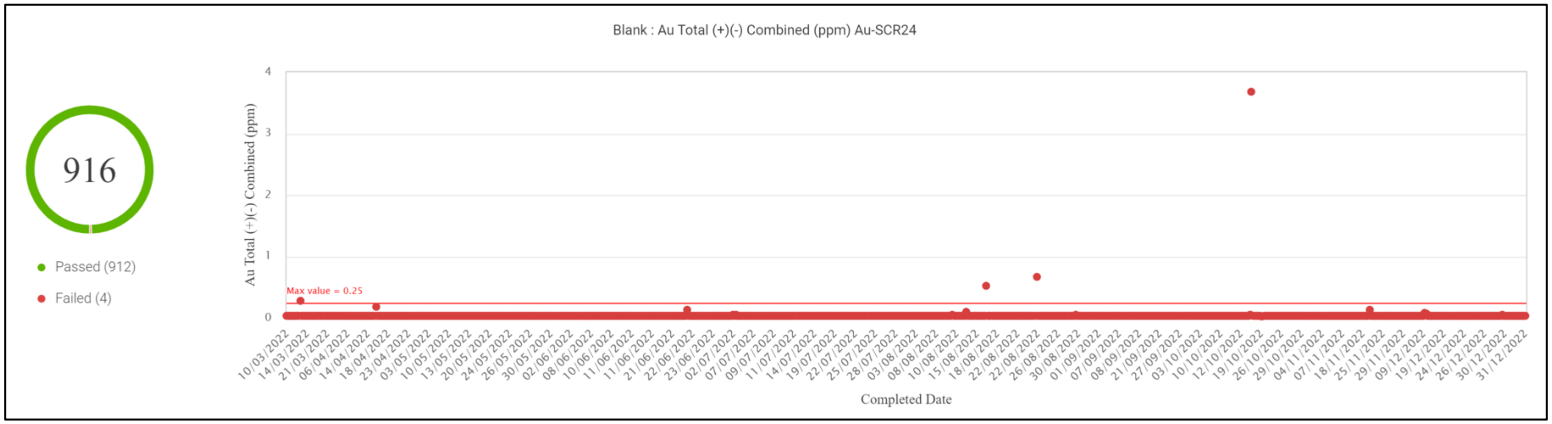
For samples analyzed by screen metallics, there was only one failure of concern related to sample 96099 (drill hole FSA-286). Further inspection indicates that this blank control samples followed a very high-grade sample with visible gold (96098: 455.69 g/t Au). It is evident there was some minor contamination in this case, but clearly not a pattern given there was a total of only four failures out of all 916 analyses in 2022 (0.44%).

Figure 11.12 – Blank Control Plot for Samples Analyzed by Fire Assay at ALS in 2022



Source Cerrado Gold, 2023

Figure 11.13 – Blank Control Plot for Samples Analyzed by Screen Metallics at ALS in 2022



Source Cerrado Gold, 2023

11.4.3 STANDARD SAMPLES

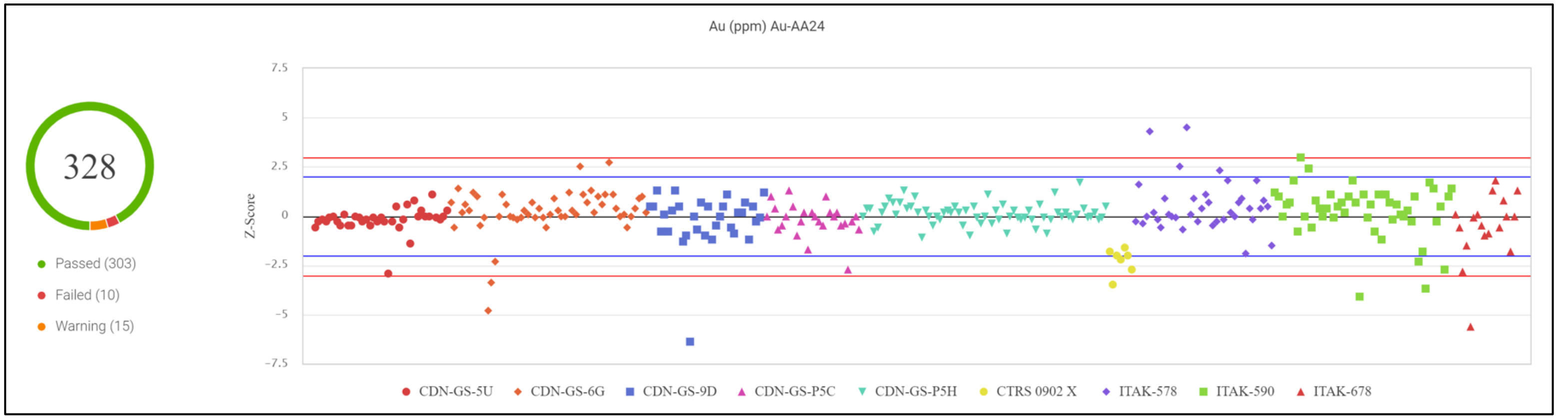
Cerrado Gold core sampling procedures ensure the use of standard control samples in order to assess the level of a laboratory's accuracy. The QA/QC protocol used is to insert a standard sample (CRM) at a frequency of one in every batch of 30 samples. The CRMs used by Cerrado Gold cover a range of gold grades, and are sourced from ITAK (Brazil), CDN Resource Laboratories Ltd. (Canada) and CTRS (Brazil). Representative plots for all of the standard control samples sent to ALS in 2022 are provided in Figure 11.14 (Au-AA24) and Figure 11.15 (Au-AA26; specific to standard sample pulps).

In Figure 11.14, there is generally a tight spread around the intended grade for all standards except CTRS 0902 X. Overall, there was only a 3% failure rate (10 out of 328) and <5% in the warning region (15 out of 328) for control samples analyzed by fire assay. It should be noted that following a failure (or series of warnings), the Cerrado Gold database manager conducts a review with the geologists and technicians to ensure no errors were made on their part (e.g., sample switches); subsequently, the failure is investigated with the lab to determine cause.

Standard CTRS 0902 X is the same standard flagged as potentially troublesome by the previous QP (GE21); however, it had just come into use with only 14 samples analyzed at the time. As failures continued with further use (SGS initially), Cerrado Gold opted to trial the standard at ALS (corresponding to Figure 11.14). It is clear from the low bias indicated at both labs that the standard is problematic, and Cerrado Gold discontinued its use due to the poor quality.

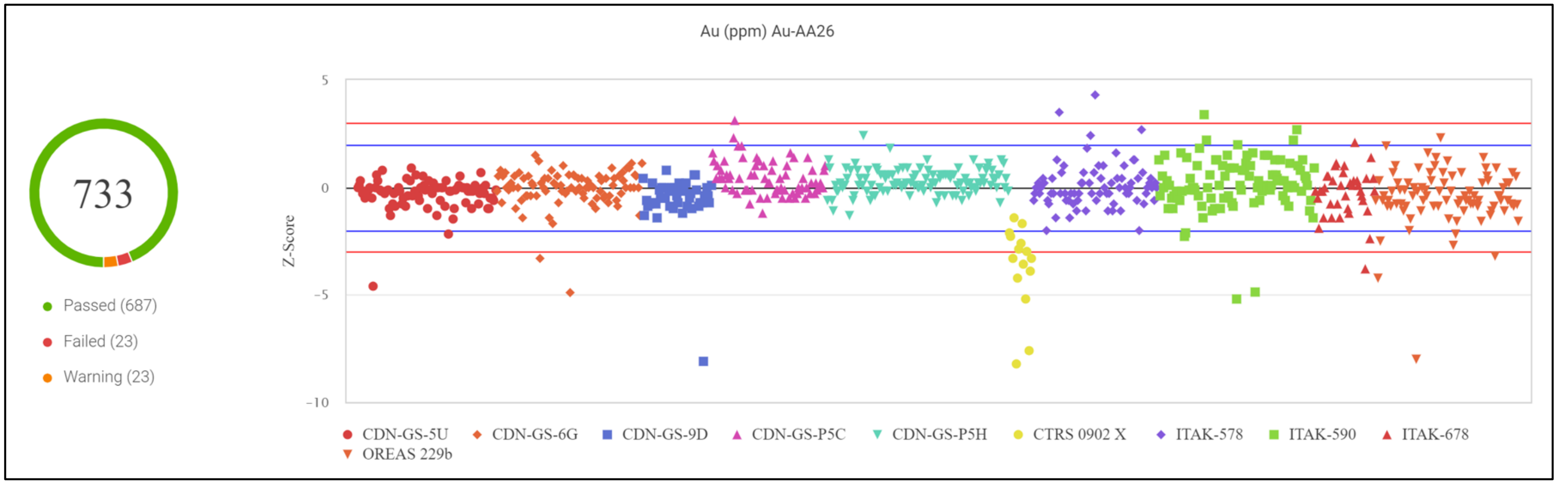
Figure 11.15 reflects fire assays for standards inserted into sample batches going through the screen metallics method; again, no obvious issues were identified for any of the standards except for the same problematic CTRS 0902 X which continued to show a low bias. Overall, there was a 3% failure rate (23 out of 733) and a 3% warning rate (23 out of 733).

Figure 11.14 – Standard Control Plot for Samples Analyzed by Fire Assay at ALS in 2022



Source Cerrado Gold, 2023

Figure 11.15 – Standard Control Plot for Sample Batches Analyzed by Screen Metallics at ALS in 2022



Source Cerrado Gold, 2023

11.4.4 Duplicate Samples

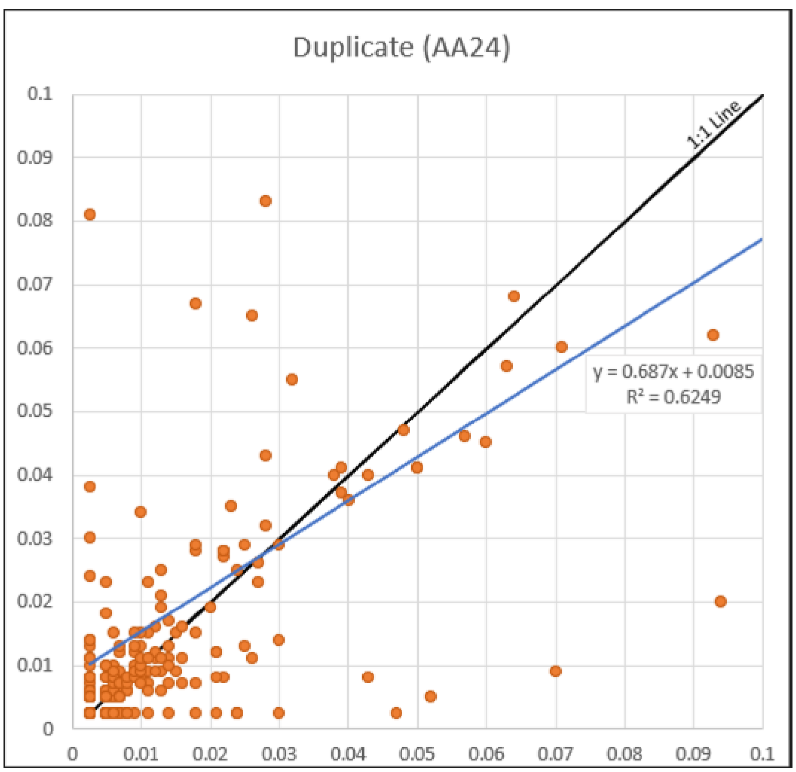
During this period, Cerrado Gold continued to use ¼ drill core samples as field-type duplicates but have since switched to a combination of pulps (FA) and coarse rejects (FA and screen metallics) in 2023 to test for improved reproducibility based on previous recommendations. Given the nugget effect present throughout the deposit, the current QP agrees with these recommendations and ongoing trial work.

The sampling protocol continues to require duplicate sample insertions at a frequency of one in every batch of 30 samples.

Representative plots for all of the duplicate control samples (¼ core) sent to ALS in both 2020 and 2022 are provided in Figure 11.16 (Au-AA24) and Figure 11.17 (Au-SCR24).

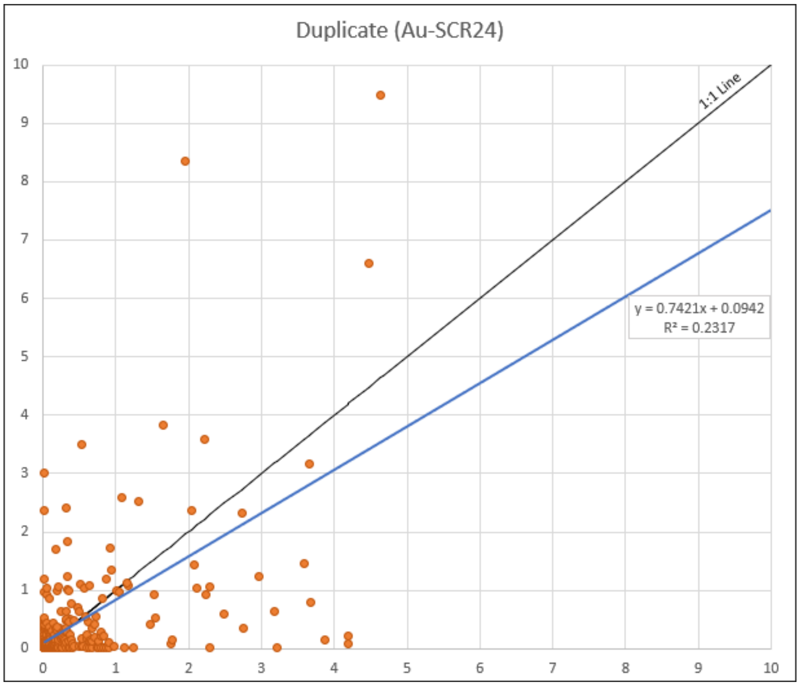
As with previous reviews, these graphs clearly indicate difficulty with reproducibility based on relatively low correlations between original and duplicate samples for both analytical types. Inspection of this precision indicates no clear association with certain grade ranges; it is concluded that the issue is likely related to the style of gold mineralization and grade variability (nugget effect) and the ongoing testwork should continue.

Figure 11.16 – Duplicate Control Plot for Samples Analyzed by Fire Assay at ALS in 2020 and 2022



Source Cerrado Gold, 2023

Figure 11.17 – Duplicate Control Plot for Samples Analyzed by Screen Metallics at ALS in 2020 and 2022



Source Cerrado Gold, 2023

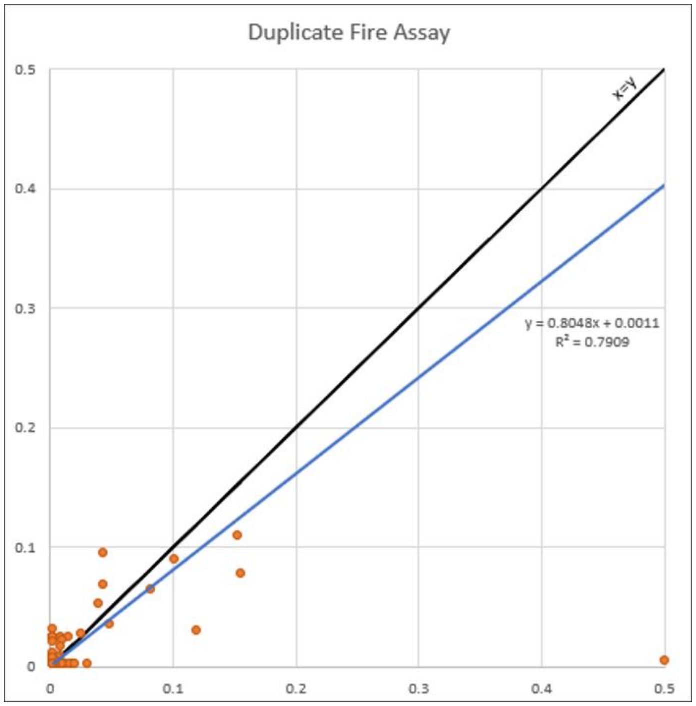
11.4.5 Check Assays

Cerrado Gold has been implementing a check assay program (utilizing a secondary laboratory) since 2018. The protocol involves sending the coarse reject from the initial laboratory to a secondary laboratory to check for any potential red flags; Cerrado Gold targets to send approximately 5% of its samples for secondary analysis. During this period, both ALS and SGS were used depending on where the original sample was sent.

Representative plots from a recent analysis for secondary check assays performed at SGS for samples initially analyzed at ALS are provided in Figure 11.18 (Au-AA24: 408 samples) and Figure 11.19 (Au-SCR24: 1,971 samples). These plots represent a total of 2,379 check assay samples corresponding to 2.98% of all samples sent for analysis during the period February 18th, 2022 to July 29th, 2023.

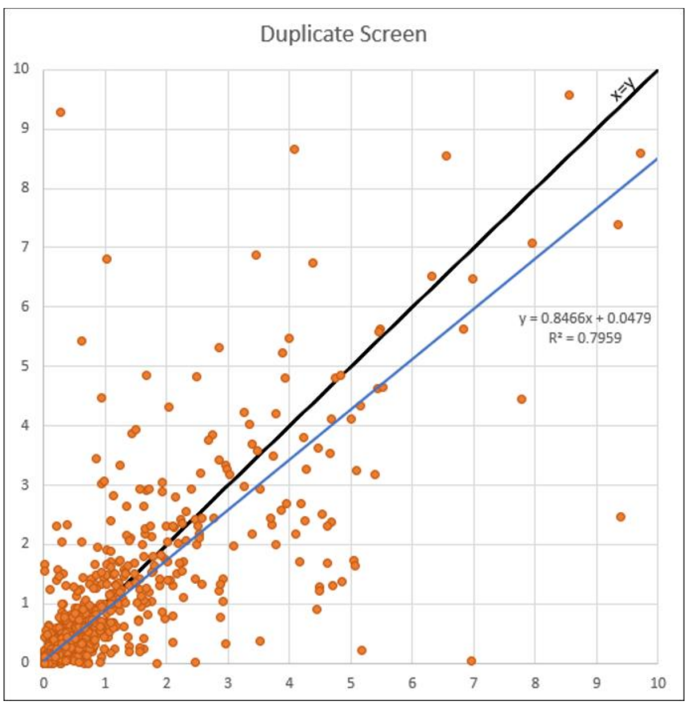
As with the previous review (GE21, 2021), precision issues between the analytical pairs are noted based on relatively low correlations for both fire assays and metallic screens (coefficients of determination of ~0.8), in addition to a relatively wide spread of data points. Similar to the analysis of duplicate control samples, this issue is likely related to the style of gold mineralization and grade variability (nugget effect).

Figure 11.18 – Secondary Check Assays at SGS for Samples Analyzed by Fire Assay at ALS in 2022 and 2023



Source: Cerrado Gold, 2023

Figure 11.19 – Secondary Check Assays at SGS for Samples Analyzed by Screen Metallics at ALS in 2022 and 2023



Source: Cerrado Gold, 2023

11.5 Qualified Person's Opinion

It is DRA's opinion that the Standard Operating Procedures (SOPs) employed by Cerrado Gold in the sampling and analysis of drill core samples, including the implemented QA/QC program, do not lead to any factors that may significantly impact the integrity of the data. As such, DRA believes the data to be of sufficient reliability and therefore adequate for the purposes of this Mineral Resource Estimate.

12 DATA VERIFICATION

12.1 Micon Data Verification

During his first site visit, the QP at the time went to three of the Giant Quartz Veins targets to examine exposures of mineralization.

At the VM vein there were three active milling sites where *garimpeiros* were processing material from small pits and underground workings. At one milling site, the workers took the mill apart and showed the QP of the previous Technical Report (GE21, 2021) some gold collected from their mining and milling activity.

At the Magalhaes 1 vein location an abandoned *garimpo* was examined and gold- and galena-mineralized quartz float was found.

At Serra Alta, the QP of the previous Technical Report (GE21, 2021) examined very extensive, abandoned *bandeirante* and *garimpeiro* workings over a significant width and strike length. It was obvious that considerable effort, over a long period of time, was expended to make these excavations. The obvious conclusion is that enough gold was recovered to justify the effort.

The QP of the previous Technical Report (GE21, 2021) also reviewed fresh drill core from the hydrothermally altered granite at Serra Alta. The alteration, veining and mineralization with pyrite, galena and sphalerite were clearly visible. Several small specks of visible gold were also noted.

While examining drill core, the QP of the previous Technical Report (GE21, 2021) collected four quarter-sawn duplicate samples for assay upon return to Canada. The samples were analyzed by ALS Global in Sudbury, Ontario. Sample preparation was performed using method PREP 31-D. The samples were analyzed in duplicate using a 50 g fire assay with AA finish (code Au AA26) and by the screen metallics method (code Au SCR24). The results are presented in Table 12.1.

Table 12.1 – Micon Check Samples

Hole	From (m)	To (m)	Original Assay (Au g/t)	Reassay		
				Au SCR 24	Au AA26	Au AA26 Dup
FSA-23	47.0	47.7	13.92	0.53	0.21	0.33
FSA-23	58.0	58.5	14.87	5.27	2.63	2.65
FSA-23	61.0	61.5	24.32	4.79	1.29	1.5
FSA-23	71.0	71.5	11.45	5.58	2.58	2.43

The results have confirmed the presence of gold in the core, albeit at lower grades than from the original samples. The results also indicate that 75% of the screen metallics assays were significantly higher than the corresponding 50 g fire assays, thereby justifying the use of screen metallics assays. The difference between the original and re-assays is likely explained by the random and unequal distribution of gold nuggets within the core.

The QP at the time was satisfied that the presence of gold has been demonstrated at the Monte do Carmo Project site, justifying further exploration. They were also satisfied with the adequacy of the sample preparation, security and analytical procedures employed (excluding those by PNP) and concludes that they have resulted in data suitable for use in a mineral resource estimate.

As such, the data was deemed adequate for the purposes used in this Technical Report.

12.2 GE21 – 2021 Data Verification

Geologist Fábio Xavier (MAIG #5179), associated with GE21, visited the project on August 17th to 18th, 2021. The visit aimed to understand the mineralization and the processes involved in drilling, including the quality control implemented in the project.

The QP of the previous Technical Report (GE21, 2021) visited the Pit Sul and Pit Norte to observe mineralization styles in outcrop. It was possible to observe the spatial arrangement of the mineralization within the geological context of the area and understand the extension of the hydrothermal alteration zones and the relationship of the mineralization with the quartz veins and sulfide-bearing zones. Technical discussions were held with the Cerrado Gold team throughout the visit period.

During the visit, it was possible to visit drilling carried out in Phase I and previous campaigns (Figure 12.1). The position of the holes is correctly identified with a concrete structure and a plate with basic information. In the field, the QP of the previous Technical Report (GE21, 2021) carried out the identification of the hole, the collection of photographs and coordinates using GPS Navigation. In an office, the coordinates collected in the field were compared with the coordinates registered in the database. No differences were found that could not be explained by the accuracy of the GPS equipment used.

Figure 12.1 – Drill Collars Visited in the Field

Source: GE21, 2021

The QP of the previous Technical Report (GE21, 2021) also observed the execution of the drilling during the Phase II program at Serra Alta. It was possible to observe the equipment used and the operating procedures adopted by the drilling company, as well as the safety procedures and operation interaction with the environment. The same previous QP understood that all points noted were within the industry best practices.

12.3 DRA – 2023 Data Verification

The current QP visited the MDC Project site from September 12th to 15th, 2023. The underlying aim of the visit was to hold technical discussions with Cerrado Gold personnel, understand the nature of the alteration and mineralization with respect to the host rocks and surrounding geology, review current interpretations and modelling methodologies, and address all geological functions, including:

- Drilling, logging and sampling procedures;
- Data collection, treatment and storage;
- Analytical procedures (including QA/QC), and;
- Core/sample chain of custody and storage processes.

To better understand the geology in a regional context, a field trip was undertaken to first visit an outlook at the top of a cuesta, beneath which the Serra Alta deposit is located. Here, the geology of the deposit and adjacent valleys was reviewed with the Cerrado Gold geology team, with particular emphasis on the various mineralized zones and major delimiting fault structures of the area.

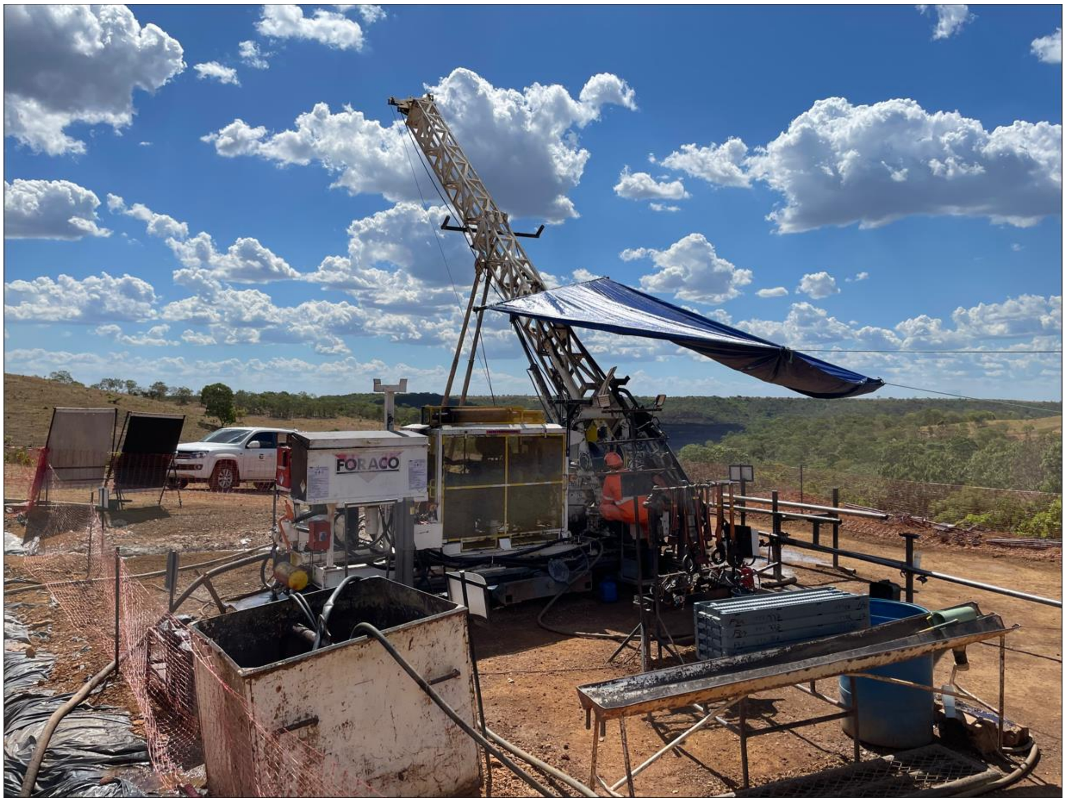
Subsequent stops at exposures of the Central Block, Pit Sul and Pit Norte areas allowed the QP to observe alteration and mineralization styles in outcrop, as well as the close relationship between gold grades and (± sulphide-bearing) quartz veining (Figure 12.2). An instance of visible gold was identified at Pit Sul, within quartz veinlets also containing minor sphalerite and galena.

Figure 12.2 – Mineralization Styles at Pit Sul, Quartz Veining ± Sulphides

Source: DRA, 2023

The QP was also able to visit an active drill site during the field portion of the visit. As indicated in Section 10, drilling was being carried out by the drill contractor Servitec Foraco. The site was clean and well-maintained, making use of lined water recirculation sump excavations. The contractor adhered to strict safety protocols, as evidenced by the witnessing of several 'runs' of core. Permits were available, and well-posted signage in all areas of the site. Photographs of the drill site are available in Figure 12.3.

Figure 12.3 – Active Drill Site Visited by DRA QP, Serra Alta Deposit



Source: DRA, 2023

While travelling between the various locations over a two-day period, the QP stopped to verify the coordinates of 29 past drill sites, representing nearly 10% of the drilling completed by Cerrado Gold. The drill collars were easily accessible, generally via gravel roads/trails, and well-identified as noted by the QP of the previous Technical Report (GE21; 2021, Figure 12.4). The collar locations were checked by handheld GPS, and compared against the provided database. No significant deviations were noted, verifying the integrity of coordinate data in the drill database.

Figure 12.4 – Drill Collar Monuments Visited by DRA QP, Serra Alta Deposit

Source: DRA, 2023

The QP also had the opportunity to review drill core from four different holes, including FSA-01, FSA-199, FSA-246 and FSA-266. The sawn ½ cores allowed for improved observation of the alteration/mineralisation and associated veining styles at the Serra Alta deposit. Several small instances of visible gold were also noted, as shown in Figure 12.5. The QP also took a total of four quarter-sawn duplicate samples for assay in Canada; these were sent to ALS's Vancouver, British Columbia facility. The sample preparation and analytical packages selected were identical to those used by Cerrado Gold for screen metallics. The results are presented in Table 12.2.

Figure 12.5 – Selected Drill Core Photographs Showing Veining and Mineralization Styles

Source: DRA, 2023

Table 12.2 – DRA Check Samples

Hole	From (m)	To (m)	Original Assay (g/t Au)	Re-assay (g/t Au)
FSA-01	13.24	13.61	13.72	5.66
FSA-01	26.07	26.60	0.40	1.70
FSA-199	344.35	345.09	2.60	1.87
FSA-246	171.76	172.25	1.23	2.84
FSA-266	92.95	93.38	3.11	2.05

These results confirm the presence of gold in the drill core from the Serra Alta deposit. The grades vary, with some re-assays higher and others lower than the originals; the differences noted are likely due to the mineralization style and related nugget effect observed throughout (both core and outcrop exposures).

12.4 Qualified Person's Opinion

DRA is satisfied that not only the presence of gold has been demonstrated at the Serra Alta deposit, but that Cerrado Gold has achieved an advanced understanding of the nature and controls on alteration and mineralization, which were substantiated during the QP's site visit.

All geological functions that were observed and/or reviewed with the Cerrado Gold project team are found to be performed at a high level, well within the norm for what are considered industry-best practices. These include logging and sampling procedures, data collection, data treatment and storage, analytical procedures (including QA/QC), and core/sample chain of custody and storage practices.

DRA concludes that all processes observed, discussed and/or verified have resulted in data suitable for use in subsequent Mineral Resource Estimation.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Introduction

This section provides a description of metallurgical test work, analysis of the results and comments on the test work program for the gold deposit, carried out from 2018 to 2023.

The following metallurgical test facilities were involved with the test work program:

- The mineral processing development tests, performed since 2018, were conducted by the laboratory Testwork *Desenvolvimento de Processo Ltda*, a Brazilian laboratory that specializes in process and metallurgical test work predominantly for gold.
- FLSmidth for Extended Gravity Recoverable Gold (EGRG) test work and modelling on composite samples in 2021 and 2022.
- Sedimentation, rheology and filtration tests were carried out at Westech Industrials Equipment's (Westech) facilities in São Paulo (SP), Brazil, with samples of tailings.
- JKTech for SMC test analysis in 2023.

The tests carried out in 2018 are described in the report no 007-2018 Cerrado Rev.0, report no 007-2018 Rev.3, May 2018, and Technical Note - Flotation Concentrate Leaching Tests, May 2023, prepared by Testwork.

A support mineral processing campaign on four (4) samples was conducted in 2021 and described in the report "Final Report Metallurgical Tests with Samples from the Orebodies of the Project: Serra Alta", report no 001-2021 Cerrado Rev. 1, June 2021.

Testwork carried out additional mineral processing development tests on one sample in 2022, and they were described in the report "report no 012-2022 Cerrado Final Rev 1", October 2022.

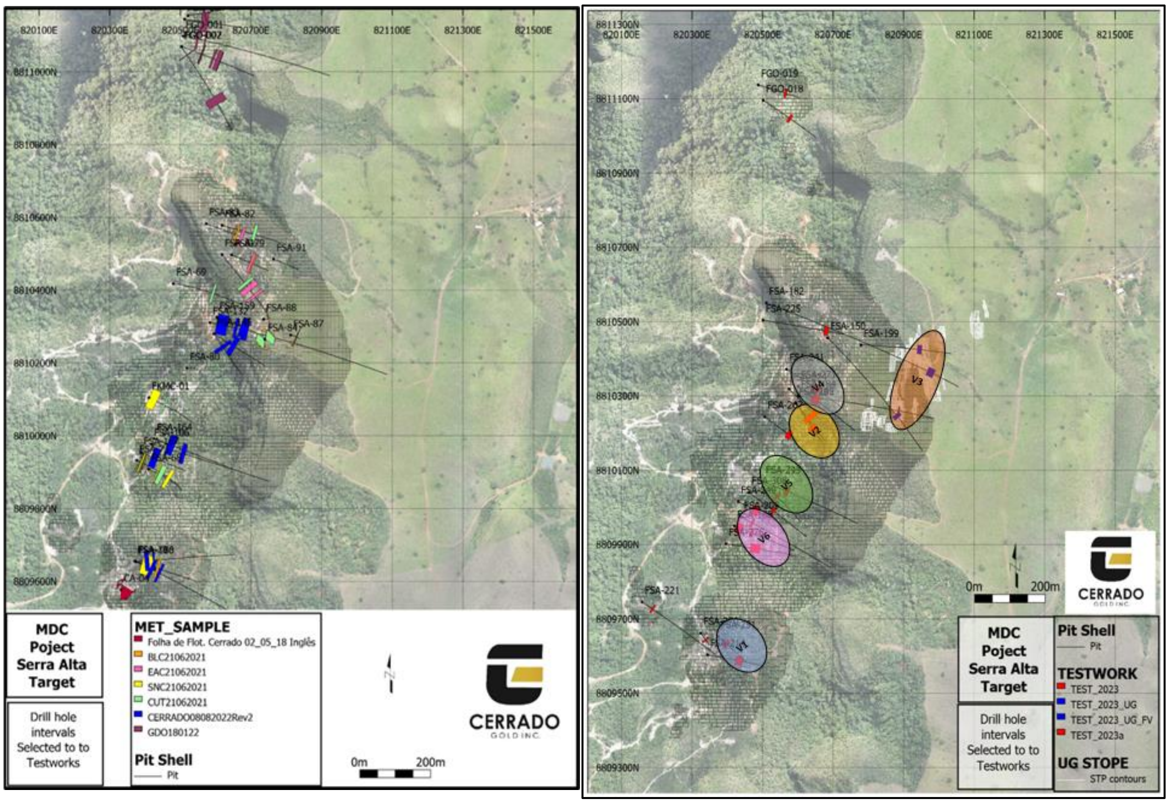
At the end of 2022, Testwork started to develop process tests also with samples from the area Gogó da Onça, neighbouring the area Serra Alta, with the objective of incorporating Gogó da Onça to the Monte do Carmo Project. The tests are described in the report no 002-2023 Cerrado Gogo Rev 1, Monte do Carmo Project Gogó da Onça Samples – Cerrado Gold, prepared between February and July 2023.

In the second half of 2023, Testwork carried out a variability metallurgical test work characterisation program tests using seven (7) variability samples from Serra Alta. The test work focused on delineating the metallurgical response over life of mine, and they were described in the report "report no 015-2023 Cerrado Final Rev 0", October 2023.

All results are summarized in this report and indicate that the ore is suitable for any type of concentration tested. No deleterious elements that can significantly affect the extraction were identified in these various campaigns.

The samples tested were provided by Cerrado geological team, who indicated all the points and coordinates sampled in the deposit, as informed in the report.

Figure 13.1 – Metallurgical Sample Locations for the MDC Project

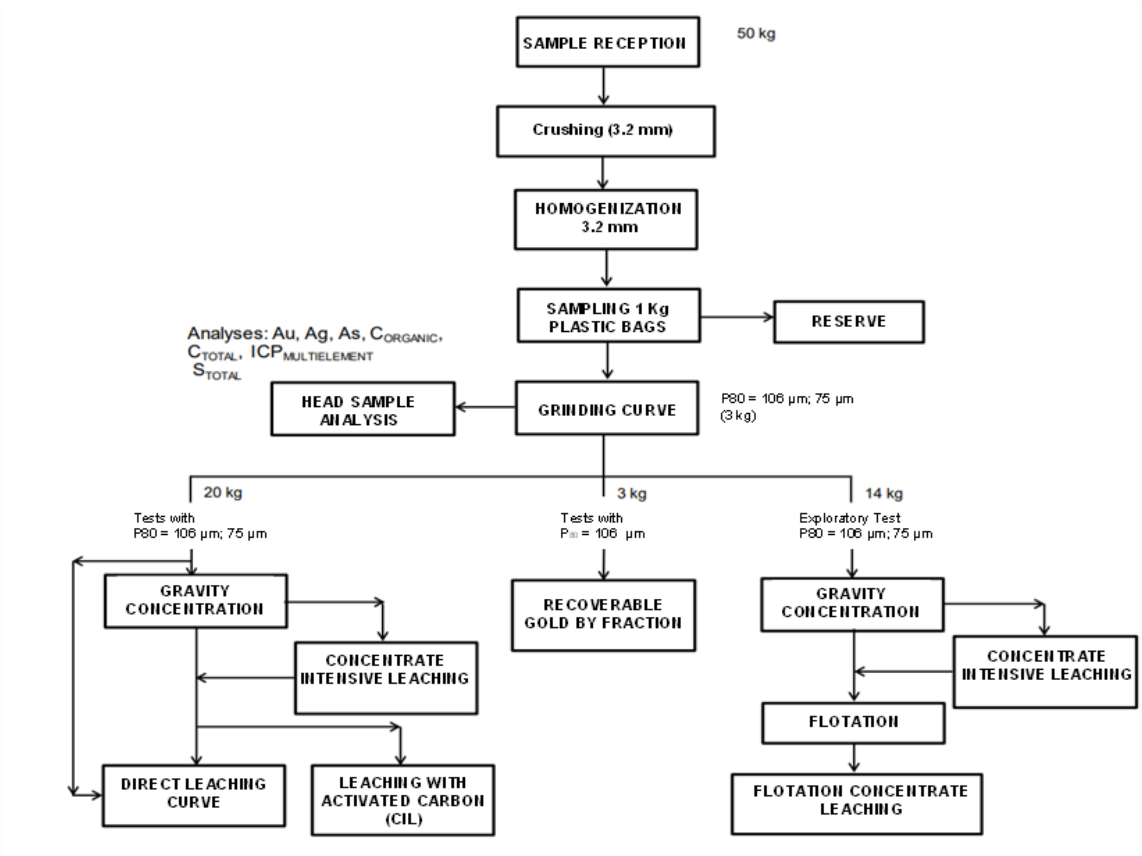


GE21 evaluated the delivered reports, and below describes its observations.

13.2 2018 – Metallurgical Campaign Summary

Two samples of the Pit Sul outcrop from Serra Alta Project were sent to Testwork laboratory for exploratory testing, and submitted to concentration test works, according to the flowsheet shown in Figure 13.2. The chemical analysis was performed by SGS-Geosol, a certified laboratory, located in Vespasiano, Minas Gerais, Brazil.

Figure 13.2 – 2018 Flowsheet – Metallurgical Program



Source: Testwork Report – 007-2018 – Cerrado Rev 3

13.2.1 Summary of Results

13.2.1.1 Head Grade

The head grade was determined after preconcentration of the sample in a lab scale centrifuge. The concentrate was entirely analysed by fire assay method, while the tails were sampled, and three (3) aliquots were sent for laboratory. Table 13.1 summarizes the results.

Table 13.1 – Composition of the Gold Head Grade- Sample from Pit Sul

TEST 1	Mass (g)	Mass (kg)	Mass (%)	Au (g/t)	Recovery (%)	% Recovery (Accumulated)
Concentrate	69.89	0.07	3.49	94.63	88.16	88.20
Tailing	1,930.11	1.93	96.51	0.46	11.84	100.00
Feed (Calculated)	2,000.00	2.00	100.00	3.75		

A sample from the feed was sent for multi-element analysis by inductively coupled plasma mass spectrometry (ICP-MS). Table 13.2 shows the results.

Table 13.2 – ICP-MS Analysis

Cerrado Gold – Feed Sample of Pit Sul Outcrop						
Element	**Unit**	**Grade**		**Element**	**Unit**	**Grade**
Ag	ppm	5		Pb	ppm	436
Al	%	4.43		S	%	0.08
As	ppm	<10		Sb	ppm	<10
Ba	ppm	234		Sc	ppm	<5
Be	ppm	<3		Se	ppm	<20
Bi	ppm	<20		Sn	ppm	<20
Ca	%	0.3		Sr	ppm	38
Cd	ppm	<3		Th	ppm	<20
Co	ppm	<8		Ti	%	0.06
Cr	ppm	<3		Tl	ppm	<20
Cu	ppm	74		U	ppm	<20
Fe	%	1.31		V	ppm	<8
K	%	3.63		W	ppm	<20
La	ppm	<20		Y	ppm	7
Li	ppm	4		Zn	ppm	141
Mg	%	0.06		Zr	ppm	60
Mn	%	0.03		C_ORG	%	<0.05
Mo	ppm	<3		C_ELE	%	<0.05
Na	%	2.33		C_CAR	%	0.1
Ni	ppm	<3		-	-	-
P	%	<0.01		-	-	-

13.2.1.2 *Recoverable Gold by Fraction*

Table 13.3 to Table 13.5 and Figure 13.3 to Figure 13.5 below show the results of the granulometric and leachability characterization by size.

Table 13.3 – Particle Size Distribution of the Milled Sample

Mesh	Size (µm)	Mass (g)	% Retained	% Retained Accumulated	% Passing
65	212	8.95	0.30	0.30	99.70
100	150	314.42	11.20	11.50	88.50
150	106	394.00	14.00	25.50	74.50

Mesh	Size (µm)	Mass (g)	% Retained	% Retained Accumulated	% Passing
200	75	579.00	20.60	46.10	53.90
325	45	536.23	19.10	65.20	34.80
<325	<45	980.00	34.80	100.00	0.00
	TOTAL	**2,812.60**			

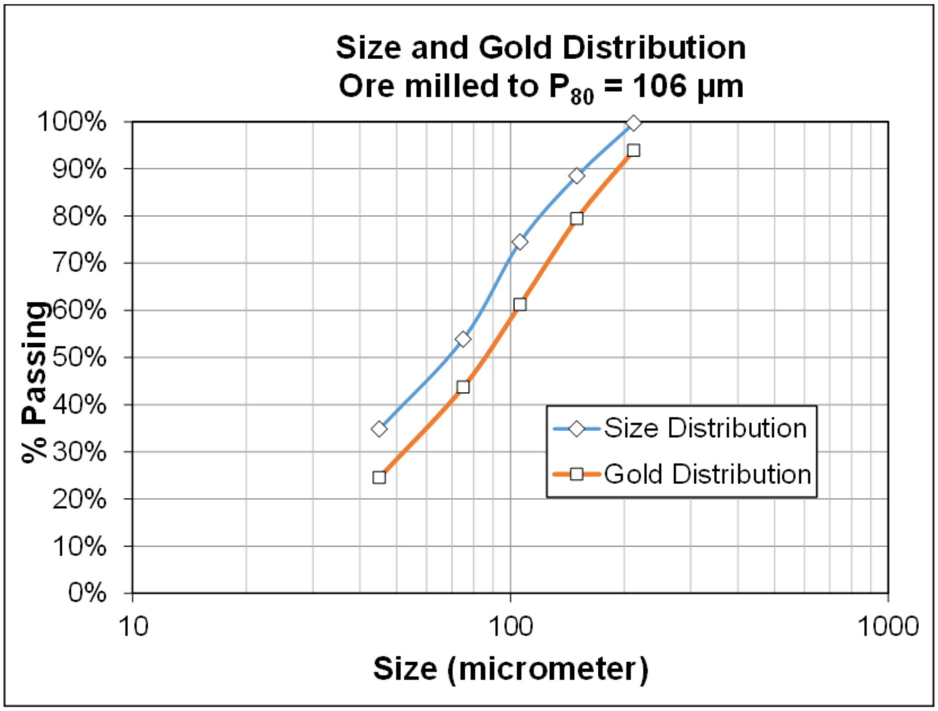
Table 13.4 – Au Distribution by Fraction

Mesh	Size (µm)	Au (g/t)	% Au Retained	% Au Retained Accumulated	% Au Passing Accumulated
65	212	86.62	6.10	6.10	93.90
100	150	5.87	14.50	20.50	79.50
150	106	5.91	18.20	38.80	61.20
200	75	3.85	17.50	56.30	43.70
325	45	4.56	19.20	75.40	24.60
<325	<45	3.20	24.60	100.00	0.00
Recalculated Feed	4.54				

Table 13.5 – Gold Recovery by Fraction Related to Feed

Mesh	Size (µm)	Au (g/t)	Au (g/t) Leaching Tailing	Recoverable Au by fraction (%)	Gold Extraction related to the Feed	
					Au (%) Simple	Au (%) Accumulated
65#	212	86.62	0.14	99.80	6.10	6.10
100#	150	5.87	0.13	97.80	14.20	20.20
150#	106	5.91	0.13	97.80	17.80	38.10
200#	75	3.85	0.10	97.40	17.00	55.10
325#	45	4.56	0.07	98.50	18.90	73.90
<325#	<45	3.20	0.05	98.40	24.20	98.10
Recalculated Feed		**4.54**	**0.08**			

Figure 13.3 – Size Distribution and Gold Distribution by Fraction

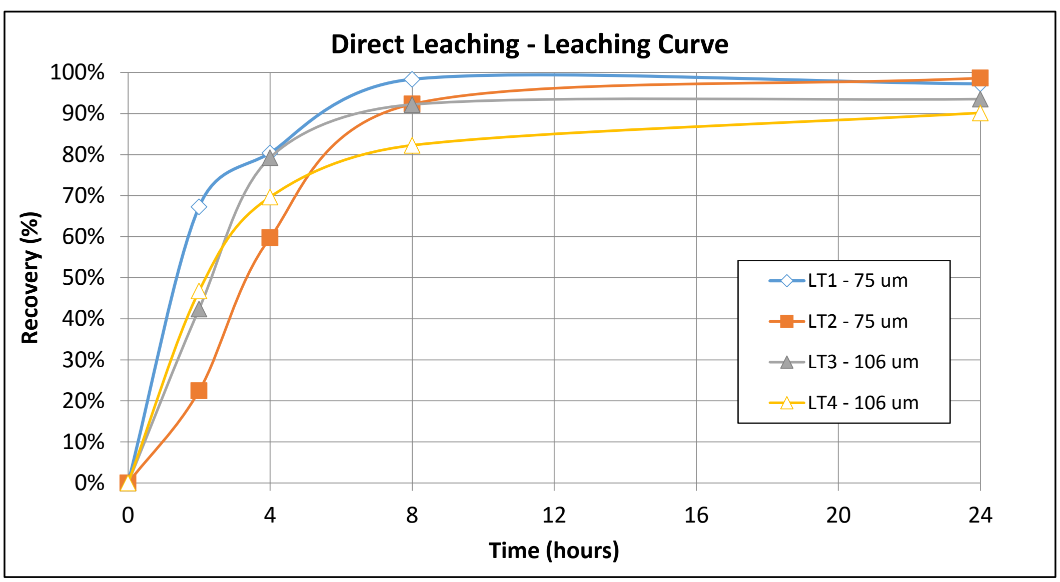


Source: Testwork Report – 007-2018 – Cerrado Rev 3

13.2.1.3 *Direct Leaching Tests*

Direct leaching tests were carried out using two (2) different grind sizes (P_{80} - 106 µm and 75 µm). Figure 13.4 shows the results obtained.

Figure 13.4 – Direct Leaching - Leaching Curve – Time vs Au Recovery



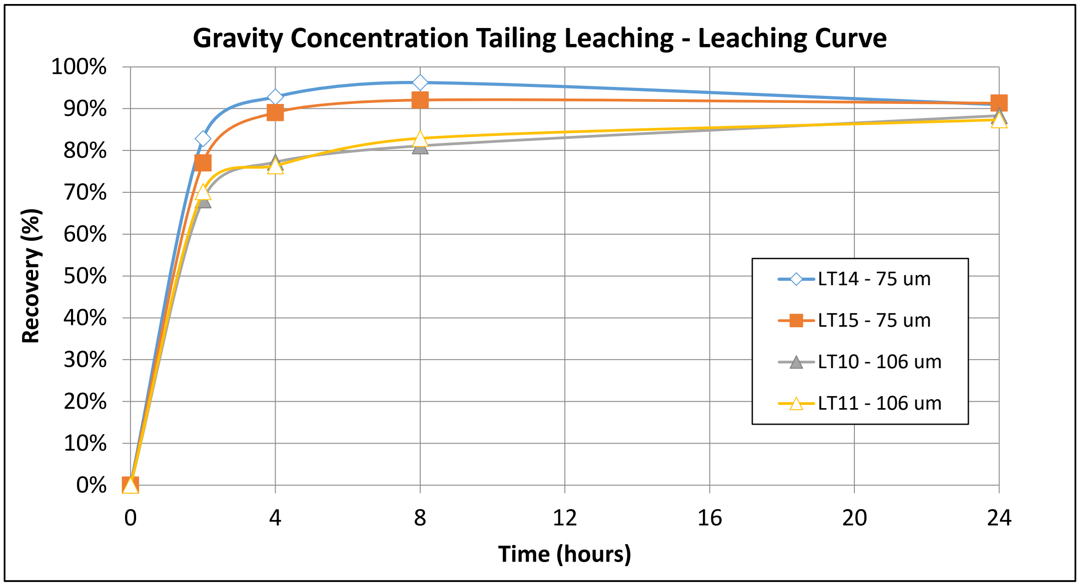
Source: Testwork Report – 007-2018 – Cerrado Rev 3

The gold recovery in the direct leaching of the whole ore were 93.5% for P_{80} = 106 µm and 97.3% for 75 µm. The results indicated that the ore is suitable for Au extraction by leaching, not refractory.

13.2.1.4 *Gravity Concentration Followed by Leaching*

The gravity concentrate was leached with high cyanide concentration in solution. The solution was sampled and sent for gold analysis and the tailing from the intensive leaching was joined to the gravity concentration tailing.

Figure 13.5 – Gravity Concentration Tailing Leaching



Source: Testwork Report – 007-2018 – Cerrado Rev 3

The gravity concentration shows high gold recoveries with an average of 78% for P_{80} 106 µm and 85.4% for P_{80} 75 µm. The Au extraction from tailings reached over 88% and global recovery – gravity and leaching over 98%.

13.2.1.5 *Gravity Concentration Followed by Flotation of Tailings*

The flotation tests were carried out on the gravity concentration tailings. The gravity concentrate was leached with high cyanide concentration solution in rolling bottles. The tailing from intensive leaching was joined to the gravity concentration tailing. The gravity tailings were sampled to obtain five sub-samples for the flotation tests.

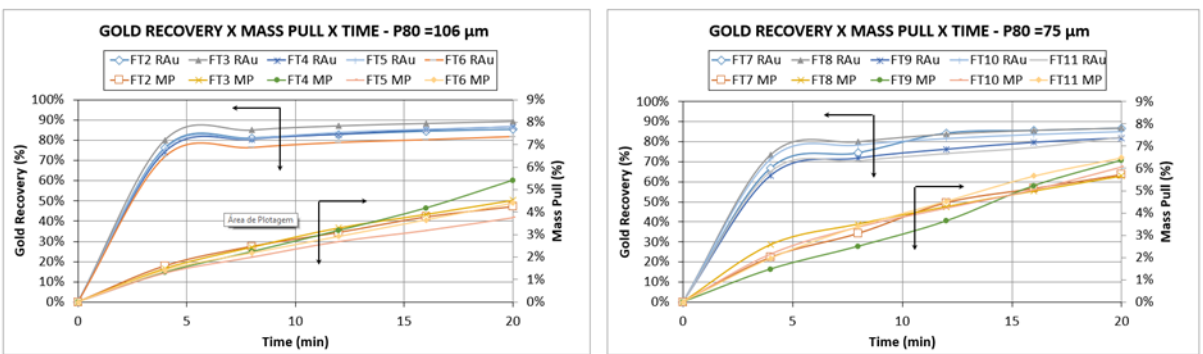
Table 13.6 shows the results of gravity concentration. The reported gold recovery is the global gold recovery including intensive leaching. The tailings grade is the average grade of the calculated feed of the flotation tests.

Table 13.6 – Gravity Concentration Recoveries

SAMPLE	CERRADO	
Test ID	LT6	LT4
P_{80}	106 µm	75 µm
Calculated Feed (g/t)	3.02	3.58
Concentrate (g/t)	159.77	215.97
Tailing (g/t)	0.83	0.54
% mass to concentrate	1.38	1.41
Recovery (%)	72.87	85.12

Figure 13.6 shows the results obtained for these exploratory tests. They indicate a lower kinetics for the smaller particle, with a higher mass pull, with recovery around 90%.

Figure 13.6 – Gold Recovery x Mass Pull x Time - P_{80} = 106 µm and P_{80} = 75 µm



Source: Testwork Report – 007-2018 – Cerrado Rev 3

The global recovery of gravity and flotation reached over 96%.

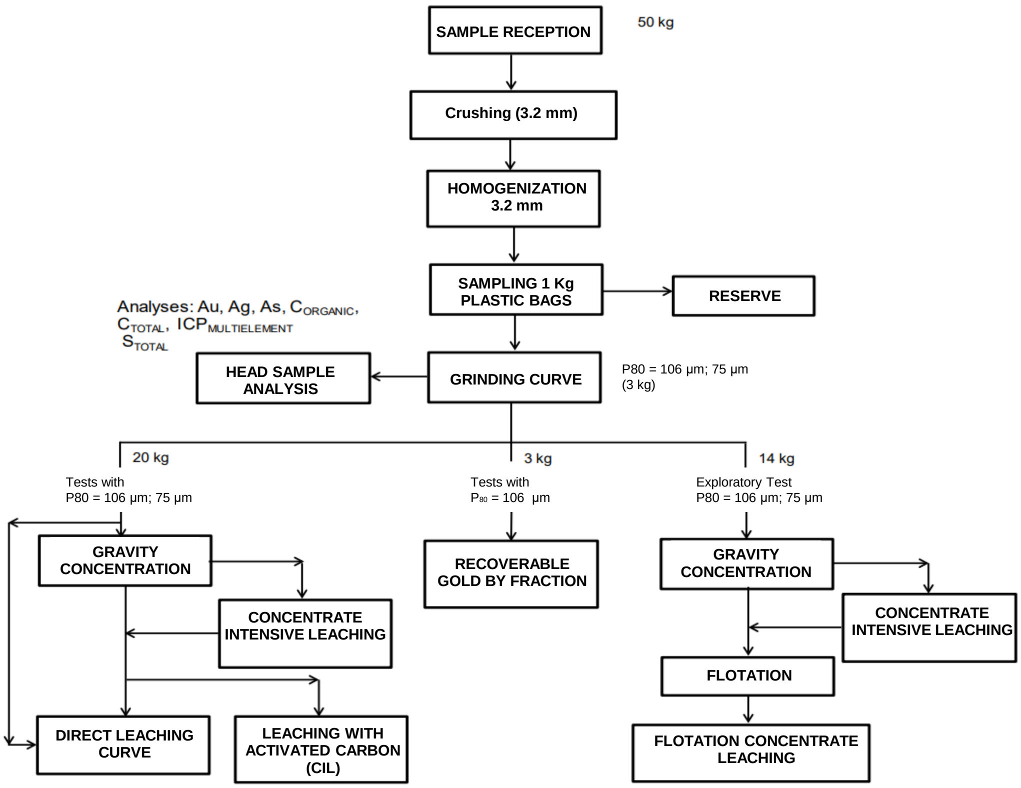
13.3 2021 – Metallurgical Test Work Campaign

Four (4) samples were submitted to previously selected process routes, in two (2) distinct ranges of sizes, to confirm the results from the first campaign. They were provided by Cerrado Gold as representing of the following blends:

- CUT – Cut Off;
- EAC - East Zone;
- BLC – Blend; and
- SNC – Sul Norte.

Figure 13.7 shows the flowsheet for the test works.

Figure 13.7 – Metallurgical Testing Program



Source: Testwork Report – 001-2021 – Cerrado – Rev 1

13.3.1 ORE CHARACTERIZATION

The samples were preconcentrated in centrifuge and concentrated and tailings sent to chemical analysis by fire assay and screen fire assay methods for head grade analysis. Results are shown in Tables 13.7 and 13.8.

Table 13.7 – Chemical Analysis of Samples by Fire Assay

Sample	Au (ppm)	Sample	Au (ppm)	Sample	Au (ppm)	Sample	Au (ppm)
BLC - AL4	2.92	SNC - AL4	1.01	EAC - AL4	2.77	CUT-AL4	0.28
BLC - AL5	1.99	SNC - AL5	0.96	EAC - AL5	3.1	CUT-AL5	0.32
BLC - AL6	2.04	SNC - AL6	1.38	EAC - AL6	2.71	CUT-AL6	0.21
Average	**2.32**		**1.12**		**2.86**		**0.27**
Standard Deviation	**0.52**		**0.23**		**0.21**		**0.06**

Table 13.8 – Chemical Analysis of Samples by Metallic Fire Assay (FAASCR)

Sample	BLC - AL7		SNC - AL7		EAC - AL7		CUT - AL7	
	Mass (g)	Au (g/t)	Mass (g)	Au (g/t)	Mass (g)	Au (g/t)	Mass (g)	Au (g/t)
Oversize	19.21	19.68	26.77	31.19	15.14	42.54	18.35	2.45
Undersize	823.29	0.67	979.23	1.47	978.76	0.94	863.15	0.22
		0.63		1.62		1.11		0.24
Total	**842.5**	**1.08**	**1006**	**2.33**	**993.9**	**1.66**	**881.5**	**0.28**

Density determinations (specific gravity) and Bond Wi are shown in the Table 13.9.

Table 13.9 – Density, Ball Bond Wi

Sample	BLC	SNC	EAC	CUT
Density (Specific Gravity)	2.68	2.64	2.62	2.63
WI Bond WI Bond (kWh/t)	16.1	15.4	14.9	14.3

Aliquots of the four (4) samples were also analyzed by the ICP-MS method The results are shown in Table 13.10.

Table 13.10 – Summary – Chemical Analysis of Samples – AL4 – ICP

Element	CUT	EAC	SNC	BLC		Element	CUT	EAC	SNC	BLC
Ag (ppm)	<3	<3	<3	<3		Ni (ppm)	<3	<3	<3	7
Al (%)	5.33	4.66	4.7	4.06		P (%)	<0.01	<0.01	<0.01	0.03
As (ppm)	<10	<10	<10	<10		Pb (ppm)	12	50	73	49
Ba (ppm)	232	203	248	253		S (%)	0.08	0.08	0.15	0.07
Be (ppm)	<3	<3	<3	<3		Sb (ppm)	<10	<10	<10	<10
Bi (ppm)	<20	<20	<20	<20		Sc (ppm)	<5	<5	<5	<5
Ca (%)	0.24	0.16	0.18	0.4		Se (ppm)	<20	<20	<20	<20
Cd (ppm)	<3	<3	<3	<3		Sn (ppm)	<20	<20	<20	<20
Co (ppm)	<8	<8	<8	<8		Sr (ppm)	25	17	30	51
Cr (ppm)	4	4	6	8		Th (ppm)	<20	<20	<20	<20
Cu (ppm)	7	11	15	13		Ti (%)	0.05	0.05	0.05	0.19
Fe (%)	1.19	1.14	1.13	1.36		Tl (ppm)	<20	<20	<20	<20
K (%)	3.74	3.79	3.61	3.23		U (ppm)	<20	<20	<20	<20
La (ppm)	<20	<20	<20	<20		V (ppm)	<8	<8	<8	16
Li (ppm)	4	4	3	5		W (ppm)	<20	<20	<20	<20
Mg (%)	0.12	0.09	0.11	0.33		Y (ppm)	9	5	5	8

Element	CUT	EAC	SNC	BLC		Element	CUT	EAC	SNC	BLC
Mn (%)	0.02	0.02	0.02	0.03		Zn (ppm)	18	59	45	51
Mo (ppm)	<3	<3	<3	<3		Zr (ppm)	71	66	66	66
Na (%)	2.38	2.24	2.44	1.9						

ICP analysis was performed in the samples. Results indicate no presence of elements that can affect the leaching process of the ore or reagent consumption.

Table 13.11 shows gold recoveries in the gravity concentration, including intensive leaching of the concentrate.

Table 13.11 – Summary – Gravity Concentration – Au Recovery

Sample / P_{80}	Before Leaching (CIL)	
	106 µm	75 µm
CUT	69.05%	68.30%
EAC	83.75%	81.35%
SNC	81.15%	81.15%
BLC	73.65%	77.45%

Table 13.12 shows a summary of gold recoveries in direct and CIL leaching tests, performed on the tailings of gravity concentrations.

Table 13.12 – Summary – CIL and Direct Leaching – Au Recovery

Sample / P_{80}	Direct Leaching		CIL	
	106 µm	75 µm	106 µm	75 µm
CUT	84.60%	82.00%	90.50%	87.30%
EAC	96.00%	96.10%	96.00%	96.70%
SNC	92.30%	96.80%	94.70%	97.50%
BLC	95.40%	96.10%	96.20%	96.80%

Table 13.13 shows a summary of gold recoveries in direct leaching and CIL leaching after gravity concentration.

Table 13.13 – Summary – CIL and Direct Leaching After Gravity Concentration – Au Recovery

Sample / P_{80}	Direct Leaching		CIL	
	106 µm	75 µm	106 µm	75 µm
CUT	95.80%	93.70%	96.30%	94.90%

Sample / P_{80}	Direct Leaching		CIL	
	106 µm	75 µm	106 µm	75 µm
EAC	99.30%	99.30%	99.30%	99.30%
SNC	98.20%	99.40%	98.60%	99.40%
BLC	98.80%	99.20%	98.80%	99.10%

Flotation tests were performed and the Table 13.14 below shows a summary of the results of rougher flotation.

Table 13.14 – Summary – Flotation Before and After Gravity Concentration – Au Recovery

Sample / P_{80}	Flotation		Gravity Concentration + Flotation of Tails	
	106 µm	75 µm	106 µm	75 µm
CUT	77.50%	79.40%	93.60%	94.70%
EAC	88.70%	90.70%	98.30%	98.40%
SNC	91.60%	94.50%	98.10%	99.10%
BLC	95.30%	92.90%	98.40%	98.60%

13.3.2 TESTS CAMPAIGN 2021

13.3.2.1 E-GRG GRAVITY CONCENTRATION TESTS

These tests were carried out to estimate the gold recoverability in a centrifugal concentrator developed by FLSmidth Knelson. Table 13.15 shows the results of the simulation of recovery for four (4) scenarios.

Table 13.15 – Summary – Simulation of Recovery for 4 Scenarios

Scenario	%Circulating Load Treated	Tonnes Treated	Au Recovery (%)			
			BCL	CUT	EAC	SNC
1	24	250	45	52	57	53
2	42	350	52	61	66	62
3	55	450	53	61	67	62
4	87*	700	57	66	71	67

13.3.2.2 *Gravity Concentration and Intensive Concentrate Leaching Tests*

Gravity concentration tests on Knelson MD-3 lab model were performed to confirm recovery. Table 13.16 summarizes the results.

Table 13.16 – Summary – Gravity Concentration Results – Knelson

Sample	BLC		CUT		EAC		SNC	
P_{80}	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm
Analyzed Feed (g/t)	1.68	1.68	0.27	0.27	2.19	2.19	2.04	2.04
Feed Calculated (g/t)	1.67	2.27	0.54	0.44	2.86	2.75	2.26	4.26
Au Recovered (g/t)	207.1	333.5	39.9	49.9	428.5	424.0	268.6	669.1
% Mass Recovered	0.57%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
% Au Recovered (%)	71.1%	74.7%	68.0%	62.8%	82.5%	79.7%	75.1%	79.4%

13.3.2.3 *Granulochemical Characterization Tests*

The results of the granulochemical analysis and the cyanide leaching of each fraction are shown in the Table 13.17 and 13.18.

Table 13.17 – Gold Distribution by Fraction – BLC Sample – P_{80} = 106 µm

Mesh Tyler	Size (µm)	Au Grade (g/t)	% Au Retained	% Au Retained Accumulated	% Passing Accumulated
100	150	12.85	9.7	9.7	90.3
150	106	3.31	19.4	29.1	70.9
200	75	1.16	20.8	49.9	50.1
325	45	1.13	13.2	63.1	36.9
<325	<45	1.09	36.9	100.0	0.0
Average	-	**1.43**	**-**	-	-

Table 13.18 – Leaching Results by Fraction – BLC Sample – P_{80} = 106 µm

Mesh Tyler	Size (µm)	Au Grade (g/t)	Au Tailings (g/t)	Au Recovery (%)	Au (%)	Au Accumulated (%)
100	150	12.85	0.08	99.4	9.6	9.6
150	106	3.31	0.05	98.5	19.2	28.7
200	75	1.16	0.04	96.6	20.1	48.8
325	45	1.13	0.02	98.2	13.0	61.8
<325	<45	1.09	0.04	96.3	35.5	97.3
Average	**-**	**1.43**	**0.04**	**-**	**-**	**-**

The Table 13.18 indicates that Au is free for cyanidation, reaching high extraction for any size, under usual cyanidation test.

13.3.2.4 *Flotation Tests*

Flotation tests on the gravity tails were carried out and results are reported in the Table 13.19.

Table 13.19 – Summary of The Flotation Tests Results

Sample BLC	**P_{80}**	**Mass Pull** (%)	**Gravity Tailings - Au** (g/t)	**Flotation Concentrate Au** (g/t)	**Flotation Tailing - Au** (g/t)	**Flotation Recovery (Rougher) - Au** (%)	**Recovery (GC + Flot) Au** (%)
Average BLC	106 µm	9.86	0.37	3.58	0.03	93.30	98.43
Average CUT		7.75	0.155	1.58	0.04	77.46	93.60
Average SNC		8.12	0.47	5.35	0.04	91.66	98.18
Average EAC		7.85	0.42	4.8	0.05	88.71	98.30
Average BLC	75 µm	10.48	0.42	3.87	0.03	92.93	98.60
Average CUT		9.57	0.098	0.86	0.02	79.42	94.68
Average SNC		9.57	0.7	7.04	0.04	94.51	99.07
Average EAC		8.65	0.45	4.81	0.05	90.75	98.44

13.3.2.5 *Flotation of Tailings, Direct Cyanidation and CIL Tests*

Tables 13.20 and 13.21 present the results of direct leaching cyanidation and CIL on gravity tails, respectively. Both tables contain information on sample ID, feed grade, NaCN initial and consumption, lime consumption, leaching kinetics, tails, and global recovery. Table 13.22 is a comparative analysis of the direct leaching and CIL results, focusing on sample ID, extraction, and global recovery.

Table 13.20 – Direct Leaching Cyanidation Results

Sample ID	**BLC**	**CUT**	**EAC**	**SNC**	**BLC**	**CUT**	**EAC**	**SNC**
P_{80}	106 µm				75 µm			
Feed Grade (g/t)	0.43	0.14	0.50	0.51	0.52	0.15	0.51	0.78
NaCN Initial (g/t)	1,008	1,018	1,013	0,991	1,011	1,007	1,013	0,996

Sample ID		BLC	CUT	EAC	SNC	BLC	CUT	EAC	SNC
P_{80}		106 µm				75 µm			
NaCN Consumption (g/t)		192	181	185	223	141	414	126	358
Lime Consumption (kg/t)		0.91	0.78	0.61	0.80	0.91	0.91	0.56	0.60
Leaching Kinetics	2h	80.1%	70.9%	86.4%	86.1%	78.4%	63.2%	87.3%	95.0%
	4h	85.8%	84.4%	91.3%	88.8%	88.0%	79.0%	96.9%	95.0%
	8h	92.3%	87.6%	95.1%	90.6%	95.3%	81.9%	96.9%	96.2%
	24h	95.3%	84.6%	96.0%	92.2%	96.1%	82.0%	96.1%	96.8%
Tails		<0.02	0.03	0.02	0.04	<0.02	0.03	0.02	0.03
Global Recovery		98.8%	95.8%	99.3%	98.2%	99.1%	93.7%	99.2%	99.4%

Table 13.21 – Summary of CIL Results on Gravity Tails

Sample ID		BLC	CUT	EAC	SNC	BLC	CUT	EAC	SNC
P_{80}		106 µm				75 µm			
Feed Grade (g/t)		0.52	0.21	0.49	0.62	0.63	0.17	0.61	0.98
NaCN Initial (g/t)		1,013	1,024	1,024	496	1,007	1,008	1,029	500
NaCN Consumption (g/t)		366	359	369	423	432	515	316	578
Lime Consumption (kg/t)		0.91	0.76	0.77	0.62	0.96	0.87	0.84	0.80
Leaching Kinetics	2h	87.6%	85.7%	86.9%	90.3%	93.6%	69.1%	96.8%	96.9%
	4h	89.4%	90.5%	95.0%	95.1%	96.8%	77.7%	96.3%	96.4%
	8h	95.2%	88.2%	96.0%	95.9%	96.8%	83.2%	96.8%	97.5%
	24h	96.2%	90.5%	96.0%	94.7%	96.8%	87.3%	97.3%	97.4%
Tails		<0.02	0.02	<0.02	0.04	<0.02	0.03	0.02	0,03
Global Recovery		98.8%	96.2%	99.3%	98.5%	99.1%	94.8%	99.2%	99.4%

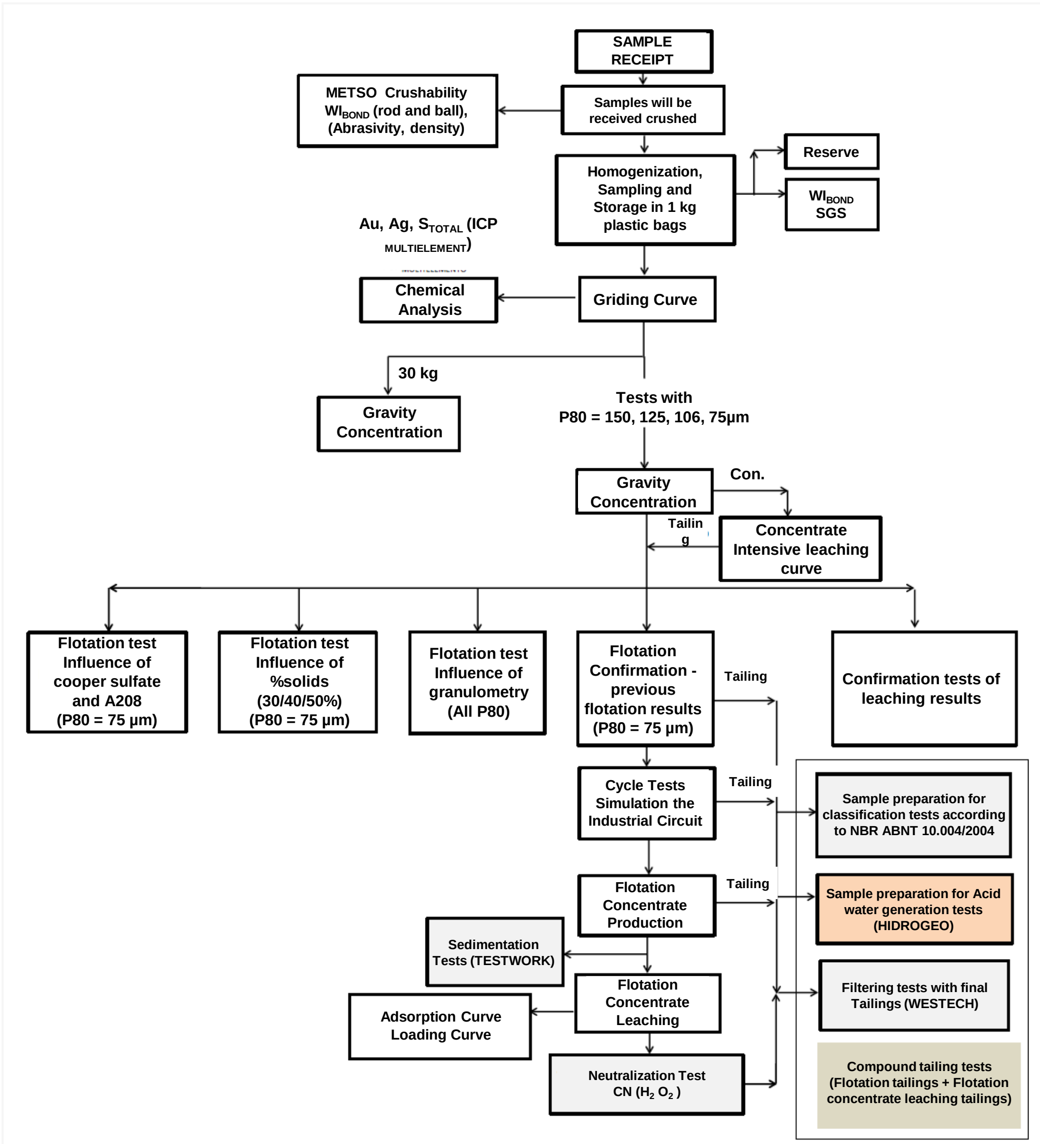
Table 13.22 – Direct Leaching x CIL

Sample ID		BLC		CUT		EAC		SNC	
P_{80}		106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm
Direct Leaching	Extraction	95.3%	96.1%	84.6%	82.0%	96.0%	96.1%	92.2%	96.8%
	Global Recovery	98.8%	99.1%	99.3%	93.7%	99.3%	99.2%	98.2%	99.4%
CIL Extraction	Extraction	96.2%	96.8%	90.5%	87.3%	96.0%	97.3%	94.7%	97.4%
	Global Recovery	98.8%	99.1%	96.2%	94.8%	99.3%	99.2%	98.5%	99.4%

13.4 2022 – Metallurgical Campaign

Figure 13.8 shows the summary of the metallurgical program carried out in 2022.

Figure 13.8 – Scope of Work – Metallurgical Program – 2022



Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

A sample was received as representing Serra Alta area of the Monte do Carmo Project, as shown in Figure 13.9.

Figure 13.9 – Cerrado Sample Received – Serra Alta Area

Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

The samples from drill holes were named as MDC Serra Alta 2022 blend, which sample composition is shown in the Table 13.23.

Table 13.23 – MDC Serra Alta 2022 Blend – Sample Composition

Hole	From	To	(m)	Au (ppm)	Testwork	Total (m)	Au (g/t)	Sample Type
FSA-132	22.67	58.19	35.52	1.76	EAST_ZONE			Coarse 3mm
FSA-132	83.03	92.10	9.07	1.55	EAST_ZONE			Coarse 3mm
FSA-132	110.25	128.60	18.35	1.7	EAST_ZONE			Coarse 3mm
FSA-141	67.15	83.15	16.00	2.65	EAST_ZONE			Coarse 3mm
FSA-145	46.80	58.05	11.25	1.62	EAST_ZONE			Coarse 3mm
FSA-159	80.05	95.51	15.46	1.76	EAST_ZONE	105.65	1.85	Coarse 3mm
FSA-106	103.85	118.00	14.15	5.98	PIT_NORTH			Coarse 3mm
FSA-164	44.61	65.05	20.44	1.86	PIT_NORTH			Coarse 3mm
FSA-167	33.54	53.15	19.61	0.81	PIT_NORTH	54.2	2.56	Coarse 3mm
FSA-166	48.19	58.49	10.30	2.72	PIT_SOUTH			Coarse 3mm
FSA-166	76.45	83.79	7.34	0.92	PIT_SOUTH			Coarse 3mm
FSA-170	27.60	40.30	12.70	0.91	PIT_SOUTH			Coarse 3mm
FSA-170	52.80	58.07	5.27	6.68	PIT_SOUTH	35.61	2.29	Coarse 3mm
					TOTAL	**195.46**	**2.13**	

13.4.1 Summary of Results – Metallurgical Program 2022

13.4.1.1 Chemical Analysis, Bond Wi and Specific Gravity (SG)

Table 13.24 – Head Grade

Sample	Au (ppm)
CER - AL1	3.87
CER - AL2	3.51
Average	3.69
Std. Deviation	0.25

Table 13.25 – Head Grade – Gravity Concentration

Sample	Value
Gravity Tailing - AL1 (Au ppm)	0.56
Gravity Tailing - AL2 (Au ppm)	0.46
Gravity Tailing - AL3 (Au ppm)	0.54
Gravity Tailing Average (Au ppm)	0.52
Tailing Mass (g)	2,967.52
Gravity Concentrate (Au ppm)	195.9
Concentrate Mass (g)	32.48
Calculated Head Grade - AL1 (Au ppm)	2.64

Table 13.26 – ICP Analysis

Analyzed Head CER - AL3					
Element	**Unit**	**Grade**	**Element**	**Unit**	**Grade**
Ag	ppm	4	P	%	<0.01
Al	%	4.26	Pb	ppm	79
As	ppm	<10	S	%	0.07
Ba	ppm	229	Sb	ppm	<10
Be	ppm	<3	Sc	ppm	<5
Bi	ppm	<20	Se	ppm	<20
Ca	%	0.19	Sn	ppm	<20
Cd	ppm	<3	Sr	ppm	25
Co	ppm	<8	Th	ppm	<20
Cr	ppm	7	Ti	%	0.08
Cu	ppm	17	Tl	ppm	<20

Analyzed Head CER - AL3					
Element	**Unit**	**Grade**	**Element**	**Unit**	**Grade**
Fe	%	1.58	U	ppm	<20
K	%	3.22	V	ppm	<8
La	ppm	<20	W	ppm	<20
Li	ppm	4	Y	ppm	8
Mg	%	0.14	Zn	ppm	49
Mn	%	0.03	Zr	ppm	69
Mo	ppm	<3	C_ORG	%	N.A.
Na	%	2.14	C_ELE	%	N.A.
Ni	ppm	3	C_CAR	%	N.A.

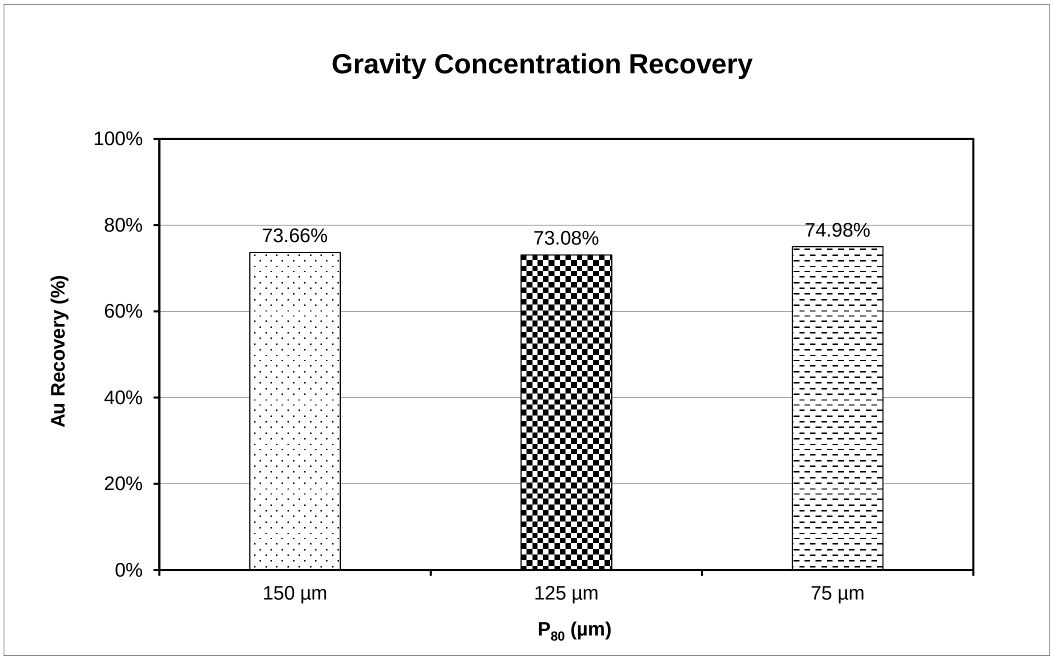
Table 13.27 – SG and Bond Wi

Specific Gravity and Bond Wi (Ball Mill)	
Density (Specific Gravity)	2.61
Bulk Density (ore crushed to ½" - 0) (t/m³)	1.65
SGS Wi Bond (kWh/short ton)	16.70
SGS Wi Bond (kWh/t)	18.40
OBS: The final product of de SGS Wi Bond determination has 73% passing 75 µm	
Metso Wi Bond (kWh/short ton)	13.97
Metso Wi Bond (kWh/t)	15.40
OBS: The final product of the Metso Wi Bond determination has 54% passing 75 µm	

13.4.1.2 *Gravity Concentration*

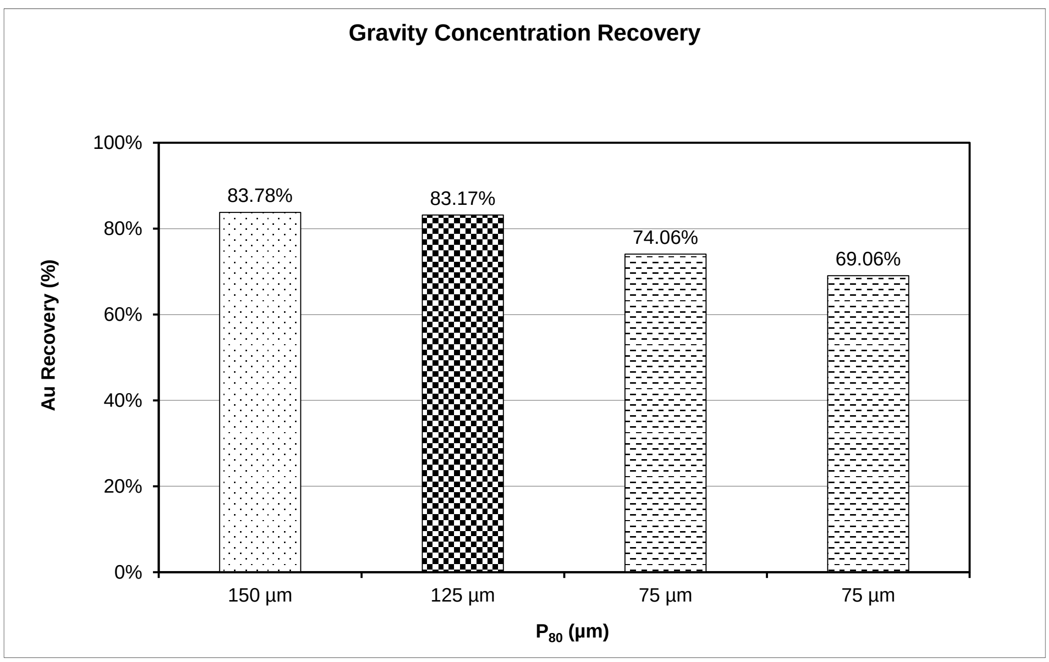
Figure 13.10 and Figure 13.11 show the recovery obtained in the concentration tests with P_{80} 150 µm, 125 µm, and 75 µm. The results of gravity concentrations are further detailed in the leaching/flotation tests, since the gravity concentration tests generated samples for leaching and flotation.

Figure 13.10 – Gravity Concentration Recovery Before Leaching



Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

Figure 13.11 – Gravity Concentration Recovery Before Flotation



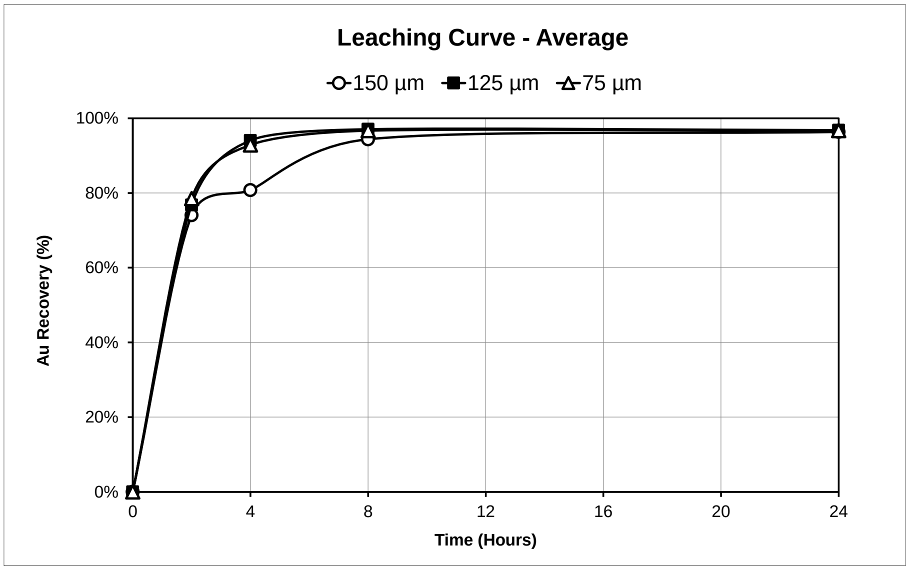
Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

The gravity concentration gold indicates recovery ranging from 69% to 83%, characteristics of coarse Au particles in the sample.

13.4.1.3 CIL TESTS – GRAVITY TAILINGS

Figure 13.12 show the leaching curves. Tailings grades reported as <0.02 g/t were considered 0.02 g/t for calculations.

Figure 13.12 – Average Leaching Curves – CIL Gravity Tailing - P_{80} = 150 µm, 125 µm, and 75 µm



Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

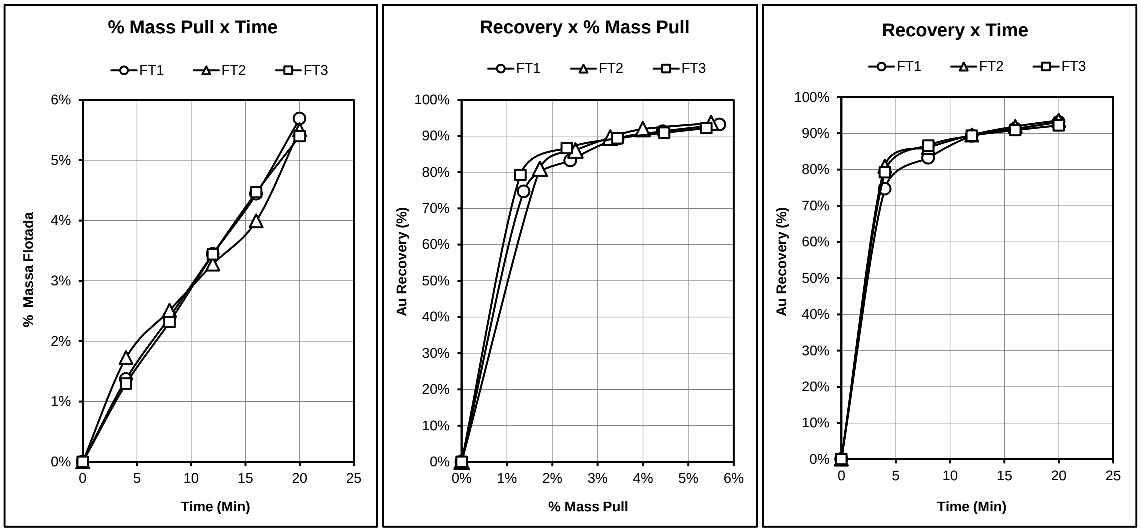
Summary – CIL

- Gold Grade Analyzed: 2.64 g/t.
- Gold Grade Recalculated: 2.39 g/t.
- Global Gold Recovery: > 99.2% (including gravity concentration).
- Gravity Recovery: 75% at P_{80} 75 µm.

13.4.1.4 FLOTATION TESTS

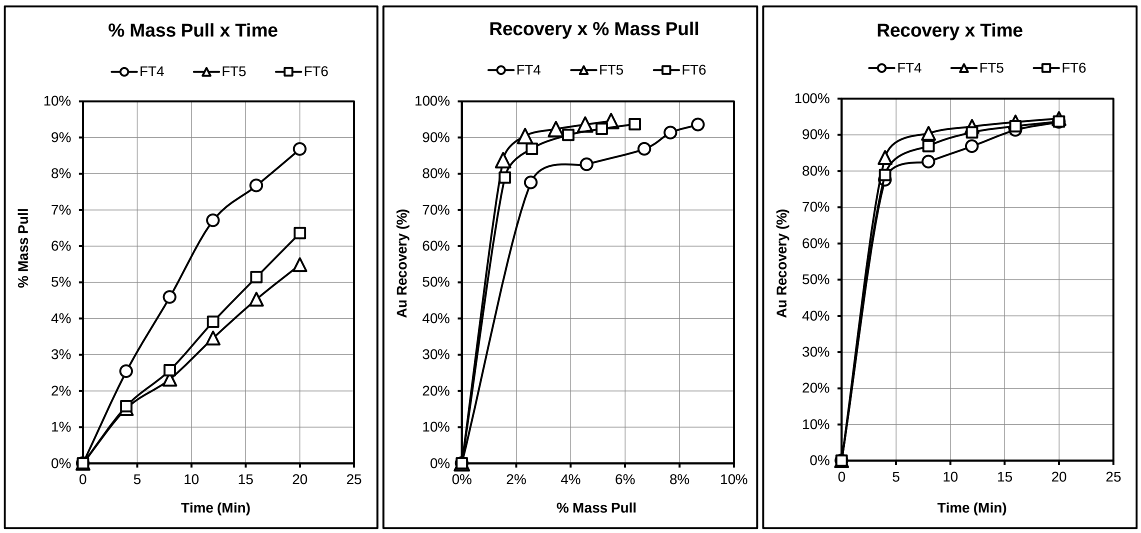
All tests were carried out with gravity tailings. Figure 13.13 to Figure 13.15 present results from the tests. P_{80} 150 µm, 125 µm and 75 µm were carried out.

Figure 13.13 – Rougher Flotation Curves - P_{80} = 150 µm – Gravity Tailing



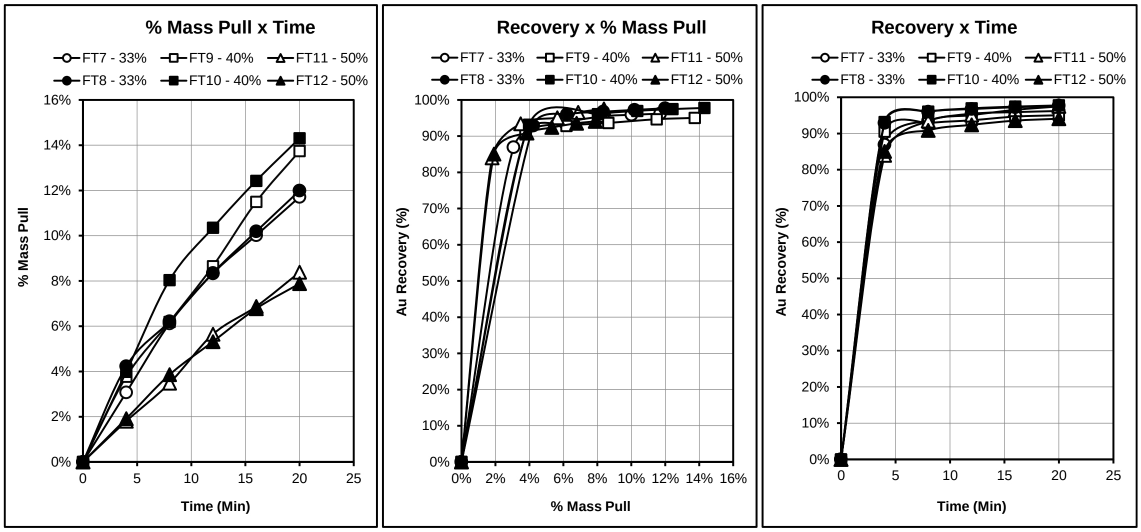
Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

Figure 13.14 – Rougher Flotation Curves - P_{80} = 125 µm – Gravity Tailing



Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

Figure 13.15 – Rougher Flotation Curves - P_{80} = 75 µm – Gravity Tailing



Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

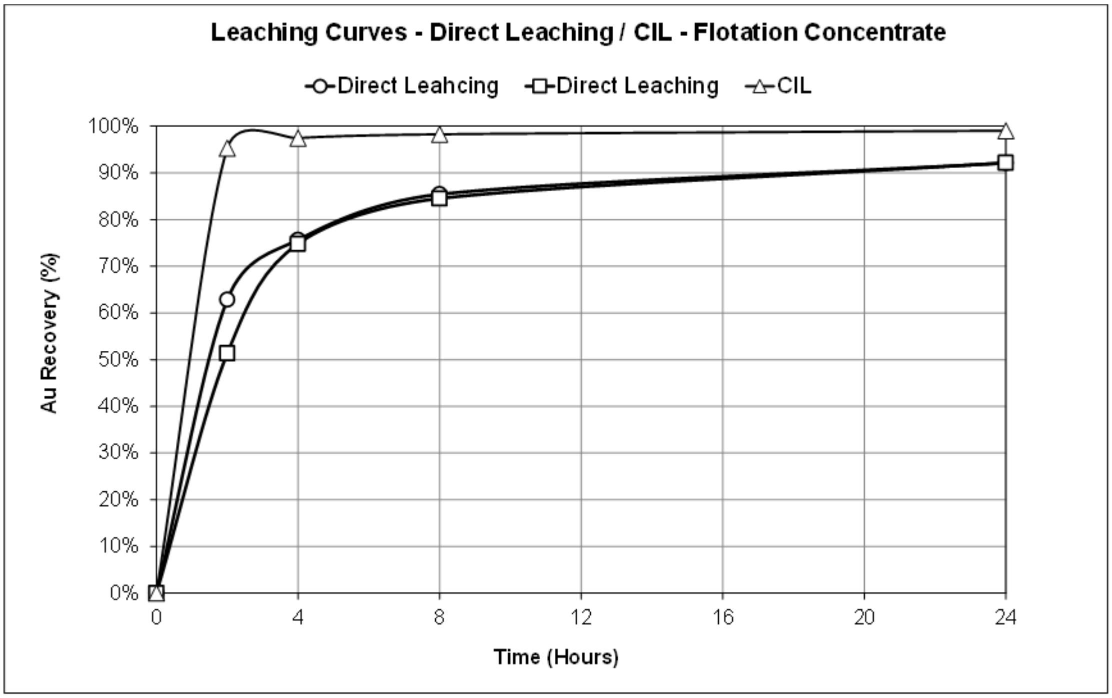
Summary – Flotation

- Gold Grade Analyzed – 2.64 g/t - Average Recalculated – 2.12 g/t.
- Total Gold Recovery > 99.2% gold recovery (including gravity concentration).
- Gravity Recovery: 70%-83% (all P_{80} tested).
- Tests indicate that flotation seems not be P_{80} dependent.

13.4.1.5 *Flotation Concentrate Leaching Tests*

Additional flotation tests were carried out to produce mass of concentrates sufficient for complementary tests, as sedimentation and leaching tests to be able to calculate the global recoveries of the tested circuits.

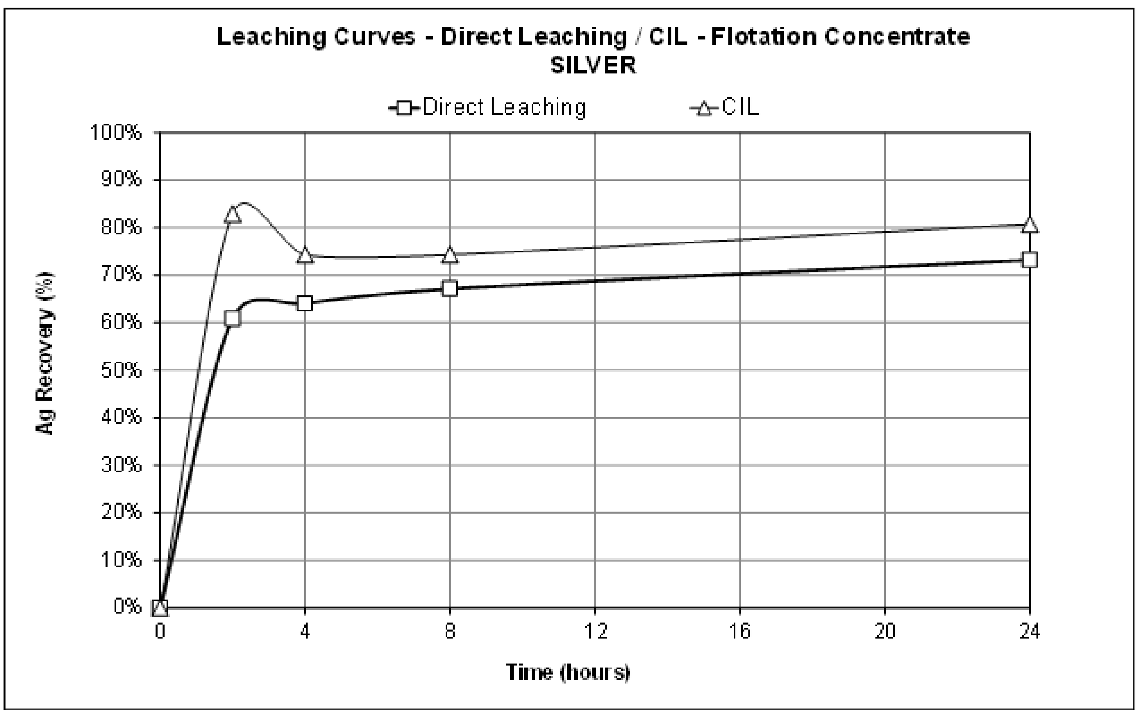
Figure 13.16 – Flotation Concentrate Leaching Curve – With (CIL) and Without Carbon



Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

On a preliminary basis, silver recoveries were determined.

Figure 13.17 – Flotation Concentrate Leaching Curves – Direct Leaching and CIL – Silver



Source: Testwork Report – 012-2022 – Cerrado Final Rev 1

The results of the leaching tests, with and without activated carbon, indicate that the kinetics and extraction of gold is faster and higher for the CIL process.

Then, a kinetics test was performed to evaluate the kinetics of gold and silver in activated carbon leaching. A sample of flotation concentrate was leached for 24 hours and filtered. The solution was used for adsorption kinetics test. The result indicates that the silver adsorption kinetics on the carbon is slower than gold.

13.4.1.6 *Sedimentation Bench Tests - Flotation Concentrate Thickening*

Sedimentation tests were carried out with a percentage of solids (w/w) of 10%, 15% and 18%, searching for a 40% w/w underflow.

13.4.1.7 *Sedimentation, Rheology and Filtering Bench Tests – Tailings*

Sedimentation, rheology and filtration tests were carried out at Westech Industrials Equipment's (Westech) facilities in São Paulo (SP), Brazil, with samples of tailings.

The filtration tests aimed to obtain the lowest possible cake moisture to recover the maximum amount of water for reuse in the process.

A 44 kg sample was produced during the bench tests, composed with 4 kg of tails from flotation concentrate leached, and 0 kg of flotation tails.

13.4.1.8 *Cyanide Neutralization*

Cyanide neutralization tests were carried out with two oxidants: hydrogen peroxide (H_2O_2) and sodium metabisulphite (MBSS), both at a solids concentration of 40% (w/w). Table 13.28 and Table 13.29 show the results.

Table 13.28 – Summary of Cyanide Neutralization Tests with MBSS

Cyanide Detoxification Test - $Na_2S_2O_5/O_2$				
Test ID	**DT1**	**DT2**	**DT3**	**DT4**
SO_2:CN (w/w) ratio	7:1	5:1	3:1	7:1
Initial CN	57	57	57	57
Initial pH	10.80	10.80	10.80	10.80
Contact Time (hours)	2.0	2.0	2.0	2.0
Stage 1	**Reagents Additions**			
$Na_2S_2O_5$ Consumption (kg/t)	0.92	0.66	0.39	0.92
$CuSO_4$ Consumption (kg/t)	0.32	0.32	0.32	-
pH After Addition	8.19	8.74	9.27	9.03

Cyanide Detoxification Test - $Na_2S_2O_5/O_2$				
Test ID	**DT1**	**DT2**	**DT3**	**DT4**
Stage 2	**Test Results**			
Final pH	8.50	8.83	9.15	9.11
CN In Natura (mg/L)	0.11	0.21	0.21	11.13
CN Reduction (%)	99.69%	99.63%	99.63%	77.80%

Table 13.29 – Summary of Cyanide Neutralization Tests with Hydrogen Peroxide

CYANIDE DETOXIFICATION TEST - H_2O_2				
Test ID	**DT5**	**DT6**	**DT7**	**DT8**
H_2O_2:CN (w/w) ratio	7:1	5:1	3:1	7:1
Pulp Mass (g)	625	625	625	625
Initial CN	57	57	57	57
Initial pH	10.8	10.8	10.8	10.8
Contact Time (hours)	2	2	2	2
Stage 1	**Reagents Additions**			
H_2O_2 Consumption (kg/t)	0.79	0.56	0.34	0.79
$CuSO_4$ Consumption (kg/t)	0.32	0.32	0.32	-
pH After Addition	10.26	10.33	10.34	10.29
Stage 2	**Test Results**			
Final pH	9.67	9.71	9.82	9.97
CN In Natura (mg/L)	0.21	0.32	1.59	20.14
CN Reduction (%)	99.63%	99.26%	96.72%	61.16%

Both reagents indicate that detoxification is effective reaching [CN-] <0.2 mg/L

13.5 2022 and 2023 – Samples and Metallurgical Program – Gogó da Onça Samples

Four (4) samples from Gogó da Onça orebody, adjacent to Serra Alta, were provided by Cerrado Gold for process test works. The samples were identified as Blended (GDOB), Average Grade (GDOA), High Grade (GDOH) and Low Grade (GDOL).

Table 13.30 to Table 13.32 show the composition of samples by core interval.

Table 13.30 – Average Grade Sample Composition

DH ID	From	To	Sample	Au_ppm	Weight	Internal Lab ID	Batch	Volume ID
FGO-001	50.68	51.69	71100	0.68	1.224	GOGO_2022_AVG	1103	B-008974
FGO-001	51.69	52.7	71101	6.57	0.99	GOGO_2022_AVG	1103	B-008974
FGO-001	52.7	53.7	71103	0.18	1.674	GOGO_2022_AVG	1103	B-008974
FGO-001	53.7	54.73	71104	0.025	1.346	GOGO_2022_AVG	1103	B-008974
FGO-001	54.73	55.75	71105	0.025	1.112	GOGO_2022_AVG	1103	B-008974
FGO-001	55.75	56.75	71106	0.39	1.328	GOGO_2022_AVG	1103	B-008974
FGO-001	56.75	57.77	71107	0.28	1.334	GOGO_2022_AVG	1103	B-008974
FGO-002	98.46	99.55	71751	0.17	1.578	GOGO_2022_AVG	1103	B-008974
FGO-002	99.55	100.57	71752	0.36	1.61	GOGO_2022_AVG	1103	B-008974
FGO-002	100.57	101.59	71753	2.81	1.45	GOGO_2022_AVG	1103	B-008974
FGO-002	101.59	102.65	71754	0.05	0.608	GOGO_2022_AVG	1103	B-008974
FGO-002	102.65	103.69	71755	0.025	1.546	GOGO_2022_AVG	1103	B-008974
FGO-002	103.69	109.95	71756	0.35	1.626	GOGO_2022_AVG	1103	B-008974
FGO-002	109.95	110.97	71763	0.19	1.436	GOGO_2022_AVG	1103	B-008974
FGO-002	110.97	112	71764	1.78	1.416	GOGO_2022_AVG	1103	B-008974
FGO-002	112	113	71765	0.33	1.406	GOGO_2022_AVG	1103	B-008974
FGO-002	113	113.94	71766	1.39	0.984	GOGO_2022_AVG	1103	B-008974
FGO-002	113.94	114.95	71768	0.98	1.286	GOGO_2022_AVG	1103	B-008974
FGO-002	114.95	115.99	71769	1.19	1.408	GOGO_2022_AVG	1103	B-008974
FGO-002	115.99	116.99	71770	0.21	1.312	GOGO_2022_AVG	1103	B-008974
FGO-002	116.99	117.98	71771	5.2	1.432	GOGO_2022_AVG	1103	B-008974
FGO-002	117.98	119.03	71772	3.85	1.46	GOGO_2022_AVG	1103	B-008974
FGO-003	119.03	120.04	71773	0.88	1.514	GOGO_2022_AVG	1103	B-008974
FGO-002	120.04	121.04	71774	0.5	1.164	GOGO_2022_AVG	1103	B-008974
FGO-002	121.04	122.08	71775	0.49	1.486	GOGO_2022_AVG	1103	B-008974
FGO-002	122.08	123.1	71776	0.16	1.472	GOGO_2022_AVG	1103	B-008974
Average Grade - AVG				**1.08**	**35.20**			

Table 13.31 – High Grade Sample Composition

DH ID	From	To	Sample	Au_ppm	Weight	Internal LAB ID	Batch	Volume
FGO-002	124.1	125.12	71779	0.24	1.366	GOGO_2022_HG	1103	B-008975
FGO-004	58.54	59.57	72042	0.1	1.38	GOGO_2022_HG	1103	B-008975
FGO-004	59.57	60.65	72043	6.87	1.44	GOGO_2022_HG	1103	B-008975
FGO-004	60.65	61.73	72044	0.74	1.492	GOGO_2022_HG	1103	B-008975
FGO-004	61.73	62.76	72045	0.58	1.408	GOGO_2022_HG	1103	B-008975
FGO-004	62.76	63.8	72046	0.09	1.342	GOGO_2022_HG	1103	B-008975
FGO-004	63.8	64.93	72047	0.18	1.66	GOGO_2022_HG	1103	B-008975
FGO-004	64.93	66	72048	0.025	0.578	GOGO_2022_HG	1103	B-008975
FGO-004	66	67	72049	0.025	1.442	GOGO_2022_HG	1103	B-008975
FGO-004	67	68.15	72050	0.33	1.788	GOGO_2022_HG	1103	B-008975
FGO-004	68.15	69.23	72051	0.31	1.744	GOGO_2022_HG	1103	B-008975
FGO-004	69.23	70.33	72053	26.2	1.594	GOGO_2022_HG	1103	B-008975
FGO-004	70.33	71.19	72054	0.025	0.996	GOGO_2022_HG	1103	B-008975
FGO-004	71.19	72.15	72055	0.025	1.182	GOGO_2022_HG	1103	B-008975
FGO-004	72.15	73.15	72056	0.13	1.376	GOGO_2022_HG	1103	B-008975
FGO-004	73.15	74.07	72057	0.21	1.244	GOGO_2022_HG	1103	B-008975
FGO-004	74.07	75.06	72058	2.58	1.294	GOGO_2022_HG	1103	B-008975
FGO-004	75.06	76	72059	8.81	1.048	GOGO_2022_HG	1103	B-008975
FGO-004	76	76.92	72061	0.75	1.142	GOGO_2022_HG	1103	B-008975
FGO-004	76.92	77.82	72062	0.25	1.094	GOGO_2022_HG	1103	B-008975
FGO-004	77.82	78.78	72063	3.39	1.314	GOGO_2022_HG	1103	B-008975
FGO-004	78.78	79.71	72064	2.99	1.262	GOGO_2022_HG	1103	B-008975
FGO-004	79.71	80.71	72065	8.91	1.304	GOGO_2022_HG	1103	B-008975
FGO-004	80.71	81.55	72066	19.15	1.174	GOGO_2022_HG	1103	B-008975
FGO-005	57.86	59.06	72254	0.46	0.976	GOGO_2022_HG	1103	B-008975
FGO-005	59.06	60.57	72255	22.5	0.968	GOGO_2022_HG	1103	B-008975
FGO-006	29.68	30.67	46803	0.67	1.146	GOGO_2022_HG	1103	B-008975
FGO-007	30.67	31.64	46804	0.13	1.17	GOGO_2022_HG	1103	B-008975
High Grade - HG				**3.77**	**35.9**			

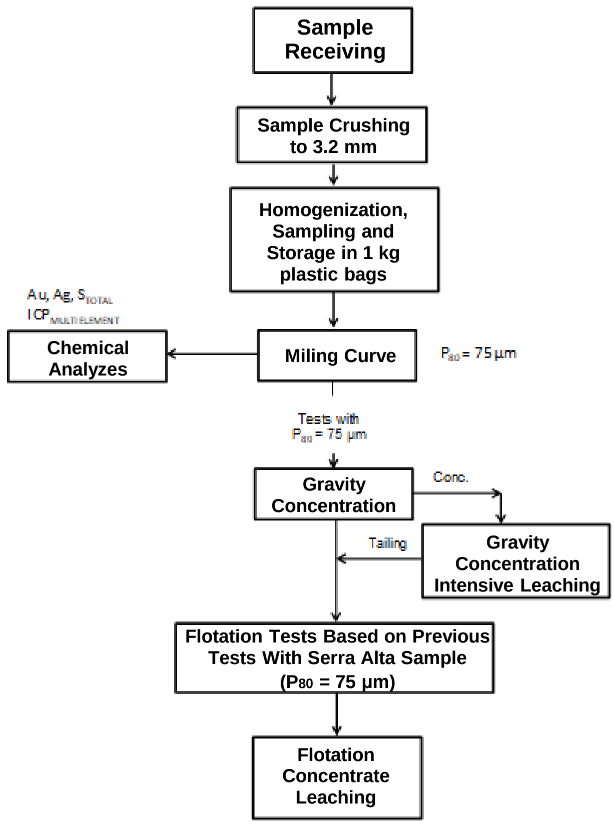
Table 13.32 – Low Grade Sample Composition and Location

Hole number	From	To	Sample	Au_ppm	Weigth	Internal LAB ID	Batch	Volume
FGO-001	80.54	125.12	71132	0.89	1.56	GOGO_2022_LG	1103	B-008976
FGO-001	81.64	82.65	71133	0.12	1.334	GOGO_2022_LG	1103	B-008976
FGO-001	82.65	83.69	71134	0.1	1.29	GOGO_2022_LG	1103	B-008976
FGO-001	83.69	62.3	71136	0.025	1.472	GOGO_2022_LG	1103	B-008976
FGO-002	62.3	64.35	71712	0.49	1.484	GOGO_2022_LG	1103	B-008976
FGO-002	64.35	65.38	71714	0.5	1.514	GOGO_2022_LG	1103	B-008976
FGO-002	65.38	66.39	71715	0.025	1.368	GOGO_2022_LG	1103	B-008976
FGO-002	66.39	67.37	71716	0.31	1.36	GOGO_2022_LG	1103	B-008976
FGO-007	182.75	183.77	46969	1.42	1.424	GOGO_2022_LG	1103	B-008976
FGO-007	183.77	184.82	46970	0.025	1.534	GOGO_2022_LG	1103	B-008976
FGO-007	184.82	185.84	46971	0.29	1.492	GOGO_2022_LG	1103	B-008976
FGO-007	185.84	186.88	46972	0.025	1.602	GOGO_2022_LG	1103	B-008976
FGO-007	186.88	187.93	46974	0.09	1.546	GOGO_2022_LG	1103	B-008976
FGO-007	187.93	188.86	46975	1.3	1.232	GOGO_2022_LG	1103	B-008976
FGO-007	188.86	189.92	46976	0.37	1.576	GOGO_2022_LG	1103	B-008976
FGO-007	189.92	190.97	46977	0.025	1.57	GOGO_2022_LG	1103	B-008976
FGO-007	190.97	191.92	46978	0.025	1.412	GOGO_2022_LG	1103	B-008976
FGO-007	191.92	192.98	46979	0.025	1.632	GOGO_2022_LG	1103	B-008976
FGO-007	192.98	194.15	46980	0.025	1.922	GOGO_2022_LG	1103	B-008976
FGO-007	194.15	195.24	46981	0.35	1.664	GOGO_2022_LG	1103	B-008976
FGO-007	195.24	196.07	46982	0.025	1.09	GOGO_2022_LG	1103	B-008976
FGO-007	196.07	197.07	46983	0.025	0.048	GOGO_2022_LG	1103	B-008976
FGO-007	197.07	198.01	46985	0.1	1.184	GOGO_2022_LG	1103	B-008976
FGO-008	198.01	198.98	46986	0.025	1.232	GOGO_2022_LG	1103	B-008976
FGO-007	198.98	199.99	46987	1.61	1.244	GOGO_2022_LG	1103	B-008976
FGO-007	199.99	201.06	46988	0.21	1.374	GOGO_2022_LG	1103	B-008976
FGO-007	201.06	202.08	46989	0.025	1.27	GOGO_2022_LG	1103	B-008976
FGO-007	202.08	203.08	46990	0.025	1.54	GOGO_2022_LG	1103	B-008976
FGO-007	203.08	204.11	46991	0.06	1.354	GOGO_2022_LG	1103	B-008976
FGO-007	204.11	205.13	46992	0.06	1.394	GOGO_2022_LG	1103	B-008976
FGO-007	205.13	206.11	46993	0.025	1.23	GOGO_2022_LG	1103	B-008976
FGO-007	206.11	207.24	46994	0.57	1.574	GOGO_2022_LG	1103	B-008976
Low Grade - LG				**0.29**	**44.5**			
Blended Sample				**1.61**	**115.6**			

The blended sample was composed by the three (3) samples in equal parts.

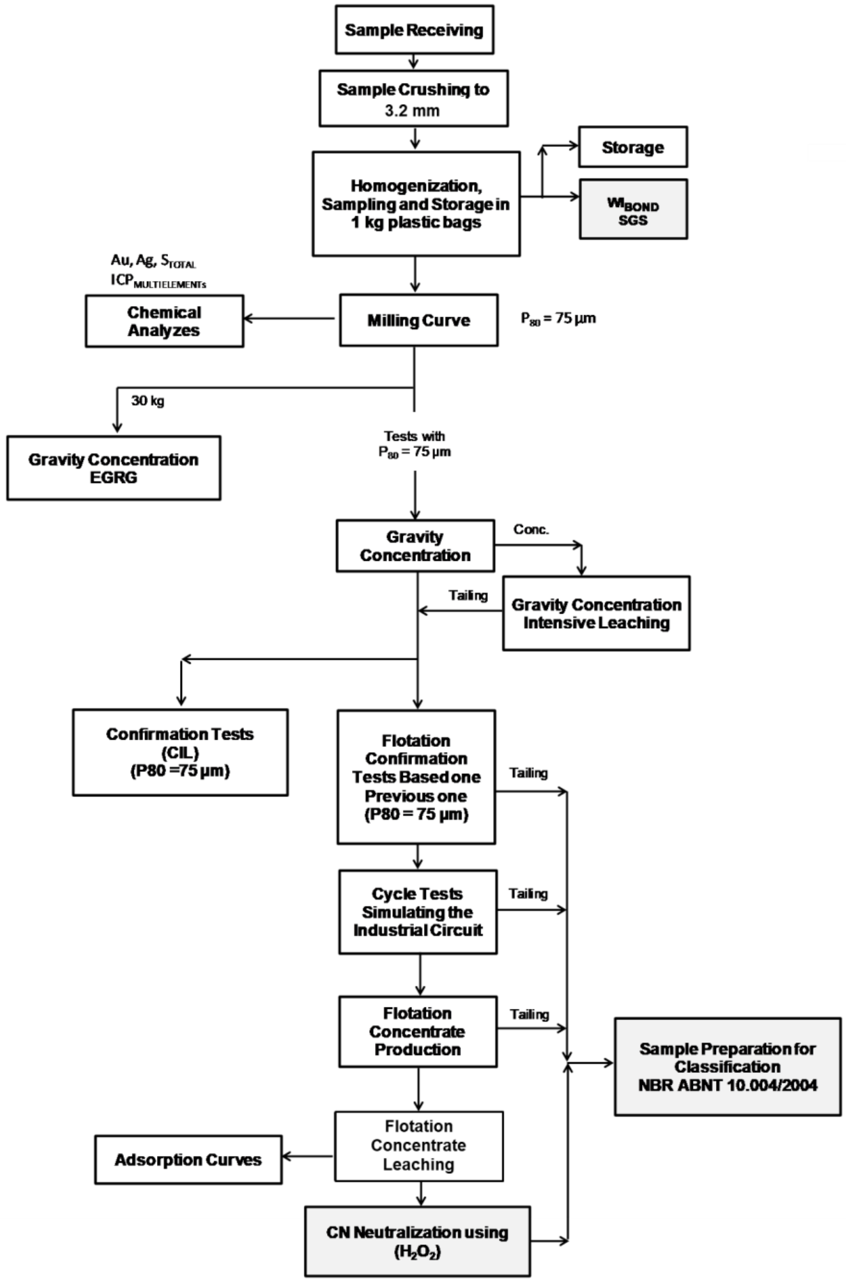
Two (2) different test routes programs were studied, for each sample and, as shown in Figure 13.18, and one (1) for composited samples (Blended Samples), as shown in Figure 13.19.

Figure 13.18 – Simplified Test Works Block Diagram



Source: Testwork Report – 002-2023 – Cerrado Gogo Rev1

Figure 13.19 – Test Works Block Diagram (Blended Sample)



Source: Testwork Report – 002-2023 – Cerrado Gogo Rev1

13.5.1 Summary of Results

Table 13.33 summarizes the results.

Table 13.33 – Gogó da Onça Test Works Results - Summary

Sample	Unit	Average Grade	High Grade	Low Grade	Blend
Au Analyzed Head Grade	g/t	1.14	2.29	1.14	1.50
Au Back-Calculated Grade	g/t	0.69	5.43	0.36	1.38
Au Geology	g/t	1.08	3.77	0.29	1.61
Ag Analyzed Head Grade	g/t	1.01	1.00	0.54	1.05
Ag Back-Calculated Grade	g/t	1.15	1.96	0.35	0.88
Au Tails	g/t	0.24	1.61	0.13	0.49
Ag Tails	g/t	1.01	1.10	0.28	0.66
Au Recovery Gravity	%	65.7	70.3	63.2	64.8
Ag Recovery Gravity	%	10.6	43.8	22.4	24.9
Au Recovery Tails Flotation	%	92.6	96.7	86.6	95.6
Ag Recovery Tails Flotation	%	70.6	43.8	36.3	73.0
Au Concentrate Leaching Recovery	%	83.4	95.5	94.4	
Ag Concentrate Leaching Recovery	%	25.5	81.0	60.0	
Au Global Recovery	%	92.0	97.8	93.3	
Ag Global Recovery	%	26.4	82.2	39.1	

Bond Work Index (BWi) was carried out in the blended sample and the energy was estimated at 17.9 kWh/t.

13.6 2023 – Variability Metallurgical Tests

A variability program was conducted for processing route confirmation on samples from different locations and depth at Monte do Carmo Project. Table 13.34 shows the identification of these samples.

Table 13.34 – Samples Identification

Sample ID	DH ID	From	To	Mass (kg)	Au Grade (g/t)	Production Year	Notes
V1	FSA-251	26.4	37.8	9.1	0.96	Y1	From 31.65m to 35.75 m, for comminution tests
	FSA-214	86.8	106.6	12.0	1.11	Y2	
				21.1	1.05		
V2	FSA-145	87.1	106.5	24.3	1.93	Y2	
V3	FSA-202	51.8	59.4	9.5	1.08	Y3	Comminution tests
V4	FSA-241	137.7	158.2	10.0	1.27	Y4 LOM	Subsamples for comminution test works
	FSA-274	132.4	152.4	10.0	1.70	Y4 LOM	
				20.0	1.48	Y4 LOM	
V5	FSA-249	55.3	76.7	25.3	1.68	Y4 LOM	
V6	FSA-186	6.3	24.6	12.0	0.62	Y4 LOM	Subsamples for comminution test
V7	Comp			18.6	1.44	UG	Subsamples for comminution test

Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

13.6.1 CHEMICAL CHARACTERIZATION

The samples were submitted to preconcentration in a laboratory scale centrifuge. Tailings and concentrates were analyzed by firing assay. Table 13.35 shows a summary of results for head grade analysis.

Table 13.35 – Head Grade Analysis

Sample ID	Au (g/t)	Ag (g/t)	S (%)
V1	1.04	1.04	0.11
V2	1.01	0.49	0.14
V4	1.04	0.5	0.10
V5	3.53	0.55	0.07
V6	0.62	0.39	0.07

Table 13.36 reports the results of ICP for samples submitted to this method.

Table 13.36 – ICP Analysis Results

ICP Analysis					
	Sample	V1	V2	V5	V6
Ag	ppm	<0.5	<0.5	<0.5	<0.5
Al	%	4.07	3.61	2.89	3.07
As	ppm	7	7	<3	<3
Ba	ppm	211	149	133	204
Be	ppm	1.5	2.7	1.6	1.6
Bi	ppm	<5	<5	<5	<5
Ca	%	0.21	0.17	0.13	0.11
Cd	ppm	<0.5	<0.5	<0.5	<0.5
Co	ppm	29	18	18	39
Cr	ppm	12	10	8	9
Cu	ppm	24	10	13	8
Fe	%	1.57	1.82	1.27	1.24
K	%	3.4	3.5	3.05	3.09
La	ppm	15.9	17.1	11.8	11.4
Li	ppm	4	<2	<2	3
Mg	%	0.09	0.09	0.07	0.05
Mn	ppm	256	182	122	159
Mo	ppm	<1	2	<1	<1
Na	%	2.42	2.38	2.3	2.26
Ni	ppm	13	10	5	6
P	%	<0.01	<0.01	<0.01	<0.01
Pb	ppm	52	21	7	26
S	%	0.09	0.11	0.05	0.04
Sb	ppm	<10	<10	<10	<10
Sc	ppm	1.4	1.3	0.9	0.9
Sn	ppm	<10	<10	<10	<10
Sr	ppm	35.1	22.2	19.1	24.9
Ti	%	0.05	0.07	0.05	0.05
V	ppm	4	6	6	3
W	ppm	64	49	41	58
Y	ppm	5.5	13.7	3.6	4
Zn	ppm	35	30	16	46
Zr	ppm	68.5	101.2	65.3	59.5

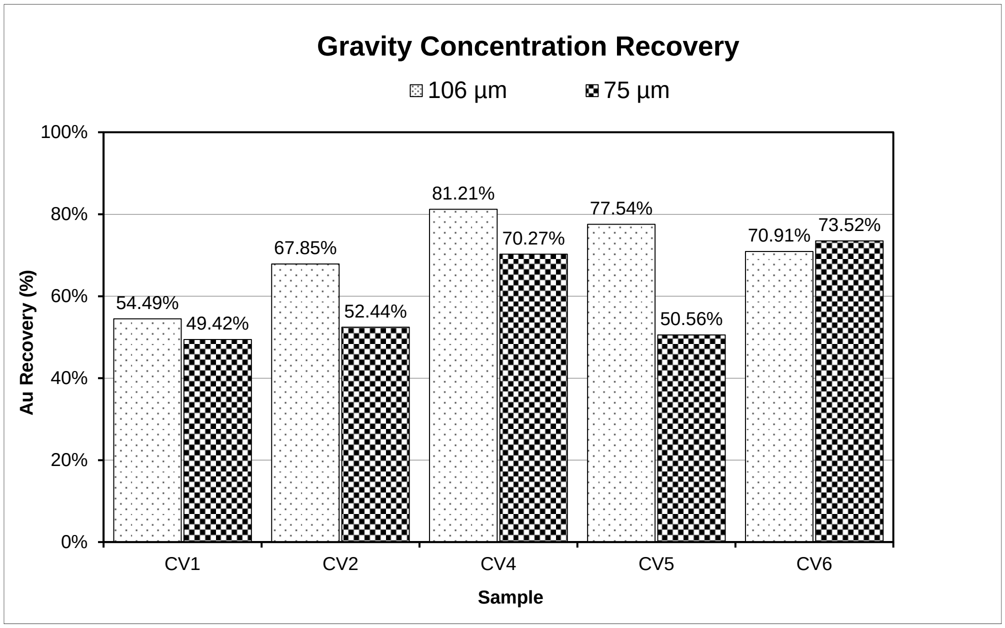
Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

13.6.2 GRAVITY CONCENTRATION TESTS

Samples were submitted to concentration tests in a laboratory scale centrifuge. Concentrate was undergone to high concentration cyanidation for balance calculation.

Figure 13.20 shows a summary of the results.

Figure 13.20 – Gravity Concentration Results - P_{80} =106 µm and 75 µm



Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

13.6.3 CIL TESTS

Gravity tails were leached in P_{80} = 106 µm and 75 µm. The results are summarized in the Table 13.37.

Table 13.37 – Gravity and Tails Leaching Tests (CIL) - Au

Sample		CV1		CV2		CV4		CV5		CV6	
P_{80}		106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm
Analyzed Head (g/t)		1.04	1.04	1.01	1.01	1.04	1.04	3.53	3.53	0.62	0.62
Calculated Head (g/t)		1.02	1.05	1.12	0.79	2.97	1.02	1.88	1.64	0.84	2.32
Recovery Gravity Conc. (g/t)		194.63	306.55	153.60	157.54	560.38	168.07	218.23	267.27	218.35	1527.00
% Mass Recovery Gravity Conc.		0.29%	0.17%	0.49%	0.26%	0.43%	0.43%	0.67%	0.31%	0.27%	0.11%
Gravity Conc. Recovery (%)		54.49%	49.42%	67.85%	52.44%	81.21%	70.27%	77.54%	50.56%	70.91%	73.52%
Calculated Tailing Leaching (g/t)		0.43	0.48	0.31	0.33	0.38	0.29	0.37	0.78	0.20	0.50
NaCN addition (g/t)		1,019	1000	1,057	1,002	1,027	996	1,028	1,005	1,028	1,019
NaCN effective consumption (g/t)		506	572	574	627	507	623	461	735	364	427
Lime consumption (kg/t)		0.51	0.41	0.45	0.41	0.78	0.75	0.58	0.55	0.60	0.58
Leaching Extraction	24h	95.37%	95.83%	93.50%	94.24%	94.30%	93.27%	94.61%	96.62%	80.76%	95.92%
	Tail (g/t)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.02
Global Recovery		**98.04%**	**98.09%**	**98.21%**	**97.47%**	**99.33%**	**98.04%**	**98.94%**	**98.37%**	**95.46%**	**99.14%**

Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

The recovery of silver was studied in the gravity/CIL tests. The results are reported in the Table 13.38.

Table 13.38 – Gravity and Tails Leaching (CIL) - Ag

Sample	CV1		CV2		CV4		CV5		CV6	
P_{80}	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm
Analyzed Head (g/t)	1.04	1.04	0.49	0.49	0.50	0.50	0.55	0.55	0.39	0.39
Calculated Head (g/t)	0.91	0.92	0.72	0.63	0.99	0.66	0.76	0.66	0.67	1.00
Gravity Conc. Recovery (%)	23.4%	20.3%	33.5%	20.5%	59.3%	30.6%	46.7%	32.6%	29.2%	44.7%
Leaching Extraction 24h	36.8%	37.6%	57.0%	57.6%	42.2%	40.7%	50.9%	50.0%	50.4%	52.0&
Global Recovery	**54.1%**	**53.0%**	**72.3%**	**68.1%**	**76.4%**	**57.3%**	**73.6%**	**69.8%**	**67.8%**	**76.7%**

Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

13.6.4 Flotation Tests

Flotation tests were carried out in the gravity tails. Table 13.39 reports the results.

Table 13.39 – Flotation Tests Results – Au

Sample	CV1		CV2		CV4		CV5		CV6	
P_{80}	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm
Analyzed Head (g/t)	1.04	1.04	1.01	1.01	1.04	1.04	3.53	3.53	0.62	0.62
Calculated Head (g/t)	1.02	1.05	1.12	0.79	2.97	1.02	1.88	1.64	0.84	2.32
Gravity Conc. Recovery (%)	54.5%	49.4%	67.8%	52.4%	81.2%	70.2%	77.5%	50.5%	70.9%	73.5%
Rougher Flotation Recovery (%)	95.5%	96.3%	94.4%	94,80%	96.2%	94.5%	95.8%	97.8%	93.1%	97.5%
Global Recovery	**97.8%**	**97.9%**	**97.9%**	**97.4%**	**99.4%**	**98.3%**	**98.9%**	**98.9%**	**97.8%**	**99.2%**

Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

The recovery of silver was determined in these tests. Table 13.40 summarizes the results.

Table 13.40 – Flotation Test Results - Ag

Sample	CV1		CV2		CV4		CV5		CV6	
P_{80}	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm	106 µm	75 µm
Analyzed Head (g/t)	1.04	1.04	0.49	0.49	0.50	0.50	0.55	0.55	0.39	0.39
Calculated Head (g/t)	0.91	0.92	0.72	0.63	0.99	0.66	0.76	0.66	0.67	1.00
Gravity Conc. Recovery (%)	23.4%	20.3%	33.5%	20.5%	59.3%	30.6%	46.6%	32.6%	26.2%	44.6%
Rougher Flotation Recovery (%)	74.5%	76.3%	63.4%	66.4%	56.4%	60.8%	54.6%	62.9%	58.3%	70.5%
Global Recovery	**79.3%**	**80.1%**	**74.8%**	**71.8%**	**82.3%**	**74.5%**	**75.7%**	**72.9%**	**65.7%**	**81.7%**

Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

In some test works, the sulphur deportment was analysed. Results were not relevant and were reported in the Testwork Report – 015-2023 – Cerrado Final Rev 0.

13.6.5 Flotation Concentrate Leaching Tests

For leaching (CIL) and cyanide neutralization tests, the flotation concentrates from each sample were combined in just one sample.

Feed grade was back-calculated from tailings and concentrate data.

Table 13.41 reports the results of the flotation and cyanidation of the concentrate for gold and silver.

Table 13.41 – CIL of the Concentrate of Flotation

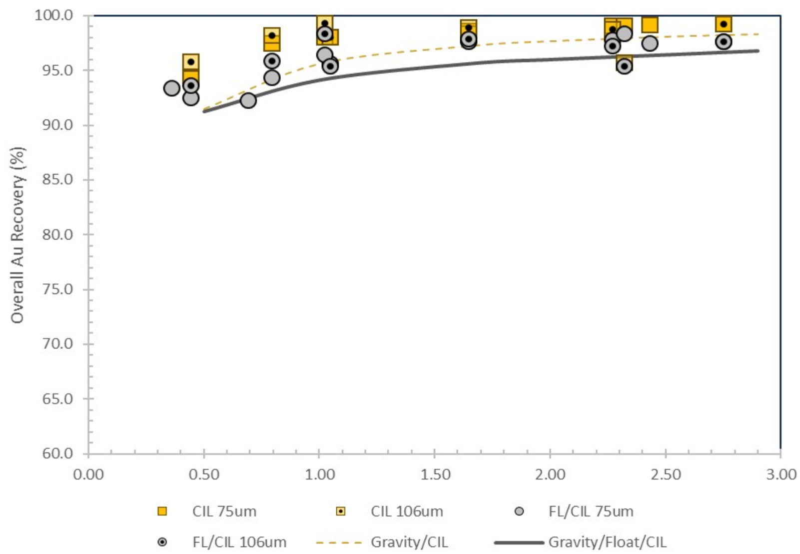
Sample		Au		Ag	
P_{80}		106 µm	75 µm	106 µm	75 µm
Flotation	Feed Grade (g/t)	0.42	0.38	0.45	0.38
	Concentrate (g/t)	3.87	3.42	2.43	1.97
	Recovery (%)	92.2%	90.8%	54.1%	52.8%
CIL	Extraction 24h (%)	97.8%	97.4%	71.4%	60.2%

Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

13.6.6 Gold Recovery Statistical Model for Flotation Circuit

The plot in Figure 13.21, derived from comprehensive testing at both 75-micron and 106-micron scales, illustrates the correlation of gold recovery for the FS. This summary is based on all test work, and a statistical analysis has been conducted by Cerrado Gold. This analysis encompasses operational loss factors, including carbon and soluble gold losses, along with operational discounts for each tested circuit. The chart presents the actual laboratory results from various tests and emphasizes the modeled discounts in comparison to these laboratory findings.

Figure 13.21- Global Gold Recovery – Algorithm Model Chart



Based on algorithm considering the gold grade of ROM and P_{80}< 106 µm the gold recovery will be 95.7%.

13.6.7 SAG Milling Comminution (SMC) Test

The SMC test was performed at SGS/JKTech, and the Bond work Index test was performed at SGS. Those tests considered the variability of the ore during the mine operation. The results are shown in Table 13.42 and Figure 13.22.

Table 13.42 – JKTech SMC Test Result

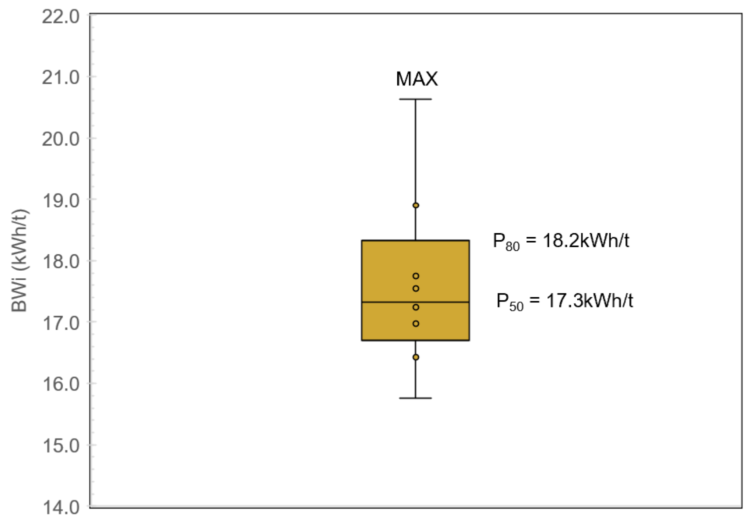
Units	DWi kWh/m^3	Mi Parameters (kWh/t)			SG
		Mia	Mih	Mic	
Core Sample	4.1	13.5	9.1	4.7	2.63

Units	A	b	Axb	t_a	SCSE (kWh/t)
Core Sample	91.1	0.70	63.8	0.63	8.02

Units	Ai
Core Sample	0.492

Source: SGS Brazil, 2023

Figure 13.22 - Bond Work Index Variability Tests



Source: SGS Brazil, 2023

While the FS currently relies on a 3-stage crushing and ball milling approach, the forthcoming optimization phase will explore potential enhancements to the comminution circuit design. This exploration will include an assessment of SAG milling. Although the ball mill circuit has been selected for the current design, the next engineering phase will evaluate the suitability and potential benefits of integrating a SAG mill into the circuit.

13.6.8 Cyanide Neutralization Tests

The cyanide neutralization tests, or detox, were carried out using samples from the whole ore CIL tests and flotation concentrate leaching tests, with different cyanide concentration.

Table 13.43 shows the results from neutralization tests.

Table 13.43 – Cyanide Neutralization Tests - Summary

			CIL Tails		Flotation Conc. CIL					
			Test 1	Test 2	Test 1	Test 2	Test 3	Test 1'	Test 2'	Test 3'
P_{80}		µm	106	106	106	106	106	75	75	75
% Solids w/w		%	50	50	35	35	35	35	35	35
Contact Time		h	1	1	1	1	1	1	1	1
CN^-	Initial	mg/l	254	208	37	317	620	32	299	560
	Final	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CN_{WAD}	Final	mg/l	5.4	5.8	2.2	14.8	27.3	1.6	24.3	45.2
Efficiency		%	98	97	94%	95%	96%	95%	92%	92%
Oxidant/CN Ratio			7	7	7	7	7	7	7	7
pH	Initial		10.4	10.4	10.4	10.6	10.7	10.3	10.6	10.9
	Final		8.2	8.3	8.3	8.1	7.6	8.2	8.0	7.3

Source: Testwork Report – 015-2023 – Cerrado Final Rev 0

13.7 Conclusions

Gravity Concentration

In the extensive testing campaign, gravity recovery consistently showed strong performance across all tested samples, encompassing various lithologies and locations. The impact of P_{80} on recovery rates appeared somewhat random, exhibiting minimal variability between 75 µm and 106 µm. Given the coarse nature of the gold particles and their free state, a high gravity recovery rate is anticipated.

FLSmidth, the specialist in gravity recovery, conducted tests and completed the modeling. Their findings indicate that each sample not only contains a high amount of Gravity Recoverable Gold (GRG) but also exhibits a coarse to very coarse particle size distribution. These characteristics make them particularly well-suited for gravity recovery processes.

During the detailed design phase, the gravity recovery circuit's design will be finely tuned and optimized to ensure maximum efficiency in gravity gold recovery.

Cyanidation

Throughout the various campaigns, all cyanidation tests – including direct leaching, leaching of gravity tails, and leaching of flotation concentrates – consistently demonstrate high recovery rates for any process. This consistency suggests an absence of contaminants or preg-robbing effects in the tested samples. Additionally, silver recovery rates have been found to fall within a range deemed suitable for the process.

Flotation

Flotation, like the other unitary operations before it, has shown good performance. A significant advantage of this process is the reduction in the mass required for leaching.

Although test work suggested that a direct Carbon-in-Leach (CIL) process might yield higher overall gold recoveries, the feasibility study opted for a combination of flotation and cyanide leaching of flotation concentrates. This decision was influenced by the potential for agricultural use of the flotation circuit's tailings, additionally, the flotation process offers benefits in terms of cost reduction and waste management.

During the detailed design phases, the design and configuration of the flotation circuit will be optimized to maximize operational efficiency and capitalize on these benefits.

Cyanide Neutralization Tests

The testing for cyanide (CN) neutralization suggests a need for additional measures to align weak cyanide levels with specified guidelines. It is recommended to conduct further test work to refine the effectiveness of the current method. This includes exploring various processes and reagents, with a specific emphasis on the SMBS (Inco Process), among others. Additionally, the assessment of other operational practices, such as dilution in the flotation tailings, will be carried out, considering technical, economic, and environmental aspects. This optimization process is part of the standard test work and design formalities, posing no expected technical or economic difficulties.

General

The ore from the Monte do Carmo Project is regarded to be well-suited for conventional gold recovery processes. The presence of coarse gold necessitates special attention to the sampling process and analytical methods. This is crucial to mitigate the 'nugget effect' and ensure the accuracy and quality of the procedures.

The Monte do Carmo Project's process design is robust and well-equipped to efficiently recover gold, with ongoing refinements enhancing its effectiveness and environmental compatibility.

14 MINERAL RESOURCE ESTIMATE

14.1 Mineral Resource Estimate Definition and Procedure

The current mineral resource estimate for the Serra Alta Deposit has been prepared following the CIM standards and definitions, as required under NI 43-101 regulations. The standards and definitions are as follows:

"Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource."

"A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction."

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

"Material of economic interest refers to diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals."

"The term Mineral Resource covers mineralization and natural material of intrinsic economic interest which has been identified and estimated through exploration and sampling and within which Mineral Reserves may subsequently be defined by the consideration and application of Modifying Factors. The phrase 'reasonable prospects for eventual economic extraction' implies a judgment by the Qualified Person in respect of the technical and economic factors likely to influence the prospect of economic extraction. The Qualified Person should consider and clearly state the basis for determining that the material has reasonable prospects for eventual economic extraction. Assumptions should include estimates of cut-off grade and geological continuity at the selected cut-off, metallurgical recovery, smelter payments, commodity price or product value, mining and processing method and mining, processing and general and administrative costs. The Qualified Person should state if the assessment is based on any direct evidence and testing."

"Interpretation of the word 'eventual' in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron, potash deposits and other bulk minerals or commodities, it may be reasonable to envisage 'eventual economic extraction' as covering time periods in excess of 50 years. However, for many gold deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time."

14.1.1 Measured Mineral Resource

"A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit."

"Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation."

"A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proven Mineral Reserve or to a Probable Mineral Reserve."

"Mineralization or other natural material of economic interest may be classified as a Measured Mineral Resource by the Qualified Person when the nature, quality, quantity, and distribution of data are such that the tonnage and grade or quality of the mineralization can be estimated to within close limits and that variation from the estimate would not significantly affect potential economic viability of the deposit. This category requires a high level of confidence in, and understanding of, the geology and controls of the mineral deposit."

14.1.2 Indicated Mineral Resource

"An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit."

"Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation."

"An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve."

"Mineralization may be classified as an Indicated Mineral Resource by the Qualified Person when the nature, quality, quantity and distribution of data are such as to allow confident interpretation of the geological framework and to reasonably assume the continuity of mineralization. The Qualified Person must recognize the importance of the Indicated Mineral Resource category to the advancement of the feasibility of the project. An Indicated Mineral Resource estimate is of sufficient quality to support a Pre-Feasibility Study which can serve as the basis for major development decisions."

14.1.3 Inferred Mineral Resource

"An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity."

"An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration."

"An Inferred Mineral Resource is based on limited information and sampling gathered through appropriate sampling techniques from locations such as outcrops, trenches, pits, workings and drill holes. Inferred Mineral Resources must not be included in the economic analysis, production schedules, or estimated mine life in publicly disclosed Pre-Feasibility or Feasibility Studies, or in the Life of Mine plans and cash flow models of developed mines. Inferred Mineral Resources can only be used in economic studies as provided under NI 43-101."

"There may be circumstances, where appropriate sampling, testing, and other measurements are sufficient to demonstrate data integrity, geological and grade/quality continuity of a Measured or Indicated Mineral Resource, however, quality assurance and quality control, or other information may not meet all industry norms for the disclosure of an Indicated or Measured Mineral Resource. Under these circumstances, it may be reasonable for the Qualified Person to report an Inferred Mineral Resource if the Qualified Person has taken steps to verify the information meets the requirements of an Inferred Mineral Resource."

14.2 General Description

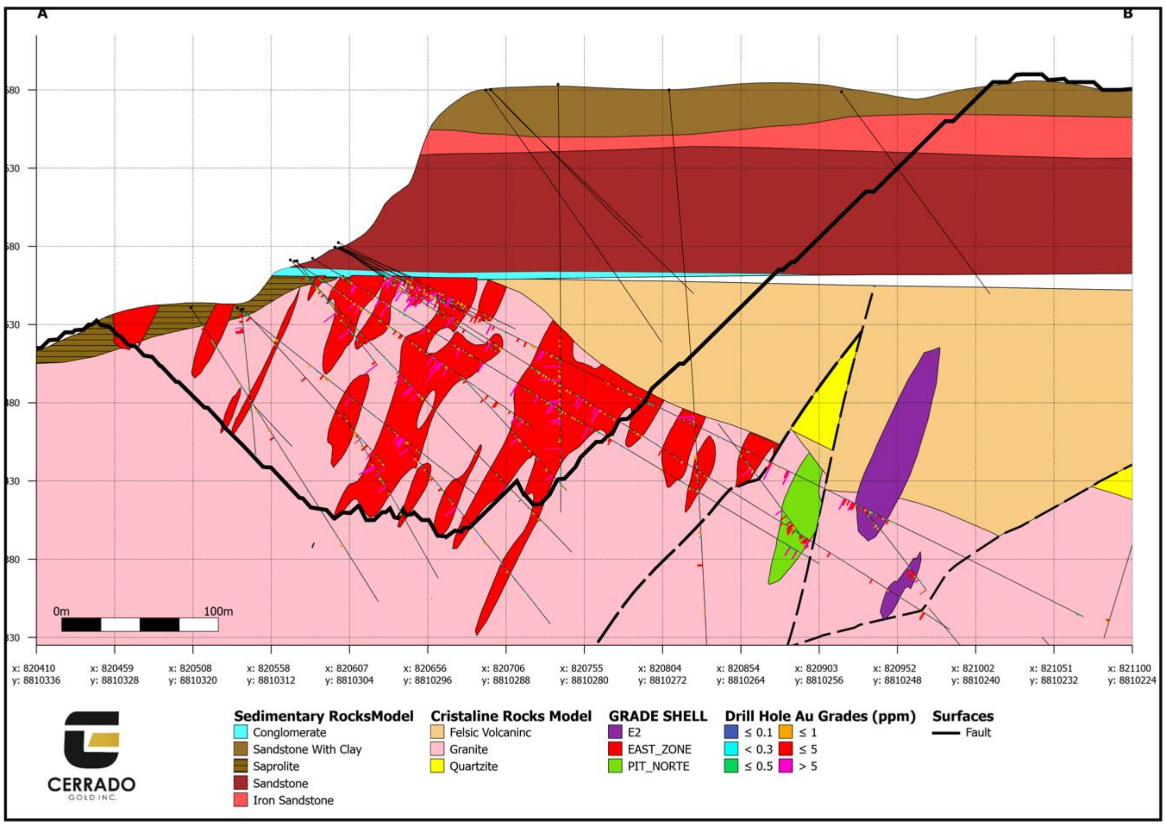
The current mineral resource update for the Serra Alta deposit has been prepared through collaborative efforts with the Cerrado Gold technical team. Following a site visit and the relevant data transfers, DRA reviewed and made minor revisions to the provided mineralization wireframes. As described in Section 8, the deposit is delineated into several fault-bounded mineralized domains, consistent with the interpreted geology and structural history of the area. These zones include:

- Central Block;
- DK-02 Footwall South;
- E2 Zone;
- East Zone;
- Extreme South;
- Gogo;
- Pit Norte; and
- Pit Sul.

The mineralization model was constructed primarily based on hydrothermal alteration zonation within the host granite, as denoted by varying intensities of gold-bearing (± sulphides) quartz veins, and a cut-off grade of 0.1 g/t Au. Ore shells were generated using a vein interpolant within the Leapfrog Geo software package, which were subsequently reviewed in both 2D and 3D in order to make selective adjustments based on interpreted mineralized trends, structures and related continuity.

The interpolant was configured using feature selection of the logged vein density, applying a preferred orientation as determined by structural measurements of the dominant vein orientations (first and fourth quartiles ignored). The resultant mineralization model is shown on a representative geological section in Figure 14.1.

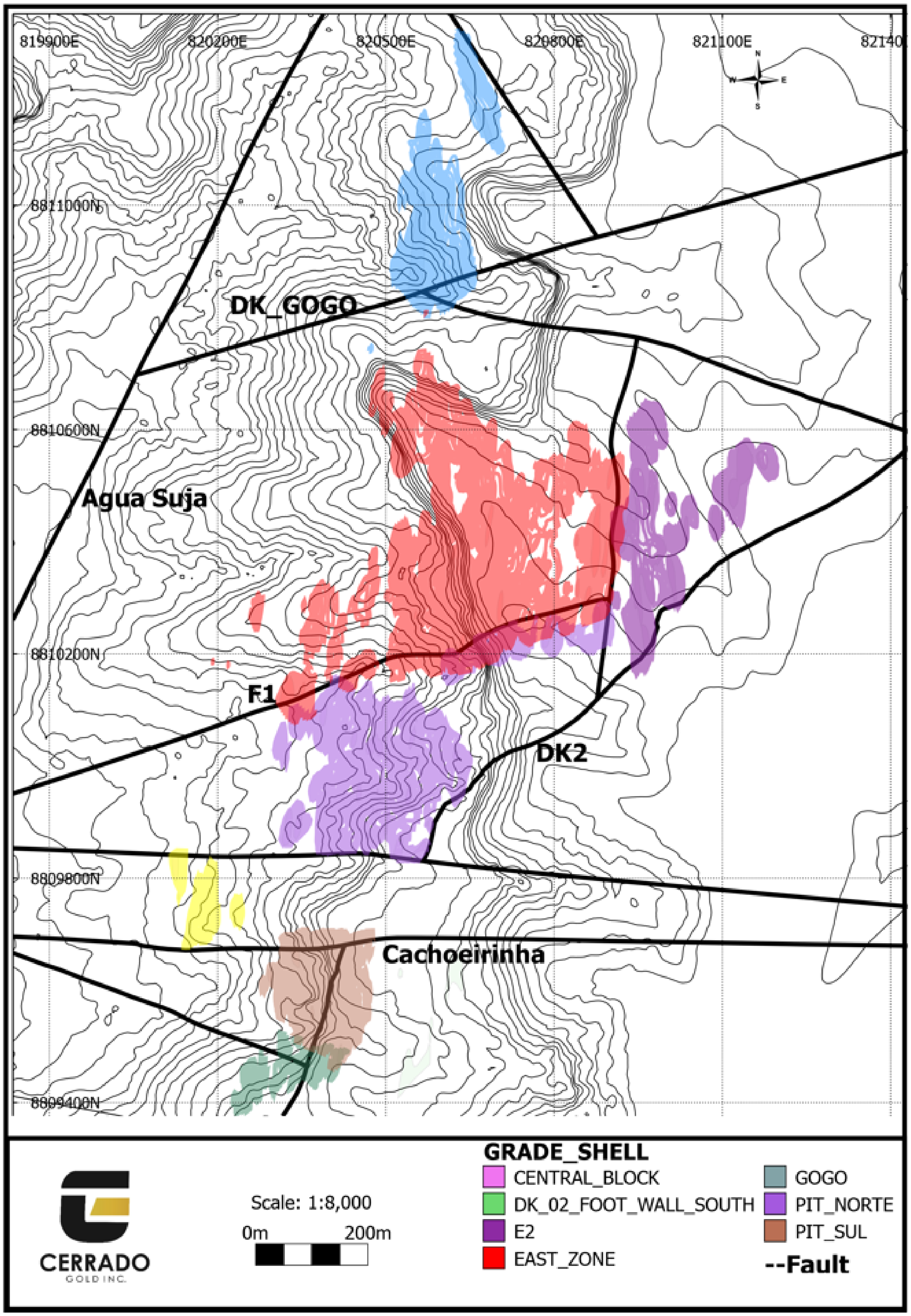
Figure 14.1 – Geological Section Showing Mineralization Model



Source: Cerrado Gold, 2023

The eight mineralized zones are located approximately along strike (S10ºW) from each other, following along the intrusive contact between the host granite and overlying felsic volcanics. Surface projections of the generated wireframes indicate their distribution and positions relative to the interpreted fault-bounded structural blocks in Figure 14.2.

Figure 14.2 – Serra Alta Deposit Mineralized Zone Locations



Source: Cerrado Gold, 2023

14.3 Supporting Data

Cerrado Gold provided DRA with the database for the Serra Alta deposit upon which the current Mineral Resource update is based. The initial dataset consisted of 362 drill holes for 88,709 m of drilling and 378 channels for 2,032 m of surface outcrop sampling. These totals exclude the subset of 39 historical drill holes that the QP elected to discard based on lack of confidence in the available analytical results (as described in Section 6). A larger database that included more regional targets was also available to understand the geological modelling (e.g., fault structures) processes undertaken by Cerrado Gold.

For the actual resource estimation, only drill holes and channels that pierce the final mineralized wireframes were used. This resulted in a functional database totaling 265 drill holes for 68,172 m of drilling and 72 channels for 764 m of surface outcrop sampling used for estimation purposes.

The channel samples were collected from surface exposures and trenches, as well as two (2) pits excavated during historic small-scale mining in the North and South blocks. These samples were particularly useful in the interpretation and delineation of ore domains at or near surface.

14.3.1 Drill Hole Database and Data Verification

Cerrado Gold provided the diamond drill hole assays database used by DRA to estimate the Serra Alta deposit mineral resources. Further information regarding the database and its verification can be found in Section 12 of this report.

14.3.2 Topography

The topographic data used for the Project was provided by Cerrado Gold in the form of a digital terrain model (DTM) and deemed of appropriate quality by DRA to be used for pit optimization purposes to constrain the mineral resources reported herein.

14.3.3 Rock Density

A total of 12,049 density measurements were provided by Cerrado Gold for tonnage estimation purposes; of these, 2,098 data points are located within the interpreted wireframes. As the data are well-distributed throughout the Serra Alta deposit, DRA elected to interpolate these values within the mineralized wireframes using the inverse distance-weighting (IDW^2) method. The overall range of density values in the block model for the entire project spans from 1.61 g/cm³ to 3.70 g/cm³. These measurements are summarized in Table 14.1.

Table 14.1 – Serra Alta Deposit Average Density by Rock Type

Host / Lithology	Count of Density Measurements	Average Density Value
Mineralized Domains	2,098	2.61
Sediments (SST)	473	2.10

Host / Lithology	Count of Density Measurements	Average Density Value
Felsic Volcanics (FV)	891	2.66
Granite (GRA)	10,361	2.63
Quartzite (QTZ)	324	2.66

14.3.4 Descriptive Statistics

Basic descriptive statistics were calculated for the raw data samples contained within the mineralized wireframes (i.e., zone intercepts) at Serra Alta. These results are summarized by zone below in Table 14.2.

Table 14.2 – Summary of Basic Descriptive Statistics for Raw Data Samples Within Mineralized Wireframes at Serra Alta

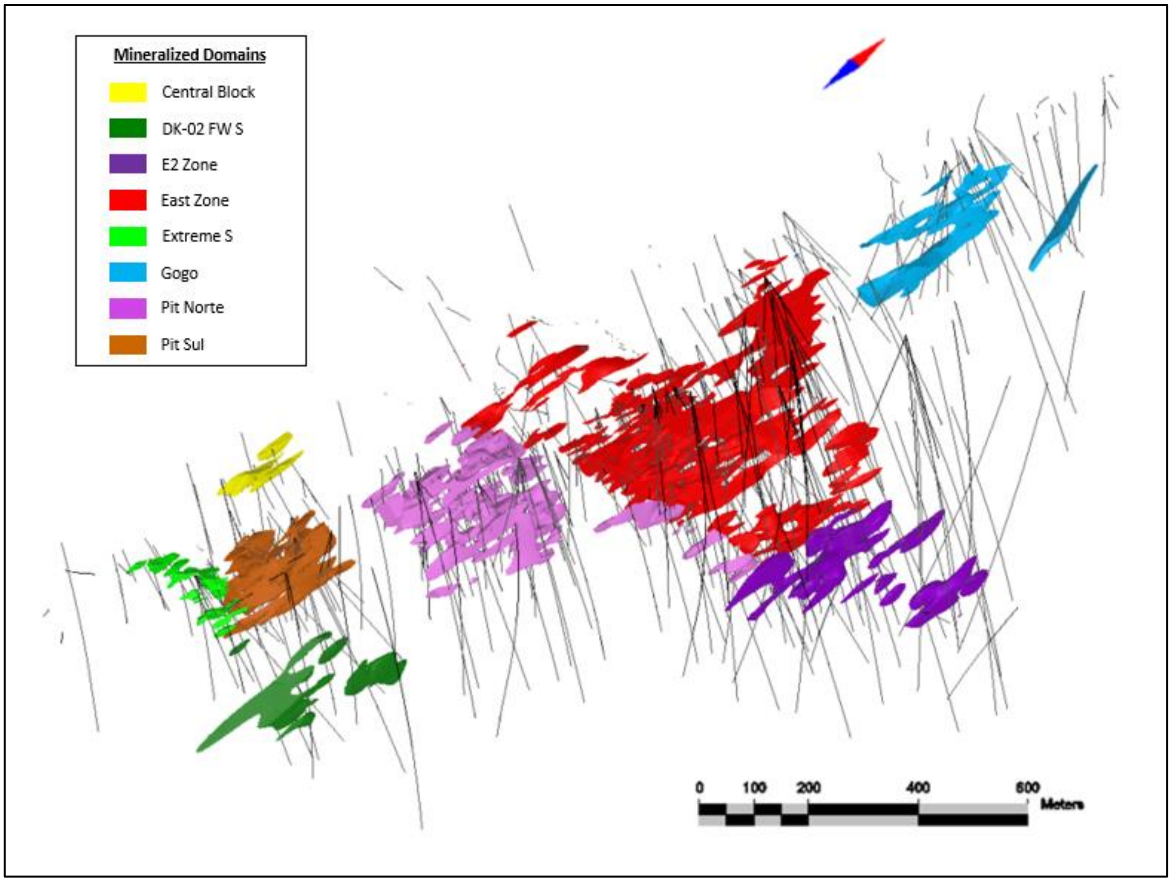
Description	Raw Data Samples Within Wireframes							
Selection	Central Block	DK-02 FW S	E2	East Zone	Ext. South	Gogo	Pit Norte	Pit Sul
Count	106	155	1,175	7,332	310	766	3,107	2,003
Length	93.51	131.43	968.99	6,197.1	246.72	630.4	2,588.1	1,655.5
Mean	1.01	0.88	1.76	1.46	0.91	1.05	1.48	1.42
Standard Deviation	3.73	2.09	13.05	5.80	2.77	6.03	4.97	4.04
Coefficient of Variation	3.69	2.38	7.40	3.97	3.05	5.75	3.36	2.84
Variance	13.90	4.38	170.36	33.62	7.68	36.37	24.71	16.30
Minimum	0.005	0.003	0.003	0.003	0.003	0.003	0.003	0.005
Lower Quartile (Q1)	0.025	0.025	0.025	0.03	0.02	0.025	0.025	0.025
Median	0.11	0.04	0.10	0.23	0.10	0.11	0.21	0.16
Upper Quartile (Q3)	0.39	0.53	0.83	0.92	0.47	0.54	0.90	0.93
Maximum	26.9	14.7	412.00	218.00	22.77	151.50	107.77	51.3

14.3.5 Three-Dimensional (3D) Modelling

Cerrado Gold provided DRA with an initial set of wireframes for the mineralized domains at the Serra Alta deposit. Following review of the approach and methodology used to generate the wireframes during the QP site visit, DRA conducted an independent review of the interpreted zones both on section (2D plan and vertical views) and in 3D using Leapfrog Geo.

Minor adjustments were made by DRA, such that ore shells with only one pierce point were eliminated, and efforts were made to minimize the effects of unsupported blow-outs sometimes caused by implicit modelling. Changes were then discussed with Cerrado Gold in order to finalize the set of mineralized wireframes used in the subsequent mineral resource estimation (Figure 14.3).

Figure 14.3 – 3D Orthographic View of Serra Alta Deposit Mineralized Domains



Source: DRA, 2023

14.3.6 DATA PROCESSING

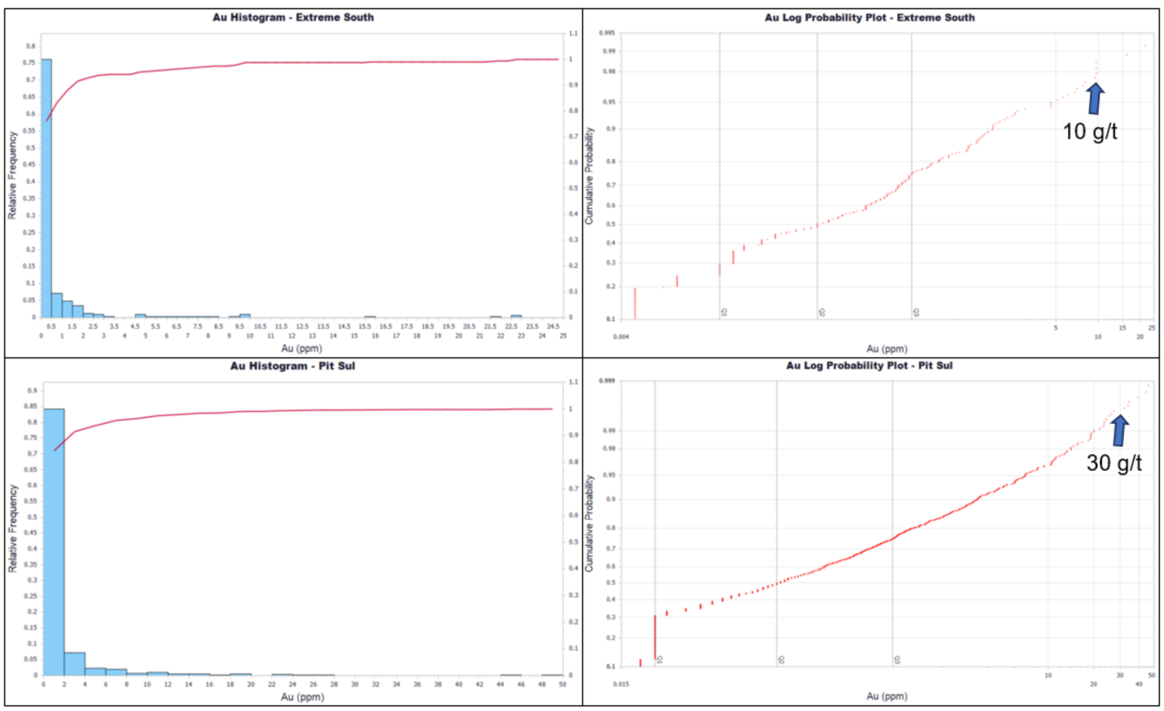
14.3.6.1 GRADE CAPPING

All outlier assay values were scrutinized, both globally and by mineralized zone, using a combination of histograms and log probability plots. Based on the variability identified between different zones, it was elected to cap gold grades according to mineralized domain. The final selected capping values and the number of samples capped are summarized by zone in Table 14.3. Representative histograms and log probability plots for selected zones are also provided in Figure 14.4.

Table 14.3 – Summary of Selected Capping Grades by Zone at Serra Alta

Mineralized Domain	Max. Grade (g/t Au)	Capping Grade (g/t Au)	Capped Samples	Total Samples
Central Block	26.9	5	3	106
DK-02 Footwall South	14.7	5	7	155
E2 Zone	412.0	40	9	1,175
East Zone	218.0	60	14	7,332
Extreme South	22.77	10	4	310
Gogo	151.5	10	10	766
Pit Norte	107.8	35	10	3,107
Pit Sul	51.3	30	8	2,003

Figure 14.4 – Representative Histogram and Log Probability Plots for Selected Mineralized Zones at the Serra Alta Deposit



Source: DRA, 2023

Basic descriptive statistics were also calculated for the capped data samples contained within the mineralized wireframes (i.e., zone intercepts) at Serra Alta. These results are summarized by zone below in Table 14.4.

Table 14.4 – Summary of Basic Descriptive Statistics for Capped Data Samples Within Mineralized Wireframes at Serra Alta

Description	Capped Data Samples Within Wireframes							
Selection	**Central Block**	**DK-02 FW S**	**E2**	**East Zone**	**Ext. South**	**Gogo**	**Pit Norte**	**Pit Sul**
Count	106	155	1,175	7,332	310	766	3,107	2,003
Length	93.51	131.43	968.99	6,197.1	246.72	630.4	2,588.1	1,655.5
Mean	0.60	0.69	1.36	1.40	0.77	0.74	1.39	1.38
Standard Deviation	1.17	1.33	4.49	4.57	1.88	1.69	3.78	3.61
Coefficient of Variation	1.96	1.92	3.30	3.28	2.44	2.29	2.72	2.62
Variance	1.37	1.76	20.13	20.91	3.53	2.87	14.27	13.007
Minimum	0.005	0.003	0.003	0.003	0.003	0.003	0.003	0.005
Lower Quartile (Q1)	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03
Median	0.11	0.04	0.10	0.23	0.10	0.11	0.21	0.16
Upper Quartile (Q3)	0.39	0.53	0.83	0.92	0.47	0.54	0.90	0.93
Maximum	5.0	5.0	40.0	60.0	10.0	10.0	35.0	30.0

14.3.6.2 *Compositing*

Drill hole intercepts through the mineralized wireframes for the Serra Alta deposit were composited to 1.0-m equal length intervals. The selected composite length was based on the systematic sampling approach used by Cerrado Gold geologists to focus on 1 m intervals through altered/ mineralized areas; this is also supported by descriptive statistics (median length). Basic descriptive statistics for the composited data within wireframes (i.e., zone intercepts) are provided in Table 14.5.

Table 14.5 – Summary of Basic Descriptive Statistics for 1 m Capped Composite Data Within Mineralized Wireframes at Serra Alta

Description	1 m Capped Composites							
Selection	**Central Block**	**DK-02 FW S**	**E2**	**East Zone**	**Ext. South**	**Gogo**	**Pit Norte**	**Pit Sul**
Count	96	133	979	6,294	252	640	2,615	1,672
Length	93.51	131.43	968.99	6,197.1	246.72	630.4	2,588.1	1,655.5
Mean	0.62	0.58	1.41	1.26	0.67	0.76	1.39	1.33
Standard Deviation	1.03	1.10	3.95	3.49	1.35	1.63	3.28	3.14
Coefficient of Variation	1.67	1.88	2.80	2.77	2.03	2.13	2.37	2.37

Description	1 m Capped Composites							
Selection	**Central Block**	**DK-02 FW S**	**E2**	**East Zone**	**Ext. South**	**Gogo**	**Pit Norte**	**Pit Sul**
Variance	1.07	1.20	15.64	12.15	1.83	2.64	10.79	9.87
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lower Quartile (Q1)	0.03	0.03	0.04	0.09	0.03	0.04	0.07	0.06
Median	0.14	0.10	0.21	0.32	0.17	0.16	0.34	0.28
Upper Quartile (Q3)	0.62	0.52	0.95	1.03	0.62	0.64	1.07	1.07
Maximum	4.69	5.00	38.43	57.22	9.69	10.00	35.00	30.00

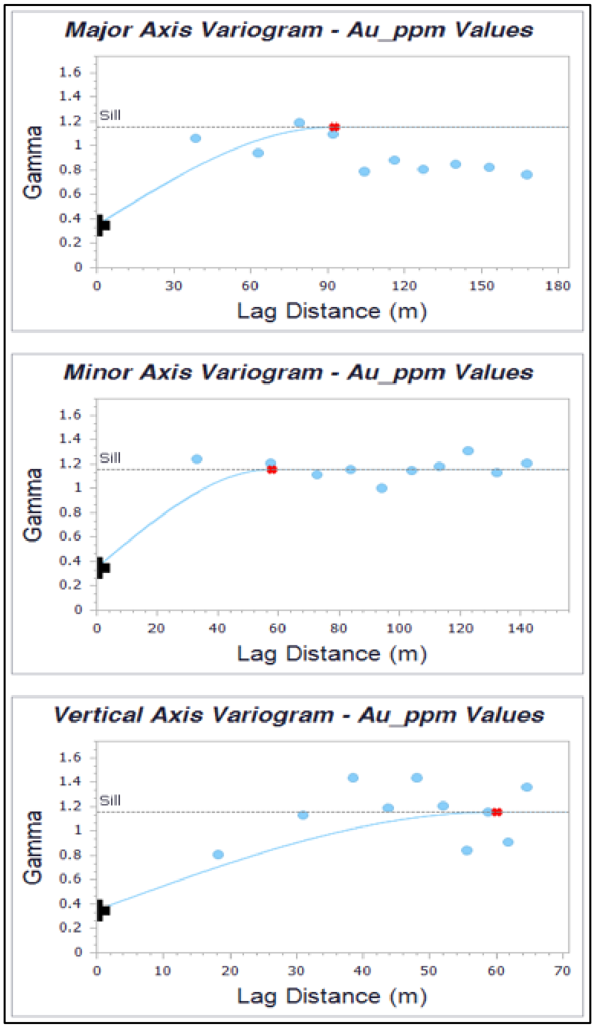
14.3.7 VARIOGRAPHY

Variography aims to assess the spatial continuity of grade for an element of interest, and ultimately helps guide the definition of parameters for the interpolation of Mineral Resources. The selected approach, inverse distance cubed weighting (IDW^3), is a linear geostatistical estimator that requires input parameters to limit the size of the search neighbourhood (via a defined search ellipsoid) for each point to be interpolated within the block model.

Variograms were modelled for each fault-bounded mineralized domain using the Sigma statistics module in HxGN MinePlan 3D (version 16.0.5). First, downhole variograms were generated to determine appropriate nugget effect values to be used in the fitting of experimental variograms. Multiple approaches were then attempted due to generally poor experimental variograms likely resulting from the short-range variations between individual mineralized shoots and the multiple vein orientations observed in both outcrop and drill core by the QP.

Ultimately, a combination of 3D variogram maps and manually generated variograms for a range of azimuths and dips were used to help support the determination of the major, minor (semi-major) and vertical axes from geological information. Example variograms are shown in Figure 14.5.

Figure 14.5 – East Zone, Serra Alta Deposit – Variography – Azimuth 175º, Dip -70º



Source: DRA, 2023

The variograms were also used to help guide the selection of maximum search ellipsoid distances (ranges) for Measured, Indicated and Inferred Resource categories, in conjunction with geological information and other statistical factors, such as average drill hole spacing. Additional details are provided in Section 14.4.2.

14.3.8 Continuity and Trends

The deposit is currently interpreted to comprise eight main zones that span approximately 2 km of strike length (oriented 190–195º) with an overall width of ~600m, and dip moderately to steeply (55–75º) to the west-northwest with a vertical extent on the order of 200 m. In general, individual mineralized lenses (i.e., shoots) range from approximately 5 m to greater than 30 m in width.

Sheeted vein sets mostly follow the overall deposit trend; however, the presence of multiple mineralized vein orientations indicates a more complex system that evolved over several mineralization and deformation events, as evidenced by the structural history of the area.

There are two main northeast-trending (~N30ºE) faults that flank the mineralization at Serra Alta, with a series of smaller east-west (± 30º) faults that delimit the deposit into discrete structural blocks; as such, each zone was modelled and estimated individually to respect these constraining features. The lateral extent of the sheeted vein swarms is wider towards the intrusive contact between the main granitic host rocks and overlying felsic volcanics This intrusive contact acts as a cap throughout much of the deposit. Quartz vein density is also higher towards the intrusive contact.

These observations regarding the mineralized trend are supported by the geology, gold grades and historic artisanal workings, in addition to a sufficient drill density which increases confidence in the currently interpreted continuity of individual zones and internal mineralized shoots.

14.4 Mineral Resource Estimate

Gold is currently the only mineral of interest at the Serra Alta deposit and therefore was the sole variable estimated as part of this resource update. Following generation of the mineralized wireframes the relevant data was transferred to HxGN MinePlan 3D® (version 16.0.5) to build the block model and perform the subsequent grade and tonnage computations.

14.4.1 Block Model

A total of three block models were generated for the Serra Alta deposit, each constructed to contain the mineralized domain codes, capped/composited gold grades, density values, topography percent (amount of material under the topographic surface) and finally the initial resource category (RCAT) as determined from multiple interpolation passes.

The block model was developed for the open-pit portion of the deposit, which contains the vast majority of the tonnage and in-situ ounces. This block model was also coded to capture a percent ore variable for dealing with blocks along the edges of mineralized zones; a minimum of 10% by volume of a block must reside within a mineralized domain to be included as ore. This threshold was considered reasonable based on a sensitivity analysis (10%, 30%, 50%) aiming to best honour the volumetrics of the finalized wireframes.

The remaining two (2) block models were created for the underground portion of the deposit: one for the resources to the west (beneath the pit), and the other focused on those resources located to the east and to depth. These two smaller-scale models were used to achieve a greater level of detail in more isolated target areas with relatively narrow mineralized intervals, in order to generate reasonable potential mining shapes required for constrained optimisation and reporting purposes.

The definition data for all three block models is summarized in Table 14.6.

Table 14.6 – Block Model Parameters for Serra Alta Deposit

Description	Open-Pit	Underground (West)	Underground (East)
Model Dimension X (m)	2,000	450	500
Model Dimension Y (m)	3,700	800	550
Model Dimension Z (m)	540	150	200
Origin X (Easting)	819,780	820,250	820,700
Origin Y (Northing)	8,808,300	8,809,830	8,810,100
Origin Z (Lower Elev.)	180	150	300
Rotation (º)	0	0	0
Block Size X (m) - Across Strike	5	0.5	0.5
Block Size Y (m) - Along Strike	10	1	1
Block Size Z (m) - Down Dip	5	1	1

14.4.2 Search Strategy and Interpolation

Gold block values were interpolated for each individual fault-bounded mineralized zone using the generated composites and the inverse distance cubed weighting (IDW^3) method. The block values were estimated with anisotropic search ellipsoids generally striking south-southwest and dipping to the west-northwest. The set of search parameters used in the interpolations, derived mainly from geological interpretations with support from statistical factors such as average drill hole spacing, are summarized by zone and resource category in Table 14.7.

Table 14.7 – Inverse Distance Cubed Weighting (IDW^3) Interpolation Parameters Summary

Pass	Variable	Units	Central Block	DK-02 FW S	E2 Zone	East Zone	Ext. South	Gogo	Pit Norte	Pit Sul	Min. Samples	Max. Samples	Max. Samples per Hole
All	Azimuth	(º)	175	195	180	175	180	185	190	185	-	-	-
All	Dip	(º)	-70	-75	-65	-70	-65	-65	-65	-65	-	-	-
All	Plunge	(º)	0	0	0	0	0	0	0	0	-	-	-
1	Range Major Axis	m	25	25	25	25	25	25	25	25	6	12	2
	Range Minor Axis	m	15	15	15	15	15	15	15	15	6	12	2
	Range Vertical Axis	m	20	20	20	20	20	20	20	20	6	12	2
2	Range Major Axis	m	60	60	60	60	60	60	60	60	4	12	2
	Range Minor Axis	m	40	40	40	40	40	40	40	40	4	12	2
	Range Vertical Axis	m	50	50	50	50	50	50	50	50	4	12	2
3	Range Major Axis	m	95	95	95	95	95	95	95	95	4	12	3
	Range Minor Axis	m	55	55	55	55	55	55	55	55	4	12	3
	Range Vertical Axis	m	65	65	65	65	65	65	65	65	4	12	3

14.4.3 Open Pit Mineral Resources

To demonstrate reasonable prospects for eventual economic extraction, the mineral resources were limited to a constraining pit shell. A pit shell (at revenue factor 1.00) was generated in the HxGN MinePlan 3D MSOPit module (version 15.80-3) using the Pseudoflow algorithm. The parameters used in the optimisation are listed in Table 14.8. The pit optimisation considered Measured, Indicated and Inferred blocks in the Mineral Resource Inventory. The Mineral Resources are reported at a gold price of $1,850/oz. Material was considered mineralized if it had a gold grade greater than 0.26 g/t, as calculated according to Equation 14.1. Figure 14.6 shows the resource constraining pit shell.

Table 14.8 – Parameters Used for Mineral Resource Constraining Pit Shell

Description	Unit	Value
Mining		
Ore Mining Cost	US$/t	2.60
Waste Mining Cost	US$/t	2.60
Processing		
Processing Cost	US$/t	10.14
Tailings Management Cost	US$/t	1.45
General and Administration Cost	US$/t	2.43
Processing Recovery	%	96.50
Economics		
Gold Price	US$/oz	1,850.00
Refining And Selling Cost	US$/oz	12.00
Payables	%	99.99
Gold Transportation Cost	US$/oz	10.74
Effective Selling Price	US$/oz	1,827.27
Geotechnical[1]		
Granite Zone	degrees (°)	45.15
FV Zone	degrees (°)	45.15
Gogo Zone	degrees (°)	55.04
Quartzite South Zone	degrees (°)	46.30
Quartzite North Zone	degrees (°)	45.15
SST Zone	degrees (°)	42.06

[1] Refer to Section 16.1.2 for further details regarding geotechnical parameters.

$$Marginal\ COG\ \left[{}^{g}/_{t}\right] = \frac{(Processing + Tailings + G\&A + Rehandling)\left[{}^{\$}/_{t}\right]}{Equivalent\ Selling\ Price\left[{}^{\$}/_{g}\right] \times Process\ Recovery[\%]}$$

Equation 14.1

Figure 14.6 – Resource Constraining Pit Shell

Source: DRA, 2023

14.4.4 Underground Mineral Resources

The majority of the mineral resources reported for the Serra Alta deposit are contained within the open pit. The remaining resources, located beneath and to the east of the pit, were constrained by potential mining shapes for reporting purposes. Optimisation was carried out using Deswik™ software (version 2023.2.762); the relevant parameters (i.e., modifying factors) are listed in Table

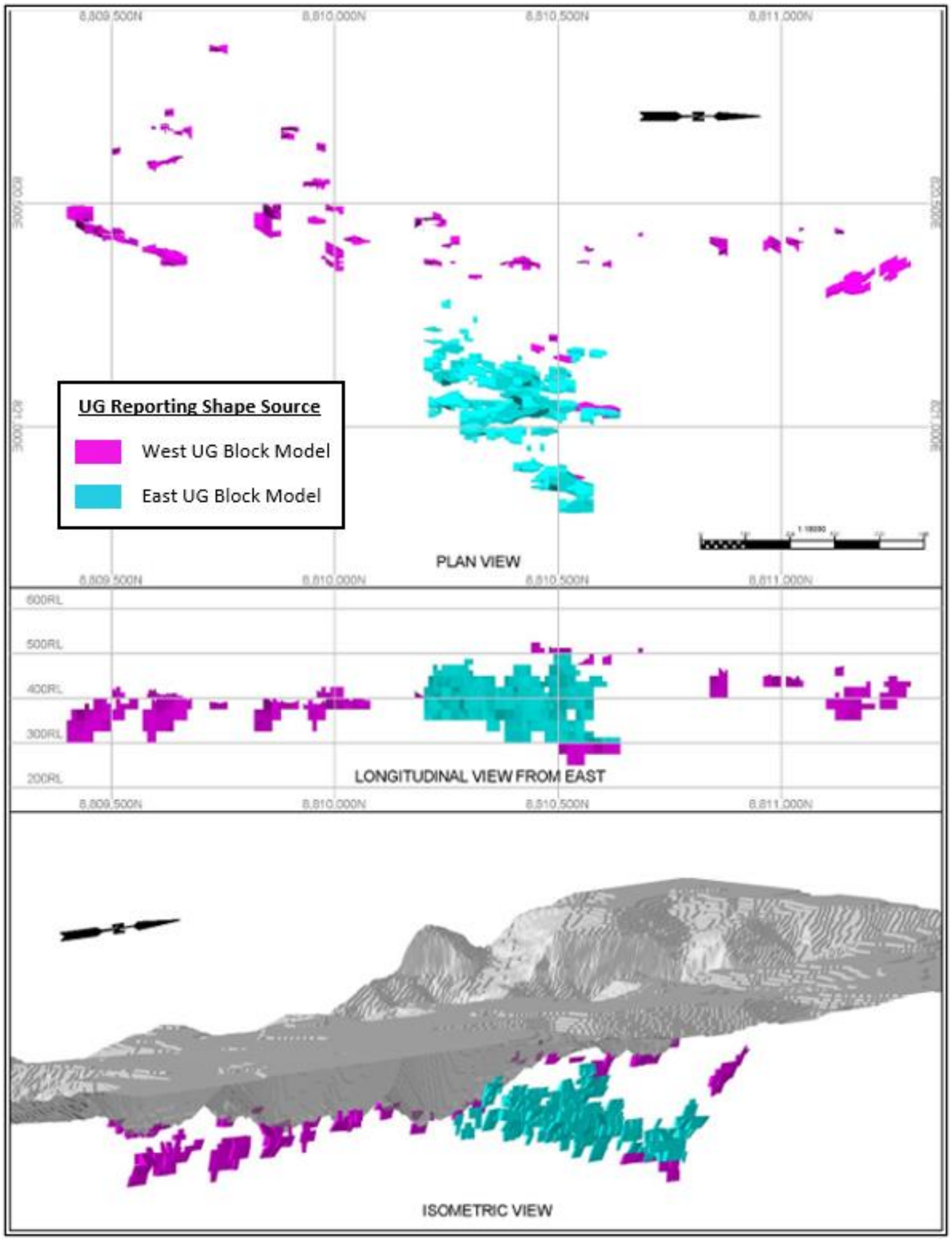
14.9. Similar to the open-pit portion of the deposit, the optimization considered Measured, Indicated and Inferred blocks in the Mineral Resource Inventory. The underground resources are reported at a higher cut-off grade of 0.69 g/t Au using a gold price of US$1,850/oz; however, the reported in-situ figures include low-grade blocks estimated within the underground shapes.

Plan, longitudinal and isometric views of the generated resource shapes for the underground portion of the Serra Alta deposit are shown in Figure 14.7; the magenta-coloured shapes were produced from the western block model, meanwhile those from the eastern block model are cyan-coloured.

Table 14.9 – Parameters Used for Constraining Underground Portion of Mineral Resources

Description	Unit	Value
Mining		
Ore Mining Cost	US$/t	24.18
Processing		
Processing Cost	US$/t	10.14
Tailings Management Cost	US$/t	1.45
General and Administration Cost	US$/t	2.43
Processing Recovery	%	95.3
Economics		
Gold Price	US$/oz	1,850.00
Refining And Selling Cost	US$/oz	12.00
Payables	%	99.99
Gold Transportation Cost	US$/oz	10.74
Effective Selling Price	US$/oz	1,827.27
Geotechnical[1]		
Maximum Length (along the transverses)	m	20
Height	m	15
Width	m	2.5 to 10
Minimum Pillar Thickness (True Convention)	m	5
Minimum Wall Dip	degrees (°)	60

Figure 14.7 – Resource Constraining Underground Reporting Shapes



Source: DRA, 2023

14.4.5 Mineral Resource Classification

The Mineral Resources reported herein for the Serra Alta deposit have been classified into the Measured, Indicated and Inferred categories. This classification is based on the interpreted geological and grade continuity of the observed gold mineralization.

Primary categorization was based on multiple interpolation passes which employed increasing search ellipsoid ranges (refer to Table 14.7).

14.5 Mineral Resource Statement

The Mineral Resource Estimate statement for the Serra Alta Deposit prepared by DRA is summarized in Table 14.10. Additional details on mining and processing modifying factors are also provided in the adjoining footnotes.

Table 14.10 – Serra Alta Deposit (Brazil) – Mineral Resources Summary, DRA Global Limited, October 31, 2023

Description	Category	Tonnage (kt)	Average Grade (g/t Au)	In-Situ Ounces (koz Au)
Open-Pit[3,4,5]				
	Measured	2,014	1.73	112
	Indicated	13,290	1.64	700
	Measured + Indicated	**15,304**	**1.65**	**812**
	Inferred	345	1.36	15
Underground[6,7,8]				
	Measured	42	1.66	2
	Indicated	3,012	2.04	197
	Measured + Indicated	**3,054**	**2.03**	**199**
	Inferred	708	2.24	51
Total				
	Measured	2,056	1.73	115
	Indicated	16,302	1.71	897
	Measured + Indicated	**18,358**	**1.72**	**1,012**
	Inferred	1,053	1.95	66

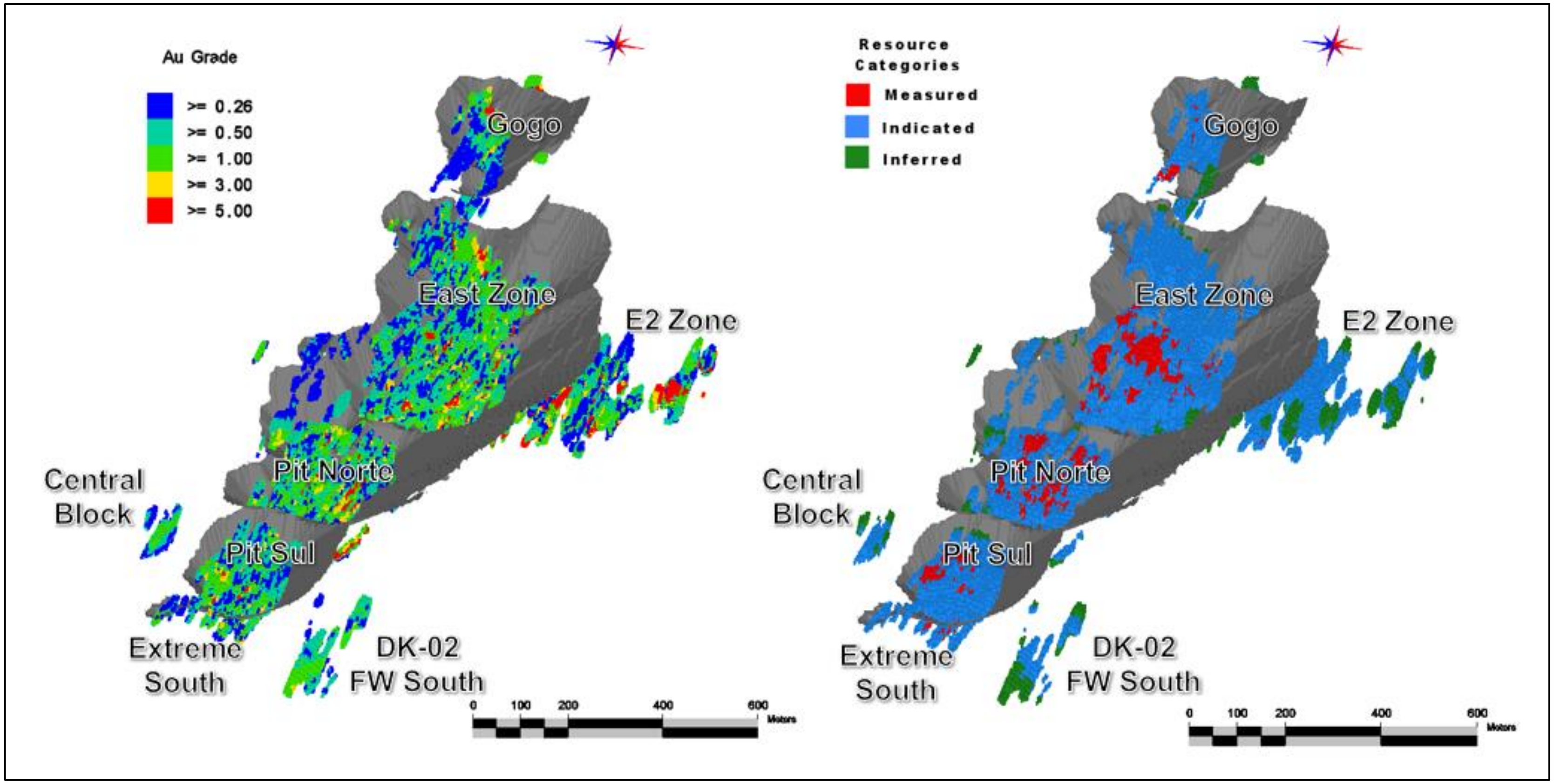
Description	Category	Tonnage (kt)	Average Grade (g/t Au)	In-Situ Ounces (koz Au)

Notes:

1. The Mineral Resource Estimate has been estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definitions Standards for Mineral Resource and Mineral Reserve in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects. Mineral Resources which are not Mineral Reserves, do not have demonstrated economic viability.
2. Inferred Mineral Resources are exclusive of the Measured and Indicated Resources.
3. In-pit Resources are constrained by a Pseudoflow optimized pit shell using HxGn MinePlan^tm 3D (v. 15.80-3).
4. Pit shell was developed using a 50-degree pit slope, gold sales price of US$1,850/oz, mining costs of US$2.60/t, stockpile rehandling costs of US$0.60/t, processing costs ofUS$10.14/t, tailings costs of US$1.45/t, G&A costs of US$2.43/t, process recovery of 96.5%, refining costs of US$12.00/oz, transportation costs of US$10.74/oz, discount rate of 5%, and assumed production rate of 1.920 Mtpa.
5. In-pit estimates are reported in-situ, at a marginal cut-off grade of 0.26 g/t Au.
6. Underground mining stope optimization was performed using Deswik^tm (v. 2023.2.762).
7. Stope shapes were developed using a gold sales price of US$1,850/oz, mining costs of US$24.18/t, processing costs of US$10.14/t, tailings costs of US$1.45, G&A costs of US$2.43/t, process recovery of 95.3%, refining costs of U$12.00/oz, transportation costs of US$10.74/oz, and assumed production rate of 1,500 t/d.
8. Underground resources were estimated using a cut-off grade of 0.69 g/t Au; however, the reported in-situ figures include low-grade blocks estimated within underground reporting shapes.
9. Resource estimations were interpolated using Inverse Distance Weighting (IDW^3); Similarly, variable densities were interpolated using IDW^2.
10. The effective date of the Mineral Resource Estimate is October 31, 2023.
11. Figures have been rounded to an appropriate level of precision for the reporting of Mineral Resources. As a result, totals may not compute exactly as shown.

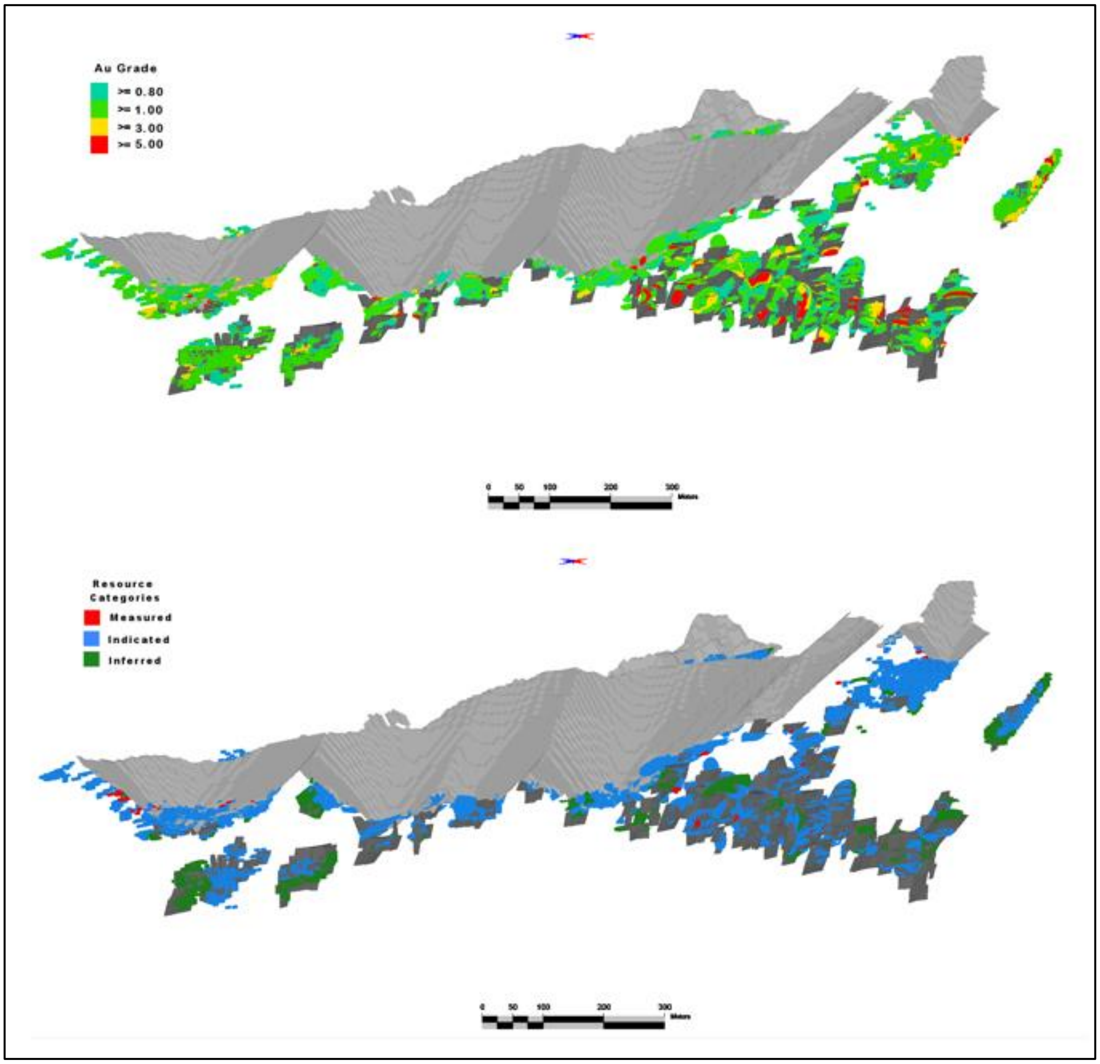
The mineral resources within the pit shells and underground reporting shapes, summarized in Table 14.10 above, are shown graphically in Figure 14.8 and Figure 14.9, respectively. A representative vertical cross-section (looking north) through the core of the deposit (Section 8810420N) is also provided in Figure 14.10, highlighting the proximity of estimated blocks beneath and outside the pit shell to the east, which represent the underground portion of the reported Mineral Resources.

Figure 14.8 – Open Pit Resource Blocks by Grade and Category – 3D Orthographic View (Looking North-Northwest)



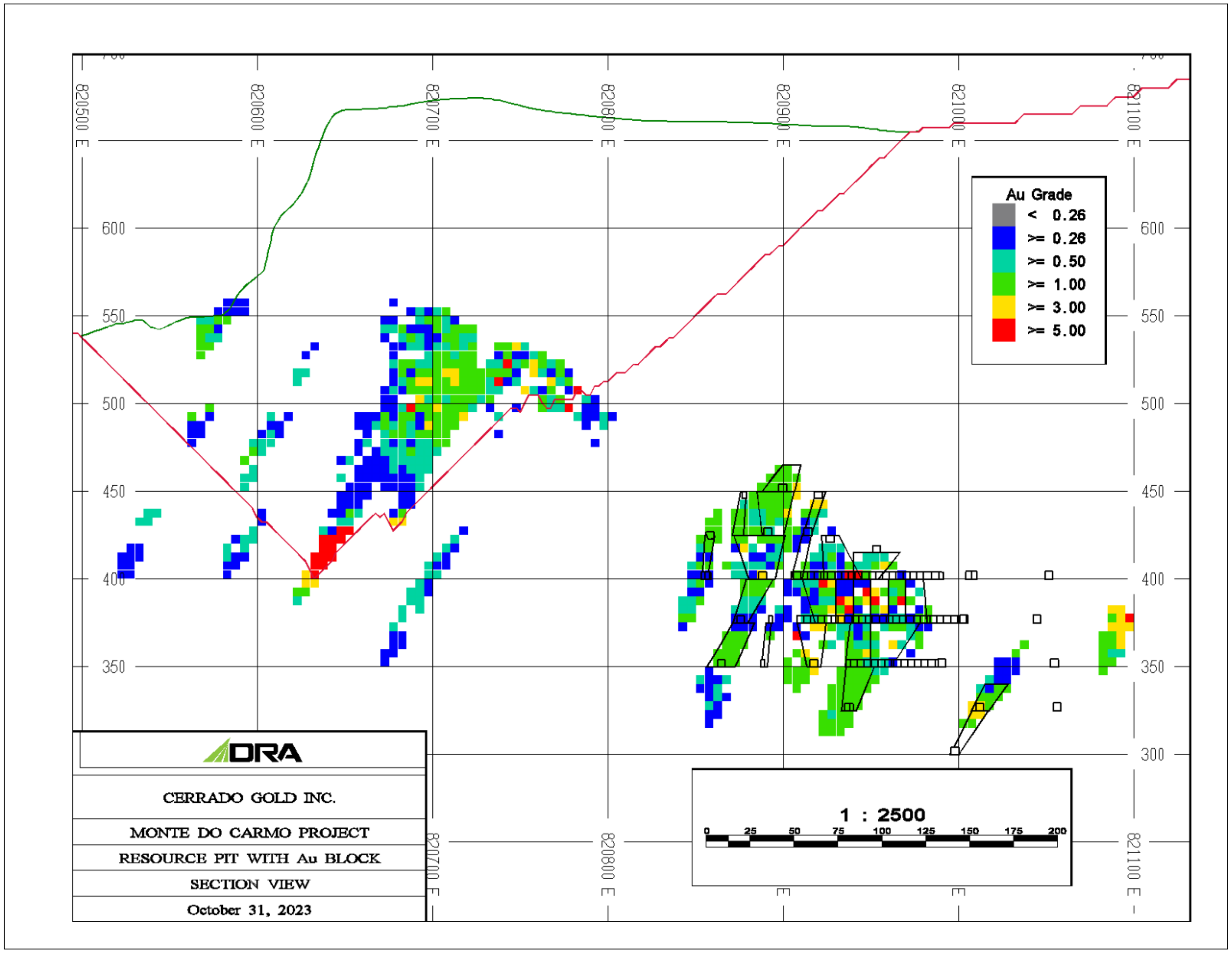
Source: DRA, 2023

Figure 14.9 – Underground Resource Blocks by Grade and Category – 3D Orthographic View (Looking Northwest)



Source: DRA, 2023

Figure 14.10 – Representative East-West Vertical Section (8810420N) – Looking North



Source: DRA, 2023

14.6 Block Model Validation

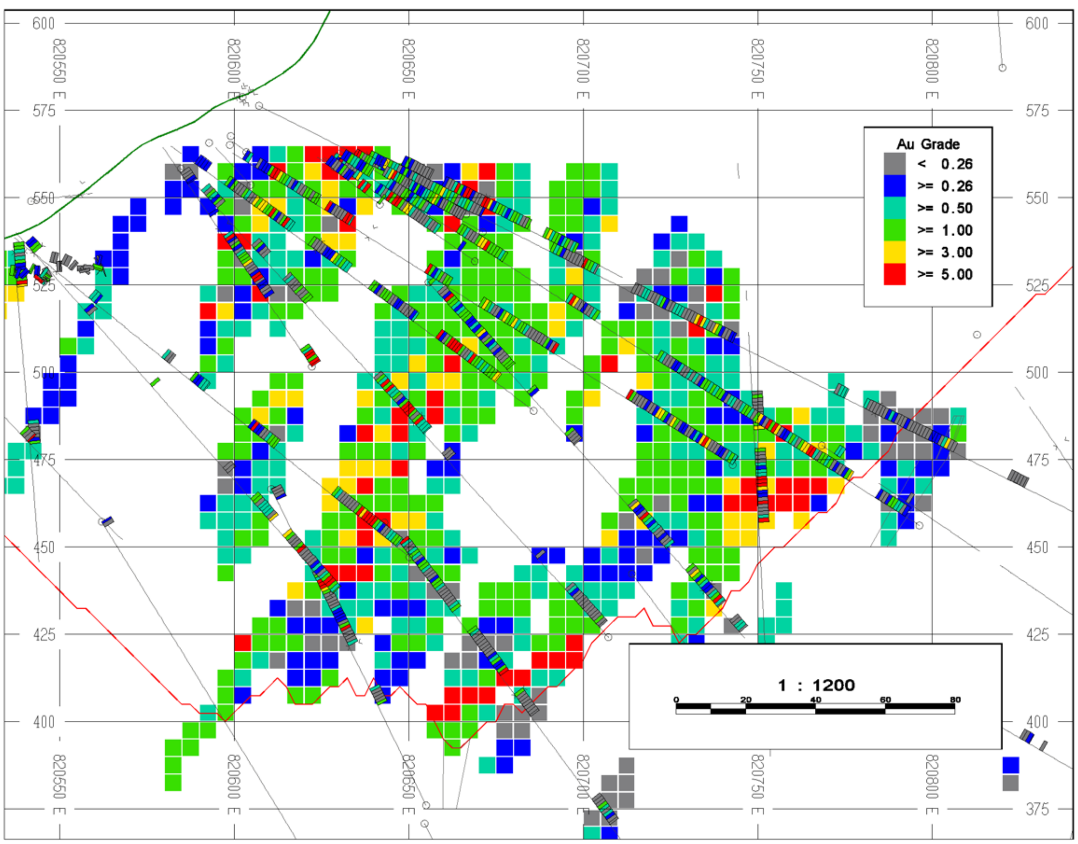
The current Serra Alta block model has been validated by DRA using a combination of visual inspection and statistical comparisons, including:

- Visual comparison of assays and block grades;
- Inspection of generated swath plots; and
- Alternative interpolation methods.

14.6.1 Visual Inspection

Estimated blocks and drill hole intercepts were reviewed both on 2D sections (vertical and plan views) and interactively within the MinePlan 3D software environment. The block grades were considered to suitably respect assay grades throughout the deposit. A representative east-west vertical section through the core of the deposit is shown in Figure 14.11.

Figure 14.11 – Comparison of Assay and Block Grades on Representative Vertical Section (8,810,300N)

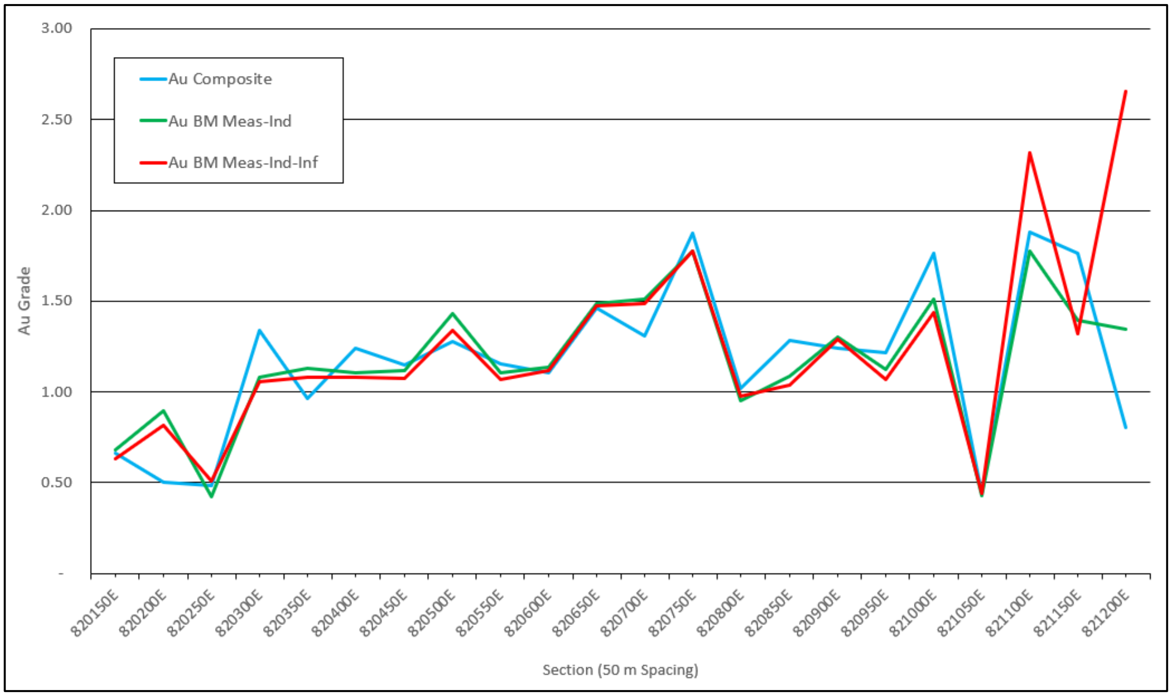


Source: DRA, 2023

14.6.2 SWATH PLOTS

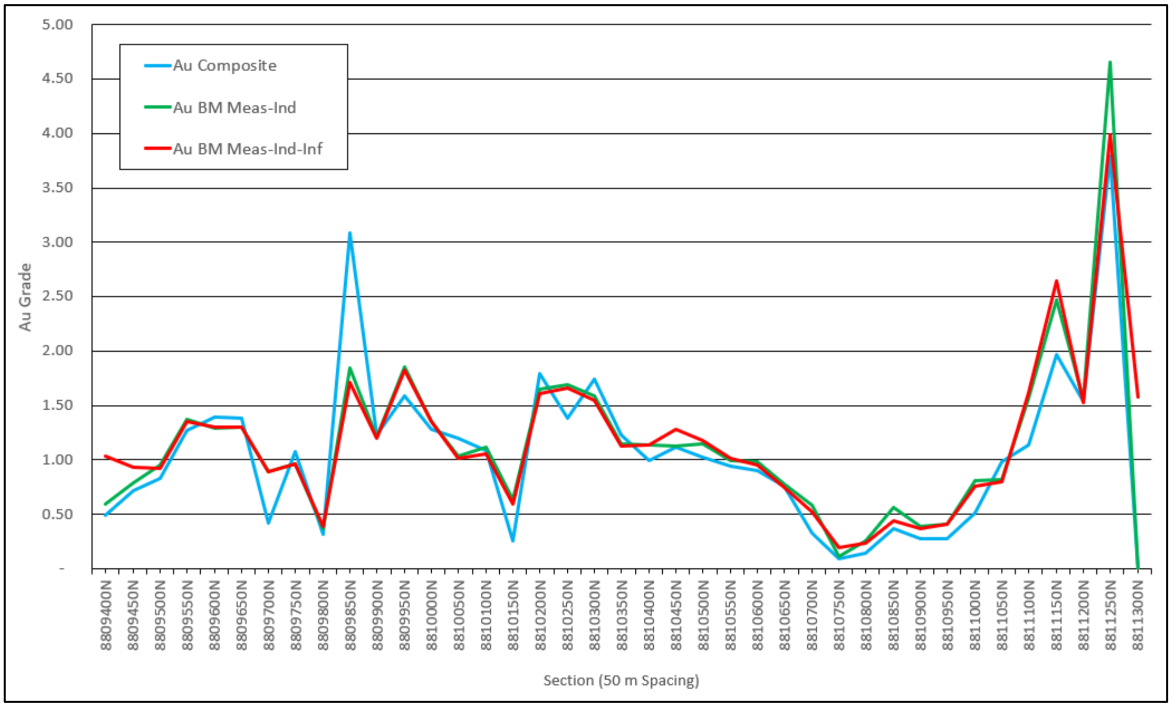
Average capped composite and block grades were also compared by means of swath plots generated on vertical planes through the core of the Serra Alta deposit at 50 m spaced intervals. East-west and north-south swath plots are provided in Figure 14.12 and Figure 14.13, respectively. It is evident from these plots that estimated block grades closely match those of the 1 m composite data throughout the deposit, with a minor amount of smoothing (as expected).

Figure 14.12 – Serra Alta Swath Plot – X-direction (East-West) – 1 m Capped Composites vs. Block Grades at 50 m Spacing



Source: DRA, 2023

Figure 14.13 – Serra Alta Swath Plot – Y-direction (North-South) – 1 m Composites vs. Block Grades at 50 m Spacing



Source: DRA, 2023

14.6.3 Alternative Interpolation Methods

A nearest neighbour (NN) model was also run as a secondary interpolation method in order to compare against the selected IDW³ method used for this resource estimate. The results of this comparison are summarized in Table 14.11; both outputs are reported as unconstrained (no pit shell or underground reporting shapes) at a 0 g/t Au cut-off grade. A close correlation between the models is evident, with tonnage, grade and contained ounces all within 5% for all categories.

Table 14.11 – Comparison of IDW³ and NN Interpolation, Unconstrained at 0 g/t Au Cut-off

	IDW³			NN			% Difference		
Category	**Tonnes (kt)**	**Grade (g/t Au)**	**Ounces (koz)**	**Tonnes (kt)**	**Grade (g/t Au)**	**Ounces (koz)**	**Tonnes (%)**	**Grade (%)**	**Ounces (%)**
Measured	2,563.4	1.45	119.5	2,563.4	1.47	121.2	0.00	1.38	1.38
Indicated	24,415.6	1.26	989.1	24,381.2	1.32	1,034.7	-0.14	4.76	4.61
Inferred	2,562.8	1.08	89.0	2,557.1	1.09	89.6	-0.22	0.93	0.70
Total	**29,541.8**	**1.26**	**1,196.7**	**29,501.8**	**1.32**	**1,245.5**	**-0.14**	**4.76**	**4.07**

14.7 Qualified Person's Opinion

The Mineral Resources reported herein have been prepared under the direction of R.S. Wilson, P.Geo., of DRA Global Limited.

It is DRA's opinion that the geological interpretation and related data are valid for the estimation of Mineral Resources. The assumptions made and methodology applied are considered reasonable and representative of typical intrusion-related gold mineralization systems. As such, DRA considers the presented Mineral Resources to have been prepared in accordance with current CIM standards, definitions and guidelines for Mineral Resources Estimation.

DRA cautions that Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. Additionally, there is no certainty that all or part of the Mineral Resources will be converted into Mineral Reserves.

DRA is currently unaware of any legal, title, environmental, permitting, taxation, socio-economic, geopolitical or other factor that may materially affect the Mineral Resources estimate presented in this report for the Serra Alta deposit.

15 MINERAL RESERVE ESTIMATE

The terminology used to classify the reserves in this Report is in accordance with National Instrument (NI) 43-101 and the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (2014) as well as following the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (2019). The terminology is summarized below.

Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proven Mineral Reserves. A Probable Mineral Reserve has a lower level of confidence than a Proven Mineral Reserve.

A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource demonstrated by at least a Pre-Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A Mineral Reserve includes diluting materials and allowances for losses that may occur when the material is mined.

Mineral Reserves are those parts of Mineral Resources which, after the application of all mining factors, result in an estimated tonnage and grade which, in the opinion of the Qualified Person(s) making the estimates, is the basis of an economically viable Project after taking account of all relevant processing, metallurgical, economic, marketing, legal, environment, socio-economic and governmental factors. Mineral Reserves are inclusive of diluting material that will be mined in conjunction with the Mineral Reserves and delivered to the treatment plant or equivalent facility. The term “Mineral Reserve” need not necessarily signify that extraction facilities are in place or operative or that all governmental approvals have been received. It does signify that there are reasonable expectations of such approvals.

Probable Mineral Reserve

A Probable Mineral Reserve is the economically mineable part of an Indicated and, in some circumstances, a Measured Mineral Resource. The confidence applied in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proven Mineral Reserve.

The Qualified Person(s) may elect to convert Measured Mineral Resources to Probable Mineral Reserves if the confidence in the Modifying Factors is lower than that applied to a Proven Mineral Reserve. Probable Mineral Reserve estimates must be demonstrated to be economic, at the time of reporting, by at least a Pre-Feasibility Study.

Proven Mineral Reserve

A Proven Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proven Mineral Reserve implies a high degree of confidence in the Modifying Factors.

Application of the Proven Mineral Reserve category implies that the Qualified Person has the highest degree of confidence in the estimate with the consequent expectation in the minds of the readers of the report. The term should be restricted to that part of the deposit where production planning is taking place and for which any variation in the estimate would not significantly affect the potential economic viability of the deposit. Proven Mineral Reserve estimates must be demonstrated to be economic, at the time of reporting, by at least a Pre-Feasibility Study. Within the CIM Definition standards the term Proved Mineral Reserve is an equivalent term to a Proven Mineral Reserve

Modifying Factors

Modifying Factors are considerations used to convert Mineral Resources to Mineral Reserves.

These factors and assumptions can significantly impact the final estimation. Here are some key ones:

Geological Factors

- Geological Understanding: The accuracy of the geological model and understanding of the ore body's shape, size, grade distribution, and continuity are crucial.
- Drilling Density and Quality: The number, spacing, and quality of drill holes affect the confidence level in understanding the deposit.

Technical and Engineering Assumptions

- Mining loss and dilution assumptions.
- Cut-off Grade: The minimum mineral content required to be considered economically viable.
- Mining Method: Different methods (open pit, underground, etc.) have varying costs and extraction efficiencies.
- Recovery Rates: Assumptions about the percentage of mineral that can be extracted during processing.
- Processing Technology: Efficiency and cost-effectiveness of the chosen extraction and processing methods.

Economic Factors

- Commodity Prices: Fluctuations in market prices can influence the economic viability of extracting minerals.
- Operating Costs: Accurate estimation of costs associated with extraction, processing, transportation, and other operational expenses.
- Regulatory and Environmental Factors: Compliance with environmental regulations and permitting requirements can impact costs and feasibility.

Risk and Uncertainty

- Uncertainty in Data: Incomplete or uncertain data about the deposit can lead to uncertainties in reserve estimates.
- External Factors: Changes in regulations, geopolitical situations, or technological advancements can affect the economic viability and feasibility of mining operations.

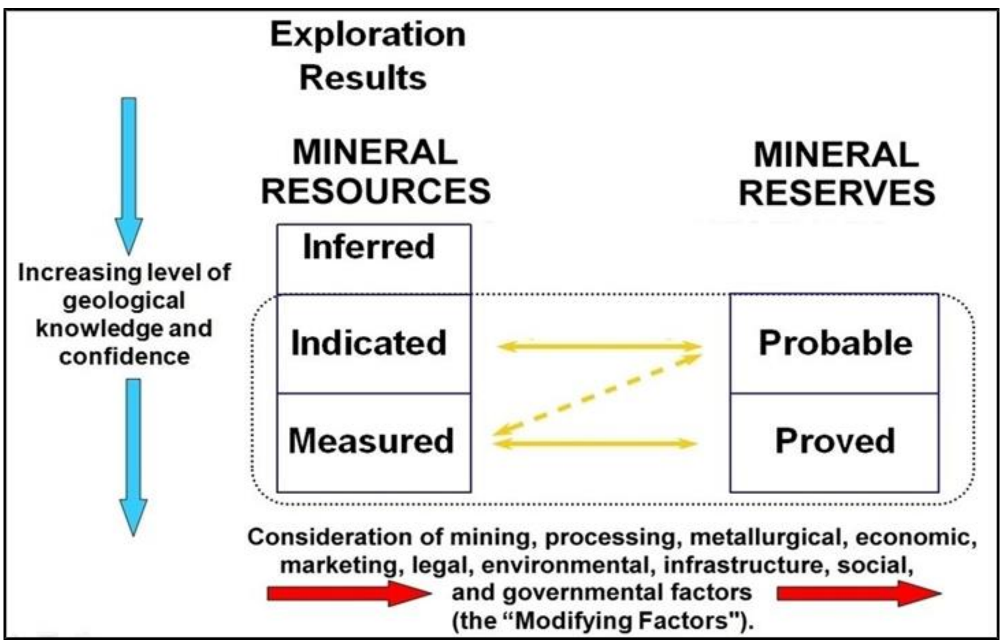
Assumptions Over Time

- Ability of the mining operation to meet the annual production rate.
- Changes in Technology: Advancements in extraction or processing technologies can affect reserve estimates.
- Market Conditions: Long-term fluctuations in commodity prices or changes in demand can influence the economic viability of reserves.

These factors and assumptions highlight the complexity and the need for a comprehensive understanding of geological, technical, economic, and operational aspects when estimating mineral reserves. Regular updates and revisions based on new data and changing conditions are necessary to maintain accuracy.

Figure 15.1 shows the relationship between the Mineral Resource and Mineral Reserve categories.

Figure 15.1 – Relationship between Mineral Reserves and Mineral Resources



Source: CRIRSCO International Reporting Template, October 2019

Mr. Ghislain Prévost, P. Eng., Principal Mining Engineer with DRA and a Qualified Person prepared the Open Pit Mineral Reserves for the Monte do Carmo, Serra Alta deposit. Mr. André-François Gravel, P. Eng., Senior Mining Engineer with DRA and a Qualified Person prepared the Underground Mineral Reserves. The Mineral Reserves have been developed using best practices in accordance with CIM guidelines and National Instrument 43-101 reporting. The Mineral Reserve Estimate effective date is October 31, 2023.

15.1 Open Pit

15.1.1 Introduction

The Mineral Reserve Estimate for the Monte do Carmo, Serra Alta deposit is a subset of the Measured and Indicated Mineral Resources, as detailed in Section 14, and as supported by the 2023 FS work for Open Pit (OP) and Underground (UG) life-of-mine (LOM) described in Section 16.

The FS work was based on a Mineral Resource Estimate with an effective date of October 31, 2023, which is outlined in Section 14 of this Report.

15.1.2 Geological Information

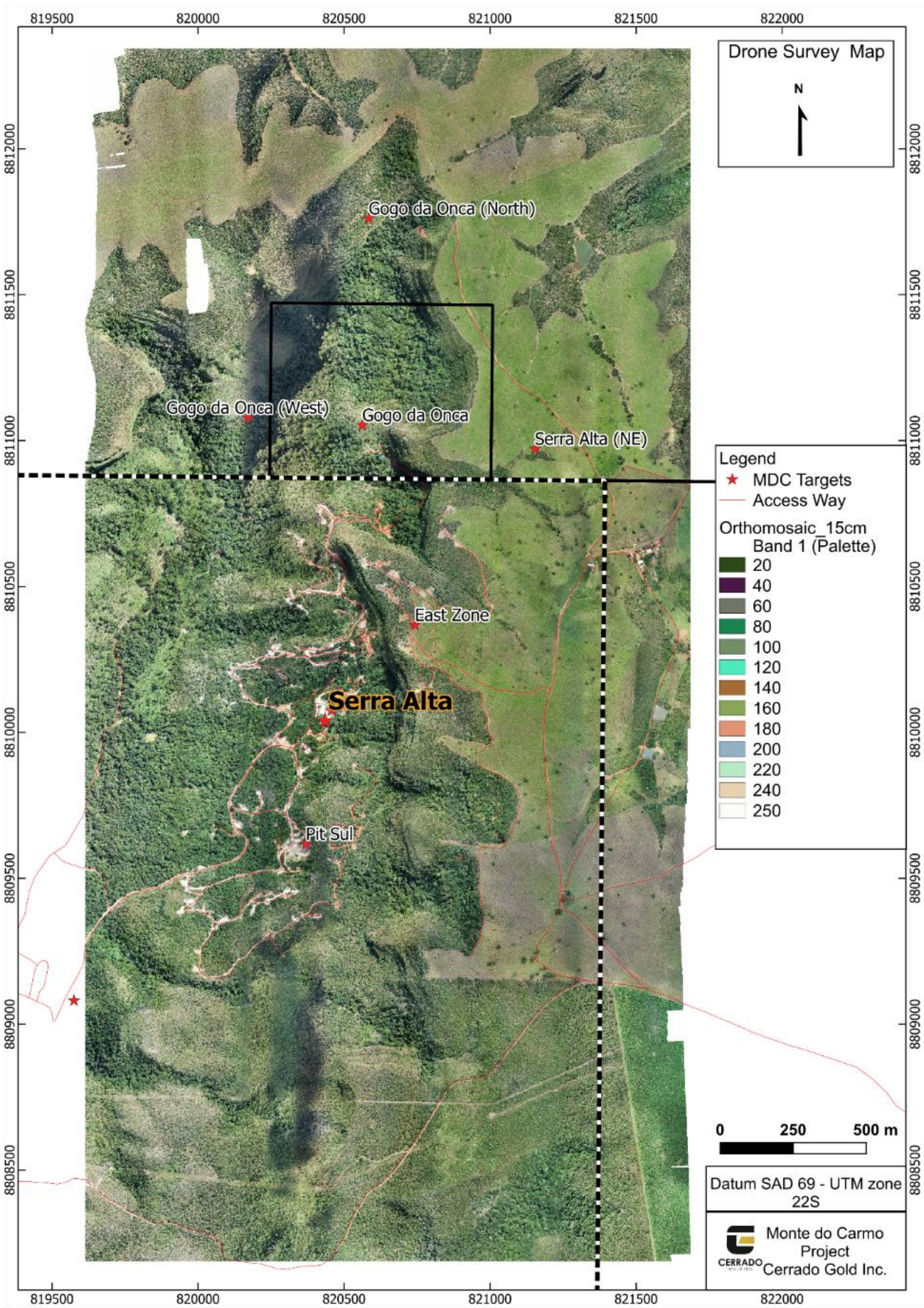
This section discusses the geological information that was used for the mine design and Mineral Reserve Estimate. This information includes the topographic surface, the geological block model and the material properties for ore, waste and sediments.

The mine planning work was performed using HxGN MinePlan®, a commercially available open pit mine planning and design software.

15.1.2.1 Topographic Surface

The mine design was carried out using a topographic surface that originated from a Laser Imaging Detection and Ranging (LIDAR) survey. In January 2018, Drone Record company conducted a topographic survey of the Serra Alta area using a LIDAR equipped drone (Figure 15.2). In May 2021, the MDC field team conducted a second topographic survey. This survey captured the current access roads, drilling pads, and provided a good resolution image of the Serra Alta surface in an area of approximately 840 ha. The topographic surface was interpolated by aero photogrammetric calculations using ten control points and several auxiliary points surveyed with an RTK GNSS T20 GPS.

Figure 15.2 - 2021 Drone Base Topographic and Imaging Survey



Source: Monte do Carmo, Cerrado Gold, 2021

15.1.2.2 *Reserve Block Model*

The mine design is based on the 3-dimensional geological block model that was prepared by DRA. Each block in the model is 5 m wide, 10 m long and 5 m high, and there is no model rotation.

Each block in the model contains the Au grade (g/t), density (t/m³), resource classification (Measured, Indicated or Inferred), and material type (mineralized, waste, and sediment).

Further details about the resource block model can be found in Section 14.

15.1.2.3 *Material Properties*

The material properties for the different rock types are described below. These properties are important in estimating the Mineral Reserves, the equipment fleet requirements as well as the dump and stockpile design capacities.

a. Density

The average in-situ dry density of the mineralized material is 2.62 t/m³. DRA used a density of 2.62 t/m³ for the waste rock and a density of 2.24 t/m³ for the sediment.

b. Swell Factor

The swell factor reflects the increase in volume of material from its in-situ state to its blasted state when loaded into haul trucks. A swell factor of 35% was used for the FS, which is a typical value used for open pit hard rock mines. Once the rock is placed in the waste dumps and stockpiles, the swell factor is reduced to 30% due to compaction.

c. Moisture Content

The moisture content reflects the amount of water that is present within the rock formation. It affects the estimation of haul truck requirements and must be considered during the payload calculations. The moisture content is also an important factor for the process water balance.

Since the Mineral Reserves are estimated using the dry density, they are not affected by the moisture content value. An average moisture content of 5% was used for the FS.

15.1.2.4 *Mill Recovery*

The mill recovery is a function of the head grade and is calculated using the following formula. The average mill recovery for the mine plan is 95.3%, The conversion from ore tonnage to gold ounces is calculated according to Equation 15.1.

$$Recovered\ Gold\ (oz) = \frac{Ore\ Tonnage\ [t] \times Gold\ Grade\ [g/t] \times Mill\ Recovery[\%]}{31.1035\ [(g/oz)]}$$

Equation 15.1

15.1.2.5 Operating Costs

The initial operating costs serve as a foundational element for pit limit analysis, mine planning, and the estimation of mineral reserves. Comprehensive operating costs are refined through a detailed mine design and plan, detailed extensively in Section 21.

The groundwork for the operating costs utilized in the pit limit analysis stems from the findings of the earlier PEA study conducted by GE21 in 2021 and additional data from the Monte do Carmo mining team.

15.1.2.6 Commodity Price

The long-term sales prices for gold adopted for the pit optimization is US$1,700.00/oz.

15.1.3 Pit Optimization

The first step in the Mineral Reserve Estimate is to carry out a pit optimization analysis. This analysis uses economic criteria to determine the cut-off grade and the extent of the deposit which can be mined profitably.

The pit optimization analysis was completed using the MSOPit module of HxGN MinePlan®. The optimizer uses the Pseudoflow algorithm to determine the economic pit limits based on input of mining and processing costs, and revenue per block. In compliance with NI 43-101 guidelines regarding the Standards of Disclosure for Mineral Projects, only blocks classified in the Measured and Indicated categories drive the pit optimization. Inferred resource blocks are treated as waste, bearing no economic value.

Table 15.1 presents parameters used for the pit optimization analysis. All figures are in US$. The costs in Table 15.1 were further detailed and developed throughout the course of the FS; therefore, the costs presented in Section 21 may not fully correspond the costs in this Section. A comparison of these costs was undertaken, and costs used for pit optimization were deemed appropriate.

Table 15.1 – Pit Optimization Parameters

Item	Unit	Value
Mining Cost (Sediment)	US$/t (mined)	2.60
Mining Cost (Waste)	US$/t (mined)	2.60
Mining Cost (Ore)	US$/t (mined)	2.60
Processing Cost	US$/t (milled)	10.14
Tailings Cost	US$/t (milled)	1.45
General Administration Cost	US$/t (milled)	2.43
Gold Price	US$/oz Au	1,700
Mill Recovery	%	96.5

Item	Unit	Value
Payable	%	99.9
Refining and Selling Cost	US$/oz Au	12.00
Transportation Cost	US$/oz Au	10.74
Overall Pit Slope[1]	°	42 to 46

Note: 1 See Section 16.1.1 for details.

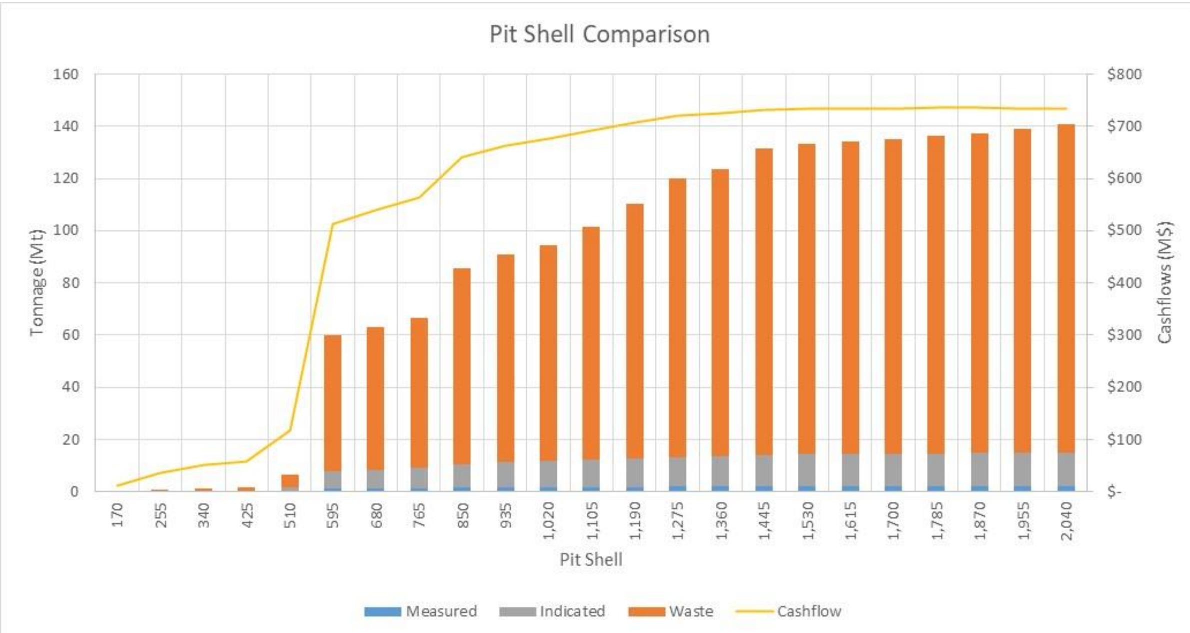
The pit optimization analysis considered Au grades before mining dilution. Using the cost and operating parameters, a series of 23 pit shells was generated by varying the gold price (revenue factor) from 0.1 to 1.2, as shown in Table 15.2. The pit associated with a revenue factor of 0.80 (highlighted in orange) was selected to guide the pit design. Figure 15.3 depicts a graphical representation of Table 15.2. Figure 15.4 shows a section through the deposit with several of the pit shells.

Table 15.2 – Pit Optimization Results

Revenue Factor	Gold Price ($/oz Au)	Ore (Mt)	Au (g/t)	Waste (Mt)	Stripping Ratio	In-Situ (oz Au)	Net CF ($M)	Mine Life (y)
0.10	170.00	0.1	4.40	0.1	1.78	8,130	11.9	0.03
0.15	255.00	0.3	2.82	0.4	1.44	26,021	36.3	0.15
0.20	340.00	0.4	2.66	0.7	1.73	36,776	50.4	0.22
0.25	425.00	0.5	2.45	0.9	1.70	43,359	58.6	0.29
0.30	510.00	1.5	1.99	4.9	3.31	95,410	116.9	0.77
0.35	595.00	7.9	1.92	52.1	6.66	481,563	514.1	4.07
0.40	680.00	8.4	1.88	54.7	6.49	509,361	542.1	4.39
0.45	765.00	9.0	1.85	57.8	6.42	534,340	564.9	4.69
0.50	850.00	10.5	1.85	75.0	7.14	625,705	643.4	5.47
0.55	935.00	11.3	1.81	79.6	7.05	655,254	666.1	5.88
0.60	1,020.00	11.7	1.79	82.9	7.11	671,642	677.9	6.07
0.65	1,105.00	12.2	1.78	89.1	7.31	696,789	693.5	6.35
0.70	1,190.00	12.7	1.77	97.7	7.68	725,739	709.1	6.63
0.75	1,275.00	13.4	1.76	106.7	7.98	755,206	722.6	6.96
0.80	1,360.00	13.6	1.75	109.8	8.08	765,104	726.9	7.08
0.85	1,445.00	14.1	1.73	117.2	8.29	787,004	734.0	7.37
0.90	1,530.00	14.3	1.72	119.0	8.31	792,631	735.7	7.45
0.95	1,615.00	14.4	1.71	119.6	8.28	795,565	736.5	7.52
1.00	1,700.00	14.5	1.71	120.5	8.29	798,224	737.2	7.57
1.05	1,785.00	14.6	1.70	121.6	8.28	802,081	737.8	7.65

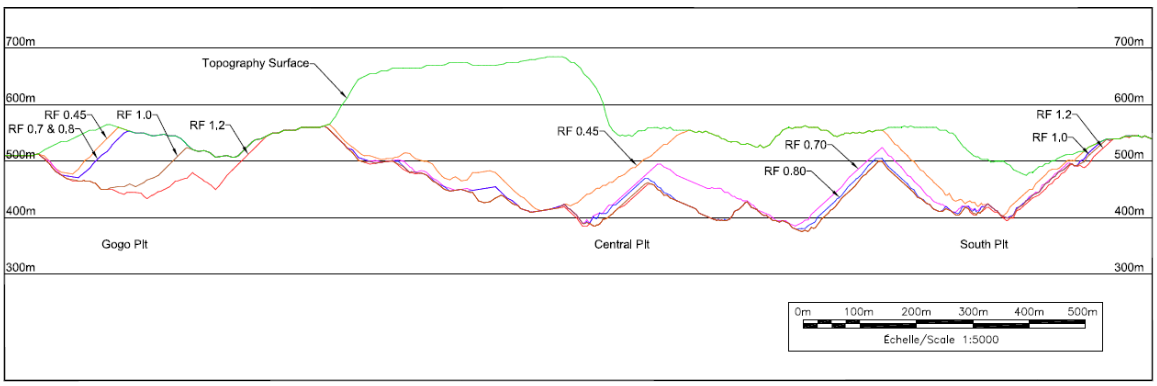
Revenue Factor	Gold Price ($/oz Au)	Ore (Mt)	Au (g/t)	Waste (Mt)	Stripping Ratio	In-Situ (oz Au)	Net CF ($M)	Mine Life (y)
1.10	1,870.00	14.8	1.69	122.6	8.26	805,251	737.9	7.73
1.15	1,955.00	15.0	1.68	124.3	8.30	808,835	737.1	7.80
1.20	2,040.00	15.1	1.67	125.6	8.30	812,333	736.9	7.88

Figure 15.3 – Pit Optimization Comparison



Source: DRA 2023

Figure 15.4 – Pit Shell Cross-Sections



Source: DRA 2023

The chosen pit shell contains 13.6 Mt of Measured and Indicated Mineral Resources with a grade of 1.75 g/t Au and a stripping ratio of 7.1 to 1. Mining additional resources with an open pit beyond the limits of this pit shell increases the stripping ratio but does not provide a significant increase in net cashflow.

15.1.3.1 *Cut-Off Grade*

Using the economic parameters presented in Table 15.1 and Equation 15.2, the Open Pit cut-off grade (COG) was calculated to be 0.32 g/t Au. Using Equation 15.3, the marginal cut-off grade (marginal COG) was calculated to be 0.28 g/t. The COG is used to determine whether the material being mined will generate a profit after the mining, processing, refining, transportation, and G&A costs. Material that is mined below the COG grade is sent to the waste dump.

$$Au\ COG[g/t] = \frac{(Mining + Processing + G\&A)[\$/t] \times Gold\ Grade\ [g/t]}{(Gold\ Price[\$/Oz\ Au] - Refining\ Cost[\$/Oz\ Au] - \ Transportation\ Cost)\ [\$/Oz\ Au] \times Recovery\ [\%]}$$

Equation 15.2

$$Au\ COG\ [g/t] = \frac{(Processing + G\&A)[\$/t] \times Gold\ Grade\ [g/t]}{(Gold\ Price[\$/Oz\ Au] - Refining\ Cost[\$/Oz\ Au] - \ Transportation\ Cost)\ [\$/Oz\ Au] \times Recovery\ [\%]}$$

Equation 15.3

15.1.4 Open Pit Design

The next step in the mineral reserve estimation process is to design an operational pit that will form the basis of the production plan. This pit design uses the chosen pit shell as a guideline and includes smoothing the pit wall, adding ramps to access the pit bottom and ensuring that the pit can be mined using the selected equipment. The following section provides the parameters that were used for the open pit design and presents the results.

15.1.4.1 Geotechnical Pit Slope Parameters

Details of the pit slope parameters used at MDC can be found in Section 16 and are defined below.

A pit slope has three major components: bench configuration, inter-ramp slope and overall slope angle. The bench configuration is defined by vertical bench separation (bench height, or BH), catch berm width (berm width, or BW) and bench face angle (BFA). The inter-ramp angle (IRA) is formed by a series of uninterrupted benches and the overall slope angle (OSA) is formed by a series of inter-ramp slopes separated by haul roads and / or geotechnical berms.

Basic pit wall design definitions are presented below and illustrated in Figure 15.5.

Bench Face Angle (BFA)

The BFAs are mainly controlled by kinematic considerations such as the formation of wedges and planar failures and are highly dependent on the rock mass structure.

Bench Height (BH)

The BH is one of the bench configuration parameters that is usually varied or modified to suit material excavated and/or mining equipment preferred by the operators.

Berm Width (BW)

Berms are required to prevent falling rocks from impacting the operational areas. The BW is usually required to be at least one-third of the vertical bench separation. A criterion for the initial design of BWs is the Modified Ritchie Criteria (Ryan & Pryor, 2000), where:

$$BW\ (m) = 0.2 \times BH\ (m) + 4.5\ m$$

BWs are often optimized based on operating practices: effective perimeter blasting and scaling that result in reduced risks of rock fall can warrant narrower catch benches.

Inter-Ramp Angle (IRA)

The IRA is the slope angle formed from the combined benches. To prevent multi-bench failures, the slope of the IRA should be less than the dip of the major or persistent weakness planes in the rock mass, such as faults or persistent dykes.

Geotechnical Safety Berm (GB)

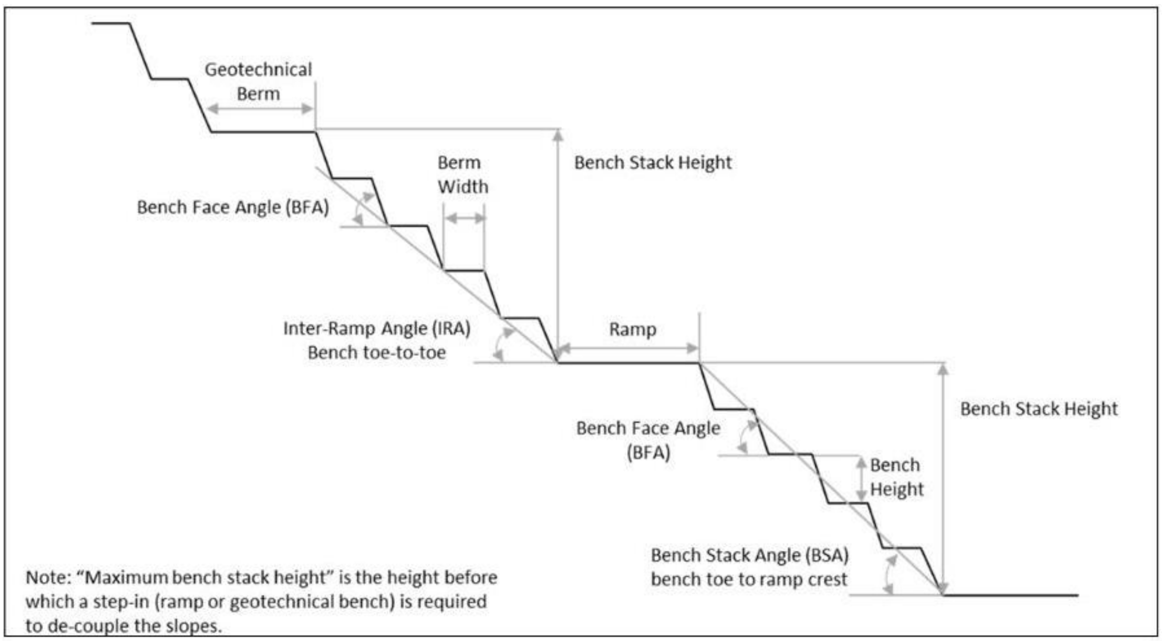
It is common practice to recommend that the final walls be subdivided into a series of bench stacks, either by haul road traverses or by inclusion of wide "geotechnical" berms at about 80 m to 100 m vertical intervals (i.e., 7 to 9 benches).

The GBs should be at least 14 m wide or more. The GBs will protect personnel from potential major rock falls, allow for horizontal drain hole water controls, provide some flexibility in wall development, as well as allow periodic clean-up.

Overall Slope Angle (OSA)

The OSAs for any pit are typically based on the recommended IRA for all rock types or geotechnical domains or wall sections and the inclusion of ramp(s) or GB(s).

Figure 15.5 – Typical Open-Pit Wall Design



Source: DRA, 2023

15.1.4.2 *Haul Road Design*

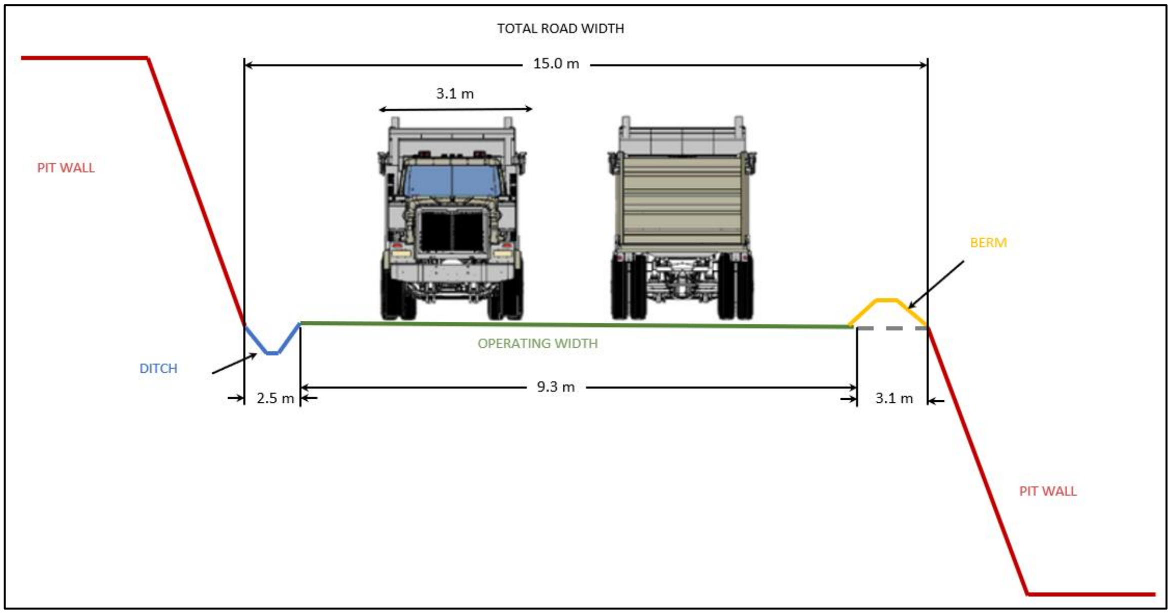
The ramps and haul roads were designed with an overall width of 15 m. For double lane traffic, industry practice indicates the running surface width to be three (3.0) times the width of the largest truck. The overall width of a 50.0 t rigid frame haul truck is 3.1 m which results in a running surface of 9.3 m. The allowance for berms and ditches increases the overall haul road width to 15 m.

For single lane traffic, industry practice indicates a minimum running surface width to be one and a half (1.5) times the width of the largest truck. The overall width of a 50.0 t rigid frame haul truck is

3.1 m which results in a running surface of 4.7 m. The allowance for berms and ditches increases the overall haul road width to 10 m.

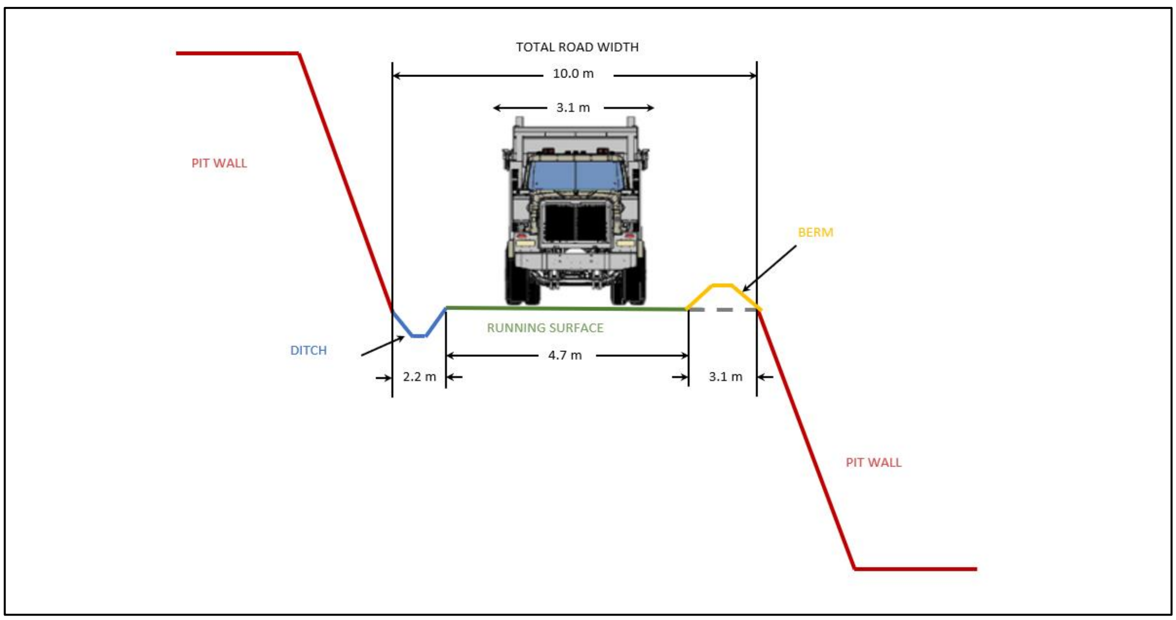
A maximum ramp grade of 10% was used for the in-pit haul road. Figure 15.6 and Figure 15.7 present typical sections of the in-pit ramp design.

Figure 15.6 – Ramp Design, Double Lane



Source: DRA 2023

Figure 15.7– Ramp Design, Single Lane



Source: DRA 2023

15.1.4.3 *Mine Dilution and Ore Loss*

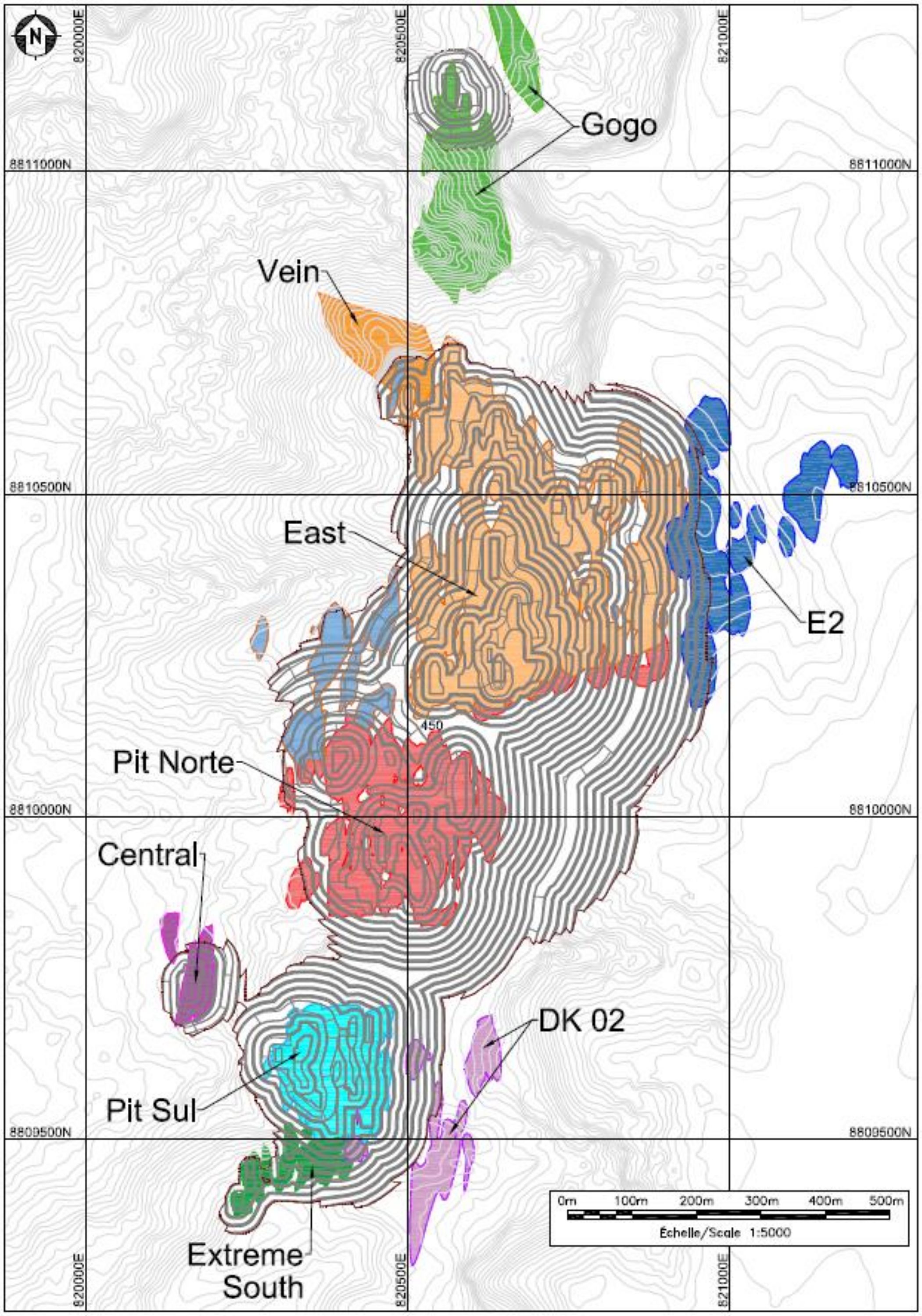
In every mining operation, complete separation of ore and waste is unattainable due to the large scale of the mining equipment and use of drilling and blasting. To account for mining dilution, DRA calculated a diluted Au grade value for each block of ore that neighbours a waste block.

The mining dilution is assumed to be approximately 0.5 m at the mineralized-barren rock contacts, which corresponds to approximately 10% dilution for a 5 m block. The dilution was calculated by expanding the mineralization shells by 0.5 m and recalculating grade based on the revised shells. The grade assigned to the additional tonnage (tonnage between the original grade shells and the expanded grade shells) was determined based on the average grade of this additional tonnage for each zone within the deposit. The grades for these tonnages are available in Table 15.3.

Table 15.3 – Dilution Grades by Mineralized Zones

Zone	Dilution Grade (g/t Au)
Central	0.15
DK2	0.10
E2	0.10
East	0.10
Extreme South	0.15
Gogo	0.10
Pit Norte	0.20
Pit Sul	0.25

Figure 15.8 – Mineralized Zones



Source: DRA 2023

The addition of mining dilution resulted in lowering the Au grade of the mineral reserves from 1.71 g/t Au to 1.62 g/t Au. The average dilution for the entire mineral reserves was estimated at 5.1%.

DRA assumed a mining loss of 5%.

15.1.4.4 Minimum Mining Width

A minimum mining width of 20 m was considered for the open pit design. This is based on a 9 m turning radius for a 50 t haul truck plus several metres on each side for safety.

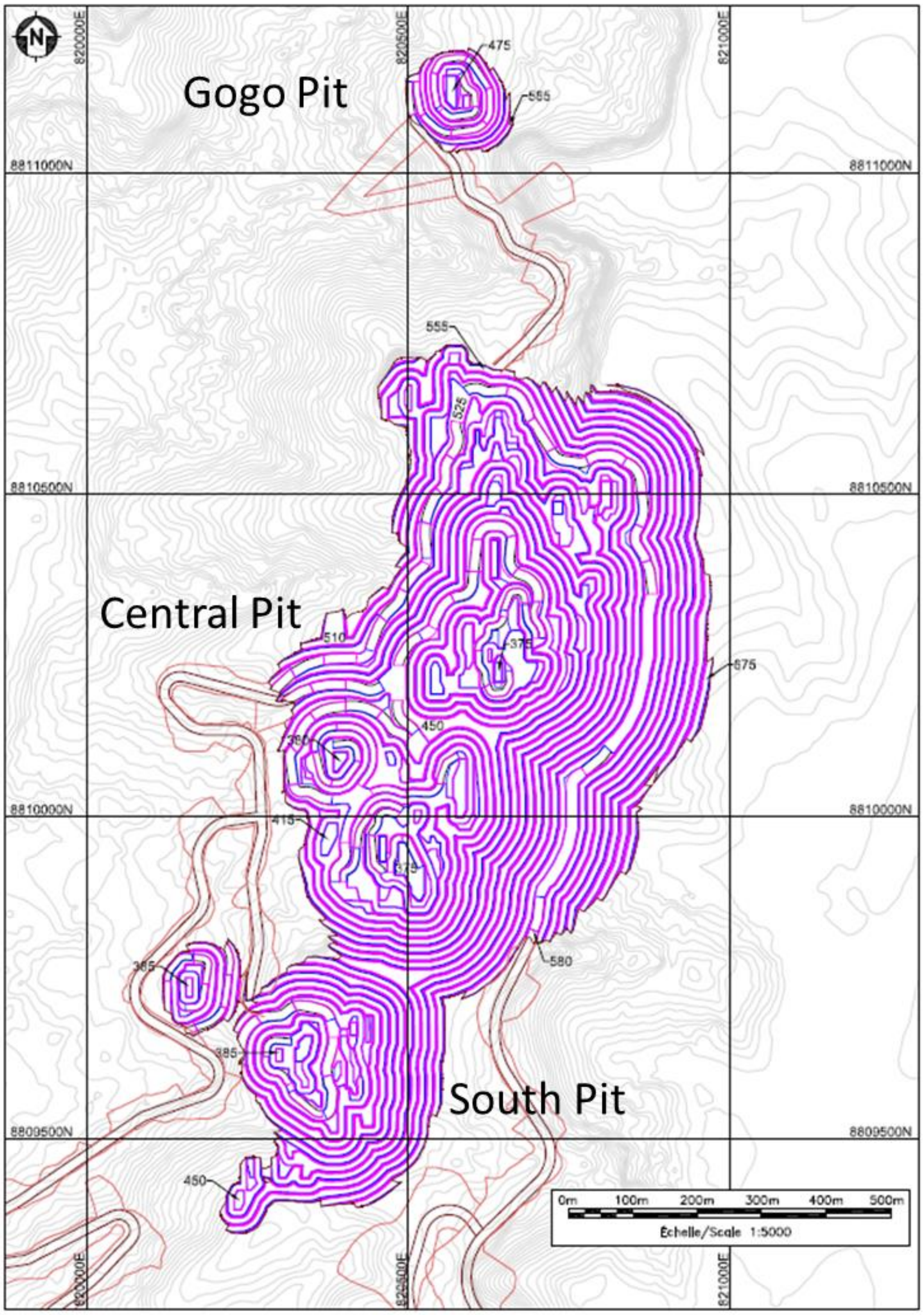
15.1.4.5 Open Pit Design Results

Pit optimization was conducted followed by pit design. A mining schedule was also defined to achieve better results in economic analysis. The ROM will feed a conventional processing plant for gold concentration. The economic and geometric parameters were established through Cerrado Gold's available data and DRA's database of similar projects.

The methodology applied to the pit design consists of establishing an outline of the toes and crests of the benches, safety berms, work sites and mining site access ramps while adhering to the geometric and geotechnical parameters that were defined.

Figure 15.9 presents the final pit design.

Figure 15.9 – Final Pit Design



Source: DRA 2023

The results of the FS final pit design are shown in Table 15.4.

Table 15.4 – Final Pit Design Results

ROM (Mt)	**Au** (g/t)	**Au** (koz troy)	**Waste** (Mt)	**Total Mined** (Mt)	**Stripping Ratio**
14.3	1.62	745.5	112.5	126.8	7.8

Three (3) pits — South, Central, and Gogo Pits — form the integral framework for the Serra Alta surface deposit. The South Pit spans approximately 377 m in length and 335 m in width at the surface, featuring a maximum pit depth of 185 m. This pit covers a total topographical surface area of around 137,000 m².

The Central Pit is the largest pit, extending approximately 930 m in length and 600 m in width at the surface, with a maximum pit depth of 305 m. Encompassing a total topographical surface area of roughly 583,000 m², the Central Pit stands as a significant facet of the mining operation, designed to maximize productivity.

The Gogo Pit, though smaller in scale, spans approximately 160 m in length and 100 m in width at the surface, with a maximum pit depth of 100 m. Despite its more compact dimensions, the Gogo Pit's strategic design ensures an effective resource extraction process, covering a total topographical surface area of approximately 22,000 m².

The Gogo Pit will be accessed through the Central Pit at level 570. The Central Pit will have a main access along its eastern wall; this access will also serve as a geotechnical berm. Secondary accesses are located on the western side of the pit, connecting the Central and South Pits. The Southern pits will be accessible by an external road built for that purpose. The bottom 30 m of the pits are designed with single-lane ramps.

Due to the pit locations at the side of a cliff and the associated access challenges, certain areas of the mine will be exploited using “retreat” mining, to ensure temporary access is maintained while the main access is being built.

15.2 Underground Mine

15.2.1 Underground Parameters

DRA designed an underground mine to produce an average of 1,600 t/d of ore from the Serra Alta deposit. The underground mine will be accessed through a twin portal from where a twin decline will be driven to the underground production levels. The deposit will be mainly mined using conventional mechanized longitudinal and transverse long-hole mining method. Table 15.5 presents the parameters used for the underground Mineral Reserve Estimate.

Table 15.5 – Underground Mineral Reserve Parameters

Description	Unit	Value
UG Mining Cost	US$/t (mined)	26.41
Mill Operation Cost	US$/t (milled)	10.14
Administration & Infrastructure	US$/t (milled)	2.43
Tailings	US$/t (milled)	1.45
Transportation Cost	US$ /oz	10.74
Refining Cost	US$ /oz	12.00
Sales Price	US$ /oz	1,700
OP Mining Dilution	%	5.0
UG Mining Dilution	%	10.0
Mining Recovery - UG	%	90.0
Mill Recovery	%	95.3

15.2.2 Cut-Off Grade

From the underground Mineral Reserve parameters, the resulting COG is 0.80 g/t Au.

A marginal COG was calculated for the exercise at 0.28 g/t Au. The marginal material comes from development tunnels. The marginal COG does not take into consideration the UG mining cost since the material will already be excavated and transported to the surface.

15.2.3 Stope Optimizer Parameters

Deswik's Stope Optimizer (Deswik.SO) software was utilized for the design of stopes. The stope sizes and the mining methods were primarily determined by the geometry of the deposit. Detailed stope design parameters are available in Section 16.2.2.

15.2.4 Mine Dilution

Dilution is the material (ore, waste, or backfill) that breaks off from the host rock walls, backs and end-walls which is inherent to underground mining. The mineral reserve calculation accounts for the following dilution parameters:

- Stope footwall: 0.5 m;
- Stope hanging wall: 0.5 m;
- Stope internal dilution from sidewall (backfilled stopes): 0.3 m; and
- Lateral / vertical development dilution: 6.5% / 5% of overbreak.

15.3 Mineral Reserves

Mineral Reserves classified as Proven and Probable have resulted from modifications made to Measured and Indicated Mineral Resources. The summary of Proven and Probable Mineral Reserves can be found in Table 15.1 (effective date: October 31st, 2023). Inferred Mineral Resources were deemed as waste. Mineral Reserves are estimated using the CIM 2019 Best Practices Guidelines and are classified based on the 2014 CIM Definition Standards.

The Mineral Reserve Estimate of the Monte do Carmo, Serra Alta deposit comprises Proven Reserves totalling 2 Mt @ 1.68 g/t Au, resulting in 109,000 oz (in-situ) and Probable Reserves amounting to 14.8 Mt @ 1.66 g/t Au corresponding to 787,000 oz (in-situ). The reserve estimate has been formulated using the marginal COG of 0.28 g/t Au for the in-pit reserves, and a COG of 0.8 g/t Au for the underground reserves. Both the Open Pit and Underground reserves are reported using an assumed gold sales price of US$ 1,700. Further information concerning mining and processing factors is available in the footnotes accompanying the tables below.

The Open Pit design includes 14,344 kt of Proven and Probable Mineral Reserves at a grade of 1.62 g/t Au. To access these reserves, 112.5 Mt of waste rock must be mined resulting in a stripping ratio of 7.8 to 1.

The underground design includes 2,451 kt of Proven and Probable Mineral Reserves at a grade of 1.90 g/t Au. To access these reserves, 800 m twin ramps will be developed from a mine portal located in the Central Pit. A total of 19,400 m of lateral development in ore and waste will be required during the underground operation. The mining method selected for Monte do Carmo is long hole transverse open stoping with cemented rockfill with minimum stope width of 3 m and maximum height of 20 m.

Table 15.6 presents the mineral reserves for both the open pit and underground mine.

Table 15.6 - Serra Alta Deposit (Brazil) - Mineral Reserve Estimate, DRA Global Limited. October 31, 2023

	Category	Tonnage (kt)	Average Grade (g/t Au)	In-Situ Ounces (koz Au)
Open Pit [5, 6, 12]				
	Proven	1,976	1.68	107
	Probable	12,368	1.61	639
	Total Proven and Probable	**14,344**	**1.62**	**746**
Underground [7, 8, 13]				
	Proven	39	1.81	2
	Probable	2,412	1.91	148
	Total Proven and Probable	**2,451**	**1.90**	**150**
Total				
	Proven	2,015	1.68	109
	Probable	14,780	1.66	787
	Total Proven and Probable	**16,795**	**1.66**	**895**

Notes:

1. The Mineral Reserves have been estimated respectively by the Open Pit and Underground Reserves QPs.
2. The Mineral Reserves have been estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definitions Standards for Mineral Resource and Mineral Reserve in accordance with National Instrument 43-101 - Standards of Disclosure for Mineral Projects.
3. Mineral Reserves are included in the Mineral Resources Estimate.
4. Open Pit Mineral Reserves were developed by a Pseudoflow optimized pit shell using HxGn MinePlan® software.
5. The pit shell was developed using a 50-degree pit slope, gold sales price of US$1,700/oz, mining costs of US$2.60/t, processing costs of US$10.14/t, tailing cost of US$1.45/t, G&A costs of US$2.43/t, refinery and transportation costs of US$22.74/oz, 96.5% process recovery and an assumed production rate of 1.92 Mtpa.
6. Underground Reserves were developed using Deswik™ software.
7. Underground stopes were developed using a gold sales price of US$1,700/oz, average underground mining costs of US$26.41/t, processing costs of US$10.14/t, tailing cost of US$1.45/t, G&A costs of US$2.43/t, refinery and transportation costs of US$22.74/oz, 95.3% process recovery and an assumed underground production rate of 1,600 t/d.
8. The Mineral Reserves are inclusive of mining dilution and ore loss.
9. Contained gold estimate has not been adjusted for metallurgical recoveries.
10. Open pit Mineral Reserves are estimated using a marginal cut-off grade of 0.28 g/t Au.
11. Underground Mineral Reserves are estimated using a mining cut-off grade of 0.8 g/t Au.
12. Effective date of the Mineral Reserve estimate is October 31, 2023.
13. Figures have been rounded to an appropriate level of precision for the reporting of Mineral Reserves. As a result, totals may not compute exactly as shown.

15.4 Factors that May Affect the Mineral Reserve Estimate

The Mineral Reserve Estimate reflects the Mining Methods and Economic Analysis described in Sections 16 and 22 of this Report, respectively. The following factors and assumptions may affect the Mineral Reserve Estimate:

- Metal prices and foreign exchange rate;

- Interpretations of mineralization geometry and continuity of mineralization zones;
- Geotechnical and hydrogeological assumptions;
- Ability of the mining operation to achieve the annual production rate;
- Operating cost assumptions;
- Mining and process plant recoveries; and
- Ability to meet and maintain permitting and environmental license conditions and the ability to maintain the social license to operate.

15.5 Comments

The current Mineral Reserve Estimates are based on the latest knowledge, permit status, and engineering constraints. The QPs are of the opinion that the Mineral Reserves have been prepared according to the industry's best practices.

16 MINING METHODS

The Mineral Reserve Estimates in Section 15 are supported by the open pit and underground mine planning summarized in this section.

Open pit and underground mine designs, mine production schedules, mobile fleet productivities and mine capital and operating cost estimates have been developed for the Monte do Carmo, Serra Alta deposit at a feasibility study level of engineering.

16.1 Open Pit

16.1.1 Introduction

The mining method selected for the Project is a conventional open pit, truck and shovel, drill and blast operation. Vegetation, topsoil and overburden will be stripped and stockpiled for future reclamation use. The ore and waste rock will be mined with 5 m and 10 m high benches respectively, drilled, blasted and loaded into rigid frame haul trucks with hydraulic excavators.

16.1.2 Geotechnical Pit Slope Parameters

The pit design consists of an operational pit that allows a safe and efficient mining operation, based on the optimal pit.

The methodology consists of establishing an outline of the toes and crests of the benches, safety berms, work sites and mining site access ramps while adhering to defined geometric and geotechnical parameters. The open pit slope design parameters for the project are based on reviews by DRA of geotechnical site investigations data, available local and regional geological data, drilling and geomechanical laboratory testing data provided by Cerrado Gold personnel and well-established geotechnical design methods.

Table 16.1 presents the pit slope design parameters that were adopted to develop the mine design for the Serra Alta deposit. It is subdivided by lithological, structural and geotechnical considerations.

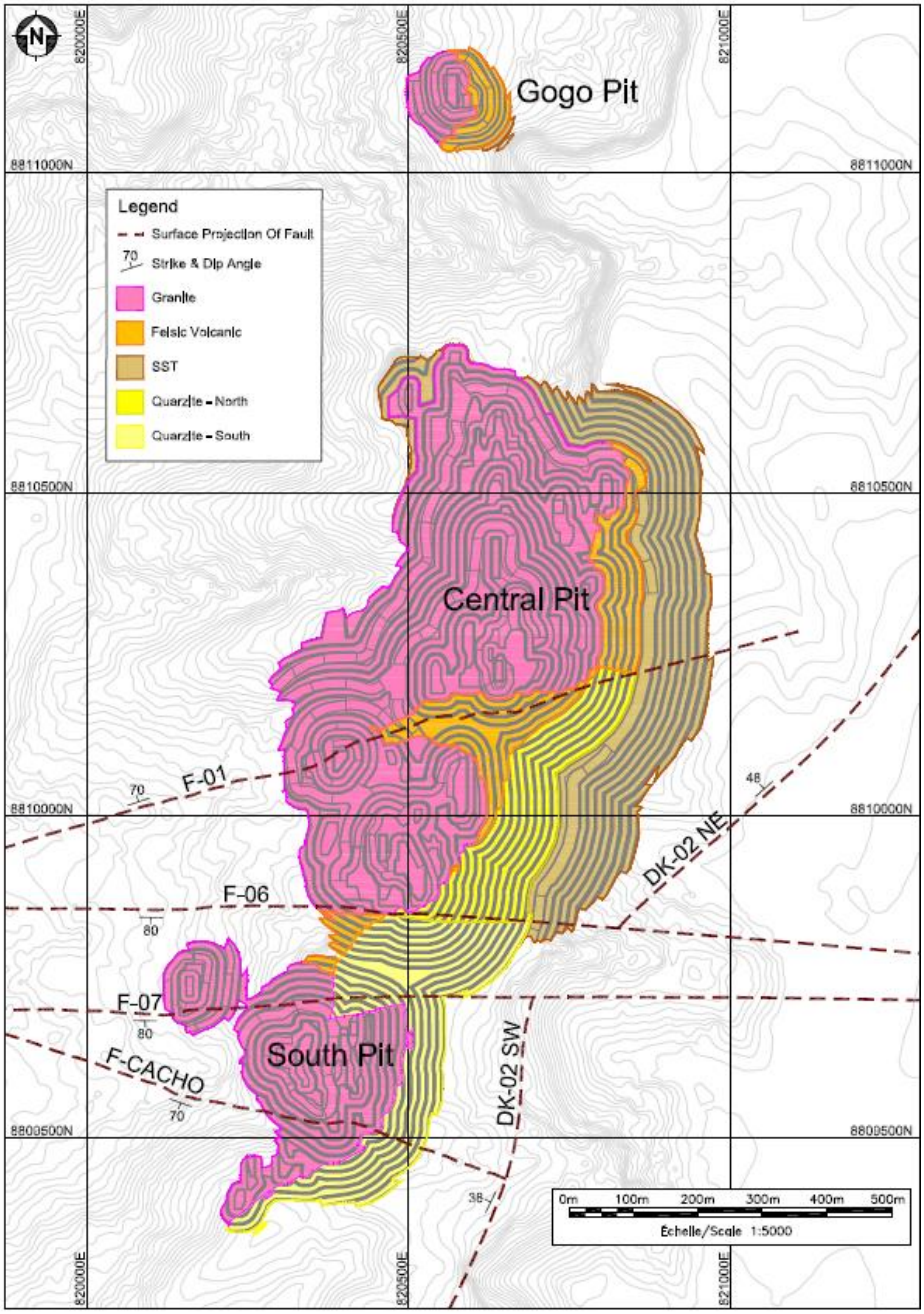
Table 16.1 – Final Pit Design Parameters

Parameter	Unit	Granite	FV	FV_Gogo	Quartzite_S	Quartzite_N	SST
Bench Height (BH)	m	5	5	5	5	5	5
Bench Stacking	#	3	3	3	3	3	3
Maximum Bench Height	m	15	15	15	15	15	15
Bench Face Angle (BFA)	°	75	75	80	75	75	70
Bench Width (BW)	m	8.5	8.5	6	8	8.5	8.5
Inter-ramp Angle (IRA)	°	50.2	50.2	60.0	51.3	50.15	47.1

Note:
- Quartzite_S includes Quartzite rocks from the South and Central blocks (between F_cacho and F_06 faults)
- Quartzite_N includes Quartzite rocks from F_06 fault to the south and F_01 fault to the north.
- Geotech berm only required if no ramps are located in the East wall. Required berm would be minimum 18m.
- IRA in the FV_Gogo to be steepened to 60° on the East Wall of the Gogo pit (80m deep max) to avoid mining SST above the pit.

Figure 16.1 presents the final pit design. All final pit slopes are assumed to be excavated using control blasting.

Figure 16.1 – Final Pit Design with Geotechnical Sectors



Source: DRA, 2023

16.1.3 Hydrogeology Parameters

Hydrogeological investigations were completed during the previous field programs by various companies under contract with Cerrado Gold. The only evaluation involved investigating water levels in exploration and geotechnical drillholes with no packer testing carried out to determine in-situ hydraulic conductivity. Groundwater data was recorded from only one (1) drillhole (FSA-278) and consisted of a one-time water level measurement that went dry after a few days, according to Cerrado Gold personnel on site. No additional water level measurements have been recorded since then, and it is not expected that groundwater levels will be an issue with the Serra Alta Open Pit.

16.1.4 Stockpiles

16.1.4.1 Waste Rock and Overburden Stockpiles

The Project will generate waste rock, which will be stored in designated stockpiles. These stockpiles are engineered to accommodate the required tonnages from the open pit.

The Project incorporates two (2) waste dumps: The East stockpile situated to the east of the Central Pit, adjacent to the processing plant, and the South stockpile located south of the South Pit. The East stockpile will function as a co-disposal site, managing both filtered tailings from the process plant and waste material from the open pit. Moreover, once the South Pit is fully excavated, in-pit waste dumping will commence, supplementing the use of the East and South stockpiles. Free dumping will be employed for in-pit dumping in the South Pit while ensuring adherence to an overall slope of 35.8°.

The open pit mine plan anticipates generating approximately 112.5 Mt of waste rock material. Considering a swell factor, including compaction, of 30%, an estimated volume of 56.2 Mm^3 of storage space will be needed for waste materials. The co-disposal site will require a 3:1 waste:tailings ratio, approximately 50.6 Mt of waste rock.

Table 16.2 tabulates the design criteria for the waste rock stockpiles and Table 16.3 tabulates the waste rock stockpile design capacity.

Table 16.2 – Mine Waste Rock Stockpile Design Criteria

Description	Unit	East Stockpile	South Stockpile	South Pit Stockpile
Lift Height	m	10	10	n/a
Lift Face Angle	°	28.60	28.60	n/a
Berm Width	m	7	7	n/a
Maximum Height	m	100	180	n/a
Overall Slope	°	21.00	20.50	35.80
Ramp Width	m	15	15	n/a
Ramp Gradient	%	10	10	n/a

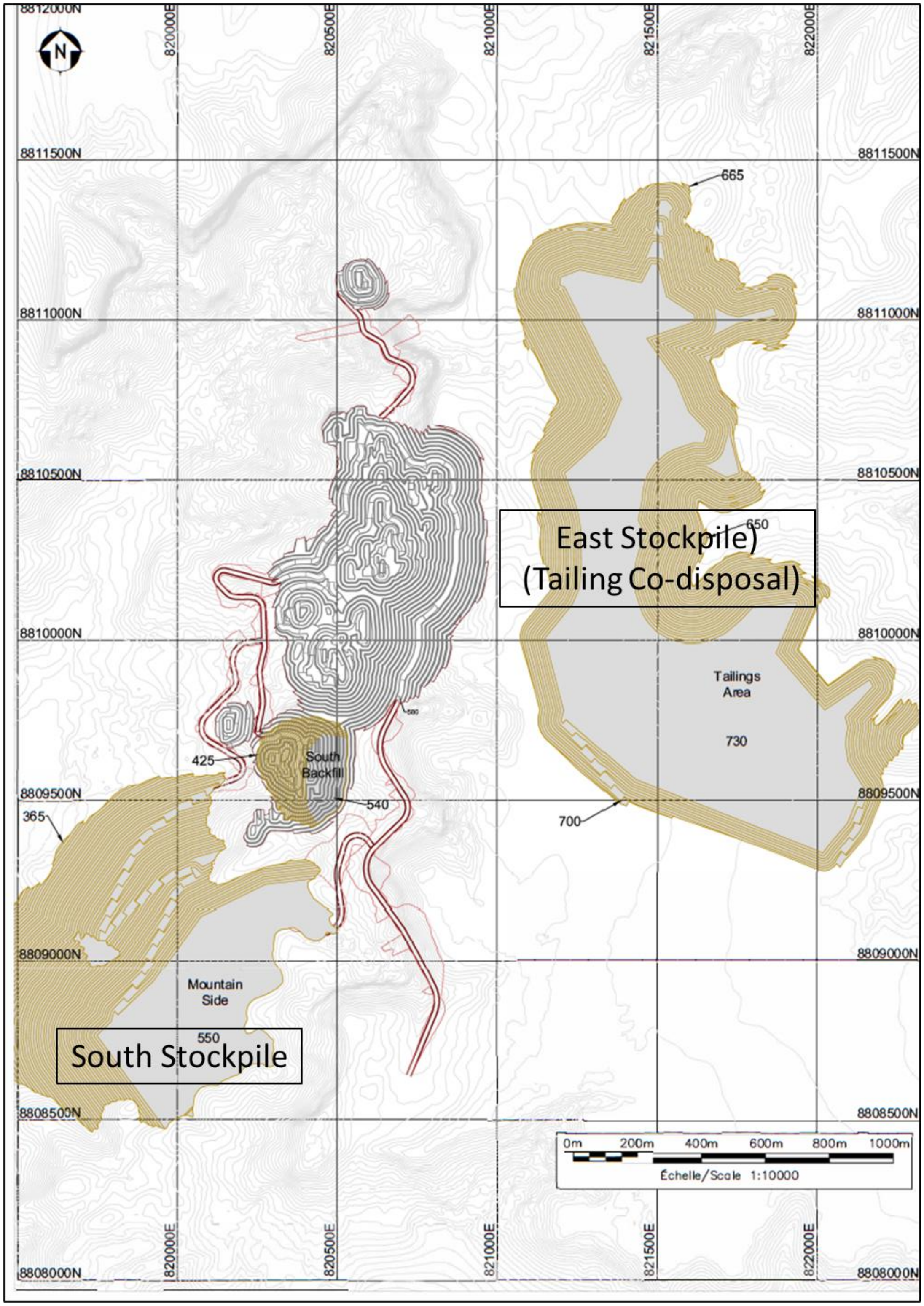
Description	Unit	East Stockpile	South Stockpile	South Pit Stockpile

Note: n/a = not applicable

Table 16.3 – Mine Waste Rock Stockpile Design Capacity

Description	Unit	East Stockpile	South Stockpile	South Pit Stockpile
Waste Rock Tonnage to Store	Mt	50.6	52.5	9.3
Swell	%	30	30	30
Total Waste Rock Volume Capacity Required	Mm^3	26.3	27.3	5.0
Designed Capacity	Mm^3	42.8	28.6	4.9
Maximum Elevation	m	730	550	540
Lowest Elevation	m	640	335	380
Footprint Area	km^2	1,531.0	848.6	135.0
Perimeter	km	8.5	4.9	1.2

Figure 16.2 – Location of South & East Stockpiles



Source: DRA, 2023

16.1.5 Mine Planning

16.1.5.1 *Phase Design*

Phases are designed to ensure an operationally feasible mine plan as well as to allow access to mineralized areas while conducting waste stripping on others. The South Pit is separated into three (3) phases, the Central Pit into seven (7) phases, and the Gogo Pit into two (2) phases.

The phases are designed and sequenced to maintain access to the different areas where mining takes place while the main access ramps are being built.

16.1.5.2 *Work Schedule*

The open pits will be mined with four teams that will be alternating in two (2) shifts and two resting, operating 24 hours a day, 365 days a year. The mining movements are designed to produce enough ROM to feed the processing plant with a nominal capacity of 1.92 Mtpa and LOM of 9 years.

16.1.5.3 *Open pit Production Schedule*

The LOM production schedule for the open pit areas was prepared using the MinePlan Schedule Optimizer ('MPSO') tool within HexagonTM MinePlan 3D software. This tool incorporates economic parameters and operational constraints, such as phase sequencing, maximum bench sink rates, and mining/milling capacities, to determine an optimal mining sequence and ore stockpiling strategy. The aim is to maximize the Net Present Value ('NPV') of the mine production plan.

The overarching goal of the mine scheduling and planning process is to optimize Project NPV while meeting processing plant objectives and targets. Primarily, this is achieved by strategically timing sediment and waste rock removal activities to minimize associated costs. This objective remains pivotal across all phases of mine design and planning.

The mining schedule was prepared following the methodology below:

- 1.92 Mtpa mill feed (Open pit and underground);
- Mine plan considers a one-year ramp-up with a mill capacity of 90%;
- Initial 12-month preproduction phase allocated for removal of a significant portion of sediments;
- Open pit mine plan structured into five (5) intermediate phases, also known as pushbacks;
- Mining operations commence at the South Pit, which demands comparatively lower stripping activities, followed by progression towards the Central and North Pits;
- Schedule constraint:
  - Total open mine tonnage: maximum 23 Mtpa.
  - Ore production from underground operations from Year 4 to Year 9.

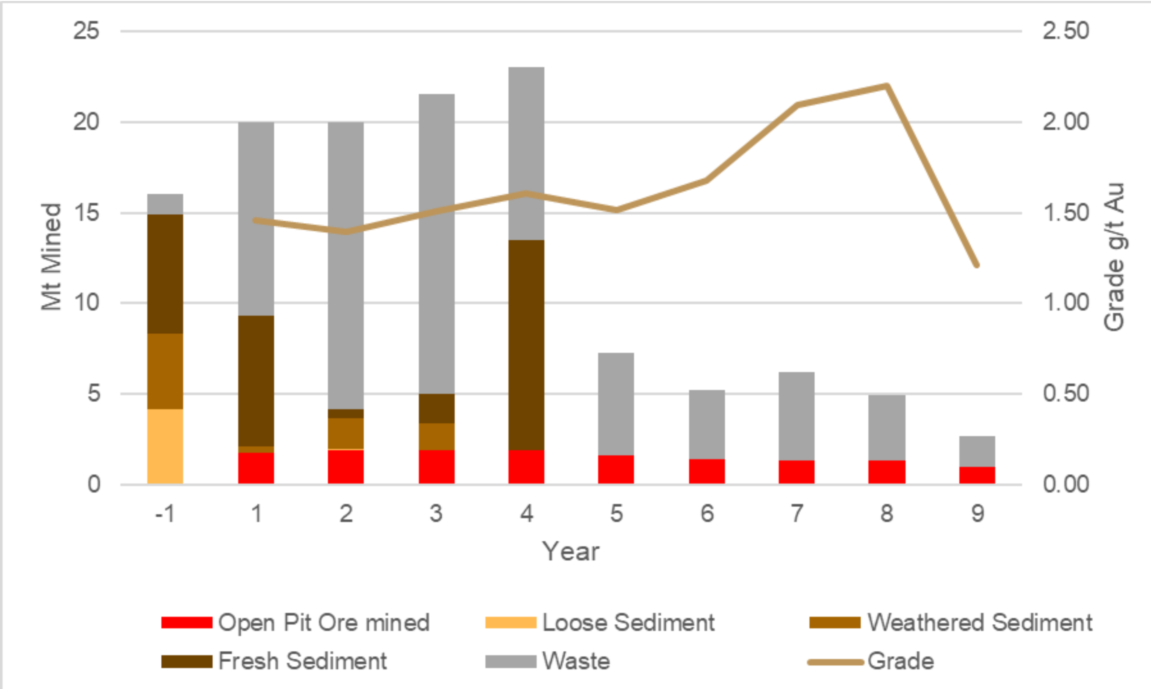
The mine plan is designed to fulfill plant feed demands while adhering to industry best practices for open pit mining, including optimizing equipment fleet utilization and maximizing NPV.

The resulting open pit mining schedule is summarized in Table 16.4 and Figure 16.3.

Table 16.4 – Open Pit LOM Production Schedule

Description	Unit	Total LOM	Year									
			-1	1	2	3	4	5	6	7	8	9
Ore Mined	**kt**	**14,344**	**-**	**1,792**	**1,920**	**1,920**	**1,915**	**1,609**	**1,456**	**1,353**	**1,341**	**1,038**
Ore Grade Mined	g/t Au	1.62		1.46	1.40	1.51	1.61	1.51	1.68	2.10	2.20	1.20
Loose Sediment	kt	4,240	4,167	-	73	-	-	-	-	-	-	-
Weathered Sediment	kt	7,665	4,142	320	1,704	1,499	-	-	-	-	-	-
Fresh Sediment	kt	27,588	6,601	7,248	510	1,627	11,601	-	-	-	-	-
Waste	kt	72,975	1,089	10,640	15,793	16,454	9,454	5,659	3,749	4,902	3,609	1,627
Total Sediment + Waste	**kt**	**112,469**	**16,000**	**18,208**	**18,080**	**19,580**	**21,055**	**5,659**	**3,749**	**4,902**	**3,609**	**1,627**
Total Tonnes Mined	**kt**	**126,813**	**16,000**	**20,000**	**20,000**	**21,500**	**22,970**	**7,268**	**5,206**	**6,255**	**4,950**	**2,665**
Stripping Ratio	**kt**	**7.8**		**10.2**	**9.4**	**10.2**	**11.0**	**3.5**	**2.6**	**3.6**	**2.7**	**1.6**

Figure 16.3 – Open Pit LOM Production Schedule

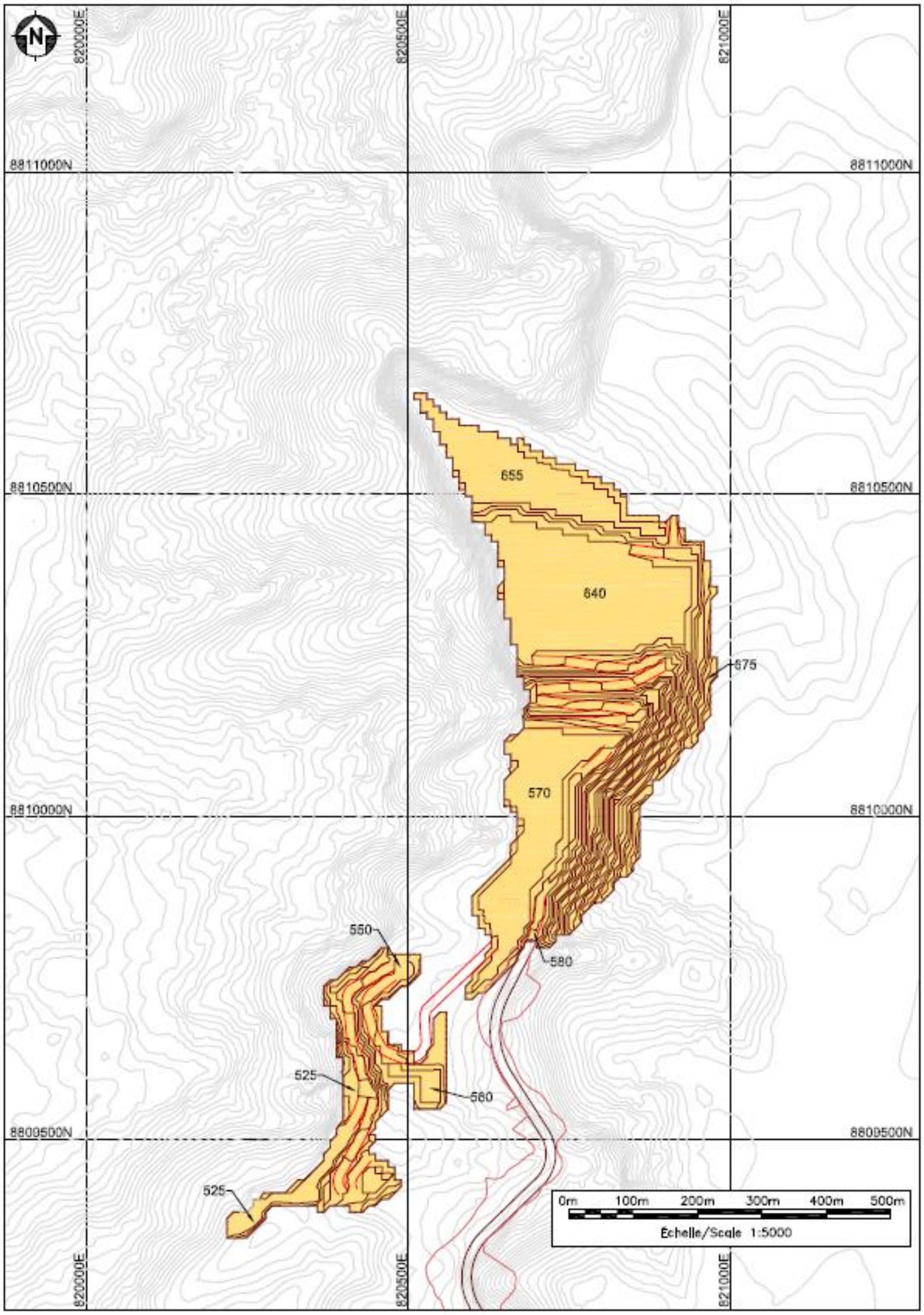


Source: DRA, 2023

16.1.5.4 *Mining Sequence*

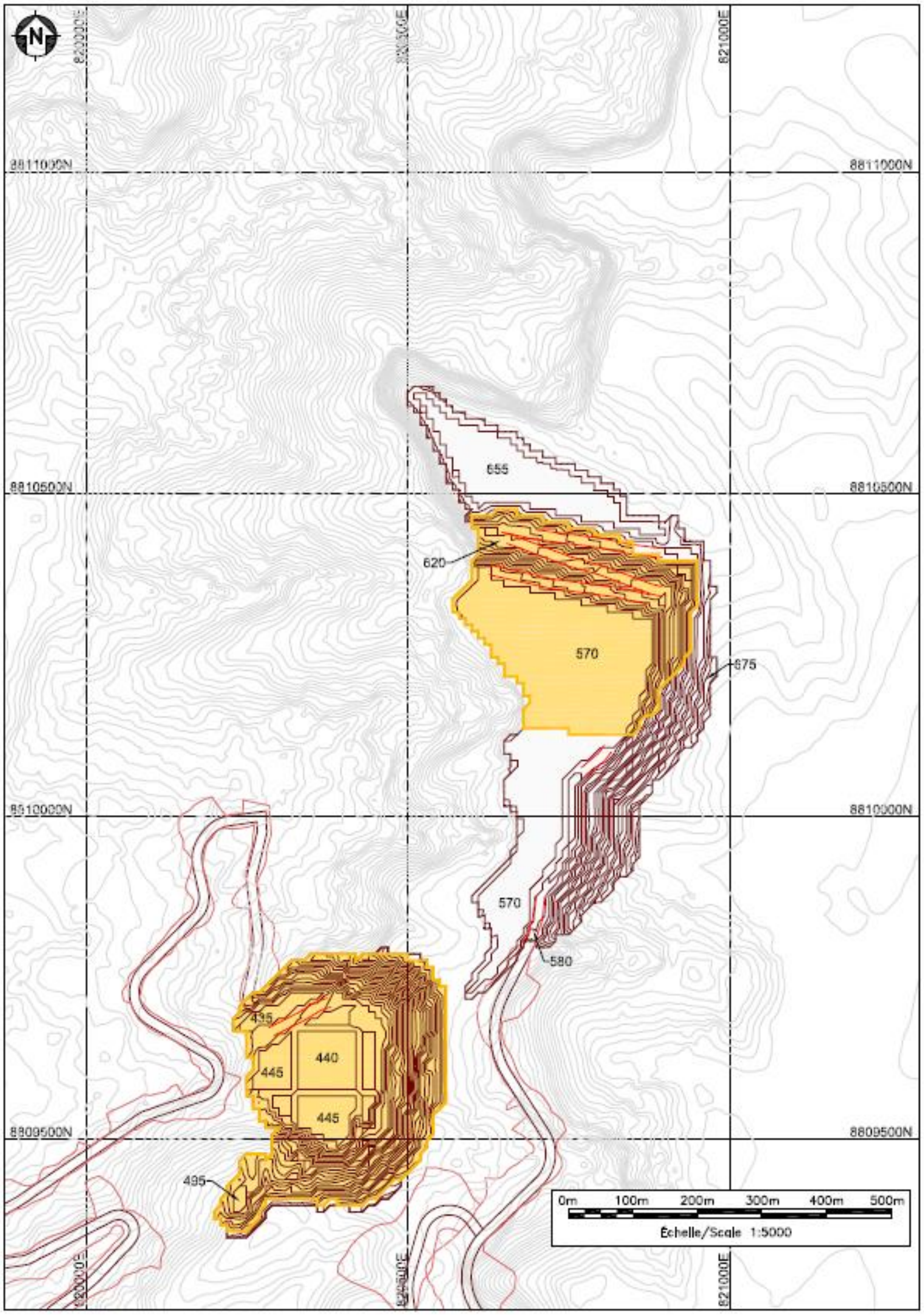
Figure 16.4 to Figure 16.9 present the progression of the Monte do Carmo open pits, on an annual basis for selected years.

Figure 16.4 – Open Pits Year 1



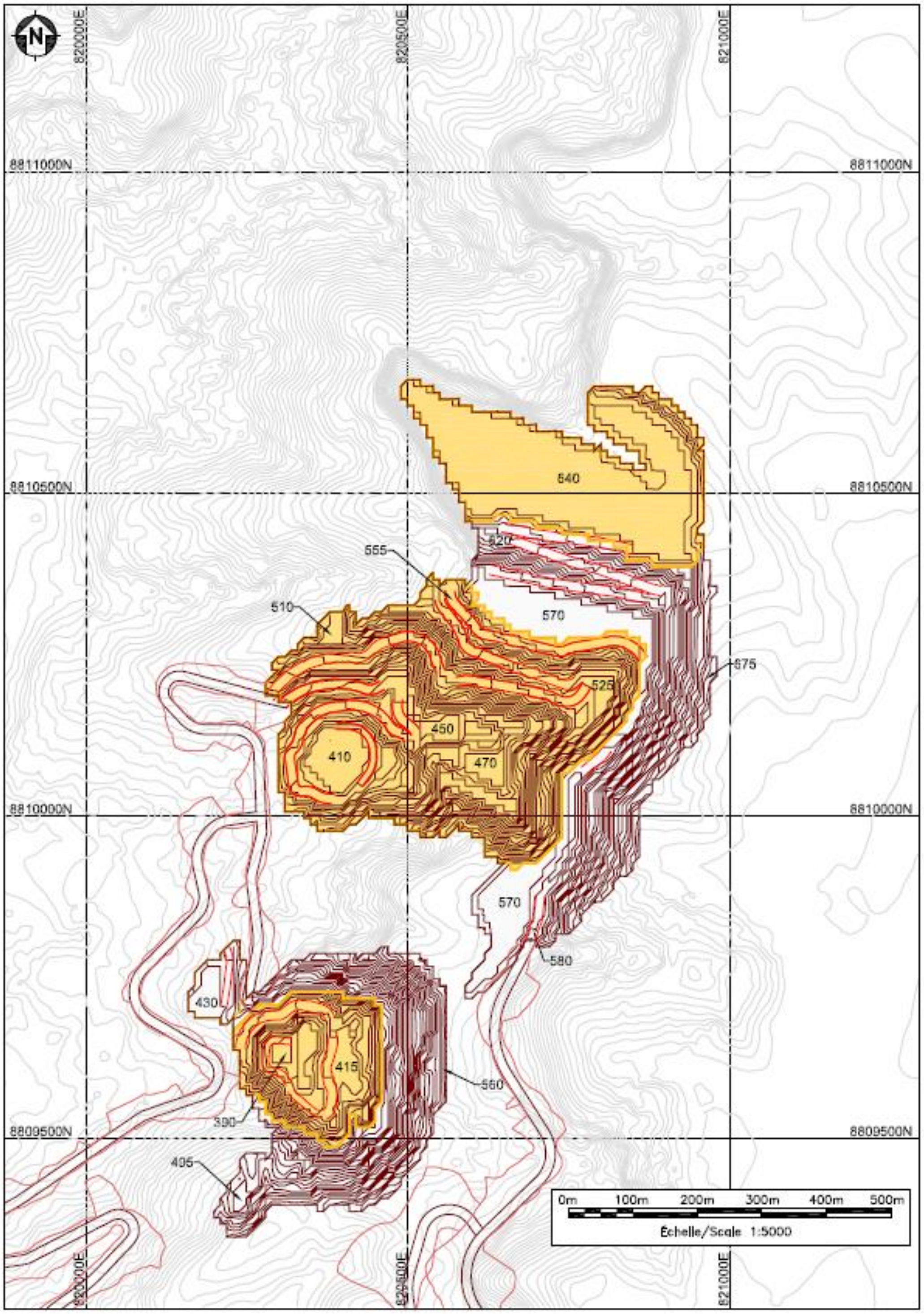
Source: DRA, 2023

Figure 16.5 – Open Pits Year 2



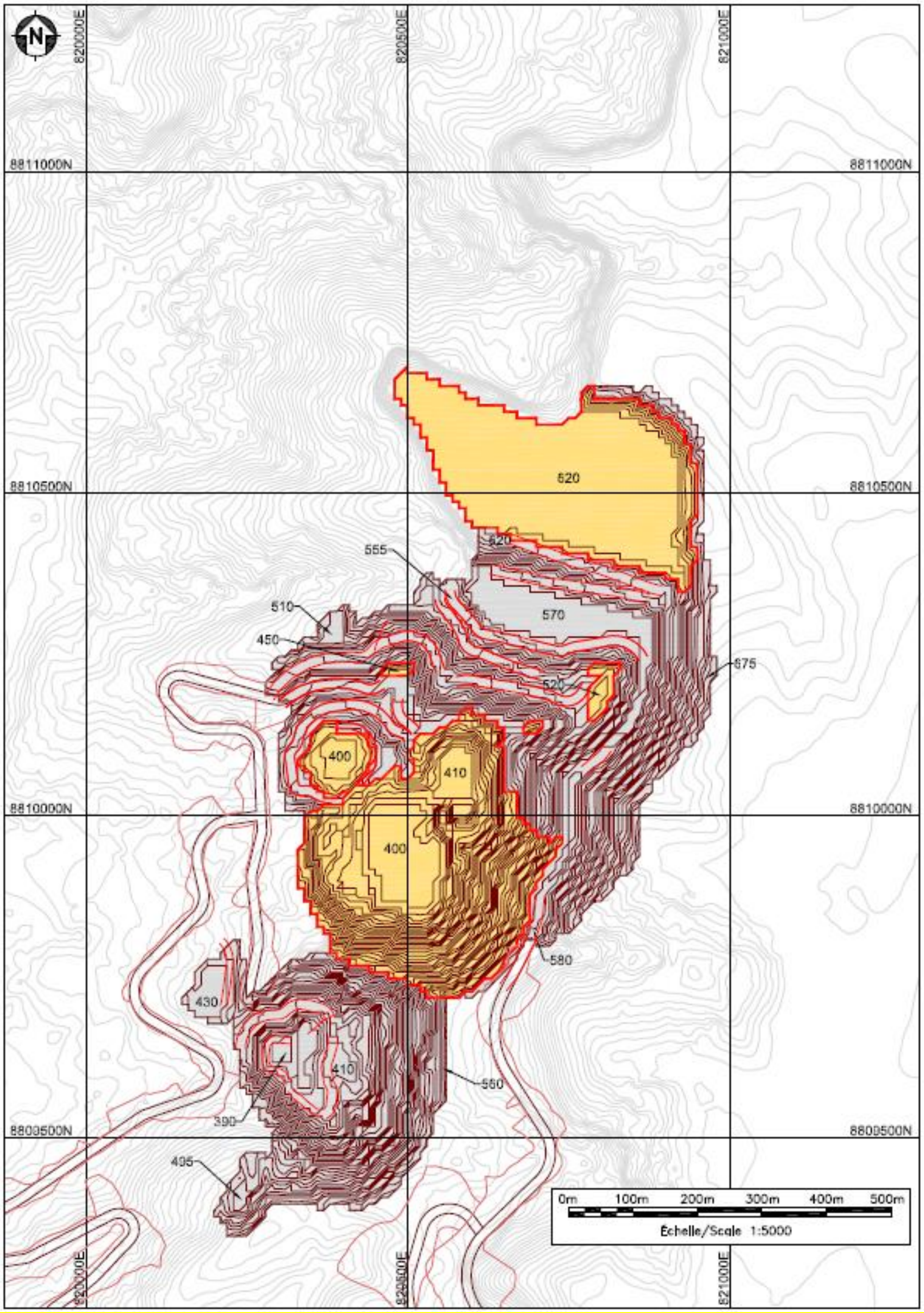
Source: DRA, 2023

Figure 16.6 – Open Pits Year 3



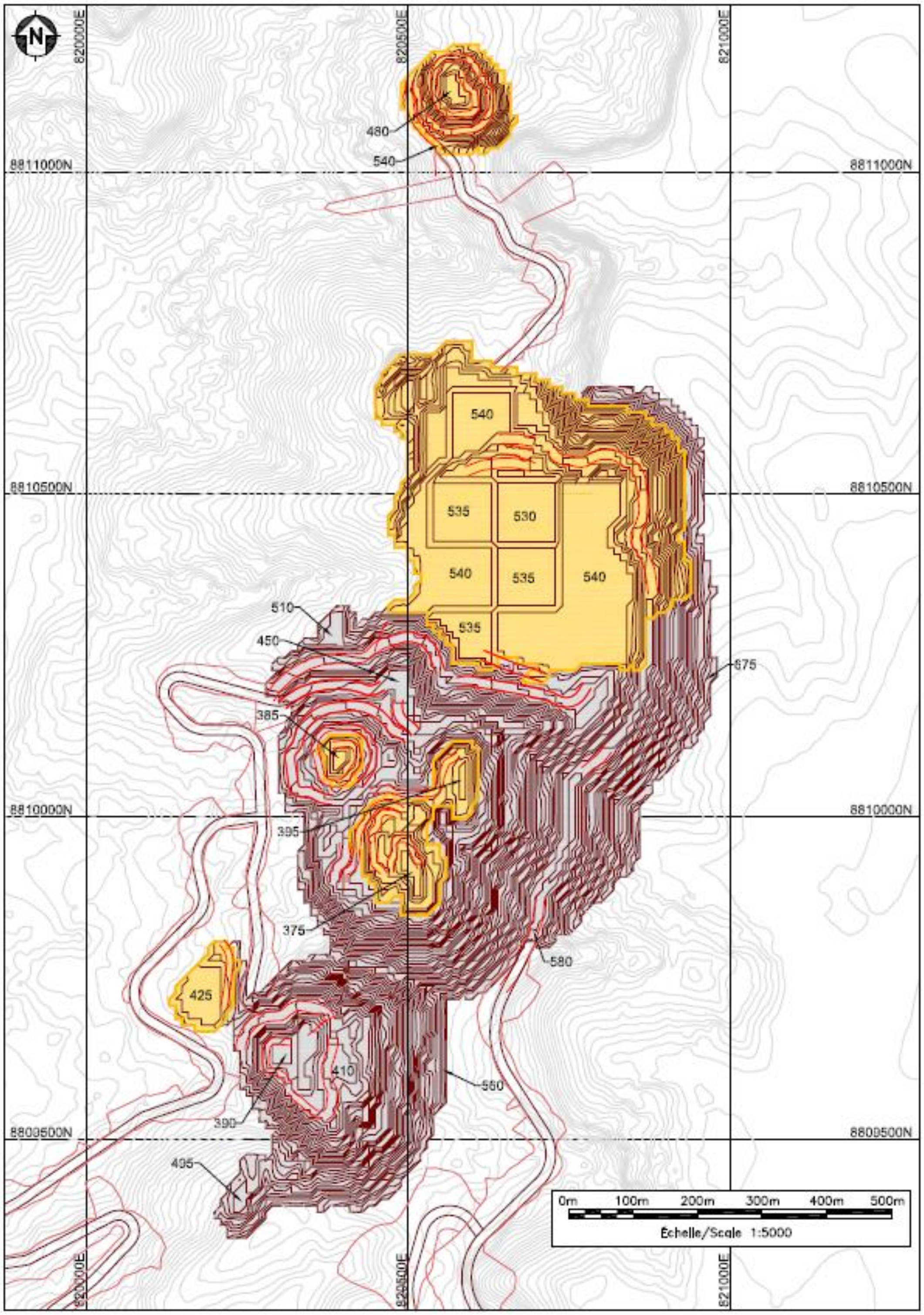
Source: DRA, 2023

Figure 16.7 – Open Pits Year 4



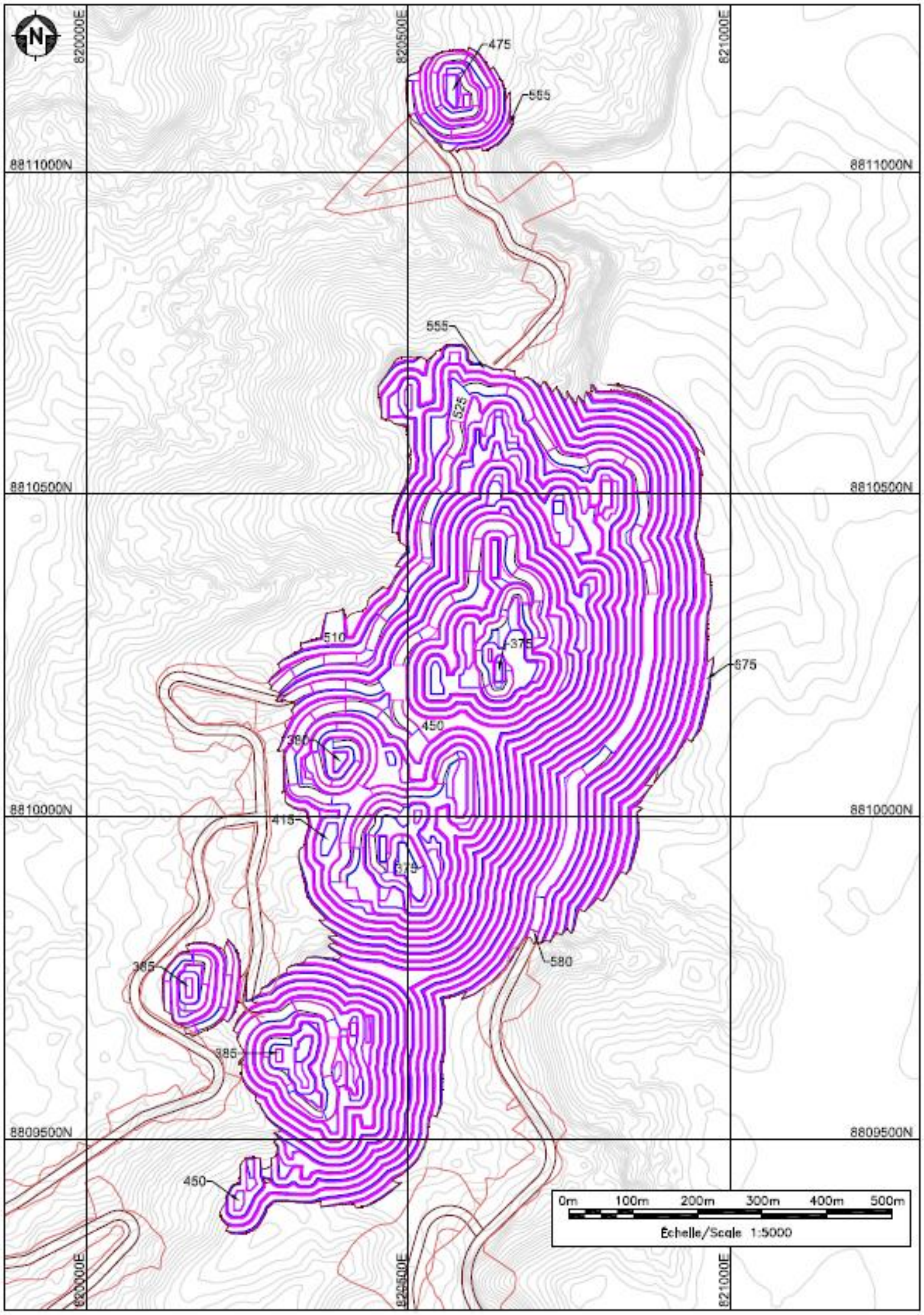
Source: DRA, 2023

Figure 16.8 – Open Pits Year 5



Source: DRA, 2023

Figure 16.9 – Final Pits



Source: DRA, 2023

16.1.5.5 *Open Pit Equipment Fleet*

The following section discusses the estimated fleet requirements to carry out the open pit mine production plan. This section includes indicative parameters for drilling, blasting, loading, and hauling. The objective of equipment selection is to produce a cost estimate suitable for a FS level and is not necessarily to design an optimized equipment fleet.

Although rock density varies across the site and by rock type, the fleet calculations consider the average densities found within the mineral reserves, specifically 2.62 t/m³ for both ore and waste rock, and 2.24 t/m³ for sediment.

All mining equipment will be diesel-powered.

For the purpose of estimating typical fleet requirements, all equipment is assumed to be owned, operated, and maintained by Cerrado Gold, with the exception of blasting equipment supplied by a subcontractor.

Monte do Carmo open pits will be mined with four teams that will be alternating in two shifts and two resting, operating 24 hours a day, 365 days a year with the assumption that 10 operating days will be lost on average due to inclement weather and non-production days. Mining movements are designed to produce enough ROM to feed the processing plant with a nominal capacity of 1.92 Mtpa and LOM of 9 years.

The selection of the primary fleet is based on the following parameters:

- Operating hours;
- Mechanical availability;
- Use of availability;
- Haulage distances;
- Cycle time;
- Truck speed; and
- Equipment productivity.

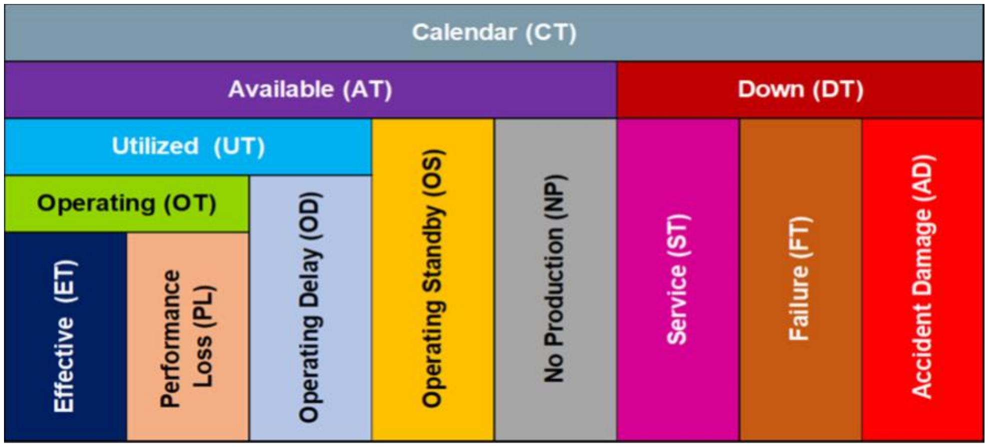
The primary mining fleet consists of hydraulic shovels, wheel loaders and rigid haul trucks.

16.1.5.6 *Equipment Utilization Model*

Time usage models for mining equipment are indispensable in precisely gauging the required scale of the primary mining equipment fleet. These models encompass critical metrics like equipment utilization, downtime analysis, maintenance schedules, and overall productivity assessments. By intricately estimating elements such as operational duration, idle periods, and maintenance routines, these models facilitate precise determination of the ideal equipment fleet size.

Figure 16.10 depicts the time usage model utilized for assessing optimal fleet size at Monte do Carmo.

Figure 16.10 – Time Usage Model



Source: Outliers Mining Solution, Mike McDowell, Time Usage Model Assists Mining and Processing.

Tables 16.5 and 16.6 present assumptions used in estimating the annual equipment production hours.

Table 16.5 – Annual Hours Estimate for Mining Equipment

Description	Loading Excavator	Loading Wheel Loader	Hauling Truck
Calendar Day	365	365	365
Unscheduled Days	10	10	10
Total Scheduled Mining Days	355	355	355
Shift per Day	2	2	2
Hours per Day	12	12	12
Total Schedule Hours	8,520	8,520	8,520
Mechanical Availability (AT)	85%	85%	85%
Down Time (DT)	1,278	1,278	1,278
Available Time (AT)	7,242	7,242	7,242
Use of availability (UA)	90%	90%	90%
Standby Time (OS + NP)	724	724	724
Gross Operating Hours (UT)	6,518	6,518	6,518
Operating Delay Hours (OD)	1,420	1,420	1,479
Net Operating Time (OT)	5,098	5,098	5,039
Effective (ET)	55	53	58
Performance Loss Hours (PL)	425	595	168
Effective Working Hours (ET)	4,673	4,503	4,871

Table 16.6 – Operating Delays Estimate for Mining Activities

Description	Loading Ore	Loading	Hauling
Shift change, inspection, Safety Meeting	min/shift	35	35
Lunch Breaks, Breaks	min/shift	60	60
Blast, No Operator, Other	min/shift	15	15
Fuel, Lube, Service	min/shift	10	15

16.1.5.7 *LOADING AND HAULING*

The key loading equipment for sediment, waste rock, and ore includes two types of diesel hydraulic excavators and front-end loaders. Specifically, for ore handling, there are 49-ton excavators with a rated bucket capacity of 2.1 m^3 and 3.4 m^3 front-end loaders. For sediment and waste, there are 95-ton excavators equipped with a rated bucket capacity of 5.7 m^3 and 5.7 m^3 front-end loaders.

The haul truck fleet is based on rigid frame 50-t truck. The haul trucks are sized to provide a good match to the ore and waste loading units.

The estimations for the loading fleet numbers are derived from first principles. These calculations rely on the necessary operating hours essential to meet the production schedule. They are determined by considering cycle times, equipment rated capacities, and estimated productivities. The assumptions for loading unit productivity can be found in Table 16.7.

Table 16.7 – Loading and Hauling Productivity Calculations

Description	Unit	Loading Ore		Loading Sediment		Loading Waste	
Example Model Excavator Type	Model	EX349	CAT966	EX395	CAT986	EX395	CAT986
Bucket Capacity	m^3	2.1	3.4	5.7	5.7	5.7	5.7
Example Model Haul Truck	Model	8x4	8x4	8x4	8x4	8x4	8x4
Effective Payload	t	50	50	50	50	50	50
Dry Density (Avg)	t	2.62	2.62	2.24	2.24	2.62	2.62
Swell Factor	-	1.35	1.35	1.35	1.35	1.35	1.35
Moisture	%	5	5	5	5	5	5
Fill Factor	%	95	95	95	95	95	95
Effective Bucket Capacity	m^3	2.1	3.4	5.4	5.4	5.4	5.4
Tonnes/Passes	t	4.1	6.6	9.4	9.4	11.0	11.0
Number of Passes	#	12	8	6	6	5	5
Bucket Cycle Time	sec	30	36	30	36	30	36

Description	Unit	Loading Ore		Loading Sediment		Loading Waste	
Example Model Excavator Type	Model	EX349	CAT966	EX395	CAT986	EX395	CAT986
Truck Spot Time	sec	48	48	48	48	48	48
Total Load Time	min	6.8	5.6	3.8	4.4	3.3	3.8
Maximum Truck Loads per Hour	loads/h	8.1	9.5	14.5	12.0	16.7	13.9
Maximum Productivity	wet t/ NOH	404	473	724	602	833	697
	dry t/ NOH	384	450	688	572	792	663

The estimate of haul truck fleet numbers was derived from first principles, considering the necessary operating hours to meet the production schedule. This estimation is based on calculated cycle times, assessments of the rated capacities of the equipment, and productivity estimations. Haul cycle times are estimated utilizing the Talpac™ software.

The three-dimensional haulage routes for each period were imported from MinePlan® to Talpac™; Talpac™ then calculates haulage times for each source and destination for the selected truck and material type.

A maximum speed of 50 km/h and a rolling resistance of 3% were applied.

Cycle times for each material type were calculated considering round-trip haulage profiles, haul truck speeds, and specific load/spot/dump times assigned to each material.

Other assumptions for the haul cycles include:

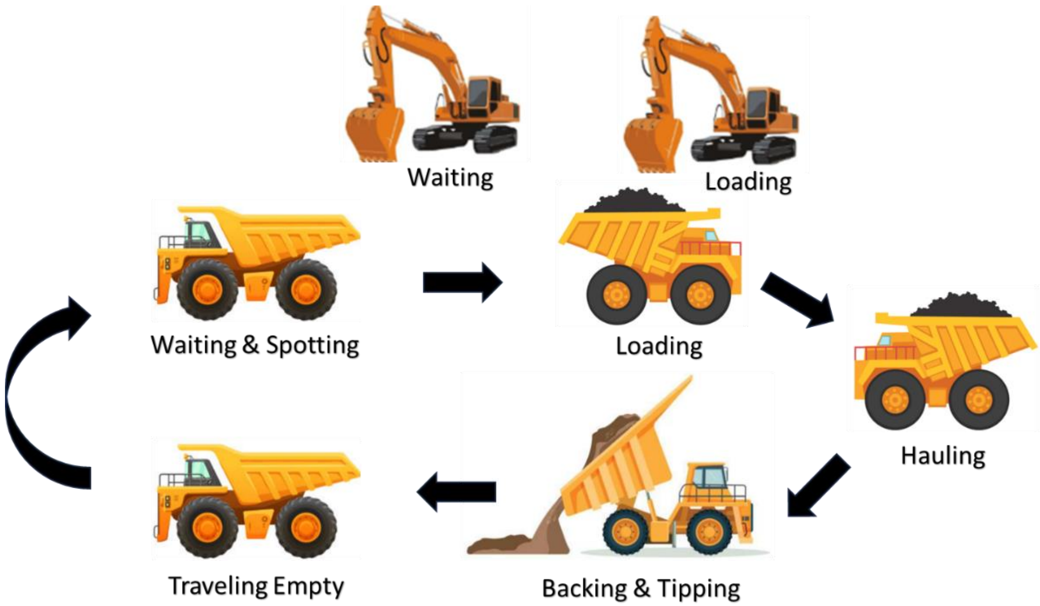
- Loading time calculated from excavator, wheel loader type;
- 0.8 min spot time at shovel;
- 1.5 min for dumping time, including spot time;
- 1.5 min of waiting time at the shovel.

Spot time at the shovel is the time during which the loading unit has the bucket in place to dump but is waiting for the truck to move into position.

The waiting time at the shovel refers to the duration when the hauling unit waits for another truck to finish loading.

Figure 16.11 illustrates the typical truck-shovel cycle of operation.

Figure 16.11 – Loading and Hauling Cycle of Operation



Source: DRA, 2023

16.1.5.8 *DRILLING AND BLASTING*

The Monte do Carmo Project will involve drilling operations managed by the mine operation, while blasting activities will be carried out by a contracted service provider under the guidance of the Monte do Carmo mining team.

The mine plans to utilize pumped explosives, boosters, and non-electrical accessories. It is assumed that wall control drill and blast methods will be required for final walls.

For the purposes of estimating the requirements, it is assumed that a portion of the sediment material will be free digging (loose sediment).

Daily blasting plans will be drafted by the technical team of the Monte do Carmo mining team during mine operations. The results will be reviewed, allowing for necessary adjustments to enhance the overall effectiveness of the blasting process.

Blasting will be executed under contract with an explosives supplier that will supply the blasting materials and technology, as well as the equipment to store and deliver the explosives products.

Table 16.8 – Drilling and Blasting Parameters

Description	Unit	Ore	Weathered Sediment	Fresh Sediment	Waste
Example Model Drill Type	Model	Sandvik DP1500i	Sandvik DP1500i	Sandvik DP1500i	Sandvik DP1500i
Hole Diameter	mm	102	140	140	140
Bench Height	m	5	10	10	10
Stemming	m	2.2	4.0	3.7	3.0
Subdrilling	m	1.1	1.0	1.0	1.0
Burden	m	2.8	5.0	4.5	4.0
Spacing	m	3.2	7.0	5.4	4.6
Tonnage per Hole	t	117	784	637	482
Explosive Density	kg/m³	1150	1150	1150	1150
Powder Factor	kg/t	0.31	0.16	0.24	0.29
	kg/m³	0.82	0.35	0.53	0.77

16.1.5.9 Primary and Support Equipment

Table 16.9 provides the number of equipment units estimated to be operating on an annual basis.

As a complement to the primary mining equipment fleet, DRA developed a list of support equipment based on its experience in similar open-pit mining operations. Determination of support equipment requirements primarily relied on the operational scale, dimensions and numbers of active waste rock stockpiles, and the extent of haul roads to be maintained. Notably, the list excludes auxiliary equipment for blasting, as these are to be provided by a contractor.

Table 16.9 – Open Pit Equipment List

Description	Model	Year									
		-1	1	2	3	4	5	6	7	8	9
Primary Equipment											
Haul Truck	FMX540 8x4	18	34	40	43	36	15	11	15	13	9
Excavator	EX349	0	1	1	1	1	1	1	1	1	1
Excavator	EX395	4	4	4	4	4	2	1	1	1	1
Wheel Loader	CAT966	0	1	1	1	1	1	1	1	1	1
Wheel Loader	CAT986	2	2	2	2	2	1	1	1	1	1
Production Drill	Sandvik DP1500i	3	6	6	6	6	3	3	3	3	1
Support Equipment											
Track Dozer	CAT 16M	2	2	2	2	2	2	2	1	1	1
Road Grader	CAT D8	3	3	3	3	3	2	2	1	1	1
Water Truck		3	3	3	3	3	2	2	1	1	1
Compactor		1	1	1	1	1	1	1	1	1	1
Industrial Crane		2	2	2	2	2	2	1	1	1	1
Portable Light Plant		8	8	8	8	8	6	6	4	4	4
Tire Handler		1	1	1	1	1	1	1	1	1	1
Fuel/Lube Truck		3	3	3	3	3	2	2	1	1	1
Pickup Truck		6	8	10	10	10	8	8	6	6	6
Bus – 20 seats		2	2	2	2	2	2	2	2	2	2
Bus – 40 seats		2	2	2	2	2	2	2	2	2	2
Lowboy Trailer		1	1	1	1	1	1	1	1	1	1
Dewatering Pump		4	4	4	4	4	4	4	4	4	4

16.1.5.10 *Mine Personnel Requirements*

The personnel needs for the open pit mine encompass both hourly staff involved in operating and maintaining equipment supporting mining activities and salaried positions in engineering, geology, and supervision.

The determination of operators for the primary mining equipment (loading and hauling) is based on the number of operational units and rotations they undergo. The majority of operators for this equipment adhere to a four-crew rotation schedule. Additionally, the requisite mine maintenance personnel are calculated in proportion to the pit equipment operators.

Table 16.10 provides the estimated number of employees on an annual basis.

Table 16.10 – Mine Personnel Requirements

Description	Year									
	-1	1	2	3	4	5	6	7	8	9
Mine Operations – Total	**140**	**212**	**232**	**243**	**219**	**124**	**102**	**106**	**97**	**74**
Mine Operation Superintendent	1	1	1	1	1	1	1	1	1	1
Mine Supervisor	6	6	6	6	6	6	6	6	6	3
Clerk/Secretary	2	2	2	2	2	2	2	2	2	2
Truck Dispatcher	4	4	4	4	4	4	4	4	4	2
Equipment Operators	114	184	204	215	191	96	79	83	74	57
Labourer	8	10	10	10	10	10	5	5	5	4
Dewatering Crew	4	4	4	4	4	4	4	4	4	3
Tool Crib Attendant	1	1	1	1	1	1	1	1	1	1
Mine Maintenance – Total	**32**	**45**	**49**	**51**	**47**	**28**	**25**	**26**	**24**	**21**
Maintenance General Supervisor	1	1	1	1	1	1	1	1	1	1
Maintenance Shift Supervisor	2	2	2	2	2	2	2	2	2	2
Maintenance Planner/Contract Admin	1	1	1	1	1	1	1	1	1	1
Clerk/Secretary	2	2	2	2	2	2	2	2	2	2
Maintenance Crew	26	39	43	45	41	22	19	20	18	15
Technical Services - Total	**17**	**18**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**15**
Chief Engineer	1	1	1	1	1	1	1	1	1	1
Mining Engineer	3	4	5	5	5	5	5	5	5	4
Geotech Engineer	1	1	1	1	1	1	1	1	1	1
Mining Technician	5	5	5	5	5	5	5	5	5	4
Chief Geologist	1	1	1	1	1	1	1	1	1	1
Geologist	4	4	4	4	4	4	4	4	4	2
Geology Technician	2	2	2	2	2	2	2	2	2	2
Open Pit Operations - Total	**189**	**275**	**300**	**313**	**285**	**171**	**146**	**151**	**140**	**108**

16.2 Underground Mine

16.2.1 Introduction

The geometry of the deposit gives the opportunity to select an underground cost-effective mining method, namely longitudinal long-hole and the transverse long-hole. The underground operations will generate 2.37 Mt of ore at an average diluted grade of 1.95 g/t Au. The underground mine will feed the processing plant at an average rate of 1,600 t/d over a period of five (5) years. The current underground mineral reserves extend to 400 m below surface. The main underground mine plan consists of seven (7) levels set at 25 m intervals.

The underground mine will start production at Year 4 of the open pit mining production. A large amount of waste rock can be re-handled and used for stope backfilling purposes. Therefore, the backfill method selected is cemented rock fill (CRF).

To access the deposit, a twin decline will be driven from a twin portal, located in the eastern wall of the Central Pit at elevation 435 m. From that location, the ramp will be driven toward the east of the deposit to reach the center of the deposit at elevation 400 m (300 Level). From that point, one (1) decline will then be driven to the lowest point of the mine, at elevation 300 m (400 level) connecting all lower levels of the underground mine. From the 300 Level, another ramp will be driven up towards the highest level of the mine at elevation 370 m (225 Level) connecting all higher levels of the underground mine.

The main level and infrastructure will be excavated at 300 Level. The commercial production of the deposit will begin one (1) year after the start of the ramp.

16.2.2 Underground Geotechnical Parameters

DRA prepared feasibility-level geomechanical recommendations and guidelines for the underground portion of the Project, which are summarized below. Details on this work can be consulted in the technical memo named Geomechanical Inputs for the FS-Level Underground Study (DRA, 2023).

The underground infrastructure and stopes are located in the granite unit, GRN (73%), felsic volcanics, FV (24%) and quartzite unit, QTZ (3%). The anticipated ground conditions for these units are good to very good rock mass quality (median Q' of 11 and 15 for FV and GRN units, respectively) that are strong to very strong (median uniaxial compressive strength, UCS, of 220 and 125 MPa for FV and GRN units, respectively). These units contain zones / structures of poorer rock mass quality near the mineralization and the F1 fault.

Empirical analyses (e.g., stability graph method) and 3D numerical modelling were performed for the underground portion of the Project to determine the stope sizing and dilution estimates. The average dip of the stopes is at approximately 70° with a stope true width between 3 m and 13 m (median 6.5 m). The results for the stope sizing and dilution estimates are summarized per stope height below.

Table 16.11 – Stope Sizing and Dilution Estimates per Stope Height

Parameter	Height = 15 m		Height = 20 m		Height = 25 m	
	Max. Length (m)	Max. Span (m)	Max. Length (m)	Max. Span (m)	Max. Length (m)	Max. Span (m)
Stope Sizing	25	9	20	10.5	15	11.5
Dilution Estimates	HW: 0.5 - 1.0 m, FW: 0.5 m, Back: 1.0 - 2.0 m, End Walls: 0.5 - 1.0 m.					

Other guidelines and recommendations were provided. These are listed as follow:

- Ground support guidelines for standard drift sizes and stopes;
- Stope inter-lode pillar dimensions;
- Crown pillar dimension and interaction with open pit: A minimum 60 m distance must be kept from the open pit. Stopes within 60 m of the open pit will require a detailed action plan and risk assessment; and
- Geomechanical recommendations for the mining sequence and development.

16.2.3 Hydrogeology Parameters

To date, there has been no investigation or study conducted on hydrogeology aspects of the underground mine.

16.2.4 Stope Design

Stopes were designed using the Mineable Stope Optimizer (MSO) module in Deswik (Deswik.SO) based on defined parameters (minimum and maximum stope dimensions, dilution, cut-off grade, etc.). The MSO parameters used for the longitudinal and the transverse long-hole stope are presented Table 16.12.

Table 16.12 – MSO Parameters

Description	Unit	Transverses	Longitudinal	Longitudinal Low Profile
Maximum Length (along the transverses)	m	15	20	20
Height	m	25	25	15
Stope Width	m	20	2.5 to 10	2.5 to 10
Minimum Mining Width (True Convention)	m	n/a	2.5	2.5
Minimum Pillar Thickness (True Convention)	m	5	5	5

Description	Unit	Transverses	Longitudinal	Longitudinal Low Profile
Minimum Wall Dip	°	60	60	60
Hanging Wall Dilution	m	0.5	0.5	0.5
Foot Wall Dilution	m	0.5	0.5	0.5
Au COG	g/t	0.80	0.80	0.82

Note:
n/a = Not applicable

A mining recovery of 90% was used on the diluted stopes regardless of the mining method.

Ore and waste drives were designed to account for the selected mining fleet, the geometry of the deposit and the mining method. The following table shows the dimensions of the mine development.

Table 16.13 - Tunnel Section

Description	Unit	Width	Height
Development – Decline	m	4.5	4.5
Development - Main Level	m	4.5	4.5
Development - Stope Access	m	4.5	4
Development - Ore Drive	m	4.5	4

16.2.5 Production Drilling and Blasting

All stopes will be drilled using a “in-the-hole” hammer (ITH) drill with a diameter of 76 mm (3 inches). An initial slot of 0.76 m (30 inches) in diameter (i.e., V30 method) will be made in each stope using appropriate boring equipment to account for rock swelling after blasting.

Bulk emulsion product, manufactured on site, will be used for the underground development and production blasting. Explosives will be manufactured at the same explosives plant used for the open pit operation and then transported to the underground mine in quantities required to sustain production and development.

16.2.6 Ore Handling

Ore mucking will be done using 14-tonne Load-Haul-Dump (LHD) machines. LHDs will be equipped with a remote-control system for mucking in the stopes. Broken ore will be brought to the level remuck on the truck turn around cut-out where loading of the haul trucks will occur. The 30-tonne underground mining trucks will haul ore material to the ramp portal through the ramp(s) and dump on a pad in the portal area. The ore will then be re-handled using the open pit ore handling fleet.

16.2.7 Backfilling

All underground stopes will be backfilled to maximize recovery of the deposit. CRF will be the main backfill material used followed by rockfill (RF). For transverse stopes, primary stopes will be backfilled using CRF and secondary stopes using RF. For longitudinal stopes, CRF backfill will be used except for the last stope in the sequence of a level will be backfilled with RF.

Most of the waste rock used for backfill will come from open pit mining activities. When available, waste rock will be transported from the waste development rounds directly to stopes to be filled. Any waste rock surplus will be hauled to surface until it can be hauled back underground later in the LOM, as active lateral development alone will not provide sufficient waste rock for backfill requirements.

A dry cement truck will transport cement to the underground cement mixing truck. The cement milk will be produced underground in the cement mixing truck parked in a drawpoint near the backfill activity. The cement milk will be poured directly into the LHD bucket filled with waste rock. The mixing of the waste rock with cement milk will be done naturally while transporting the CRF to the stope and while unloading the CRF in the stope.

CRF backfill will cure for 28 days following the end of the backfilling. It is expected that the cement content of the CRF will be 4%. The curing of the CRF backfill will allow the mining of the adjacent stope on the same level.

The CRF backfill production rate is set at 650 t/d considering backfill operations occur during both dayshift and nightshift.

16.2.8 Mine Development

A development schedule was prepared to ensure that stopes will be available on time to sustain a nominal ore concentrator feed of 1,600 t/d. Early in the LOM, the development plan consists of a twin decline (i.e., ramp) that will transition to multiple faces once the production level is reached.

The ramp will be driven from the surface to the 300 level using a single development crew. After reaching this level, the same crew will complete the main level and the infrastructure required to start production. The same crew will also develop the footwall drive and drawpoints for production. A raise crew will complete excavation of the main ventilation raise air intake and the second egress installation through the raise.

All lateral and ramp development has a single face productivity rate of 120 m/month. For multiple headings, the rate is 250 m/month. These are typical rates used in similar underground operations.

Table 16.14 details the development schedule for pre-production and production years. A total of 14 km of equivalent lateral development and 0.2 km of vertical development will be required, as sustaining capital expenses, to access and develop different stopes on time. Completion of the escape way raises and the main ventilation raises are required before starting stope production, as required to comply with legal requirements for two means of egress and ventilation.

The development and production plan will be used to define the operating and capital requirements. The underground development schedule is presented in Table 16.14, with an indication of whether the expenditure per item is considered as CAPEX or OPEX.

Table 16.14 – Underground Development Metres by Year

Description	Unit	Total	Year 4	Year 5	Year 6	Year 7
CAPEX Main Ramp	m	1,717	1,568		149	
CAPEX Main Access	m	2,990	1,019	718	842	411
CAPEX Infrastructure	m	698	427	85	139	46
CAPEX Lateral Metres	*m*	*5,423*	*3,032*	*803*	*1,130*	*457*
CAPEX Vertical Metres	m	233	79	77	51	26
Subtotal CAPEX Metres	*m*	***5,657***	***3,111***	***881***	***1,181***	***483***
OPEX Waste Metres	m	4,142	669	1,535	1,401	536
OPEX Marginal Metres	m	1,677	88	722	512	355
OPEX Ore Metres	m	2,562		1,122	1,011	430
Total Development Metres	***m***	***14,037***	***3,868***	***4,260***	***4,105***	***1,802***

16.2.9 Portal

The underground mine portals will be located near the bottom of the Central Pit in the eastern wall. Ground support specific to this kind of infrastructure will be installed accordingly to support walls of pit and brow between the tunnel and the upper catch bench of the pit. A short section of corrugated steel structure will be erected at the drift entrance to eliminate any potential personnel exposure to rocks falling from the vertical rock face.

16.2.10 Mine Ventilation

16.2.10.1 Introduction

To complete the mine ventilation design to a feasibility level, the VentsimTM simulation software was used to determine the various fan and pressure requirements.

All costs included in the report are in US$.

16.2.10.2 Design Criteria and Assumptions

The design criteria and main assumptions for the mine ventilation design are as follows:

- Air velocity in ramp will not exceed 12 m/s.
- All horizontal development will be 4.5 m x 4.5 m arched.

- All ventilation raises will be 3.0 m x 3.0 m square developed with drop raise method equipped with ladderways for egress.
- No ventilation raises will be developed to surface; the ventilation system will use the twin ramp as intake and exhaust.
- Due to the relatively shallow mine depth (170 m), no refrigeration plant or heat study will be considered.
- Ventilation requirements:
  - Brazilian regulations require three (3) different methods to determine airflow requirements, with the highest value of the three then selected. The engine power method was selected as it was determined to be the highest, and the explosives or production rate methods were therefore discarded.
  - Brazilian regulations have an engine certification program (Proconve) where a certified engine will require less airflow, however none of the diesel engines selected were found to have the certification. The airflow requirement is therefore 3.5 m^3/min/ HP of vehicle engine. (Brazil, 2023)
  - Ventilation requirements for the project were determined based on the equipment list provided by Cerrado Gold. To determine total airflow requirement for LOM, the utilization rate was multiplied by the airflow requirement of each equipment. An industry standard was applied to make sure the worst-case scenario is met (assumed to be as follows):
    - All LHDs and trucks were set to 100%.
    - Production drills and Jumbos were set to 20% as they mainly operate on electric.
    - Other service equipment was set to 50%.
    - Leakage factor of 20% was applied.
  - Based on these assumptions, for LOM, a total airflow requirement of **218 m^3/s** was established, as per Table 16.15.
  - The total airflow requirement for the development and pre-production years (Year 1 & 2) was estimated at 138 m^3/s as per Table 16.16.
  - Exposure limits of contaminants are as follows (as per **Invalid source specified.**):
    - CO TWA 39 ppm.
    - NO_2 TWA 4 ppm.
    - Nitric Oxide 20 ppm.
    - No limits were found for Diesel Particulate Matter (DPM) exposure, elemental or total carbon.
    - Based on experience and assuming that new vehicles will be purchased for the operation, these exposure limits will not be a limiting factor for the ventilation rates and therefore solely the Brazilian airflow requirement of 3.5 m^3/min/ HP will apply.

Table 16.15 – Airflow Requirements

Description	Company	Model	Unit	Power (kW)	Utilization rate	Total Demand (m^3/s)
Jumbo Drill 2 Boom	Epiroc	Boomer S2/282	1	90	20%	1
ITH Drill	Epiroc	Simba M4C	2	115	20%	4
LHD 8 yd^3	Epiroc	ST14	4	250	100%	78
Scissor Lift	MacLean	SL2	3	69	50%	8
Mine Truck 30t	CAT	AD30	2	299	100%	47
Mixer	Getman	Transmixer	2	69	50%	5
Mobile Anfo Loader	Getman	Charger	1	69	20%	1
Subtotal			**12**			
Secondary Equipment or Similar Model			**Unit**	**Power** (kW)	**Utilization rate**	**Total Demand** (m^3/s)
Grader	CAT	CAT 140	1	136	50%	5
Forklift	CAT	CAT IT28	1	116	50%	5
Boom Truck	Maclean	Maclean BT2	1	69	50%	3
Fuel Lube Truck	Maclean	FL3	1	96	50%	4
Scissor Lift	Maclean	SL2	1	69	50%	3
Personal Carrier	Toyota	Landcruiser	5	95	50%	19
Subtotal			**25**			**182**
Leakage factor (20%)						**36**
Total						**218**

Table 16.16 – Pre-Production / Development Airflow Requirements

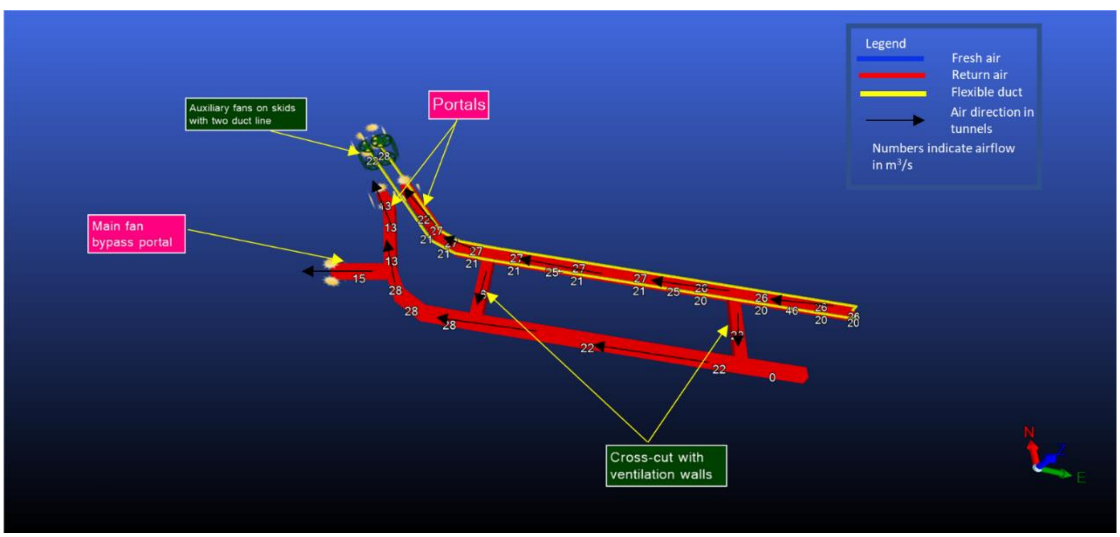
Description	Company	Model	Unit	Power (kW)	Utilization rate	Total Demand (m^3/s)
Jumbo Drill 2 boom	Epiroc	Boomer S2/282	2	90	20%	3
ITH Drill	Epiroc	Simba M4C	0	115	20%	0
LHD 8 yd^3	Epiroc	ST14	2	250	100%	39
Scissor Lift	MacLean	SL2	1	69	50%	3
Mine Truck 30t	CAT	AD30	2	299	100%	47
Mixer	Getman	Transmixer	1	69	50%	3
Mobile Anfo Loader	Getman	Charger	1	69	20%	1
Subtotal			**7**			

Description	Company	Model	Unit	Power (kW)	Utilization rate	Total Demand (m³/s)
Secondary Equipment or Similar Model			**Unit**	**Power** (kW)	**Utilization rate**	**Total Demand** (m³/s)
Grader	CAT	CAT 140	1	136	50%	5
Forklift	CAT	CAT IT28	1	116	50%	5
Boom Truck	Maclean	Maclean BT2	1	69	50%	3
Fuel Lube Truck	Maclean	FL3	1	96	50%	4
Scissor Lift	Maclean	SL2	0	69	50%	0
Personal Carrier	Toyota	Landcruiser	1	95	50%	4
Subtotal			**14**			**115**
Leakage factor (20%)						**23**
Total						**138**

16.2.10.3 VENTILATION LAYOUT RAMP DEVELOPMENT/PRE-PRODUCTION

For the initial ramp development, two (2) fans with individual duct lines will be installed on surface on a skid as shown in Figure 16.12. The two ducts line are required to provide sufficient air for both the truck and the LHD.

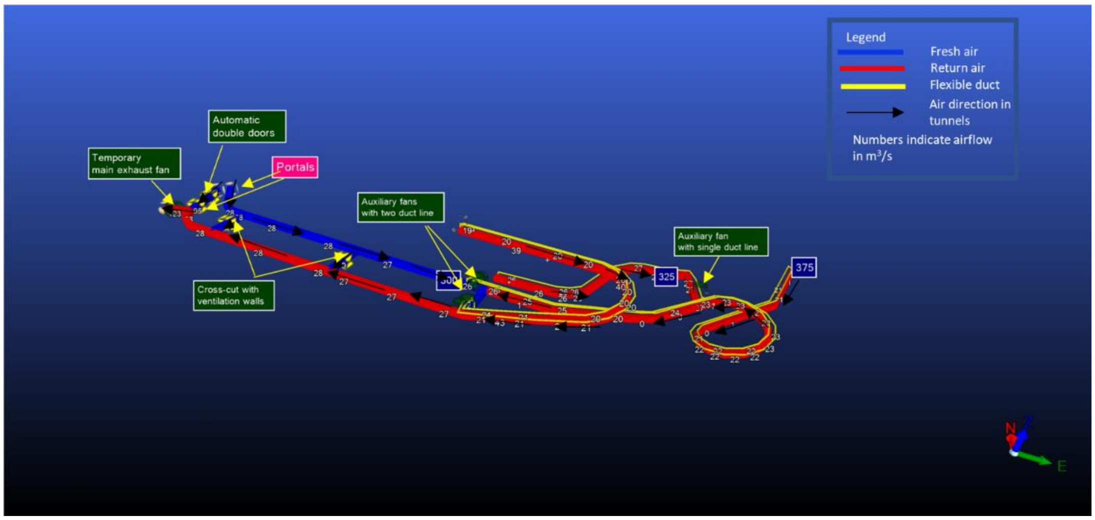
Figure 16.12 – Ventilation Layout Initial Ramp Development



Source: DRA 2023

Once the third crosscut to connect the twin ramp is developed, with the objective of delaying CAPEX of the larger main fan, a smaller temporary main fan will be installed, at the same location where the permanent main fan will later be installed. This will create a ventilation circuit with the third crosscut of the twin ramp as shown in Figure 16.13. Two (2) duct lines will then push air to the development faces to provide sufficient air for one (1) truck and one (1) LHD. To develop secondary headings along the main ramp, an additional single line duct with auxiliary fan can be used. Excavations for these intersections will be larger to accommodate the two (2) ducts and fan.

Figure 16.13 – Ventilation Layout Ramp Development / Pre-Production



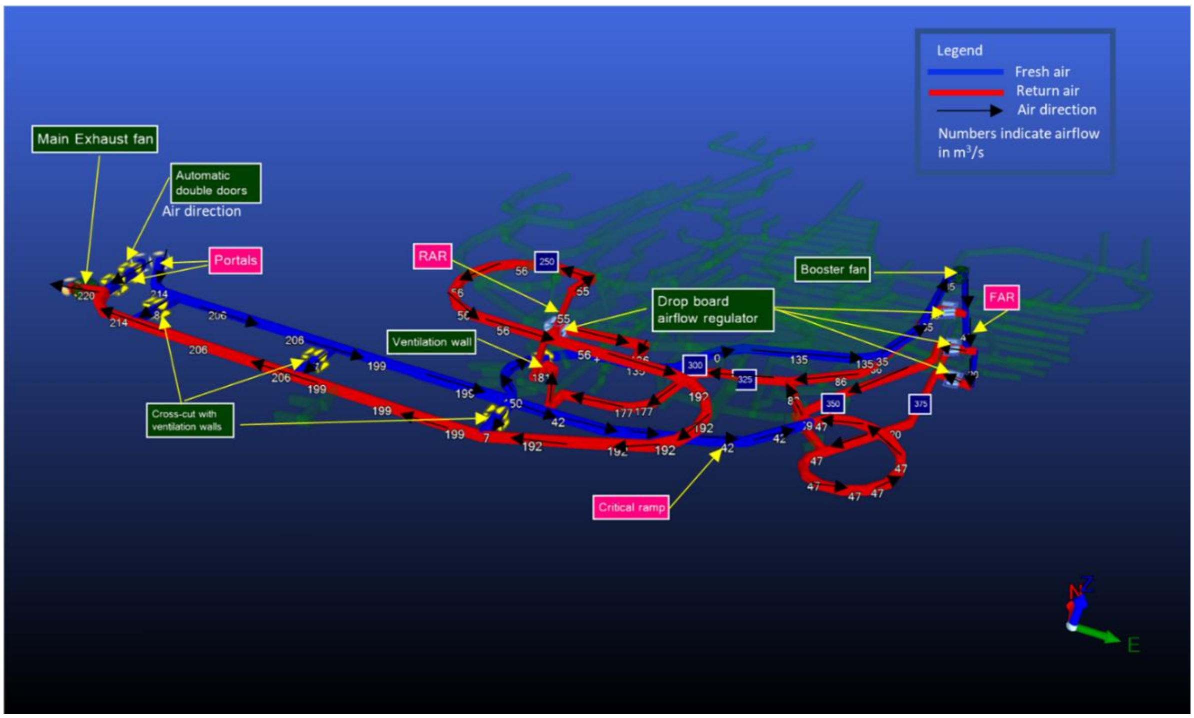
Source: DRA 2023

16.2.10.4 *Ventilation Layout LOM*

The main ventilation layout for the LOM is shown in Figure 16.14Figure 16.14. The twin ramp is used as intake and exhaust. A main exhaust fan is installed to bypass the most Eastern ramp near the portal. To pressurize the mine, a double automatic door is installed in the portal. These doors will open and close automatically as vehicles go through. Since these doors are critical for ventilation, it must be carefully sealed to minimize leakage. Crosscuts within the twin ramps must also be adequately sealed with ventilation walls to minimize leakage and maximize fresh air to the working zones. A system of fresh air raises (FARs) is used to carry air to the North end of the mine from 300 level down to 375 level. For these raises, the temporary main fan will be moved on top of 300 level as a booster fan pushing air down to the lower levels. At the level access with the FAR on 325, 350 and 375 levels, drop board airflow regulators will be installed to distribute fresh air between the different levels. Once the air leaves the FAR, it is then carried up the ramp back to 325 level towards the South to a Return air Raise (RAR) system from 325 level up to 250 level. Air is then carried to the exhaust ramp to be discharged to atmosphere at the portal. In order to create the ventilation circuit. Access between the RAR and 325 and 250 levels will remain fully opened while access of the RAR to 300 level will be fully closed with double doors for personnel passage to access the egress route. 275 level access with the RAR will also be equipped with a drop board airflow regulator and double doors for personnel access. The ramp connection between 300 and 275 levels is critical and will require close monitoring as it may result in low airflows if the balance between the booster and main fans is not adequately managed. A minimum of 23 m³/s is needed in that section of the ramp for the truck, and it will be important to install an airflow monitor at that location.

The ramps from the portal to 300 level will experience high air velocities (up to 11 m/s). 300 level may also experience high air velocities (up to 7 m/s). For these airways, standard procedures to limit pedestrian access should be put in place to avoid safety hazards related to exposure to high air velocities. A sprinkler system should also be installed to suppress dust entrainment in the airways. For reference, 11 m/s is equivalent to 40 km/h winds. As all ventilation raises are equipped with ladderways for egress, measures will be put in place so that workers will not have to climb ladders in high air velocities. The RAR has velocities up to 17 m/s which is a safety hazard. In the event that underground workers need to access the area, the main fan speed should be reduced.

Figure 16.14 – Ventilation Layout LOM



Source: DRA 2023

16.2.10.5 AUXILIARY VENTILATION FOR PRODUCTION

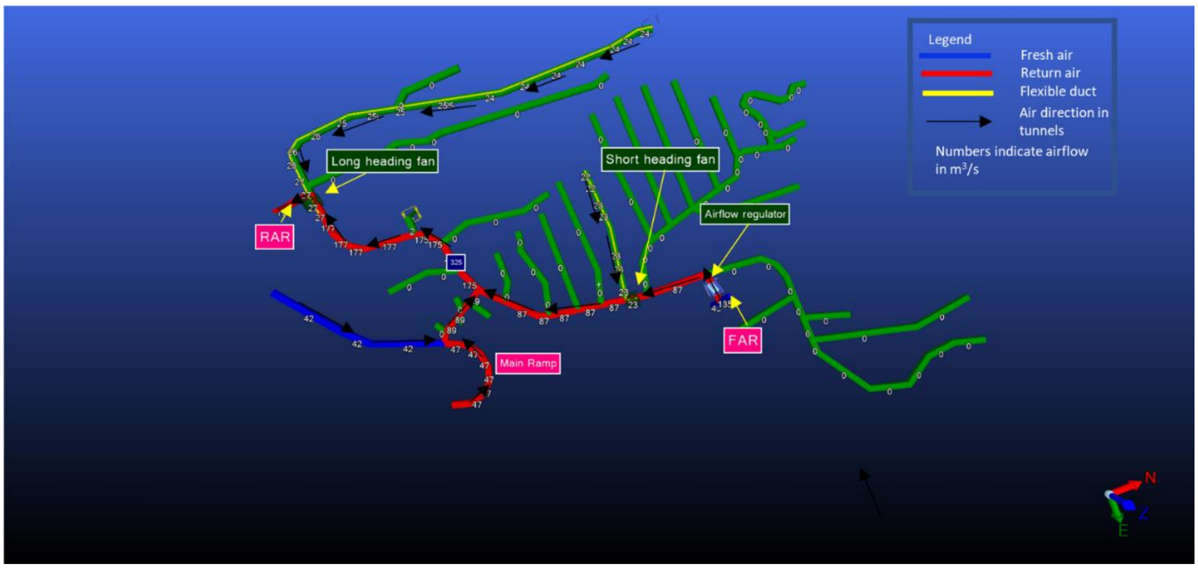
The auxiliary ventilation for production has two different types of fans, one for short headings (up to 100 m long) and another for longer headings (between 100 to 500 m) as shown in Figure 16.15. Air is taken from the main fresh air route on the various levels and sent to the working faces with a single line ventilation duct, however 400 and 225 levels will be ventilated with auxiliary ventilation from the ramp since no raise reaches those levels.

It is also possible to use return air from a long heading and ventilate a secondary heading with a small heading fan, as shown in Figure 16.16.

One of the main challenges with ventilating headings for long hole mining is to eliminate stope leakages across levels. Stope leakage can lead to lack of air in some headings as the air provided by the auxiliary fan will escape by the stope instead of returning back to the stope access. It is very important that a ventilation curtain is installed immediately after a production blast.

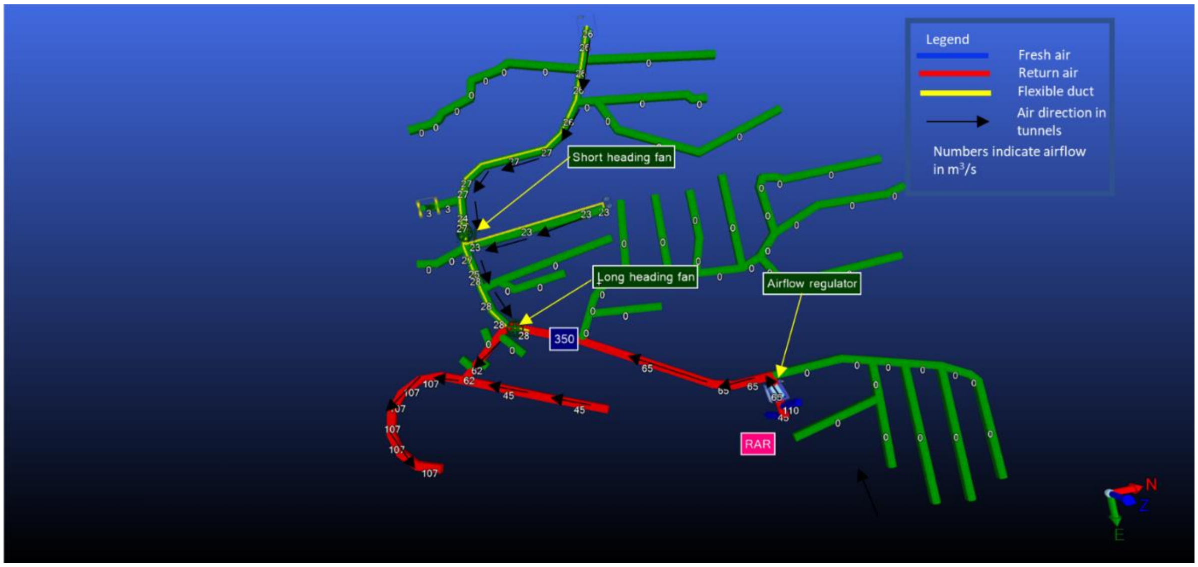
For the auxiliary ventilation, all ducts have been assumed at 1.2 m diameter. As shown in Figure 16.17, where trucks are operating, there is tight clearance with the duct line. Careful attention will have to be put in the duct installation especially where two duct lines will be installed when developing the ramp. It is suggested to install each duct line on both side of the walls and keep other services in the middle. A large amount of spare ducts has been considered taking into account the high risk of damage.

Figure 16.15 – Auxiliary Ventilation Production Level



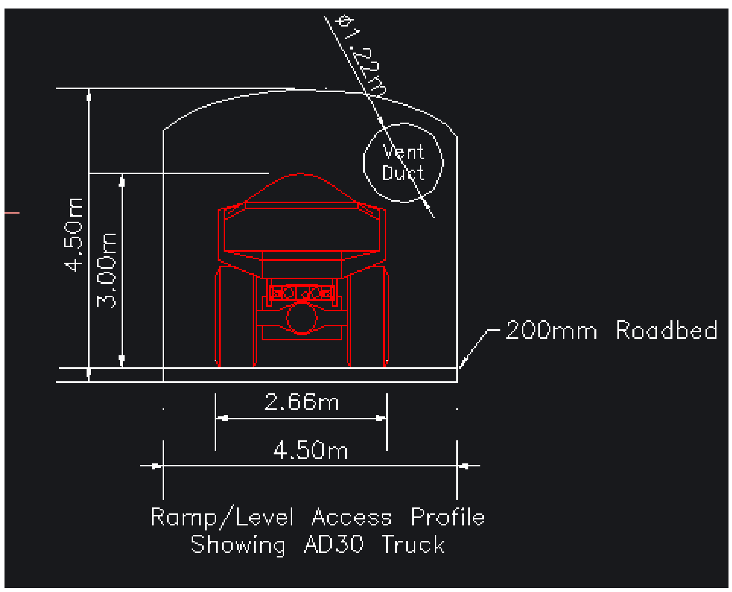
Source: DRA 2023

Figure 16.16 – Auxiliary Ventilation with Secondary Heading



Source: DRA 2023

Figure 16.17 – Duct Clearance with AD30



Source: DRA 2023

16.2.10.6 *Fan Selection*

Fan selection has been performed using the Ventsim™ software and the assumptions below:

- For the main fan, to determine the required pressure, the worst case has been simulated, which is when the totality of airflow is carried to the RAR from 325 up to 250 level. The airflow requirement for the main fan is of 218 m³/s. It is a single fan in a horizontal arrangement in a bulkhead in the portal bypass. This will simplify installation, minimize the required excavation and risk of stall with parallel arrangement. Spare parts will be considered to mitigate the risks in case of failure that would result in complete shutdown of the mine.

- The temporary main fan was sized sufficiently to push air across the third crosscut of the twin ramp. The airflow requirement for the fan is of 138 m³/s. The fan was also selected so that it can be re-used for the FAR booster on 300 level. It must be installed in a manner that allows it to continue operating while installing the permanent main fan, and to minimize downtime during the switchover to the permanent system. As with the main fan, the temporary fan and booster will be installed in a single fan horizontal arrangement in a bulkhead.
- For auxiliary ventilation, two different types of fans were selected as follows:
  - Small production fans for headings up to 100 m using a 1.2 m diameter duct and an airflow requirement of 23 m³/s (20 m³/s to provide sufficient air for the LHD and 20% for leakage).
  - Development heading fans use two ducts of 1.2 m diameter each delivering 25 m³/s for a total of 50 m³/s. The airflow requirement is for one truck (23 m³/s) and one LHD (75% of 20 m³/s = 15 m³/s) assuming 30% leakage (11 m³/s). As per regulations (Brazil, 2023), only 75% of the second vehicle (LHD) airflow requirement is included in the demand calculation. The maximum length required for development is 560 m.
  - For the long production headings (between 100 m and 500 m), the fans will be the same as those used for development but with a single 1.2 m diameter duct line instead of two to supply 25 m³/s (20 m³/s with a 30% leakage factor) for the LHD. It is assumed that the truck will not enter the heading.

Four (4) different fans were selected for this project as shown in Table 16.17.

Table 16.17 – Fan List

Type	Airflow (m³/s)	Total Pressure (Pa)	Motor Power (HP)	Vendor	Model
Main Fan	220	2,265	750	Howden	AFN SO 51 1200 2440
Temporary Main Fan / Booster Fan	138	377	300	Howden	10150-AMF-5000
Development / Long Heading Production Fan	25	3000	150	Howden	4800-VAX-2700 half bladed
Short Heading Production Fan	23	845	40	Howden	4500-VAX-1800 half bladed

16.2.10.7 VENTILATION CONTROLS

A modern ventilation control system will be implemented. Both the 150 HP development / long heading production fans and main fan will use a VFD controlled from surface. To detect leakage through stopes or any deficiencies in the ventilation system, airflow and CO monitors will be located in ramps and main levels. The main fan speeds will operate based on shift change and activities underground to optimize energy usage. 150 HP auxiliary fans will also adjust speed based on daily planned activities. For example, if drilling is occurring, ventilation can be adjusted at a lower rate.

16.2.11 Typical Mine Layout

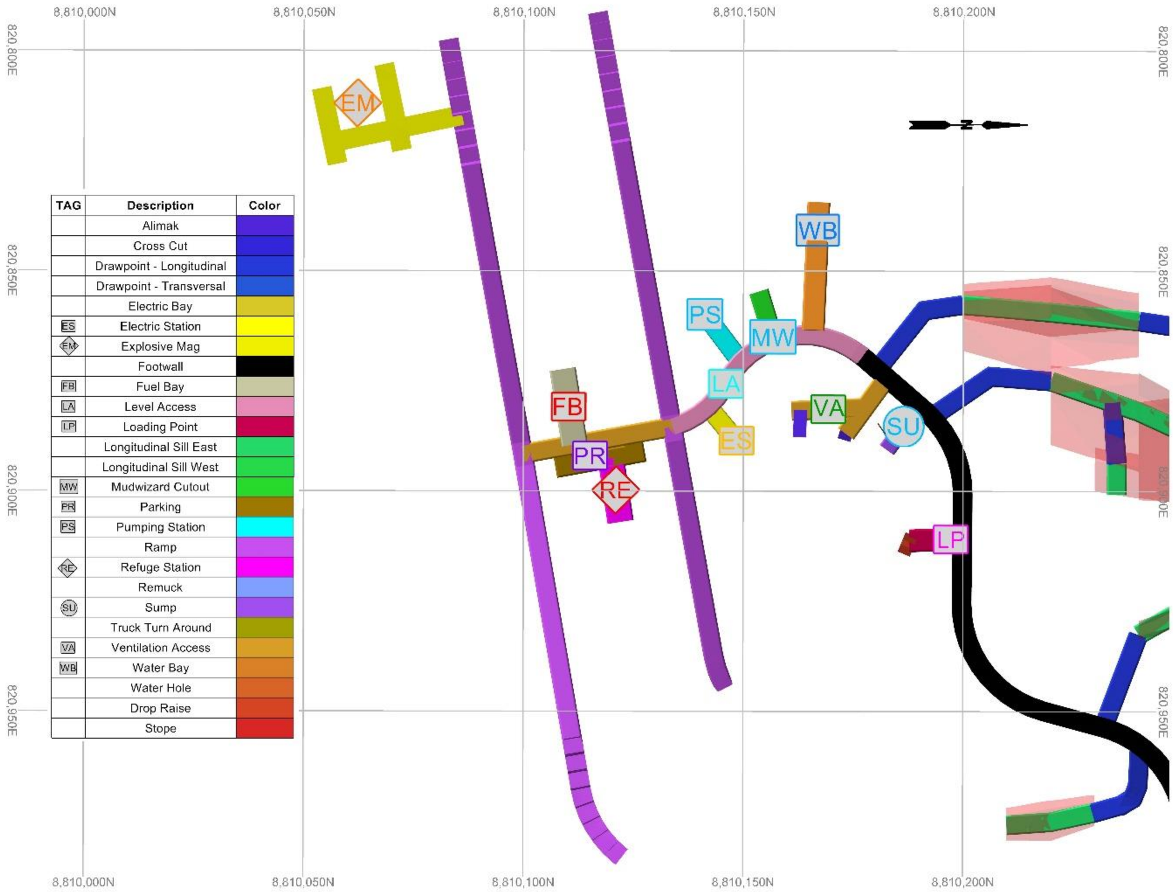
Access is provided by a twin decline, located West of the underground deposit. The twin decline starts on the eastern wall of the Central Pit at 275 level. Levels are spaced at 25 m with level access located near the centre of the economic lodes. The stopes are mainly mined using transverse and longitudinal long-hole mining.

As shown in Figure 16.19 and Figure 16.20, the levels will all contain sets of standard infrastructure required for operation. Each level is connected to the main ventilation intake raise, and an electrical bay or substation is installed to provide power. A sump is also located at the level access to control water inflows and avoid sending process water into the production ramp.

Excavations are provided to allow for efficient loading of production equipment. A remuck is provided to allow for mucking operations between trucks and for banking of material once the stopes require remote mucking. A truck turn-around is also excavated to maintain production activities on the level and keep the ramp free from stationary equipment. These excavations will be re-purposed during the backfill step to store waste rock and park the cement mixing truck.

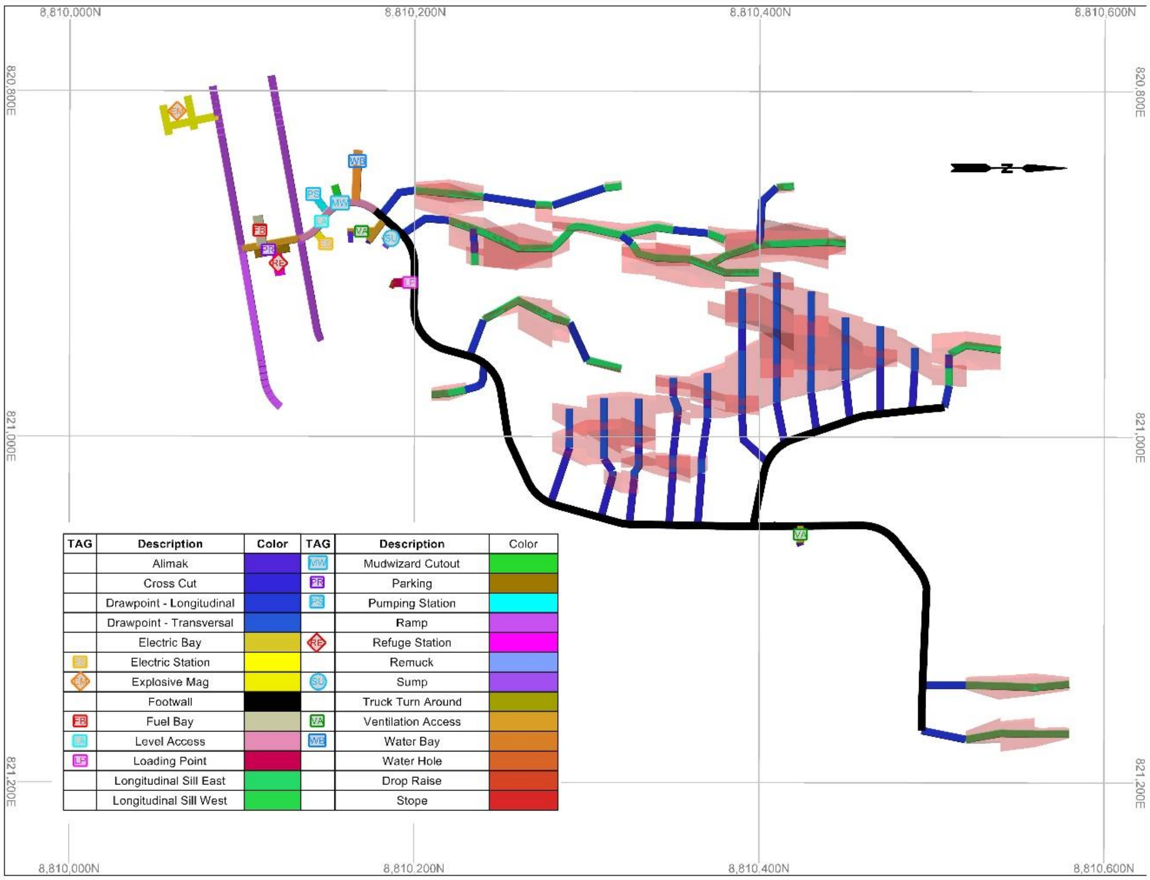
The main level will contain additional infrastructure, as required. For example, refuges will be excavated at strategic locations in the mine at 300 level and 375 level, and secondary egress accesses will be connected to the main level below 300 level. Between levels, raises will be excavated to create an exhaust circuit all the way to the 300 level where one of the declines will exhaust to surface.

Figure 16.18 – Main Level (300L) Infrastructure - Plan View



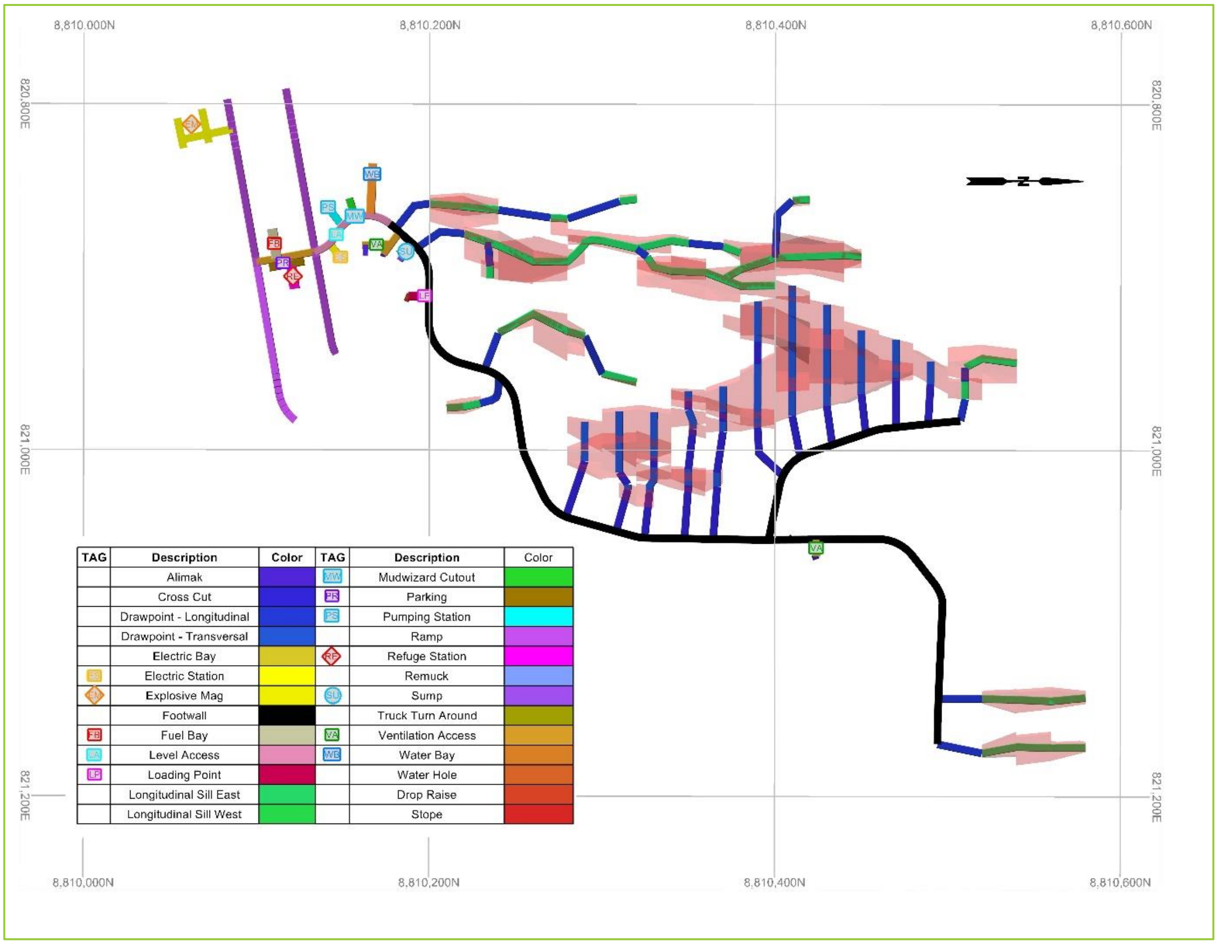
Source: DRA 2023

Figure 16.19 – Layout Plan View (300L)



Source: DRA, 2023

Figure 16.20 – Layout Plan View (325L)



Source: DRA, 2023

16.2.12 Production Schedule

A production schedule was generated from the Mineral Reserves presented in Section 15. The schedule targets an average ore throughput of 1,600 t/d (development and stope combined). Commercial production starts at Year 5 (Y5) to sustain the concentrator feed at full capacity.

Development and production milestones are listed below:

- First production stope will be mined in first month of Y5 (one year after start of the twin decline);
- Commercial production (60% of 1,600 t/d of ore) will be reached in the third quarter of Y5 (18 months after start of the twin ramp); and
- Full production (100% of 1,600 t/d of ore) will be reached in the third quarter of Y5 (18 months after the start of the twin ramp).

Table 16.18 presents the underground production schedule.

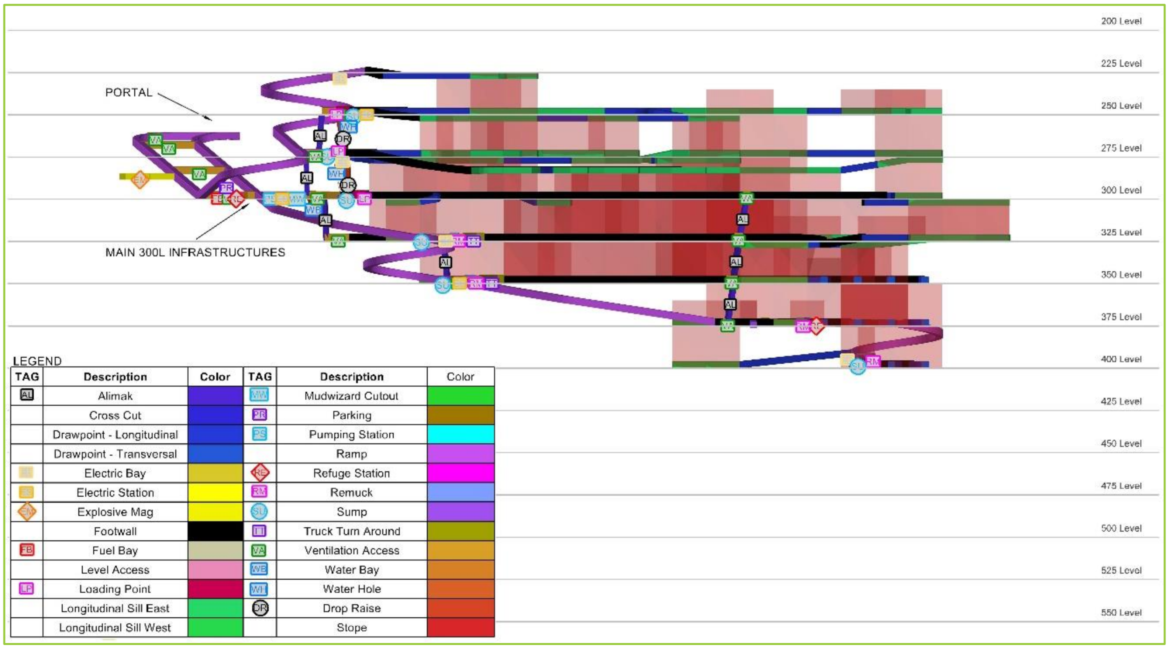
Table 16.18 – Underground Production Schedule

Description	Unit	Total	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Total Underground Mine	**t**	**2,964,589**	**210,061**	**429,431**	**597,255**	**621,492**	**579,370**	**526,980**
Ore	t	2,367,779		273,380	438,835	549,303	579,280	526,980
Marginal Ore	t	83,932	4,442	37,541	24,645	17,304		
Waste	t	512,878	205,619	118,510	133,775	54,884	90	
CAPEX Main Ramp	m	1,717	1,568		149			
CAPEX Main Access	m	2,990	1,019	718	842	411		
CAPEX Infrastructure	m	697	427	85	139	46		
CAPEX Lateral Metres	m	5,423	3,032	803	1,130	457		
CAPEX Vertical Metres	m	233	79	77	51	26		
Subtotal CAPEX Metres	*m*	*5,657*	*3,111*	*881*	*1,181*	*483*		
OPEX Waste Metres	m	4,142	669	1,535	1,401	534	2	
OPEX Marginal Metres	m	1,677	88	722	512	355		
OPEX Ore Metres	m	2,562		1,122	1,011	430		
Subtotal OPEX Metres	*m*	*8,381*	*757*	*3,379*	*2,924*	*1,319*	*2*	
Total Development Metres	**m**	**14,037**	**3,868**	**4,260**	**4,105**	**1,802**	**2**	
Stope Longitudinal Ore	t	1,079,023		124,853	270,246	178,582	171,658	333,684
Stope Transverses Ore	t	1,165,179		94,071	120,643	349,546	407,621	193,296
Stope Ore	t	2,244,202		218,924	390,889	528,128	579,280	526,980
Stope Au Grade	g/t	1.92		1.94	1.81	1.75	1.71	2.39
Stope Au Ounces	oz	138,425.9		13,648	22,742	29,738	31,830	40,468
Development Ore	t	123,577.3		54,456	47,946	21,175		
Development Au Grade	g/t	2.54		2.83	2.40	2.12		
Development Au Ounces	oz	10,097.1		4,949	3,702	1,446		
Sub Total Ore	t	2,367,779		273,380	438,835	549,303	579,280	526,980
Average Ore Au Grade	g/t	2.0		2.12	1.87	1.77	1.71	2.39
Sub Total Ore Au Ounces	oz	148,523		18,597	26,443	31,184	31,830	40,468
Marginal Ore	t	83,932	4,442	37,541	24,645	17,304		
Marginal Au Grade	g/t	0.52	0.49	0.53	0.50	0.54		
Ounces from Marginal	oz	1,405	70	635	400	300		
Total Ore & Marginal	**t**	**2,451,711**	**4,442**	**310,920**	**463,480**	**566,607**	**579,280**	**526,980**
Total Ore & Marginal Au Grade	**g/t**	**1.90**	**0.49**	**1.92**	**1.80**	**1.73**	**1.71**	**2.39**
from Marginal & Ore	**oz**	**149,928**	**70**	**19,233**	**26,843**	**31,484**	**31,830**	**40,468**

16.3 Underground Infrastructure

Figure 16.21 illustrates the various general underground infrastructure locations.

Figure 16.21 – Underground Infrastructure Locations

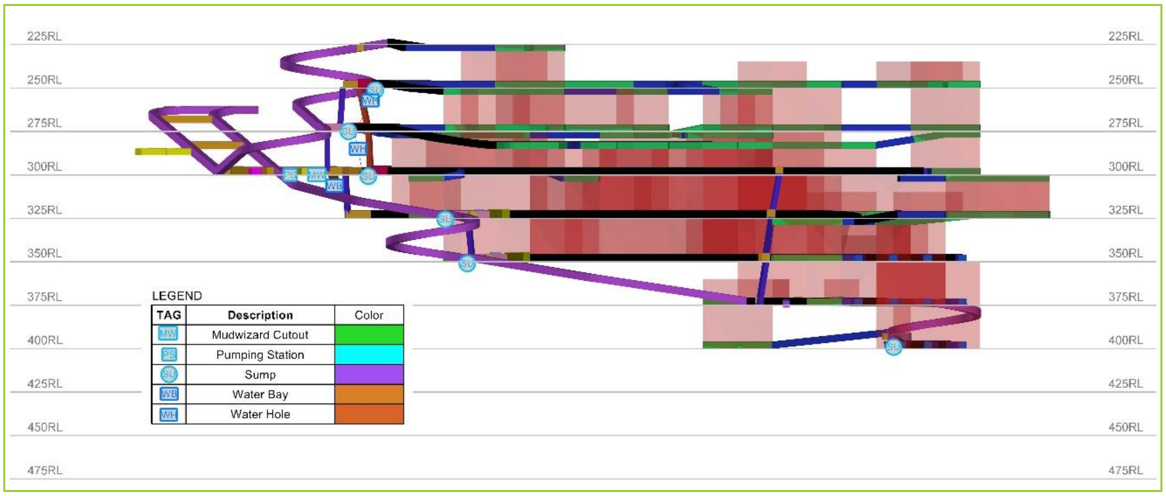


Source: DRA, 2023

16.3.1 Water - Mine Drainage and Water Pumping Arrangement

The process water system will consist of managing dirty water to direct it to a central area, thus centralizing the mud extraction process prior to returning clean water to water stopes prior to reinsertion in the process. Meanwhile, mud will be disposed of either in mined out stopes, or in trucks of ore, should it reveal economic values generated by production hole cuttings in the mud. Figure 16.22 depicts a typical mine drainage and water pumping arrangement.

Figure 16.22 – Underground Water / Pumping Network Infrastructure Locations



Source: DRA, 2022

16.3.1.1 *DEWATERING STRATEGY & PUMPING SYSTEM*

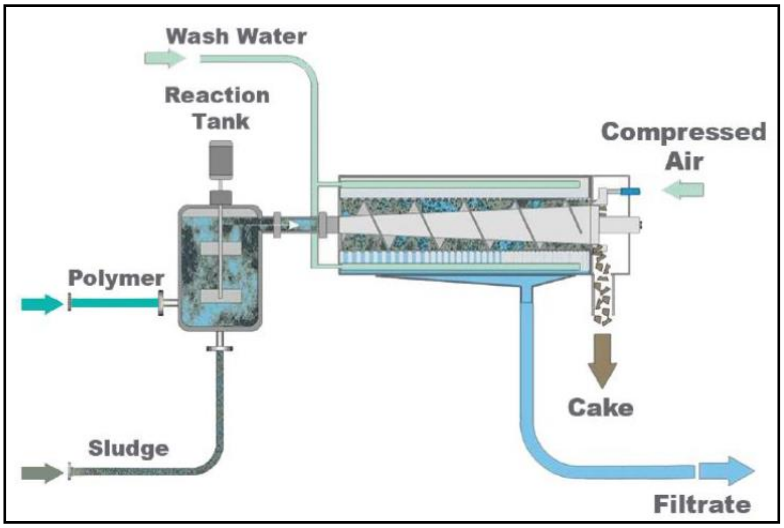
All upper levels will have drain holes to direct dirty water to lower levels. Sumps will consist of two rounds deep enough to store dirty water and to drill a drain hole out of the main circulation way which will allow water to cascade down from sump to sump until it reaches a pumping station or a mud extractor. There is also a strategy to pump in cascade from level to level until it reaches a temporary pumping station / mud extractor location during the development phase. For these duties, a series of 5 HP submersible pumps were selected. Also located near the mud extractor on 300 level, a water bay / stope will be excavated to store and supply water for drilling and other mining operations. The mud extractor will be located in its own excavation as with the pumping station.

Same strategy will also apply from 400 to 300 levels. Dirty water will get directed to lower levels through drill holes from sump to sump. During development, water will get pumped from the lower level in cascade to 300 level, where a pumping station / mud extractor are established. A cavity pump with a capacity of pumping 50 m³/h for a minimum head pressure of 200 m will be used to pump from the lowest level, as the mine progresses, up to 300 level.

16.3.1.2 *MUD EXTRACTOR SYSTEM*

Installation of a screw press is recommended to extract mud from dirty water. A cake of 60% to 70% solid produced by the screw press will be much easier to handle with scoops and trucks than a 30% slurry if using other methods. Figure 16.23 is a typical schematic representation of the screw press system.

Figure 16.23 – Screw Press Schematic - Typical



Source: Hydrotech, 2022

16.3.1.3 CLEAR WATER INSTALLATION

For the early development phase of the mine, clean water supply will come from the surface. During progression of the mine development, a water stope / bay will be excavated at 090 level. The pumping and mud extraction system described previously will supply that reservoir with the required water to support all drilling operations of the mine. Clean water will be distributed to the mine operation through a 2-inch pipe installed in the ramps and the level access of the mine.

16.3.2 AIR

Air compressors will be located on surface. A compressor room 6.6 m x 5.6 m (or 37 m^2) will enclose two air compressors of 1,000 cfm each. Compressed air will be distributed using a 6-inch steel pipe which is extended into the mine as development progresses.

16.3.3 FUEL, OIL, AND GREASE

It is assumed that all underground equipment, with the exception of Landcruisers and UG haul trucks; boom truck, will be filling up fuel reservoirs underground from the fuel truck unless they must go to surface for other specific reasons. Scooptrams may eventually become an exception as their travelling speed is reasonable and their fuel consumption is important. They may also be required to refill directly from the fuel truck when it comes to refill the SatStat®, to avoid emptying the fueling station too fast. The fuel station is established at 300 level.

16.3.4 ELECTRICAL DISTRIBUTION

Power will be distributed to the various consumers from each electric substation using a 600 V cable installed as the development progresses. Each substation will connect through service holes to an electric bay one level above and below. This allows a reduction of distance covered and minimizes the number of substations required. Junction boxes will be installed in the electric bay on each level without a substation.

16.3.5 Communication System

Communications and controls hardware will be distributed — and the network expanded — as development progresses. Leaky feeder and Wi-Fi access points will be distributed through the mine over time. Fixed radios in mobile equipment and handheld radios for personnel will be completed by strategically located base stations distributed in key locations (refuges, shop, offices, etc.).

16.3.6 Lunchroom / Mine Refuge

Refuges have been planned to meet legal requirements in terms of distance between each refuge. A 1 km distance is respected between an active workplace and the refuge in the underground mine. Refuges are also typically used as lunchrooms and are designed as such. With the current mine configuration, two (2) separate refuges will be required at 300 and 375 levels.

16.3.7 Material Storage

No specific excavation is planned for the purpose of material storage. It is assumed that these will be built on an as-needed basis in remucks or other temporary excavations that are repurposed over time as development and as activities progress.

16.3.8 Maintenance Bay

There will be no underground maintenance shop. A small tire changing bay is planned for the purpose of changing flat tires and completing minor repairs. It is assumed that these will be built on an as-needed basis in remucks or other temporary excavations that are repurposed over time as development and as activities progress. Any full-scale maintenance work will be performed in the surface maintenance shop.

16.3.9 Cap Magazine

Magazine dimensions are 5 m wide x 12 m long. All components (front wall, paint, door, shelves, etc.) conform with local regulations for occupational health and safety in mines.

The Cap Magazine is located on 275 level.

16.3.10 Explosives Magazine

The magazine can hold up to 24 emulsion bins or pallets of explosives for a total capacity of 30,000 kg. All components (front wall, paint, door, shelves, lighting, and heating units, etc.) will conform with local regulations for occupational health and safety in mines.

The Cap Magazine is located on 275 level.

16.3.11 Cement Distribution Station

After being transferred on the surface storage area from tote bags to a small silo, dry cement will be transferred by a screw conveyor to an underground dry cement delivery truck. The truck will then travel underground to deliver cement to the area where it will be mixed with water in an underground cement mixing truck. Once mixed, the cement milk will then be poured directly in the LHD bucket and then dumped in the stope.

16.3.12 Mobile Equipment

Table 16.19 summarizes the underground mine equipment fleet that will be required during the peak period considering the development and production plan established. This fleet is selected in consideration of the quantities of material to be mined and moved, and the geometry of the orebody. The mine will be operated by a Contractor who will supply the equipment fleet.

Table 16.19 – Underground Equipment Fleet

Equipment	Capacity	Quantity Required
Main Equipment		
Truck	30 t	2
Development / Production Scoop	14 t	4
Production Drill with V30 Attachment	76 to 762 mm	1
Production Drill ITH	76 mm	2
Hydraulic 2 Booms Jumbo	4 m round	1
Scissor Lift		4
Auxiliary Equipment		
Boom Truck		1
Grader		1
Boom Truck		1
Lube Truck		1
Production Loading		1
Landcruiser		6
Dry Cement Transport Truck		1
Mixing Truck		1
Small Loader		**1**

In addition to the underground fleet, a small surface fleet will be required to support the operation as presented in Table 16.20.

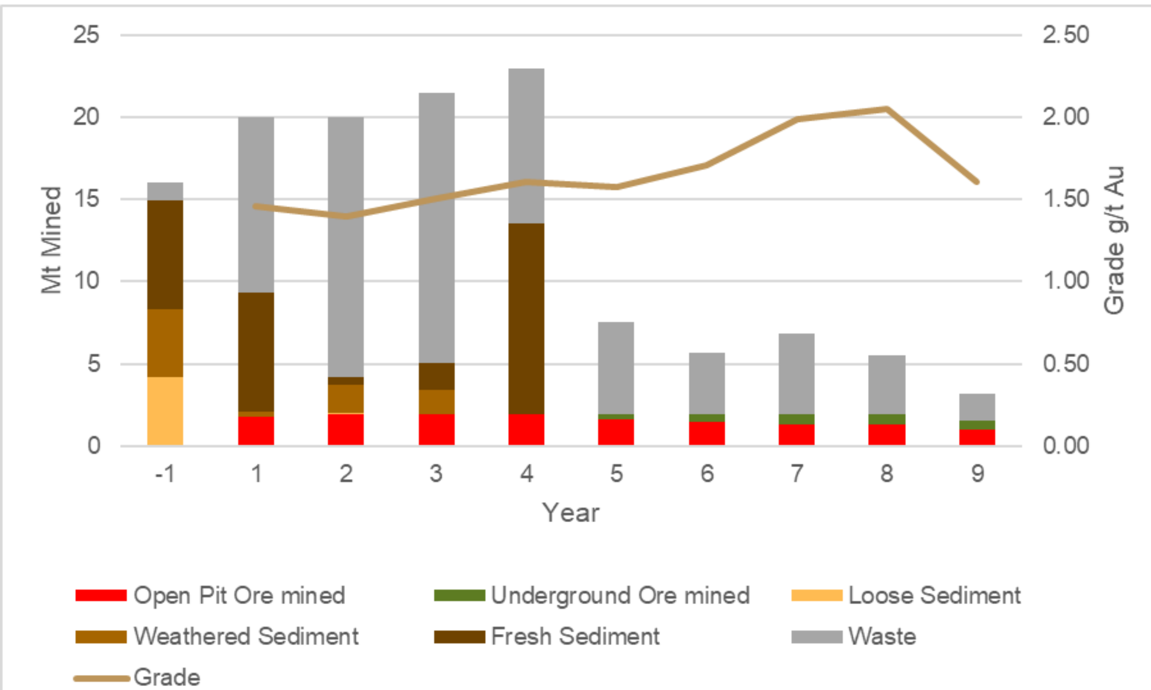
Table 16.20 – Surface Support Equipment Fleet

Equipment	Capacity	Quantity Required
Water Truck	Mined Operations	1
Pickup	**Mined Operations**	**2**

16.4 Combined Mine Production Schedule

The results of the combined open pit and underground mining schedule are summarized in Figure 16.24 and Table 16.21.

Figure 16.24 – Combined Mine Production Schedule (Open Pit and Underground)



Source: DRA, 2023

Table 16.21 – Combined Mine Production Schedule (Open Pit and Underground)

Description	Unit	Total LOM	Year								
			1	2	3	4	5	6	7	8	9
Open Pit Production Plan											
Ore Tonnes	kt	**14,344**	1,792	1,920	1,920	1,915	1,609	1,456	1,353	1,341	1,038
Ore Grade	g/t Au	**1.62**	1.46	1.40	1.51	1.61	1.51	1.68	2.10	2.20	1.20
Underground Production Plan											
Ore Tonnes	kt	**2,452**	-	-	-	4	311	464	567	579	527
Ore Grade	g/t Au	**1.90**	-	-	-	0.49	1.92	1.80	1.73	1.71	2.39
Total Mill Feed *											
Ore Tonnes	kt	**16,796**	1,792	1,920	1,920	1,920	1,920	1,920	1,920	1,920	1,565
Ore Grade	g/t Au	**1.66**	1.46	1.40	1.51	1.61	1.58	1.71	1.99	2.05	1.61

* totals may not sum due to rounding

17 RECOVERY METHODS

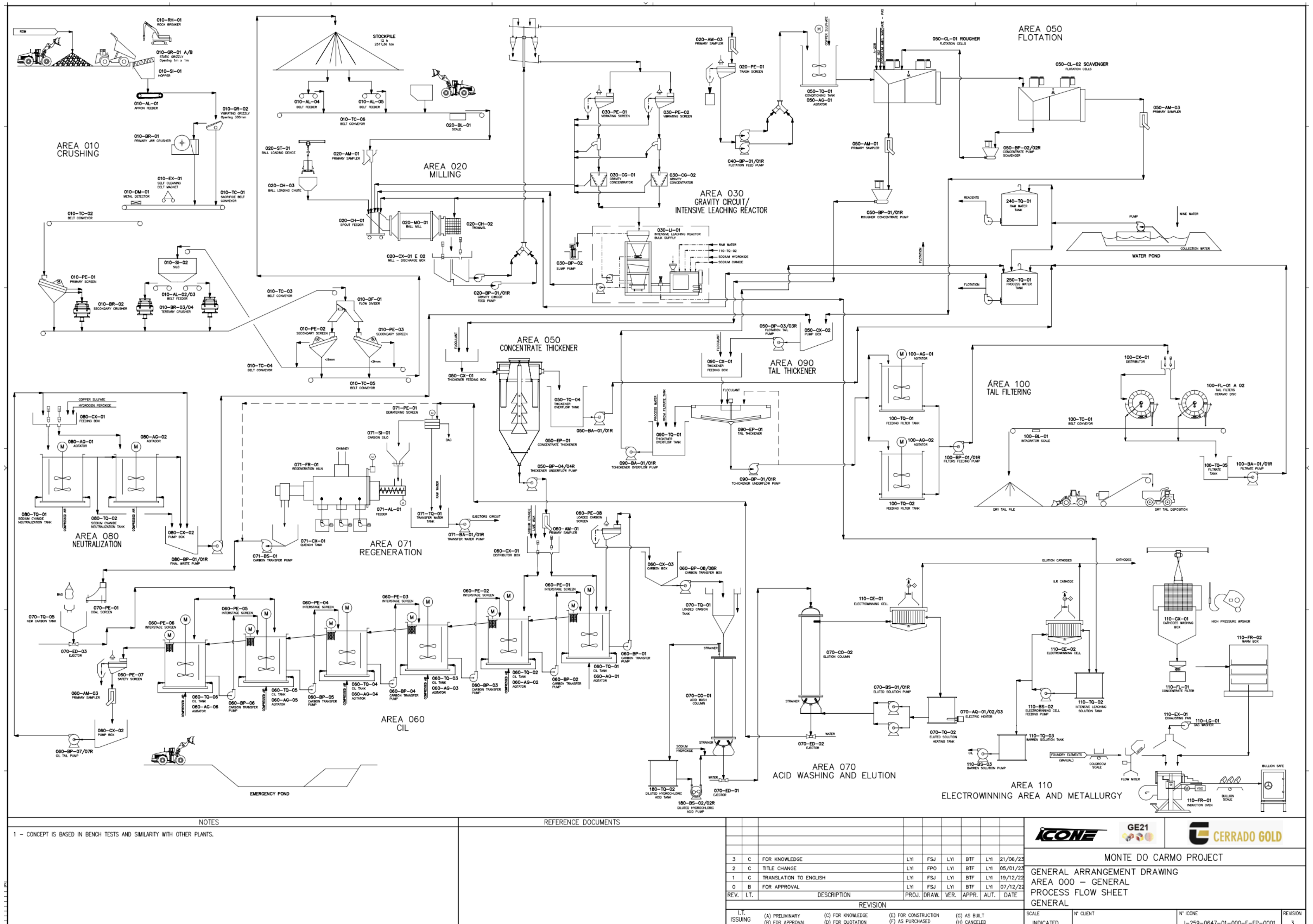
The process route was defined considering the results of the process development tests described in the Section 13 of this Report.

The engineering design provided process design, process flow diagrams (PFDs), mass and water balances, equipment lists, general arrangement drawings (GAs), preliminary piping and instrumentation diagrams (P&IDs) and single line electrical drawings. The unit operations used to achieve plant throughput and metallurgical performance are well proven in the gold and silver processing industry. The flowsheet incorporates the following major process operations:

- Three-stage crushing and primary crushing stockpile.
- One stage ball mill grinding and classification.
- Gravity concentration and intensive leaching.
- Flotation of tailings from gravity concentration.
- Carbon-in-leach (CIL) of the flotation concentrate.
- Desorption, regeneration and gold room.
- Cyanide detoxification, tailings thickening, filtration and disposal.
- Fresh and reclaim water supply.
- Reagents preparation and distribution.

The overall process plant flowsheet is shown in Figure 17.1.

Figure 17.1 – Process Plant Flowsheet



Source: GE21, 2023

17.1 Process Design Criteria

The Monte do Carmo Gold Project will be implemented in the state of Tocantins, Brazil, and will be designed for processing 1,920,000 t of ore per year or 5,260.3 t/d.

The process design criteria summary is provided in Table 17.1.

Table 17.1 – Process Design Criteria Summary and Production Forecast

Description	Unit	Value
Ore Characteristics		
Gold grade (average)	g/t	1.62
Ore SG	t/m³	2.6
3/8" crushed ore bulk density	t/m³	1.6
3/8" crushed material angle of repose	degrees	36
General Plant Data		
Tonnes processed	Mtpa	1.92
Gold recovery (average over life of mine)	%	95.7
Crushing		
Run of Mine (ROM) - maximum size	mm	800
Crushing circuit product size (P_{80})	mm	9
Stockpile capacity (live)	H	12
Grinding		
Bond ball mill Work Index	kWh/t	17.5
Grinding product size (P_{80})	µm	106
Gravity concentration and intensive leaching		
Gravity concentration	Type	2 x KC-QS30
Intensive leach reactor	Type	1 x CS 2000
Flotation		
Rougher flotation design residence time	Min	10
Scavenger flotation design residence time	Min	10
Design flotation mass pull	%	10
Pre-leach thickening		
Thickener underflow density	% w/w	40
Thickener ultra-high-rate	ø (m)	3

Description	Unit	Value
CIL		
Residence time	h	24
CIL tanks	-	6
CIL Slurry Density	% w/w	40 - 50
Detoxification		
Detoxification Type		Peroxide
Number of stages		2
Tailings Handling		
Tailings Thickener Underflow Density	% w/w	50 to 55
Tailings Filter Product Moisture	% w/w	22
Deposition Method	-	Truck

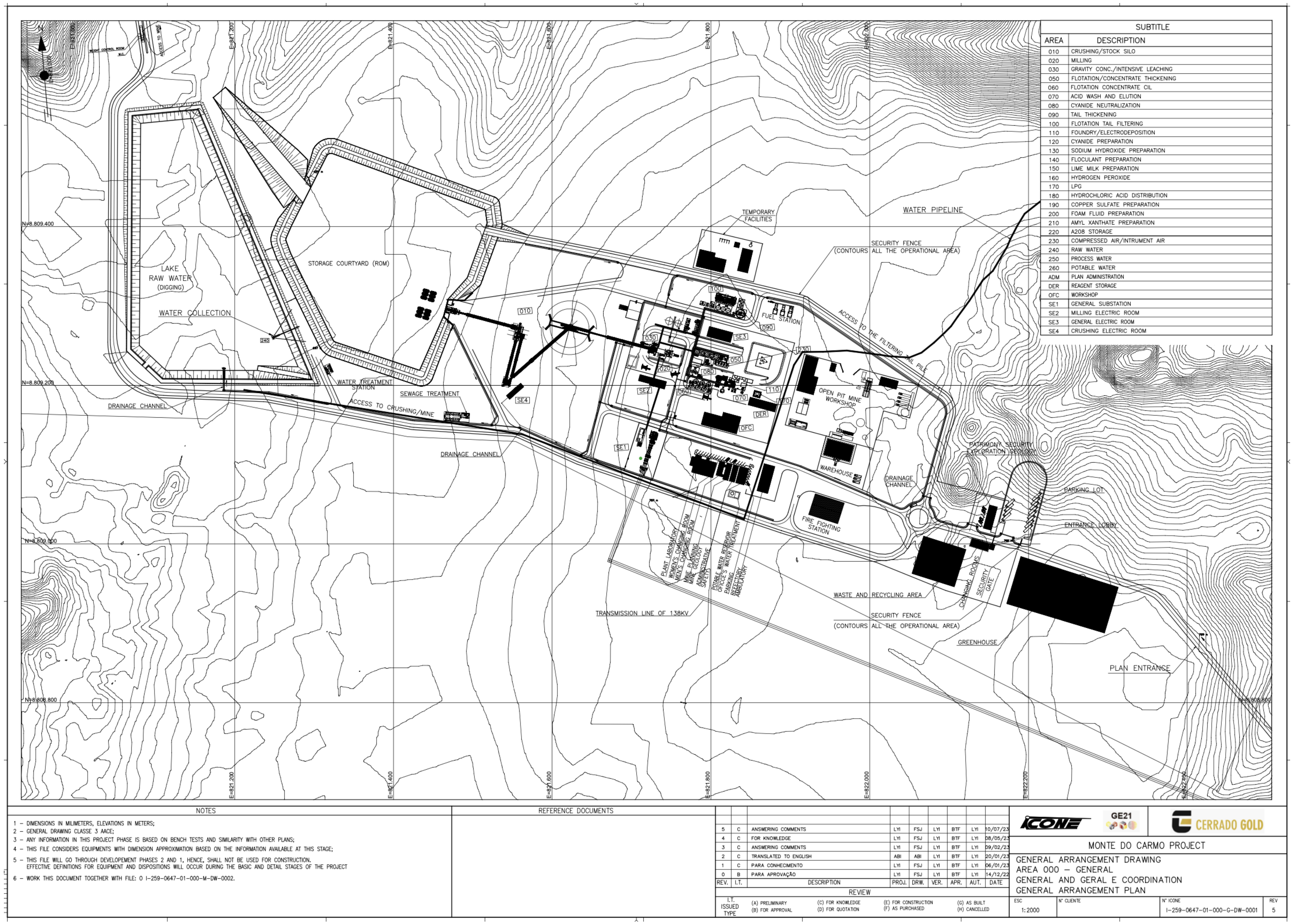
17.2 Process Plant Description

The process plant comprises ore receiving, crushing, ball milling, gravity recovery, flotation, CIL, elution/carbon regeneration, cyanide detoxification, tailings thickening, tailings filtration, reagent make-up and supply, services and utilities.

The electrowinning and refining area are located in a building separate from the main process plant and close to the helicopter landing pad.

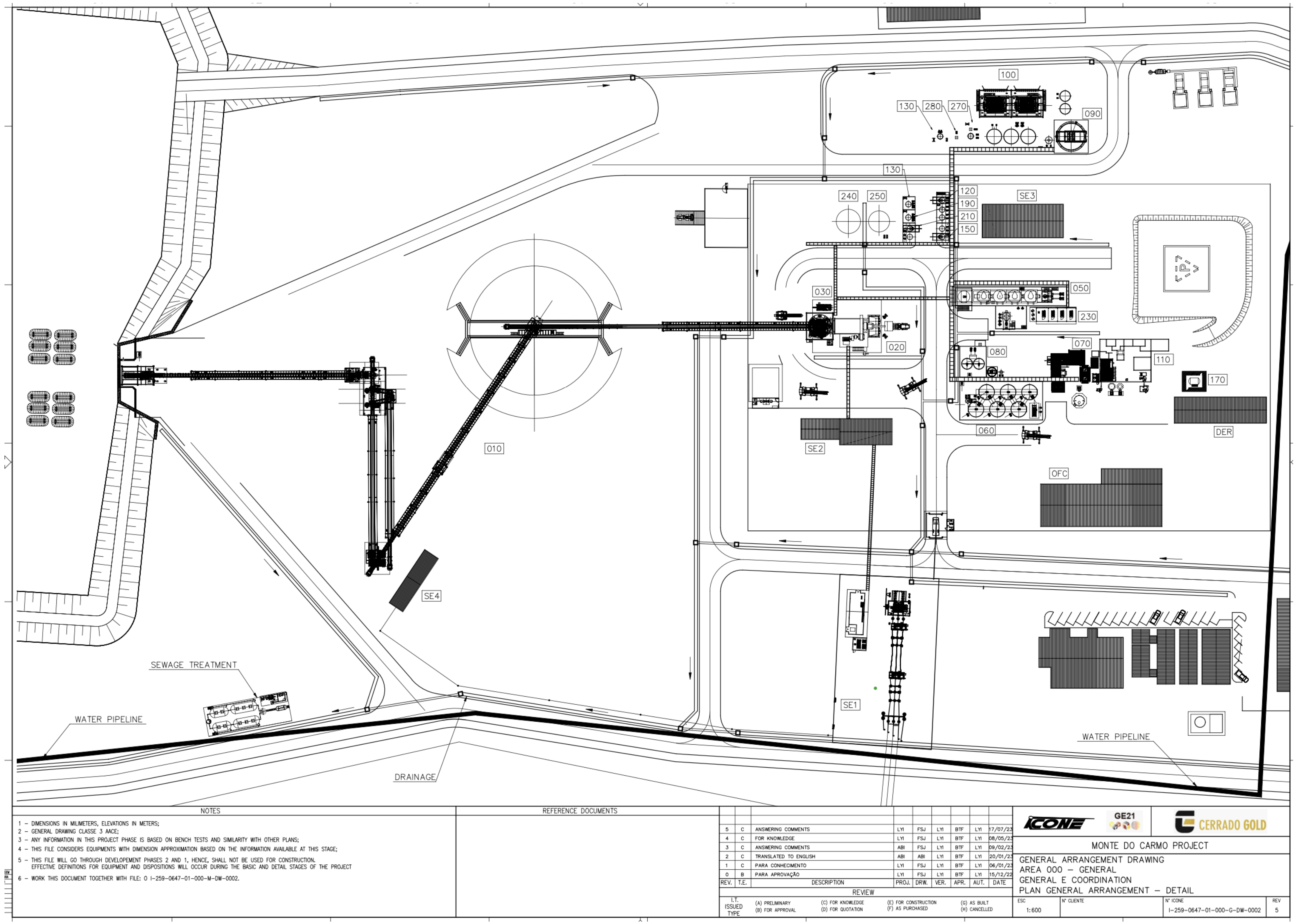
The thickened tailings are pumped to a filter plant, located next to the main plant, to be filtered and transferred by dump trucks to Waste Pile 1, which contains co-deposited filtered tailings and mine waste rock. Figures 17.2 and 17.3 shows the general arrangement in plan view.

Figure 17.2 – Process Plant General Arrangement



Source: GE21, 2023

Figure 17.3 – Process Plant Arrangement



Source: GE21, 2023

17.2.1 PRIMARY CRUSHING, STOCKPILE AND SECONDARY/TERTIARY CRUSHING

The primary crushing plant functions on a continuous basis across two shifts, amounting to a total of 24 hours per day, for 365 working days a year. Ore transport to the plant occurs either via trucks or loaders, depositing ore into a hopper (designated as 010-SI-01) equipped with a static grid. This grid has an aperture allowing for a maximum Run of Mine (ROM) dimension of 800 mm with feed rate regulated by an apron feeder (010-AL-01). Fines extraction is carried out in the vibrating grizzly at 010-GR-02, followed by the ore's introduction into the jaw crusher (010-BR-01).

Subsequently, the material traverses a sacrificial belt conveyor (010-TC-01) before unloading onto conveyor 010-TC-02. The purpose of sacrificial belt conveyor 010-TC-01 is to safeguard the primary conveyor against belt tearing. Conveyor 010-TC-02 directs the feed to the primary screen (010-PE-01), where particles above 35 mm proceed to the secondary crusher (010-BR-02). Both the oversize and the secondary crusher discharge are conveyed to belt conveyor 010-TC-03.

This conveyor discharges into a splitter, dividing the flow to two secondary screens, namely 010-PE-02 and 010-PE-03. Particles above 9 mm are directed to conveyor 010-TC-04, while the undersize material is routed to belt conveyor 010-TC-05. Conveyor 010-TC-04 discharges into a feed bin equipped with belt feeders 010-AL-02/03, supplying tertiary crushers 010-BR-03 and 010-BR-04. The tertiary crushers discharge onto conveyor 010-TC-03, completing the circulating load.

Conveyor 010-TC-05 transports material to a stockpile in the milling area, with a live capacity of approximately 12 hours. The extraction of material from the stockpile is facilitated by feeders 010-AL-04 and 010-AL-05, directing the ore to belt conveyor 010-TC-06. This conveyor is equipped with a weightometer (020-BL-01) and a two-stage sampler, conveying ore to the ball mill 020-MO-01.

17.2.2 GRINDING AND CLASSIFICATION, GRAVITY CONCENTRATION AND INTENSIVE LEACHING

The ball mill (020-MO-01) receives various streams through a spout feeder (020-CH-01), namely: inlet dilution water, fresh ore, underflow from the classification circuit, gravity circuit and intensive leaching pulp, along with grinding media. A circulating load of 250% is expected with target grind size of P_{80} of 106 µm.

The mill will discharge through a trommel into pump boxes (020-CX-01 and 02) and be pumped via pumps (020-BP-01/01R) to the hydrocyclone cluster (020-HC-01). The hydrocyclone overflow will pass through two samplers and a trash screen 020-PE-01. The screen underflow discharges onto vibrating screens (030-PE-01 to 02) with a 2 mm aperture size. The undersize of the screens will feed hydrocyclone cluster 020-HC-01, and the underflow of 020-HC-01 will feed gravity concentrators 030-CG-01/02. The oversize of the screens and the low-density fraction of the gravity concentrators proceed via gravity to the ball mill.

The concentrate (high-density fraction) from the gravity concentrators 030-CG-01/2 will be directed to intensive leaching unit 030-LI-01. The gravity concentrate will be batch processed in the intensive cyanidation unit in 24-hour intervals. The gravity concentrate will be leached to dissolve gold in a leach solution that includes sodium cyanide, caustic solution, and a leach accelerant. After the leach cycle is complete, the pregnant solution will be pumped to the electrowinning circuit while the intensive cyanidation unit residue will be pumped back into mill 020-MO-01.

The hydrocyclone overflow from 020-HC-01, after passing through trash screen 020-PE-01, will be fed to the flotation section using pump 040-BP-01/01R.

Control of the flotation mass pull and density control is paramount for the effective performance of the CIL (Carbon in Leach) process. Whilst direct feeding of flotation through the cyclone cluster overflow is anticipated, an ultra-high-rate thickener is included to ensure enhanced control and overall process extraction efficiencies.

17.2.3 Flotation

Ahead of flotation, the milled ore in slurry will be pumped into the conditioning tank. Sufficient residence time is provided for conditioning time for flotation chemicals including copper sulfate, amyl potassium xanthate, frother, and A-208. Lime will be added into the tank to adjust pH, if required.

In the conventional flotation circuit, the concentrate from the rougher cell is pumped to the cleaner stage for further upgrading, while the rougher tailings are directed to scavenger cells. The scavenger concentrate is recycled back to the rougher cell, and the scavenger tailings is transferred to the tailings thickener. Cleaner flotation concentrate will be pumped to the pre-leach thickener and cleaner flotation tailings will be pumped back to the rougher flotation feed box.

Bench tests test work has highlighted that the gold content and mass recoveries of both rougher and scavenger concentrates meet the conditions for direct integration into the CIL process. Subsequently, the flotation circuit will initially operate with only rougher and scavenger stages, whilst provision has been made for the cleaner circuit.

17.2.4 Carbon-in-Leach (CIL), Cyanide Detoxification, Acid Washing, Elution, Tailings Thickening and Tailings Filtration

Flotation concentrate will be pumped to a pre-leach feed thickener to increase slurry density for the downstream cyanidation process. The thickener overflow will report to a pre-leach thickener overflow tank which is then pumped to the process water tank.

The thickener underflow is pumped to the CIL circuit consisting of 6 tanks (060-TQ-01 to 06), equipped with agitators (060-AG-01 to 06) and interstage screens (060-PE-01 to 06) to retain the carbon in each tank for the necessary time.

Sodium cyanide solution is added in the first tank, and if necessary, lime to maintain the target slurry pH. Carbon (new, eluted, or regenerated) is added in the last tank of the sequence, while loaded carbon will leave the CIL circuit from the first and second CIL tanks.

The pulp with carbon will be pumped countercurrent between tanks through the indented rotor pumps (060-BP-02 to 06). All CIL tanks will have air injection circuits for pulp oxidation.

CIL tailings will pass over a safety screen 060-PE-07 and a vezin sampler before being pumped, using pumps 060-BP-07/07R, to neutralization.

The neutralization section consists of two (2) tanks 080-TQ-01/02 with agitators 080-AG-01/02 where hydrogen peroxide and copper sulfate will be added. The neutralized slurry is mixed with flotation tailings. All CIL and neutralization tanks will have air injection circuits for pulp oxidation.

All tailings are received in a transfer sump 050-CX-02 and pumped(050-BP-03/03R) to the tailings thickener 090-EP-01. The clarified (overflow) from the thickener gravitates to the process water tank.

Thickened tailings pumped to agitated surge tanks 100-TQ-01/02, before being pumped to the tailings filters 100-FL-01 to 02. A filter cake with a target solid content of 78% (w/w) will be produced. The tailings filter cake will be transported by truck to Waste Pile 1, which contains co-deposited filtered tailings and mine waste rock. The filtrate will flow into the process water tank.

The loaded carbon from the CIL circuit will be pumped and screened before being received in the rich carbon tank 070-TQ-01. For every 3 t of accumulated carbon, the acid wash column 070-CO-02 will be fed by gravity. Hydrochloric acid solution will be circulated, followed by neutralization with caustic soda and washing before transporting loaded carbon to the elution column.

The elution circuit will be atmospheric using the Zadra Process. The eluate solution containing NaOH and NaCN will be prepared in tank 070-TQ-02. The eluate will be pumped through the carbon in the column, then circulated in the electrowinning cell and returned to the eluate tank.

17.2.5 Carbon Regeneration and Gold Room

After being stripped of gold, the carbon to be regenerated, will pass through a rotating screen 071-PE-01 for dewatering before entering silo 071-SI-01 and regeneration kiln 071-FR-01. The regenerated carbon enters the quench tank 071-CX-01 from where it is pumped into new carbon tank 070-TQ-05. Regenerated carbon returns to tanks 060-TQ-06 or 05 in the CIL circuit.

The electrolysis and metallurgy area, located in the gold room will have two electrodeposition circuits. Tank 110-TQ-01 will receive the pregnant solution and circulate through electrolytic cell 110-CE-01 via pump 110-BS-01. The barren solution will be stored in tank 110-TQ-03, from where it will be pumped to the CIL circuit or to gravimetry. The intensive leaching solution feeds tank 110-TQ-02 from where through pump 110-BS-02 the solution circulates in cell 110-CE-02. The barren solution is also directed to tank 110-TQ-03.

The electrowinning cathodes will be manually transferred from the electrowinning cells to the cathode washing tank where a high-pressure washer will be used to dislodge gold sludge from the cathode surface. The sludge will be filtered by a filter press. The resulting filter cake will be dried in a drying oven and the resulting filtrate will be pumped back to the barren solution pump box within the refinery. The dried filter cake will then be transferred manually into the electric smelting furnace with flux materials where it will be batch smelted into gold doré bars and stored in a secure vault. Both electrowinning cells and the oven have an exhaust fan. Gases in the foundry will pass through gas washer 110-LG-01.

17.2.6 Fresh and Reclaim Water Supply

The process water circuit incorporates water recovered in various thickening and filtration processes. Water make-up will be achieved using mine water accumulated in ponds and recovered by pumps (Figure 17.4).

Raw water is delivered to the water tank using centrifugal pumps. It is also used as process water make-up, feeding the process water tank by gravity. Three (3) gland service water pumps (two duty, one standby) supply water from the raw water tank to the slurry pumps. Raw water will be used in the dust suppression system of plant crushing area.

Two (2) service water pumps (one duty, one standby) are installed to provide water to the service points within the plant.

The main process water source comes from the overflows of the two thickeners. Other sources are filtrate from the tailings filtration process and drainage from the tailings dry stack decant reservoir. Process water can also be supplied from the raw water tank (Figure 17.5). Three (3) (two (2) duty, one (1) standby) process water pumps supply process water to the various consumers throughout the plant site, with the main consumer being the grinding circuit. The process water tank is constructed from mild steel and has a live volume ensuring 120 minutes of residence time.

Potable water will be supplied to the process plant by treating filtered fresh water. A vendor-supplied water treatment plant will generate potable water. Physicochemical processes will be used to remove inorganic pollutants, heavy metals, oils and greases, colour, sediments, suspended solids, non-biodegradable organic materials and dissolved solids. Two (2) pumps (one (1) duty, one (1) standby) will supply potable water to the plant areas and to two (2) tanks which will provide water to various consumers.

17.2.7 Plant Consumption

17.2.7.1 Water

On average, approximately 70 m³/h of raw water is required for makeup water.

17.2.7.2 Energy

The expected installed power is 11,250 kW and the power demand is estimated between 8,400 kW and 9,200 kW over life of mine.

17.2.7.3 Consumables and Reagents - Preparation and Distribution

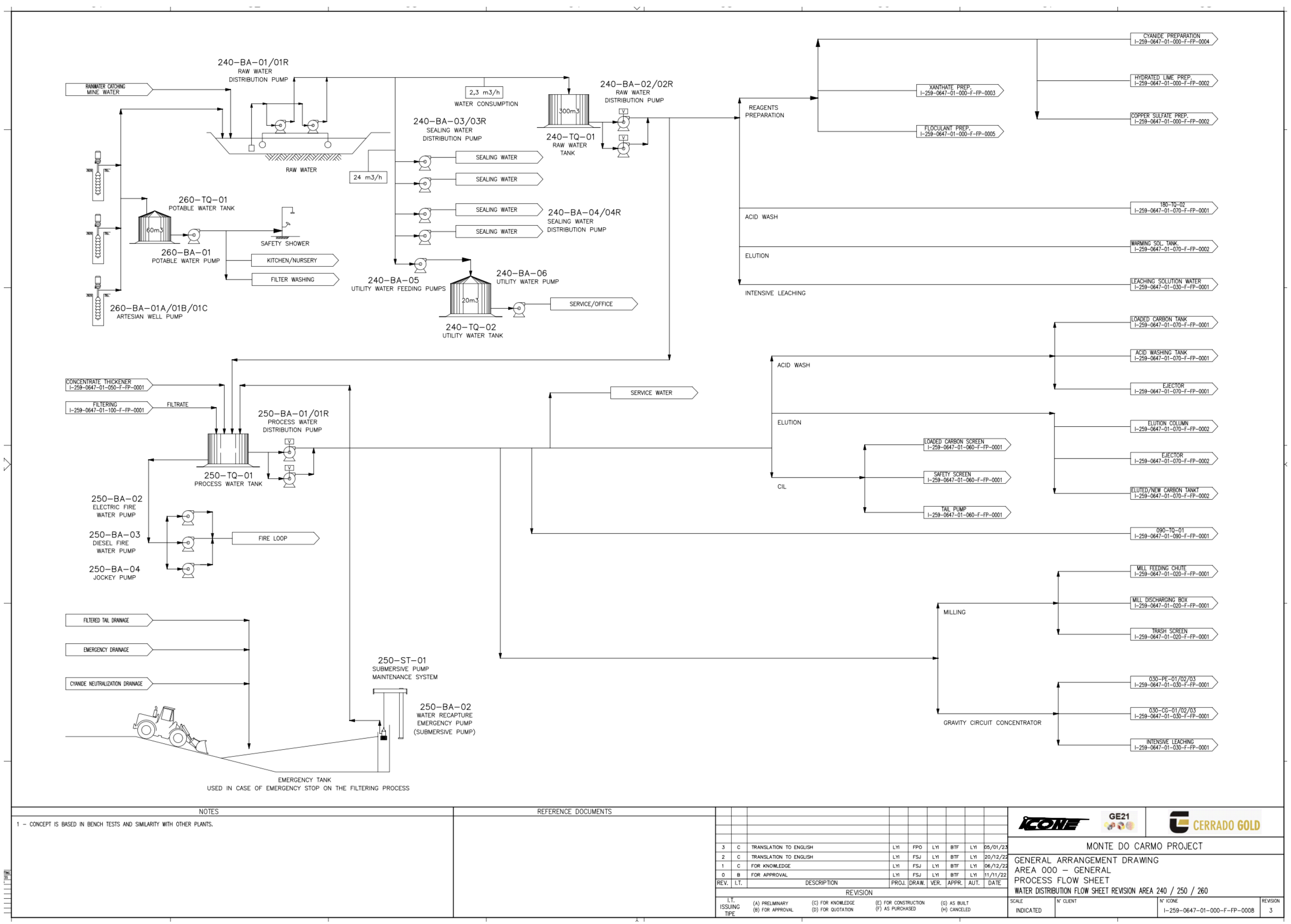
The consumption rate of the main consumables is summarized in Table 17.2.

Table 17.2 – Main Consumables

Consumables	Consumption	
Jaw crusher wear materials	7.4	sets/a
Cone crusher wear materials	13.5	sets/a
Ball mill liners	0.46	sets/a
Steel balls - ball mill media (1.5" diameter)	0.80	kg/t ROM
Coating of centrifugal concentrators	1	sets/a
Fabrics and filter plates (press) or vacuum filter sectors	1	sets/a

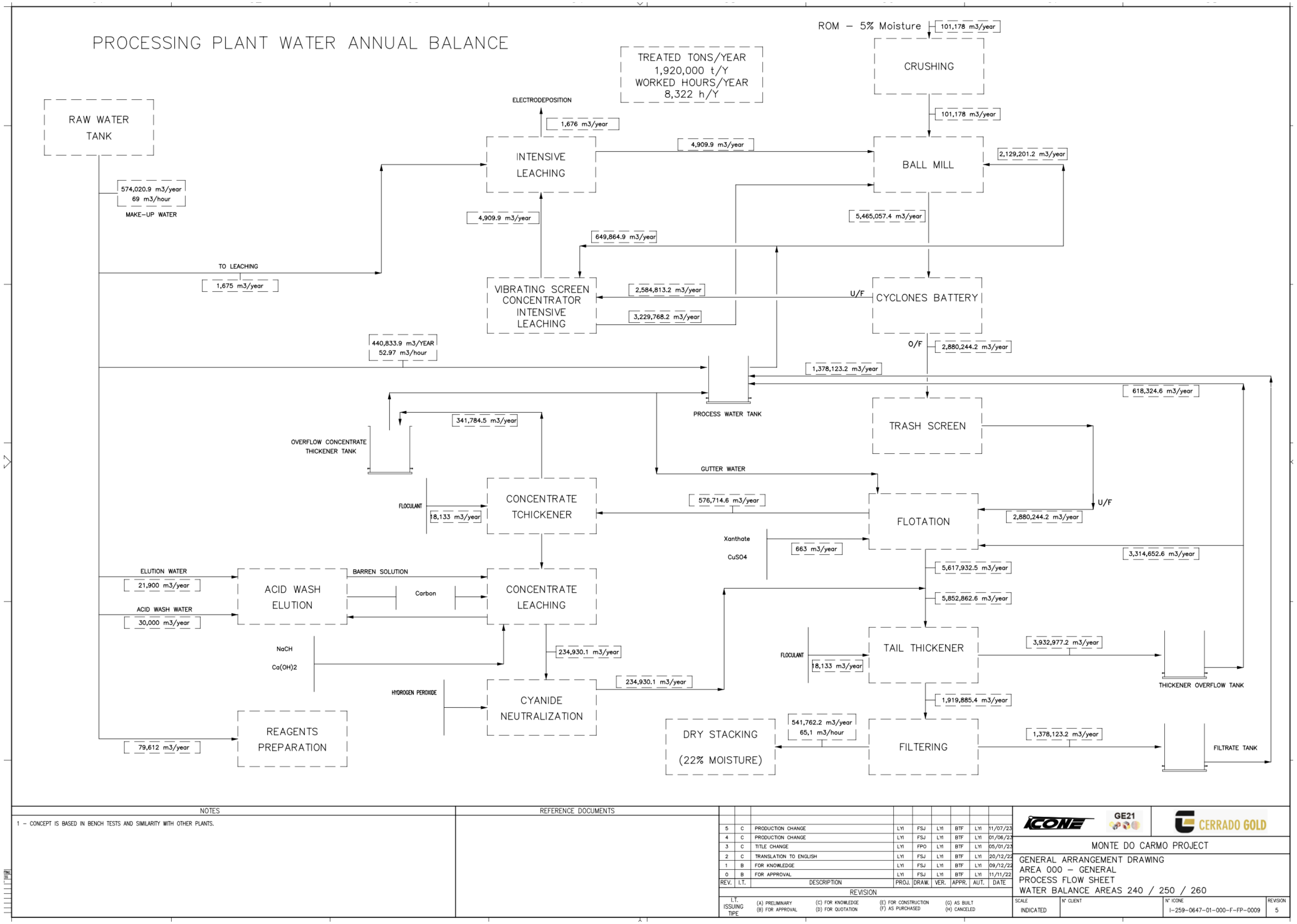
The estimated consumption rate of the main reagents for the project throughput of 1.92 Mtpa of ROM, as shown in Table 17.3.

Figure 17.4 – Water Distribution Flowsheet



Source: GE21, 2023

Figure 17.5 – Fresh and Reclaim Water Supply Flowsheet and Mass Balance



Source: GE21, 2023

Table 17.3 – Main Reagents - Estimated Consumption Rates

Reagents	Consumption		Annual consumption		Receipt Form	Concentration for Distribution	Area
Hydrated Alcohol	0.09	liter/ton	176.68	m^3/year	Tank truck, stored in a tank at the plant (system provided by the supplier)	Pumped into the elution as received, without dilution	Elution
Sodium Amyl Xanthate	0.080	kg/t	153.6	ton/year	Received in 850 kg big-bags	Diluted in water and distributed at 20% w/v	Flotation
Lime	0.25	kg/ton	472.2	ton/year	Received in a 1,000 kg big-bag	Diluted in water and distributed at 10% (w/w)	CIL and tailings thickening
Activated Carbon (reference: JACOBI-PICAGOLD G210)	0.005	kg/ton	9.6	ton/year	Received in 0.5 ton big-bags	-	Intensive Leaching and CIL
Sodium Cyanide (reference: UNIGEL)	0.120	kg/ton	230.4	ton/year	Received in ~18 ton tank truck at 30%-35% w/v	Transferred to storage tank and distributed as received, without dilution	CIL and Intensive leaching
Dithiophosphate (references: INT214 or A208)	0.080	kg/ton	153.6	ton/year	Received in 1 m^3 containers weighing 1.1 t	Distributed as received, without dilution	Flotation
Frother (reference: INT 102)	0.04	kg/ton	80.6	ton/year	Received in 1 m^3 containers weighing 0.85 t	Distributed as received, without dilution	Flotation
Flocculant (reference: MAGNAFLOC 10)	0.010	kg/ton	19.2	ton/year	Received in 25 kg bags	Prepared in a flocculant system and distributed at 0.3% (w/v), with dilution in the thickener feed	Thickener (final tailings) and flotation
Hydrochloric Acid (HCl)	0.040	liter/ton	76.8	m^3/year	Received in 18 t tank trucks, HCl concentration at 30%-35% v/v	Received at 33% v/v and diluted to 3% for use	Acid Washing
Hydrogen Peroxide (H_2O_2)	0.240	liter/ton	460.8	m^3/year	Received in 18t tank trucks, H_2O_2 concentration at 50% v/v	Diluted in the Cyanide Neutralization feed box	CIL Cyanide Neutralization
Copper Sulfate ($CuSO_4.5H_2O$)	0.080	kg/ton	153.6	ton/year	Received in 1 ton big-bags	Diluted with water and distributed at 20% w/v	Flotation and Cyanide Neutralization
Sodium Hydroxide (NaOH)	0.078	kg/ton	150.7	ton/year	Received in 18 t tank trucks, NaOH concentration at 50% v/v	Distributed as received	Filtering

Source: Testwork Laboratory Reports 2018, 2021, 2022 and 2023

Based on the consumption, transport and receiving systems, storage and distribution strategies were developed. Reagents consumed within the process plant will be prepared on site and distributed via various reagent handling and makeup systems.

Lime – $Ca(OH)_2$

The hydrated lime will be supplied in bulk bags. Bags will be hoisted using a mobile crane onto the bag splitter located above the lime mix/storage tank. The tank will be partially filled with process water at the beginning of the mixing sequence to achieve a slurry concentration of 10%-20% w/w. The lime slurry is used as a pH modifier and is pumped by lime distribution pumps to the various locations in the plant through a ring main. Unused lime returns to the lime mix/storage tank. Spillage in the lime area is collected in the lime sump and pumped to the cyanide detoxification distribution box.

Hydrated lime will be received in 1 t bags that will be stored in a closed and ventilated area. The preparation will be done with the bags being broken over the preparation tank.

The lime solution will be distributed to the CIL, to the cyanide neutralization and to the thickeners.

Copper Sulphate - $CuSO_4.5H_2O$

Copper sulphate is used both in the cyanide detoxification process as well as flotation. Copper sulphate will be supplied in 25 kg bags or in 1-t bags. The copper sulphate mixing tank will be partially filled with process water and the copper sulphate will be manually loaded into the tank by way of a bag splitter. The copper sulphate will be dissolved into 20% w/w solution concentration and then gravitates to the copper sulphate storage tank under the mixing tank.

The copper sulphate solution is distributed using the copper sulphate distribution pump to the cyanide detoxification distribution box and to the flotation conditioning tank. Spillage in the copper sulphate area is collected in the copper sulphate sump and pumped to the cyanide detoxification distribution box.

Liquefied Petroleum Gas - LPG

The LPG will be received in trucks from the distributor and will be stored in tanks with a capacity of approximately 20 m^3 that will be positioned in a place close to the usage points (elution, carbon regeneration, electrolysis and foundry).

Sodium Amyl Xanthate (Flotation Collector)

The xanthate will arrive in 1-ton bags and be stored in a enclosed and well-ventilated space. These bags will be opened above the preparation tank for mixing with water, resulting in a solution with a 20% w/v concentration. The prepared solution will be pumped from the preparation tank to a storage tank and then continuously pumped for flotation. The vicinity of the preparation and storage tanks will be monitored to prevent unauthorized access and will be adequately ventilated.

Surrounding the preparation and storage tanks, there will be a containment area capable of holding 110% of the largest tank's volume. Additionally, the area will feature a sump pump to redirect any spills back into the preparation tank.

Sodium Cyanide - NaCN

Sodium cyanide (NaCN) serves as a gold lixiviant and will be supplied in briquette form within 1-ton bulk bags enclosed in boxes. These boxes, transported and offloaded by forklift, will be stored in a restricted-access cyanide storage facility located in the cyanide mixing area. The NaCN will be dissolved to form a 20% w/w solution. The briquettes are pre-buffered with sodium hydroxide to maintain a high solution pH and prevent hydrogen cyanide formation during the mixing process.

Before cyanide preparation, caustic soda and water will be added to raise the pH to 10.5. Subsequently, the bulk bag of cyanide will be opened and placed in the tank. After preparation, the cyanide solution will be transferred to a storage tank and pumped to the CIL area.

The mixed solution will flow to the cyanide holding tank beneath the mixing tank, with NaCN pumps directing the solution to dosing points in leaching and elution. Spillage in the NaCN area will be collected in the NaCN sump and pumped to the cyanide detoxification distribution box.

Safety measures include fencing around the preparation and storage tank area to prevent unauthorized access, ventilation, and strict control. A containment area surrounding the tank, with a capacity of 110% of the tank's volume, will be waterproofed to prevent ground infiltration in case of tank or pipe breakage. The area will feature a sump pump to redirect any spills back into the tank or to the CIL area. Distribution piping will be designed to prevent leaks and will be identified with a lilac color to distinguish it from other liquids.

Sodium Hydroxide - NaOH

The caustic soda will arrive as a 50% w/v solution and will be primarily stored in a sealed and well-ventilated space. From this central storage, it will be pumped to the plant's stock tank located near the elution and intensive leaching areas. Subsequently, the caustic soda solution will be directed to the elution heating tank and the intensive leach leaching solution tank.

In the filtration area, the caustic soda will be utilized to neutralize the acid solution resulting from washing the ceramic filters. Any spills in the intensive cyanide leach area will be collected in the intensive cyanide leach sump and pumped to the first leach tank, while spills in the sodium hydroxide area will be collected in the NaCN sump.

The zones surrounding the storage tanks will be fenced off to prevent unauthorized access, ensuring strict control and adequate ventilation. Additionally, there will be containment areas around the tanks, capable of holding 110% of the tank volumes. These areas will be waterproofed to prevent soil infiltration in case of tank rupture, and they will feature a sump pump to redirect any spills back into the tank or to the CIL tank. The distribution piping will be designed to prevent leakage and will be clearly identified to avoid confusion with other liquids.

Flocculant - MAGNAFLOC 10

MAGNAFLOC 10 is used to help improve the settling of solids in the three thickeners and will be supplied in a powder form in bulk bags. A self-contained flocculant metering and mixing system will be installed for controlled batch mixing at a solution strength of 0.5% w/w using process water.

The mixed flocculant solution will be channeled to the flocculant storage tank and dosed to the three thickener distribution boxes, where it will be further diluted in the appropriate proportion for each thickener to aid in flocculant dispersion. Spillage in the flocculant area will be collected in the flocculant reservoir and pumped into the distribution boxes of the three thickeners. The addition of flocculant in the three thickeners will be done through independent dosing pumps.

Hydrogen Peroxide – H_2O_2

Hydrogen peroxide serves as the oxygen source in the cyanide detoxification process, supplied through an 18-ton tank truck at a 50% v/v concentration. It is diluted for use in the cyanide neutralization circuit feed box. The resulting solution is pumped by a dosing pump to the cyanide detoxification distribution box. Any spills in the area are collected in the sump and pumped to the cyanide detoxification distribution box.

Detoxification tests using sodium metabisulfite have also been conducted, yielding positive results. Consequently, in the upcoming project phase, sodium metabisulfite may be considered as an alternative to H_2O_2.

Flotation Collector - A208

A208 will be received in containers with a capacity of 1,000 L, which will preferably be stored in a location close to the flotation area. The collector will be stored and pumped directly to the flotation area cells using dosing pumps.

Flotation Frother - MIBICOL

MIBICOL will be received in containers with a capacity of 1,000 L, which will be stored, preferably, in a location close to the flotation area. The frother will be stored in concentrate and will be pumped directly to the flotation cells area using dosing pumps.

Sulphuric Acid – H_2SO_4

Sulphuric acid will be used to wash and clean the filter media in the filtration system. H_2SO_4 will be received in tank trucks of approximately 18 t and in a concentration of 98% v/v. This product will be stored in tanks. It will be pumped to the filtering area at the same concentration as received. For use in filtration, it will be diluted in water at an approximate concentration of 20% v/v.

Sodium Hypochlorite – NaClO

Sodium Hypochlorite will also be used to wash and clean the filter media in the filtration system. NaClO solution is often used as a disinfectant and as a bleaching agent. NaClO will be received in tank trucks of approximately 18 t and in a concentration of 30%-35% v/v. This product will be stored in tanks. It will be sent in piping to the filtering area at the same concentration as received. For use in filtration, it will be diluted in water at an approximate concentration of 20%-25% v/v.

Hydrochloric Acid – HCl

Hydrochloric acid is used in the acid wash cycle to remove any foulants that may be present on the carbon surface prior to elution. The HCl will be supplied in liquid bulk containers at a concentration of 33% w/w and will be dosed to the acid wash column. Spillage in the HCl area is collected in the HCl sump trap.

The concentrated HCl will be pumped into the dilute solution tank where it will be mixed with water to obtain a 3% w/v solution. From this tank, the solution will be pumped to the acid washing column to remove carbonates from activated carbon.

The storage and dilution area will be fenced and well ventilated, with controls to prevent unauthorized entry. Around the tanks there will be a containment area with a capacity of 110% of the volume of the largest tank and any leakage will be immediately neutralized with lime.

Information on the storage and distribution of HCl can be found in the previous paragraph of this report, in the flowsheets of the Acid Washing Area (I-259-0647-01-070-F-FP-0001-R3 and I-259-0647 -01-070-F-FE-0001-R2).

Gold Room Fluxes

Borax, nitre, silica, and sodium carbonate are the fluxes used in the gold room and will be supplied as dry solids in 25 kg bags.

Activated Carbon

Activated carbon will be supplied in solid granular form in 0.5 t bulk bags. The activated carbon from the big bags will be added to the CIL tanks, through bag breakers, when necessary to compensate for any carbon losses.

17.2.8 Services and Utilities

Process/Instrument Air

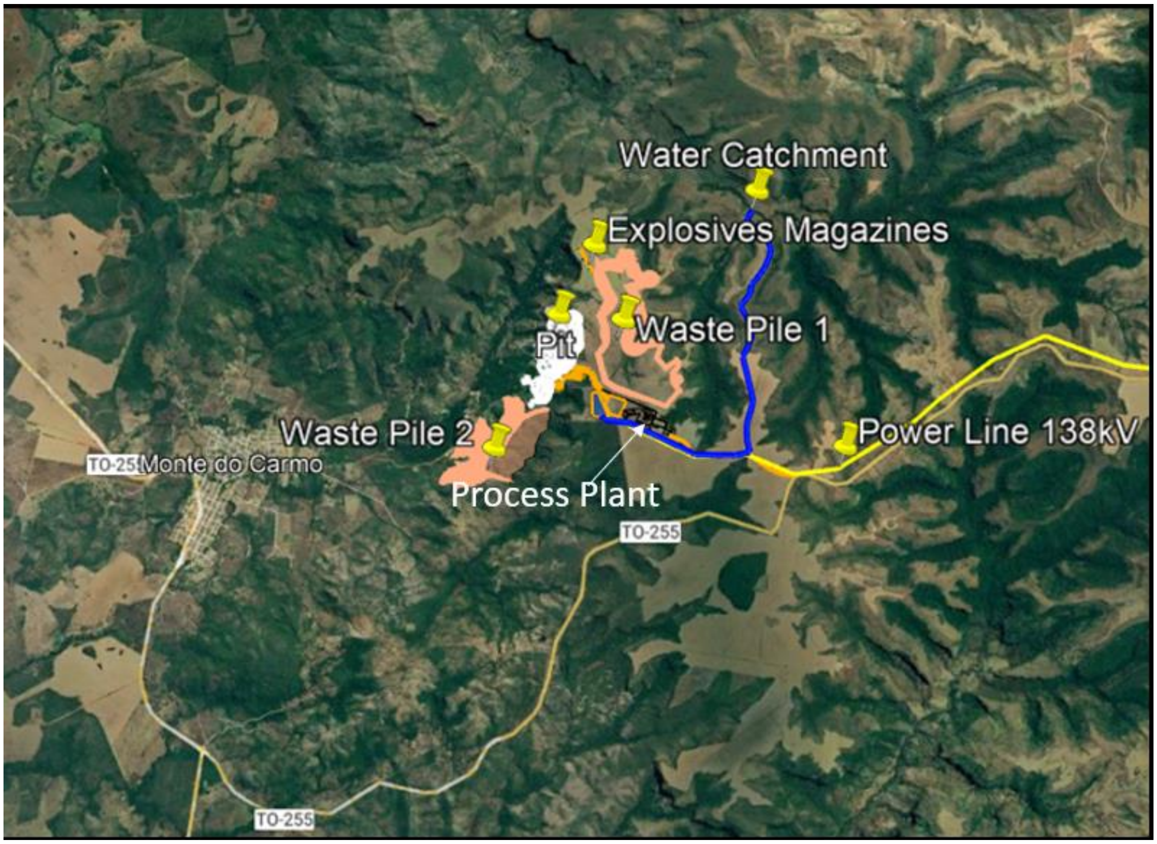
Compressors will generate high-pressure air, stored in an air receiver tank to fulfill plant needs. A segment of this high-pressure air will be directed through an air dryer to provide instrument air to various field instruments throughout the plant. Specific equipment, such as the primary crusher, CIL tanks, and others, will have dedicated air compressors. The tailings filter plant will be outfitted with both high- and low-pressure air compressors, along with receivers, to supply air for diaphragm pressing and air blowing cycles essential for the vertical plate pressure filters.

18 PROJECT INFRASTRUCTURE

Figures 18.1 and 18.2 show the mine site layout including all key infrastructure. The following sections describe each component of the project infrastructure.

Geotechnical investigations were performed in the crushing and milling areas to support engineering studies of the FS.

Figure 18.1 – Overall Site Plan and Main Roads



Source: GE21, 2023

Figure 18.2 – Transmission Line

Source: GE21, 2023

18.1 Site Selection and Site Earthworks

The Monte do Carmo Project, is located near the municipality of Monte do Carmo, which is in the centre of the state of Tocantins in central Brazil.

The general layout of the site is shown in the Section 18. Figure 18.1shows the approximate location of the process plant, associated administration offices, workshops, and other site buildings.

The factors considered for layout and site selection are listed below:

- The process plant will be located more than 1,500 m away from the existing watercourse due to the environmental requirement (200 m minimum).
- Topography is favourable to reduce earthworks.
- Minimization of the impact of clearing vegetation.
- Separate heavy mine traffic from non-mining light vehicle traffic.
- Utilize existing roads to reach the site and connect the various development sites.

18.2 General Access and On-Site Roads

18.2.1 Public Roads

TO-255 is the public road that connects the Project to the town of Monte do Carmo. This road is shown in Figure 18.1.

18.2.2 Access and Service Roads

The access and most of service roads are existing roads, minimizing earthworks and clearing of vegetation. Figure 18.1 shows the access and service roads for the Monte do Carmo Project.

The main access from the public road TO-255 to the main gate and the parking lot is 1.9 km long. Internal roads linking the offices, plant and the Waste Pile 1 and access to the mine and explosives magazine are approximately 4.5 km. These are dirt roads with adequate pavement using waste material from the mine pre stripping and with an adequate drainage system.

18.3 Power Supply and Distribution

18.3.1 Electrical Power Source

The power will be received through a 138 kV transmission line with a simple circuit, which will supply the main substation. Figure 18.2 shows the transmission line that will be constructed covering a distance of 36 km between Isamu Ikeda power plant and the mine site. The main transformer will lower the receiving voltage from 138 kV to 13.8 kV which will be the site distribution voltage.

The plant will have three (3) secondary substations as follows:

- Milling plant substation;
- Primary crushing plant substation; and
- Metallurgy plant substation.

18.3.2 Electrical Power Demand Estimates

The estimated electrical power demand for feeding the Project is 9.24 MW that represents 74% of the installed power. Table 18.1 shows the estimated demand for the main and secondary substations.

Table 18.1 – Estimated Electric Power Demand

Area	Installed Power (kW)	Power Demand (kW)
Crushing	1847	1350
Milling	5072	4448
Gravity and Leaching	220	187
Flotation	468	331
CIL	476	376
Elution	164	76
Cyanide Neutralization	81	51
Tailings Treatment	888	540
Electrolysis and Melting	132	88
Reagents Preparation	185	98
Compressed Air/Instrument Air	364	243
Process and Fresh Water	596	320
Water Catchment	482	332
Offices and Auxiliary Facilities	500	200
Underground Mine	1200	600
TOTAL	**12675**	**9240**

18.3.3 Main Substation

The main substation will be located 100 m to the South of the process plant and will consist of an external concrete pad for high voltage equipment and a control room, comprising the electrical panel room and the cable room. The main transformer will lower the receiving voltage from 138 kV to 13.8 kV as noted.

The following systems will integrate the main substation:

- Grounding;
- Protection against lightning strikes;
- Limiting equipment for the ground fault current;
- Reliable voltage;
- Emergency power generators;
- Supervision, control and protection;
- Detection, alarm and fire fighting with a clean suppression agent;
- Access control;
- Air conditioning and pressurization; and

- Safety signs and escape routes

18.3.4 Site Power Distribution

The distribution on the plant between the main substation and the secondary substations at 13.8 kV, will be mainly through insulated cables. Production areas outside the plant like water reclaim and remote water wells will be fed through aerial power lines.

18.3.5 Secondary Substations

The plant will have three (3) secondary substations:

- **Milling plant substation** - Provides power for the process of grinding and classification;
- **Primary crushing plant substation** and **secondary crushing plant substation** – Provides power for the crushing plant; and
- **Metallurgy plant substation** - Provides power for leaching, elution, carbon regeneration, electrodeposition, reagents, detox, tailings filtration plant.

The transformers installed in the secondary substations will have a step-down ratio of 13.8 kV-0.48 kV in the case of supplying process and utility loads (well pumps, welding sockets, maintenance hoists, overhead cranes, etc.) or 380V-220 V in the case of powering the lighting system and general purpose sockets, both in the industrial and administrative areas of the plant.

The power transformers will be designed in order to always respect the maximum limit of 2.5 MVA aiming not to increase the short-circuit power that passes through them.

18.3.6 Stand-by/Emergency Power Supply

Emergency power supply by diesel generator will be provided for essential loads. The generator set will be 500 kVA, 440 V, automatically started during main power outages.

18.3.7 Grounding System and Protection Against Lightning Strikes

The main substation will have a ground grid to control voltage gradients and equalize electric potentials interconnected to the plant's industrial grounding grid. The medium voltage panels of the secondary substations will have surge arresters at the entrance, and in the cases where the transformer will be mounted directly at poles and there will be no panels, the surge arresters will be installed on the pole itself.

The low voltage auxiliary power panels will have surge suppressors at the entrance. The neutral of transformers whose low voltage side is 13.8 kV or 0.48 kV will be grounded by resistive impedance limiting the phase-to-ground fault current to 100A-10s and 3A-continuous respectively and will not be distributed. The neutral of transformers whose low voltage side is 220/127 V will be solidly grounded and distributed.

All equipment, gates, handrails, structures, and other fixed metal parts must be connected to the ground/protection conductor for proper equalization of electrical potentials. Where required by Brazilian standards, there will be a protection system against lightning strikes, including capture, descent, and flow/grounding systems.

18.4 Plant Control System

18.4.1 Process Control System

The automation system will promote efficient and safe control of the plant, reducing the decision-making time in order to promote an increase in quality and productivity. The Process Control System (PCS) will be designed for a continuous operation regime and will have a stand-by power supply. The automation system will have an open architecture, which allows for integration with third party systems (mill, water treatment plant, filter, control panel for diesel pump, compressor control panel, etc.).

18.4.2 Field Instruments and Valves

Field instruments and valves will be wired either to the PCS or to the specialty PLCs.

18.4.3 Closed-Circuit Television

Process video cameras will be installed in 23 locations to assist the operator's view of the process. These cameras are viewed on a separate display in the main control room and in the security control room. The CCTV system will be unique and should share the same management and control platform with the property security system and the operational process and will therefore have full integration as a single system.

18.5 Communication System

An integrated cabling system will be used, supported by hybrid network architecture, i.e., optical fibre for the backbone and copper twisted pair cable for the local network. The single-mode fibre optic cable will be used for low-loss and high-bandwidth optical systems. The fibre optic cable must be suitable and capable of operating with good performance and continuous operation in an industrial environment with a high level of suspended ore dust, high humidity, and noisy areas.

18.6 Compressed Air System

The compressed air system at site comprises two (2) (one duty, one standby) 900 kPa rotary screw compressors with integrated drier and filter and distribution network for the various service and instrumentation points.

Where necessary, such as in the tailings filtering plant, workshops and mine, dedicated compressors will be installed.

18.7 Buildings

18.7.1 Process Plant

The process plant is composed of several buildings: primary crushing, secondary and tertiary crushing, grinding, leaching, thickener and reagents, elution and gold refining.

The primary crushing building will be a 17 m (long) x 7 m (wide) x 21.5 m (high) steel construction with cross-sectional frames to increase the stability. The building will house a jaw crusher and silo with 44 m (diameter).

The secondary and tertiary crushing complex will be divided in two (2) structures. Secondary crushing will be 18 m (long) x 8 m (wide) x 8 m (high) steel building, while tertiary crushing in a 12 m (long) x 9 m (wide) x 8.5 m (high) steel structure. The building will house, apart from the three (3) cone crushers (one (1) secondary and two (2) tertiaries), conveyors discharge chutes, screeners, feeders and silos.

The grinding building will have dimensions of 26.5 m (long) x 20 m (wide). The building will be a steel structure and will house the ball mills and feeder.

The gravity concentration tower will be a steel structure with dimensions of 26 m (long) x 11 m (wide) x 20 m (high) housing the centrifugal concentrator and cyclones.

The flotation and thickener tanks will be distributed over an area 9.8 m (long) x 50 m (wide). There will be six (6) steel tanks in total, served by steel platforms. The steel structures around the tanks will house agitators, samplers, pumps and a crane.

Fresh water and process water will be stored in steel tanks 9.5 m and 8 m in diameter. This area will contain pumps and instruments necessary for the management this resource.

The reagents complex will include one (1) warehouse and three (3) process buildings. The building details are as follows:

- **Warehouse** - size 10 m (wide) x 40 m (long) x and will be made of steel;
- **First process building** - size 14 m (long) x 12 m (wide);
- **Second process building** - 10 m (long) x 20 m (wide); and
- **Third process building** - 20 m (long) x 10 m (wide).

18.7.2 Industrial Support Buildings

Figure 18.3 shows the industrial area, where the Process Plant and Industrial Support Buildings are located.

Maintenance Workshop

The Maintenance Workshop will be located 60 m from the process plant, in the industrial area next to the Warehouse. The masonry building will include a 20 m (long) x 30 m (wide) construction with four (4) heavy equipment bays and one (1) space for light vehicles. Next to the building is considered a roofless wash building of 10 m (long) x 10 m (wide). On the West side of the shop, a 6 m (long) x 20 m (wide) administrative office will be built. This two-store office will house a tool shop, washrooms, meeting room and one (1) office for management.

Disposable Material Building

The Disposable Material Building will be located south-east of the process plant. The building is a construction for storage of disposable material that will consist of an open fenced yard and a shed for the storage of hazardous waste. The structure of 50 m (long) x 55 m (wide) will have masonry walls and a metallic roof. The shed will have the capacity to store two (2) buckets with materials contaminated with oil, grease and paint, boxes for lamps and drums for electronic scraps, batteries. In the yard, metals, plastics, glass, rubber, wood, and non-recyclable materials will be stored.

Plant Operations Office

The Plant Operations Office will be located south of the process plant in the industrial area. The office will be housed in a 6 m (long) x 20 m (wide) masonry building with offices for plant management, maintenance area, meeting rooms, storage space, hall, and washrooms.

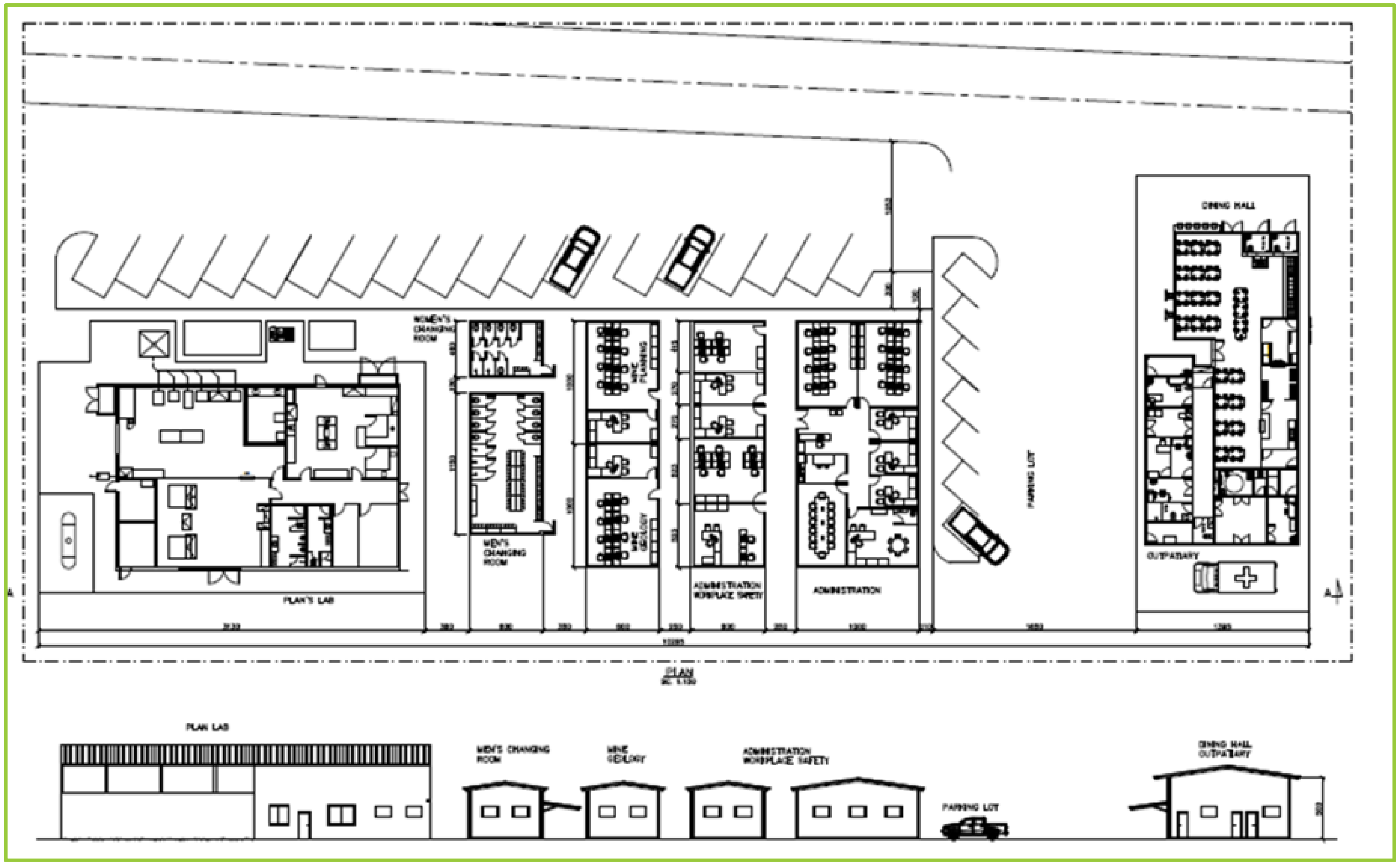
Warehouse

The Warehouse will be a prefabricated structure of 26 m (long) x 40 m (wide) easy to assemble at site, with a ceiling height of 6 m at its lowest point. The Warehouse will be located southeast of the process plant in the industrial area next to the Maintenance Workshop. There will be wind fans on the roof and a high-strength concrete floor. A prefabricated 12 m (long) x 5 m (wide) wooden building will be the warehouse support, comprising an office with two (2) workstations, storage space, and washrooms.

Laboratory

The Laboratory will be a 30 m (long) x 15 m (wide) prefabricated wooden masonry construction, with space for different test rooms, offices, storage space, waste disposal, and washrooms.

Figure 18.3 – Industrial Support (Administrative) Buildings



Source: GE21, 2023

18.7.3 Administration Buildings

Figure 18.3 shows the administration area which is located 100 m south from the Process Plant.

Gate House and Security Building

The Gate House and Security buildings will be located in the administration area, southeast of the process plant. The gate house building will be a prefabricated 7 m (long) x 7 m (wide) masonry building. The security administration building, 20 m (long) x 10 m (wide), will include a reception with a training room for eight (8) people, weight control room, property security office, storage space, and two (2) toilets.

Truck Drivers Building

The Truck Drivers support building will be a prefabricated 6 m (long) x 6 m (wide) wooden construction. This layout considers a balcony, an office room with one (1) workstation, storage space and washrooms.

Administration Office

The Administration Office will be located in the administration area, southeast of the process plant. It will be a 20 m (long) x 10 m (wide) prefabricated wooden and single-story building. The building will house offices, meeting rooms, workstations, washrooms, and storage space.

First Aid and Fire Department

The First Aid and Fire Department will be located to the southeast of the process plant in the administrative area next to the Administration Office. It will be a 10 m (long) x 15 m (wide) prefabricated wooden and single-story building. The construction will house a reception, nursery, pharmacy, offices, and a fire brigade tool room with external access. On the north side of the building will be space to park an ambulance and a fire truck.

Locker Room Building

The Locker Room building will be located southeast of the process plant in the administrative area. The Locker Room will be a 50 m (long) x 50 m (wide) prefabricated wooden building, which will have changing rooms and washrooms.

Canteen

The Canteen will be a 19 m (long) x 13 m (wide) masonry building located east of the process plant in the administrative area in front of the Administration Office.

18.8 Water Systems

18.8.1 Fresh Water Supply and Distribution

Based on water balance simulations, it is expected that the Project facilities and catchment areas within the Project footprint will collect sufficient rainfalls to meet the mill's make-up water demand and the underground mine's water demand for equipment operation in all simulated scenarios.

Rated consumption of fresh water in the plant will be 69 m³/h. The underground mine will demand 24 m³/h during the Year 4 through Year 9.

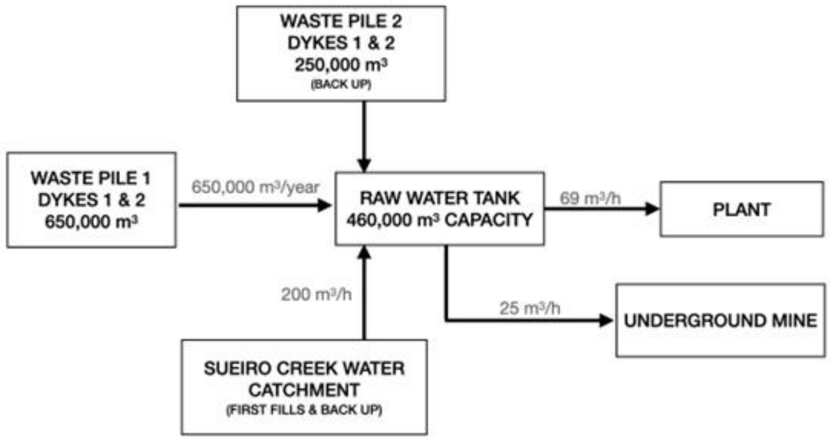
The Project water consumption will be 600,000 m³ per year when running only the open pit mine and will peak at 800,000 m³ per year when running both open pit and underground mine.

The proposed water management system for the Project includes several components: the Site Pond, an Open Pit sump, a sump located at the filtered tailings stack, water transfer pumps, and pipelines. These components are designed to facilitate the transfer of water between various Project infrastructure points and to secure a fresh water supply from Sueiro Creek. In case there is a backup water supply requirement, freshwater will be pumped from Sueiro Creek through a pipeline extending approximately 4.5 km to the north of the Project site.

The following main Project facilities and infrastructure for water management will be utilized (Figures 18.4 and 18.5).

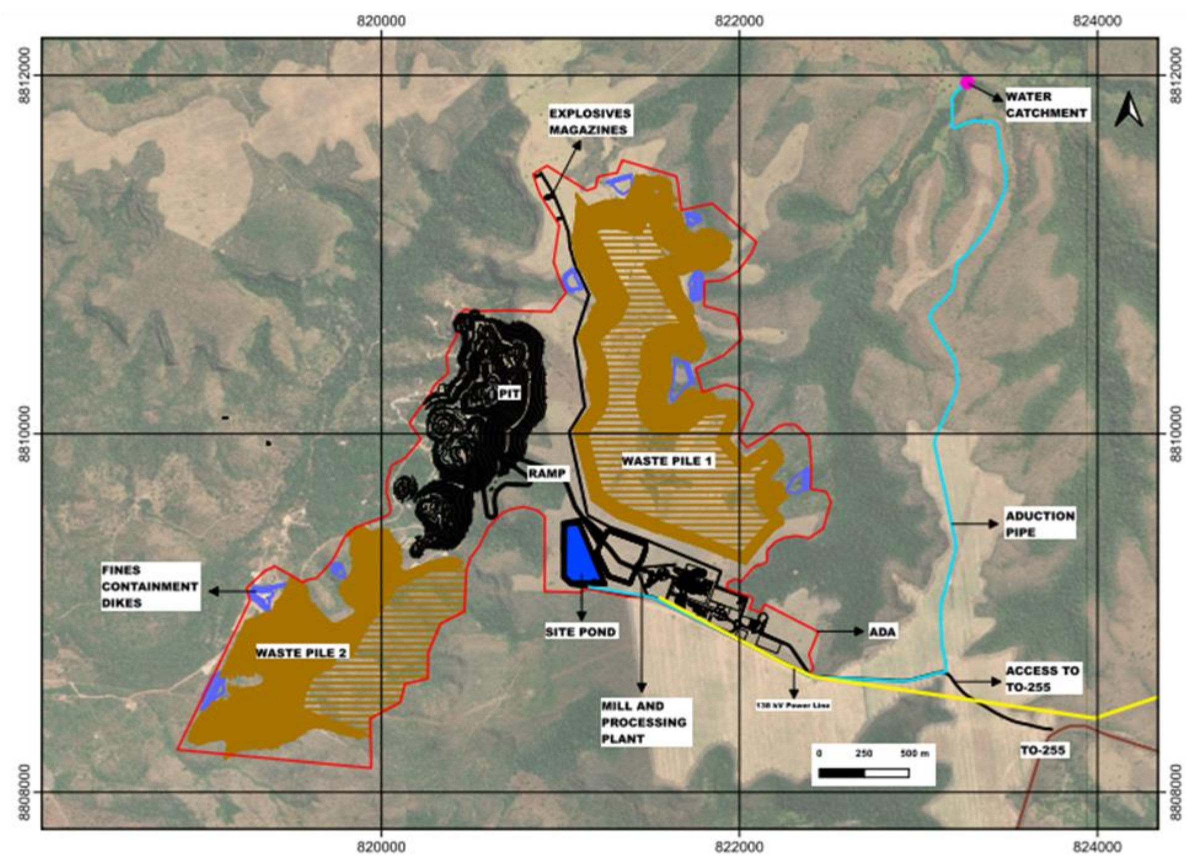
- Process Plant Site;
- Site Pond for storage of 460,000 m³ of water;
- Open Pit will divert runoffs to the local drainage system and will use diesel mobile pumps in sumps to drain water to the Água Suja Creek;
- Underground Mine;
- Dykes around the Waste Pile 1, capable of collecting up to 650,000 m³ of water per year;
- Dykes around the Waste Pile 2, capable of collecting up to 250,000 m³ of water per year (waste rock disposal); and
- Pumping stations and pipeline from Sueiro Creek.

Figure 18.4 – Water Supply and Management



Source: GE21, 2023

Figure 18.5 – Water Dam and Pipeline to Plant



Source: GE21, 2023

18.8.2 Potable Water System

Potable water will be supplied to the process plant by treating filtered fresh water. A vendor-supplied water treatment plant will generate potable water. Physicochemical processes will be used to remove inorganic pollutants, heavy metals, oils and greases, colour, sediments, suspended solids, non-biodegradable organic materials, and dissolved solids. Two (2) pumps (one (1) duty, one (1) standby) will supply potable water to the leaching and reagent plants and to two (2) tanks which will provide water to various consumers.

Potable water will be supplied to the administration area from a 10 m³ elevated storage tank.

18.8.3 Reclaim Water System

The main source of process water will be reclaimed from tailings thickeners and filtration and stored in the water tanks. Three (3) centrifugal pumps (two (2) duty, one (1) standby) will be used to supply multiple consumers through a 12” pipeline. Two (2) pumps (one (1) duty, one (1) standby) will supply blend water to various consumers through a 10” pipeline.

18.8.4 Sewage Collection

The sewage from the administration area will be collected via a network of buried PVC piping and conveyed by gravity to a sewage treatment plant located north the administration area.

The collected sewage from the industrial area will be conveyed by buried PVC pipeline to a biodigester treatment plant located south of the process plant, between the main substation and warehouse buildings.

18.9 Fire Protection

A network of fire hydrants will be placed in the industrial area considering a radius of 30 m, which corresponds to the length of the hose, not counting the range of the water jet. The hydrants will be placed in free access points, preferably close to the streets and 15 m away from the external wall of the buildings.

Three (3) pumps will supply water to the fire hydrants network from a tank. The main pump and the jockey pump will have electric engines while the third one will be a diesel pump. The fire water tank will have a reserve capacity of 250 m³ of water, which correspond to 120 min of capacity.

The main pump must be designed to meet the flow rate of two (2) open hydrants. The jockey pump will be designed to maintain pressure in the line. The diesel engine pump will have similar characteristics as the main pump and will be used in case of a failure.

Automated fire detection will be installed in the industrial and administration buildings. All buildings will have handheld fire extinguishers, emergency exits, emergency lights and signalling.

18.10 Accommodation

No accommodation on site is considered as the plant is located near the town of Monte do Carmo.

18.11 Environmental Area

Close to the main gate there will be an area of 1.2 ha for environmental activities like plant nursery, recycling, and environmental education programs.

18.12 Explosives Magazines

The stocks of explosives and accessories and emulsion will be located North of Waste Pile 1 with a safety distance according to the standards and will be separated by caps and fuses container, accessories container and appropriate tanks for emulsion. The structures will be fenced, and alarms and lightning protection will be installed. The location of the structures is shown in Figure 18.1.

18.13 Mining Contractor Area

An area of 1.5 hectares close to the main gate and close to the waste pile is necessary for the mining operation contractor for offices, workshops, warehouse, parking.

18.14 Diesel Tanks

A 30 m x 60 m area will be designated for the installation of three (3) tanks, each with a capacity of $30m^3$ to store diesel sufficient for 3 days. This area will be in close proximity to the mining contractor facility. As the primary consumer, the mining contractor will be responsible for managing the diesel consumption.

18.15 Truck Scale

A truck scale will be installed in the road from the mine to the crusher and Waste Pile 1.

18.16 Waste Piles with Co-deposition of Tailings

Part of the waste from the pit will be disposed of in Waste Pile 1 close to the plant. Approximatively 60% of the waste will be disposed of in this pile. The pile occupies 210 ha of area North of the plant. The location of Waste Pile 1 is shown in Figure 18.1.

The tailings of the process will be filtered, hauled, and disposed of in the middle of Waste Pile 1 avoiding environmental concerns.

Approximatively 40% of the waste from the pit will be disposed of in Waste Pile 2 at South of the pit reducing hauling distance and hauling costs. The location of Waste Pile 2 is also shown in Figure 18.1.

Both waste piles will be built according to geotechnical projects in 10 m height layers and 7 m berms with drainage system and revegetated.

Both Waste Piles will have drainage systems with appropriate rock barriers to filter and avoid fines carried to the local drainage.

The co-disposal facility does not demand a specific permit. All the necessary permits will be included in the construction and operation licenses of the Project.

19 MARKET STUDIES AND CONTRACTS

19.1 Market Studies

There is a continuous and steady demand for gold, which is a freely traded commodity on the world market. As such no specific market studies have been commissioned by Cerrado Gold nor its affiliates or consultants, in relation to this Project.

19.2 Commodity Pricing

Cerrado Gold has adopted the following price projections for the FS financial model base case as presented in Table 19.1.

Table 19.1 – Base Case Metal Pricing

Element	Unit	Financial Model
Au	$US/oz	1,750

19.3 Contracts

There are no material contracts or agreements in place as of the effective date of this Report. Cerrado Gold has not hedged, nor committed any of its production pursuant to an off-take agreement.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

A discussion is presented below of available information on relevant environmental and social factors in light of environmental licensing and related to the Project.

20.1 Permits

The area object of this study refers to the National Mining Agency process nº 860.187/1988, currently in the mining application phase.

In short, the Project has completed the formal environmental licensing process for the preliminary license stage, for the main activity of gold mining, with an average annual production rate of 1,920 Mtpa of ore.

The Preliminary License process formalized on July 11, 2022 under protocol number 17688/2022 was completed on May 26, 2023, with Preliminary License LP 27/2023 being granted by NATURATINS (Nature Institute of the State of Tocantins). Having certified the environmental viability of the Project, this License defined the technical requirements that must be met to proceed with the stage of obtaining the environmental license for installing the Project.

This section of the Technical Report presents the current status of the environmental regularization of the Monte do Carmo Project, as well as the necessary steps to subsidize the acquisition of environmental licenses to start the operation of this mining Project.

This document also includes the presentation of the conclusions of the Environmental Impact Assessment (EIA), an essential study for the instruction of the Environmental Licensing process resulting from mining activity, and which concludes the socio-environmental feasibility assessments of the Project.

The summary below presents the legal requirements applicable to the environmental regularization of the Project, its current situation in relation to the environmental licensing, the executive summary of the EIA, with the presentation of the environmental diagnosis (physical, biotic and socioeconomic spheres); the assessment of environmental impacts; and the proposals for mitigation, control, monitoring and rehabilitation actions, thus concluding the socio-environmental feasibility assessments of the Monte do Carmo Project.

20.2 Legal Requirements Applicable to the Environmental Regularization

CONAMA (National Environmental Council of Brazil) Resolution No. 237 of 1997 defines environmental licensing as an administrative procedure by which the competent environmental agency licenses the location, installation, expansion and operation of enterprises and activities that use environmental resources and are considered to be effectively or potentially polluting.

For mineral extraction activities, environmental licensing is mandatory in Brazil and must be conducted in accordance with Federal Decree No. 99.274/90, which regulates Federal Law No. 6.938/81, which, in turn, establishes the National Environmental Policy.

The competence for the Environmental Regularization of the Project in question belongs to the State of Tocantins, competence established by Law nº 6.938/81, as well as by CONAMA Resolution nº 237/97, and the competent environmental agency for the analysis of the licensing process is NATURATINS, a body linked to the Government of the State of Tocantins that holds the attribution to implement and monitor public policies on the environment, as recommended by Law No. 261/91 and Law No. 3804/2021. Notwithstanding, State Environmental Council (COEMA) Resolution No. 07/2005 provides for the Integrated Environmental Control System of the State of Tocantins, and respective guidelines for environmental licensing.

Within the scope of environmental licensing, in addition to complying with applicable legislation at the Federal, State and Municipal levels, under relevant environmental aspects (such as water and effluents, flora and fauna, noise, natural, cultural, historical and archaeological heritage, environmental education, indigenous and quilombola lands, and traditional populations), it must also be considered the manifestation of intervening bodies, including the Municipality of Monte do Carmo, attesting to the compliance of the Company with the municipal legislation of land use and occupation.

For mining activities, it is also necessary for the Company to prove that they are the holder of the right to exploit the intended mineral substance, which is granted by the National Mining Agency, considering that the mineral resources are Union property, pursuant to art. 20, IX of the Federal Constitution of 1988.

Also, according to CONAMA Resolution nº 237/97, which defines concepts, procedures and criteria used in environmental licensing, the three-phase model is the rule in Brazilian environmental licensing, which is divided as follows:

- **Preliminary License** (LP - Licença Prévia), indicates government's conditional approval of the environmental viability of the project.
- **Installation License** (LI - Licença de Instalação).
- **Operation License** (LO - Licença de Operação)

Thus, in three-phase licensing, the company must first obtain the Preliminary License, which attests to the environmental viability of the activities in terms of their design and location, as provided for in CONAMA Resolution No. 09/90.

In the State of Tocantins, COEMA Resolution No. 07/2005 is the norm that provides for environmental licensing in the State and, following the determinations contained therein, a Preliminary License was requested from NATURATINS for the Monte do Carmo Project. At this stage, the environmental viability of the Project in terms of its design will be attested, and the basic requirements that must be met in the next implementation phase will be established.

Following the guidelines of CONAMA Resolution No. 01/86, the EIA and respective Environmental Impact Report (EIR) were presented to support the analysis of the technical, environmental and locational viability of the Project. It is important to highlight that the EIA is a constitutional instrument of the National Environmental Policy, whose primary purpose is to assist, as a source of technical information, the full and complete achievement of the objectives set by the National Environmental Policy, in accordance with Law No. 6.938/81.

20.3 Current Status of the Environmental Regularization

The area object of this study refers to the National Mining Agency process nº 860.187/1988, currently in the mining application phase.

In short, the Project has completed the formal environmental licensing process for the preliminary license stage, for the main activity of gold mining, with an average annual production rate of 1.920 Mtpa of ore.

The Preliminary License process formalized on July 11, 2022 under protocol number 17688/2022 was completed on May 26, 2023, with Preliminary License LP 27/2023 being granted by NATURATINS (Nature Institute of the State of Tocantins). Having certified the environmental viability of the Project, this License defined the technical requirements that must be met to proceed with the stage of obtaining the environmental license for installing the Project.

20.4 Relevant Environmental Aspects

Based on the evaluated verification content, in particular to the EIA and respective EIR prepared by *Mineral Engenharia e Meio Ambiente*, 2022 below is presented the summary of the environmental assessment in the context of identifying the impeding, restrictive and potentializing factors of the Project, with the aim of identifying the scenario of its environmental viability.

Regarding impeding factors, these are non-existent if the current locational criteria are considered, contained in COEMA Resolution No. 07/2005 and duly adopted for environmental licensing.

Within the scope of restrictive environmental factors and specifically for the biotic environment, it must be considered that the Monte do Carmo Project is a mining undertaking, therefore of public utility.

For implementation and operation of the Project, it will be necessary to remove fragments of native vegetation and isolated trees. In all, the vegetation suppression area is defined as 282.97 ha.

Considering the mining, processing and waste piles activities subject to environmental licensing by COEMA Resolution No. 07/2005, and the need for authorization for the use of water through surface capture, these become restrictive factors, raising the need for specific studies of environmental assessment. The grant studies were filed together with the application for an installation license in September 2023, are being analyzed by the environmental agency, and are currently waiting for the respective authorizations to be issued.

In terms of the socioeconomic environment, the restrictive aspect goes against the impact of the activity on the municipality of Monte do Carmo, which may suffer pressure on infrastructure, equipment and public services, in addition to the need for training of local labour.

As for the potentiating and favourable aspects of the Project, it is worth mentioning the fact that the Project was regularized, already in the mining application phase and in compliance with the regularization stages, with the National Mining Agency. Other potentiating aspects are related to the Project's compliance with the Master Plan of the municipality of Monte do Carmo and expectations of job and income generation for the municipality.

Finally, it should be noted that the EIA also concludes that the Project is environmentally viable, since the socio-environmental impacts can be mitigated by carrying out the environmental programs proposed by the EIA.

20.5 The Project

The exploitation of gold ore from the Monte do Carmo Project will be developed by Serra Alta Mining Ltd.

Serra Alta Mining Ltda. is a subsidiary of Cerrado Gold Inc., which is a company focused on mining and exploration of precious metals. Headquartered in Toronto, Canada, it has built a portfolio of assets in South America such as the Don Nicolas Project, 100% owned by the Company, located in Santa Cruz, Argentina, which is a gold and silver mine with great potential for optimization, exploration expansion; and the Monte do Carmo Project, 100% owned by the Company, in the State of Tocantins, Brazil, thus expanding the base of high-grade mineral resources through extensive exploration.

The main objective of the Monte do Carmo Project is, therefore, to expand the supply, production and international trade of gold in order to meet the different demands for the metal. Currently, the greatest demands come from its direct application in the jewelry and technology industries, in addition to the growing demand for investments and purchases by central banks in several countries, due to its history of price stability compared to currency fluctuations and different stock exchange assets.

The Monte do Carmo Project is located in the municipality of Monte do Carmo, in the central portion of the state of Tocantins, located about 90 km from Palmas. Road access is through TO-255 Highway, at an approximate distance of 40 minutes from the city center.

The venture comprises the operations of extracting and processing gold ore, with an expected average annual production rate of 1.92 Mtpa of ore.

The extraction method will be an open pit and underground, using explosives for dismantling and excavators and trucks for loading and transporting ore and overburden. Ore processing will take place through the steps of crushing, grinding, gravimetric concentration, flotation of gravimetric concentration tailings, leaching of flotation concentrate, elution, smelting, neutralization of cyanide in leach tailings (DETOX), thickening of leach tailings after neutralizing the cyanide added to the tailings from flotation and filtering the tailings for water recycling and transporting the tailings in cake form to the overburden pile. In the Monte do Carmo Project there will be no tailings dam. The tailings will be deposited dry in a controlled pile.

In addition to the pit and processing plant, the Project will feature a waste dump for co-disposal of tailings, a waste dump and an excavated basin for water storage and civil facilities.

According to Hidrogeo, 2022, the results of the geochemical tests were interpreted according to the international methodology presented in the Acid Rock Drainage Guide (INAP, 2009) and concluded that although the samples contain sulphides in their mineralogy, due to the capacity to neutralize the acidity of the local geology (presence of carbonates), the potential for generation of acid drainage is unlikely, or non-existent.

Also, according to Hidrogeo, 2022, based on the solubilization tests, the samples from the lithologies GR (granites), QA (quartzite), a sample of RB (basic rock) and a sample of RVF (felsic volcanic rock) showed potential for solubilization of arsenic parameter. However, there are plans to move forward in studies of containment measures for arsenic solubilization, such as a lateritic drain type, due to its great potential for adsorbing arsenic and consequently retaining it at the base of waste piles.

Based on updated information from the Mineral Consulting company as of September 2023 the EIA/RIMA was prepared based on information from the initial or conceptual phase of the Project. Serra Alta has made significant advancements in the last 24 months by carrying out detailed work in various disciplines, including geology, mining engineering, processes, infrastructure. These efforts have resulted in increased project maturity.

It is important to highlight that these efforts to change the Project resulted in a configuration with the best economic and environmental performance. The reduction in waste generation and the corresponding decrease in the size of waste piles, as well as the use of surface water capture instead of underground sources, are among the significant changes that command attention. Moreover, these benefits will be incorporated into future Project installations.

20.6 Environmental Diagnosis of the Socioeconomic Environment

According to the EIA prepared by *Mineral Engenharia e Meio Ambiente, 2022,* the municipalities of Porto Nacional and Monte do Carmo were considered for the evaluation of the indirect effects of the activities of the Project on the region, that is, they are in the area of Indirect Influence of the Monte do Carmo Project. The area of direct influence encompasses only the municipality of Monte do Carmo.

The two municipalities that make up the Project's Area of Indirect Influence, Porto Nacional and Monte do Carmo, have an estimated population in 2021 of 53,618 and 8,182. The population of Monte do Carmo represents 0.51% of the population of the State of Tocantins (estimated at 1,607,363 for 2021). The population of the study area is predominantly urban in the area of indirect influence and predominantly rural in the area of direct influence.

The total employed population in 2019 in Porto Nacional was 10,733 people, 85.82% of whom were salaried, and the average monthly salary in that same year was 2.1x current minimum wages. In the municipality of Monte do Carmo, it has 439 employed persons for the period 2019, 389 of whom are salaried, with an average monthly salary of 1.6x current minimum wages.

The economic activities of the municipality of Monte do Carmo are focused on agriculture, livestock, which is also the sector that offers more formal jobs, followed by public administration. In addition, the field research showed that the service sector of the municipality is composed of various small businesses.

The municipality of Monte do Carmo currently has three (3) water supply systems, capturing raw water from adjacent streams, wells, and dams. The capture of surface water managed by the company Hidroforte serves 100% of the population in the urban area and 42.9% of the rural area.

There is no sewage system, the water is treated by simple disinfection, and the sanitary sewage produced in the municipality is sent to absorbent pits. The company that provides electricity grid services in the municipality is Energisa.

According to data compiled by the National Register of Health Establishments, the municipality of Monte do Carmo had 2 health units with 3 Family Health teams, and a low coverage of hospital beds (5 beds). Health care ended up being transferred to Porto Nacional, which has 105 health facilities (34 public), 3 hospital facilities and 140 hospital beds (all linked to the Unified Health System).

The basic education network in the municipality of Monte do Carmo has 13 school institutions, 9 of which are municipal (2 urban and 7 rural) and 5 state (2 urban and 3 rural). The region has 102 educational institutions: 59 municipal, 21 state, 2 federal (the Federal University of Tocantins and the Federal Institute of Tocantins – Campus Porto Nacional) and 20 private.

Even though it does not have a formal social license in Brazil, based on the EIA, 2022, it is possible to state that potential social conflicts linked to the socioeconomic and political configuration of the municipality were not identified. Within the scope of the Project in question, the positive impact on income generation and the forecast of the social communication program to cope with the doubts, concerns and expectations of the community in the Project area are highlighted.

20.6.1 Land Use and Occupation

For the municipality of Monte do Carmo (AID) most of the soil is made up of Cerrado vegetation in the strict sense (49.40%), followed by agriculture (17.87%) and temporary crops that occupy 41,388.86 hectares (11.50%), areas of gallery forest or riparian forest (11.26%), and "cerradão" (9.21%). The urbanized areas occupy only 144.32 hectares, which corresponds to 0.04% of the AID's land. The surroundings of the area where the Monte do Carmo Project will be installed are dominated by savannah vegetation and pastures, with no houses or other forms of occupation nearby. The road that leads to the installation site of the development's structures is close to pastures for livestock activity.

For the Forest Inventory, an area of 507.84 ha was mapped and studied, of which 234.81 ha will be effectively removed for the implementation of the Project. Of the total amount, approximately 48.2 ha are located in Permanent Preservation Areas slopes with a slope greater than 45º and the banks of water bodies and source.

20.6.2 Historical, Cultural, Landscape and Archaeological (Prehistoric/Historical), Paleontological Heritage and Speleology

According to the EIA prepared by Mineral, in July 2022 a consultation with the National Cultural Heritage System of the National Historical and Artistic Heritage Institute (Iphan) revealed that there is no cultural heritage reference at the federal level. At the state level, there is only one listed property in the municipality and outside the Project intervention area: the Church of Nossa Senhora do Carmo (IPHAN, s/d).

Located at Praça da Matriz in the municipality of Monte do Carmo, the Church of Nossa Senhora do Carmo was listed as a Cultural Heritage of the State of Tocantins, as published in the Official Diary, in an act registered on September 25, 2012, in the Livro do Tombo Histórico e Etnológico and Livro do Tombo Arquitetônico, officially registering the historical, architectural and cultural value of the work. The action was an initiative of the Tocantins State Secretariat for Culture (ESTADO DO TOCANTINS, s/d) . The secondary data consulted indicate that there may be ruins of the Rosário Church or São Gonçalo Church in the municipality, built and used by black people enslaved at the foot of the Serra do Carmo (ESTADO DO TOCANTINS, s/d). However, no evidence was found to show that this cultural asset actually exists and is under any process of patrimonialization.

The Interventive Diagnosis of the Archaeological Potential in the development area, carried out by a specialized team, in 2015 and 2021, did not find any type of rock art or any trace or artifact remaining from prehistoric groups. However, dozens of historical-cultural material traces that have symbolic references to the social and economic formation of Monte do Carmo were registered.

Regarding the existence of caves, according to the CECAV database of 12/31/2021, the cavities closest to the Project meet located about 40 km away from the Project, that is, outside the Project area.

20.6.3 Indigenous Lands and Quilombola Communities

The location where the development is intended to be installed is directly inserted on 31 points of Permanent Preservation Areas (APPs) and partially on the Legal Reserve of nine properties. Three environmentally protected areas were also identified. Two of them are Sustainable Use Conservation Units, APA Serra do Lajeado and APA Lago de Palmas, and one of them is a Full Protection Conservation Unit (PE Lajeado), but which should not suffer interference with the implementation of the Project, as they are if at a distance greater than 32 km from the directly affected area of the development.

In addition to the CUs and APPs, two (2) Priority areas for Biodiversity Conservation were identified in the areas of influence of the Project, but which should also not suffer interference due to the implementation of the Project.

There are no records of indigenous peoples within 10 km of the Project in question. With regard to traditional quilombola communities, there is the remaining community of quilombo Mata Grande in the municipality of Monte do Carmo. The distance between the development entrance and Mr. Joaquim (reference point for the quilombola territory) is 10.4 km, outside the minimum distance required for mining projects in the Legal Amazon, which would exempt the Company from the obligation to obtain a statement from INCRA on the need for specific studies and consultations with the community.

20.7 Environmental Diagnosis of the Biotic Environment

20.7.1 Flora

The areas of influence of the Monte do Carmo Project are under the phytogeographic domain of the Cerrado biome. There are basically two (2) types of phytophysiognomies in the development area: Savannah areas and Semideciduous Seasonal Forest areas, both with high biological diversity, giving the region a character of high ecological potential. The Savannah areas have a predominance of open xeromorphic vegetation, dominated and marked by a shrub layer, occurring in most of the Project. The areas of Seasonal Semideciduous Forest are predominantly made up of medium and large tree individuals, occasionally with timber potential, sometimes forming small galleries. There are also, in the areas of influence of the Project, the anthropic areas. These are characterized by the partial or total absence of native species, being areas used for planting (mainly soy) or raising cattle. The flora survey recorded seven (7) species protected by the List of Flora Species Immune to Cutting in Tocantins, and one species threatened with extinction.

20.7.2 Fauna

The development site is located in the municipality of Monte do Carmo, also located in a transition area between the Cerrado and the Amazon, biomes rich in fauna diversity. The fauna that occurs in the region where the development will be installed was evaluated through a survey of mammals, birds, reptiles (snakes and lizards) and amphibians (toads, frogs and tree frogs), fish and invertebrates. The methodologies used were visual and auditory active search, observation and listening points, camera traps and ultrasonic recorder. The affected fauna is significant for the region, but does not involve endemic, rare or endangered species.

20.8 Environmental Diagnosis of the Physical Environment

The Project's regional geological context is inserted in the Araguaia Belt, located in the northern portion of the Tocantins Structural Province in central Brazil. Particularly the study area is located in the southeastern portion of the Araguaia Belt, being a region that comprises ancient magmatic and metamorphic rocks, superimposed by more recent sedimentary sequences. In the study region there are several occurrences of gold ore reported, being a region historically explored by prospectors.

The State of Tocantins has climatic characteristics with a dry season and a rainy season, typical of the central Brazilian region. There is a predominance of rains between the months of October and April, followed by periods of drought from May to September, with the maximum drought in the month of July.

The region where the Project's areas of influence are inserted in rugged relief, with mountains and depressions, as well as the study areas are located in the transition between the Alto Tocantins Depression and the Dissected Plateau of Tocantins, so that they present a predominantly flat to slightly undulating, marked by the escarpments and deep valleys of the Serra do Carmo that form high levels. The area of the Project's future pit is located in this relief transition context, with the presence of dissected escarpments and testimonial hills.

The existing soil in the Project region presents alternations according to the different relief formations, ranging from regions with higher concentrations of fine clayey materials and iron oxides with low susceptibility to erosion to areas with more rock fragments and greater susceptibility to erosion. The extent and depth of land cover are associated with slope, with less developed soils in more hilly stretches and more developed soils in less hilly regions.

The development region of the Project has watercourses that vary in volume and flow according to the lack of rain and drought, with the occurrence of silting processes in some watercourses during the rainy season. With regard to the hydrographic profile, the Project's region is located in the Tocantins River Basin, more specifically on the right bank of the Água Suja River sub-basin. The survey of hydrological data and geological characteristics of the region reveal that the water availability of the basin meets the flow required for capturing surface water by the Project, as well as the activities must not imply changes in the water table levels in adjacent areas.

20.9 Evaluation of Environmental Impacts and Mitigating Actions

According to *Mineral Engenharia e Meio Ambiente*, 2022, the direct impacts on the socioeconomic environment were identified, and among them are the generation of expectations in the population, generation of employment and income in the implementation, dynamization of the local and regional economy, interference in the daily life of the population by generation of nuisances for the work, pressure on the infrastructure of essential services, generation of jobs and income in the operation, interference in the daily life of the population by generating nuisances of the operation, increase in tax collection, damage to the implementation of ecological tourism.

With regard to the impacts on the biotic environment, during the implementation of the Project, these are related to: loss of specimens of protected and threatened flora and Reduction of permanent preservation areas (APP), loss of habitat and reduction of biodiversity of aquatic biota, increased vehicle traffic and reduction of terrestrial fauna biodiversity, displacement of terrestrial fauna by moving machines, vehicles, people and acoustic discomfort, forest fragmentation and loss of vegetation cover. Already during the operation of the Project, the impacts correspond to the displacement of the terrestrial fauna by the movement of machines, vehicles, people and acoustic discomfort, loss of habitat and reduction of the biodiversity of the ichthyofauna, loss of habitat and reduction of the biodiversity of the terrestrial fauna.

In relation to the impacts on the physical environment, during the implementation and operation phases, these correspond to changes in environmental quality due to the generation of noise and vibrations, changes in air quality due to the generation of dust and the emission of gases from burning fuels, interference in surface dynamic processes, interventions in drainage and water sources, change in water availability, change in the quality of surface and ground water and soil and exclusively during operation there will still be impacts on the generation of geotechnical risks, change of landscape and aquifer lowering.

Certainly, the implementation of the Project is the phase with the greatest number of impacts identified, given the greatest number of generating actions, referring to construction activities. However, many are mitigated through the implementation of the respective environmental plans and programs.

The positive impacts identified for the Monte do Carmo Project are related to the socioeconomic environment. The dynamism of the economy and the collection of taxes are benefits that the installation and operation of the Project can bring to the region, mainly to the municipalities of Monte do Carmo and Porto Nacional. Finally, based on the environmental diagnosis of the Project's areas of influence, it was verified that there are no impacts on Conservation Units or their Buffer Zones, Biosphere Reserves, Indigenous Lands, Quilombola Communities and Incra rural settlements.

There are also no impacts on Archaeological, Paleontological or Speleological Heritage, since no occurrences and traces were found.

Regarding the Project's deactivation (closure) phase, the productive operations will be closed and, consequently, the activities that generate waste, effluents, atmospheric emissions, noise and vibrations.

In order to avoid the existence of environmental liabilities, and degraded environments due to the potential for the intensification of erosive processes and silting in the mining area or even contamination of surface and underground waters and soils during the closure of operational activities, it is necessary to foresee the Degraded Areas Recovery Program — PRAD. In analyzing the Mine Closure Plan and the PRAD, in this preliminary phase of the Project's design, it was possible to verify that the vast majority of aspects, impacts and risks associated with the phase of closing the activities of this Project were approached and evaluated. The cost estimate presented is also consistent with the mapped risks and previously designed structures, having used as a price reference the costs established by the Reference Costs System for Works of the National Department of Transport Infrastructure (SICRO-DNIT) for the state of Tocantins, with January 2022 as the base month. This reference is considered adequate and relevant, bringing up-to-date and adequate values for the region where the Project will be inserted.

Therefore, in view of the reasons presented, the conclusion of the EIA is the existence of the environmental viability of the Project, provided that it is associated with the framework of environmental measures and programs set out below:

Table 20.1 - Framework of Environmental Measures and Programs

Minimizing Measures	Objectives
Environmental Management Program	The general objective of the EMP is to provide the enterprise with efficient mechanisms that guarantee the execution and control of actions planned in the environmental programs, in addition to the adequate environmental management of the works, with regard to specific procedures, maintaining a high standard of quality in its implementation and operation.
Social Communication Program	The objective of this program is to establish the necessary communication channels for a good relationship between the entrepreneur and the social actors in the areas under the influence of the enterprise.
Environmental Education Program	The Environmental Education Program aims to provide interactions between the social actors involved in the implementation process of the Monte do Carmo Project, mainly through the dissemination of new knowledge and new forms of relationship and management of natural resources, respecting the ways of life of local communities, as well as their productive activities.
Environmental Program for Construction	The purpose of the EPC is to define and present the guidelines, guidelines and procedure to be followed by the entrepreneur and his contractors during the mobilization and implementation phases of the enterprise.

Minimizing Measures	Objectives
Degraded Area Recovery Program	The main objective of the DARP is the rehabilitation of areas eventually degraded by the implementation of the project, such as mining areas, waste and tailings piles, industrial area.
Risk Management Program	The main objective of the RMP is to provide a system, aimed at establishing requirements containing general management guidelines, with a view to preventing environmental accidents in the operation of the enterprise.
Water Quality Monitoring Program	The main objective of the program is to evaluate possible alterations in the quality of the water resulting from the actions foreseen in the implementation and operation phases of the enterprise, based on the recording of the results obtained in the quality of the surface water in relation to the standards established by the current legislation.
Control and Monitoring Program for Erosive and Silting Processes	The program aims to group actions to control and mitigate the impacts caused on the ground as a result of the implementation and operation activities of the enterprise, related to soil instability and promotion of erosion processes in roads and access roads, as well as the silting up of bodies of water, considering necessary surveys, investigations, instrumentation and procedures.
Noise and Vibration Monitoring Program	The program aims to monitor the sound pressure and vibration levels during the installation and operation phase of the project, aiming to adjust the noise and vibration levels resulting from the operation of equipment, with the aim of guaranteeing the well-being and comfort of residents. closer, in addition to quantifying the levels of vibrations in the structures, ensuring the safety of the structures.
Air Quality Monitoring Program	The program aims to present guidelines to minimize possible impacts caused by the generation of atmospheric emissions, ensuring limits of air quality standards, compared to current legislation.
Hydrogeological Monitoring Program	This program aims to monitor actions to control and mitigate the impacts caused on water availability in the region as a result of the pumping activities necessary for the development of the pit.
Hydrological Monitoring Program	The program aims to monitor actions to control and mitigate the impacts caused on water availability in the region as a result of the implementation and operation activities of the enterprise, considering interventions in recharge areas of water bodies, as well as water demand for operation of the enterprise.
Geotechnical Monitoring Program	The program aims to monitor actions to control and mitigate the impacts caused on the ground, related to the instability of environments, as well as structures subject to geotechnical risks.
Terrestrial Fauna Monitoring Program	The main objective of the program is to evaluate the possible impacts on the faunal communities during the implementation and operation phases of the project.
Aquatic Biota Monitoring Program	The program aims to monitor possible effects arising from the impacts arising from the implementation and operation of the enterprise on the aquatic biota and, if necessary, indicate corrective measures.
Program for Chasing and Rescuing Terrestrial Fauna	The main objective of the program is to establish the actions and define the strategies that will be adopted during the activities of capture, transport and release of wild fauna in the stages of vegetation suppression, in order to minimize the risk of accidents or death of the animals present in the area. .

Minimizing Measures	Objectives
Terrestrial Fauna Signaling Program	The main objective of the program is to guarantee the conservation of the faunal diversity of the areas where the project is located, based on actions and strategies that minimize the impact on wild fauna and contribute to the safety of users of the project's internal access roads.
Program for Monitoring the Suppression of Vegetation and Rescue of Germplasm and Epiphytes	The objective of the program is to define methods for rescuing germplasm and epiphytes, and guide vegetation suppression activities, in addition to promoting greater use of wood resources arising from vegetation removal and interacting with the Fauna Scaring and Rescue Program.
Forest Replacement Program	The main objective of the program is to establish procedures that guide the implantation, handling and monitoring of plantations related to Forest Replacement due to the suppression of vegetation by the implementation of the Monte do Carmo Project.
Labor Training and Qualification Program	The program aims to provide technical qualification and encourage formal education, aiming to provide residents of the areas of influence with development and training to access job opportunities during the implementation and operation phases of the enterprise.
Health Indicators Monitoring Program	The main objective of the program is to monitor the Health indicators of the Municipalities of Porto Nacional and Monte do Carmo, by obtaining data produced by the Municipal Health Secretariats and carrying out analyzes that indicate whether the activities of the undertaking may be generating any pressure on this sector.

The Preliminary License granted by NATURATINS attests to the viability of the Project based on the conceptual presentation of socio-environmental control and monitoring measures in the EIA prepared in July 2022. For the current phase of requesting the installation license, the programs socio-environmental control and monitoring were duly detailed through the Basic Environmental Plan – PBA document prepared in September 2023 in order to support the executive phase of the Project.

20.9.1 Social and Environmental Assessment

The GE21 Mineral Consultancy presents in this section the results of the Environmental Technical Assessment of the Monte do Carmo Project by Serra Alta Mineração Ltda., from the analysis of the current situation of the Company's environmental regularization and its relevant socio-environmental factors, in light of the Project's environmental viability.

This analysis is carried out within the scope of the environmental licensing which, for the mineral extraction activity, is mandatory in Brazil and must be conducted in accordance with Federal Decree No. 99.274/90, which regulates Federal Law No. 6,938/81 which, in turn, institutes the National Environmental Policy.

The competence for the Environmental Regularization of the Project in question belongs to the State of Tocantins, established by Law nº 6.938/81, as well as by CONAMA Resolution nº 237/97, and the competent environmental agency for the analysis of the licensing process is NATURATINS, which is linked to the Government of the State of Tocantins and holds the attribution to implement and monitor public policies about the environment, as recommended by Law No. 261/91 and Law No. 3804/2021. COEMA Resolution No. 07/2005 provides the Integrated Environmental Control System of the State of Tocantins, and respective guidelines for environmental licensing.

Within the scope of environmental licensing, in addition to the conformity with applicable legislation at the Federal, State and Municipal levels, under relevant environmental aspects — such as water and effluents, flora and fauna, noises, natural, cultural, historical and archaeological heritage, caves, environmental education, indigenous and quilombola lands, and traditional populations —, the manifestations of intervening agencies, including the Municipality of Monte do Carmo, attesting the undertaking's compliance with municipal legislation on land use and occupation, are also analyzed.

For mining activities, it is also necessary for the Company to prove that it holds the right to exploit the intended mineral substance, which is granted by the National Mining Agency, considering that the mineral resources are Union property according to art. 20, IX of the Federal Constitution of 1988.

Also, according to CONAMA Resolution nº 237/97, which defines concepts, procedures and criteria used in environmental licensing, the three-phase model is the rule in Brazilian environmental licensing, which is divided into the stages of Preliminary License, Installation License, and Operating. Thus, in three-phase licensing, the Company must first obtain the Preliminary License, which attests the environmental viability of the activities in terms of their design and location, as determined by CONAMA Resolution No. 09/90.

In the State of Tocantins, COEMA Resolution No. 07/2005 is the norm that provides for environmental licensing in the State and, following the determinations contained therein, a Preliminary License was requested from NATURATINS for the Monte do Carmo Project. At this stage, the environmental viability of the Project in terms of its design will be attested, and the basic requirements that must be met in the next implementation phase will be established.

Following the guidelines of CONAMA Resolution No. 01/86, the EIA and the respective EIR were presented to support the analysis of the technical, environmental and locational viability of the Project. It is important to highlight that the EIA is a constitutional instrument of the National Environmental Policy, whose primary purpose is to assist, as a source of technical information, the full and total achievement of the objectives set by the National Environmental Policy, in accordance with Law No. 6,938/81.

The EIA and the respective EIR were carried out by a technical team composed of specialists from different areas of knowledge, with a view to requesting the Preliminary License for the Project, following the guidelines of current environmental legislation.

The studies were elaborated according to a set of techniques and stages, namely: characterization of the undertaking; identification of applicable environmental legislation; definition of study areas; environmental characterization involving all physical, biotic and socioeconomic aspects; projection of the future scenario of the region from the implementation of the Project; assessment of environmental impacts; and the proposition of control, compensation and monitoring measures for the negative impacts identified, as well as for the enhancement of the positive effects.

The studies included therefore a careful and consistent global assessment of the negative and positive environmental effects to be generated during the planning, implementation and operation phases of the Monte do Carmo Project.

This evaluation considered the characteristics of the Project and possible alterations that may occur in the region, and resulted in the indication of 21 Environmental Programs in the Physical, Biotic and Socioeconomic spheres. The implementation of the Environmental Programs will guarantee the effective viability of the Project in a balanced conception, making compatible the use of natural resources, the protection of the environment and the quality of life of the population.

It can be concluded that the Monte do Carmo Project is considered viable from a locational and environmental point of view, provided that the guidelines and recommendations for control and monitoring included in the various environmental programs indicated in the EIA and the respective Environmental Control Plan are dully followed.

The Preliminary License process formalized on July 11, 2022 under protocol number 17688/2022 was completed on May 26, 2023, with Preliminary License LP 27/2023 being granted by NATURATINS. Having certified the environmental viability of the Project, this License defined the technical requirements that must be met to proceed with the stage of obtaining the environmental license for installing the Project.

It is important to highlight that among the documents presented to NATURATINS to obtain the Installation License is the Basic Environmental Plan which details the socio-environmental monitoring and control programs for the installation, operation and deactivation phases of the Project.

It is also important to inform that to request the Installation License, the forestry report and the grant report were formalized. Therefore, the Installation License will be granted simultaneously with the Grant and Forestry Exploration Authorization.

In view of the above, based on the documents analyzed, taking into account the characteristics of the Monte do Carmo Project and the applicable legal regulations, the environmental viability of the intended mining activity is proven, reinforced by the specialized technical studies carried out, as well as by the Prior License. However, the Company still complies with the other stages of the licensing process and requires an installation license. Therefore, there remains a conclusive analysis of the NATURATINS installation license stage to begin work on the Project.

20.10 Mine Closure, Remediation and Reclamation Plan

In analyzing the Mine Closure Plan and the PRAD, in this preliminary phase of the Project's design, it was possible to verify that the vast majority of aspects, impacts and risks associated with the phase of closing the activities of this Project were approached and evaluated.

The cost estimate presented is also consistent with the mapped risks and previously designed structures, having used as a price reference the costs established by the Reference Costs System for Works of the National Department of Transport Infrastructure (SICRO-DNIT) of the state of Tocantins, with January 2022 as the base month. This reference is considered adequate and relevant, bringing updated and appropriate values to the region where the Project will be inserted.

21 CAPITAL AND OPERATING COSTS

The Project scope covered in this Report is based on the construction of a greenfield mining and processing facility with an average mill feed capacity of 1.92 Mtpa of ore.

The capital (CAPEX) and operating (OPEX) cost estimates related to the mine, the process plant, and all required facilities and infrastructure have been developed by DRA or consolidated from external sources. The estimate is based on the scope of work as presented in earlier sections of this Report.

The CAPEX and OPEX are reported in United States Dollars (US$). The reference period for the cost estimate is 4^{th} Quarter 2023.

The estimate prepared for this FS is based on a Class 3 type estimate as per the Association for the Advancement of Cost Engineering (AACE) Recommended Practice 47R-11 with a target accuracy of ±15%. Although some individual elements of the CAPEX may not achieve the target level of accuracy, the overall estimate falls within the parameters of the intended accuracy.

21.1 Capital Cost Estimate

21.1.1 Capital Cost Summary

The CAPEX consists of direct and indirect capital costs for the Project, including the open pit and underground mine sites, and the processing plant and infrastructure. Sustaining capital is also included. The estimates include contingency and other costs as indicated.

Table 21.1 presents a summary of the initial CAPEX and the sustaining CAPEX for the Project.

Table 21.1 – Capital Cost Summary

Description	Initial CAPEX (millions of US$)	Sustaining CAPEX (millions of US$)	Total CAPEX (millions of US$)
Direct Costs			
Infrastructure - Site Infrastructure	8.9		8.9
Infrastructure - Water Collection System	1.6		1.6
Infrastructure – Dam	0.6		0.6
Infrastructure – Substation	3.6		3.6
Infrastructure – Transmission Lines	7.6		7.6
Infrastructure – Temporary Facilities	3.2		3.2
Sub-Total - Infrastructure	***25.5***	***0.0***	***25.5***
Processing Plant – Concrete	7.3		7.3
Processing Plant – Metallic Structure	5.0		5.0

Description	Initial CAPEX (millions of US$)	Sustaining CAPEX (millions of US$)	Total CAPEX (millions of US$)
Processing Plant – Architecture	1.4		1.4
Processing Plant – Boiler	3.0		3.0
Processing Plant – Mechanical Equipment	38.3		38.3
Processing Plant – Mobile Equipment	0.6		0.6
Processing Plant – Piping	3.2		3.2
Processing Plant – Electrical Equipment	10.5		10.5
Processing Plant – Automation, Instrumentation, and Telecommunications	1.5		1.5
Processing Plant – Gold Laboratory	1.0		1.0
Sub-Total – Processing Plant	***71.8***	***0.0***	***71.8***
Mining – Open Pit Pre-stripping	20.3		20.3
Mining – Open Pit Equipment	29.7	19.9	49.6
Mining – Underground Equipment & Infrastructure		32.9	32.9
Mining – Underground Development		13.2	13.2
Sub-Total - Mining	***50.0***	***66.0***	***116.0***
Sub-Total Direct Cost	**147.3**	**66.0**	**213.3**
Indirect Costs			
Indirect Costs	12.1		12.1
Owner's Costs	6.2		6.2
Sub-Total Indirect Cost	**18.3**		**18.3**
Sub-Total Direct Cost + Indirect Cost	**165.6**	**66.0**	**231.6**
Closure Costs		**15.0**	**15.0**
Contingency	**15.8**		**15.8**
TOTAL	**181.4**	**81.0**	**262.4**

21.1.2 Scope of the CAPEX

The capital cost estimate includes the material, equipment, labour, and freight required for the mine pre-development, mine service equipment, mine services and facilities, processing facilities, filtered tailings/Co-Disposal storage and management, as well as all infrastructure and services necessary to support the operation.

The CAPEX includes estimates developed and provided by DRA and external sources such as:

DRA: Estimate compilation, consolidation, and preparation of MTOs and cost estimates for:

- Open Pit Mining;

- Underground Mining (in sustaining costs); and
- Indirect Costs.

GE21: Preparation of MTOs and cost estimates for:

- Process Facilities;
- Non-Process Surface Facilities and Infrastructure;
- Electrical and Power Distribution;
- Filtered Tailings / Co-disposal Storage Facility;
- Waste Management Facility; and
- Water Management Facility.

21.1.3 Major Assumptions

The following are assumptions on which the CAPEX is based:

- Minimal requirement or limitation with respect to local content in terms of labour, materials, equipment and economic impact.
- No restriction to site at any time during execution of the Project.
- No delays as a consequence of labour disputes.
- No underground obstructions for all excavation activities to be performed during the construction.
- Soil conditions will not require special foundation designs such as piling.
- All excavated material will be disposed of within the site battery limits.
- Cost estimates are based on the Project obtaining all relevant permits in a timely manner to meet the Project Schedule.

21.1.4 Major Exclusions

The CAPEX excludes allowances for the following:

- Provision for inflation, escalation, currency fluctuations and interests incurred during construction.
- Unidentified ground conditions.
- Extraordinary climatic events.
- Force majeure.
- Labour disputes.
- Insurance, bonding, permits and legal costs.
- Schedule recovery or acceleration.

- All duties and taxes, expenditures to date (sunk costs) (but these were considered in the Financial Analysis).
- Project financing costs.
- No allowance was made in the estimate for withholding tax.

It is assumed that local contractors can find local accommodation and have included such costs in their unit pricing.

21.1.5 Basis of Estimate for Direct CAPEX

The CAPEX includes all the direct and indirect costs along with the appropriate project estimating contingencies for all the facilities required to bring the Project into production, as defined in this Technical Report. All equipment and material are assumed to be new. The labour rate build up is based on the statutory laws governing benefits to workers in effect in Brazil at the time of the estimate. Brazilian import tariffs have been applied. The estimate does not include any allowances for scope changes, escalation and exchange rate fluctuations.

The execution strategy is based on an engineering, procurement and construction management (EPCM) implementation approach and horizontal (discipline based) construction contract packaging.

21.1.5.1 Exchange Rates

The base currency for this Report is the US Dollar (US$). For information purposes, the exchange rates used for all work when quotations were received in foreign currencies are shown in Table 21.2.

Table 21.2 – Currency Exchange Rates

Code	Description	Exchange Rate	
USD	US Dollars	1.00	1.000
CAD	Canadian Dollar	1.35	0.724
EUR	European Euro	0.94	1.063
BRL	Brazilian Real	5.00	0.200

21.1.5.2 Direct Quantities

Direct costs are generally quantity-based and include all permanent equipment, materials and labour associated with the physical construction of the mine, site infrastructure, process plant, tailings facilities, and ancillary facilities.

Material take-offs (MTOs) were generated from engineering design developed by Ícone Engenharia for the Project site in 2023 as well as preliminary calculations. The quantities were developed based on a conceptual engineering and, afterwards, adjusting the scope developed between engineering and Cerrado Gold, the quantities were adjusted to accommodate the new production premises, which the QP understands to be adequate for this Report.

21.1.5.3 Quotation Requests

For all major equipment, budget quotations were obtained from established vendors. These quotes were benchmarked against pricing obtained for similar equipment on recent database projects. Pricing for minor equipment and materials was obtained from budget quotes or general database. Some equipment quoted are listed below.

- Processing Plant:
  - Crusher;
  - Mills;
  - Tanks;
  - Agitators;
  - Pumps;
  - Screens;
  - Conveyors; and
  - Feeders.
- Mining:
  - Major open pit equipment (e.g., trucks, loaders, excavators, production drills); and
  - Major underground equipment (e.g., trucks, LHDs, drill-jumbos, fans, production drills).
- Other.

27% of all direct costs and 87% of mechanical equipment costs were based on budget proposals and price queries in the market.

21.1.5.4 Fabrication and Construction Works

A preliminary plan was prepared showing the type of supply and construction packages envisaged for the Project. Essentially the contracting plan was established to maximize the use of local contractors and is based on the award of horizontal discipline contract packages.

Once the design was sufficiently advanced budget quotation requests were prepared for the main contract packages and issued to local Brazilian contractors and also off-shore suppliers to obtain pricing.

The CAPEX is based on the unit rates derived from vendors and database following analysis of the contractor unit rates.

21.1.5.5 *Labour Rates and Crew Rates*

Base labour rates for different trades and classifications have been obtained from Brazilian sources (contractors and database). Payroll mark-ups and burdens for social charges and uplifts have been included taking into consideration site conditions, work exposure and existing legislation.

The estimate of service costs was obtained through the Brazilian construction methodology, in which unit costs of services include composition of labour, materials and equipment necessary for construction and assembly. All costs were obtained from a recent database of similar projects. The applied productivity was adequate to local conditions of weather, labour capacity and other.

21.1.5.6 *Contractor Indirects*

Contractor indirects are included in the "All-In" crew rates and cover the costs for mobilization and demobilization of labour, equipment and contractor facilities to and from the Project site. Other items included in contractor indirects are the establishment of temporary site facilities and utilities for each contractor, maintenance of temporary facilities and equipment, construction management and supervision support, health, safety, security and environment (HSE) support, site administration support, project expenses (miscellaneous minor licenses and permits) and contractor fees and overhead.

The contractor Indirect costs were considered in the services unit costs, with the assumption that the local infrastructure is included in these costs.

21.1.5.7 *Engineering, Procurement and Construction Management Services*

The EPCM services required for execution of the Project as well as engineering, drafting, project management and project controls hours were included as a factorization from direct costs, based on similar projects. The in-country project and procurement support, construction management and commissioning services were also estimated based on the factorization of direct costs.

21.1.5.8 *Vendor Commissioning*

Vendor construction and commissioning costs were estimated for each equipment package either by percentage or based on the received proposals.

21.1.5.9 *Spare Parts*

The CAPEX includes an allowance to cover spares for process plant and equipment, based on similar projects.

21.1.5.10 *First Fills*

The first fills inventory and opening stocks have been considered. These costs consist of reagents and consumable items purchased and stored on site at the onset of operations. This inventory ensures adequate consumables are available for the initial stage of operation.

21.1.5.11 Freight

Freight costs inclusive of ex-works packaging and handling, road freight to an export port and sea freight costs from various countries of origin were obtained via database and compared to similar projects.

Freight costs were estimated based on an average percentage over the equipment and materials supply and were included in the supply costs. For domestic freight a 4% factor was applied and for imported items an additional 10% fee was used to cover sea transport and taxes.

21.1.6 Owner's Costs

Cerrado provided the estimate of Owner's costs including the owner's project team, pre-production process plant and administration labour and expense costs, environmental and social costs, project insurance and commissioning and training costs.

Owner's costs also include maintenance tools and equipment, office furniture, and software. These costs were estimated based on the scope established.

21.1.7 Duties and Taxes

All duties and taxes were included in the CAPEX, including the following benefits:

- Convênio 52/91; and
- DIFAL tax exemption.

21.1.8 Contingency

The purpose of contingency is to make specific provision for uncertain cost items within the Project scope. Contingency does not cover scope changes, escalation or exchange rate fluctuations. The unforeseeable items covered by contingency are often referred to "unknown unknowns" within the scope of the Project. These can arise due to:

- Labour productivity variations due to contractors not providing or not having access to labour with the required level of skills as assumed in the various direct cost estimates.
- Labour rates or construction equipment rental rates being different from the base assumptions adopted in the CAPEX.
- Equipment and bulk material cost variations from the budgetary pricing submitted for the CAPEX.
- Other.

Contingency is an integral part of an estimate and has been applied to all parts: direct costs, indirect costs, Owner's costs, etc. The contingency was calculated using a Monte Carlo methodology, adopting P_{80} as it is a conceptual project, in accordance with good market practices. From this, the index of 12.8% was obtained. This percentage was incorporated into the total costs (direct and indirect) of the CAPEX. The contingency does not include funds to cover project risks.

21.1.9 Sustaining Costs

The sustaining costs for the Project consist essentially of additional open pit equipment and equipment replacement required during the open pit operation ($19.9 M) as well as the underground development costs (US$46 M).

Open pit sustaining costs include major equipment (trucks, shovels, loaders and drills) for US$16.7 M, support equipment (water truck, service and pickup trucks) for US$3.2 M, and US$0.9 M for additional mine road construction.

Underground sustaining costs consist of development in waste rock and include: portal and ramp (decline) development, ventilation system, CRF plant, and underground mine infrastructure. Costs were developed from first principles similar to the underground operating costs using vendor quotes, local consumables pricing, local manpower costs and DRA data. Total LOM underground sustaining costs are estimated at US$46.0 M. Details are given in Table 21.3.

Table 21.3 – Summary of Underground Sustaining Costs

Item	Sustaining CAPEX (millions of US$)
Waste Development	13.1
Mine Equipment	20.4
Mine Infrastructure	0.8
Ventilation	7.9
Dewatering	1.5
Communication	0.7
Electrical Installation	1.6
TOTAL	**46.0**

21.1.10 Closure and Rehabilitation Costs

At the end of the Project life, it is required that all disturbed areas are rehabilitated, and equipment and buildings are disposed of, and an allowance has been made for this in the CAPEX. GE21 advised the quantities associated with the Project closure and the prices were included in this estimate as sustaining capital.

21.2 Operating Cost Estimate (OPEX)

The OPEX is presented in United States Dollars (US$) and uses prices obtained in Q4 2023. DRA and GE21 developed these operating costs in conjunction with Cerrado Gold.

The following are examples of cost items specifically excluded from the OPEX:

- Value Added Tax (VAT); and
- Project financing and interest charges.

Table 21.4 presents the operating costs summary by major project area over the LOM. The average operating cost over the 9-year mine life is estimated at $29.78/t of ROM or $687/oz. All-in Sustaining Costs (AISC), as summarized in Table 21.5.

Table 21.4 – Summary of OPEX (average over LOM)

Item	Cost (US$/t milled)
Mining	17.01 *
Processing	9.11
Tailings	1.45
G & A	2.21
TOTAL	**29.78**

* weighted average of open pit and underground mining

Table 21.5 – All-in Sustaining Costs (AISC)

Description	AISC (US$/oz)
Mining	333
Processing	179
Tailings	29
G&A	43
Sustaining Capital	77
Royalties & Mining Taxes	26
Total	**687**

21.2.1 MINE OPEX (OPEN PIT)

The open pit mining OPEX was developed based on the open pit mining plan for the Project.

Open pit mining operating costs are built up from first principles. Inputs are derived from vendor quotations and DRA historical data. This includes quoted cost and consumption rates for such inputs as fuel, lubes, fluids, tires, undercarriage, ground engaging tools (“GET”), machine parts, and operating and maintenance labour as well as supervision and engineering/technical services personnel.

Open pit mining operating costs averaged over the life of the operation are estimated at $1.98/t of material mined by open pit method. A breakdown of the open pit mining operating costs is provided in Table 21.6.

Table 21.6 – Average Open Pit Mine OPEX

Item	LOM (k$)	Cost (US$/t mined)
Loading	21,666	0.17
Hauling	43,676	0.34
Drilling & Blasting	89,905	0.71
Support & Service	41,636	0.33
Manpower	50,752	0.40
Technical Service	3,192	0.03
TOTAL	**250,829**	**1.98**

21.2.2 MINE OPEX (UNDERGROUND)

The underground mining OPEX was developed based on the underground mining plan for the Project.

Underground mining operating costs are built up from first principles. Inputs are derived from vendor quotations and DRA historical data. This includes quoted cost and consumption rates for such inputs as fuel, lubes, fluids, tires, ground engaging tools ("GET"), drill bits, machine parts, and operating and maintenance labour as well as ground support.

Underground mining costs cover for development in ore and waste costs not included in the sustaining costs, production stoping costs, cemented rockfill costs and indirect costs. The costs include labour, equipment operation, consumables, ground support, ventilation, electrical power, supervision and transport of the ore to the process plant.

Underground mining operating costs averaged over the life of the operation are estimated at $25.04/t of ore mined. A breakdown of mining operating costs is provided in Table 21.6.

Table 21.7 – Average Underground Mine OPEX

Item	LOM (k$)	Cost (US$/t ore)
Development	10,368	4.23
Stoping	18,711	7.63
Cemented Rockfill	11,584	4.72
Indirects	16,693	6.81
TOTAL	**57,356**	**23.39**

21.2.3 Processing Plant OPEX Estimate

The process plant operating costs were developed by GE21 based on the processing plant plan for the Project.

The operating cost for the process plant and related infrastructure at the project site is based on the estimated direct costs for processing at a nominal annual throughput of 1.92 Mtpa of concentrate.

The process plant operating costs comprise: plant manpower, reagents and consumables, power required for the process, and operational maintenance. The process plant and related infrastructure annual operating cost is estimated to be US$17.49 M, equivalent to US$9.11/t plant feed.

Table 21.8 – Processing Plant OPEX Estimate

Item	Unit Cost (US$/t ROM)	Total Cost (M US$/a)
Labour	2.15	4.13
FEL Feeding Primary Crusher	0.24	0.46
Power	1.70	3.27
Consumables	2.48	4.76
Reagents	2.07	3.97
Maintenance	0.46	0.89
TOTAL	**9.11**	**17.49**

Manpower and Labour

The annual average manpower and labour costs for the operation is summarized in Table 21.9. The organization chart and manpower list were derived from first principles. Salary and wage rates were based on local labour fees. The labour rates are based on local requirements for social charges, labour law and current practices in the state.

Table 21.9 – Manpower and Labour Costs for Processing Plant

Item	Number	Unit Cost (US$/t ROM)	Total Cost (M US$/a)
Process Staff	9	0.32	0.61
Process Operations	77	1.15	2.21
Process Maintenance	44	0.68	1.31
TOTAL	**130**	**2.15**	**4.13**

Non-shift employees working a 40-hour work week include main office staff, and senior management and professional staff working at site. It is assumed all the employees will live around the site and travel to site by charter aircraft was not considered.

Based on Brazil labour legislation it is expected that the employees will be represented by a workers' union, and work schedule and labour rate details will need to be negotiated with the union.

Power

Power consumption estimates were adopted from the electrical load analysis. The total estimated power consumption per annum is 67.29 MWh. Power supply costs were based on the ANEEL (National Agency of Electrical Energy) and the power market for the free consumer plus 25% ICMS for a total price of US$ 0.0486 per kWh. PIS/COFINS recoverable taxes are excluded.

The annual estimated process plant power cost is US$3.27 M, equivalent to US$1.70/t milled. The power cost for the process plant is summarized in Table 21.10.

Table 21.10 – Processing Plant Power Cost

Item	Unit	Value
Annual Total Power	MWh	67.29
Power Cost	US$/kWh	0.0486
Annual Power Cost	M US$	3.27
Power Cost	US$/t	1.70

Reagents and Consumables

The estimated annual reagent and consumables cost, including delivery to site, is US$8.74 M, equivalent to US$4.55/t feed. Reagent consumptions are estimated from laboratory test results and mass balance calculations. During the study phase, various potential suppliers provided unit prices for supplies and consumables, which were integral to the operating cost estimate. The estimated costs for the main plant consumables are grounded in standard consumable rates, corroborated by test work, and priced according to current market rates and quotations from reputable suppliers. For the remaining consumables, a cost equivalent to 1.5% of the total equipment expenses was applied.

The reagents and consumables costs for the process plant are summarized in Table 21.11:

Table 21.11 – Reagents and Consumables Costs for Processing Plant

Item	Description	Unit Cost (US$/t ROM)	Total Cost (M US$/a)
Reagents	all	2.07	3.97
Process Consumables	Main process consumables	2.48	4.77
TOTAL		**4.55**	**8.74**

Maintenance

The estimated annual maintenance cost for the project is US$0.89 M, which translates to approximately US$0.46/t of plant feed. These annual process maintenance costs were calculated using established factors and the total supplied costs for major equipment. The costs are distributed evenly over the mine's lifespan. In cases where specific maintenance costs were not derived from a first-principles basis, an assumption was made to factor in costs at 2% of the direct mechanical equipment costs.

21.2.4 General and Administration (G&A) OPEX Estimate

Operating costs for G&A include items that are not captured in the mine or processing costs. These costs include items such as management and administration personnel labour, environmental monitoring, safety, medical, catering and travel expenses, communications, support tools and shared equipment, emergency response, site-wide maintenance, insurance, legal fees and property taxes, as well as other miscellaneous office expenses.

Cerrado Gold provided an estimate for G&A costs of $ 2.43/t ROM that were reviewed and validated by GE21. G&A cost details are given below in Table 21.12.

Table 21.12 – G&A Costs

Item	Unit Cost (US$/t ROM)	Total Cost (M US$/a)
General and Administration Labour	1.24	2.39
General and Administration Expenses	1.18	2.27
TOTAL	**2.43**	**4.66**

21.2.5 Tailings Cost Estimate

Tailings co-disposal costs were estimated by GE21 at US$2.7 M per year or US$1.45/t ROM.

22 ECONOMIC ANALYSIS

The economic analysis performed for this Technical Report is based on an annual cash flow model over the life of the Project. The cash flow projections are estimated using the project development and production schedule and incorporate sales revenue, CAPEX, OPEX, and other costs. CAPEX include initial capital expenditures, sustaining capital expenditures and closure costs. OPEX include mining costs, processing costs and general and administration costs.

The economic analysis results present net present value ("NPV") and internal rate of return ("IRR") on pre-tax and after-tax bases. Payback period and total undiscounted cash flow are also presented. A sensitivity analysis was performed on key parameters.

22.1 Financial Assumptions

The economic analysis is based on several technical and economic input assumptions, as presented in Table 22.1, and as documented in other sections of this Technical Report.

Table 22.1 – Financial Analysis Assumptions

Description	Unit	Value
Gold Price Assumptions		
Gold Sales Price	$/oz	1,750
Payable Metal	%	99.99
Refinery Charges	$/oz	12.00
Freight And Insurance	$/oz	10.74
Production		
Steady State Ore Throughput	Mtpa	1.92
Average Annual Au Production	k oz per annum	95,212
Life of Mine	years	9.0
Life on Mine Au Recovery	%	95.64
Total Ore Mined – Open Pit	Mt	14.3
LOM Average Stripping Ratio		7.84
Total Ore Mined – Underground	Mt	2.5
Total Recovered Gold (Payable)	ounces	856
Operating Costs		
Open Pit Mining	US$/tonne	13.73
Underground Mining	US$/tonne	3.28
Processing	US$/tonne	9.11
Water and Tailings Management	US$/tonne	1.45
G&A	US$/tonne	2.21

Description	Unit	Value
Total Operating Costs	US$/tonne	29.78
Total Cash Costs	US$/oz	583.7
All-in Sustaining Cost (AISC)	***US$/oz***	***686.6***
Capital Costs		
Initial Capital Cost	US$ M	165.6
Contingency	US$ M	15.8
Total Upfront Capital Cost	US$ M	181.4
Sustaining Capital Cost	US$ M	66.0
Closure Cost	US$ M	15.0
Total Capital Cost	***US$ M***	***262.4***

Table 22.2 summarizes the financial analysis results. The Project generates an after-tax NPV of US$ 390 M at a 5% real discount rate, an after-tax IRR of 34% and the after-tax payback period is 2.1 years from commencement of production. All figures are in US$ currency.

Table 22.2 – Financial Analysis Summary

Financial Results	Unit	Pre-Tax	After-Tax
NPV @ 5%	US$ M	466	390
IRR	%	37	34
Payback Period	years	2.0	2.1

22.2 Taxes

Taxes that are due for the Monte do Carmo Project are estimated considering existing tax laws, with application to revenues associated with project's production.

- CFEM – Financial Compensation for the Exploitation of Mineral Resources:

  CFEM is the consideration paid to the Government of Brazil for the extraction and economic exploration of Brazilian mineral resources.

  The CFEM rate for this project is 1.5% over EBIT.

- CSLL – Social Contribution:

  The social contribution tax is 9% calculated based on pre-tax profit.

- IRPJ – Income Tax:

  A tax rate of 25% is applied to pre-tax profit but this value has a 75% discount due to the tax incentive offered by the *Superintendência do Desenvolvimento da Amazônia* (SUDAM), the Amazon Development Superintendence.

- PIS, COFINS and ICMS:

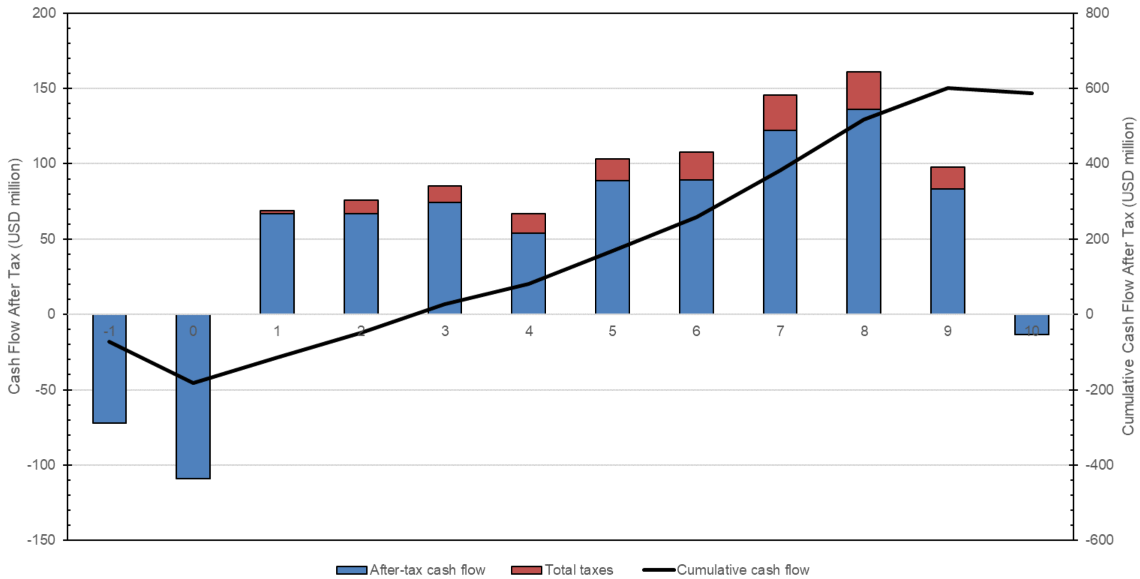
  These taxes were not applied in this analysis since all production is directed for exportation.

22.3 Discounted Cash Flow

A simplified Discounted Cash Flow (DCF) base case scenario was developed to assess the Project based on economic-financial parameters, on the results of the mine scheduling and on the Initial CAPEX and OPEX.

The annual Project cash flows are presented in Figure 22.1 and Table 22.3.

Figure 22.1 – Project Discounted Cash Flow (After-Tax)



Source: DRA, 2023

Table 22.3 – Project Cash Flow

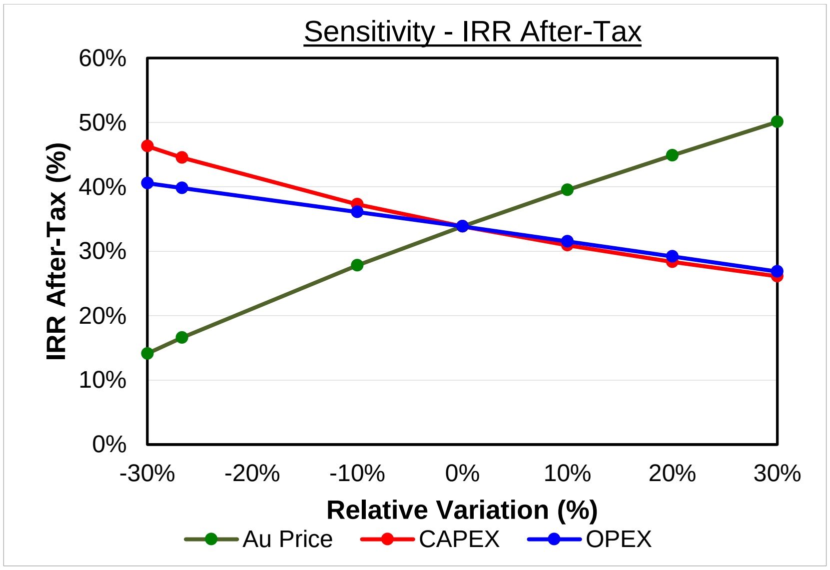
YEAR		-1	0	1	2	3	4	5	6	7	8	9	10	
Item														**TOTAL**
Net Sales Revenue		-	-	138,233	141,864	153,316	163,675	161,009	174,355	203,534	210,198	133,765	-	1,479,949
Third party royalties		-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Income		-	-	138,233	141,864	153,316	163,675	161,009	174,355	203,534	210,198	133,765	-	1,479,949
Operating Costs		-	-	(58,238)	(63,646)	(65,980)	(68,566)	(53,597)	(52,519)	(52,098)	(48,752)	(36,798)	-	(500,195)
EBITDA		-	-	79,995	78,218	87,336	95,109	107,412	121,836	151,435	161,446	96,967	-	979,754
			0%	*58%*	*55%*	*57%*	*58%*							
Other Costs		-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total		-	-	79,995	78,218	87,336	95,109	107,412	121,836	151,435	161,446	96,967	-	979,754
Mine Pre-production Capital Expenditure														
Mine development		-	(20,249)	-	-	-	-	-	-	-	-	-	-	(20,249)
Mine equipment		-	(29,747)	-	-	-	-	-	-	-	-	-	-	(29,747)
Mine site infrastructure		-	-	-	-	-	-	-	-	-	-	-	-	-
Process plant		-	-	-	-	-	-	-	-	-	-	-	-	-
Tailings & water management		-	-	-	-	-	-	-	-	-	-	-	-	-
Mobile equipment		(72,261)	(59,122)	-	-	-	-	-	-	-	-	-	-	(131,383)
Power plant & power distribution		-	-	-	-	-	-	-	-	-	-	-	-	-
Off-site infrastructure		-	-	-	-	-	-	-	-	-	-	-	-	-
Royalty buy-out option		-	-	-	-	-	-	-	-	-	-	-	-	
Total capital expenditure		(72,261)	(109,118)	-	-	-	-	-	-	-	-	-	-	(181,379)
Debt financement		-	-	-	-	-	-	-	-	-	-	-	-	
Equity portion of capital expenditure		(72,261)	(109,118)	-	-	-	-	-	-	-	-	-	-	(181,379)
Salvage value		-	-	-	-	-	-	-	-	-	-	-	-	
Change of Working Capital		-	-	(1,728)	(45)	(143)	(129)	33	(167)	(365)	(83)	955	1,672	
Sustaining Capital Expenditure														
OP Stripping		-	-	-	-	-	-	-	-	-	-	-	-	-
OP Equipment		-	-	(9,434)	(2,196)	(1,943)	(2,365)	(2,073)	-	(1,931)	-	-	-	(19,943)
UG Development		-	-	-	-	-	(8,069)	(1,759)	(2,325)	(1,012)	-	-	-	(13,164)
UG Infrastructure		-	-	-	-	-	(3,758)	(501)	(7,325)	(463)	(195)	(160)	-	(12,401)
UG Equipment		-	-	-	-	-	(14,045)	-	(4,338)	(2,064)	-	-	-	(20,447)
Plant mobile equipment		-	-	-	-	-	-	-	-	-	-	-	-	-
Off-site infrastructure		-	-	-	-	-	-	-	-	-	-	-	-	-
Land acquisition		-	-	-	-	-	-	-	-	-	-	-	-	-
Investment for sustaining capital assets		-	-	(9,434)	(2,196)	(1,943)	(28,237)	(4,333)	(13,988)	(5,469)	(195)	(160)	-	(65,955)
Mine rehabilitation trust fund payments		-	-	-	-	-	-	-	-	-	-	-	(15,000)	(15,000)
Public Royalty		-	-	(2,074)	(2,128)	(2,300)	(2,455)	(2,415)	(2,615)	(3,053)	(3,153)	(2,006)	-	(22,199)
Debt payment		-	-	-	-	-	-	-	-	-	-	-	-	
Pre-tax cash flow		**(72,261)**	**(109,118)**	**66,760**	**73,849**	**82,950**	**64,287**	**100,697**	**105,066**	**142,548**	**158,015**	**95,757**	**(13,328)**	**695,221**
Cumulative cash flow		(72,261)	(181,379)	(114,619)	(40,770)	42,180	106,467	207,164	312,230	454,778	612,793	708,549	695,221	
Fractions calculations		n/m	n/m	n/m	n/m	0.49	0.66							
Mid-year adjustment		0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	
Discount factor	5.00%	1.000	0.952	0.907	0.864	0.823	0.784	0.746	0.711	0.677	0.645	0.614	0.585	
Discounted cash flow		(72,261)	(103,922)	60,553	63,793	68,243	50,371	75,141	74,668	96,482	101,858	58,786	(7,793)	
Government royalty														-
Income tax		-	-	-	(6,843)	(8,528)	(10,201)	(11,837)	(15,678)	(20,249)	(21,829)	(12,320)	-	(107,485)
Other Tax														-
After-tax cash flow		**(72,261)**	**(109,118)**	**66,760**	**67,005**	**74,422**	**54,086**	**88,860**	**89,388**	**122,300**	**136,186**	**83,437**	**(13,328)**	**587,736**

Source: DRA, 2023

22.4 Sensitivity Analysis

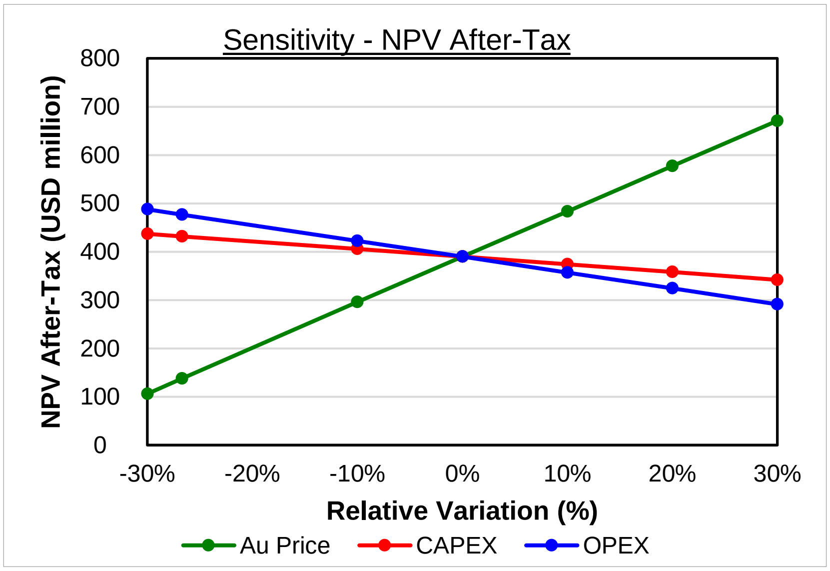
Figure 22.2 illustrates a comparison of after-tax 5% IRR sensitivities to the changes in metal prices, CAPEX and OPEX. Figure 22.3 depicts a comparison of the after-tax 5% NPV sensitivities to the changes to the metal prices, CAPEX and OPEX.

Figure 22.2 – IRR Sensitivity



Source: DRA, 2023

Figure 22.3 – NPV Sensitivity



Source: DRA, 2023

23 ADJACENT PROPERTIES

Cerrado Gold employs a subsidiary company, Jazida, dedicated to the management of land titles in the vicinity of its properties. Jazida facilitates status management by promptly notifying Cerrado Gold of any relevant changes in the vicinity. Comprehensive weekly reports are issued and disseminated to ensure that Cerrado Gold team members are informed and aware of any developments in the general area.

There are a number of exploration properties held by competitors in the Monte do Carmo region, including the following landholdings:

- Monte Sinai (33,603 ha);
- Pan American Silver (24,709 ha);
- Mineração Maracá (42,587 ha);
- Ore Resources (9,361 ha);
- Poti Mineradora (44,725 ha); and
- Tiberio Cesar (181,162 ha).

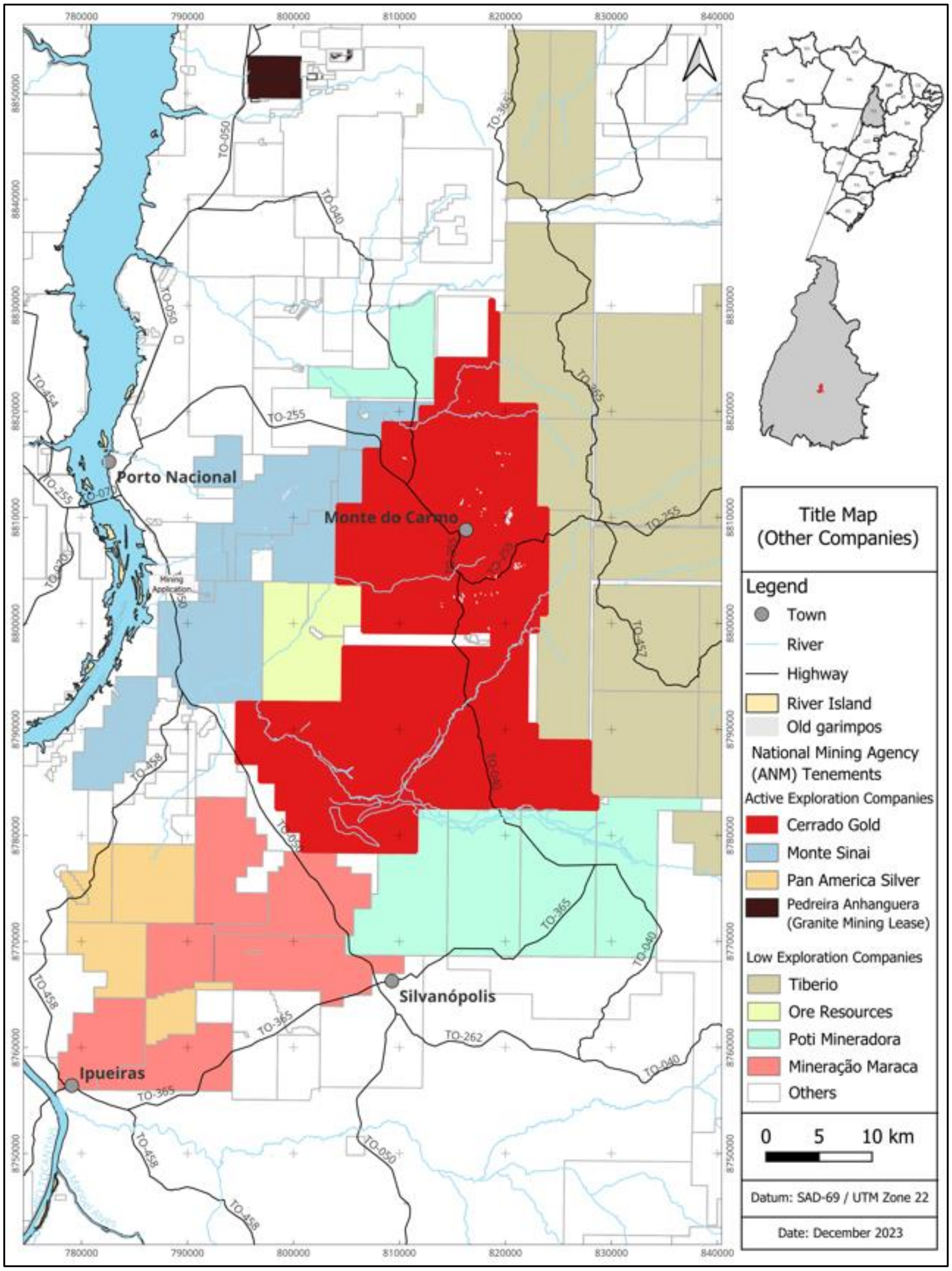
A regional location map summarizes these adjacent properties in Figure 23.1. The historical *bandeirante* and *garimpeiro* workings surrounding the town of Monte do Carmo within Cerrado Gold's property boundary are included.

The only known active project in the immediate area is a granite mining lease held by Pedreira Anhanguiera, located approximately 30 km northwest of the Cerrado Gold land package. Construction for the more distal Almas Gold Project (Aura Minerals) began in early 2021; however, this project is located approximately 150 km southeast of Monte do Carmo, out of range on the provided map.

With the exception of Monte Sinai, which has a mining lease application in progress for a 300 ha concession (864.425/2008) located approximately 15 km due west of the Cerrado Gold property, it is understood that all other exploration efforts in the region are relatively early stage. All exploration in the area appears focused on gold, except for Tiberio, which is targeting iron and/or base metals on its contiguous property to the east of Cerrado Gold's Project.

However, the Geology and Resources QP for the current Technical Report has been unable to verify any of the described activities related to adjacent properties. As such, this information is not necessarily indicative or related to the mineralization and resources described for the Serra Alta deposit in this report.

Figure 23.1 – Location Map of Adjacent Properties and Historical Artisanal Workings



Source: DRA, 2023

24 OTHER RELEVANT DATA AND INFORMATION

24.1 Project Execution Schedule

A master schedule was developed for the Monte do Carmo Project to sequence main activities associated with the execution phase. The schedule includes activities such as completion of the Feasibility Study phase, engineering, procurement, construction, and commissioning. It is assumed that all applicable permits are obtained in a timely manner so as not to impact the schedule.

24.1.1 Schedule Assumptions

The master schedule was developed considering the following assumptions:

- **Feasibility Study Phase**: complete and Project go-ahead is approved.
- **Engineering and Design**: based on preliminary vendor information. Once certified information is received, design verification will be done. Significant design changes are not considered.
- **Procurement**: duration of 12 weeks is assumed for the procurement of each package of equipment, which includes:
    - Specifications and enquiry development; period (4 weeks);
    - Tender period (3 weeks) and tender adjudication period (2 weeks); and
    - Contract compilation period (3 weeks).
- **Fabrication, Manufacturing, and Delivery**: where current equipment vendor manufacturing durations are not available, manufacturing durations from similar DRA projects were utilized.
- **Construction**: durations are estimated based on similar recent DRA projects.
- **Commissioning**: durations are estimated based on similar recent DRA projects.

Table 24.1 and Figure 24.1 highlight key milestones and phases of Project development.

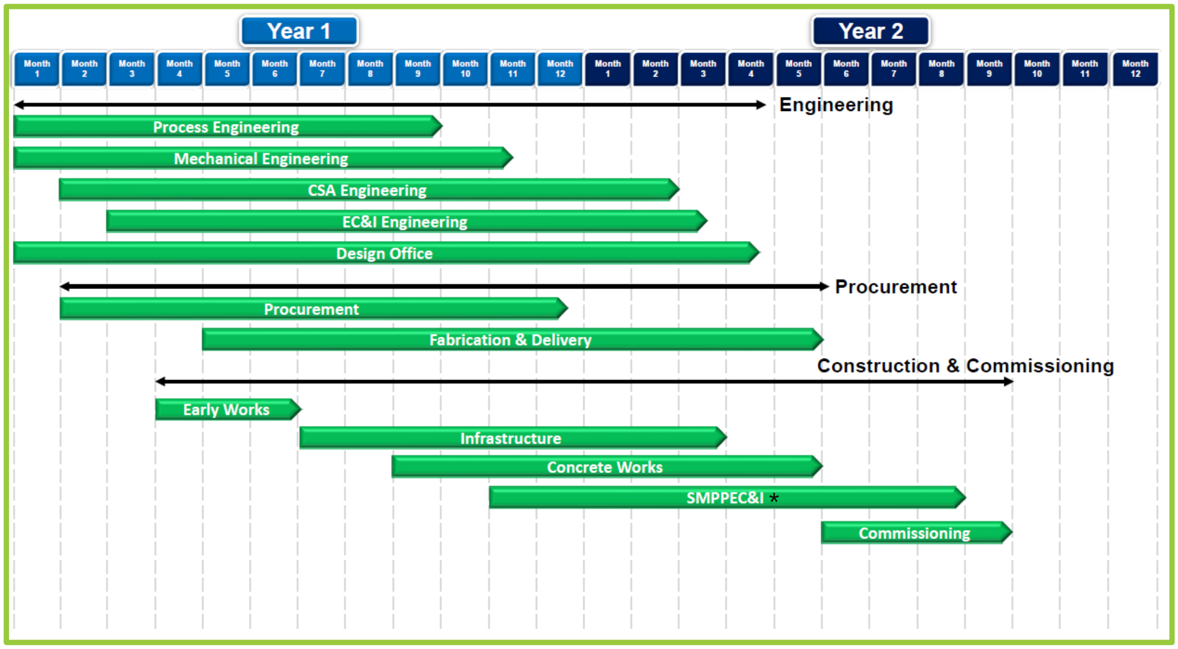
Table 24.1 – Key Project Milestones by Month

Milestone	Month
Project Execution Start	0
EP and CM Consultant(s) Appointed	0
Start Construction (Early Works)	4
Major Equipment Orders Placed	5
Engineering Complete	16
Procurement Complete – Equipment Delivered	17
Construction Complete	20
Plant Commissioning Complete	21

24.1.2 Critical Path and Long Lead Items and Activities

With current available information, the Project critical path runs through the procurement of major processing equipment. The installation of this equipment and commissioning thereof will then complete the critical path.

Figure 24.1 – High Level Execution Schedule



* SMPPEC&I represents construction work for structural, mechanical, platework, piping, electrical, control and instrumentation installation

24.2 Project Execution Plan

24.2.1 Introduction

A Project Execution Plan (PEP) was developed during the course of the Feasibility phase, to describe anticipated strategies, Project phases, methodologies and approaches, team structures, and tools, to be implemented during the execution phase of the Project. This PEP is summarized in this section. The execution schedule, which is a critical component of the PEP, was previously described above.

24.2.2 Project Organization

It is expected that Cerrado Gold will retain EP and CM contractors (or one overall EPCM contractor) to provide execution services for the Project. The contractors will work closely with Cerrado Gold personnel and with each other to provide their respective services on the Project.

Main responsibilities of the EP contractor will include:

- Perform detail design and engineering services, and prepare final specifications and drawings.

- Undertake all project services and administer Project controls during the initial (EP) phase of execution.
- Support Cerrado Gold with all bid inquiry and purchasing activities, and provide all technical content for contracts to execute the Project scope (actual purchase order and contract placement by Cerrado Gold).
- Provide engineering support to construction and commissioning.

Main responsibilities of the CM contractor will include:

- Support Cerrado Gold with all bid inquiries for contracts to execute the project scope (actual contract placement by Cerrado Gold).
- Manage construction contractors and site construction activities for the Project scope.
- Oversee safety governance with regards to construction.
- Commission the Project to handover to Cerrado Gold (steady state running with ore).
- Undertake all site-based project services and administer site-based project controls for the CM phase of the Project.

The EP and CM contractors will be mobilized to the Project by Cerrado Gold upon confirmation of Project sanction.

During the initial stages of execution, Project activities will be coordinated through the EP contractor's home office.

Key groups within the EP and CM contractor teams, and their expected activities, are described in the following sub-sections.

24.2.3 EP and CM Contractor Commitments

The principal objectives of the contractor(s) will be to provide value to Cerrado Gold by:

- Committing to the highest safety standards as described by Cerrado Gold Corporate philosophies.
- Executing the project in accordance with the established technical, HSSE, quality, budget, and schedule requirements.
- Creating a Project culture of collaboration and transparency.

24.2.4 Initial Project Implementation

24.2.4.1 Set-Up and Initiation

Before commencing work, a formal handover of the project from key members of the FS Team will take place, to confirm that the scope of work and conditions of the contract are fully defined.

All previous project documentation will be made available to the Project team, and it will be confirmed that it reflects the most current contract agreement.

Appropriate sections of the Project contract, as well as all kick-off documentation, will be made available to the Project team for review. This will facilitate proper Project planning and execution.

24.2.4.2 Project Mobilization

An onboarding presentation will be established for all new Project team personnel.

A Project mobilization checklist will be implemented and regularly revisited, which will ensure a systematic approach to mobilization and start-up.

24.2.4.3 Project Kick-off Meeting

A kick-off meeting will be arranged with key project staff from EP/CM contractors and Cerrado Gold within 7 days of contract award. All key personnel will be at the meeting. The purpose of the meeting is to ensure that all involved parties understand and are aligned on the Project scope of work, their roles and responsibilities, and Cerrado Gold expectations. The meeting will also provide means to obtain necessary information required for completion of initial Project planning.

24.2.5 Project Management and Controls

Various project control procedures will be developed to provide specific work guidelines for successful execution of the work, including:

- Basis of Schedule;
- Cost Control Procedure;
- Procurement Procedure; and
- Logistics Management Plan.

Procedures / plans are owned by the Project Management team. These procedures will be approved by Discipline Engineering Leads, Project Controls Manager, and Project Manager.

Project control services will support timely and efficient execution of the Project. The Project controls group will provide planning and scheduling, cost estimating, cost controls, cost trending, document control and Project financial services for the Project team.

The controls methodologies, procedures and systems will be based on:

- Well-defined scope of work and established work packages.
- Managing engineering scope and quantities in line with baseline capital costs.
- Controlling costs to a baseline CAPEX.
- Providing regular, accurate cost / schedule forecasts to allow actions to be taken as necessary.

- Measuring progress and productivity against a baseline schedule and budget.
- Change management process to identify factors that could impact scope, cost or schedule.
- Management of risks and opportunities to allow early mitigation, action, and/or implementation.

The baseline scope will be approved by the Project Manager, who will also be responsible to generate and maintain certain tools and procedures to manage the scope on an ongoing basis:

24.2.5.1 Cost Control

A Cost Control procedure will govern financial management and progress of the Project from start to finish. In addition, the Project will use a database cost management system to manage budgets, forecasts, commitments and costs in a project environment.

Cost forecasting and identification of trends are tools for getting early warnings about potential issues and proactively managing the Project. The Project management team will coordinate and approve monthly cost forecasts for the entire Project. A trend register will identify potential changes that may impact Project cost.

24.2.5.2 Planning and Scheduling

A Planner will develop and maintain the project schedule(s):

- Level I (EPCM) – High level summary intended for management, to illustrate major milestones against the current and baseline schedules.
- Level II (EPCM) – Detailed to enable control via logically tied sub-projects / discipline scopes.
- Level III (EPCM) – Aligned to engineering / construction work packages, procurement and contracting plans, and commissioning and start-up strategy.
- Level IV (CM) – Contains more detailed plans by specific area or equipment package to map out details for work planning.

The Planner will develop the Levels I to III schedules inclusive of engineering, procurement, design, high level construction and commissioning, and will conform to the principles as laid out of an established Basis of Schedule. Construction contractors will develop the Level IV schedule using the Level III as a guide.

24.2.5.3 Progress, Performance, and Productivity

Project progressing and performance measurements will be reported at regular intervals.

- Progress will be reported as a percentage complete against an agreed scope of work.
- Earned value will be determined based on percentage complete and budgeted costs.
- Earned values can be compared against planned costs to determine productivities.

Progress will be measured using metrics and rules of credit for each project aspect, including:

- Engineering;
- Procurement;
- Fabrication/ Delivery;
- Construction; and
- Commissioning.

Earned value will be applied to the Project schedule and costs as a means of monitoring, progress analysis, forecasting and change control/mitigation.

Engineering progress will be measured and reported in terms of earned hours against individual documents and deliverables.

Materials management and fabrication progress measurement will be generated via expediting, quality surveillance and receiving reports. Materials management includes transport and delivery, offloading, receipt and tracking of materials / equipment.

Construction progress will be measured and reported in terms of earned value, based on specific quantity metrics.

24.2.5.4 Change Management

Change management will be administered per a procedure established by project management. Any member of the project team may highlight changes that impact engineering or cost. Contractors are obligated to notify the team of changes in work (additions or deletions) or in conditions.

During execution, the change control process will fundamentally have three key steps:

- **Trend** - Cursory early alert of potential change, includes a description, reason, source, and rough schedule and cost impacts, and presented to the Project Manager for approval.
- **Change Notice** – When trend is approved, this is prepared with inputs from impacted groups, and presented to Engineering and Project Managers for approval.
- **Project Change Order** – Once Change Notice is approved, it is incorporated into project baseline, and is finally approved by the Project Manager.

During construction, changes at site are associated with a demonstrated change in scope, either through deviations in the baseline execution plan or through responses to formal requests for information. The Construction Manager will be ultimately responsible for authorizing requests for change in the field from suppliers and / or contractors.

24.2.5.5 Risk and Opportunity Management

For each project, there exists potential for both risks and opportunities in the work. A Risk and Opportunity Register will be utilized and administered by the Project Manager. Risk levels will be assessed on unmitigated and then mitigated bases. The higher the level of assessed risk, the more action will be needed. All risks and opportunities are assigned a responsible person for follow up.

24.2.5.6 DOCUMENT CONTROL

All technical documentation will be distributed, controlled, and filed via transmittal, using a document management platform / website. Use of an accessible platform is essential to ensure all Project stakeholders (Engineer, Client, Suppliers and Contractors) have access to current information.

A document register will be maintained for all Project documents for verifying all Project document numbers.

A document distribution matrix will be maintained to ensure documents are methodically distributed.

24.2.5.7 COMMUNICATIONS AND REPORTING

Ultimate accountability for project reporting will reside with the Project Manager, however report preparation will be a collaborative effort of various Project team members.

Formal reports will be prepared monthly, capturing key facets of the Project, and will address key aspects required by Cerrado Gold to provide an outlook of the Project.

The Project team will utilize all modern means of communication (in-person and virtual conferencing, telephone, email, etc…). Each organization at a minimum will ensure their own employees have a computer, telephone, internet connection, email account, and IT support. Virtual conferencing will be deployed across the Project team to minimize travel requirements where possible.

24.2.6 ENGINEERING

Work previously completed will serve as the basis for detailed engineering. Key drivers include:

- Fit-for-purpose design; and
- Construction driven execution.

The engineering execution approach is aimed at supporting the construction strategy and plan.

The engineering team will prepare detailed engineering deliverables to fully define the technical scope of the Project. Deliverables produced will include calculations, datasheets, specifications, lists, schedules, drawings and technical reports. Engineering will also develop detailed bills of material which form the basis of the construction execution package.

Engineering will also prepare technical documentation for all purchased equipment and materials.

Engineering will prepare technical bid evaluations in support of package award to vendors and contractors.

Detailed engineering design for all new process facilities and their tie-ins will be completed in a 3D modeling environment. All design personnel will use a common 3D platform hosted on an accessible server, allowing design from any location and future access to the model from the construction site.

Documents and drawings will be prepared, checked, and approved in accordance with project procedures, and revisions will also be formally checked and approved. In addition, technical peer reviews will be conducted by specialists (where required) who are not on the day-to-day project team. Other reviews to be completed include Hazard and Operability (HAZOP) and Constructability.

24.2.7 Procurement and Contracting

24.2.7.1 Procurement Strategy

The procurement strategy for this Project will include:

- Procurement activities will promote strong ethical procurement practice.
- Multiple bidders per package will be included for extracting value from vendors. Style of bidding will depend on level of engineering at time of tendering and complexity of package scope.
- Project team will assess scope, specifications and contractual requirements to identify opportunities for CAPEX savings.
- Procurement activities will comply with project policies and procedures, and will be auditable.

Certain packages designated as "long lead" will be prioritized for early award.

24.2.7.2 Contracting Process

Contracting and supply strategies will suit the specific needs of the Project. Consideration will be given to package structure, risk, criticality, team capability and contractor availability. The contracting strategy for the Project considers the following features with plans in place to address each of them for each package:

- Frame agreements;
- Standard commercial terms and conditions;
- Escalation and taxes;
- Warranty conditions and supplier technical assistance; and
- Spare parts.

24.2.8 Logistics

The transport and logistics strategy aims to ensure all materials and equipment are available at the Project site in advance of the required dates stipulated in the schedule. An overall logistics plan will be prepared for the Project, as well as specific logistics plans per package as deemed necessary.

The services of a freight forwarder may be retained to manage logistics for the Project.

Suppliers will need to comply with all applicable export and re-export laws and regulations in the shipment of their goods. Suppliers must maintain all permits, licenses and certificates as needed for the performance of services and supply of goods.

Major equipment purchases, including modules and pre-assemblies imported from international sources may be subject to recoverable duties and taxes. As such and to facilitate this process, the team will consider retaining the services of a Brazil-based customs and bonding specialist to assist.

24.2.9 Construction

Cerrado Gold will engage a suitably qualified construction partner (CM contractor), and gain alignment on Project goals. The CM Contractor will finalize a Construction Execution Plan and will gain alignment with all Project stakeholders on this plan.

24.2.10 Commissioning

Commissioning is the process of handing over the completed facilities to operations in a safe, orderly, and effective manner. A commissioning plan will be developed by a nominated commissioning manager who will lead a team of personnel with clearly delineated responsibilities for each team member, to achieve the following objectives:

- Testing and turnover of systems and facilities;
- Integrated schedule (construction, testing, commissioning) to optimize overall Project plan;
- Prepare each system / facility to operate with minimal delay after construction handover;
- Turn over integrated systems with suitable interlocks and in safe running condition; and
- Ensure adherence to security, safety, health and environmental program for the Project.

The commissioning plan will define a sequence of activities to be performed and establish expectations in terms of requirements for testing and turnover of systems and facilities.

The following are the typical stages and sequence of commissioning:

- **C1 Certification** – Construction and Mechanical Completion;
- **C2 Certification** – Cold Commissioning;
- **C3 Certification** – Wet Commissioning;
- **C4 Certification** – Product Commissioning; and
- **C5 Certification** – Completion and Handover Certificate.

After completion of commissioning, a handover will take place, whereby the plant will be turned over to Cerrado Gold. From that point, Cerrado Gold will be responsible for production, operating personnel, maintenance and HSE. It is expected that Cerrado Gold will progressively improve production post-handover during a production ramp-up phase. Cerrado Gold will be integrated and onboarded actively participating in and supporting commissioning activities.

24.2.10.1 PROJECT CLOSURE

Construction close-out will take place when the Project team has completed all construction activities and will be considered complete once all component activities are complete, whether undertaken by the EP contractor, CM contractor, a sub-contractor, or a Third Party.

25 INTERPRETATION AND CONCLUSIONS

25.1 Mineral Resource

An updated Mineral Resource Estimate has been completed for the Serra Alta deposit using new information from continued drilling and exploration work since the effective date of the last technical report (July 21, 2021; GE21, 2021). The resources reported herein used a database cut-off (i.e., freeze) date of December 31st, 2022.

It is DRA's opinion that the geological interpretation and related data are valid for the estimation of Mineral Resources. The assumptions made and methodology applied are considered reasonable and representative of typical intrusion-related gold mineralization systems.

The in-pit resource estimate for the Serra Alta deposit includes Measured and Indicated Resources of 15,304 kt @ 1.65 g/t Au for 812 koz, and Inferred Resources of 345 kt @ 1.36 g/t Au for 15 koz; the underground portion includes Measured and Indicated Resources of 3,054 kt @ 2.03 g/t Au for 199 koz, and Inferred Resources of 708 kt @ 2.24 g/t Au for 51 koz.

The resource estimate has been prepared using a marginal cut-off grade of 0.26 g/t Au for the in-pit resources; underground resources are declared at a cut-off grade of 0.69 g/t Au but include low-grade blocks falling within underground reporting shapes to reflect realistic mining logistics. Both the open-pit and underground resources are reported using a gold price of US$ 1,850.

It is important to recall that Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. Additionally, there is no certainty that all or part of the Mineral Resources will be converted into Mineral Reserves.

DRA considers the reported Mineral Resources to have been prepared in accordance with current CIM standards, definitions and guidelines for Mineral Resources Estimation.

DRA is also currently unaware of any legal, title, environmental, permitting, taxation, socio-economic, geopolitical or other factor that may materially affect the Mineral Resources estimate presented in this report for the Serra Alta deposit.

It should be noted that although additional drilling has been completed at the Serra Alta deposit subsequent to the closing of the database, DRA considers this drilling as not likely to have a significant effect on the overall resource reported herein.

25.2 Environmental

According to the EIA prepared by the consultancy Mineral in July 2022 the MDC Project's main objective is to increase the supply of gold, by the extraction and processing of gold ore. Ore operations go with the flow production to the foundry, within its facilities, where gold bars are produced, which are traded on the market.

To analyze the environmental impacts, the EIA considered the characteristics of the areas of influence, obtained through its environmental diagnosis, as well as the characteristics of the Project, the interventions proposed for its implementation and its operation. By considering all of this information, environmental impacts were predicted and subsequently evaluated.

The environmental assessment carried out, considering the integrated analysis of the environmental diagnosis, identification and assessment of environmental impacts, proposal of environmental impact measures and programs and environmental prognosis, allowed verification that the negative impacts identified did not present themselves as impediments to the implementation of the Project.

However, some potential negative impacts deserve to be highlighted and paid attention to special purpose of the business, with the intention of mitigating, preventing, controlling or compensating for them.

From a social point of view, the implementation of the MDC Project is justified by the generation of local taxes. Another justification for implementing the Project is the generation of around 1,000 jobs at the peak of construction. The operation of the mine and maintenance of equipment must be carried out by a specialized company hiring a reduced contingent in relation to the works, divided into the administrative, mine, processing plant and HSEC (Health, Safety, Environment and Community) areas.

Thus, the environmental assessment carried out has revealed that none of the environmental impacts identified have resulted in any environmental non-compliances. Coupled with the proposed environmental measures and programs, the environmental impact of the proposed development is deemed viable by the team responsible for this EIA.

Based on the analyzed documents and the technical studies carried out, as well as the Preliminary License granted, the MDC Project is environmentally viable and compliant with applicable legal regulations. However, the Company still needs to complete the other stages of the licensing process that require an installation license. Therefore, there remains a conclusive analysis of the NATURATINS installation license stage for the start of work on the Project.

25.3 Metallurgical Testing

The ore characterization was carried out progressively, since 2018. All campaigns indicate a low variability in results and high gold recoveries, ranging from 95% to 99%, with an average tailings grade 0.02 g/t Au.

Various flowsheet options were studied, and the circuit composed by gravity concentration followed by flotation of tailings and leaching of flotation concentrate was chosen. Besides the advantage of reducing the mass of ore to be leached, consequently reducing disposal and neutralization facilities, the flotation tailings has potential for future reuse in agriculture.

The presence of any deleterious element or compound was not detected. An exception that can be considered was the formation of ferrocyanide in the cyanide leaching, but in a proportion that did not significantly change the consumption of the leaching reagents. Reagent consumption and leaching residence times remained at normal levels and similar to the other projects.

Tests for neutralization indicate that the method of oxidation is suitable for the operation, with the same dosages and residence times typical of the gold industry. Due operational matter, the use of hydrogen peroxide was chosen instead of sodium metabisulfate. Additional tests must be carried out to improve efficiency.

The disposal of final tailings will be done in piles in co-disposition with waste from mine, eliminating the use of tailings dams.

25.4 Recovery Methods

The process plant will have a designed capacity of 1.92 Mtpa. The process plant will involve several processing steps, including crushing, ball mill grinding, gravity concentration, flotation, pre-leach thickening, CIL, desorption, carbon washing and regeneration and gold room. The process plant design also includes tailings detoxification and filtration. The filtered tailings will be transported and disposed of in Waste Pile 1, which contains co-deposited filtered tailings and mine waste rock.

The proposed process flowsheet uses well proven technologies in the gold processing industry, and no significant risks or deleterious elements are expected in the feed.

The flotation flowsheet was considered with two (2) stages (rougher and scavenger) and the respective residence times were estimated based on the results from test work.

The residence time of the CIL leaching was determined as 24 h, considering the flotation mass pull close do 10%.

It is recommended that further optimization test work be considered to determine the optimal sizing and equipment requirements for the mill, thickener, filters, and other components of the Monte do Carmo Project. The tests can lead to increased process efficiency, leading to a reduction in both CAPEX and OPEX. While the FS is based on a target grind of 80% passing 106 µm, the current process design has been adequately sized for 80% passing 75 µm. Opportunities may exist to relax the grind to coarser than 106 µm.

Despite test work indicating that the direct CIL process flowsheet could result in improved overall gold recoveries, the Feasibility Study was based on flotation and cyanide leaching of flotation concentrates, which reduces the ore mass in CIL and detoxification to approximately 10% of the ROM, with benefits for the environment. Notwithstanding, the option to proceed with direct CIL is supported by metallurgical test work.

This choice was also made due to the potential agricultural utilization of tailings from the flotation circuit, which contain an average of 4.5% K_2O, providing promising prospects for the development of an agricultural product.

25.5 Site Infrastructure

The designed infrastructure for the Project meets operational requirements. Water supply will be provided from collection of rainfalls over plant and mine areas and pumping from existing rivers close to the Project. The Project infrastructure includes the required access roads, power supply, water supply, combined waste and tailings storage, and facilities to support production.

The facilities are traditional and common to other projects. The location of the Project is in an easily accessible region with good water sources.

Therefore, the construction of the complementary infrastructure necessary for operation of the plant and the entire Project is expected to proceed normally; now environmental or operational events are foreseen.

25.6 Project Economics

The capital cost of the Project was estimated to a suitable degree of accuracy for a Feasibility Study and is suitable for use in establishing the detailed engineering project budget. The capital cost estimate includes amounts for sustaining capital costs, closure, and contingency.

Operating costs have similarly been estimated to a sufficient degree of detail. There is thus confidence in the overall economic feasibility of the mine plan.

25.7 Risks

Risk management is an essential part of any project, particularly for large-scale endeavors such as the one detailed in the FS. Risks have the potential to impact a project's timeline, budget, and resources, which can pose challenges for stakeholders and the project team. Efficient risk management involves the identification of potential risks, assessment of the risks' impact, and the development of effective strategies to mitigate them over the life of the Project. In this Section, various potential risks associated with the Project are discussed,

25.7.1 Geology and Resource

Geology and resource highlight several areas of risk that could negatively impact the Project. These risks include the potential for small-scale structural interpretation to affect zone delineation and mineralization continuity, which could lead to a negative impact on the overall Mineral Resource Estimate. It was also determined that decreased grade continuity could contribute to more than a 10% change in metal content, such as nugget effect, which could further impact the overall resource estimate. Also, lower confidence levels associated with mineral domain classification challenges along the edges between inferred and indicated categories could lead to lower confidence levels within estimates. Exploration uncertainty poses a risk to the Project.

25.7.2 Geotechnical Risks

The available data used to develop the study slope design recommendations are primarily based on widely spaced geotechnical boreholes, numerous resource holes and the geologic model and geotechnical characterization are based on interpretation and extrapolation of conditions observed in rock core. Differences in the geotechnical characterization and geologic models contained in this Report and the actual geologic conditions exposed during mining should be expected.

The following principal risks have been identified based on the available information and analyses:

- In a typical mine setting, bench scale or multi-bench failures can be expected locally where rock mass is weak, structural conditions are unfavourable, or blasting practices are poor. The risk of such local instability developing increases with steeper slope angles. The current understanding of the site geology indicates a low risk of large-scale slope failures. However, there is potential that undocumented structural features exist with orientations that are unfavourable for stability.
- Although initial modelling and data review has indicated no groundwater issues, a greater understanding of the groundwater conditions at Serra Alta would be beneficial for both open pit and underground operations.
- If groundwater becomes an issue and both the pit slopes or underground workings cannot be effectively dewatered and depressurized, changes to the design may be required.
- Compartmentalization of groundwater in the presence of faults or lithologic contacts could result in localized zones with higher pore pressures and local instability.

25.7.3 Process Plant

Dangerous chemicals, products, and equipment will exist in the process plant which if not properly used could result in serious harm or death. The risks associated with personnel safety in the process plant were some of the most serious risks.

The items include the following:

- Insufficient training of personnel in the use and care of equipment within the plant.
- Insufficient training of personnel in the use and exposure to various chemicals in the plant.
- Improper operation of the plant resulting in chemical spills to the environment.

25.7.4 Environmental

There are several environmental risks associated with the Project, including changes to required airflow regulations and the need for ESG electrification. Upgrades to ventilation practices may lead to additional energy consumption, while changes to underground equipment may require significant upgrades to the mine's electrical infrastructure. There is a risk of water contamination due to the leaching characteristics of mining wastes and the uncertainty around acid rock drainage potential.

25.7.5 Waste and Water Managements

Waste management represents a significant challenge for the Project, and poor geotechnical properties due to the failure to achieve the expected mixture rate pose considerable concern. A higher moisture content than planned increases the waste transportability problem, undermines production rates of waste rock and causes fines migration to external areas of the facility, and leads to poor control of foundation development. These issues and the associated risks put the Project, environment, and community at risk. Implementing efficient waste management strategies is crucial for the Project's successful implementation and compliance with environmental standards.

For water management, the Project faces several risks that could significantly impact its success, such as dam failure, ongoing studies, and engineering works. The effluent treatment requirements remain a significant challenge for the Project, complicated further by the potential for the mining wastes' geochemistry to cause harm, necessitating effluent treatment. The ongoing studies and engineering work required to address water availability mean that it may take a longer time to bring the project to fruition. It is important to develop effective water management strategies to mitigate the risks associated with the Project's implementation and ensure compliance with environmental standards.

By addressing these risks, the Project Team can develop a comprehensive plan to manage waste and water efficiently, minimize environmental impacts, and improve the community's welfare.

25.8 Opportunities

This section describes the opportunities available to the Project, which aim to optimize production, efficiency, and environmental sustainability. The opportunities outlined in this section aim to create a more sustainable project, maximizing gains while minimizing impact.

25.8.1 Geology

Several opportunities exist in this area for the Project, one of which is the potential zone/trend extensions due to small-scale structural interpretation. This could provide extended mineralization and a higher overall mineral resource estimate. Additionally, the report found increased grade continuity from preliminary testwork suggesting increased sample grinding masses could lead to an overall contained gold increase. Infill/interpretation opportunities to convert more “Indicated” resources to “Measured” resources and adding new “Inferred” resources could also address lower confidence level challenges due to mineral domain classification along the edges between “Inferred” and “Indicated” categories. Finally, the work performed during the FS identified proximal exploration targets and satellites as one way to increase nearby tonnes to feed the centralized mill, which offers an opportunity to increase the resource base of the Project.

25.8.2 Geotechnical

The upside potential for achieving steeper IRA depends primarily on good operating practices. It may be possible to achieve steeper bench faces with improved blasting such as pre-splitting, buffer blasting, careful blast-hole layout, and excavation practices. Steeper achieved BFAs will allow steeper IRA provided overall slope stability is maintained. Additionally, the required BW can be re-evaluated after mining commences and bench performance data can be collected. If smaller BWs are shown to be effective for rock fall protection, steeper IRAs may also be possible.

25.8.3 Environmental

In terms of environmental opportunities, Brazilian regulatory requirements mandating the use of electric underground (UG) equipment presents an opportunity for the Project to adopt more sustainable energy sources and reduce its carbon footprint.

25.8.4 Permitting and Licensing

Regarding permitting and licensing opportunities, the project has shown effective acquisition of the preliminary licenses with a target to ensure that they are obtained in a timely manner. Regional interest in the Project will ease the regulatory process, with the Laudo de Viabilidade Ambiental (Environmental Viability Report) already granted.

25.8.5 Waste Management

In terms of waste management, improvements can be made in waste properties at the plant outlet and storage facility. Reducing the waste's moisture content by 5% from the base case can ease haulage and reduce the amount of seepage through the base. This development can raise the waste rock : tailings mixture rate by 50%, which has the potential to improve geotechnical properties while reducing the waste production rate by 10% compared to the base case. Phreatic levels could also be decreased by 10%.

25.8.6 Water Management

In terms of water management opportunities, the Project has confirmed regional water availability through regulatory processes, enabling plans to use efficient water management strategies in the production phases. Effectively managing water availability is crucial for the project's successful implementation while ensuring adherence to environmental regulations.

26 RECOMMENDATIONS

26.1 Geology, Sampling, and Sample Analysis

The following items are recommended for further consideration:

Geology

- Continue to improve understanding/interpretation of small-scale structural elements that could potentially affect zone delineation/continuity or give rise to previously unidentified zone/trend extensions (i.e., new exploration targets). This area could also affect the currently understood geotechnical model.
- Conduct in-depth structural study of the various (± mineralized) vein orientations identified throughout the deposit to better constrain paragenetic relationships and local deformation history recorded by the host granite and identified shear zones. Potential impacts on local continuity of individual zones/lenses, genetic model and exploration targeting. Also important for detailed design and grade control from a mining perspective.

Resources

- Additional infill drilling to increase confidence in the current resource base, thereby upgrading more Resources to the Measured and Indicated categories, particularly along the edges of mineralized domains.
- Additional extension/expansion drilling to add new Resources to the Inferred category for future upgrading (eventually for replacement of Reserves in later mining phases).

Exploration Targeting

- Conduct additional lithogeochemical studies to help identify pathfinder elements and assess mass balance of alteration fronts (i.e., zonation) towards the development of new exploration targeting strategies (both for Serra Alta and in a regional context).
- Continue regional exploration programs focused on proximal targets/satellites, which can increase nearby Resources to theoretically feed a centralized mill.
- Consider Mobile Metal Ion (MMI) soil geochemistry testwork to help with earlier stage exploration targeting (mixed results from past conventional B-horizon sampling, as conveyed by Cerrado Gold personnel).

Sampling

- Maintain recently started (2023) trial program to replace ¼ core duplicate samples with pulp and coarse reject duplicates to assess the effects on reproducibility/precision due to nugget effect. Similar approach should be considered for check assay programs at secondary laboratory.
- Continue to reinforce all SOPs with geological and technical staff to ensure Cerrado Gold's high standards are maintained.

Sample Analyses

- As discussed during site visit, consider test program to increase sample mass via laboratory preparation protocols; this could provide more representative and accurate assays due to the observed high variability and nugget effect throughout the deposit.

26.2 Environmental

The following item is recommended for further consideration:

- Continue the environmental licensing process, meeting the technical and procedural control requirements for operation of the Project, while ensuring sustainability of the Project.

26.3 Mining

26.3.1 Overall

Throughout the study, certain items were identified that necessitated additional information for enhanced precision and inclusion in the next phase of the project, as follows:

- A comprehensive review of groundwater conditions and dewatering plan to protect the project in the event of severe rainfall and flooding potential.
- Additional trade-offs between contractor vs. owner fleets can be assessed. A scenario that involves a partnership between a contractor and the owner-operator, could also be explored. This could be advantageous, particularly in the initial LOM phase characterized by a high stripping ratio.
- Conduct additional studies to better measure the swell factor concerning both granite and sediments.
- Further explore the potential use of larger mining trucks, such as the 10x4 and 10x6 models.
- Continue optimizing mine plan by varying design of phases, mining strategies, etc.

26.3.2 Geotechnical and Hydrogeological

The following is the recommended geotechnical work to be undertaken before mining commences:

- Continued operational geotechnical drilling to confirm expected lithologies in pit walls. Quantities, location, test work needed, geotechnical targets and drilling budget would need to be determined.
- Supplement geotechnical laboratory testing database with additional sampling for all lithologies and expected rock conditions at Serra Alta especially for the SST rock type which is not as well tested.
- Additional groundwater drilling behind major structures, to investigate potential compartmentalization of groundwater, and update of slope stability analyses models once the updated groundwater conditions data is available.

- Install Vibrating Wire Piezometers (VWP) and / or Casagrande standpipe piezometers in existing holes or in new holes outside the pit footprint to monitor water levels over the life of mine and the effect of mining on the water levels.
- Perform various bench stability analyses to look for potential to increase bench heights, BFA, etc. This can be done using slope stability software and tested in the field during development of the first few benches.
- Perform studies on the impact of blasting on the rock, during development of first few benches.

26.4 Mineral Processing and Metallurgical Testing

Further optimization test work is recommended to determine the optimal equipment sizing for the process plant. Notwithstanding this, the process flowsheet follows standards of similar gold operations worldwide. Based on the strong results of test work, good performance is expected of the plant.

The following items are recommended for further consideration:

- Bond Wi test results done in 2021 ranged from 15.8 kWh/t to 17.8 kWh/t. The test carried out at Metso and SGS showed a Wi 15.4 kWh/t and 18.4 kWh/t, respectively. Definition of Wi by domain is recommended, as “average” result is not adequate for mill sizing.
- The flotation tests carried out indicated good performance. However, as the tests were carried out on a bench scale in rougher and scavenger stages, it was possible to evaluate only the conventional flotation cells.
- In most flotation bench tests, mass recovery was less than 10%. Although some had higher mass recoveries, up to 15%, for this study a mass recovery of 10% was assumed.
- Carbon-In-Leach (CIL) tests indicate good results with residence times between 16 and 24 h. In this FS, the sizing of the CIL circuit considered the residence time in 24 h.
- As the overflow from the tailings thickener will be recirculated in the plant, it is important to evaluate the influence on flotation and cyanidation. Recommended to carry out flotation tests with process water instead of tap water.
- A trade-off study with paste and filtered tailings disposal is recommended, as indicated in the Westech recommendations.
- Silver recovery studies were carried out on a preliminary basis, with good recovery results being obtained. These preliminary studies indicated that silver recovery can also be done without substantial change in the gold recovery process considered in this FS, and the studies must be complemented.
- Gravity concentration tests by Testwork and FLSmidth indicate gold recovery above 60%. Little variation was obtained within the range of processing of 42% and 90% of the circulating load.

- There is a significant variability in the head analysis, geology and back-calculated grades. It suggests the occurrence of coarse particles of gold and the development of a comprehensive protocol for sampling, custody and analytical method is recommended.

26.5 Project Infrastructure

The following items are recommended for further consideration:

- Infrastructure on the Project generally meets technical and environmental standards. Therefore, it is recommended to maintain the structures designed in this study, without making substantial modifications in the subsequent Project phases.
- Perform site-wide geotechnical investigations.

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28 CERTIFICATE OF QUALIFIED PERSON

555 René-Lévesque Blvd West / 6th floor / Montréal / Quebec / Canada / H2Z 1B1
T +1 514 288-5211 / **E** info@draglobal.com / https://www.draglobal.com/

CERTIFICATE OF QUALIFIED PERSON

To accompany the Report entitled "*NI 43-101 Technical Report – Feasibility Study – Monte do Carmo Gold Project, Tocantins State, Brazil*" filed on December 15, 2023, with an effective date of November 02, 2023 (the "Technical Report"), prepared for Cerrado Gold Inc. ("Cerrado" or the "Company").

I, *André-François Gravel, P. Eng., PMP.,* do hereby certify:

1. I am a Senior Mining Engineer with DRA Global. Limited, with an office at 555 René-Lévesque Blvd West, Montreal, Quebec, Canada.
2. I am a graduate of École Polytechnique de Montréal, Montreal, Quebec, Canada in 2000 with a bachelor's degree in Mining Engineering.
3. I am a registered member of "*Ordre des Ingénieurs du Québec*" (Reg. #123135).
4. I have worked as an Engineer in the Mining & Metals industry continuously since my graduation from university.
5. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("N 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43 101.
6. I have worked on similar projects to the Monte do Carmo Gold Project in South America; my experience for the purpose of the Technical Report includes:
   - Design, scheduling, cost estimation and Mineral Reserve estimation for several underground studies in Canada, the USA, South America, Asia and West Africa.
   - Technical assistance in mine design and scheduling for mine operations in Canada, the US and Morocco.
   - Participation and author of several NI 43-101 Technical reports.
7. I am independent of the Company applying all the tests in Section 1.5 of NI 43-101.
8. I have participated in the preparation of this Technical Report and am responsible for portions of Sections 1, 15, 16, 21, 25, and 26 of the Technical Report.

9. I did not visit the property that is the subject of the Technical Report.
10. I have had no prior involvement with the property that is the subject of the Technical Report.
11. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
12. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Dated this 15th day of December 2023

"Original Signed and sealed on file"
André-François Gravel, P.Eng., PMP
Senior Mining Engineer
DRA Global Limited

CERTIFICATE OF QUALIFIED PERSON

To accompany the Report entitled "NI 43-101 Technical Report – Feasibility Study – Monte do Carmo Gold Project, Tocantins State, Brazil" filed on December 15, 2023, with an effective date of November 02, 2023 (the "Technical Report"), prepared for Cerrado Gold Inc. ("Cerrado" or the "Company").

I, Branca Horta de Almeida Abrantes, MAIG (#8145), do hereby certify:

1. I am a Geography and Environmental Analysis Bachelor with GE21 Consultoria Mineral Ltda., located at Avenida Afonso Pena, 3130, 12th floor, Belo Horizonte-Minas Gerais-Brazil, CEP 30130-910.
2. I graduated with a B.A.Sc. in Geography and Environmental Analysis from the UNI-BH, Belo Horizonte, Brazil, and an MBA in Project Management from FGV, Brazil.
3. I am a registered member of the Australian Institute of Geoscientists (#8145).
4. Brief summary of my professional experience: I am a professional with over 19 years of experience in the environmental sector. My relevant experience for the purpose of this Technical Report includes: Participated in more than 60 projects, involving Elaboration, General Coordination, Technical Execution, Project Management, and Review of Environmental Studies. Notable projects I have worked on similar projects include Mineração Carpathian Gold, Beadell Resources Gold Mining, Atlântic Niquel, Mosaic fertilizers, and various other significant undertakings in the sectors of industry, mining, energy, and sanitation.
5. I have worked on similar projects to the Monte do Carmo Gold Project in South America; my experience for the purpose of the Technical Report includes:

- 2017 – to date - Specialist socio-environmental consultant at GE 21 Consultoria Mineral.
- 2010 – 2021 Consultant responsible for the general coordination and preparation of projects and socio-environmental studies for the company YKS Serviços Ltda.
- 2004 – 2009 Technician responsible for managing and preparing environmental studies for the company Holos Engenharia Sanitária e Ambiental Ltda.

6. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43 101.
7. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
8. I am responsible for the preparation of Section 20 and portions of 1, 25, 26 and 27 of the Technical Report.

9. I did not visit the property that is the subject of the Technical Report.

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

11. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.

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

Dated this 08th day of December 2023

"Original Signed and Sealed on file"
Branca Horta de Almeida Abrantes, MAIG
Geography and Environmental Analysis Bachelor
GE21 Consultoria Mineral Ltda.

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T +1 514 288-5211 / **E** info@draglobal.com / https://www.draglobal.com/

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I, *Claude Bisaillon, P. Eng.,* Quebec, do hereby certify that:

1. I am Senior Geotechnical Engineer with DRA Global Limited located at 555 Blvd René-Lévesque West, 6th Floor, Montreal, Quebec, Canada H2Z 1B1.
2. I am a graduate from Concordia University in Montreal, Quebec in 1991 with a B.Sc. in geology and from the Université Laval in Quebec City, Quebec in 1996 with a B.Ing. in geological engineering.
3. I am a registered member of "*Ordre des Ingénieurs du Québec*" (#116407).
4. I have worked as a geological engineer continuously since graduation from university in 1996.
5. I have worked on similar projects to the Monte do Carmo Gold Project in North and South America; my experience for the purpose of the Technical Report includes:
   - Over 26 years of consulting in the field of Mineral Resource estimation, orebody modelling, mineral resource auditing and geotechnical engineering in Canada, the USA, South America, and Asia.
   - Participated and/or supervised several open pit geotechnical studies in Canada, the USA, South America, Asia and Africa at the Mineral Resource Estimates, PFS and/or FS Stages;
   - Participation in the preparation of several NI 43-101 Technical Reports QP Review, audits, due diligence, interpretation of geoscientific data for several projects.
6. I have read the definition of "qualified person" set out in the National Instrument 43-101 and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfil the requirements to be an independent qualified person for the purposes of NI 43-101;

7. I am independent of the issuer applying all the tests in section 1.5 of NI 43-101.

8. I have participated in the preparation of this Technical Report and am responsible for portions of Sections 1, 16, 25, and 26 of the Technical Report.

9. I visited the property that is the subject of the Technical Report on September 13 to 15, 2023.

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

11. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.

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

Dated this 15th day of December 2023

"Original Signed and sealed on file"
Claude Bisaillon, P. Eng.
Senior Geotechnical Engineer
DRA Global Limited

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I, *Daniel M. Gagnon, P. Eng.,* do hereby certify:

1. I am Vice President Mining, Geology and Met-Chem Operations, with DRA Global Limited located at 555 René Lévesque West, 6th Floor, Montreal, Quebec Canada H2Z 1B1.
2. I am a graduate of École Polytechnique de Montréal, Montreal, Quebec, Canada in 1995 with a bachelor's degree in Mining Engineering.
3. I am registered as a Professional Engineer in the Province of Quebec (Reg. #118521).
4. I have worked as a Mining Engineer for a total of 27 years continuously since my graduation.
5. I have worked on similar projects to the Monte do Carmo Gold Project in North and South America; my experience for the purpose of the Technical Report includes:
    - Design, scheduling, cost estimation and Mineral Reserve estimation for several open pit studies in Canada, the USA, South America, West Africa, and Morocco.
    - Technical assistance in mine design and scheduling for mine operations in Canada, the USS, and Morocco.
    - Participation and author of several NI 43-101 Technical Reports.
6. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43 101.
7. I am independent of the Company applying all the tests in Section 1.5 of NI 43-101.

8. I have participated in the preparation of this Technical Report and am responsible for Sections 19 and 22, and portions of Sections 1, 21, 25, and 26 of the Technical Report.

9. I visited the property that is the subject of the Technical Report on September 25 to 28, 2023.

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

11. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.

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

Dated this 15th day of December 2023

"Original Signed and sealed on file"
Daniel M. Gagnon, P. Eng.
Senior Vice President of Mining and Geology
DRA Global Limited

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T +1 514 288-5211 / **E** info@draglobal.com / https://www.draglobal.com/

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I, *Ghislain Prévost, P. Eng., B. Mining Eng, M.Sc. A.,* Montreal, Quebec, do hereby certify that:

1. I am Principal Mining Engineer with DRA Global Limited with an office at suite 600, 555 René-Lévesque Blvd. West, Montreal, Quebec, Canada;
2. I am a graduate from "*École Polytechnique de Montréal"* with Bachelor of Mining Engineer in 1996 and a Master of Applied Science in Mineral Engineering in 1999.
3. I am a registered member of "*Ordre des Ingénieurs du Québec*" (# 119054).
4. I have practiced my profession continuously since 1999 with over 24 years of experience in mining exploration in industrial minerals, bauxite, gold, silver, and base metals projects across Canada and worldwide.
5. I have worked on similar projects to the Monte do Carmo Gold Project in South America; my experience for the purpose of the Technical Report includes:
   - Design, scheduling, cost estimation and Mineral Reserve Estimate for several underground and open pit studies.
   - Participation and author of several NI 43-101 Technical Reports.
6. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43 101.
7. I am independent of the Company applying all the tests in Section 1.5 of NI 43-101.
8. I have participated in the preparation of this Technical Report and am responsible for portions of Sections 1, 15, 16, 21, 25, and 26 of the Technical Report.

9. I visited the property that is the subject of the Technical Report on September 13 to 15, 2023.
10. I have had no prior involvement with the property that is the subject of the Technical Report.
11. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
12. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Dated this 15th day of December 2023

"Original Signed and Sealed on file"

Ghislain Prévost, P. Eng., B. Mining Eng, M.Sc.A.
Principal Mining Engineer
DRA Global Limited

CERTIFICATE OF QUALIFIED PERSON

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I, Ricardo Álvares Campos Cordeiro, MAIG (#4212), do hereby certify:

1. I am a Mining Engineer with GE21 Consultoria Mineral Ltda., located at Avenida Afonso Pena, 3130, 12th floor, Belo Horizonte-Minas Gerais-Brazil, CEP 30130-910.
2. I graduated with a B.A.Sc. in Mining Engineering from the Federal University of Ouro Preto, Ouro Preto, Minas Gerais, Brazil, and an M.Sc. in Mineral Engineering from the University of São Paulo, São Paulo, Brazil.
3. I am a registered member of the Australian Institute of Geoscientists (#4212).
4. Brief summary of my professional experience: I have worked continuously in the field of mining engineering since graduating from university, amassing more than 44 years of experience. My career has encompassed roles in mining, mineral processing, and mine planning, with significant involvement in projects involving iron ore, manganese, titanium, copper, nickel and gold mines. This extensive background has equipped me with a comprehensive understanding of various aspects of the mining industry, both in Brazil and internationally.
5. I have worked on similar projects to the Monte do Carmo Gold Project in South America; my experience for the purpose of the Technical Report includes:
    - 2008 to 2012: Mining Engineer at Coffey Mining Brasil, developing technical studies of mineral processing and mine planning, including several iron ore and gold mines.
    - 1980 to 1982: Mining Engineer at Vale, working on the Andorinhas Gold Project.
    - Participation and author of several NI 43-101 Technical Reports, including the current Technical Report for the Monte do Carmo Gold Project.
6. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43 101.
7. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.
8. I am responsible for the preparation of Sections 13, 17, 18 and portions of 1, 21, 25, 26 and

27 of the Technical Report.

9. I visited the Monte do Carmo Project site in Brazil during the periods May 17 to 20, 2022.

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

11. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.

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

Dated this 08th day of December 2023

"Original Signed and Sealed on file"

Ricardo Alvares de Campos Cordeiro (Min Eng), MAIG
Mining Engineer
GE21 Consultoria Mineral Ltda.

555 René-Lévesque Blvd West / 6th floor / Montréal / Quebec / Canada / H2Z 1B1
T +1 514 288-5211 / **E** info@draglobal.com / https://www.draglobal.com/

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I, *Ryan Wilson, P. Geo.,* do hereby certify that:

1. I am Geological Mining Specialist with DRA Global Limited, located at 555 Blvd René-Lévesque West, 6th Floor, Montreal, Quebec, Canada H2Z 1B1.
2. I am a graduate of University of Ottawa, Ottawa, Ontario, Canada in 2007 with a B.Sc. in Earth Sciences and in 2012 with an M.Sc. in Economic Geology, and a graduate of McGill University, Montreal, Quebec, Canada in 2022 with a Ph.D. in Mining Engineering.
3. I am registered as a Professional Geologist in the Province of Ontario (PGO Reg. #2511) and in the Province of Quebec (OGQ Reg. #10435).
4. I have worked and conducted research in the geological sciences and mining sector continuously since my graduation in 2007.
5. I have worked on similar projects to the Monte do Carmo Gold Project in North America, South America and Australia; my experience for the purpose of the Technical Report includes:
   - Over 15 years of experience in exploration, mining and metals split between industry and specialized research. Specifically, 8 years of experience focused on intrusion-related and orogenic gold deposits in the world-class Timmins gold camp, Timmins, Ontario, Canada.
   - Technical assistance in exploration, geology and resources for a variety of projects from greenfield exploration to active mine operations in Canada. Geostatistical assistance in project evaluation for multiple projects in Australia. Additional research and collaboration on several mine-to-plant simulation studies in Canada and Chile.
   - Participation in the preparation of multiple NI 43-101 Technical Reports.
6. I have read the definition of "qualified person" set out in the National Instrument 43-101 and certify that by reason of my education, affiliation with a professional association and past

relevant work experience, I fulfil the requirements to be an independent qualified person for the purposes of NI 43-101;

7. I am independent of the issuer applying all the tests in section 1.5 of NI 43-101.
8. I have participated in the preparation of this Technical Report and am responsible for Sections 4, 5, 6, 7, 8, 9, 10, 11, 12, 14 and 23, and portions of Sections 1, 25 and 26 of the Technical Report.
9. I visited the property that is the subject of the Technical Report on September 12 to 15, 2023.
10. I have had no prior involvement with the property that is the subject of the Technical Report.
11. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
12. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Dated this 15th day of December 2023

"Original Signed and sealed on file" .

Ryan Wilson, P. Geo.
Geological Mining Specialist
DRA Global Limited

20 Queen Street West / 29th Floor / Toronto / Ontario / Canada / M5H 3R3
T +1 416 800 8797 / **E** info@draglobal.com / https://www.draglobal.com/

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I, *Tim Fletcher, P. Eng.*, Toronto, Ontario, do hereby certify that:

1. I am Senior Project Manager, DRA Global Limited with an office at 20 Queen Street West, 29th Floor, Toronto, Ontario, Canada M5H 3R3.
2. I am a graduate from University of Toronto, with a B.A.Sc. in Mechanical Engineering in 1992 and an M.A.Sc. in Metallurgical Engineering in 1995.
3. I am a Professional Engineer licensed by Professional Engineers Ontario (Membership Number 90451964).
4. I have worked as an Engineer in the Mining and Metals industry continuously since my graduation from university.
5. My relevant work experience includes:
   - Over 25 years of metallurgical project development experience, for numerous commodities and clients, in the capacities of Mechanical Engineer, Project Engineer, Engineering Manager, and Project Manager;
   - Management of numerous studies and projects of varying complexity, involving multi-disciplinary engineering teams for projects in gold, base metals, and other commodities;
   - Participant and author of various NI 43-101 Technical Reports.
6. I have read the definition of "qualified person" set out in the NI 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfill the

requirements to be a qualified person for the purposes of NI 43 101.

7. I am independent of the Company applying all the tests in Section 1.5 of NI 43-101.
8. I am responsible for the preparation of Sections 2, 3, and 24, for portions of Sections 1 and 25 to 27, and for overall report compilation.
9. I did not visit the property that is the subject of the Technical Report.
10. I have had no prior involvement with the property that is the subject of the Technical Report.
11. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
12. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Dated this 15th day of December 2023

"Original Signed and sealed on file"
Tim Fletcher, P. Eng.
Senior Project Manager
DRA Global Limited