Cabaçal Gold-Copper Project
NI 43-101 Technical Report and Pre-feasibility Study

Mato Grosso, Brazil

Effective Date: March 10, 2025

Prepared for:

Meridian Mining UK Societas
8th Floor, 4 More London Riverside,
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Prepared by:

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CERTIFICATE OF QUALIFIED PERSON
Tommaso Roberto Raponi, P.Eng.

I, Tommaso Roberto Raponi, P.Eng., certify that:

1. I am employed Principal Metallurgist with Ausenco Engineering Canada ULC., (Ausenco), with an office address of Suite 1550 - 11 King St West, Toronto, ON M5H 4C7.
2. This certificate applies to the technical report titled *"Cabaçal Gold-Copper Project, NI 43-101 Technical Report and Pre-feasibility Study, Mato Grosso, Brazil"* (the "Technical Report"), prepared for Meridian Mining UK Societas (the "Company") with and effective date of March 10, 2025 (the "Effective Date").
3. I graduated from the University of Toronto with a Bachelor of Applied Science degree in Geological Engineering with specialization in Mineral Processing in 1984.
4. I am a Professional Engineer registered with the Professional Engineers Ontario (No. 90225970), Engineers and Geoscientists British Columbia (No. 23536) and NWT and Nunavut Association of Professional Engineers and Geoscientists (No. L4508).
5. I have practiced my profession continuously for over 40 years with experience in the development, design, operation and commissioning of mineral processing plants, focusing on gold projects, both domestic and internationally. My project design and development experience include the generation of capital and operating costs for mineral processing plants and associated infrastructure and financial modelling of project economics.
6. I have read the definition of "Qualified Person" set out in the National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for those sections of the Technical Report that I am responsible for preparing.
7. I have not visited the Cabaçal Project site.
8. I am responsible for Sections 1.15, 1.16.1, 1.16.2, 1.17, 1.19, 1.20, 1.21, 1.22, 3.3, 17, 18.1 - 18.4, 18.7, 18.8, 19, 21.1, 21.2.1, 21.2.2, 21.2.4 - 21.2.11, 21.3.1, 21.3.2, 21.3.4, 21.4, 22, 24, 25.9, 25.12, 25.14, 25.15, 25.16, 25.17.1.6, 25.17.1.8, 25.17.2.5, 25.17.2.7, 26.7, 26.9, 26.11, 27 of this Technical Report.
9. I am independent of the Company as independence is defined in Section 1.5 of NI 43-101.
10. I have been previously involved with the Cabaçal Project, participating in the preparation of the report titled "*Cabaçal Project NI 43-101 Technical Report and Preliminary Economic Assessment, Mato Grosso, Brazil,"* in 2023.
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 that Instrument. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: March 31, 2025.

"*Signed and sealed*"

Tommaso Roberto Raponi, P.Eng.

CERTIFICATE OF QUALIFIED PERSON
Scott C. Elfen, P.E.

I, Scott C. Elfen, P.E., certify that:

1. I am employed as a Global Lead Geotechnical and Civil Services of Ausenco Engineering Canada ULC. (Ausenco), with an office address of 1050 W Pender Street, Suite 1200, Vancouver, BC V6E 3S7, Canada.
2. This certificate applies to the technical report titled *"Cabaçal Gold-Copper Project, NI 43-101 Technical Report and Pre-feasibility Study, Mato Grosso, Brazil"* (the "Technical Report"), prepared for Meridian Mining UK Societas (the "Company") with and effective date of March 10, 2025 (the "Effective Date").
3. I graduated from the University of California, Davis, CA, in 1991 with a Bachelor of Science degree in Civil Engineering (Geotechnical).
4. I am a Registered Civil Engineer in the State of California (licence No. C56527) since 1996 and in the State of Idaho (licence No. 3961670) since 2024.
5. I have practiced my profession continuously for 30 years, gaining experience in the development, design, construction, and operations of mine waste storage facilities, including waste rock storage facilities and tailings storage facilities, along with the design of heap leach facilities worldwide. Additionally, I have established geotechnical and civil design parameters for plant foundations and other supporting infrastructure. Examples of mine waste facility projects I have worked on the following projects: Lumina Gold's Cangrejos Project PEA through FS in Ecuador, GoGold Resources's, Los Ricos Project PEA in Mexico, HD Mining's Murray River Project PFS and FS in Canada, and Resolution Copper's Resolution Copper Project PEA in the United States and Northern Peru Copper ,El Galeno Project, Peru, Lumina Copper, Taca Taca, Argentina and the PEA for this project.
6. I visited the Cabaçal Project site from September 16 to 18, 2024.
7. I am responsible for Sections 1.16.3, 1.16.4, 1.18, 2.4.1, 3.4, 18.5, 18.6, 20, 25.10, 25.13, 25.17.1.7, 25.17.1.9, 25.17.2.6, 25.17.2.8, 26.8.1, 26.8.2, 26.10, 27 of this Technical Report.
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10. I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with that Instrument. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: March 31, 2025.

"Signed and sealed"

Scott C. Elfen, P.E.

CERTIFICATE OF QUALIFIED PERSON
John McCartney, C.Geol.

I, John Anthony McCartney, C.Geol., certify that:

1. I am employed as a Principal Hydrogeologist with Ausenco Chile Limitada, (Ausenco), with an office address of Avenida Las Condes 11283, 7590992 Las Condes, Santiago, Chile.
2. This certificate applies to the technical report titled *"Cabaçal Gold-Copper Project, NI 43-101 Technical Report and Pre-feasibility Study, Mato Grosso, Brazil"* (the "Technical Report"), prepared for Meridian Mining UK Societas (the "Company") with and effective date of March 10, 2025 (the "Effective Date").
3. I graduated from the University of Technology Sydney with a Master of Science in Hydrogeology and Groundwater Management in 2001.
4. I am a Chartered Geologist elect by the Geological Society of London (Fellowship number 1041328).
5. I have practiced my profession continuously for 35 years with experience in list your experience in the investigating and management of hydrological and hydrogeological projects in the mining sector worldwide. I have worked on many open pit and underground mining projects, covering all stages of project study and development, from scoping studies to post-closure. I have managed the installation and optimization of mine water control measures, the implementation and operation of mine dewatering systems, development of water supplies, and the execution of environmental impact analyses for both open pit and underground mining operations.
6. I have read the definition of "Qualified Person" set out in the National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for those sections of the Technical Report that I am responsible for preparing.
7. I have not visited the Cabaçal Project site.
8. I am responsible for Sections 1.16.5, 18.9, 25.11, 26.8.3, 27 of this Technical Report.
9. I am independent of the Company as independence is defined in Section 1.5 of NI 43-101.
10. I have not been previously involved with the Cabaçal Project.
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 that Instrument. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: March 31, 2025.

"*Signed and sealed"*

John Anthony McCartney, C.Geol.

CERTIFICATE OF QUALIFIED PERSON
Leonardo Soares, BSc (Geo), MAIG (#5180)

I, Leonardo Soares, BSc (Geo), MAIG (5180), certify that:

1. I am employed Senior Geologist with GE21 Consultoria Mineral (GE21), with an office address of Avenida Afonso Pena, 3130, 9th floor, Savassi, Belo Horizonte, MG, Brazil – CEP 30130-910.
2. This certificate applies to the technical report titled *"Cabaçal Gold-Copper Project, NI 43-101 Technical Report and Pre-feasibility Study, Mato Grosso, Brazil"* (the "Technical Report"), prepared for Meridian Mining UK Societas (the "Company") with and effective date of March 10, 2025 (the "Effective Date").
3. I graduated from the Federal University of Minas Gerais in Belo Horizonte, Brazil with a bachelor's degree in Geology in April 2002.
4. I am a professional Geologist registered as a Member of the Australian Institute of Geoscientists (MAIG) (No. 5180).
5. I have practiced my profession continuously for 24 years, including 9 years of experience as a specialist geologist in exploration, geotechnics, and grade control within mining companies in Brazil, and 15 years in consultancy, specializing in Mineral Resource estimation and geostatistics for various commodities, including gold and copper projects.
6. I have read the definition of "Qualified Person" set out in the National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for those sections of the Technical Report that I am responsible for preparing.
7. I have not visited the project site.
8. I am responsible for Sections 1.7, 1.8, 1.9, 1.10, 1.12, 7, 8, 9, 10, 11, 14, 25.3, 25.4, 25.6, 25.17.1.1, 25.17.1.3, 25.17.2.1, 26.2, 26.3, 27 of this Technical Report.
9. I am independent of the Company as independence is defined in Section 1.5 of NI 43-101.
10. I have not been previously involved with the Cabaçal Project.
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 that Instrument. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: March 31, 2025.

"*Signed and sealed*"

Leonardo de Moraes Soares, BSc. (Geo), MAIG (#5180).

CERTIFICATE OF QUALIFIED PERSON
Norman Lotter, PhD., P.Eng., PrEng., C.Eng.

I, Norman Lotter, PhD., P.Eng., PrEng., C.Eng., certify that:

1) I am employed as President and Consulting Engineer with Flowsheets Metallurgical Consulting Inc., (Flowsheets), with an office address of 904 Connaught Ave, Sudbury, Ontario, Canada P3E 5Y2.
2) This certificate applies to the technical report titled *"Cabaçal Gold-Copper Project, NI 43-101 Technical Report and Pre-feasibility Study, Mato Grosso, Brazil"* (the "Technical Report"), prepared for Meridian Mining UK Societas (the "Company") with and effective date of March 10, 2025 (the "Effective Date").
3) I graduated from the University of Natal, South Africa with a B.Sc. in pure and applied science in 1972. I graduated from the University Cape Town, South Africa with an M.Sc. in Chemical Engineering in 1995. I graduated from McGill University, Canada, with a Ph.D. in Metallurgical Engineering in 2006.
4) I am a professional engineer registered with the Professional Engineers Ontario (No. 90531807), as a Designated Consulting Engineer with the Professional Engineers Ontario (No. 4063), as a Professional Engineer with the Engineering Council of South Africa (No 960489) and with the Engineering Council of England as a Chartered Engineer (No 343604).
5) I have practiced my profession continuously for 53 years with experience in mineral processing, sampling, and associated flowsheet development. Some examples include:
    a) mineral processing, sampling, and associated flowsheet development.
    b) sampling and assaying audit of Newgold New Afton custom feed programmed with Elk Gold as supplier.
    c) post-commissioning performance improvement for the Raglan concentrator, Nunavit.
6) I have read the definition of "Qualified Person" set out in the National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for those sections of the Technical Report that I am responsible for preparing.
7) I have not visited the Cabaçal Project site.
8) I am responsible for Sections 1.11, 13, 25.5, 25.17.1.2, 25.17.2.2, 26.4, 27 of this Technical Report.
9) I am independent of the Company as independence is defined in Section 1.5 of NI 43-101.
10) I have not been previously involved with the Cabaçal Project.
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 that Instrument. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: March 31, 2025.

"Signed and sealed"

Norman Lotter, PhD., P.Eng., PrEng., C.Eng.

CERTIFICATE OF QUALIFIED PERSON
Juliano Felix de Lima, Geologist Engineer, MAIG (#9180)

I, Juliano Felix de Lima, Geologist Engineer, MAIG (9180), certify that:

1. I am employed as a Chief Technology Innovation Officer with GE21 Consultoria Mineral (GE21), with an office address of Afonso Pena Av., 3130, 12 floor, Belo Horizonte - MG, Brazil.
2. This certificate applies to the technical report titled *"Cabaçal Gold-Copper Project, NI 43-101 Technical Report and Pre-feasibility Study, Mato Grosso, Brazil"* (the "Technical Report"), prepared for Meridian Mining UK Societas (the "Company") with and effective date of March 10, 2025 (the "Effective Date").
3. I graduated from the Universidade Federal de Ouro Preto with a bachelor's in science in Geological Engineering on August 20, 1999.
4. I am a geology engineer and registered Member with the Australian Institute of Geology (MAIG) (#9180).
5. I have practiced my profession continuously for 25 years with experience in exploration, resource and reserves estimation and open pit and underground mining focusing on gold and iron ore projects. My experience includes general management of three gold mining operations, Sertão Mining, Equinox Gold Fazenda Brasileiro and Equinox Gold Mineração Aurizona.
6. I have read the definition of "Qualified Person" set out in the National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for those sections of the Technical Report that I am responsible for preparing.
7. I visited the Cabaçal Project site on September 17, 2024.
8. I am responsible for Sections 1.3, 1.4, 1.5, 1.6, 1.14, 2.4.2, 2.6, 3.1-3.2, 4, 5, 6, 12, 16, 23, 25.2, 25.8, 25.17.1.5, 25.17.2.4, 26.6, 27 of this Technical Report.
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Dated: March 31, 2025.

"Signed and sealed"

Juliano Felix de Lima, Geologist Engineer, MAIG (#9180).

CERTIFICATE OF QUALIFIED PERSON
Porfírio Cabaleiro Rodriguez, BSc (Mining Engineering), FAIG(#3708)

I, Porfírio Cabaleiro Rodriguez, BSc (Mining Engineering), FAIG (3708), certify that:

1. I am employed as a Senior Mining Engineer with GE21 Consultoria Mineral, (GE21), with an office address of Avenida Afonso Pena, 3130, 9th floor, Savassi, Belo Horizonte, MG, Brazil – CEP 30130-910.
2. This certificate applies to the technical report titled *"Cabaçal Gold-Copper Project, NI 43-101 Technical Report and Pre-feasibility Study, Mato Grosso, Brazil"* (the "Technical Report"), prepared for Meridian Mining UK Societas (the "Company") with and effective date of March 10, 2025 (the "Effective Date").
3. I graduated from Federal University of Minas Gerais in Belo Horizonte, Brazil with a bachelor's degree in mining engineering in December 1978. I have a master's degree in Geostatistics from Universidade Federal de Ouro Preto in December 1986
4. I am a professional Mining Engineer registered as Fellow Australian Institute of Geoscientists (FAIG) (No. 3708).
5. I have practiced my profession continuously for 45 years with experience mining planning, resources estimation, reserves estimation, mining management, including more than 35 years in consulting firms. Some examples include:
    - Prepare, coordinate or supervised dozens of Mineral Reserves estimates since 2007
    - Recent Technical Reports filed in Sedar include: Ero Coper – NXGold, 2023, Sigma Lithium - Grota do Cirilo Project, 2024, Larco Inc – Campbel Pit, 2021
6. I have read the definition of "Qualified Person" set out in the National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for those sections of the Technical Report that I am responsible for preparing.
7. I have not visited the Cabaçal Project site.
8. I am responsible for Sections 1.1, 1.2, 1.13, ,2.1-2.3, 2.5, 2.7-2.9, 15, 21.2.3, 21.3.3, 25.1, 25.7, 25.17.1.4, 25.17.2.3, 26.1, 26.5, 27 of this Technical Report.
9. I am independent of the Company as independence is defined in Section 1.5 of NI 43-101.
10. I have not been previously involved with the Cabaçal Project.
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 that Instrument. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: March 31, 2025.

"Signed and sealed"

Porfírio Cabaleiro Rodriguez, BSc (Mining Engineering), FAIG (#3708).

Important Notice

This report was prepared as National Instrument 43-101 Technical Report for Meridian Mining UK Societas (Meridian) by Ausenco do Brasil Engenharia Ltda., Ausenco Engineering Canada ULC., Ausenco Chile Ltda. (Ausenco), GE21 Consultoria Mineral (GE21), and Flowsheets Metallurgical Consulting Inc., collectively the Report Authors. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in the Report Authors' services, based on i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by *Meridian* subject to terms and conditions of its contracts with each of the Report Authors. Except for the purposes legislated under Canadian provincial and territorial securities law, any other uses of this report by any third party are at that party's sole risk.

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1 SUMMARY

1.1 Introduction

Meridian Mining UK Societas (Meridian) commissioned Ausenco do Brasil Engenharia Ltda. (Ausenco) to compile a pre-feasibility study (PFS) of the Cabaçal Gold-Copper Project in Brazil. The PFS was prepared in accordance with the Canadian disclosure requirements of National Instrument 43-101 (NI 43-101) and the requirements of Form 43-101 F1.

The responsibilities of the engineering consultants and firms who are providing qualified persons are as follows:

- Ausenco managed and coordinated the work related to the report. Ausenco also developed the PFS-level design and cost estimate for the process plant, general site infrastructure, tailings infrastructure, environmental management, compiled the overall cost estimate and completed the economic analysis.
- GE21 Consultoria Mineral (GE21) completed the work related to geological setting, deposit type, exploration, drilling, sample preparation, data verification, Mineral Resource estimation, the mine plan and schedule, and capital cost and operating cost related to the mine, and adjacent properties.
- Dr. Norman Lotter (Ph.D., P.Eng.) of Flowsheets Metallurgical Consulting Inc., in Canada, was responsible for the project laboratory testing methodology and interpretation.
- Sete Soluções e Tecnologia Ambiental Ltda. completed work related to environmental studies.
- Hidrovia Hidrogeologia e Meio Ambiente Ltda. supported the PFS with hydrological studies.

1.2 Terms of Reference

The Report supports disclosures by Meridian in a news release dated March 10, 2025, entitled, “Meridian Mining’s Cabaçal Pre-Feasibility Study Delivers USD 984 million NPV5 & 61.2% IRR (After-Tax), and Annual Average Production 141,000 AuEq Ounces.”

1.3 Property Description and Location

The Cabaçal Project mineral titles cover a 50 km strike length of a prospective Proterozoic greenstone belt, spanning 51,826 hectares (ha) in the state of Mato Grosso, Brazil. Mining rights straddle six municipalities: Mirassol do Oeste, São José dos Quatro Marcos, Lambari d'Oeste, Rio Branco, Araputanga, and Reserva do Cabaçal. The Project is located approximately 310 km west-northwest of the state capital, Cuiabá, with sealed roads providing access between Cuiabá and Meridian’s administrative base in São José dos Quatro Marcos. Within the Property, the Cabaçal gold-copper-silver mine is located at -58° 12' 33.84'' W; -15° 20' 18.6'' S (GCS WGS, 1984), on the 1:250000 “Barra do Bugres” mapsheet, approximately 35 km from São José dos Quatro Marcos via unpaved, all-weather gravel roads.

On November 6, 2020, Meridian entered into a definitive Purchase Agreement with two private Brazilian companies, Prometálica Mineração Ltda. and IMS Engenharia Mineral Ltda. (the “Vendors”) (the “Cabaçal Agreement”), to acquire a 100% beneficial interest in the Cabaçal Gold-Copper Project in the state of Mato Grosso, Brazil, spanning an area of

18,462 ha. On October 5, 2021, Meridian assigned the Cabaçal Agreement to its Brazilian subsidiary, Rio Cabaçal Mineração Ltda. The remaining 33,364 ha along with other regional licences in coeval greenstone belts to the west covering 55,452 ha, are not part of the Purchase Agreement and are registered directly to Rio Cabaçal Mineração Ltda. The Cabaçal Agreement allows the Company to withhold payments in an Indemnification Escrow Fund (the "Escrow Fund") to guarantee the payment of any losses related to certain Vendor obligations. At the Company's discretion, the Escrow Fund balance can be used to pay certain Vendor obligations.

Under the terms of the Cabaçal Agreement, the Company is required to make staged payments based on the achievement of milestones outlined below. The Company has determined the Cabaçal Agreement to be an executory contract based on the assessment of its provisions. As a result, as milestones are achieved, the corresponding staged payments will be triggered. The amount of each staged payment will be determined at the trigger date and will be capitalized to exploration and evaluation assets, as these payments are considered acquisition-related costs.

Amounts triggered and paid as of December 31, 2024:

- First instalment payment: $25,000 payable within five days of the execution of the option agreement (paid).
- Second instalment payment: $275,000 payable by October 15, 2021, following the filing of the mineral rights transfer to Rio Cabaçal Mineração Ltda. with the Agência Nacional de Mineração (ANM; Brazil's national mining agency) (paid).
- Third instalment payment: $1,750,000 payable on August 1, 2023, unless accelerated by the completion of an equity financing with gross proceeds of at least $2,500,000, contingent upon the successful completion of a drill program and validation of the historical geophysics database, and the acquisition of necessary permits and access to the surface rights overlapping with the Cabaçal mineral rights. To date, the Company has paid $1,647,717.
- Fourth instalment payment: 1,000,000 common shares in the capital of the Company or C$300,000, at the Vendors' option, payable within six months of the third payment and subject to the completion of a technical report estimating the resource in accordance with National Instrument 43-101, whichever occurs later (paid in common shares).

Amounts not yet triggered:

- Fifth instalment payment: $1,850,000 plus, at the Vendors' option, 1,500,000 common shares in the capital of the Company or C$450,000, payable within nine months of the fourth payment and subject to the successful completion of a positive economic feasibility study. On January 4, 2024, the Company amended the terms of this fifth payment where the payment will be made by September 30, 2025, but is subject to the successful completion of the positive economic feasibility study. The amended terms require the Company to advance a total of $250,000, divided into monthly instalments from April 2025 to June 2025, to be deducted from the total amount of the fifth payment. The advance of $250,000 became payable upon amendment of the Cabaçal Agreement.
- Sixth instalment payment: $2,250,000 plus, at the Vendors' option, 2,000,000 common shares in the capital of the Company or C$600,000, payable within 30 days after the issuance of the Installation Licence (LI) of the Cabaçal plant by the competent authorities.
- Seventh instalment payment: $2,600,000 payable within 45 days after the Company signs the definitive financing contracts for the construction of the Cabaçal plant.

Cabaçal is located within the Border Buffer Zone of Brazil's frontier. This zone is a political protection area, not an economic exclusion zone. The terms of the Cabaçal Agreement give Meridian the option, under certain conditions, to return the mineral rights to the Vendors on an "as is" basis, with no further payment obligations or compliance with other terms.

1.4 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

The mining and exploration licences under the option agreement pending approval of the transfers to RCM by the Agência Nacional de Mineração (ANM) are:

- Registered to Prometálica Mineração Ltda.
  - 866292/2004: The Cabaçal Mining Lease Application (4,028 ha)
  - 861956/1980: The Santa Helena Mining Lease (875 ha)
- Registered to IMS Engenharia Mineral Ltda., the second term exploration licences:
  - 867407/2008: Exploration Licence (9,813 ha)
  - 866002/2016: Exploration Licence (2,566 ha)
  - 866455/2016: Exploration Licence (1180 ha).

Licence 861956/1980 has a royalty payment for the benefit of Manati, arising from the Mineral Exploitation Project Agreement dated December 20, 2000.

Rio Cabaçal Mineração Ltda. has applied for 16 satellite exploration licences in its own right in the Cabaçal, Jaurú and Araputanga Belts, which are listed as follows. Approval of the licences for field activity is pending.

Licence Number	Licence Number
866261/2021 (9862 ha)	866757/2021 (7400 ha)
866743/2021 (666 ha)	866751/2022 (1404 ha)
866744/2021 (9767 ha)	866752/2022 (9466 ha)
866749/2021 (7546 ha)	866753/2022 (5071 ha)
866750/2021 (8925 ha)	866261/2024 (1890 ha)
866751/2021 (4977 ha)	866262/2024 (2116 ha)
866752/2021 (4911 ha)	866597/2024 (7561 ha)
866754/2021 (4917 ha)	866967/2024 (2336 ha)

The Company has access agreements with 65 landholders and conducts its exploration activities under licences (LOPM - Licença de Operação para Pesquisa Mineral) issued by the state environmental agency, Secretaria De Estado De Meio Ambiente (SEMA). Water required of field activities is taken from licenced draw points.

1.5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

The Cabaçal Project is located on the plateau area of Western Mato Grosso state, consisting of flat to gently rolling hills at an elevation of approximately 225-345 metres above sea level (masl). The area around the historic Cabaçal mine has already been significantly cleared for agriculture (predominantly beef cattle), is amenable to exploration, and has areas suitable for potential mine infrastructure such as plant and material storage facilities.

The region is well served by infrastructure, with power currently supplied through a high-voltage 34.5-kilovolt (kV) powerline. Several hydroelectric power stations operate in the region. A potential route for the construction of a 138 kilovolt-ampere (kVA) power line of sufficient capacity for the Cabaçal Project, from the Araputanga substation to the Project area, has been identified extending over 22 km. Subject to permitting, water is potentially available from the nearby Cabaçal river.

Mine services and labour are available, primarily from nearby towns.

1.6 History

In the early 1980s, BP Minerals (BPM) identified three new greenstone belts in northwest Mato Grosso, which they named the Jaurú, Araputanga and Cabaçal Belts, and established about 800,000 ha of licences over this area. Rio Tinto Zinc (RTZ, later Rio Tinto Group) assumed ownership of the project following its acquisition of BPM in 1989.

BPM initially undertook regional geological mapping, stream geochemical programs and an aerial geophysical INPUT survey, defining a series of Cu-Pb-Zn-Au anomalies and various conductors associated with metavolcanic – metasedimentary stratigraphy. This was followed by prospect-scale soil surveys, ground geophysics and exploratory drilling. The Cabaçal and Santa Helena Volcanic Massive Sulphide (VMS) deposits were discovered during this exploration phase (from prospects first called C4A and C2C, respectively). Historical drilling during the BPM-RTZ campaigns between 1981 to 1989 amounted to 768 diamond holes for 79,088.6 m (dominantly NQ core with some HQ, BQ, and AQ core sizes). The immediate Cabaçal mine area was intensely drilled, in places on a 10 x 10 m grid, whilst the extensions were drilled on a 100 x 100 m grid, with predominantly vertical holes. Many of the geochemical and geophysical peripheral targets defined by BPM did not progress to systematic drill testing, due to the focus on resource definition drilling at Cabaçal (C4 target) and Santa Helena (C2C target).

Mining was initiated on the Cabaçal Deposit in April 1987, on historical licence 861925/1980. The mine operated until August 1991 when RTZ closed it. The Cabaçal operation processed 973,031 t at 4.91 g/t Au, 0.80% Cu (Ag data not complete). Ore mineralogy was composed of sulphides, selenides, bismuth, gold, and silver alloys. The main sulphide minerals were chalcopyrite, pyrite and pyrrhotite, with subordinate sphalerite and trace levels of galena. Underground mining was selective using a room-and-pillar mining method and focused on high-grade gold trends. The mine produced a gold-rich copper concentrate and gold-silver doré. Following rehabilitation, the Cabaçal mining licence was renounced in March 1994. In June 2004, Prometálica Mineração Ltda (PML) was successful in applying for a new exploration licence (866292/2004) over the Cabaçal mine area. PML subsequently applied for a mining licence in May 2017.

The Vendors undertook a Versatile Time-Domain Electromagnetic (VTEM) Survey in 2007 over the Cabaçal Belt (Franco, 2008), obtaining conductivity and magnetic survey data, and undertook further soil survey programs. Prior parties have evaluated the licences, but subsequent agreements have lapsed with no change in ownership. This includes:

Evaluation by AngloGold Ashanti in 2011, including resampling of historical core and technical reviews; and

A period in 2015, when Avanco evaluated the Project and undertook a limited drill campaign, involving 11 drill holes for 2,234.1 m. Their interest in the project was subsequently discontinued.

The combination of modern geophysics with historical datasets has created an excellent framework for a new round of exploration on advanced targets.

1.7 Geology and Mineralization

The Cabaçal and Santa Helena deposits, along with other identified targets, are associated with a Paleoproterozoic volcanogenic massive stringer and disseminated sulphide system hosted within deformed metavolcanic-sedimentary rocks of the Alto Jaurú Greenstone Belt. The meta-sediment package is part of a bimodal basalt-dominated sequence dated at 1853 ±15 Ma, by U-Pb method on zircon from the Manuel Leme Formation (Pinho et al., 2010). This places it at around the same age as other significant Paleoproterozoic VMS districts, such as Flin Flon, Canada (1890 Ma); Bergslagen and Skellefte districts, Sweden (1890 Ma); Jerome, United States (1760 Ma); and Pembine-Wausau Terrane, United States (1870 Ma). Regionally, the Cabaçal host sequence is interpreted to lie on the overturned eastern limb of an east-verging anticline (Mason and Kerr, 1990). An associated laterally extensive chert-pelite unit, interpreted as an exhalative deposit, serves as a marker horizon. Mineralization consists of massive stockwork/breccia-style veins, stringers, and disseminated sulphides, primarily composed of chalcopyrite with lesser amounts of pyrite and sphalerite.

The deposit has a relatively high gold content, enhanced by a later-stage hydrothermal overprint superimposed on the original VMS mineral system. Both shallow-dipping and steeper-dipping late-stage vein sets were identified during the mine development. The weathering profile is shallow, generally reaching a depth of 10-15 m. VMS mineral systems can often form clusters of deposits, creating exploration discovery opportunities both near existing mines and in broader regional exploration targets.

1.8 Exploration

Meridian conducted exploration activities from 2021 to 2024, focusing on Cabaçal and near-mine surroundings, with additional work on regional targets such as the southeast Santa Helena mineral centre. The work includes diamond drilling, sampling and assaying, surface geochemical surveys (including soil, trench, and rock chip sampling), downhole geophysical surveying of historic diamond drill holes, ground-based electromagnetic geophysical surveys, remote sensing (WorldView-3 satellite survey over the Cabaçal Belt), topographic control (LiDAR Surveys and ground control points), and digital data compilation. Additionally, Meridian reviewed all sources of information from historical records and cross sections to digitally compile historical logging codes.

1.9 Drilling

Meridian drilling operations consist of three diamond drilling campaigns, as outlined in Table 1-1. The Company is currently conducting a combination of verification infill holes, and resource extension holes to support the validation of the Project's historical database and to define the limits of mineralization.

Table 1-1: Drill Summary

Campaign	No. of Holes	Type of Drilling	Total Metres
2021-2022	224	Diamond Drilling	27,278.92
2022-2024	295	Diamond Drilling	32,701.91
2022-2024	12	Hydrogeological reverse circulation (RC) Drillholes	981
2022-2024	25	Auger Drilling	85.87
Historical	698	Diamond Drilling	69,496.38

A total of 519 diamond drill holes, amounting to 59,980.83 m, were included in the drilling database up to the effective date of the Mineral Resource Estimate (MRE), covering the Cabaçal deposit and near-mine sterilization areas. Additional data included 12 hydrogeological reverse circulation (RC) holes totalling 981 m, 37 geotechnical holes totaling 590 m, and 25 auger holes totaling 85.87 m.

The 2021-2022 program has returned significantly mineralized intersections of copper (Cu), gold (Au), and silver (Ag) in the VMS-style mineralization, extending in the Northwest Extension (CWNE) from the mine along strike over the basal contacts.

Meridian has also reviewed all sources of information from historical registers and cross sections to digitally compile the historical logging codes.

The diamond drilling methods used in the current drilling campaigns are in compliance with industry standards.

1.10 Sampling Preparation and Security

A historical sampling preparation study, using Gy's sampling formula, was the base to definition of the milling and pulverizing of entire core intervals to a nominal -200 mesh and analysing of 50 g fire assay for drillcore. In early drilling AQ and BQ diameter cores were obtained, whereas HQ and NQ diameter core sizes were used during the evaluation drilling. Sampling preparation and analysis was initially conducted by BPM through LABPM Laboratory (sample preparation at corner of Rua Pereira Passos and Avenida Kennedy, Caxias, Rio de Janeiro – RJ, Brazil; analysis at Rua Caetés, n49, Bonsucesso, Rio de Janeiro -RG, Brazil). This was an in-house laboratory established under the supervision of Dr William McMannus (Laboratory Director, chemical engineer), Dr Paul Taufen (BPM Chief Geochemist), Mr Mauro Yamamoto (Laboratory General Manager, chemical engineer), Mr João Vilar da Silva (LABPM Coordinator, Chemist). With the 1989 RTZ acquisition of BPM, this became a commercial laboratory – Nomos – at the same addresses. The accreditation status of the laboratory is not recorded. Initially, the gold analysis was by atomic absorption, with an aqua regia digest, and in the extraction an organic solvent MIBK was used, for aliquots of 50 grams. Subsequently, fire assay analyses were adopted; after tests showed that this method was more efficient, with better reproducibility of the assay result for gold. In addition, the sample preparation adopted the procedure of crushing the sample entirely at -200 mesh, and later quartering to obtain a 50-gram aliquot. Copper and silver were analysed by atomic absorption, using a three-acid digest for copper and aqua regia digest for silver.

The procedures adopted in the Cabaçal Project by Meridian for collecting samples involve different processes, which are described as follows. The sampling method has core intervals from at least 30 cm to a maximum of 100 cm length, respecting the lithological contacts and change in hole diameter. not mixing materials with different diameters. After the core has been saw-splitted, the box is returned to its original position on the bench. Individual half-core samples generally weigh approximately 1.5 – 5.0 kg. The procedure involves drying at 105°Celsius, crushing so that 75% passes <3 mm, homogenization of the sample, splitting with a Jones riffle splitter to give a split sample mass of 250-300 g; and pulverization of 250 to 300 g with 95% passing mesh size 150#.

Density measurements were taken on core samples via the immersion in water method, i.e., weight in air weight in water by Archimedes method.

Two commercial laboratories have been used: SGS Laboratory in Brazil and ALS Laboratory in Peru. Gold analysis is by fire assay of a 50 g charge with an atomic absorption spectroscopy (AAS) finish. Copper and Silver are analysed as part of a multielement package through a 4-acid total digest method (HCl, HNO3, HF and HClO4), with analysis by ICP-OES finish.

Current sampling preparation procedures presented by Meridian are considered by the Qualified Person (QP) as compliant with Industry good practices.

Historical information from previous companies' preparation sampling procedures was registered as in accordance with industry standards. Historical analytical procedures included submissions of standards and blanks, coupled with empire analysis. Limited records of the original quality control data have been preserved, and Meridian has conducted umpire sampling and twin drilling to support the use of this data in the classification of the mineral resource estimate. Some of the sampling and assay database does not have sufficient information to confirm the quality to ensure the appropriate level of confidence to support a mineral resource estimate. Meridian has applied a categorical attribute ("Assay Type") to identify samples to treat as historical information.

The security procedures designed to prevent sample interference are acceptable. Meridian's quality assurance/quality control (QA/QC) program is considered by the QP to be compliant with industry standards and its analysis shows the results inside sufficient level of confidence to support Mineral Resource Estimate.

1.11 Mineral Processing and Metallurgical Test work

According to this present PFS project, two products will be generated at Cabaçal:

- Gold and silver in doré bars; and
- Copper and gold concentrate.

The beneficiation process is simple due to a clean mineralized ore, with low impurities and an absence of organic material. This will make ore processed, at a 200-micron (µm) grind, amenable to flotation techniques, with the excellent auto-flotation characteristics of the Cabaçal mine's chalcopyrite, allowing for a simple flotation schedule to give copper recoveries up to 95% to a clean concentrate. Gold is mainly recovered via gravity circuit (concentrator and shaking tables), but also in and via flotation in a copper concentrate, together with copper. The rougher tailings are treated in a pyrite flotation step, with the main objective of separating most of the sulphur in a low mass stream, reducing the risks

of final tails dewatering and disposition. Rougher concentrate is reground and refloated in a cleaner circuit, consisting of a vertimill and a Jameson Cell, which reports its concentrate to the final concentrate dewatering circuit.

Three test work programs have been completed since 2022. They are summarized as follows:

- In 2022, a new drilling campaign and test work program was completed, where Meridian drilled ten metallurgical holes. Seven of these holes were used for sample selection to confirm historical performance with a new round of test work at SGS Lakefield, Canada. The holes provided samples from the four known main VMS systems, namely the Central Copper Zone, the Eastern Copper Zone, the South Copper Zone and the Cabaçal Northwest Extension. Most of the samples were within the expected head grade range for the deposit. Comminution, gravity and flotation tests were run on samples from different metallurgical domains, as well on a master composite sample.
- In 2023, 23 samples from across the deposit (including nine through the vertical profile of drill hole CD-228) were collected, covering oxidised, transition and sulphides zones. Samples were tested at SGS Lakefield, Canada. In this program, all samples were tested for Bond Work Index (BWI) and went through the SAG Mill Comminution (SMC) test work program. In addition, metallurgical samples were tested for flotation flowsheet and reagent dosage optimization and once optimal flowsheet was defined, variability samples were tested to generate enough information to create recovery curves for the project.
- In 2024, a revised process flowsheet was developed with the main differences to the PEA flowsheet being the use of copper and gold specific collectors (Aerophine 3148A and Aero 208 to replace potassium amyl xanthate (PAX) in rougher flotation), extended rougher flotation time and pyrite minerals floated from the rougher tails for separate storage. The new flowsheet was tested on the same samples and master composites selected for the PEA, as well as additional samples that filled in gaps in the grade curve, represented the variability of the deposit from top to bottom and added data on the oxide and transition zones of the deposit. In addition, a gold deportment study was conducted as well as TIMA-X mineral characterisation of the master composite. Tailings settling/thickener testing showed it responded well to BASF Magnafloc 155 flocculant. Updated grade-recovery curves were developed at the completion of the test work.

Additional test work is recommended to define final mill P_{80} (200 vs 150 µm). Also, pilot plant tests are planned for the next phase of the project to reduce risks of the project and generate enough sample mass for further testing (vendor, environmental, etc.) in the next phase of the Project.

1.12 Mineral Resource Estimate

The Mineral resource for the Cabaçal deposit was classified and prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves, adopted by the CIM Council on May 10, 2014, as amended (the “CIM Standards”), and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines, adopted by CIM Council on November 29, 2019, as amended (the “CIM Guidelines”) by Mr Leonardo Moraes Soares, MAIG. Mr Soares is an independent Qualified Person as such term is defined under NI 43-101.

The mineral exploration data was applied to define the 3D geological model and resource estimate. It was compiled into Leapfrog software for the audit and validation of the organization, integrity and security of the data. The database is considered suitable for the purposes of mineral resource estimation.

The 3D geological model was prepared by the QP using Leapfrog Geo software, to define and interpolate geological domains. The variograms prepared for each domain were used in Ordinary Kriging for Au (g/t), Cu (%) and Ag (g/t) estimates, using Leapfrog Edge software.

The nominal sample length of 1 m was selected to be used in sample compositing based on the analysis of composite support for Cabaçal deposit

The block model for Cabaçal Project was built using Leapfrog software. The dimensions of the blocks were based on the one quarter (of the area) of the average spacing of the drilling grid. Sub-blocks were used to ensure an appropriate adherence between modelled surfaces/solids and the block model.

Density data was supplied by Meridian inside the drillhole database with selected intervals of 10-15 cm in length. The density values were measured using the technique based on Archimedes principle. Outlier values of density for each domain were treated before the estimation in the block model. A total of 54,047 density test results are present in the database. Due the low number of samples in saprolite zones, the QP assumed a fixed value of 2.16 t/m³ by average density on saprolite and 2.54 t/m³ for Saprock horizon. Sulphide minerals (such as chalcopyrite, pyrite, pyrrhotite, and sphalerite) and oxide minerals (magnetite) contribute to the influence in rock mass density. Due to this feature, the density estimation was carried out for fresh rock horizons using an IDW interpolator.

The Ordinary Kriging (OK) estimation method was applied to estimate the Au (ppm), Cu (%) and Ag (ppm) grade for mineralized domains. The estimates were separated for each domain, respecting the composites of each of the mineralized horizons. Grades were estimated considering Hard Boundary domains. The estimation was made using five progressive steps, varying the neighbouring search main radius, named P1, P2, P3, P4 and P5, which were defined based on the range of the variogram model for each domain.

The analysis of the global bias was conducted on Au (ppm), Cu (%) and Ag (ppm) by comparing the estimated grade, block by block, with the grade estimated by the Nearest Neighbour method, which aims to represent the original sample population in the deposit. Swath plot graphs were carried out in order to analyse the occurrence of local biases. The QP considers that the validation did not demonstrate an excessive smoothing effect by the ordinary kriging. The local bias was considered by the QP inside acceptance limits for the estimation of mineral resources.

The classification of mineral resources for the Cabaçal deposit was determined by the QP's using the definitions of the Resources established by the CIM. This process involved assessing data quality and quantity, and resource classification was also based on search pass numbers used in grade interpolation. The approach considers drillhole sample distribution, confidence in input data, and proximity to the block centroid. Additional factors influencing classification include geological modelling, variography, sampling techniques, QA/QC procedures, density measurements, core recovery, interpolation methodology, and reconciliation with past production records.

The Mineral Resource value was quantified inside a resource pit based on the current cost and assumed commodity price, represented for the Reasonable Prospect for Eventual Economic Extraction (RPEEE), considering as effective date December 4, 2024. Table 1-2 summarizes the Mineral Resources of the Cabaçal deposit.

The following are the principal assumptions which were used in the generation of the Mineral Resource classification:

- Measured: The QP considered as measured mineral resource blocks those estimated by pass 1 and 2 for low and high-grade mineralized domains.
- Indicated: The QP considered as indicated resource blocks those estimated for gold estimation by passes 3, 4 and 5 for low and high-grade mineralized domains, and also for the mineralized background, those blocks estimated by passes 1 to 3.
- The resource cut-off grade applied for low- and high-grade domains in Measured and Indicated resources was 0.188 g/t AuEq, and for the mineralized background was 0.25g/t AuEq.
- Inferred: There were no blocks classified as inferred within the open-pit shell. Inferred resource class was classified by an underground mining stope optimization process.

A Stope optimization process using Datamine software was applied to mineralization zone below the optimized open pit.

The Cabaçal open-pit Mineral Resource is presented in Table 1-2, While the Cabaçal underground Mineral Resource is presented in Table 1-3.

Table 1-2: Cabaçal Gold-Copper Project Open-Pit Mineral Resource

Resource Classification	Mass Mt	Average Value			Material Content		
		Au (g/t)	Cu (%)	Ag (g/t)	Au (koz)	Cu (kt)	Ag (koz)
Measured	43.68	0.59	0.41	1.53	834.16	178.80	2,152.32
Indicated	7.75	0.28	0.33	1.32	70.15	25.68	328.40
Measured+Indicated	**51.43**	**0.55**	**0.40**	**1.50**	**904.31**	**204.47**	**2,480.72**

Notes:

1. Measured and Indicated Resource estimate reported inside open pit constrains. Inferred category was not classified inside open pit constrains.
2. The Mineral Resource Estimates were prepared in accordance with the CIM Standards, and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.
3. Mineral Resources are not Mineral Reserves and are not demonstrably economically recoverable.
4. Grades reported using dry density.
5. The effective date of the MRE was November 15, 2024.
6. The QP responsible for the Mineral Resources is geologist Leonardo Soares (MAIG #5180).
7. The MRE numbers provided have been rounded to the estimate relative precision. Values cannot be added due to rounding.
8. The MRE is delimited by Mining tenement areas.
9. The MRE was estimated using ordinary kriging in 10m x 10m x 5m blocks with sub-blocks of 5.0m x 2.5m x 1.25m.
10. The MRE report table was produced in Leapfrog Geo software.
11. The MRE was restricted by a pit shell defined using metal prices of USD2 119/oz Au, Mining cost of USD2.11/t mined, processing cost ofUSD8.20/t processed, metallurgical recovery calculated block by block based on metallurgical tests, General and Administrative (G&A) costs of USD1.66/t processed, and USD1.64/t processed logistics.
12. Equivalent Gold grade was calculated with the following formula: AuEq = (Au_grade * %Au_Recovery) + (1.346*(Cu_grade * %Cu_Recovery)) + (0.013*(Ag grade * %Ag_Recovery)).
13. The resource cut-off grade applied for low- and high-grade domains in Measured and Indicated resources was 0.188 g/t AuEq, and for the mineralized background was 0.25g/t AuEq.

Table 1-3: Cabaçal Gold-Copper Project Underground Mineral Resource

Resource Classification	Mass	Average Value			Metal Content		
	Mt	Au (g/t)	Cu (%)	Ag (g/t)	Au (koz)	Cu (kt)	Ag (Koz)
Inferred	0.26	0.96	0.49	1.36	8.15	1.29	11.54

Notes:
1. Inferred Resource category is reported inside underground grade shell.
2. The mineral resource estimates were prepared in accordance with the CIM Standards, and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.
3. Mineral Resources are not Mineral Reserves and are not demonstrably economically recoverable.
4. Grades reported using dry density.
5. The effective date of the MRE was November 15, 2024.
6. The QP responsible for the Mineral Resources is geologist Leonardo Soares (MAIG #5180).
7. The MRE numbers provided have been rounded to the estimate relative precision. Values cannot be added due to rounding.
8. The MRE is delimited by Mining tenement areas.
9. The MRE was estimated using ordinary kriging in 10m x 10m x 5m blocks with sub-blocks of 5.0m x 2.5m x 1.25m.
10. The MRE report table was produced in Leapfrog Geo software.
11. The MRE was restricted by an underground optimized stopes defined using metal prices of USD2 119/oz Au, Mining cost of USD32.0/t mined, processing cost of USD8.20/t processed, metallurgical recovery calculated block by block based on metallurgical tests, G&A costs of USD1.66/t processed, and USD1.64/t processed logistics.
12. Equivalent Gold grade was calculated with the following formula: AuEq = (Au_grade * %Au_Recovery) + (1.346*(Cu_grade * %Cu_Recovery)) + (0.013*(Ag grade * %Ag_Recovery)).
13. The resource cut-off grade applied to underground Inferred resources was 0.96 g/t AuEq.

1.13 Mineral Reserve Estimate

The Initial Mineral Reserve estimate for Cabaçal was carried out by GE21 Mineral Consulting and is based on the Mineral Resource Statement with an effective date of February 11, 2025. Mineral Resources are inclusive of Mineral Reserves (Table 1-4).

Table 1-4: Cabaçal Gold-Copper Project – Mineral Reserves Estimate (Effective Date – February 11, 2025)

Reserve Classification	Mass	Average Value			Material Content		
	Mt	Au (g/t)	Ag (g/t)	Cu (%)	Au (koz)	Ag (koz)	Cu (M lb)
Proven	37.11	0.67	1.64	0.45	797.103	1 962.660	364.903
Probable	4.59	0.36	1.57	0.40	52.773	231.754	40.480
Proven+Probable	**41.70**	**0.63**	**1.64**	**0.44**	**849.876**	**2 194.414**	**405.384**

Notes:
1. Mineral Reserves estimates were prepared in accordance with the CIM Standards
2. Mineral Reserves are the economic portion of the Measured and Indicated Mineral Resources
3. No Inferred Resource was counted as Mineral Reserve.
4. Mineral Reserves were estimated by Porfírio Cabaleiro BSc (Min Eng), FAIG, a GE21 associate, who meets the requirements of a "Qualified Person" as established by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014) (the CIM Standards)
5. The Mineral Reserves are reported with an effective date of February 11, 2025.
6. The reference point at which the Mineral Reserves are defined is the point where the ore is delivered from the open pit to the crushing plant.
7. Mineral Reserves were estimated using the GEOVIA Whittle 4.3 software and following the geometric and economic parameters
8. Geometric and economic parameters include: Mine recovery of 97% and 3% dilution, copper, gold, silver selling cost of USD4.16/lb, USD2 119/oz, USD26.89/oz, respectively, Mining costs of USD2.98/t for mineralization and waste, Processing costs of USD9.83/t of ore feed, General and Administrative (G&A) costs of USD2.11/t of process ore, Copper, Gold, Silver selling cost of USD2.77/t of process ore. Exchange rate: $1.00 = R$5.99, Specific values for the Deposit: Pit slope

angles ranging from 35° to 54°, Copper concentrate metallurgical recovery of 93.25%, Gold overall metallurgical recovery of 90.89%. Silver overall metallurgical recovery of 68.82%, Strip Ratio 2.33 (tonne per tonne).

1.14 Mining Methods

Cabaçal is a polymetallic deposit, partially mined between April 1987 and August 1991 using the underground room-and-pillar method as commented in Section 15.

For the restart of production, a selective open-pit mining method was studied. Most of the ore and waste will be drilled, blasted, and loaded by hydraulic excavators operating on 10-m benches. Conventional 55-ton trucks will haul the material to the ore crusher, a short-term stockpile, or the waste dump, as required.

The Project is designed for a mine life of 10 years and seven months of plant operation, with a 9-month pre-stripping phase before the plant start-up, and a strip ratio of 2.33:1. The maximum annual mining rate is expected to reach approximately 14.8 Mt (including waste) to support the plant's designed capacity of 2.5 Mt/a up until Year 3 and increasing to 4.5 Mt/a for the remaining production period. A total of 41.70 Mt of ore is expected to be processed over the life of mine.

1.15 Recovery Methods

The process flowsheet was developed based on test work completed to date. The process flowsheet is an evolution from the flowsheet in the last phase of the project. The unit operations selected are conventional technology.

The process plant design incorporates a staged expansion approach that allows throughput to be increased in Year 4, where the plant capacity will be increased from 2.5 Mt/a to 4.5 Mt/a. Initial operation at 2.5 Mt/a throughput includes the following:

- Primary crushing (sized for 4.5 Mt/a)
- Single stage semi-autogenous (SAG) milling with pebble crushing
- Gravity concentration with production of gold doré
- Rougher, cleaner and cleaner scavenger flotation to produce copper-gold concentrates
- Pyrite flotation and dewatering
- Concentrate thickening (sized for 4.5 Mt/a)
- Tailings thickening (sized for 4.5 Mt/a)
- Concentrate and tailings filtration
- Filtered tailings disposal.

In Year 4, the following changes will be implemented to the plant to increase its capacity to 4.5 Mt/a:

- Existing SAG mill will operate in open circuit
- New ball mill to be installed in closed circuit

- Gravity, flotation, and filtration circuits will be expanded with additional equipment.

Key process design criteria are listed below:

- Nominal throughput of 2.5 Mt/a until Year 4, when it increases to 4.5 Mt/a
- Crushing plant operating availability of 65%
- Plant operating availability of 92% for grinding, gravity concentration, flotation, and thickening
- Plant operating availability of approximately 85% for concentrate and tailings filtration.

1.16 Project Infrastructure

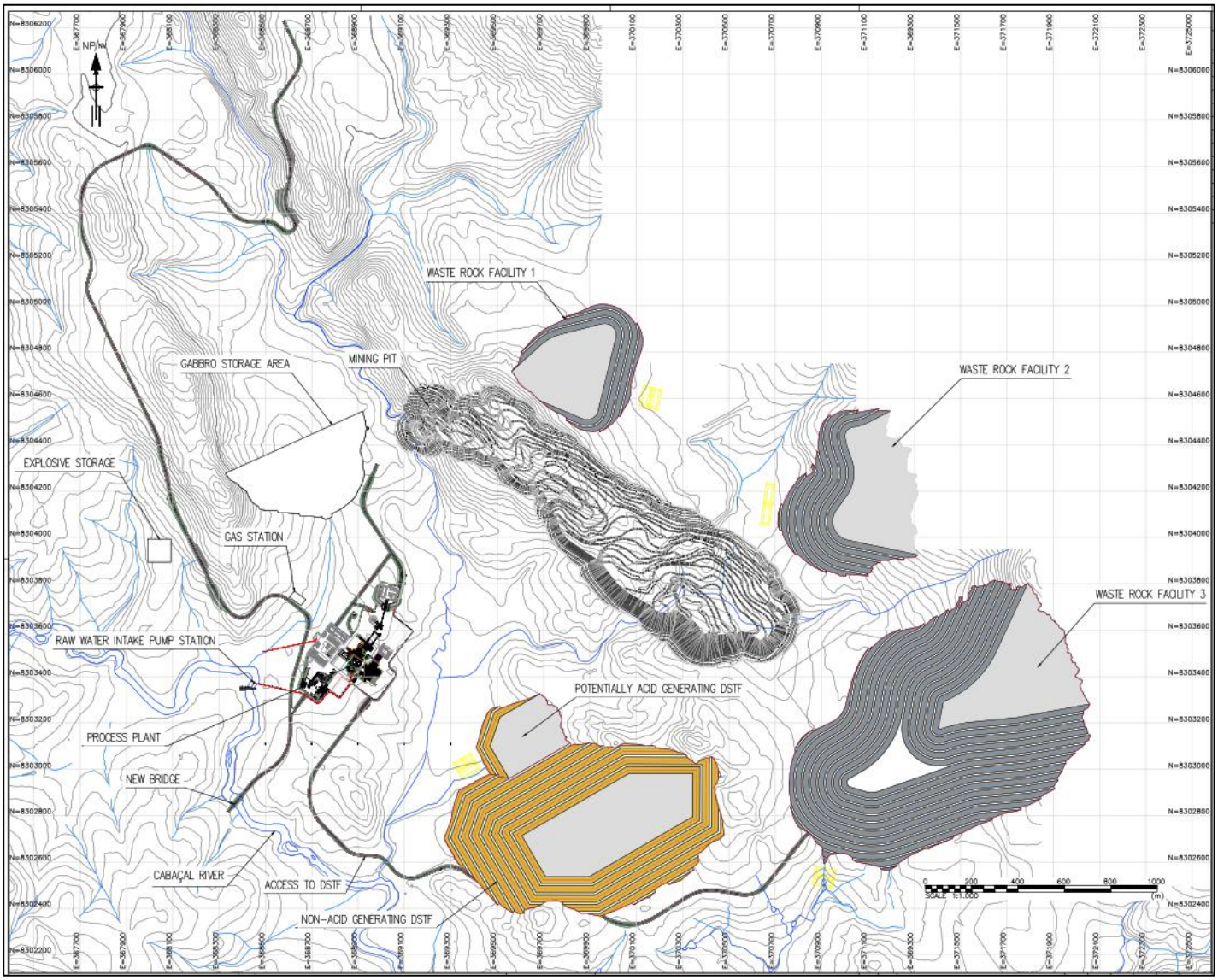
Infrastructure to support the Cabaçal Project will consist of site civil work, site facilities and process buildings, a water management system, waste disposal facility (WDF) and electrical power distribution. Site facilities include:

- Mine facilities include the administration offices, truck shop, wash bay and Heavy Mobile Equipment (HME) workshop, which have synergy with the process plant administrative facilities. Mine facilities also include a gas station and explosives magazine.
- Process facilities include the process plant, crusher facilities, process plant workshop, and assay laboratory, dry stack tailings storage (DSTS) and waste rock facilities (WRF).
- Common facilities include a gatehouse, administration building, industrial restaurant, medical unit/fire brigade, locker room, drivers' room, intermediate waste storage and discarded material centre.

Both the mine facilities and the process facilities are served with potable water, fire water, compressed air, power, diesel, communication, and sanitary systems. The site was selected to provide sufficient area for all the facilities mentioned.

The overall site plan is shown in Figure 1-4.

Figure 1-1: Overall Site Layout



Source: Ausenco, 2025.

The plant site consists of the necessary infrastructure to support the processing operations. All infrastructure buildings and structures will be built and constructed to all applicable codes and regulations. Due to the tropical weather conditions, no closed buildings will be required to cover the process plant. The project site will include an administration building, plant maintenance shop and warehouse, and other buildings.

1.16.1 Access

Property access is described in Section 1.2. The Project can be accessed by unpaved all-weather gravel roads, approximately 35 km to the north-northeast from São José dos Quatro Marcos city. A new concrete bridge crossing the Cabaçal river was also planned during the development of the plant location study.

The site access road is a two-lane gravel road required from the secondary road to the plant site access, expected to be 9 m wide by 0.7 km long. This road also connects farmlands to the entrance of the mine via a single lane gravel road that will be 6 m wide by 6 km long.

Road construction will include clearing, topsoil removal, and excavation followed by incorporation of drains, safety bunds and backfilling with granular material and aggregates for road structure. The entrance to the process and mine site will be via the gatehouse.

1.16.2 Power Supply

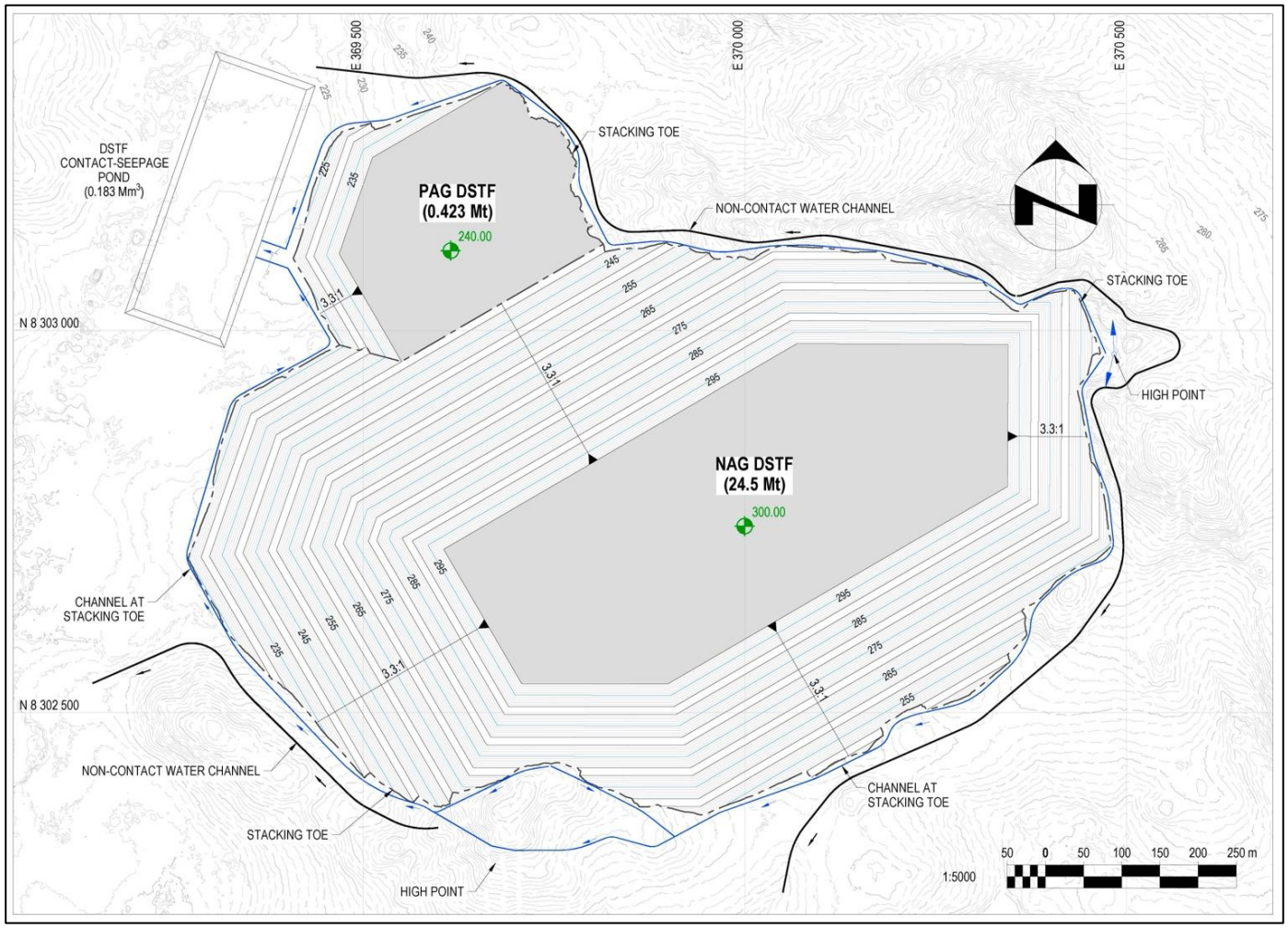
Plant power supply will be via a connection at the Araputanga Substation at 138 kV. An approximately 20 km long transmission line is required to connect the plant to the Araputanga substation. The proposed line may use the existing high-voltage electric transmission corridor that passes nearby the Cabaçal Project.

1.16.3 Tailings Management Facility

A siting and deposition method trade-off study was conducted in 2021 for the Dry Stack Tailings Facilities (DSTFs) and Waste Rock Facilities (WRFs), ensuring compliance with the mine concession and the avoidance of perennial streams. Filtered tailings disposal into a DSTF was favoured based on various factors, including environmental impact considerations. This tailings approach has distinct advantages over other options, most notably being significantly safer for the environment than conventional wet slurry tailings, as the effects of any accident, including slope failures, can be effectively controlled and contained within a few hundred metres, along with a significant reduction in water usage.

The Cabaçal Project has two tailings streams: tailings containing sulphides that are potentially acid-generating (PAG) and tailings with low or no sulphides that are non-acid-generating (NAG). Therefore, the two streams will be stored in separate facilities with different design criteria. The PAG-filtered tailings will be stored in a composite liner system consisting of a compacted subgrade and geomembrane-lined facility, while the NAG-filtered tailings will be stored on a compacted subgrade. The PAG DSTF has a storage capacity of 0.74 Mt, and the NAG DSTF has a storage capacity of 44.21 Mt (refer to Figure 1-3). The thickened tailings from the process plant will be transported to the filter plant to produce a cake with a moisture content of approximately 15%. The filtered tailings will be conveyed to the DSTFs using haul trucks and stacked in 10-metre lifts with dozers and compactors to compact the tailings in thin lifts, increasing strength for both static and seismic stability while sealing the tailings to reduce seepage and providing a trafficable surface.

Figure 1-3: PAG and NAG DSTFs



Source: Ausenco, 2025.

The main components of DSTF engineering and design include the planning and management of filtered tailings, starter facilities, a composite liner system (for the PAG facility only), surface water management, an underdrain system, instrumentation, water quality monitoring systems, progressive rehabilitation, and a cover system for closure. The cover system, dependent on material availability, will consist of saprolite and topsoil with vegetation cover, designed to minimize future surface water infiltration into the DSTFs. The DSTFs are designed to meet Brazilian guidelines for mine waste dumps and stockpile design (2017) standards, ensuring a safe and environmentally acceptable facility. Contact water management will collect the surface runoff in contact with the DSTF and convey it through diversion channels to a contact water pond, which will temporarily store the water and sediments and be treated before releasing to the environment. The surface water management structures are designed to convey stormwater up to the 500-year 24-hour storm event.

Sediment analysis has been performed for DSTF-1 and DSTF-2 surface area, it was considered that sediment production would also be collected by the contact water pond, so it would be an additional volume in these ponds.

The total pond volume considers surface runoff, sediment production, particle settling, and resuspension for the 100-year 24-hour storm event and 0.5 m of freeboard and safely pass up to the 500-year 24-hour storm event through the pond.

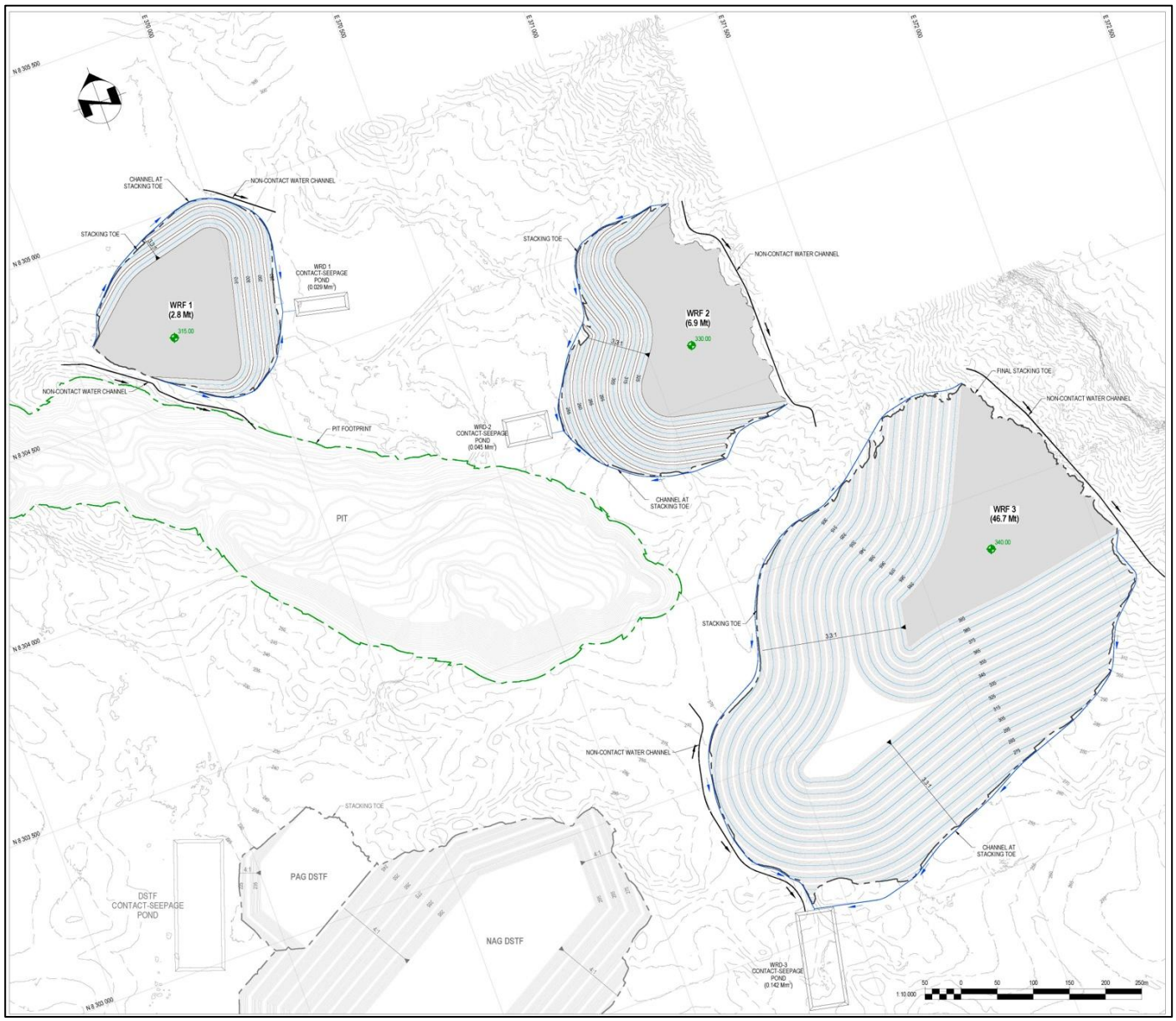
1.16.4 Waste Rock Facilities (WRFs)

The Waste Rock Facilities (WRFs) are designed to provide secure and permanent storage for approximately 91.4 Mt of non-economic waste rock and overburden, including overburden, saprolite, saprock, oxide rock, and fresh materials that will be mined over the 11-year life of the mine (Refer to Figure 1-2). Non-economic waste rock and overburden generated by mining activities at the project will be used to construct site infrastructure, serve as road base, contribute to other required construction or maintenance products, or be placed in storage facilities located north of the open pit. There are three waste rock storage facilities developed north of the open pit:

- Waste Rock Facility 1 (WRF 1) with a 4.8 Mt storage capacity
- Waste Rock Facility 2 (WRF 2) with 12.0 Mt storage capacity
- Waste Rock Facility 3 (WRF 3) with 81.3 Mt storage capacity

The design of these facilities focuses on containing all waste material within the mine concession and maintaining a 60-m-wide buffer from perennial streams. During the first 3.25 years, the waste rock and overburden (saprolite and saprock) generated during operations will be placed in WRF 1 and 2, and the remainder of the mine's life will be placed in WRF 3.

Figure 1-2: Waste Rock Facilities



Source: Ausenco, 2025.

The management of waste storage facilities includes the oversight of contact water and non-contact water. Contact water is defined as precipitation that falls onto the surface of the waste rock facilities (WRFs) or comes into contact with these facilities from surface water sources. The contact waters will be collected in the ponds at the base of these facilities, while the non-contact water will be released into the drainage below them. The waste rock facilities are located within a short haul distance from the open pits, and the design provides adequate capacity for waste materials

throughout the life of the mine. Waste rock and overburden will be hauled from the pit via a haul road constructed from the pit rim to these facilities. WRFs 1 and 2 will receive waste materials during pre-production and through part of Year 2 of operations, while WRF 3 will receive waste materials for the remainder of the mine's life. Similar to the DSTF, the WRFs will be progressively closed once a lift has been completed to minimize contact water and sediment management from these facilities.

Contact water management will collect the surface runoff up to the 100-year 24-hour storm event from the WRFs and diverted to contact water ponds through diversion channels that will temporarily store both water and sediments and be treated before releasing to the environment.

Sediment analysis has been performed for DSTF-1 and DSTF-2 surface area, it was considered that sediment production would also be collected by the contact water ponds, so it would be an additional volume in these ponds. Ponds total volume considering surface runoff, sediment production, particle settling and resuspension, 100-year 24-hour storm event.

1.16.5 Water Management

Raw water will be sourced from the nearby Cabaçal river, the demand is 326.1 m^3/h over the life of mine (LoM) for the process plant.

The foundation of the contact and non-contact water management is to collect the surface runoff in contact with the facilities in open diversion channel, sediments and non-surface water at the foundation and material contact, captured by an underdrain system and diverted to the contact and non-contact water ponds during operation and then discharged into the environment.

Water management system for the DSTF´s encompasses surface water management (contact and non-contact water) and non-surface water management (seepage and near-surface groundwater in the foundation and tailings). The contact water should only contain sediment from the NAG DSTF and will be directed to NAY contact water ponds, treated with flocculant, and then discharged into the environment. The contact water from PAG DSTF may contain acid and metals; it will be conveyed to the PAG DSTF contact water pond. Additional potential treatment to manage sediment content and other deleterious components will be assessed in the feasibility study (FS) stage of the project. After closure, the DSTF surface water collection channels will become non-contact water collection ditches. The non-surface or drainage water management will capture near-surface groundwater and any seepage from the tailings to reduce any phreatic surface in the base of the tailings facilities.

Water management system for the WRF´s also encompasses surface water management (contact and non-contact water), contact water will be conveyed to contact water ponds before discharge to environment, non-contact water management will collect surface runoff and sediments from drainage areas surrounding the facilities and conveyed to non-contact water ponds before discharge to environment.

Potable water will be supply by wells and will be treated in a water treatment station (WTS) to serve the project and will be dimensioned according to consumption needs in accordance with the Personnel Lease Table (PLT).

The site water balance estimates the contact runoff produced over each facility and non-contact water from surrounding drainage areas, at a monthly step. A detailed water balance will be assessed in FS stage considering infiltration analysis based on storage material physical parameters.

1.17 Market Studies and Contracts

No formal market studies or product valuations were completed as part of the 2025 PFS. Market price assumptions and payment terms were based on a review of public information, industry consensus, standard practices and specific information from comparable global operations. Regular contact has been maintained with a select group of commodity traders and copper smelters with the objective of understanding future customer requirements and market conditions.

For this Technical Report, a gold price of USD2 119/oz, copper price of USD4.16/lb, and silver price of USD26.89/oz were assumed and exchange rate reported in Brazilian Reals (BRL) to United States dollars (USD): BRL5.99 = USD1.00 and United States dollars (USD) to Canadian dollars (CAD): USD1.00 = CAD1.453 was used.

The economic analysis applies refining charges and payment terms based on benchmarks for comparable operations located globally. Payable gold in doré is assumed to be 99.9%, with a refining charge of USD0.50/oz of payable gold. For copper concentrate, road and port costs are assumed to be USD158.99/t of concentrate shipped. This cost considers transport by trucks from the site to Açu Port over an approximate distance of 2,560 km, including taxes. Port costs include storage costs and operations for loading ships.

A deduction of 1% from the copper grade in concentrate is taken as free metal. Treatment and refinery charges are calculated at USD70/dmt of concentrate and USD0.07/lb of contained copper respectively. Payable gold in concentrate is assumed to be 98% for concentrate grades above 0.7 g/dmt Au. Payable silver in concentrate is assumed to be 90% for concentrate grades above 30 g/dmt Ag.

1.18 Environmental, Permitting and Social Considerations

Meridian has engaged the Sete Soluções e Tecnologia Ambiental Ltda. to undertake an environmental study (EIA/RIMA: Estudo de Impacto Ambiental e Relatório de Impacto Ambiental/Environmental Impact Assessment and Environmental Impact Report). Environmental studies started in January 2022 and are ongoing as of the Effective Date.

Considering the surveys carried out, the main aspects that generate environmental impacts with the implementation of the Cabaçal Project are highlighted below, most of which are intrinsic to the implementation of mining projects and subject to control, mitigation, and compensation.

Physical environment: Changes in the morphology of the relief and landscape of the region, associated with rock mass movement. Impacts can be managed with appropriate drainage control and vegetation. Dry stacked tailings will be used to mitigate risk and tailings will be non-acid-generating. Barren topsoil in the open-pit mine pre-strip will be stockpiled and used for rehabilitation. Analysis of air quality, environmental noise, and vibrations in the study area indicate that the operational works should not cause significant environmental changes, and constant monitoring of these conditions will be undertaken.

Biotic environment: Local change in land-use and vegetation removal can impact fauna but can be offset by both a careful management plan to maintain biodiversity through reforestation, and by purchase and preservation of analogue forest environments to compensate for areas used.

Socioeconomic environment: Programs will be put in place to manage community expectations and ensure that infrastructure, public services and equipment and not overloaded. Indirect and direct employment opportunities will arise from mine development, and local and state governments would receive income from taxes.

Cabaçal Project is in an area already been greatly altered by anthropic activities, in particular pastures characterized as environments of very low plant diversity, formed through prior deforestation for cattle grazing over previous decades. Remnant native vegetation plays an important role in the hosting a diversity of fauna species in the district, and a carefully managed future mining operations would plan to enhance habitat for endemic species and more than compensate for local impacts.

As for the socioeconomic aspects of the study area, considering the dynamics and social portrait of the municipalities in question (Rio Branco, São José dos Quatro Marcos, Araputanga and Mirassol D'Oeste) the implementation and operation of the Cabaçal project will represent related positive consequences, above all, the generation of employment and income, generation of budget revenues for the municipal public treasury, enhancing the economy and public social investment in these regions. Care will need to be taken to not overload services and public facilities during the build up of activities in the region.

Closure and Reclamation Considerations: The primary objective of the closure and reclamation initiatives will be to eventually return the DSTF and WRSF to self-sustaining facilities that satisfy the end land-use objectives. No formal Closure and Reclamation Plan has been prepared for the Cabaçal Project to date. One will be developed as the project advances through subsequent project stages of feasibility-level design.

1.19 Capital and Operating Costs

The capital and operating cost estimates presented in this report provide substantiated costs that support the pre-feasibility study of the Cabaçal Gold-Copper Project. The estimates are based on an initial process plant capacity of 2.5 Mt/a (Phase 1), followed by an expansion in Year 3, to a capacity of 4.5 Mt/a.

All capital and operating cost estimates are presented in US dollars (USD) and Brazilian Reais (BRL), with no allowance for escalation or exchange rate fluctuations. The exchange rate applied is:

Brazilian Reais (BRL) to US dollars (USD): BRL5.99 = USD1.00.

1.19.1 Capital Cost Estimate

The capital cost estimate aligns with Class 4 guidelines for a PFS-level estimate with an accuracy range of -20% to +30% as specified by the Association for the Advancement of Cost Engineering International (AACE International). The capital cost estimate, developed in Q1 2025, is based on the proposed design for the Project, on Ausenco's budgetary quotations, in-house project and study database, and insights from similar operations.

The following costs and scope items are excluded from the capital cost estimate:

- Scope changes, project schedule changes, and other associated costs
- Any facilities or structures not mentioned in the project summary
- Financing charges and interest during the construction period.
- The total initial capital cost for the Cabaçal Project is USD247.93M (Phase 1) and USD55.73M (Phase 2). The initial capital cost summary is presented in Table 1-5.

Table 1-5: Capital Cost Summary

Description	Phase 1 Initial Capital Costs		Phase 2 Expansion Capital Costs	
	(MBRL)	(MUSD)	(MBRL)	(MUSD)
Equipment	267.98	44.74	120.44	20.11
Materials	81.70	13.64	19.66	3.28
Construction and Erection	328.88	54.90	68.65	11.46
Dry Stack Tailings Facility and Waste Piles	115.66	19.31	-	-
SE Araputanga/Main Substation/LT 138kV	34.41	5.75	3.81	0.64
Mine	180.15	30.08	-	-
Owner's costs	50.44	8.42	8.50	1.42
Indirect Costs	178.37	29.78	57.10	9.53
Contingency	247.52	41.32	55.63	9.29
Project Total	**1,485.11**	**247.93**	**333.80**	**55.73**

Note: Values may not sum due to rounding. Source: Ausenco, 2025.

1.19.2 Operating Cost Estimate

Operating costs include the ongoing costs of operations related to mining, processing, tailings disposal, and general administrative activities. Table 1-6 provides a summary of the operating costs across all phases of operation, expressed on a USD/t processed basis.

Table 1-6: Operating Cost Breakdown

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Labour	1.64	1.84	1.84	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.17
G&A	3.10	3.10	3.10	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.77
Power	2.31	2.31	2.31	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.33
Reagents & Consumables	2.75	2.75	2.75	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
Maintenance	1.07	1.07	1.07	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.84
Water/Sewage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Access Maintenance	0.06	0.06	0.06	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Laboratory	0.38	0.38	0.38	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Concentrate Logistics	2.72	4.02	3.20	2.88	2.61	1.83	1.87	1.90	1.59	1.50	1.38
Dry Stack Tailings	0.62	0.62	0.62	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.62
Mining Costs	14.67	16.17	15.35	11.64	11.37	10.60	10.63	10.67	10.36	10.26	9.97
Total Operating Costs	**28.73**	**30.07**	**27.71**	**19.22**	**18.49**	**17.04**	**17.35**	**19.02**	**20.14**	**20.08**	**11.24**

Note: Values may not sum due to rounding.

Common to all operating cost estimates are the following assumptions:

- Cost estimates are based on Q1 2025 pricing without allowances for inflation
- Costs are expressed in USD, using the exchange rate of BRL5.99 = USD1.00
- The majority of the operations staff is assumed to come from neighbouring municipalities
- Processing unit operating costs were also benchmarked against similar or comparable processing plants
- Equipment and materials will be purchased as new
- Reagent consumption rates have been estimated on the metallurgical test results.

1.20 Economic Analysis

An engineering economic model was developed to estimate annual pre-tax and post-tax cash flows and sensitivities of the Project. Cash inflows consist of annual revenue estimates for the mine. Cash outflows include capital costs, operating costs, sustaining costs, royalties, and taxes, which are deducted from the inflows to produce the projected annual cash flows.

To reflect the time value of money, annual net cash flow (NCF) projections are discounted back to the beginning of the Project execution using a 5% discount rate. The discounted values of the cash flows are summed to determine the net present value (NPV).

It must be noted, however, that tax estimates involve many complex variables that can only be accurately calculated during operations and, as such, the after-tax results are only approximations. Sensitivity analyses were performed to assess the impact of variations in copper prices, head grades, operating costs and capital costs.

The financial model is based on the Mineral Reserves outlined in Section 15, the mining rates and assumptions presented in Section 16, the mineral processing and recovery methods covered in Sections 13 and 17, respectively and the Market studies presented in Section 19. The economic analysis uses the following assumptions:

- A construction period of 24 months.
- A LoM of 10.6 years.
- Results are based on 100% ownership.
- Initial capital costs are estimated at USD248M, an expansion capital of USD56M and a sustaining capital over the LoM, estimated at USD54M.
- LoM operating costs are estimated at USD838M over the LoM.
- Closure and reclamation costs are estimated at USD47M.
- LoM royalties are estimated at USD75M.
- LoM costs for treatment and refining are estimated at USD73M.

The pre-tax NPV discounted at 5%, is USD1 168M, the IRR is 69.0%, and payback period is 1.2 years. On a post-tax basis, the NPV discounted at 5% is USD984M the IRR is 61.2%, and payback period is 1.4 years. A cash flow summary is included below in Table 1-7.

Table 1-7: Economic Analysis Summary

General	LoM Total/Avg.
Copper Price (USD/lb)	4.16
Gold Price (USD/oz)	2 119
Silver Price (USD/oz)	26.89
Mine Life (years)	10.6
Production	**LoM Total/Avg.**
Total Mill Feed Tonnes (kt)	41,703
Mill Head Cu Grade (%)	0.44
Mill Cu Recovery Rate (%)	92.3
Total Copper Recovered (Mlb)	374
Mill Head Gold Grade (g/t)	0.63
Mill Gold Recovery Rate (%)	87.1
Net Gravity Gold Recovery Rate (%)	26.6
Total Gold Recovered (koz)	744
Mill Head Silver Grade (g/t)	1.64
Mill Gold Recovery Rate (%)	60.5
Total Silver Recovered (koz)	1,329
Operating Costs	**LoM Total/Avg.**
Mining Cost (USD/t Mined)	2.8
Processing Cost (USD/t Milled)	9.5
G&A Cost (USD/t Milled)	2.0

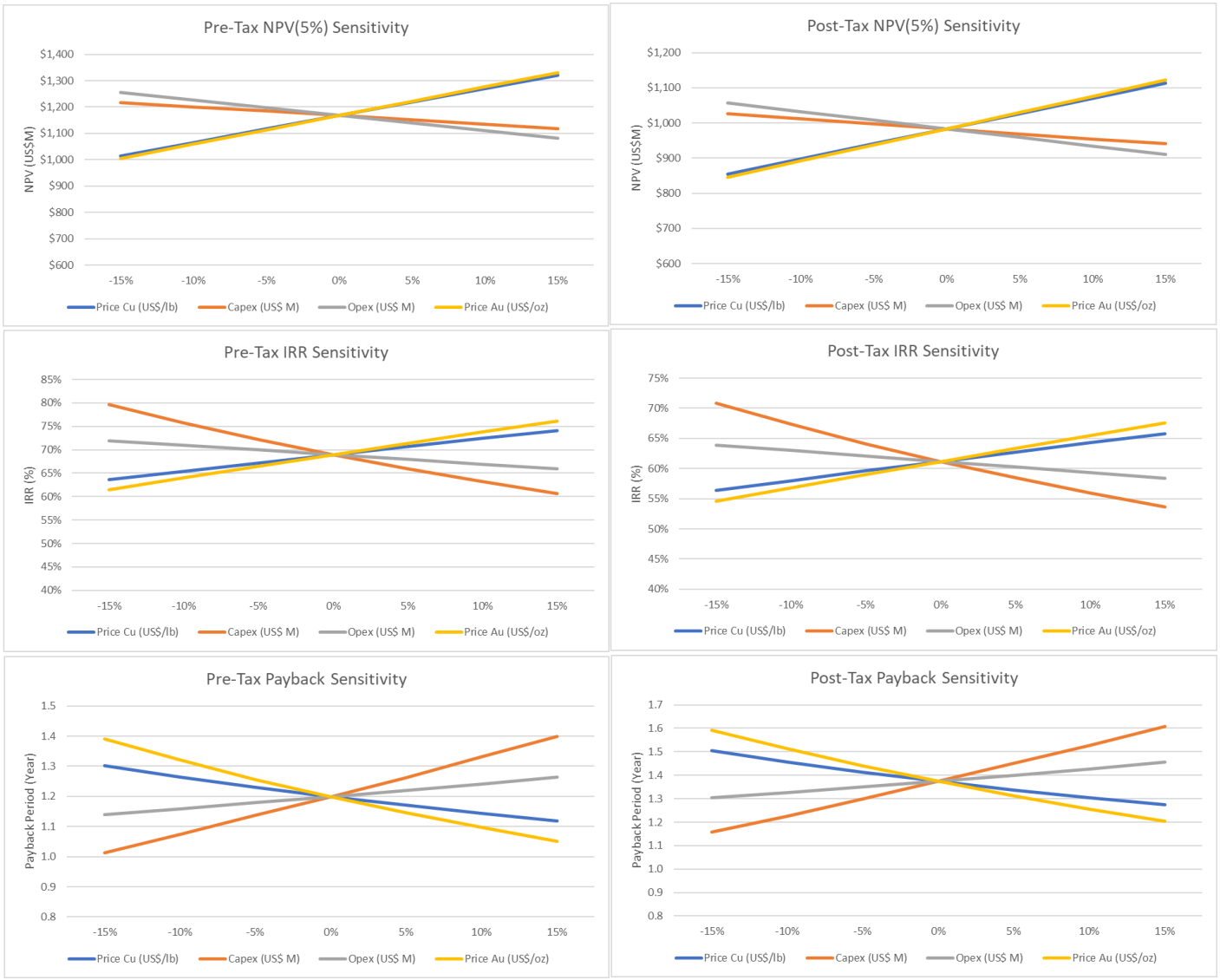
Refining & Transport Cost (USD/lb Cu)	0.2
Total Operating Costs (USD/t Milled)	20.1
Cash Costs (USD/oz AuEq)	684.7
AISC (USD/oz AuEq)	742.3
Capital Costs	**LoM Total/Avg.**
Initial Capital (USDM)	248
Expansion Capital (USDM)	56
Sustaining Capital (USDM)	54
Mine Closure Costs (USDM)	47
Salvage Costs (USDM)	(18)
Financials - Pre Tax	**LoM Total/Avg.**
NPV (5%) (USDM)	1 168
IRR (%)	69
Payback (years)	1.2
Financials - Post-Tax	**LoM Total/Avg.**
NPV (5%) (USDM)	984
IRR (%)	61
Payback (years)	1.4

* Cash costs consist of mining costs, processing costs, mine-level G&A and refining charges and royalties.
** AISC includes cash costs plus sustaining capital, closure cost and salvage value.

1.20.1 Sensitivity Analysis

A sensitivity analysis was conducted on the pre-tax and post-tax NPV and IRR of the Project, examining the following variables: initial capital costs, operating costs, copper and gold prices. The analysis indicated that the Project NPV is most sensitive to fluctuations in gold price, followed by copper price, with lesser sensitivity to changes in operating costs and initial capital cost. The sensitivity results are shown in Figure 1-3.

Figure 1-3: Sensitivity Analysis Results



Source: Ausenco, 2025.

Table 1-8 presents the findings of the sensitivity analyses in pre-tax and post-tax NPV.

Table 1-8: Summary of Sensitivities

Au Price (USD/oz)	Pre-Tax NPV (5%)	Initial Capex (USDM)		Opex (USDM)		Sustaining Capex (USDM)	
		(20%)	20%	(20%)	20%	(20%)	20%
-30%	$841	$907	$775	$957	$725	$636	$1,046
-15%	$1,004	$1,071	$938	$1,121	$888	$800	$1,209
0%	$1,168	$1,234	$1,101	$1,284	$1,052	$963	$1,372
15%	$1,331	$1,398	$1,265	$1,448	$1,215	$1,127	$1,536
30%	$1,495	$1,561	$1,428	$1,611	$1,378	$1,290	$1,699
Au Price (USD/oz)	**Post-Tax NPV (5%)**	**Initial Capex (USDM)**		**Opex (USDM)**		**Sustaining Capex (USDM)**	
		(20%)	20%	(20%)	20%	(20%)	20%
-30%	$708	$765	$650	$806	$610	$536	$880
-15%	$846	$903	$788	$944	$748	$674	$1,018
0%	$984	$1,041	$926	$1,082	$886	$811	$1,156
15%	$1,121	$1,179	$1,064	$1,219	$1,023	$949	$1,293
30%	$1,259	$1,317	$1,202	$1,357	$1,161	$1,087	$1,431

1.21 Interpretations and Conclusions

Based in the assumptions and parameters presented in this report, the PFS study shows positive economics (i.e., USD984M post-tax NPV (5%) and 61.2% post-tax IRR). The PFS supports a decision to carry out additional detailed studies.

1.22 Recommendations

The financial analysis of this PFS demonstrates positive economics. It is recommended to continue developing the project through additional studies, including a feasibility study. The items required to be completed in advance of, and as inputs to, a prefeasibility study are indicated in the respective sections below.

Table 1-9: Summary of Recommended Work Program

Program Component	Estimated Total Cost (USDM)
Drilling	1.20
Metallurgical Testing	1.40
Mining	0.33
Geotechnical Work	0.40
Market Studies	0.05
Environmental Studies	0.25
Engineering & Other	2.92
Total	**6.55**

2 INTRODUCTION

2.1 Introduction

Meridian Mining UK Societas (Meridian) commissioned Ausenco do Brasil Engenharia Ltda. (Ausenco) to compile a pre-feasibility study (PFS) of the Cabaçal Gold-Copper Project in Brazil. The PFS was prepared in accordance with the Canadian disclosure requirements of National Instrument 43-101 (NI 43-101) and the requirements of Form 43-101 F1.

The responsibilities of the engineering consultants and firms who are providing qualified persons are as follows:

- Ausenco managed and coordinated the work related to the report. Ausenco also developed the PFS-level design and cost estimate for the process plant, general site infrastructure, tailings infrastructure, environmental management, compiled the overall cost estimate and completed the economic analysis.
- GE21 Consultoria Mineral (GE21) completed the work related to geological setting, deposit type, exploration, drilling, sample preparation, data verification, Mineral Resource estimation, the mine plan and schedule, and capital cost and operating cost related to the mine, and adjacent properties.
- Dr. Norman O. Lotter (Ph.D., P.Eng.) of Flowsheets Metallurgical Consulting Inc., in Canada, was responsible for the project laboratory testing methodology and interpretation.
- Sete Soluções e Tecnologia Ambiental Ltda. completed work related to environmental studies.
- Hidrovia Hidrogeologia e Meio Ambiente Ltda. supported the PFS with hydrological studies.

2.2 Terms of Reference

The report supports disclosures by Meridian in a news release dated March 10, 2025, entitled, “Meridian Mining’s Cabaçal Pre-Feasibility Study Delivers USD 984 million NPV5 & 61.2% IRR (After-Tax), and Annual Average Production 141,000 AuEq Ounces.”

2.3 Qualified Persons

The Qualified Person’s (QPs) for the report are listed in Table 2-1. By virtue of their education, experience and professional association membership, and independence from Meridian, each individual qualifies as a “Qualified Person” under NI 43-101. The report sections for which each QP is responsible are also listed in Table 2-1.

Table 2-1: Report Contributors

Qualified Person	Professional Designation	Position	Employer	Independent of Meridian	Report Section
Tommaso Roberto Raponi	P.Eng.	Senior Mineral Processing Specialist	Ausenco Engineering Canada ULC.	Yes	1.15, 1.16.1, 1.16.2, 1.17, 1.19, 1.20, 1.21, 1.22, 3.3, 17, 18.1 - 18.4, 18.7, 18.8, 19, 21.1, 21.2.1, 21.2.2, 21.2.4 - 21.2.11, 21.3.1, 21.3.2, 21.3.4, 21.4, 22, 24, 25.9, 25.12, 25.14, 25.15, 25.16, 25.17.1.6, 25.17.1.8, 25.17.2.5, 25.17.2.7, 26.7, 26.9, 26.11, 27
Scott C. Elfen	P.E.	Global Lead, Geotechnical Service	Ausenco Engineering Canada ULC.	Yes	1.16.3, 1.16.4, 1.18, 2.4.1, 3.4, 18.5, 18.6, 20, 25.10, 25.13, 25.17.1.7, 25.17.1.9, 25.17.2.6, 25.17.2.8, 26.8.1, 26.8.2, 26.10, 27
John Anthony McCartney	C.Geol.	Regional Hydrogeology Practice, Lead	Ausenco Chile Ltda.	Yes	1.16.5, 18.9, 25.11, 26.8.3, 27
Leonardo Soares	MAIG	Geology Technical Manager	GE21 Consultoria Mineral	Yes	1.7, 1.8, 1.9, 1.10, 1.12, 7, 8, 9, 10, 11, 14, 25.3, 25.4, 25.6, 25.17.1.1, 25.17.1.3, 25.17.2.1, 26.2, 26.3, 27
Norman Lotter	PhD., P.Eng., PrEng., C.Eng.	President and Consulting Engineer	Flowsheets Metallurgical Consulting Inc.	Yes	1.11, 13, 25.5, 25.17.1.2, 25.17.2.2, 26.4, 27
Juliano Felix de Lima	MAIG	Geologist	GE21 Consultoria Mineral	Yes	1.3, 1.4, 1.5, 1.6, 1.14, 2.4.2, 2.6, 3.1-3.2, 4, 5, 6, 12, 16, 23, 25.2, 25.8, 25.17.1.5, 25.17.2.4, 26.6, 27
Porfirio Cabaleiro Rodriguez	FAIG	Mine Engineer	GE21 Consultoria Mineral	Yes	1.1, 1.2, 1.13, ,2.1-2.3, 2.5, 2.7-2.9, 15, 21.2.3, 21.3.3, 25.1, 25.7, 25.17.1.4, 25.17.2.3, 26.1, 26.5, 27

2.4 Site Visits and Details of Inspection

2.4.1 Inspection by Scott C. Elfen

Mr Scott Elfen from Ausenco Engineering Canada visited the Cabaçal Project from September 16 to 18, 2024. The purpose of the visit was to review the proposed sites for the dry stack tailings facilities and waste rock facilities. He performed a preliminary review of land use, topography, geology, hydrology, and geotechnical aspects that could affect the design of these facilities.

2.4.2 Inspection by Juliano Felix de Lima

Mr Juliano Felix de Lima, from GE21, visited the project site from September 16 to 18, 2024. He was accompanied by Mr Vitor Belo, Principal Mining Consultant for Meridian Mining. The purpose of the visit was to become familiar with site topography and area for the installation of Cabaçal infrastructures, the style of the geology, the mineralization, and the rock competency.

2.5 Effective Dates

This technical report has a number of significant dates as follows:

- Cabaçal mineral resource estimate: November 15, 2024.
- Cabaçal mineral reserve estimate: February 11, 2025.
- Press release: March 10, 2025.

The effective date of this report is based on the date of the press release, which is March 10, 2025.

2.6 Information Sources and References

This technical report is based on internal company reports, maps, published government reports, and public information as listed in Section 27. It is also based on information cited in Section 3.

2.6.1 Previous Data Verification

The QPs have relied on the data validation in the site visit reports prepared by Geologist Marcelo Batelochi (MB Geologia Ltda), who conducted three site visits to the Cabaçal Project between 2021 and 2023. These visits included inspections of historical core, drill sites, current core, QA/QC procedures, and data management protocols. Field practices and data handling were found to follow good industry standards. A recommendation was made to implement a robust database management system as the project advances toward feasibility studies as described on report “Cabaçal Gold-Copper Project NI 43-101 Technical Report and Preliminary Economic Assessment.” These reports include:

- Batelochi (2021). Field Visit Report June 7-11, 2021 on the Cabaçal Project – Mato Grosso State – Brazil Copper/Gold. 13 pp.
- Batelochi (2022). Field Visit Report August 29 to September 1, 2022 on the Cabaçal Project – Mato Grosso State – Brazil Copper/Gold. 13 pp.
- Batelochi (2023). Field Visit Report October 9-13, 2023 on the Cabaçal Project – Mato Grosso State – Brazil Copper/Gold. 13 pp.

2.7 Previous Technical Reports

The following Technical Report related with the Cabaçal Project were filed on SEDAR:

- Ausenco do Brasil Engenharia Ltda., 2023, Cabaçal Gold-Copper Project. NI 43-101 Technical Report and Preliminary Economic Assessment. Mato Grosso, Brazil. effective date is March 1, 2023.
- H&S Consultants Pty Ltd, 2022. Independent Technical Report, Mineral Resource Estimates for the Cabaçal VMS Deposit, Cabaçal Project, State of Mato Grosso, Brazil. Prepared for Meridian Mining UK Societas, effective date is August 16, 2022.
- H&S Consultants Pty Ltd, 2021. Amended and Restated NI43-101 Technical Report: Cabaçal Project Property Report, Mato Grosso, NW Brazil. Prepared for Meridian Mining UK Societas, effective date is November 12, 2021.
- SRK Consulting (2007) NI 43-101 Technical Report, Brazilian Resources Inc., Monte Cristo Mine, State of Mato Grosso, Brazil. SRK Project Number 164802. Effective Date: December 31, 2006.

2.8 Currency, Units, Abbreviations and Definitions

All units of measurement in this report are metric and all currencies are expressed in United States dollars (symbol: US$ or currency: USD) unless otherwise stated. Contained gold metal is expressed as troy ounces (oz), where 1 oz = 31.1035 g. All material tonnes are expressed as dry tonnes (t) unless stated otherwise. A list of abbreviations and acronyms is provided in Table 2-2, and units of measurement are listed in Table 2-3.

Table 2-2: Abbreviations and Acronyms

Abbreviation	Description
AA	atomic absorption spectroscopy
AACE International	Association for the Advancement of Cost Engineering International
ABA	Acid/Base Accounting
Ag	silver
Ai	abrasion index
AIG	Australian Institute of Geoscientists
ANFO	ammonium nitrate fuel Oil
ANM	Agência Nacional de Mineração
Au	gold
AuEq	gold equivalent grade
Az	azimuth
BHEM	borehole electromagnetic survey
BIF	banded iron formation
BPM	BP Minerals
BWi	bond ball mill work index
CAD:USD	Canadian-American exchange rate
CCD	counter-current decantation
CCZ	central copper zone
CFEM	Financial Compensation for the Exploration of Mineral Resources
CIL	carbon-in-leach
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CIM Definition Standards	CIM Definition Standards for Mineral Resources and Mineral Reserves 2014
CIP	carbon-in-pulp
CoG	cut-off grade
ConfC	confidence code
Crec	core recovery
CRM	certified reference material
CSS	closed-side setting
CTB	quartz-sericite-chlorite-(biotite) schist
CTW	calculated true width
Cu	copper
CWi	Bond crusher work index
CNWE	Cabaçal northwest extension
DCIP	direct current resistivity and induced polarization
DDH	diamond drill hole
DFS	definitive feasibility study
DGPS	differential global positioning system
dmt	dry metric tonne
EDA	exploratory data analysis
E-GRG	extended gravity recoverable gold
ECZ	east copper zone
EIA	Environmental impact assessment
EIS	environmental impact statement

Abbreviation	Description
EM	electromagnetic
EMIT	Australian Electromagnetic Imaging Technology Pty Ltd
EMP	environmental management plan
FA	fire assay
FET	federal excise tax
FLTEM	fixed-loop transient electromagnetic
FoS	factor of safety
FS	feasibility study
G&A	general and administration
GPR	gross production royalty
GQCV	greenstone-hosted quartz-carbonate vein deposits
GRAV	gravimetric finish method
GRG	gravity recoverable gold
HDPE	height density polyethylene
HLS	heavy liquid separation
HTW	horizontal true width
ICP	inductively coupled plasma
ICP-OES	inductively coupled plasma - optical emission spectrometry
ID^2	inverse distance squared
ID^3	inverse distance cubed
IFC	International Finance Corporation
ILS	intermediate leach solution
IOCG	iron oxide copper-gold
IP	induced polarization
IRGS	intrusion-related gold system
IRR	internal rate of return
ISO	International Organization for Standardization
LCT	Locked cycle test
LHD	long-haul dump truck
LiDAR	light detection and ranging
LLDDP	linear low density polyethylene plastic
LOI	loss on ignition
LoM	life of mine
LUP	land-use permit
MARN	Ministry of the Environment and Natural Resources
MDA	Mine Development Associates
MCF	mechanized cut and fill
MIBC	methyl isobutyl carbinol
MIK	multiple indicator kriging
MME	mine & mill engineering
MRE	mineral resource estimate
MTW	measured true width
MWM	Motoren-Werke Mannheim (motor manufacturer)
NAD 83	North American Datum of 1983

Abbreviation	Description
NAG	net acid generation
NAG	non-acid generating
NGO	non-governmental organization
NI 43-101	National Instrument 43-101 (Regulation 43-101 in Quebec)
NN	nearest neighbour
NPV	net present value
NSR	net smelter return
NTS	national topographic system
OK	ordinary kriging
OSC	Ontario Securities Commission
PAX	potassium amyl xanthate
PEA	preliminary economic assessment
PFS	prefeasibility study
PGE	platinum group elements
PML	Prometálica Mineração Ltda
PLC	programmable logic controller
PLS	pregnant leach solution
PMF	probable maximum flood
POP	procedimento operacional padrão [standard operating procedure]
QA/QC	quality assurance/quality control
QP	qualified person (as defined in National Instrument 43-101)
RC	reverse circulation drilling
RoM	run of mine
RQD	rock quality designation
RTK	real time kinematic
SAG	semi-autogenous grinding
SCC	Standards Council of Canada
SCZ	south copper zone
SD	standard deviation
S_d-BWI	micro hardness or bond ball mill work index on SAG ground material
SEC	United States securities & Exchange Commission
SEDEX	sedimentary exhalative deposits
SG	specific gravity
SGS	SGS Laboratories (Belo Horizonte)
SIRGAS	Geocentric Reference System for the Americas
SMU	selective mining unit
SPT	standard penetrating testing
SUDAM	Superintendence for the Development of the Amazon
TAC	quartz-sericite-biotite-feldspar schist
TDEM	time domain electromagnetic
Totem	Totem Consultoria em Arqueologia Ltda
TMF	tailings management facility
TSF	tailings storage facility
TSP	total suspended particulates

Abbreviation	Description
UFMT	Mato Grosso Federal University
UFRGS	Federal University of Rio Grande do Sul
UFSM	Federal University of Santa Maria
UG	underground
UHF	ultra-high frequency
UTM	Universal Transverse Mercator coordinate system
UV	ultraviolet
VFD	variable frequency drive
VLF-EM	very low frequency electromagnetic
VMS	volcanogenic massive sulphide
WRSF	waste rock storage facility
XRD	x-ray diffraction
XRF	x-ray fluorescence
ZCL	quartz-sericite-chlorite-(biotite) schist
Zn	zinc

Table 2-3: Units of Measurement

Unit	Description
%	percent
% solids	percent solids by weight
CAD	Canadian dollar (currency)
C$	Canadian dollar (as symbol)
$/t	dollars per tonne
°	angular degree
°C	degree Celsius
#	mesh size
µm	micron (micrometre)
a	annum (year)
cm	centimetre
cm^2	square centimetre
cm^3	cubic centimetre
dia.	diameter
ft	foot/feet (12 inches)
ft^2	square foot/feet
ft^3	cubic foot/feet
ft^3/min	cubic feet per minute
g	gram
Gal	gallon
g/L	gram per litre
g-mol	gram-mole
gpm	gallons per minute
g/t	grams per tonne
h	hour (60 minutes)

Unit	Description
ha	hectare
Hp	Horsepower
kA	kiloampere
kg	kilogram
kg/t	kilogram per tonne
km	kilometre
km^2	square kilometre
Koz	thousand troy ounces
kt	kilotonne (thousand metric tonnes)
kt/d	kilotonnes per day
kt/a	kilotonnes per annum (year)
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
kWh/t	kilowatt-hour per tonne
L	litre
L/s	litres per second
L/s/m	litres per second per metre
lb(s)	pound(s)
m	metre
m^2	square metre
m^3	cubic metre
M	million (mega)
Ma	Million annum (years)
m asl	metres above sea level
m amsl	metres above mean sea level
mg/L	milligrams per litre
min	minute
Mm^3	cubic megametre
mm	millimetre
mm^2	square millimetre
mm^3	cubic millimetre
Moz	million troy ounces
Mt	million tonnes
MW	Megawatt
oz	troy ounce
ppb	parts per billion
ppm	parts per million
s	second
ton	short ton (2,000 pounds)
t	metric tonne (1,000 kg)
t/a	tonnes per annum (year)
t/h	tonnes per hour
t/d	tonnes per day

Unit	Description
ton	short ton (2,000 lbs)
USD	United States dollars (currency)
US$	United States dollars (as symbol)
V	volt
W	watt
y	year

2.9 Definitions

The following general mining terms are used in this report.

Table 2-4: Definitions of Terms

Term	Definition
Assay	The chemical analysis of mineral samples to determine the metal content.
BHEM Survey	Bore Hole Electromagnetic survey – a downhole survey method designed to detect conductive bodies.
Block model	A 3D shape comprised of blocks each with various metal grades and geological parameters; used for reporting the Mineral Resource.
Capital Expenditure	All other expenditures not classified as operating costs.
Composite	Combining more than one sample result to give an average result over a larger distance.
Concentrate	A metal-rich product resulting from a mineral enrichment process such as gravity concentration or flotation, in which most of the desired mineral has been separated from the waste material in the mineralized material.
Crushing	Initial process of reducing run-of-mine (RoM) particle size to render it more amenable for further processing.
Cut-off Grade (CoG)	The grade of mineralized rock, which determines as to whether it is economic to recover its metal content by further concentration.
Density	Mass of a unit volume of a material substance. The formula for density is d = M/V, where d is density, M is mass, and V is volume.
Dilution	Waste, which is unavoidably mined with mineralized material.
Dip	Angle of inclination of a geological feature/rock from the horizontal.
Fault	The surface of a fracture along which movement has occurred.
FLTEM Survey	Fixed-Loop Transient Electromagnetic survey – a surface survey method designed to detect conductive bodies
Footwall	The underlying side of mineralization or stope.
Gangue	Non-valuable components of the mineralized material.
Grade	The measure of concentration of a metal within mineralized rock.
Hangingwall	The overlying side of a mineralization or slope.
Haulage	A horizontal underground excavation, which is used to transport mined mineralized material.
Hydrocyclone	A process whereby material is graded according to size by exploiting centrifugal forces of particulate materials.
Igneous	Primary crystalline rock formed by the solidification of magma.
Kriging	An interpolation method of assigning values from samples to blocks that minimizes the estimation error. Uses variography.
Level	Horizontal tunnel the primary purpose is the transportation of personnel and materials.
Lithological	Geological description pertaining to different rock types.

Term	Definition
LoM Plans	Life-of-Mine plans.
LRP	Long Range Plan.
Material Properties	Mine properties.
Milling	A general term used to describe the process in which the RoM is crushed and ground and subjected to physical or chemical treatment to extract the valuable metals to a concentrate or finished product.
Mineral/Mining Lease	A lease area for which mineral rights are held.
Mining Assets	Material properties and significant exploration properties.
Ongoing Capital	Capital estimates of a routine nature, which is necessary for sustaining operations.
Pillar	Rock left behind to help support the excavations in an underground mine.
Sedimentary	Pertaining to rocks formed by the accumulation of sediments, formed by the erosion of other rocks.
Shaft	An opening cut downwards from the surface for transporting personnel, equipment, supplies, mineralized material, and waste.
Sill	A thin, tabular, horizontal to subhorizontal body of igneous rock formed by the injection of magma into planar zones of weakness.
Smelting	A high temperature pyrometallurgical operation conducted in a furnace, in which the valuable metal is collected to a molten matte or doré phase and separated from the gangue components that accumulate in a less dense molten slag phase.
Specific Gravity	Ratio of the density of a substance to that of a standard substance, the usual standard of comparison for solids and liquids being water.
Stope	Underground void created by mining.
Stratigraphy	The study of stratified rocks in terms of time and space.
Strike	Direction of line formed by the intersection of strata surfaces with the horizontal plane, always perpendicular to the dip direction.
Sulphide	A sulphur bearing mineral.
Tailings	Finely ground waste rock from which valuable minerals or metals have been extracted.
Thickening	The process of concentrating solid particles in suspension.
Total Expenditure	All expenditures including those of an operating and capital nature.
Tuff	A rock composed of compacted volcanic ash varying in size from fine sand to coarse gravel.
Variogram	A statistical representation of spatial characteristics usually metal grade.
Variography	A methodology to measure the spatial grade continuity of a particular metal and the relationship between samples; uses variograms to generate variogram models.

3 RELIANCE ON OTHER EXPERTS

3.1 Introduction

The QPs have relied upon the following other expert reports, which provided information regarding surface rights, property agreements, royalties, environmental, permitting, social and community impacts, taxation, and markets for sections of this Report.

3.2 Property Agreements, Mineral Tenure, Surface Rights and Royalties

The QPs have not independently reviewed ownership of the Project area and any underlying property agreements, mineral tenure, surface rights, or royalties. The QPs have fully relied upon information derived from Arap, Nishi & Uyeda Advogados and legal experts retained by Meridian for this information through the following documents:

- Arap, Nishi & Uyeda Advogados. (2020). Mineral Rights Purchase and Sale Agreement, by and among Prometálica Mineração Ltda and IMS Engenharia Mineral Ltda, as Sellers, and Meridian Mining SE, As Purchaser, dated November 6, 2020. 70 pp.
- Instrumento Particular de Acordo para Realização de Projeto de Explotação Mineral. 6 Pages. Royalty agreement relating to licence 861956/1980 (the St Helena/Monte Cristo Mining Lease) for the benefit of Mineração Manati Ltda, a company registered at CNPJ/ME under n. 30.670.848/0001-99.

This information is used in Section 1.3, 1.4, 4 and 25.2 of the Report.

3.3 Taxation

The QPs have fully relied upon the information supplied by Meridian Mining related to taxation as applied to the financial model. The economic model was compiled by Ausenco and reviewed and approved by Meridian specialists on March 14, 2025, as documented in the following communication:

- Soraia Morais, Meridian Mining CFO. “Confirmation regarding the Tax model.” Internal document prepared for Meridian Mining and emailed to Ausenco on March 14, 2025.

This information is used in support of Section 1.20, 22, and 25.16 of the Report.

3.4 Environmental

The QPs have fully relied upon the information supplied by Sete Soluções e Tecnologia Ambiental Ltda. related to environmental studies, permitting and social or community impact. The Project is being developed in accordance with the Brazilian National Environmental Policy established on August 31, 1981 (Federal Law ref. No. 6,938). All activities that cause pollution or have the potential to pollute are subject to environmental licensing. The environmental section

was compiled by Sete and reviewed and approved by Meridian specialists on February 28, 2025, as documented when it was uploaded into Ausenco's Sharepoint and shared with the QP and management team.

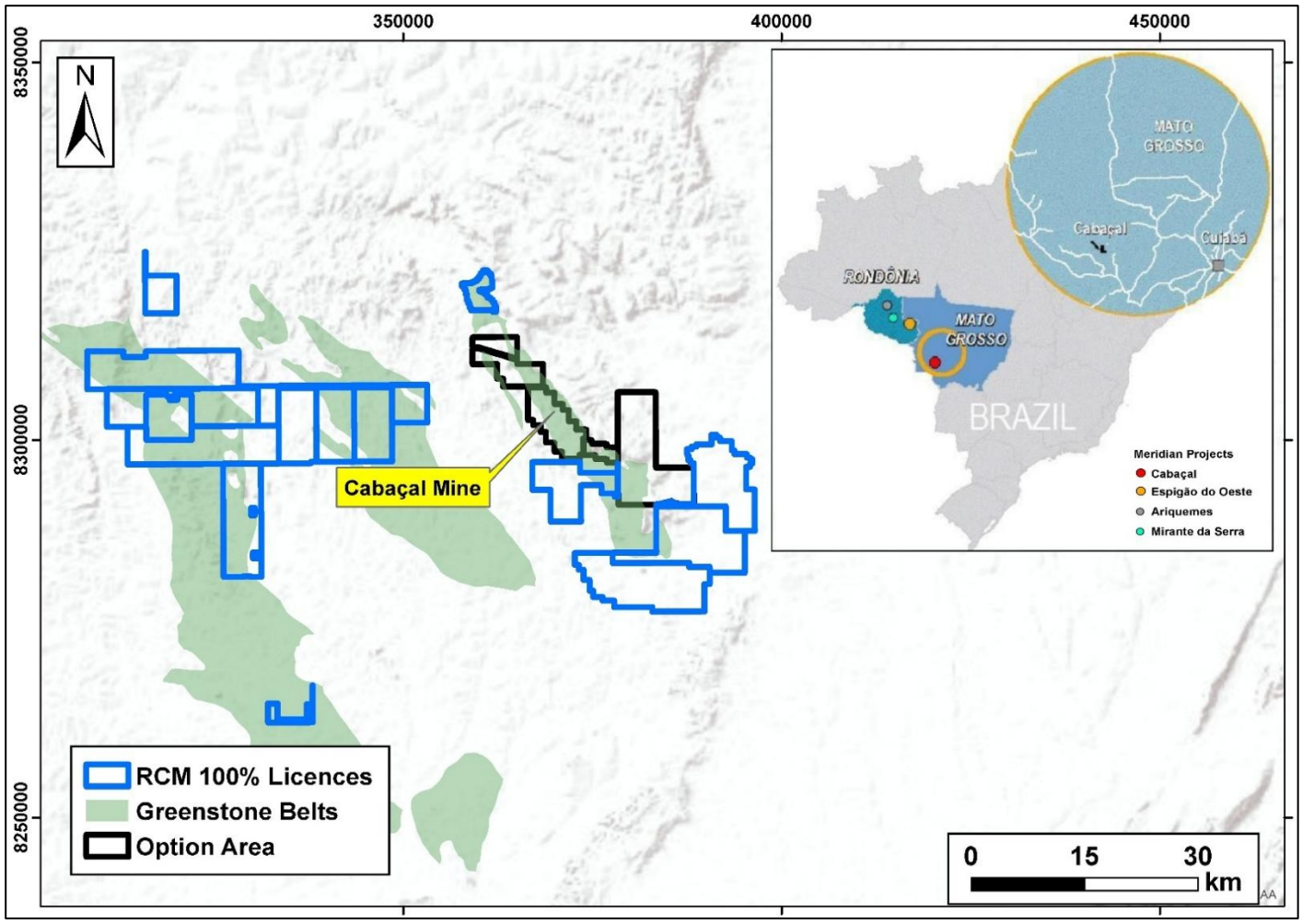
This information is used in support of Section 1.18, 20, 25.13 and 26.10 of the Report.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Introduction

The Cabaçal Property extends over an area of 51,826 ha and is located in the state of Mato Grosso, Brazil. The Cabaçal Cu-Au-Ag mine is located at -58° 12’ 33.84 ‘’ W; -15° 20’ 18.6’’ S (GCS WGS 1984), on the 1:250000 “Barra do Bugres” mapsheet SD-21-Y-D (IBGE map system; Instituto Brasileiro de Geografia e Estatística). Figure 4-1 shows the location of the Cabaçal deposit and the RCM exploration licences.

Figure 4-1: Project Location Map, Showing The Option Area and Exploration Licences



Source: Meridian, 2025. Adapted from Lacerda Filho et al (2014).

There are several towns in the area, including Araputanga, São José dos Quatro Marcos and Mirasol D'Oeste, which have facilities such as hospitals, schools, shops, banks, post-offices, and petrol stations. These towns are connected to the Brazilian national highway system by paved roads. The project area is accessible via a 35 km of unpaved roads from São José dos Quatro Marcos. São José dos Quatro Marcos offers the best logistic base for a regional office.

4.2 Property and Title in Brazil

The mining sector in Brazil is administered by the Agência Nacional de Mineração (ANM), part of the Ministry of Mines and Energy. Like many countries, minerals are owned by the government, and private companies have the right to explore and develop resources in return for royalty payments. The mineral code allows for a legal right of entry (Decret-Law Nº 227, de 28 de Fevereiro de 1967 – Brazilian Mining Code). Meridian is sensitive to community needs and all mining and exploration work is undertaken under agreement with private landholders.

A mineral licence in the application stage awaiting approval is termed "Requerimento de Pesquisa" (research applications). Once approved, the licence is authorized for work programs, and the licence enters of phase of being authorized for research (Autorização De Pesquisa). Exploration licences are granted for an initial period of three years. Subject to assessment of an exploration progress report ("Partial Report" or "Relatório Parcial"), exploration claims can be extendable for three more years. During this phase, bulk sampling can be conducted to test processing performance of different material types. At the conclusion of this period, Meridian submits a Final Report, outlining the findings of its work programs. Where resources are defined, a Positive Final Report is presented (Relatório Final de Pesquisa Mineral Positivo). An application for a mining licence (Lavra) can be made after submission of an economic study, and the area is typically reduced in size to a footprint required for development and operation. In instances where exploration does not define a resource of interest, a Negative Final Report is submitted (Relatório Final de Pesquisa Mineral Negativo), and the licence is relinquished. In instances where access delays have prevented work, extensions of term can be requested based on impediments to exploration. Mining licences have no expiry data and are valid until surrendered, subject to being kept in good standing through payment of government licensing fees and meeting regulations.

Cabaçal is located within the Border Buffer Zone of Brazil's frontier. This zone is a political protection zone, not an economic exclusion zone.

With respect to the licences forming part of the option agreement:

- Licence 866292/2004 (the Cabaçal Mining Lease Application) has had its final report approved and has been accompanied by an appropriate reduction of area. The current licence was first approved for exploration on December 10, 2009. A partial report was presented on October 4, 2012 and the licence was renewed on January 3, 2013. A positive final report was presented on June 8, 2016 and approved on October 13, 2016 with an appropriate reduction in area. The mining lease application was lodged on May 11, 2017;
- Licence 861956/1980 (the Santa Helena/Monte Cristo Mining Lease) was approved as a mining licence on June 12, 2002. The last Mineral Resource update by SRK was lodged on February 13, 2017 by PML;
- The first term exploration licences all had anniversaries on March 7, 2021 (866002/2016, 866455/2016), and interim exploration reports were submitted (Partial Reports). These were approved and licences renewed for a second three-year term from April 6, 2023;

- Licence 867407/2008 was renewed for a second three-year term on October 10, 2022 following assessment and approval of its Partial Report; and
- Meridian has verified the titles are registered to the Vendors and an application for transferal has been lodged to the ANM. Annual fees (TAH) are payable to the Federal Government upon grant or renewal of mineral claims, at current rates of BRL 4.74 per hectare for the first three years of grant, and BRL 7.11 per hectare upon renewal.

4.3 Project Ownership

Meridian entered into a definitive Purchase Agreement to acquire a 100% beneficial interest in the Cabaçal Project on November 6, 2020, from Prometálica Mineração Ltda and IMS Engenharia Mineral Ltda On October 5, 2021, Meridian assigned the Purchase Agreement related to the Cabaçal Project to its subsidiary Rio Cabaçal Mineração Ltda Since signing the option agreement, Meridian has progressively expanded its position through additional licence applications in the Cabaçal belt and further licences in coeval greenstone belts to the west through its subsidiary Rio Cabaçal Mineração Ltda

4.4 Mineral Tenure

The Cabaçal Project tenure covers a 50 km strike length of a prospective Proterozoic greenstone belt, spanning 51,826 ha (Table 4-1), of which 18,462 ha relates to the following licences under the option agreement:

- Registered to Prometálica Mineração Ltda
  - 861956/1980: The Santa Helena Mining Lease (875 Ha).
  - 866292/2004: The Cabaçal Mining Lease Application (4,028 Ha).
- Registered to IMS Engenharia Mineral Ltda
  - 867407/2008: Exploration licence (9,813 Ha).
  - 866002/2016: Exploration licence (2,566 Ha).
  - 866455/2016: Exploration licence (1,180 Ha).

Meridian applied for sixteen licences in its own right in the Cabaçal, Jaurú and Araputanga Belts. The applications have been accepted and registered (Figure 4-2). Approval of the new applications for field activity is pending. The licences in the Jaurú and Araputanga Belts span 55,452 ha (Table 4-2).

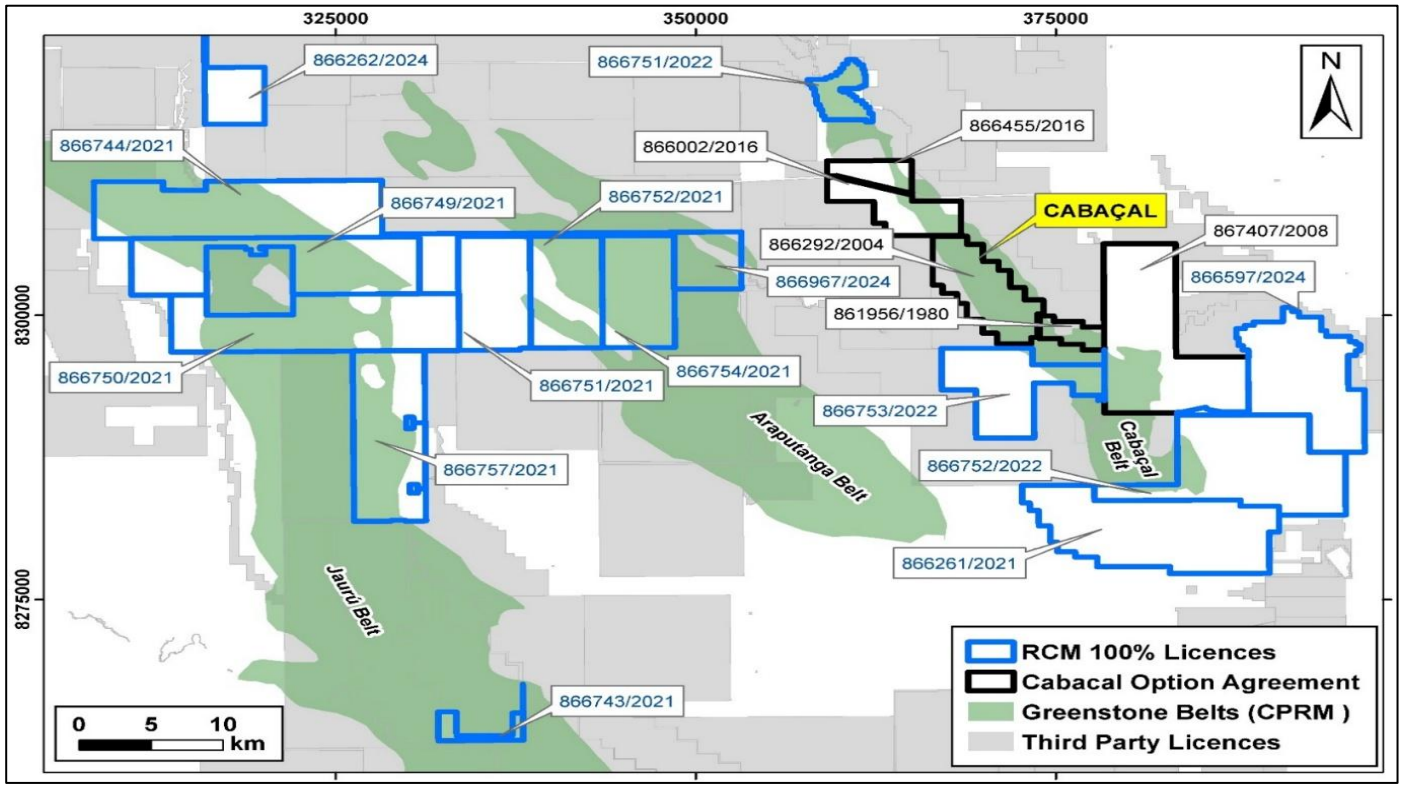
Table 4-1: Mineral Tenure – Cabaçal Project

Claim Number	Holder	Type of Claim	Application Date	Issue Date	Expiration Date	Area (Ha)
866292/2004	Prometálica Mineração Ltda; Under Option to Rio Cabaçal Mineração Ltda	Mining Lease Application	11/05/2017			4,028.24
861956/1980		Mining Lease	01/02/2001	12/06/2002		875.00
867407/2008	IMS Engenharia Mineral Ltda; Under Option to Rio Cabaçal Mineração Ltda	Exploration Lease	24/12/2008	07/03/2018	10/10/2025	9,812.64
866002/2016		Exploration Lease	05/01/2016	07/03/2018	06/04/2026	2,566.08
866455/2016		Exploration Lease	14/06/2016	07/03/2018	06/04/2026	1,179.92
866261/2021	Rio Cabaçal Mineração Ltda	Exploration Application	01/03/2021			9,862.27
866751/2022	Rio Cabaçal Mineração Ltda	Exploration Application	29/09/2022			1,403.63
866753/2022	Rio Cabaçal Mineração Ltda	Exploration Application	29/09/2022			5,070.51
866752/2022	Rio Cabaçal Mineração Ltda	Exploration Application	29/09/2022			9,466.49
866597/2024	Rio Cabaçal Mineração Ltda	Exploration Application	21/08/2024			7,561.22

Table 4-2: Mineral Tenure – Jaurú and Araputanga Belts

Claim Number	Holder	Type of Claim	Application Date	Issue Date	Expiration Date	Area (Ha)
866743/2021	Rio Cabaçal Mineração Ltda	Exploration Application	14/06/2021			666.42
866744/2021	Rio Cabaçal Mineração Ltda	Exploration Application	14/06/2021			9,767.22
866749/2021	Rio Cabaçal Mineração Ltda	Exploration Application	14/06/2021			7,545.90
866750/2021	Rio Cabaçal Mineração Ltda	Exploration Application	14/06/2021			8,925.37
866751/2021	Rio Cabaçal Mineração Ltda	Exploration Application	14/06/2021			4,977.08
866752/2021	Rio Cabaçal Mineração Ltda	Exploration Application	14/06/2021			4,911.08
866754/2021	Rio Cabaçal Mineração Ltda	Exploration Application	14/06/2021			4,917.25
866757/2021	Rio Cabaçal Mineração Ltda	Exploration Application	14/06/2021			7,399.86
866261/2024	Rio Cabaçal Mineração Ltda	Exploration Application	15/05/2024			1,889.51
866262/2024	Rio Cabaçal Mineração Ltda	Exploration Application	15/05/2024			2,116.29
866967/2024	Rio Cabaçal Mineração Ltda	Exploration Application	22/11/2024			2,336.01

Figure 4-2: Mineral Tenure Map



Source: Meridian, 2024. Geology from Lacerda Filho et al (2014), licences from ANM.

4.5 Property Agreements

On November 6, 2020, Meridian entered into a definitive Purchase Agreement with two private Brazilian companies, Prometálica Mineração Ltda and IMS Engenharia Mineral Ltda (the "Vendors") (the "Cabaçal Agreement"), to acquire a 100% beneficial interest in the Cabaçal Gold-Copper Project in the state of Mato Grosso, Brazil, spanning an area of 18,462 ha. On October 5, 2021, Meridian assigned the Cabaçal Agreement to its Brazilian subsidiary, Rio Cabaçal Mineração Ltda The remaining 33,364 ha along with other regional licences in coeval greenstone belts to the west covering 55,452 ha, are not part of the Purchase Agreement and are registered directly to Rio Cabaçal Mineração Ltda The Cabaçal Agreement allows the Company to withhold payments in an Indemnification Escrow Fund (the "Escrow Fund") to guarantee the payment of any losses related to certain Vendor obligations. At the Company's discretion, the Escrow Fund balance can be used to pay certain Vendor obligations.

Under the terms of the Cabaçal Agreement, the Company is required to make staged payments based on the achievement of milestones outlined below. The Company has determined the Cabaçal Agreement to be an executory contract based on the assessment of its provisions. As a result, as milestones are achieved, the corresponding staged payments will be triggered. The amount of each staged payment will be determined at the trigger date and will be capitalized to exploration and evaluation assets, as these payments are considered acquisition-related costs.

Amounts triggered and paid as of December 31, 2024:

- First instalment payment: $25,000 payable within five days of the execution of the option agreement (paid).
- Second instalment payment: $275,000 payable by October 15, 2021, following the filing of the mineral rights transfer to Rio Cabaçal Mineração Ltda with the Agência Nacional de Mineração (ANM; Brazil's national mining agency) (paid).
- Third instalment payment: $1,750,000 payable on August 1, 2023, unless accelerated by the completion of an equity financing with gross proceeds of at least $2,500,000, contingent upon the successful completion of a drill program and validation of the historical geophysics database, and the acquisition of necessary permits and access to the surface rights overlapping with the Cabaçal mineral rights. To December 31, 2024, the Company has paid $1,647,717.
- Fourth instalment payment: 1,000,000 common shares in the capital of the Company or C$300,000, at the Vendors' option, payable within six months of the third payment and subject to the completion of a technical report estimating the resource in accordance with National Instrument 43-101, whichever occurs later (paid in common shares).

Amounts not yet triggered:

- Fifth instalment payment: $1,850,000 plus, at the Vendors' option, 1,500,000 common shares in the capital of the Company or C$450,000, payable within nine months of the fourth payment and subject to the successful completion of a positive economic feasibility study. On January 4, 2024, the Company amended the terms of this fifth payment where the payment will be made by September 30, 2025, but is subject to the successful completion of the positive economic feasibility study. The amended terms require the Company to advance a total of $250,000, divided into monthly instalments from April 2025 to June 2025, to be deducted from the total amount of the fifth payment. The Advance of $250,000 became payable upon amendment of the Cabaçal agreement.
- Sixth instalment payment: $2,250,000 plus, at the Vendors' option, 2,000,000 common shares in the capital of the Company or C$600,000, payable within 30 days after the issuance of the Installation Licence (LI) of the Cabaçal plant by the competent authorities.
- Seventh instalment payment: $2,600,000 payable within 45 days after the Company signs the definitive financing contracts for the construction of the Cabaçal plant.

Cabaçal is located within the Border Buffer Zone of Brazil's frontier. This zone is a political protection area, not an economic exclusion zone. The terms of the Agreement give Meridian the option, under certain conditions, to return the mineral rights to the Vendors on an "as is" basis, with no further payment obligations or compliance with other terms.

4.6 Surface Rights

The Project concession package provides legal basis for entry, exploration, and extraction activities. Agreements are required with local surface rights owners prior to surface disturbance activities. Permits for extraction are obtained through application to the state's environmental and mining agencies (SEMA and the ANM).

The Company has access agreements with 45 landholders in the Cabaçal Belt and including the area hosting the Cabaçal and Santa Helena resource definition areas and is progressively expand the footprint of its access agreements. As agreements are obtained, the accompanying LOPM's are progressively expanded.

4.7 Water Rights

The Company's water use is conducted under licence for use in mineral exploration activities. Originally water was drawn from five points (under certificate number 4074/GOUT/CCRH/SURH/2021 - technical opinion # 4074) This licence was issued on March 15, 2021, by SEMA (environmental agency of the state of Mato Grosso - Brazil). These initial five points have now been replaced by three:

- PT: 3865/2024; valid until November 14, 2024, allowing for 60m³/h
- PT: 3855/2024; valid until November 13, 2024, allowing for 60m³/h
- PT: 3862/2024; valid until November 14, 2024, allowing for 60m³/h.

4.8 Royalties and Encumbrances

Licence 861956/1980 (the Santa Helena/Monte Cristo Mining Lease) has a royalty payment for the benefit of Manati, arising from the Mineral Exploitation Project Agreement dated December 20, 2000. The value is equivalent to one-point-five per cent (1.5%) of the gross revenues earned in a given month, less any taxes in connection with the Purchaser's production and sales, payable up to the fifth (5th) business day of each month, in connection with the immediate previous month. Under the acquisition structure, Rio Cabaçal Mineração is purchasing the titles and not the companies that were the prior title owners. This is being done to mitigate the corporate risk with respect to any actions against the past operators.

4.9 Environmental Considerations

Over the course of 2023-2024, Prometálica has undertaken remediation activities on Licence 861956/1980, removing remaining infrastructure relating to the Santa Helena Mining Operation (beneficiation plant, office rooms, the old laboratory). A guardhouse has been retained for field use. Landscaping and erosion control measures were undertaken on the old RoM area. The operating licence (Lo n° 0655/2008) for activities in the Santa Helena Mine has expired since December 5, 2011, and there is no request for renewal.

The Vendors have presented to the environmental agency SEMA a request for decommissioning the dam (Process No. 1,546/2003, protocols 135003/2006 and 848703/2010), and SEMA is engaging with the Vendors on outstanding requirements.

The Cabaçal mine on licence 866292/2004 is totally deactivated. Old buildings have their walls remaining and have partially now been adapted for Meridian's exploration requirements. The entrance to the underground mine was sealed by RTZ. The tailings dam was decommissioned and rehabilitated.

4.10 Permitting Considerations

Meridian has received the required permits to execute its work programs. Exploration activities require a "Licença de Operação Provisória para Mineração (LOPM) to be issued by the state environmental authority. On March 3, 2021, LOPM n° 323835/2021, was issued by the Secretaria de Estado do Meio Ambiente (Secretary of State for the Environment – SEMA, Mato Gosso) for the immediate Cabaçal resource definition area. The LOPM has been expanded over time with additional farms as access agreements have been confirmed to facilitate regional exploration. In October 2022, the LOPM licence number was updated to LOPM n° 328120/2022, reflecting the addition of the expanded areas, valid through February 26, 2024. The LOPM spans targets on both the Cabaçal Mining Lease Application (866292/2004), and the Santa Helena Mining Lease (861956/1980). After several expansions of the exploration areas, the current LOPM for the Cabaçal project is number 331501/2024, issued on February 14, 2024. This licence covers mining rights 861.956/1980 and 866.292/2004 and is valid until February 15, 2027. For exploration licences 866.455/2016, 866.002/2016 and 867.407/2008, (hosting the Cigarra, Álamo and Santa Fé targets, among others) the Company has been issued LOPM 330101/2023 on the July 28, 2023, valid until May 21, 2026.

4.11 Social Licence Considerations

There are no current mining activities on the Project. The Cabaçal mine was decommissioned by RTZ, and the Santa Helena mine has been closed with the plant partially sold and dismantled. Meridian initiated the current exploration and resource definition campaign on February 1, 2021. There are no obstacles regarding access to the property. Mineral titles are secure having been granted by the government under a mining code. The right to perform work on the property has been covered by the appropriate landowner agreements.

The Cabaçal project is located within farming land, with no artisanal mining activity. Aside from local farms, there are no settlements or population clusters within the project's active area. The nearest indigenous land is located 80 km distant from Cabaçal to the northwest (Terra Indígena Figueiras). The project is located more than 25 km away from areas classified as Quilombolas (settlements first established by originally founded by escaped enslaved people, whose descendants have recognized land rights under Brazilian law). No areas classified as of special tourist importance are present. This subject is addressed further in Section 20.

4.12 Project Risks and Uncertainties

The broader exploration licence package beyond the immediate mine environment has a large number of rural landholdings. Some properties are small to moderate size. While resource companies have rights of access, Meridian has only been conducting its exploration activities with the agreement of the landholders. Most landholders are supportive of development and receive a direct benefit through royalties if targets proceed to production. Meridian's licences do not overlap indigenous lands. Meridian manages landholder liaison through its in-house team.

The Company currently has all agreements in and licences in place necessary to execute its programs for current and planned activities and is liaising with statutory agencies to obtain all permits needed for any future mining operation.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Physiography

The Cabaçal Project is located on the plateau area of Western Mato Grosso state, consisting of flat to gently rolling hills. The resource and exploration area lies at an elevation of approximately 225 – 345 m above sea level. There are many rivers in the project area such as the Cabaçal, Jaurú and Rio Branco, all of which flow into the Paraguai River. The area has already been significantly cleared for agriculture. The topography is undulating and amenable to exploration, being largely grass-covered (Figure 5-1). Topographic base maps used for exploration by RTZ at Cabaçal were constructed from aerial photographs flown at a scale of 1:25,000. The local economy is based on agriculture, predominantly beef cattle.

Figure 5-1: View from The SE Looking Across Cabaçal and Towards The NW Extension (Ridgeline).



Source: Meridian Staff, 2021. Located at Meridian drill site CD-065 (Cabaçal Southeast), looking NW.

5.2 Accessibility

The Cabaçal Project is located in the Brazilian state of Mato Grosso in NW Brazil. The state is serviced by regular scheduled jet air flights to the capital city Cuiabá.

The site is accessible by the federal highway BR-070 from Cuiabá, 219 km by road to the municipality of Cáceres, then 59 km by the BR-174 road until the junction with the MT-175 road, 333 km by the MT-175 until the municipality of São José dos Quatro Marcos, 16 km by unpaved road MT-339 to Santa Fé (the nearest town) and finally 19 km by unpaved side road. The site or adjacent towns do not have a formal airport, but there is an approved runway closer to the city of Mirassol do Oeste, where twin-engine aircraft are allowed to operate during the day.

Within the Project area, vehicle access is available via a network of all-weather municipal dirt roads (Figure 5-2). During the wet season, 4WD access is advisable in some sectors.

Figure 5-2: Road Connecting São José Dos Quatro Marcos and The Project Area.



Source: Meridian Staff, 2021.

5.3 Climate

As a point of reference, public domain data indicates that São José dos Quatro Marcos, in Mato Grosso, has an average temperature of 25.4°C and average annual precipitation of 1,471 mm, concentrated between October and April. Previous mining operations ran all year round. Table 5-1 contains climate data for the general Cabaçal area.

Table 5-1: Climate Data for São José Dos Quatro Marcos

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	26.6 °C (79.8) °F	26.3 °C (79.3) °F	26.3 °C (79.3) °F	25.8 °C (78.5) °F	24.3 °C (75.8) °F	24.1 °C (75.4) °F	24.1 °C (75.3) °F	26.2 °C (79.2) °F	28 °C (82.3) °F	28 °C (82.4) °F	27 °C (80.6) °F	26.9 °C (80.4) °F
Min. Temperature °C (°F)	23.6 °C (74.4) °F	23.4 °C (74.1) °F	23.2 °C (73.8) °F	22.4 °C (72.2) °F	20.6 °C (69) °F	19.5 °C (67.1) °F	19 °C (66.3) °F	20.7 °C (69.2) °F	23 °C (73.3) °F	24 °C (75.3) °F	23.6 °C (74.5) °F	23.8 °C (74.8) °F
Max. Temperature °C (°F)	30.7 °C (87.2) °F	30.4 °C (86.7) °F	30.4 °C (86.7) °F	30.1 °C (86.1) °F	28.8 °C (83.8) °F	29.4 °C (85) °F	29.9 °C (85.9) °F	32.5 °C (90.6) °F	33.8 °C (92.8) °F	33.1 °C (91.5) °F	31.4 °C (88.5) °F	31.1 °C (87.9) °F
Precipitation / Rainfall mm (in)	212 (8)	194 (7)	169 (6)	92 (3)	43 (1)	12 (0)	10 (0)	15 (0)	45 (1)	110 (4)	161 (6)	184 (7)
Humidity(%)	79%	81%	81%	77%	72%	64%	57%	47%	53%	66%	74%	77%
Rainy days (d)	17	16	17	10	5	2	1	2	6	11	14	17
avg. Sun hours (hours)	9.7	9.2	8.6	8.5	7.9	8.6	9.1	9.9	9.9	9.8	9.4	9.9

Source: https://en.climate-data.org/south-america/brazil/mato-grosso/sao-jose-dos-quatro-marcos-43144/.

5.4 Local Resources and Infrastructure

The Project concession package provides a legal basis for entry, exploration, and extraction activities. Agreements are required with local surface rights owners prior to surface disturbance activities. Permits for extraction are obtained through application to the state's environmental and mining agencies (SEMA and ANM).

5.4.1 Power

The region is supplied by a high-voltage 34.5 kV power line from Cachoeira Dourada in Goiás State to Rio Casca in Mato Grosso State. The high-voltage line is about 1 km southwest of the Santa Helena mine site. A potential route for the construction of the electric line from the substation at Araputanga to the Cabaçal mine area has been identified, extending over 21 km.

5.4.2 Communications

The microwave system run by Embratel and Telemat provides excellent national and international coverage for communications.

5.4.3 Water

The Cabaçal River has been used historically as a source of fresh water for mineral processing. Most recently, freshwater for Prometálica's Santa Helena underground mining operations was supplied from the nearby Cabaçal River, about 0.5 km from the Santa Helena mine site, via a permit for a barge-mounted pump, which operated at 800 L/min.

5.4.4 Mining Personnel

Brazil has an advanced mining economy, with a long history of production in many commodities including gold and base metals. The country has a strong system of universities and professional institutions. Experienced professional staff in remote locations may work on a fly-in/fly-out basis, or take residential options available. Mato Grosso itself has active mines, quarrying and alluvial operations. Labourers can be sourced from the local towns and agricultural community. Meridian has an experienced management team.

5.4.5 Health Services

The municipality has medical services in both the municipal and private network, with which Meridian's medical insurer, UNIMED, is affiliated with. The municipality of Mirassol d'Oeste, located approximately 10 km from São José dos Quatro Marcos, has more specialized services, including an intensive care unit.

5.4.6 Potential Tailings Storage Areas

A scoping study of tailings sites for operation at Cabaçal has been undertaken by Ausenco initiated in July 2021 and finished in December 2022, with findings now updated in Section 18 of this study.

5.4.7 Potential Processing Plant Sites

A scoping study of processing plant options has been undertaken as part of the scoping study by Ausenco. Sites have now been identified and are summarized in Section 18 of this study.

5.5 Comments on Accessibility, Climate, Local Resources, Infrastructure and Physiography

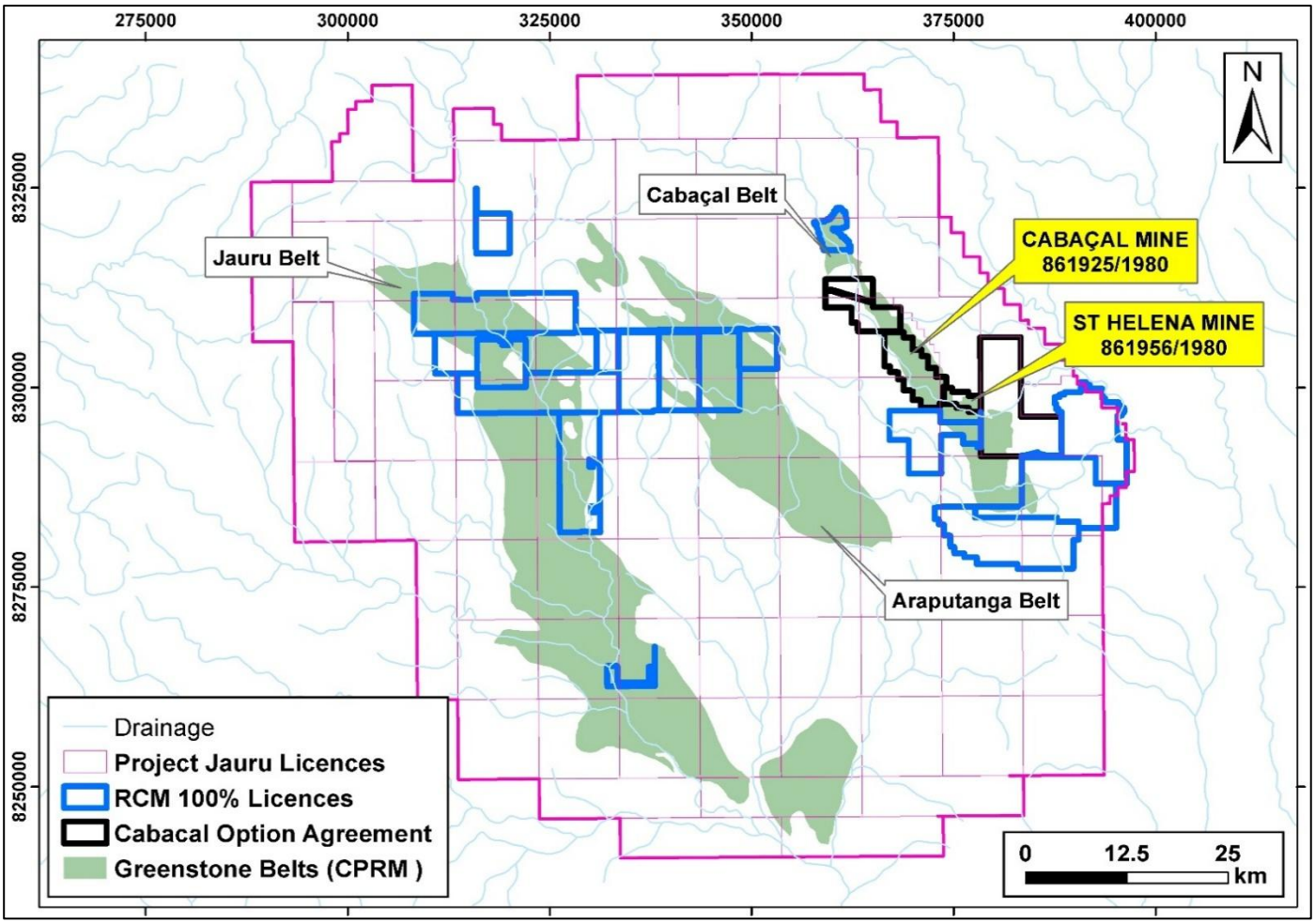
The broader state and the local area have a history of mine development, and the region is well-served by power, water resources, and road transport routes along which concentrates have been previously transported. Local communities at the townships of São José dos Quatro Marcos, Araputanga, Rio Branco provide a potential source of labour and support services. The Cabaçal site is characterized by gently rolling hills and has been significantly cleared for agriculture. Subject to permitting the area has sites suitable for mine infrastructure such a processing plant and waste rock storage facilities.

6 HISTORY

6.1 Prior Ownership and Ownership Changes

In early 1980, BPM reconnaissance activities recognized the presence of a series of greenstone belts in northwest Mato Grosso, subsequently named the Jaurú, Araputanga and Cabaçal Belts, and applications for 80 exploration licences were lodged at the DNPM through its subsidiary Mineração Santa Martha S/A (Figure 6-1). The licences covered about 800,000 ha and collectively were referred to as Project Jaurú. With the acquisition of BPM by RTZ in 1989, Mineração Santa Martha was absorbed by Mineração Manati Ltda, a subsidiary of RTZ.

Figure 6-1: Original BP Minerals Licences of Project Jaurú



Source: Meridian, 2025. Licences adapted from ANM data and geology from Lacerda Filho et al (2014).

6.1.1 Cabaçal Mine Area

BPM licence 861925/1980, where the Cabaçal deposit was discovered and developed, was applied for on October 17, 1980. It was approved for its first term of exploration on June 25,1981 and renewed for a second three-year term on February 21, 1985. A positive final exploration report was presented on April 15, 1986 and approved on May 21, 1986. A mining licence application was lodged on June 2, 1986, and approved on March 16, 1987. Initiation of mining was registered on April 27, 1987. Following the cessation of mining at Cabaçal and closure and rehabilitation, the mining licence was renounced on March 14, 1994, and the area was published as free on October 13, 1994.

Following relinquishment, a number of competing and overlapping applications were lodged for the area but did not progress due to either incomplete content in application documentation, or later withdrawal by the applicants.

On June 1, 2004, PML was successful in applying for the Cabaçal licence 866292/2004, straddling the area which had earlier been relinquished by RTZ. The licence was approved for exploration on December 10, 2009, with its first term report approved on October 4, 2012, and renewed for a second term on January 3, 2013. A positive final report was presented on January 4, 2016, and a mining licence was applied for on May 11, 2017.

6.1.2 Santa Helena Mine Area

Licence 861956/1980, where the Santa Helena deposit was discovered and developed, was applied for on October 17, 1980, by BPM. It was approved for its first term of exploration on March 15, 1982, and renewed for a second term on September 1, 1988. A positive final exploration report was presented on September 21, 1990. With the divestment of RTZ interests, in June 1998, Mineração Manati Ltda transferred mining rights to Metais do Brasil Mineração Ltda (MBM). In September 1998, MBM wrote an agreement transferring the mineral rights and liabilities to Prometálica Mineração Ltda (PML).

In December 1998, PML and Companhia Mineira de Metais (CMM, a subsidiary of Votorantim Group) formed a consortium for the exploitation of Mineral Resources on 861956/1980. During this stage, additional exploration, resource evaluation, metallurgical testing, and equipment purchase were carried out. The Final report was approved on April 6, 2000. A mining licence application was lodged on February 1, 2001, and approved on June 12, 2002. However, for strategic reasons, CMM exited from the project soon after. Beginning in 2003, PML took over the project and developed the Santa Helena Mine. The life-of-mine production was planned from 2006 – 2011, but the collapse in the zinc price from a high of USD4 442/t in November 2006 to a low of USD1 075/t in January 2009 rendered the project unprofitable and mining terminated early.

6.1.3 Cabaçal Option Area Exploration Licences and prior PML partnerships

Other historical BPM licences, which straddle the option area include 861906/1980, 861937/1980, 861924/1980, 861923/1980. This formed part of the original Project Jaurú application package lodged in October 1980. The licences lapsed with the withdrawal of RTZ in 1994 with none progressing to mining licences.

The Vendors have had prior parties evaluate the licences, but subsequent agreements have lapsed with no change in ownership. This includes:

- Evaluation by AngloGold Ashanti in 2011, including resampling of historical core and technical reviews; and
- A period in 2015, when Avanco evaluated the project and undertook a limited drill campaign, involving eleven drill holes. Their interest in the project was subsequently discontinued.

6.1.4 RCM Licences – Cabaçal Belt

RCM licences 866261/2021, 866751/2022, 866752/2022, 866753/2022, 866597/2024 straddle the following licences of the original Project Jaurú application package: 861921/1980, 861922/1980, 861937/1980, 861939/1980, 861939/1980, 861947/1980, 861958/1980, 861959/1980, 861960/1980, 867371/1983. The licences lapsed with the withdrawal of RTZ in 1994 with none progressing to mining licences. Meridian acquired these licences as applications over vacant ground and through the ANM's land release auction system.

6.1.5 RCM Licences – Araputanga Belt

RCM licences 866751/2021, 866752/2021, 866754/2021, 866261/2024, 866967/2024, straddle the following licences of the original Project Jaurú application package: 861920/1980, 861926/1980, 861927/1980, 861928/1980. The licenses lapsed with the withdrawal of RTZ in 1994 with none progressing to mining licences. Meridian acquired these licences as applications over vacant ground and through the ANM's land release auction system.

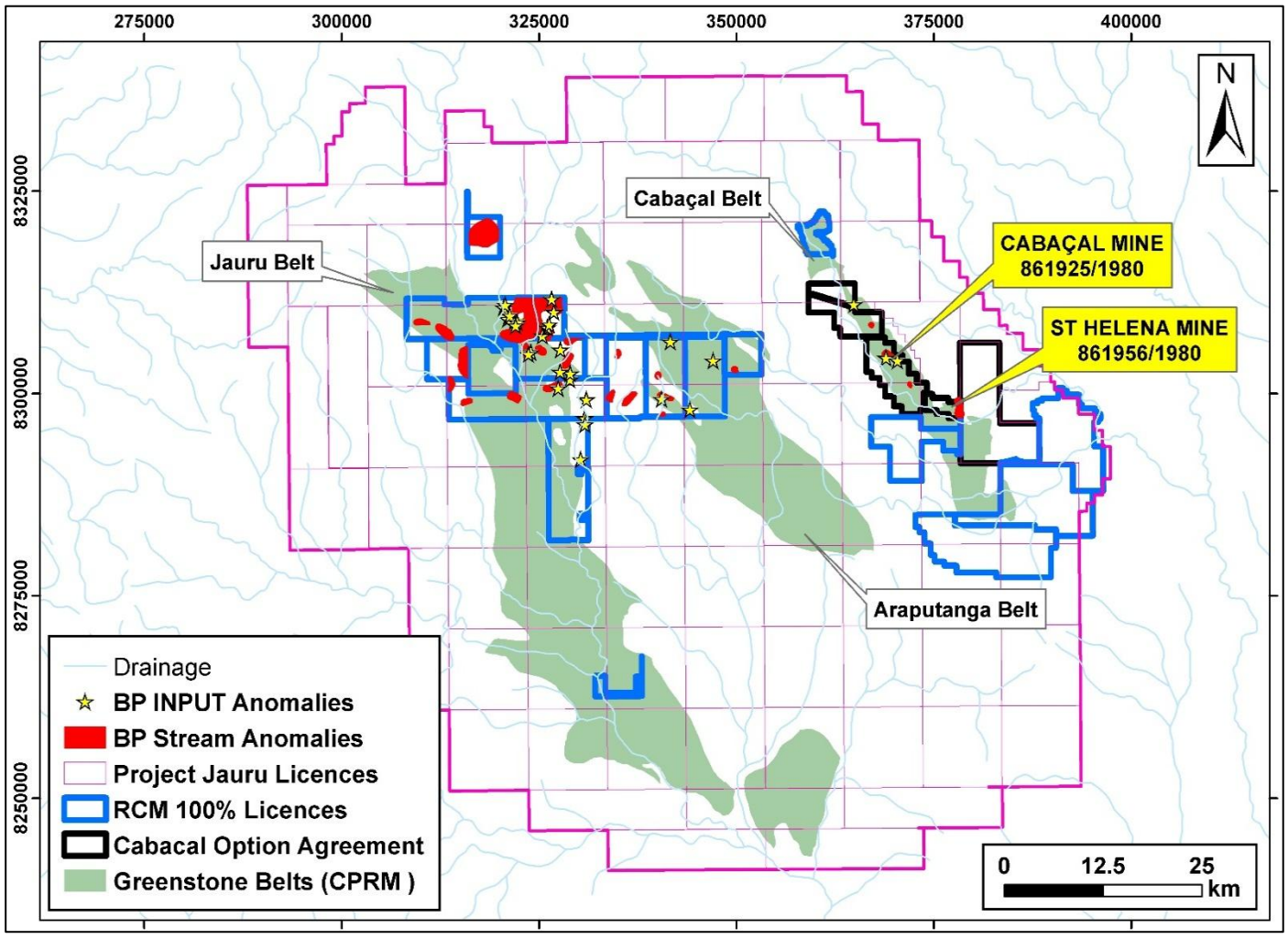
6.1.6 RCM Licences – Jaurú Belt

RCM licences 866743/2021, 866750/2021, 866749/2021, 866757/2021, 866744/2021, 866262/2024 straddle the following licences of the original Project Jaurú application package: 861909/1980, 861910/1980, 861912/1980, 861914/1980, 861931/1980, 861932/1980, 861933/1980, 861934/1980, 861943/1980, 861955/1980, 861972/1980, 861907/1980. The licenses lapsed with the withdrawal of RTZ in 1994 with none progressing to mining licences. A number of licences were subsequently hold by Guaporé Mineração Ltda (in which Anglo American had an interest: 866261/2006, 866749/2021, 866.750/2021, 866803/2006), which conducted reconnaissance exploration in the region. Meridian acquired these licences as applications over vacant ground and through the ANM's land release auction system.

6.2 Historical Exploration

After establishing the Jaurú Project in the 1980's, BPM first undertook regional stream sediments geochemical programs and aerial geophysical programs, defining a series of anomalies for their licences (Figure 6-2).

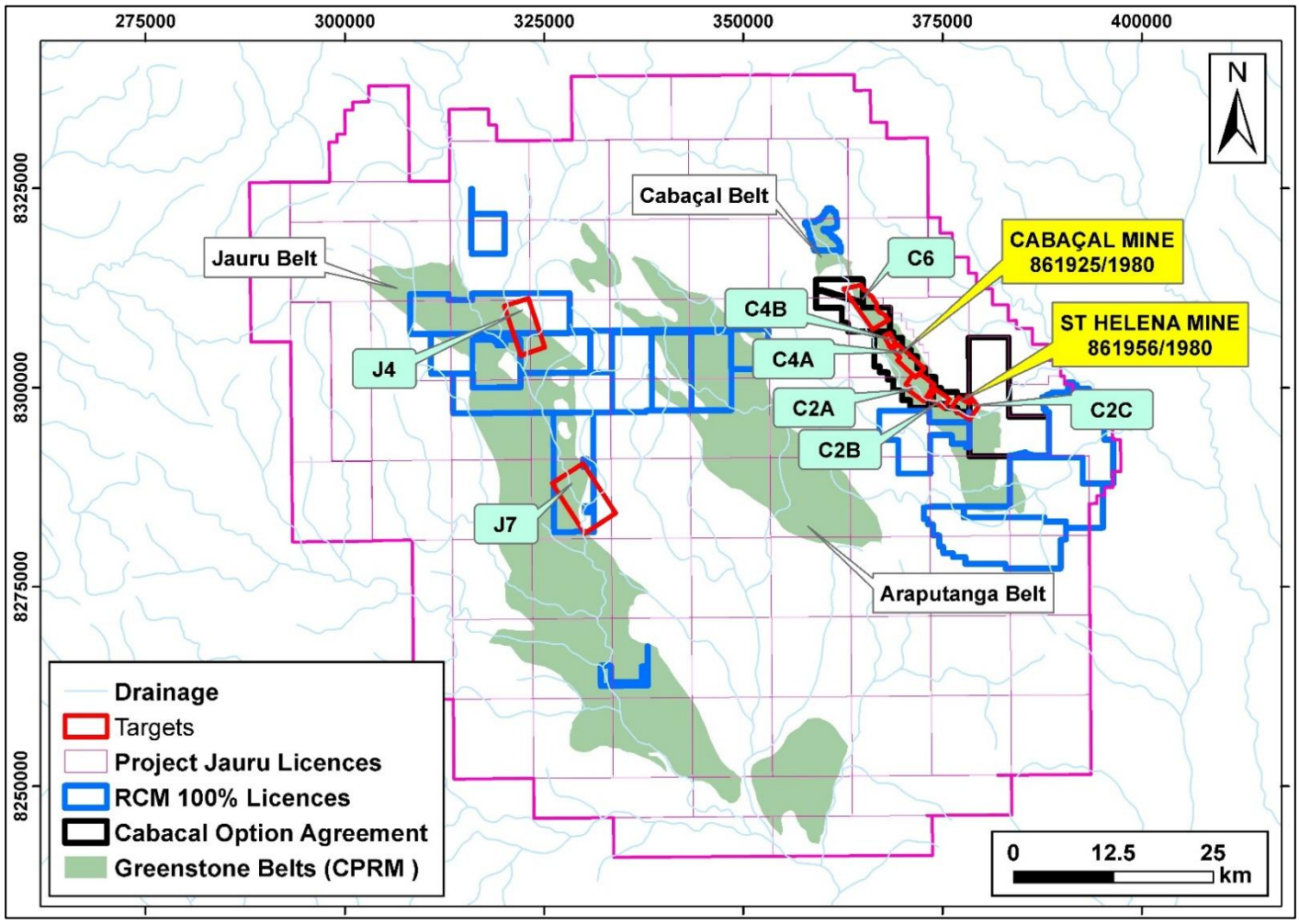
Figure 6-2: Regional Steam and Geophysical Anomalies Defined by First Phase of Exploration



Source: Meridian, licences from ANM and geology from Lacerda Filho et al (2014). Targets from RTZ archives.

This was followed by prospect-scale soil surveys, ground geophysics, and exploratory drilling. The Cabaçal and Santa Helena VMS deposits were discovered during this exploration phase from prospects first called C4A and C2C, respectively (Figure 6-3). The Cabaçal deposit was not exposed, and its discovery was attributed to soil geochemistry and geophysics (RTZ File BRA30000124—086.pdf; unpublished 1985 report). Discussion of historical exploration in this report is largely focused on the Cabaçal Belt, with compilation and validation of historical data for the Araputanga and Jaurú Belts yet to be completed.

Figure 6-3: Principal BP Minerals Prospects



Source: Meridian, Licences from ANM data; geology from Lacerda Filho et al (2014). Targets from RTZ archives.

Following the work by BPM and the relinquishment of the Cabaçal Mine Lease, the next phase of work was conducted by PML with the Cabaçal Mine area held under licence 866292/2004. Exploration work comprised limited fieldwork and a series of data compilation exercises. More recent exploration programs have included:

- A VTEM Survey (2007) – conductivity and magnetic survey
- Resampling of historical core and technical reviews by AngloGold Ashanti (2011)
- Regional soil sampling (2012)
- Regional diamond drilling funded by Avanco (2015).

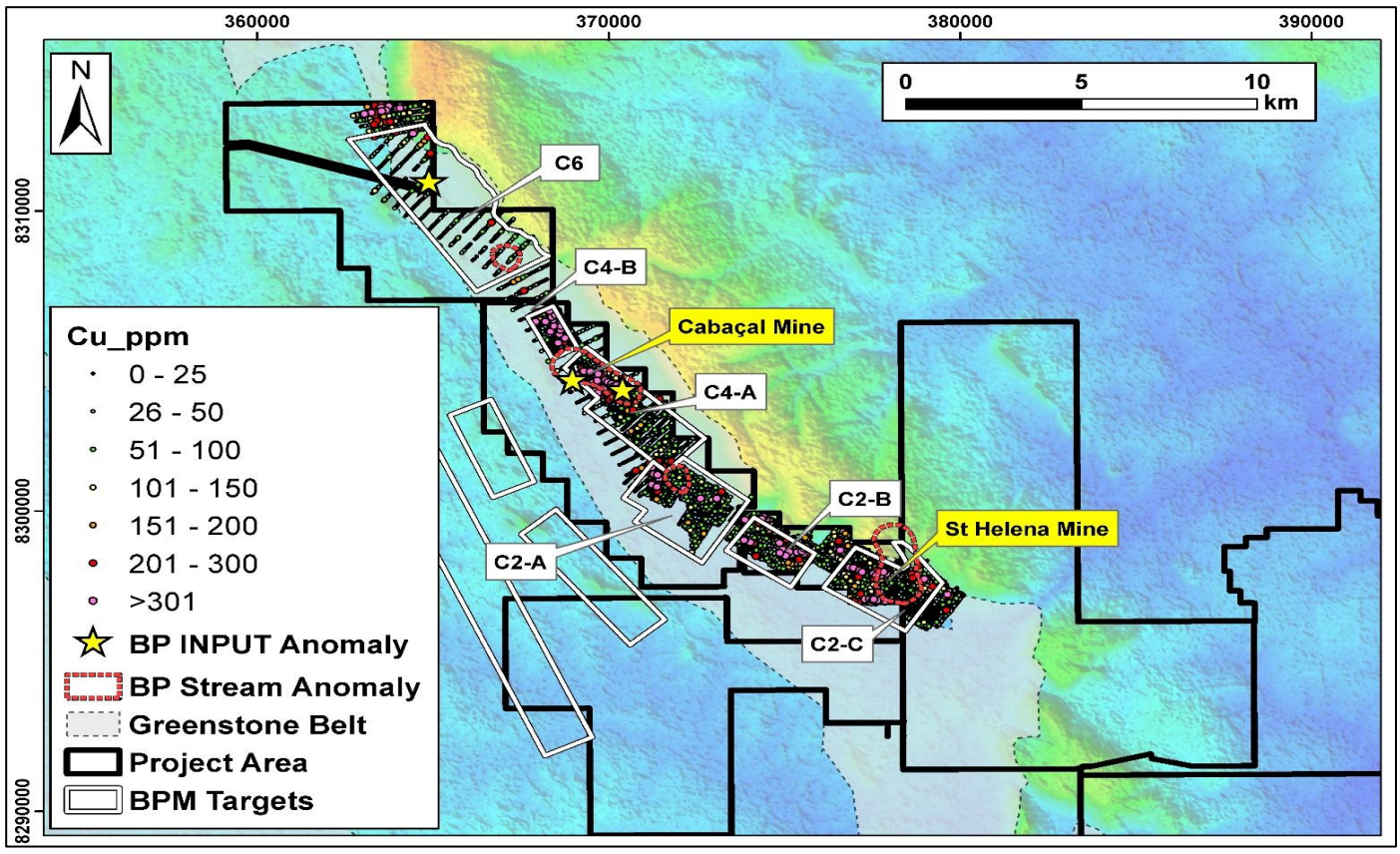
6.2.1 Geochemical Surveys

The original BPM reconnaissance programs covered an area of approximately 11,500 km^2. Initially, interpretations were made on satellite and radar images, in conjunction with regional geological mapping (scale 1: 100,000). Subsequent field work targeting broad, prospective areas (7,000 km^2) within the general area, comprised stream sediment sampling (4,291 samples, analysed for Cu, Pb, Zn, Ni, As, sometimes Au + Ag) and pan concentrates (5,111 samples).

In 1982, 1:50,000 geological mapping was undertaken accompanied by a detailed stream sediment sampling program (1,921 samples analysed for Cu, Pb, Zn, Ni, As, sometimes Au + Ag). During this period, the first surface occurrences of copper (chalcopyrite and malachite) were identified approximately 5 km to the west of Cabaçal.

During 1983 and 1984, follow up of the stream geochemical work resulted in a series of detailed hand-auger soil sampling grids initially on 50 m by 400 m spacing. This was followed by closer spaced soil sampling on 25 m by 100 m grids concentrating on the Cabaçal Range. In 1985, a regional soil sampling program at 50 m by 400 m spacing was completed over the Cabaçal corridor. The extent of historical BPM soil sampling is illustrated in Figure 6-4, showing areas with anomalous copper results.

Figure 6-4: Original BP Minerals Targets and Copper in Soil Results in the Cabaçal Belt on ASTER Digital Elevation Model



Source: Meridian, 2024, adapted from RTZ Archives. ASTER data from NASA's Land Processes Distributed Active Archive Centre.

6.2.2 Geophysical Surveys

In 1982, BPM carried out an INPUT survey completed by Prospec S/A, with the technical supervision of Questor Canada, covering approximately 6,800 km^2, capturing approximately 2,800 line-km of magnetic/electromagnetic data. This delineated the principal volcanic belts and 81 targets, 13 of them in the Cabaçal Belt. The original Cabaçal target was delineated as an INPUT anomaly 46-A, coinciding with 56 ppm Cu and 49 ppm Zn anomalies in stream sediment samples, and gold counts in pan concentrates (maximum 14 counts).

Ground-based geophysical surveys were completed by September 1985, and included 45 km of gradient array IP arrangement, 13 km of pole-dipole IP, and 163 km of max-min applied potential surveys.

The most recent geophysical program was a VTEM magnetic and conductivity survey undertaken for PML in late 2007, by Microsurvey Aerogeofísica e Consultoria Geofísica Ltda (Rio Branco Survey; Franco, 2008). A total of 977 line-km of data were collected at 300 m spacings. In 2009, Newexco Services Pty Ltd (Perth Australia) reviewed the data under a commission from AngloGold Ashanti (Ebner, 2009), identifying 21 bedrock conductors. Due to the scale of the anomalies, further work is required to identify the conductive sources.

6.2.3 Mapping and Survey

The original reconnaissance work initiated in July 1980, by BPM defined the Jaurú, Araputanga and Cabaçal Belts. In 1982, BPM carried out an aerial photogrammetric survey (1:25,000 colour images) covering an area of about 6,800 km^2 of the area. This dataset was used for initial photointerpretation, and subsequent mapping at a regional scale (1:100,000).

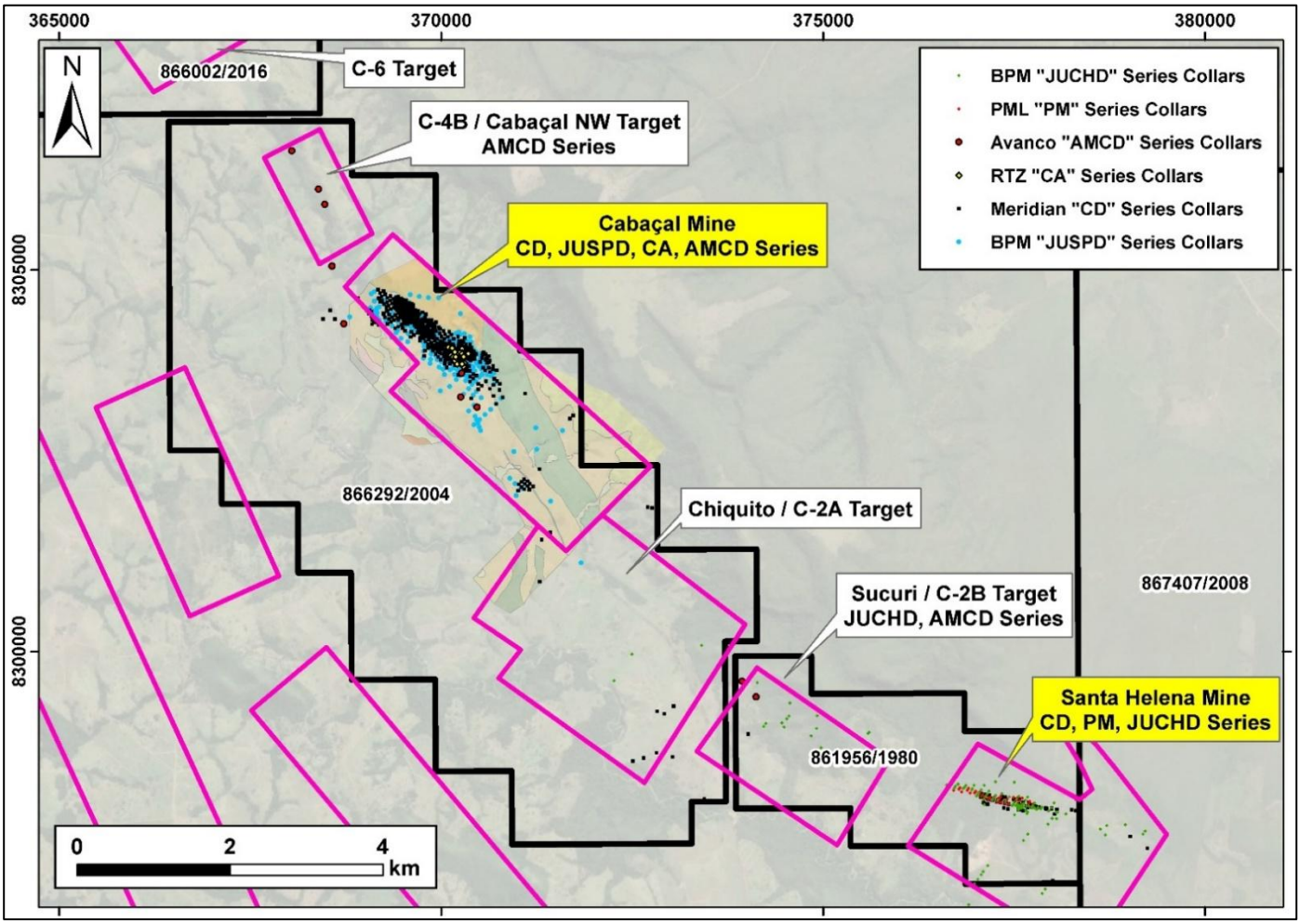
Mapping scales were progressively reduced to semi-detail scales (1:50,000) and coupled with soil survey/mapping grids. The area around the Cabaçal mine (C-2A grid) was mapped at scales 1:5,000, 1:2,500 (combined with a 200 m x 25 m grid) and 1:1,000 (50 m x 25 m grid).

6.3 Historical Drilling – Procedures and Results

6.3.1 Type and Extent

The extent of regional diamond drilling in the Cabaçal Belt for the various campaigns is illustrated in Figure 6-5.

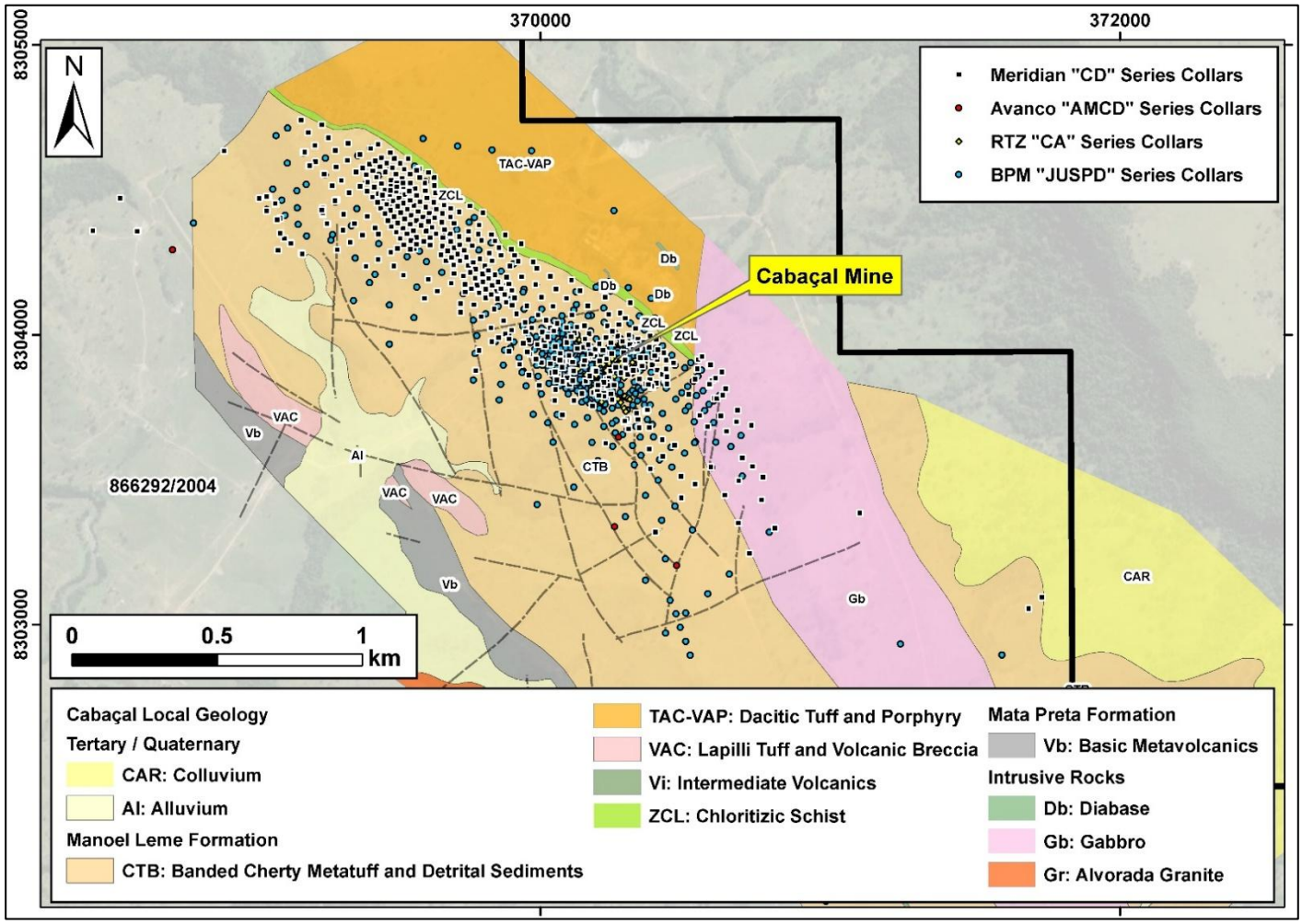
Figure 6-5: Cabaçal Belt Drilling



Source: Geology from PML GIS data. PML and BPM collars from PML and RTZ archives.

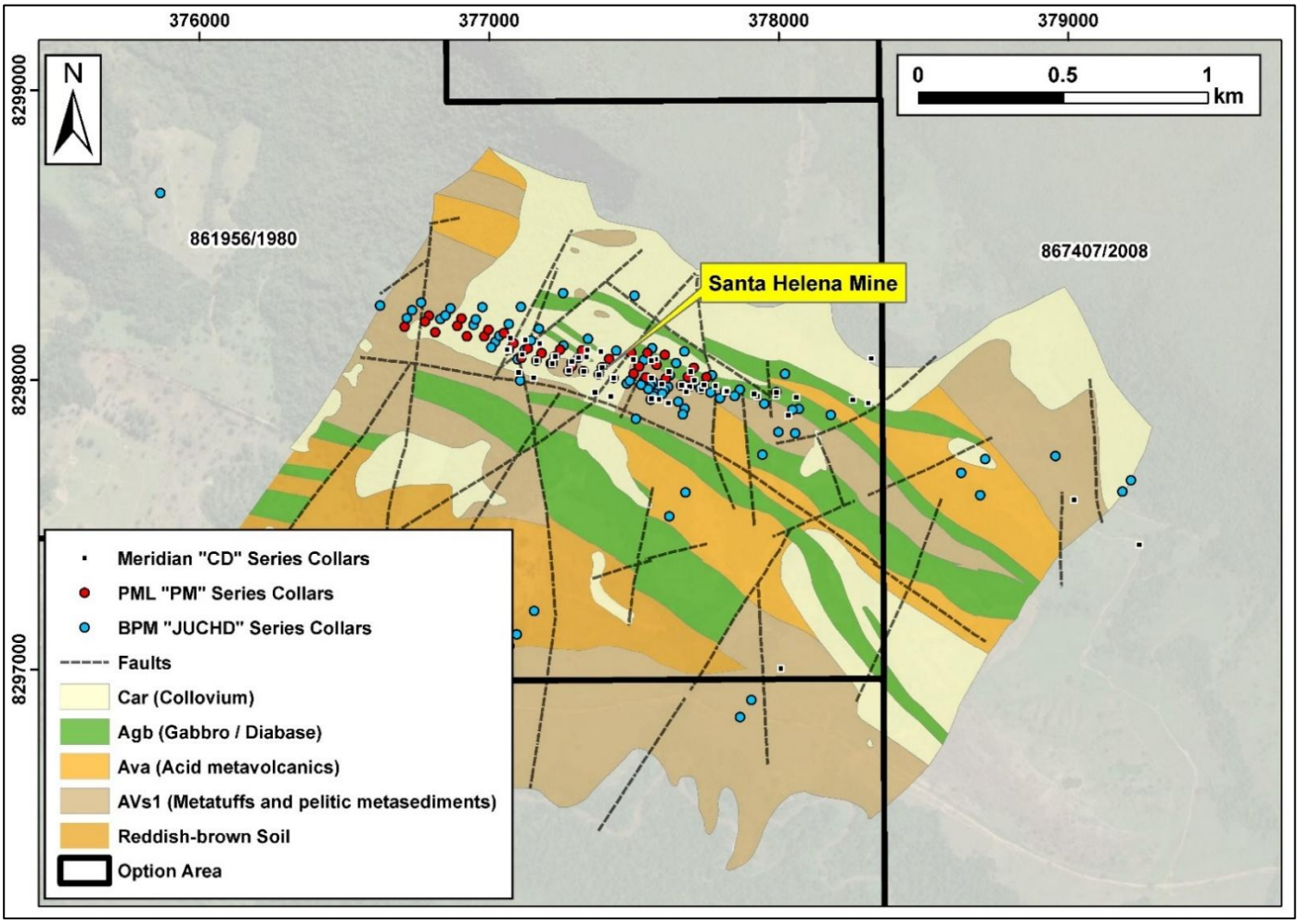
Drilling in the near-mine settings for Cabaçal and Santa Helena are shown in Figure 6-6 and Figure 6-7, respectively.

Figure 6-6: Near-mine Drilling – Cabaçal Area



Source: Geology from PML GIS data. PML and BPM collars from PML and RTZ archives.

Figure 6-7: Near-mine Drilling – Santa Helena Area



Source: Geology from PML GIS data. PML and BPM collars from PML and RTZ archives.

BPM's drilling of the Cabaçal and Santa Helena deposits involved diamond coring with Maquesonda 850, Diakore, and BBS+ Longyear wireline diamond drill rigs (Figure 6-8).

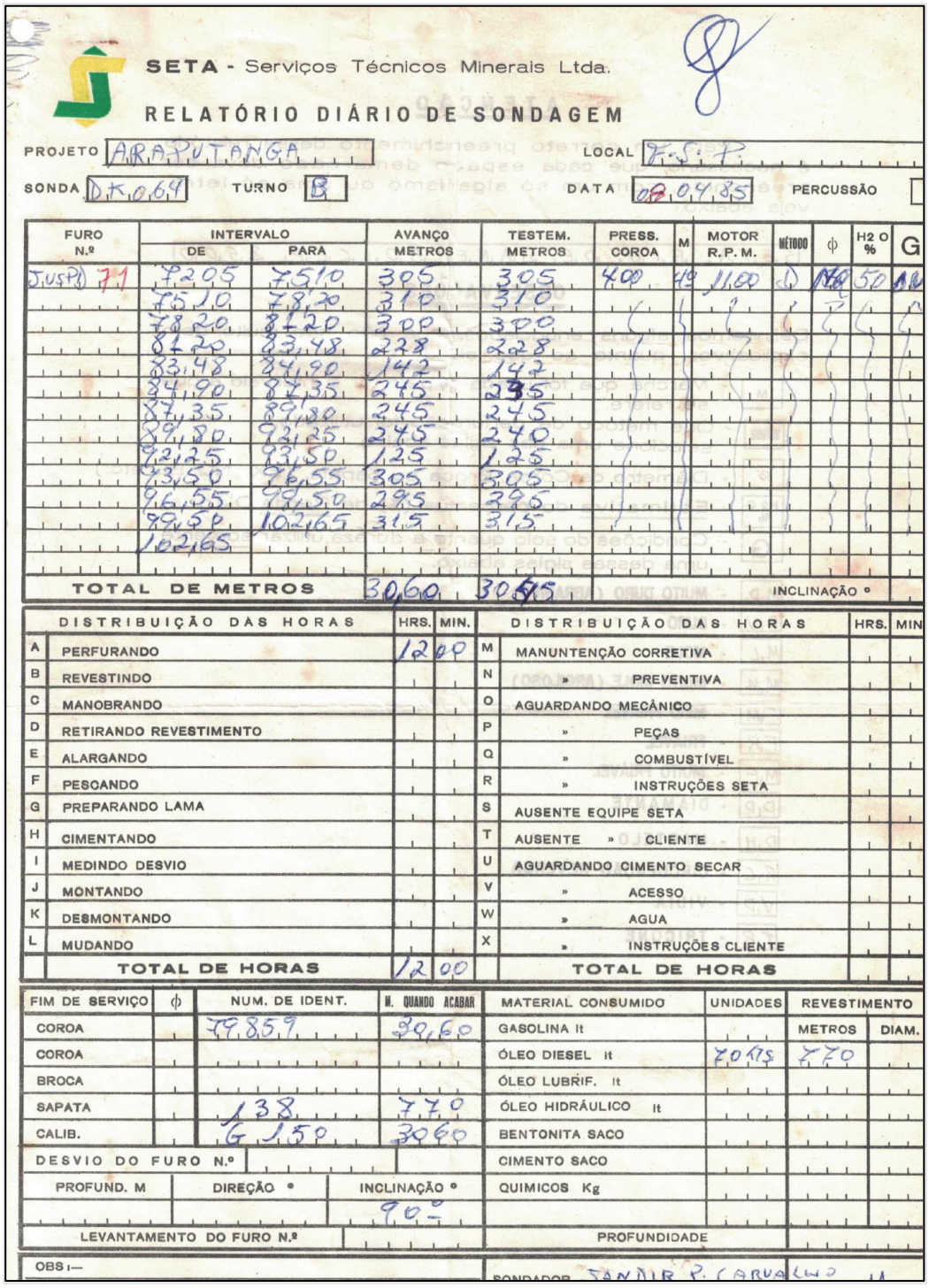
Figure 6-8: Warman Rig in Operation on The Cabaçal Deposit, São Paulo Farm



Source: Geoplex Mineração Ltda (1985). BRA30000124–086 [Internal document supplied by RTZ for Meridian]

Historical daily production drill bulletins have been located for many of the drill holes from the contractor SETA Drilling (Figure 6-9).

Figure 6-9: Example of Original Daily Drill Bulletin, JUSPD071



SETA - Serviços Técnicos Minerais Ltda.

RELATÓRIO DIÁRIO DE SONDAGEM

PROJETO ARAPUTANGA LOCAL T.S.P.

SONDA D.K.0.69 TURNO B DATA 02.04.85 PERCUSSÃO

FURO N.º	INTERVALO DE	INTERVALO PARA	AVANÇO METROS	TESTEM. METROS	PRESS. COROA	M	MOTOR R.P.M.	MÉTODO	ϕ	H2 O %	G
JUSPD 71	7.295	7.510	305	305	400	49	1100	D	NW	50	NW
	7.510	7.820	310	310	"	"	"	"	"	"	"
	7.820	8.120	300	300	"	"	"	"	"	"	"
	8.120	8.348	228	228	"	"	"	"	"	"	"
	8.348	8.490	142	142	"	"	"	"	"	"	"
	8.490	8.735	245	235	"	"	"	"	"	"	"
	8.735	8.980	245	245	"	"	"	"	"	"	"
	8.980	9.225	245	240	"	"	"	"	"	"	"
	9.225	9.350	125	125	"	"	"	"	"	"	"
	9.350	9.655	305	305	"	"	"	"	"	"	"
	9.655	9.950	295	295	"	"	"	"	"	"	"
	9.950	10.265	315	315	"	"	"	"	"	"	"
	10.265										
TOTAL DE METROS			3060	3055					INCLINAÇÃO °		

	DISTRIBUIÇÃO DAS HORAS	HRS.	MIN.		DISTRIBUIÇÃO DAS HORAS	HRS.	MIN.
A	PERFURANDO	12	00	M	MANUNTENÇÃO CORRETIVA		
B	REVESTINDO			N	» PREVENTIVA		
C	MANOBRANDO			O	AGUARDANDO MECÂNICO		
D	RETIRANDO REVESTIMENTO			P	» PEÇAS		
E	ALARGANDO			Q	» COMBUSTÍVEL		
F	PESCANDO			R	» INSTRUÇÕES SETA		
G	PREPARANDO LAMA			S	AUSENTE EQUIPE SETA		
H	CIMENTANDO			T	AUSENTE » CLIENTE		
I	MEDINDO DESVIO			U	AGUARDANDO CIMENTO SECAR		
J	MONTANDO			V	» ACESSO		
K	DESMONTANDO			W	» AGUA		
L	MUDANDO			X	» INSTRUÇÕES CLIENTE		
	TOTAL DE HORAS	12	00		TOTAL DE HORAS		

FIM DE SERVIÇO	ϕ	NUM. DE IDENT.	M. QUANDO ACABAR	MATERIAL CONSUMIDO	UNIDADES	REVESTIMENTO METROS	REVESTIMENTO DIAM.
COROA		79859	2960	GASOLINA lt			
COROA				ÓLEO DIESEL lt	2015	770	
BROCA				ÓLEO LUBRIF. lt			
SAPATA		138	770	ÓLEO HIDRÁULICO lt			
CALIB.		G 150	3060	BENTONITA SACO			
DESVIO DO FURO N.º				CIMENTO SACO			
PROFUND. M	DIREÇÃO °	INCLINAÇÃO °		QUIMICOS Kg			
		90°					
LEVANTAMENTO DO FURO N.º				PROFUNDIDADE			
OBS:—				SONDADOR JANUIR P. CARVALHO			

Source: SETA (1985). Drill bulletin showing advance and recovery, rig and bit type, date, hole set-up details.

Registers of coordinates (along with diameter and set-up details) have been found in the following reports retrieved from RTZ archives (pdf files: BRA30000124—086: BRA30000124–085). Maps showing spatial locations of drill holes are also available (BRA30000058—002, BRA30000124—091, BRA30000058—008, BRA30000124—025, BRA30000124—049).

A summary of principal drilling in historical campaigns in the Cabaçal Belt covering both the Cabaçal and Santa Helena deposits and regional exploration is shown in Table 6-1.

Table 6-1: Summary of Drilling, Trenching and Channel Sampling from Historical Campaigns

Campaign	Year	Hole Series	Type	# Holes	Meterage
Avanco	2015	AMCD	DD (surface)	11	2240.1
RTZ	1988	CAI	DD (underground)	86	2,976.29
BPM	1984- 1988	JUCHD	DD (surface)	113	12,541.76
BPM-RTZ	1983-1989	JUSPD	DD (surface)	610	65,846.14
RTZ	1987	CH	Channel (underground)	83	202.17
Prometálica (C2C)	2000	PM	DD (surface)	39	2,478.83
Prometálica (C2C)	2007-2008	FSS	DD (underground)	35	1,039.22
Prometálica (C2C)	2007-2008	FP	Grade Control (underground)	245	770.77
Prometálica (C2C)	2006-2007	CAN - M	Channel (underground)	89	126.9
Prometálica (C2C)	1989	C2C_TR	Trenching	14	707.66
TOTAL				**1,325**	**88,929.84**

For the BPM drilling, available records indicate that early holes included narrower diameter drilling (AQ: 3019m, BQ: 3,149 m) – predominantly in the 1983 – 1984 campaign, to the JUSPD055/JUCHD017, and sporadically thereafter. From 1985, holes were collared through the saprolite with HQ diameter core, with NQ core tails. Available records indicate 6,342 m of drilling in HQ diameter with the balance in NQ diameter.

Avanco undertook an 11-hole reconnaissance drilling program as part of its evaluation program in 2015. The drilling was completed by contractor Servdrill Perfuração e Sondagem, using HQ core through the saprolite-saprock zone, and NQ diameter drill core in fresh rock. At least 246 m was drilled as HQ.

6.3.2 Drill hole Collar Survey Control

Historically, BPM drill holes in the Cabaçal Mine were located with survey control. 7 km of base lines were established, these were along local grid sections 40S, 00N and 100N to 800N, in the NW extension area, and along sections 200N to 100S, in the SE extension area; The location of collar coordinates for all the drill holes was by the closed polygons method tied to a geodetic station (Figure 6-10, Figure 6-12). This was triangulated from a survey point established by the army in the area. The survey equipment used included: a Wild theodolite (model T-2), coupled to a Wild rangefinder (model DI -3), and a Wild level model N-2 (Mineração Santa Martha, 1997).

Comparison of collar coordinates listed on BPM and RTZ survey ledgers (e.g., Figure 6-10) with surveys of PML, Meridian, and independent contractors COGETOP and Geosan (using modern DGPS/Real Time Kinetic equipment) show that there is an offset between the actual and original tabulated positions. The reason for this offset is unknown, (Figure 6-12). Current database positions are based on either resurveyed values, or a correction factor where collars are not located based on the following affine transformation parameters:

- scale_in: 0.080704388
- scale_out: 12.48717
- X1: 0.063357646
- Xshift_in: -370031.926
- Xshift_out: 369907.6625
- Xx: 0.99188416
- Xy: -0.012681682
- Y1: 0.07918513
- Yshift_in: -8303426.263
- Yshift_out: 8303948.206
- Yx: 0.010519996
- Yy: 0.991326167

Figure 6-10: Example of Original Drill Collar Ledger from Archival Records

DRILLING DATA

HOLE JU-SP-D	GEOLOGICAL SECTION	DEPTH (m)	DIAMETER	DIRECTION DIP	COORDINATES NORTH (Y)	COORDINATES EAST (X)	COLLAR ELEVATION	DEPTH ZCL BASE	SAMPLES FROM/TO	No. OF SAMPLES	NOTES PLT	NOTES
001	395	153,05	AQ	N 60° E 60°	8303.423,371	370.466,455	257,951	92.50	JUR 5755 JUR 5937	183		
002	495	107,45	AQ	N 60° E 60°	8303.532,627	370.469,490	271,604	30.50	JUR 6310 JUR 6407	98		
003	590	101,37	AQ	N 60° E 60°	8303.541,385	370.297,239	279,185	66.70	JUR 6408 JUR 6552	145		
004	1305N	103,16	AQ	N 60° E 60°	8304.281,007	370.236,550	291,558	não tem ZCL	JUR 6663 JUR 6764	102		
005	1345N	61,70	AQ	N 60° E 60°	8303.997,817	369.637,099	355,586	26.70	JUR 6765 JUR 6802	38		
007	395	140,48	AQ	N 60° E 60°	8303.394,573	370.417,600	250,767	99.00	JUR 6851 JUR 7005	155		
008	1090N	159,35	AQ	N 45° E 60°	8303.762,975	369.907,256	319,421	54.50	JUR 6803 JUR 6850	48		
009	1385N	157,54	AQ	N 45° E 60°	8304.014,338	370.051,280	333,916	72.90	JUR 7208 JUR 7393	186		
010	800	155,59	AQ	N 45° E 60°	8303.633,553	370.071.040	298,781	93.00	JUR 7395 JUR 7542	148		
011	395	320,78	NX 15,20 BXL320,78	N 60° E 60°	8303.361,541	370.354,295	251,898	107.20	JUR 7543 JUR 7845	303		
014	590	300,00	NX 18,15 BXL300,00	N 60° E 60°	8303.504,032	370.232,797	273,453	85.00	JUR 7846/7966 JUR 8373/8560	309		
015	200	113,35	NQ 73,75 BQ 113,35	N 43°30E 60°	8303.290,940	370.559,859	239,780	99.30	JUR 13.492 JUR 13.561	70		
026	200	247,75	NQ 61,46 BQ 247,75	N 43°30E 60°	8303.038,185	370.317,753	247,556	162,55	JUR 13.793 JUR 13.867	75		
027	00	220,00	NQ 61,00 BQ 220,00	N 43°30E 60°	8303.100,620	370.654,494	238,644	122.10	JUR 13.868 JUR 14.031	164		
028	00	239,35	NQ 113,80 BQ 239,35	N 43°30E 60°	8302.920,081	370.481,561	254,577	212.30	JUR 14.032 JUR 14.161	130		
029	200	126,55	NQ 82,20 BQ 126,55	N 43°30E 60°	8303.211,934	370.483,991	235,352	119.05	JUR13595/13665 JUR13456/13491	105		
030	00	242,60	NQ 28,65 BQ 242,60	N 43°30E 60°	8302.847,865	370.412,388	246,753	219.05	JUR 13.666 JUR 13.792	127		

Source: Geoplex Mineração Ltda (1985). BRA30000124–086 [Internal document supplied by RTZ for Meridian].

Figure 6-11: Original Survey Marker for The Cabaçal Project



Source: Meridian Staff Photo

More recently, PML established a geodetic base station named M1, MC-POSTE, PO-Britador, PM-1001 and PM-1002, with an additional two stations, at Fazenda Santa Helena (PM-1003) and another at Fazenda Alamo (PM-1004).

Table 6-2: Prometálica Mineração Ltda Geodetic Base Stations in UTM SAD69

Point	X	Y	Z	OBS
M1	376857.160	8297134.851	234.112	PM, tailings dam
MC-POSTE PO- BRITADOR	377148.930 377219.427	8297558.134 8297639.393	238.763 248.022	PML PML
PM-1001	377277.564	8297051.620	255.809	PML, guardhouse
PM-1002 PM-1003	377830.076 373602.235	8298016.556 8298080.091	355.096 242.109	PML, Mine Santa Helena Farm
PM-1004	378569.017	8297756.143	395.540	Alamo Farm

Collar locations at Cabaçal were revised by PML by means of georeferenced maps of collar positions, which appear in the various reports. Some field checks were subsequently done by PML on hole locations by handheld GPS (63 holes), geodetic GPS (32 holes), and total station surveys (5 holes). The geodetic GPS surveys were conducted by independent surveyors, COGETOP – Engineering Service (Mirassol D'Oeste – Consultoria Geodésica Topográfica). Checks by Total Station on the following holes were undertaken by PML surveyors. The positions of remaining holes were calculated from georeferencing work undertaken by PML using historical plans, which illustrated the collar layout.

Holes drilled by Avanco were laid out using handheld GPS, and those in the near-mine areas have since been located and formally surveyed, correcting minor offsets associated with handheld GPS accuracy.

6.3.3 Drill Hole Downhole Survey Control

Downhole surveys for the historical drillholes were made with a Sperry-Sun single-shot drillhole path-deviation instrument at 30 m intervals. The XYZ coordinates along the path of the drillhole were calculated utilizing an HP-97 calculator (BRA30000124–086.pdf). The vendors provided spreadsheets with 849 downhole surveys for 325 holes (BD Survey Recuperados_Ago2020.xls). Of these, 273 holes drilled from a vertical set-up. The original downhole survey files of the Sperry-Sun surveys are yet to be located. Tabulated registers from historical RTZ archives list set-up coordinates, dip and UTM azimuth for surface and underground holes (pdf files: BRA30000124—086, BRA30000124–085). The SETA daily drill bulletins likewise record the dip and azimuth of collars at set-up. Historical plans and sections indicate that deviation for angled holes was not substantial, thus given the relatively shallow depths drilled, and with most holes being vertical, location errors of drill intercepts are likely to be quite small.

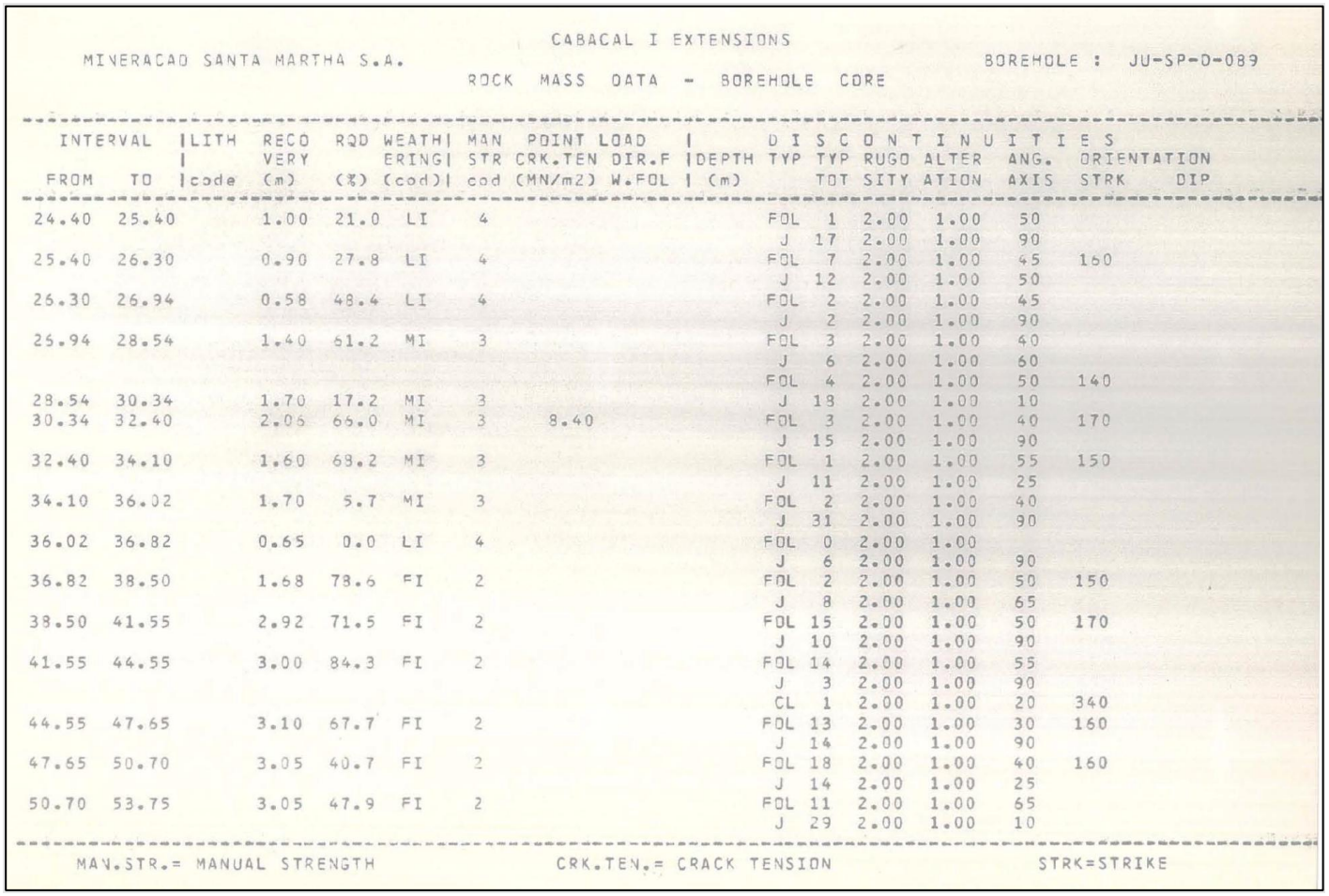
Downhole surveys on Avanco holes were made by way of a REFLEX EZ-TRAC™ tool with dip and azimuth readings in 3 m increments.

Meridian has subsequently conducted down-hole survey on located JUSP series holes when found to be open in whole or part and added 435 survey records with a Reflex SPRINT-IQ gyroscopic survey tool, which have been given priority in the database. Vertical holes drift naturally slightly to the northeast with depth, and a best-fit deviation dog-leg rate was calculated and applied to the projection of historical holes where blocked.

6.3.4 Rock Mass Data

After the start of the infill drilling program on Cabaçal by BPM, rock mass data was collected, comprising core recovery, rock quality designation (RQD), weathering, and discontinuities (BRA30000124—083.pdf; Figure 6-12).

Figure 6-12: Example of Rock Mass Ledger from Archival Records



CABACAL I EXTENSIONS

MINERACAO SANTA MARTHA S.A. BOREHOLE : JU-SP-D-089

ROCK MASS DATA - BOREHOLE CORE

INTERVAL FROM	TO	LITH code	RECOVERY (m)	RQD (%)	WEATHERING (cod)	MAN STR cod	POINT LOAD CRK.TEN (MN/m2)	DIR.F W.FOL	DEPTH (m)	DISCONTINUITIES TYP	TYP TOT	RUGOSITY	ALTERATION	ANG. AXIS	ORIENTATION STRK	DIP
24.40	25.40		1.00	21.0	LI	4				FOL	1	2.00	1.00	50		
										J	17	2.00	1.00	90		
25.40	26.30		0.90	27.8	LI	4				FOL	7	2.00	1.00	45	160	
										J	12	2.00	1.00	50		
26.30	26.94		0.58	48.4	LI	4				FOL	2	2.00	1.00	45		
										J	2	2.00	1.00	90		
25.94	28.54		1.40	61.2	MI	3				FOL	3	2.00	1.00	40		
										J	6	2.00	1.00	60		
										FOL	4	2.00	1.00	50	140	
28.54	30.34		1.70	17.2	MI	3				J	18	2.00	1.00	10		
30.34	32.40		2.06	66.0	MI	3	8.40			FOL	3	2.00	1.00	40	170	
										J	15	2.00	1.00	90		
32.40	34.10		1.60	68.2	MI	3				FOL	1	2.00	1.00	55	150	
										J	11	2.00	1.00	25		
34.10	36.02		1.70	5.7	MI	3				FOL	2	2.00	1.00	40		
										J	31	2.00	1.00	90		
36.02	36.82		0.65	0.0	LI	4				FOL	0	2.00	1.00			
										J	6	2.00	1.00	90		
36.82	38.50		1.68	78.6	FI	2				FOL	2	2.00	1.00	50	150	
										J	8	2.00	1.00	65		
38.50	41.55		2.92	71.5	FI	2				FOL	15	2.00	1.00	50	170	
										J	10	2.00	1.00	90		
41.55	44.55		3.00	84.3	FI	2				FOL	14	2.00	1.00	55		
										J	3	2.00	1.00	90		
										CL	1	2.00	1.00	20	340	
44.55	47.65		3.10	67.7	FI	2				FOL	13	2.00	1.00	30	160	
										J	14	2.00	1.00	90		
47.65	50.70		3.05	40.7	FI	2				FOL	18	2.00	1.00	40	160	
										J	14	2.00	1.00	25		
50.70	53.75		3.05	47.9	FI	2				FOL	11	2.00	1.00	65		
										J	29	2.00	1.00	10		

MAN.STR.= MANUAL STRENGTH CRK.TEN.= CRACK TENSION STRK=STRIKE

Source: Mineração Santa Martha S.A. (1988) BRA30000124-083 [Internal document supplied by RTZ for Meridian].

The core recovery was measured for each drill run, by fitting the fragments together and measuring the length apparently represented. Recovery was also recorded against drilling advance in the daily drill bulletins of SETA.

RQD was calculated based on the total cumulative length of pieces of core greater than 100mm in length, for each run, expressed as a percentage.

Weathering was recorded according to a simple coding system for each core run:

1. Completely fresh rock;
2. Slightly weathered rock, with discolouration only, with some minerals partially altered to clay;
3. Moderately weathered rock, highly discoloured, fabric becoming obscure, much clay alteration; and

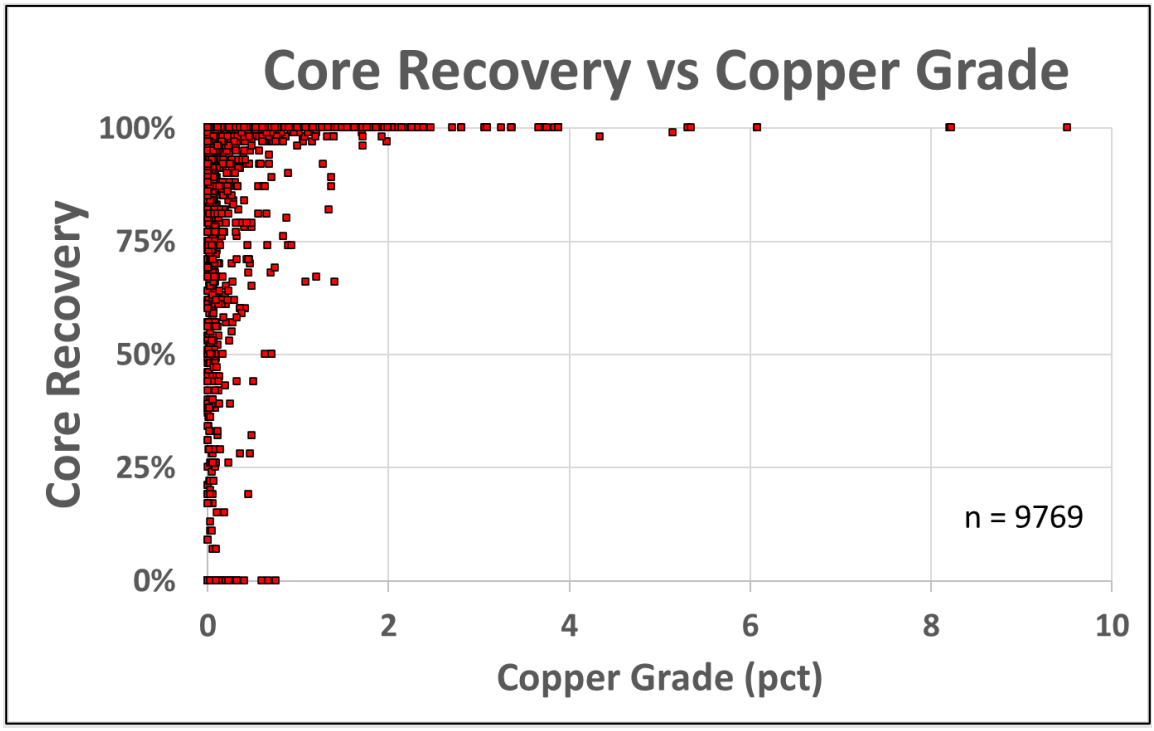
4. Completely weathered rock, with discolouration and decomposition of many minerals, and the original fabric obscured.

Discontinuities were measured for the following structural features: Joints (J), Foliation (Fol), Cleavage (Cl), Veins (V), Fault (F). Where relevant, roughness was also recorded.

Point load tests were carried out on 120 mm long samples selected from unbroken core from hanging wall, footwall and the mineralized material zone in each selected drillhole. The samples were shipped to the Ouro Preto School of Mines where the point load tests were carried out. After October 1985, the point load tests were carried out at Araputanga. A 1 to 5 scale of strength was estimated with one representing the softest and weakest rocks, and five representing the strongest rocks.

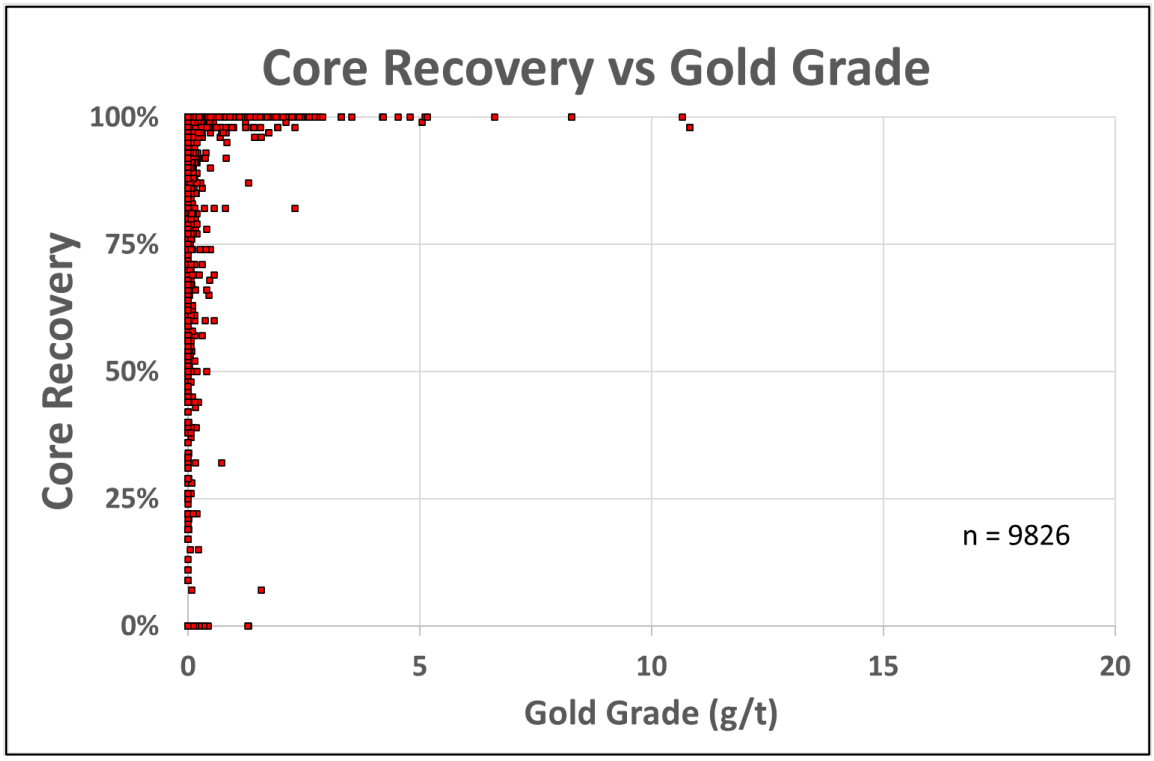
Core recovery data indicated by the rock mass tables and corroborated by the SETA daily drill bulletins, indicated good recovery. Charts of copper and gold grades against recovery indicate no bias or relationship between metal grade and recovery (Figure 6-13, Figure 6-16). Average recovery for the Cabaçal drilling is based on the rock mass table and is recorded as 96.2%.

Figure 6-13: Core Recovery vs Copper Grade For JUSPD-Series Cabaçal Samples



Source: BRA30000124—083 and RTZ assay ledgers.

Figure 6-14: Core Recovery vs Gold Grade for JUSPD-Series Cabaçal Samples



Source: BRA30000124—083 and RTZ assay ledgers.

Recoveries were logged in eight of the Avanco holes for 1,652.1 m, mostly in fresh, where the average recovery was 98.9%.

6.3.5 Density

Density readings were collected as part of the Rock Mass characterization procedure. Samples were determined in parallel with the point load tests by personnel at the School of Mines, and subsequently by BPM staff at Araputanga. Readings were based on the immersion in water method (weight in air/weight in water).

Data has been retrieved from readings that were compiled from BPM ledgers, which include individual interval readings in archival ledgers (BRA30000124—082.pdf), and data calculated against composites in intersections selected for reserve definition (BRA30000124—025.pdf). Data shows in general an increase in specific gravity with increasing copper grade (Figure 6-15).

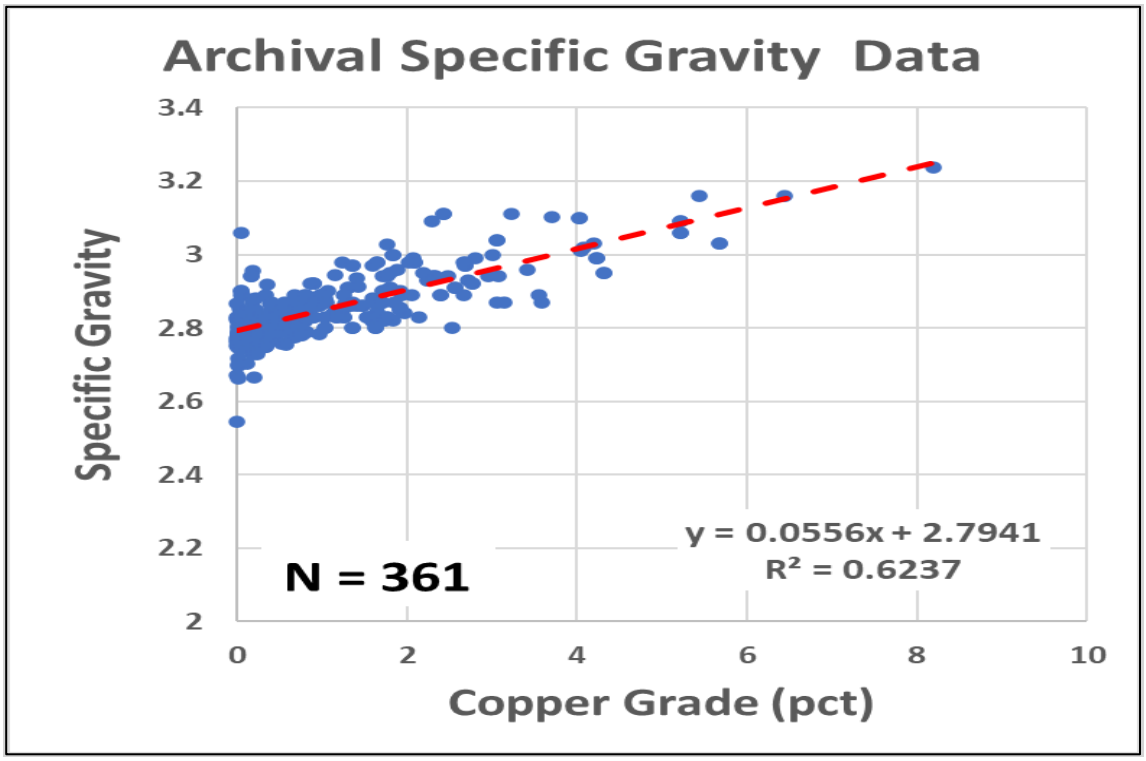
Reserve calculations completed by BPM as five mineralization domains referred to as A-E (BRA30000124—022.pdfd) assigned the following densities, with average default values of:

- Zone A: 2.83 t/m^3

- Zone B: 2.83 t/m^3
- Zone C: 2.92 t/m^3
- Zone D: 2.95 t/m^3
- Zone E: 2.96 t/m^3.

A total of 361 specific gravity assay readings have been compiled from historical records, but the total number of records on which these averages are based on is unknown.

Figure 6-15: BP Minerals Density Plot Against Copper Grade



Source: Meridian, 2021.

6.3.6 Core Logging

Original core logging procedures are summarized in the 1985 BPM exploration report (BRA30000124—086.pdf: Geoplex Mineração: Exploration Report -Volume I -The Cabaçal Project). Historical core logging was undertaken following mark-up by technicians (Figure 6-16). Core photography was carried out and samples were marked out with intervals ranging from 0.2 to 1.5m, depending on the degree of mineralization and lithological variation. Sawn half-core was sampled, and the remainder stored in core sheds.

Not all original logs have survived (examples exist in RTZ archival file BRA30000124—137.pdf), but data has been compiled from a variety of sources:

- File BRA30000124—083.pdf: tabulated lithology codes, geotechnical/structural logging
- File BRA30000124–078.pdf: Description of Borehole Core – Lithology
- File BRA30000058–006.pdf: Secoes Transversais — ST-590 e ST-295 — Cabaçal I
- File BRA30000124–050.pdf: Secoes Transversais e Mapa de Contorno de Base Reservas
- File BRA30000124--024.pdf: Definition of mineralized Zones and Potential for New mineral Reserves
- Files BRA30000058–018 to 024.pdf: Monthly Project reports.

BPM logging was based on a series of qualitative codes for lithology, alteration, ore minerals, and oxidation written on hardcopy logs and sections. This data has been transferred to digital files by Meridian and stored as an Access database. Avanco and PML logging had been captured digitally in a series of MS Excel spreadsheets and has similarly been integrated into the Access database.

Figure 6-16: Example of Original Log and Sampling Sheet, JUSPD071

CABAÇAL I — DESCRIPTION OF CORE SAMPLES

D.D.H. : JU - SP - D - 71. SHEET 05 OF 06

SAMPLE No.	INTERVAL (m) FROM	TO	INT. (m)	LITHOLOGY AND MINERALIZATION	ORE TYPE	ASSAY RESULTS Au (g/t	Cu (%)	Ag (g/t)	Mo (ppm)	Bi (ppm)	d (g/cm³)
JUF. 19.237	106,00	107,00		Bi - Se. cl - Qz sch. + CaFn.							
238		108,08		Bi - Se. cl - Qz sch. + CaFn, py + cp (20-30%)	Di						
239		109,17		Bi - Se. cl - Qz sch. + CaFn, py + cp (Tr.)	"						
19.240		109,42		cl - Qz sch. + Qz Vu, py + cp (Tr.)	Di - Bn						
241		110,54		cl - Qz sch. , py + cp (Tr.)	Di						
242		111,38		" , " (")	"						
243		112,13		cl - Qz sch. + Qz Vu + CaFn, py + cp (50-70%)	Di - Vu - Bn.						
244		113,00		cl - Qz sch.							
245		114,00		cl - Qz sch. , py + cp (Tr.)	Di						
246		114,88		" , " (")	"						
247		115,00		cl - Qz sch.							
248		115,81		cl - Qz sch. + Qz Vu, py + cp (0,5-1%)	Di - Vu - Bn.						
249		116,64		cl - Qz sch. , py + cp (Tr.)	Di						
19.250		117,57		cl - Qz sch. + Qz Vu, py + cp (30-50%)	Di - Vu - Bn.						
251		118,26		cl - Qz sch.							
252		119,13		cl - Qz sch. + Qz Vu, py + cp (Tr.)	Di - Bn.						
253		119,80		cl - Qz sch. + Qz Vu, py + cp (20-40%)	" "						
254		120,56		cl - Qz sch. + Qz Vu, py + cp (10%)	Di - Vu - Bn.						
255		122,00		cl - Qz sch. , py + cp (Tr.)	Di						
256		123,00		" , " (")	"						
257		123,18		"							
258		124,00		" , py + cp (Tr.)	Di						
259		125,00		" , " (")	"						
19.260		126,00		cl - Qz sch. + Qz Vu, py + cp (Tr.)	Di - Bn						
261		127,00		cl - Qz sch. , py + cp (Tr.)	Di						
262		128,00		" , " (")	"						

Source: Source: RTZ (2021) Core sampling and lithology registers (**Amostragem_Cabaçal_01**). [Internal document].

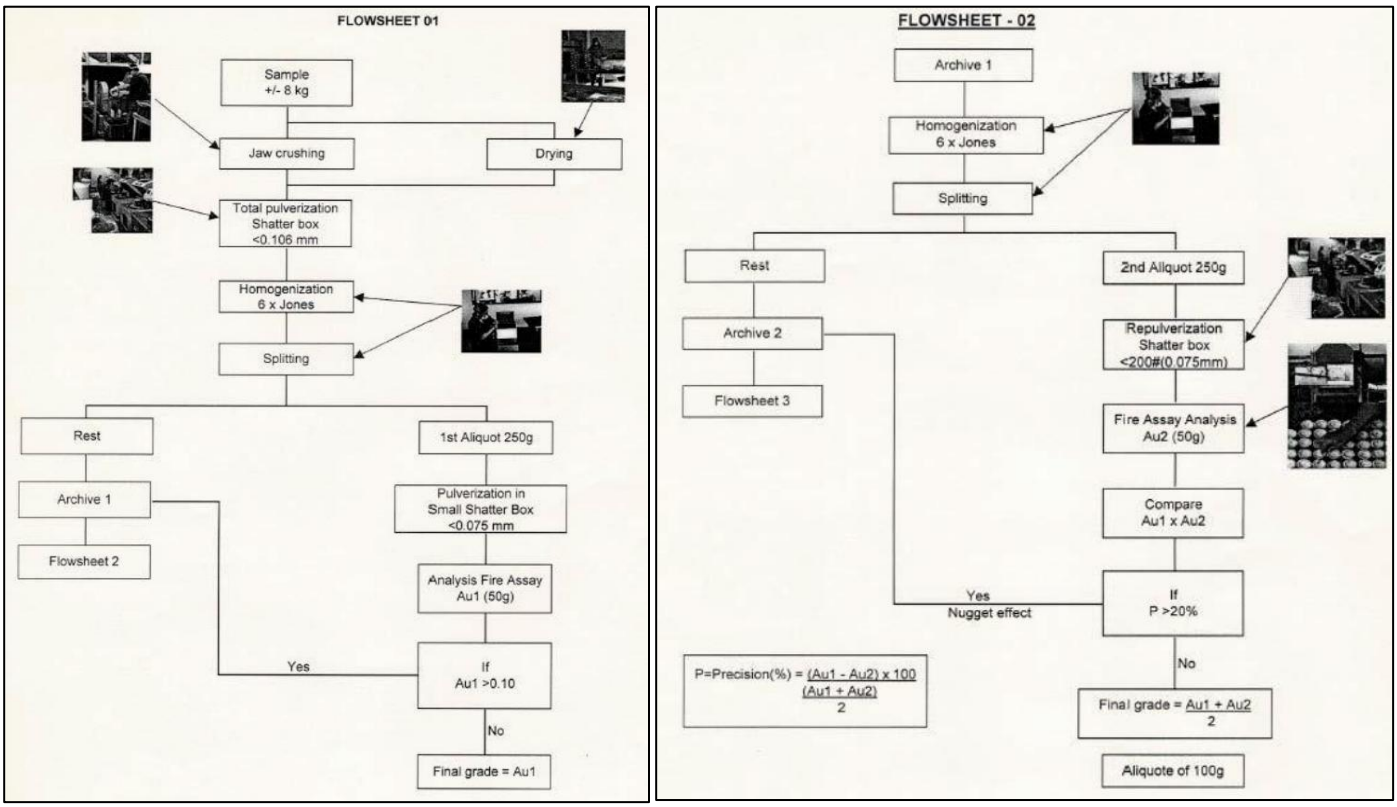
6.3.7 Sample Preparation and Analysis

Documentation from the Mineração Santa Martha S.A. report dated June 1987 provides information on the sample preparation technique.

Based on a study of the Cabaçal microscopy and using Gy's sampling formula, the milling and pulverizing of entire core intervals to a nominal -200 mesh and analysing of 50g fire assay charges were established as standard procedures for the Cabaçal deposit drill core. In the early drilling (about 10% of the completed holes) AQ and BQ diameter cores were obtained, whereas HQ and NQ diameter core sizes were used during the evaluation drilling. Early tests of the milling and pulverizing equipment with Cabaçal core established the milling times necessary to achieve nominal -200 mesh granulometry for this material.

BPM had its own laboratory in the Cabaçal mine for sample preparation and production sample analysis. Exploration sampling preparation and analysis was initially conducted by BPM through LABPM Laboratory (sample preparation at corner of Rua Pereira Passos and Avenida Kennedy, Caxias, Rio de Janeiro – RJ, Brazil; analysis at Rua Caetés, n49, Bonsucesso, Rio de Janeiro -RG, Brazil). This was an in-house laboratory established under the supervision of Dr William McMannus (Laboratory Director, chemical engineer), Dr Paul Taufen (BPM Chief Geochemist), Mr Mauro Yamamoto (Laboratory General Manager, chemical engineer), Mr João Vilar da Silva (LABPM Coordinator, Chemist). With the 1989 RTZ acquisition of BPM, this became a commercial laboratory – Nomos – at the same addresses. The accreditation status of the laboratory is not recorded. Original laboratory managers have provided a report summarizing laboratory procedures, flowsheets, and quality control protocols (Vilar da Silva, 2021; Figure 6-17).

Figure 6-17: Nomos Laboratory Flowsheet



Source: Vilar da Silva, 2021.

Initially, the gold analysis was by atomic absorption, with an aqua regia digest, and in the extraction an organic solvent MIBK was used, for aliquots of 50 grams. Subsequently, fire assay analyses were adopted; after tests showed, that this method was more efficient, with better reproducibility of the assay result for gold. In addition, the sample prep adopted the procedure of crushing the entire sample entirely at -200 mesh, and later quartering to obtain a 50-gram aliquot.

Copper and silver were analysed by atomic absorption, using a three-acid digest for copper and aqua regia digest for silver. Selected core samples were also analysed for Pb, Zn, Bi, Mo and As. Pb and Bi were obtained by aqua regia digest with an atomic absorption finish.

Multielement analyses were carried out on 39 drill core samples for Cabaçal to better understand the character of the hydrothermally altered and metamorphosed rocks (Au, Cu, Ag, Bi, Mo, Pb, Ca, Mg, Ti, Mn, Ba, Co, Cr, Ga, Ni, Sc, Sr, Y, Yb and Zn). A range of analytical techniques, appropriate to the times, was completed (e.g., Fire Assay, Aqua regia/AA and XRF). Using correlation coefficients, they estimated that 37 of the 39 samples could be classified as being originally andesites, and two as dacites.

Original laboratory reports are not available for the Cabaçal samples, and data has been compiled from available drill hole data registers and sections. Assay data for 279 surface holes is missing either in part or in full. For these holes, semi-quantitative values based on numbers depicted on graphic cross-sections have been inserted into the digital database to guide geological interpretation.

Samples from Avanco's drilling were analysed at SGS Geosol – Laboratórios Ltda, - Vespasiano – MG Brazil, for Ag, Cu, Pb, Zn, by method AAS41B (4-acid digest with atomic absorption finish, and gold by method FAA505 – fire assay of a 50 g charge with atomic absorption finish).

6.3.8 Quality Assurance/Quality Control Procedures

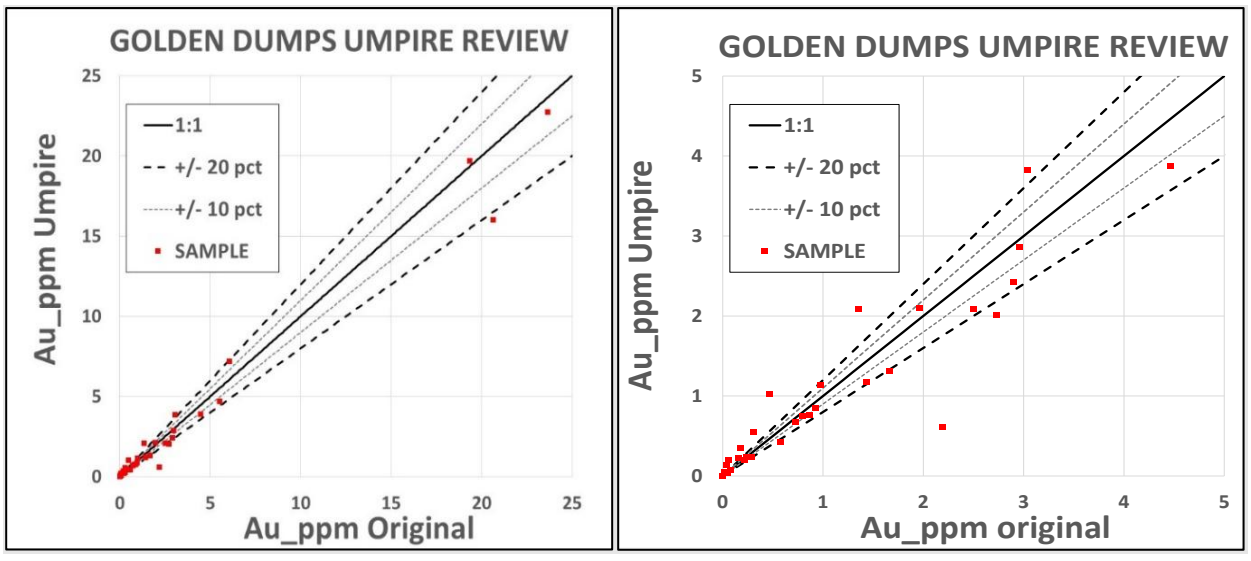
Documentation from the 1987 Mineração Santa Martha S.A. report dated June 1987 indicates that a duplicate analysis program was applied as part of a close quality control program for gold analysis:

Duplicates for 20% of all Cabaçal deposit cores were analysed to maintain close control over variability associated with preparation and analysis.

At an early stage of the infill drilling program in May 1985, a series of check analyses on 42 pulps from holes JUSPD052, 58, 62 and 63 from the Cabaçal deposit were carried out at "Golden Dumps Research Laboratory," South Africa (Figure 6-18). The umpire samples included pulp blanks and standards, which returned acceptable results. No systematic bias was identified from these checks.

BPM's selection of the Golden Dumps laboratory was based on its reputation as one of the best facilities of the era for fire assay gold analysis. BPM concluded, based on blank analysis, standard analysis and laboratory precision, that its own fire assay laboratory performed in a competent and consistent manner in analysis of the Cabaçal deposit drill core.

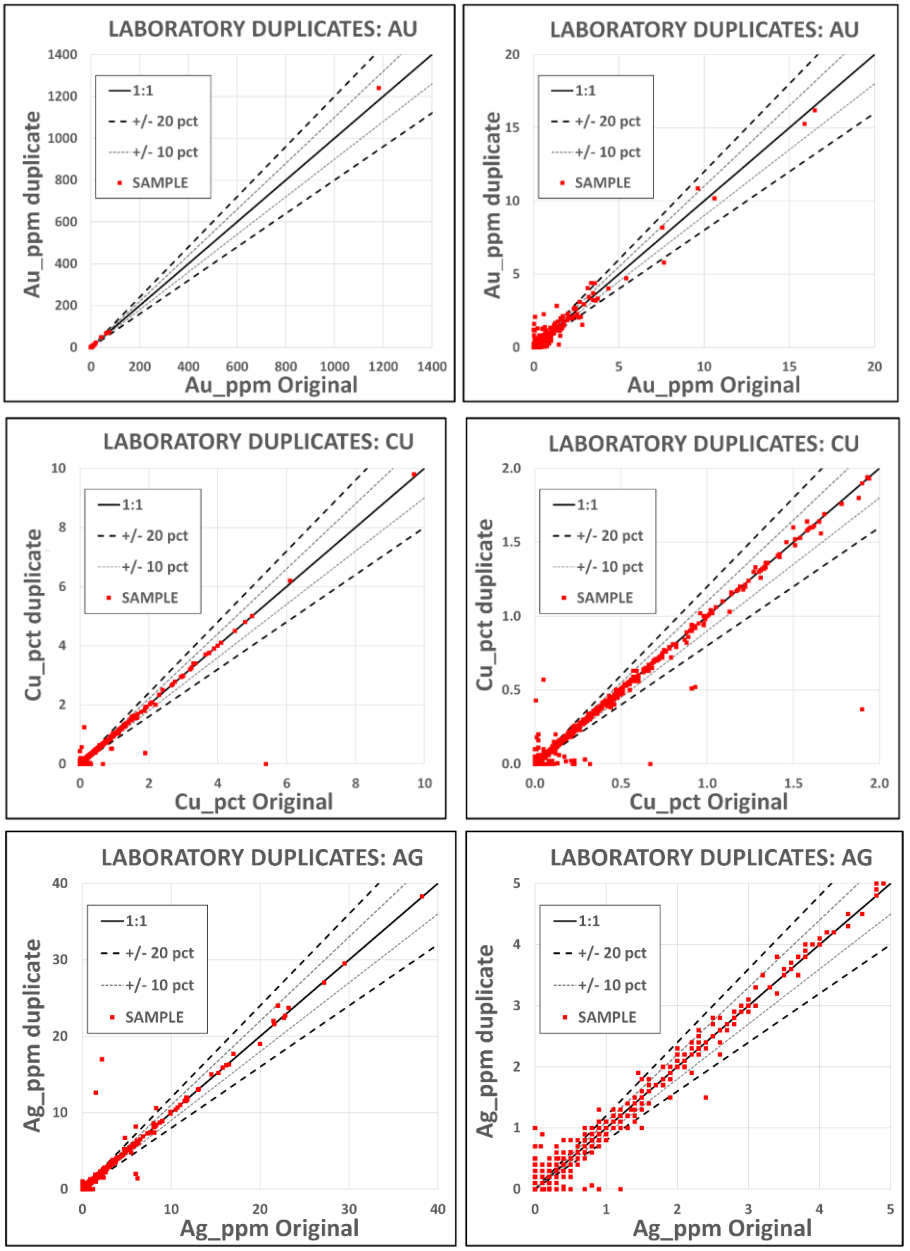
Figure 6-18: Umpire Analysis BP Minerals Laboratory and Golden Dumps Research Laboratory



Source: Meridian, based on BPM data in BRA30000124–088. Charts to the right are an expanded view of the lower grades.

Data from the BPM Cabaçal drilling is available for 1,788 laboratory pulp duplicates for gold analysis (grade range: below detection to 1,240 g/t Au), 1,697 laboratory pulp for copper analysis (grade range: below detection to 9.8% Cu) and 1,730 laboratory pulp duplicates for silver analysis (grade range: below detection to 38.3 g/t Ag). Results show no evidence of any systemic bias (Figure 6-19). No specific analytical records of blank analysis or Certified Reference Materials have yet been located, other than that associated with the Golden Dumps umpire analyses.

Figure 6-19: Compiled BP Minerals Duplicate Analyses



Source: Meridian, based on data in BRA30000124-076, 124-077, 124-079. Charts to the right are an expanded view of lower grades.

Avanco's drilling was accompanied by a quality control program, involving submission of quarter-core field duplicates (one in 40 samples), pulp blanks (one in 40 samples), Certified Reference Materials manufactured by Geostats (GBM998-4, GBM399-6; one in forty samples).

6.3.9 Significant Results and Interpretation

The first diamond drilling campaign was carried out between July and December 1983 in the C-4A grid (14 holes and 1,760 m – JUSP001 to JUSP014), which proved the presence of copper, lead and zinc sulphide mineralization at Cabaçal and anomalous values for gold (JUSPD007 – had the first visible gold reported). In the C-4B grid, Cu, Pb and Zn sulphides were also identified, along with anomalous assays for Au and Ag.

A second diamond drilling campaign on the C-4A grid, executed in the second half of 1984, confirmed the lateral continuity and down-plunge of the mineralized intervals intercepted during the first drilling campaign, when 33 holes (6,309 m) were drilled – JUSPD025 to JUSPD057). In this campaign, Cu, Pb, Zn and Ag mineralization (with traces of gold) were also identified in the C-2C and C-2B grids.

The next program to evaluate the Cabaçal deposit was carried out between March and September 1985 (coinciding with the former C-4A target). This program identified five overlapping mineralized zones and the stratabound characteristics of the deposit.

A further program to assess the potential of the northwest and southeast extensions of the Cabaçal deposit, carried out between July 1986 and February 1987, 71 holes (total of 7,517 m). These were drilled in a 100 m x 50 m grid in the northwest extension and 50 m x 25 m in the southeast extension. This mineralization envelope was extended and considered open along northwest, southeast and southwest extensions (Mineração Santa Martha, 1987).

As a result of the work developed by Mineração Santa Martha (Grupo BPM) and Mineração Manati Ltda (Grupo RTZ), the Cabaçal mine initiated operations in March 1987 following approximately 60,000 m of diamond drilling.

Many of the geochemical and geophysical targets defined by BPM did not progress to systematic drill testing, due to the focus on resource definition drilling at Cabaçal (C4 target) and Santa Helena (C2C target). Intersections of interest outside of the Cabaçal and Santa Helena mine environments include:

- C-2B: A target located 1.5 km northwest along strike from the Santa Helena mine, along the same trend (overlapping with the "Sucuri" VTEM target). Initially defined by significant gold counts in soils and a chargeability anomaly, Holes JUCHD 9, 11, 77, 78 and 79 intercepted gold mineralization associated with conductive sulphide (pyrite + pyrrhotite). Ledgers retrieved from the RTZ archives show a peak grade of 1 m at 140 g/t Au from 53 m in JUCHD11. Hole JUCHD9 contained a polymetallic anomaly in the upper section of the hole, with a peak grade of 1 m at 94 g/t Ag, 0.45 g/t Au, 0.78% Zn, 0.14% Pb & 0.01% Cu from 12.72 m (BRA30000124-080.pdf).
- C-4B: This target is located approximately3 km along strike from Cabaçal to the northwest and was initially defined as a stream and soil geochemical anomaly with an associated historical chargeability anomaly. Historical reports indicated that 12 holes were drilled (JUSPD006, 12-13, 15-19, 21-24), with a peak grade of 0.7 m at 5.2 g/t Au from 46.0 m in JUSPD017, and 0.96 m at 0.91% Cu, 3.0 g/t Ag from 79.2 m in JUSPD021 (BRA30000058–001.pdf). Geochemical anomalies are related to at least two horizons consisting of chlorite, garnet, grunerite, stilpnomelane,

magnetite and quartz, with bands of sulphide (pyrite, pyrrhotite, chalcopyrite, galena, and sphalerite). These horizons occur interspersed with acidic metavolcanic and pelitic metasediments (tuffs of dacitic-rhyolitic composition) with subordinate intermediate to basic volcanics and volcaniclastics. Collar locations for these holes are yet to be confirmed in the field.

In December 2002, Prometálica Mineração Ltda conducted drilling around the Santa Helena (C2-C) deposit, completing 39 vertical holes (2,078 m) in order to complete a prefeasibility study and metallurgical tests.

The drilling methods, logging procedures, sampling methods, sample preparation and analysis and recoveries are considered best practices for the time, conducted by experienced professionals under supervision of senior management of BP Minerals and later Rio Tinto. Analytical precision of commercial laboratories has improved since the 1980's and 1990's, but the data is considered reasonably accurate with no evidence of bias. Modern downhole survey methods have also improved since the era of the original programs, but given the short lengths of the holes, and the predominance of vertical drilling, there is not considered to be any material drift in the holes.

6.3.10 Validation Drilling

In 2015, Avanco drilled hole AMCD-15-005, testing near to historical drill hole JUSPD-031, approximately 18 m away. In the opinion of the QP 18 m is considered, too big a distance for a twin hole but the position, pattern and general tenor of the copper and gold mineralization reasonably matches the original results, providing some confidence that historical records are robust.

AMCD-15-005 returned:

- Upper Zone: 31 m at 0.33% Cu, 0.03 g/t Au from 99.0 m
- Lower Zone: 45.0 m at 0.73% Cu, 0.34 g/t Au from 149 m

This compares to JUSPD031, which intersected:

- Upper Zone: 24.0 m at 0.23% Cu, 0.06 g/t Au from 97.0m
- Lower Zone: 47.29 m at 0.71% Cu, 0.97 g/t Au from 142.55 m

6.4 Historical Resource Estimates

Historical estimates have been made for the Cabaçal Cu-Au-Ag Deposit by the Vendors, and by Falcon Metais Ltda in June 2009 (Table 6-4). Meridian has not treated these estimates as current Mineral Resources for purposes of National Instrument 43-101.

The historical estimates were generated via an inverse distance squared method on composite data from 301 diamond drill holes. A uniform density of 2.7 t/m^3 was applied for tonnage estimation, using 3D solids modelled from 54 sections. A 0.20% Cu Equivalent % cut-off grade was applied (CuEq % = Cu % + (0.51 * ppm Au); the metallurgical recoveries totalled 85% Cu, 65% Au; and prices totalled USD845/oz Au, and USD4 000/t Cu). No qualified person has done sufficient work to classify the historical estimate as current mineral resources or mineral reserves. Meridian is not treating the historical estimate as current mineral resources or mineral reserves.

On August 21, 2022, Mineral Resource estimates were generated by Simon Tear (PGEO), of H&S Consultants Pty Ltd, (H&SC) based in Brisbane, Qld, Australia. The MRE was based on 848 historic and recent diamond core holes with logged geology and assays, totalling 87,268 m. For grade interpolation, the complete drill hole dataset was composited to 1 m intervals for gold, copper, and silver and subsequently modelled. The unconstrained 1 m compositing produced a total of 40,467 composites. Grade interpolation used the Multiple Indicator Kriging (MIK) technique for gold with the E-Type estimate (utilising an average panel grade for gold) used for reporting the Mineral Resources. Block size was 10 m (X) by 10 m (Y) by 5 m (Z) with a selective mining unit (SMU) of 5 m by 5m by 2.5 m with no sub-blocking. Ordinary Kriging (OK) was used for the grade interpolation of the copper and silver composite values. The MRE generated Indicated Resources of 52.9 Mt at 0.64 g/t Au, 0.32% Cu, 1.4 g/t Ag and Inferred resources of 10.3 Mt at 0.68 g/t Au, 0.24% Cu, 1.1 g/t Ag. The historical H&SC resource estimate has been superseded by the Mineral Resource Estimate in Section 14 of this report. A qualified person has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves; and the issuer is not treating the historical estimate as current mineral resources.

SRK was previously commissioned by the Vendors to undertake a resource study on the Monte Cristo (Santa Helena) Zn Deposit in 2007. This estimate was last updated in a report dated May 30, 2007 (Michael et al, 2007; Table 6-3). The estimation procedure consisted of using three iterations of the inverse distance squared method on composited drillhole data using progressively longer search ranges. A Zinc Equivalent (%) calculation was applied for reporting the estimates using the formula: ZnEq % = Zn% + (2.14 * Cu%) + (0.39 * ppm Au) + (0.007* ppm Ag). The metallurgical Recoveries were 89% Zn, 89% Cu, 65% Au, 61% Ag. Metal prices were set at USD570/oz Au, USD11/oz Ag, USD3.36/lb Cu, and 1.57/lb Zn). The Mineral Resource was reported in accordance with NI-43-101 rules but has not been updated to account for final mining depletion. A qualified person has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves; and the issuer is not treating the historical estimate as current mineral resources.

Table 6-3 Historical Santa Helena 2007 Estimates

Classification	Tonnes	ZnEq (%)	Zn (%)	Cu (%)	Au (g/t)	Ag (g/t)
Measured In-situ	595,000	9.03	5.84	1.17	1.23	40.43
Indicated	488,000	10.30	6.47	1.44	1.37	43.30
Stockpile (Measured)	37,000	13.60	8.39	2.08	1.23	39.52
Total M&I	1,120,000	9.73	6.20	1.32	1.29	41.65
Inferred	37,000	9.28	5.81	1.29	1.28	4.94

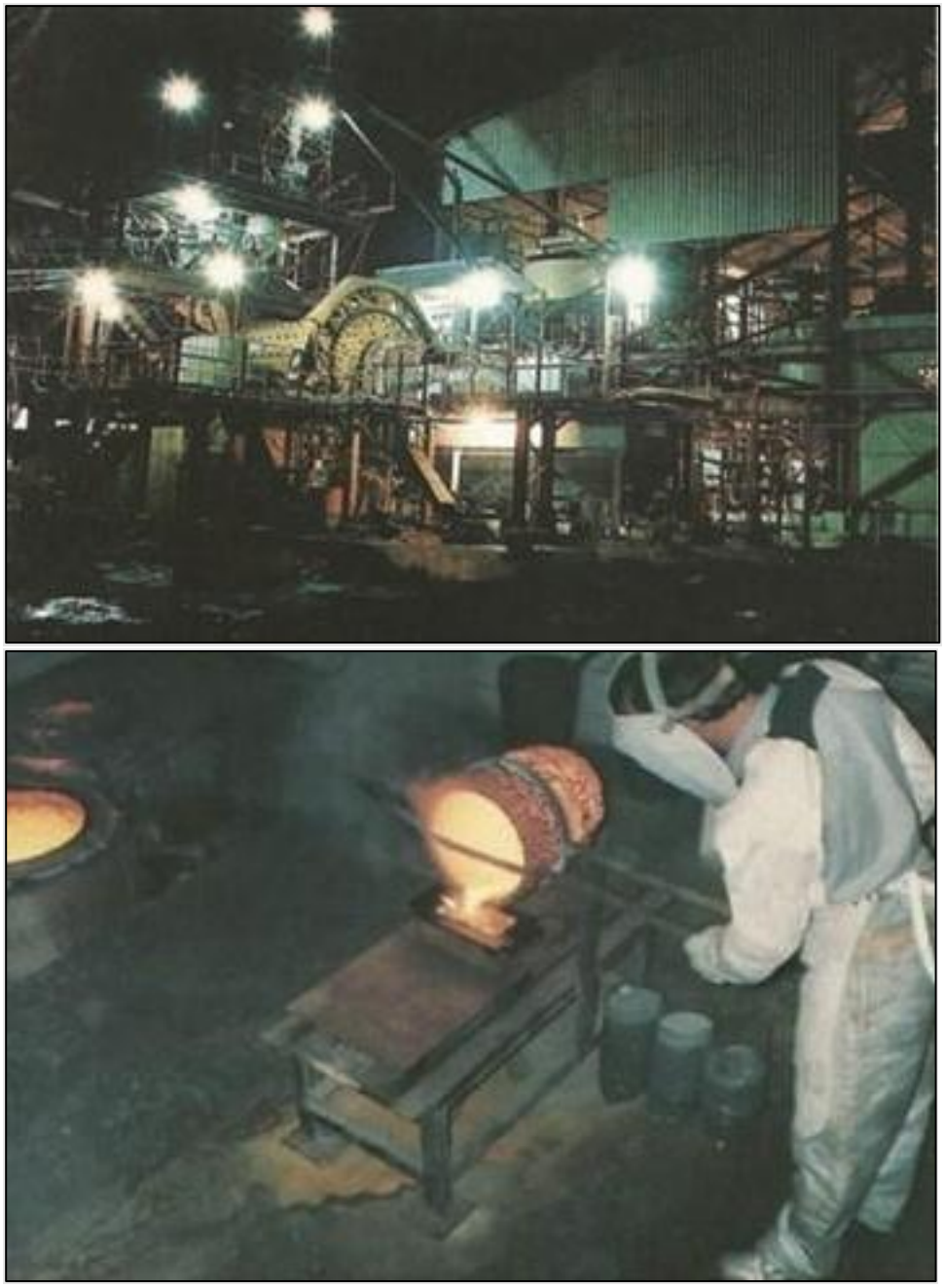
6.5 Production

The Cabaçal Mine opened in 1987 and processed 973,031 t at 4.91 g/t Au, 0.80% Cu. Underground mining was selective using a room-and-pillar mining method and focused on high-grade trends in the mineralization. In August 1991, the Cabaçal mine ceased production during a period of subdued metal prices, following the takeover of BPM Minerals by RTZ in 1989. Cabaçal was not considered a core operation by RTZ.

The original Cabaçal plant and mill (Figure 6-20) were designed to process a nominal rate of 550 t/d but showed a capacity to process 700 t/d, based on conventional flowsheet (Figure 6-21). The calculated average gold content of

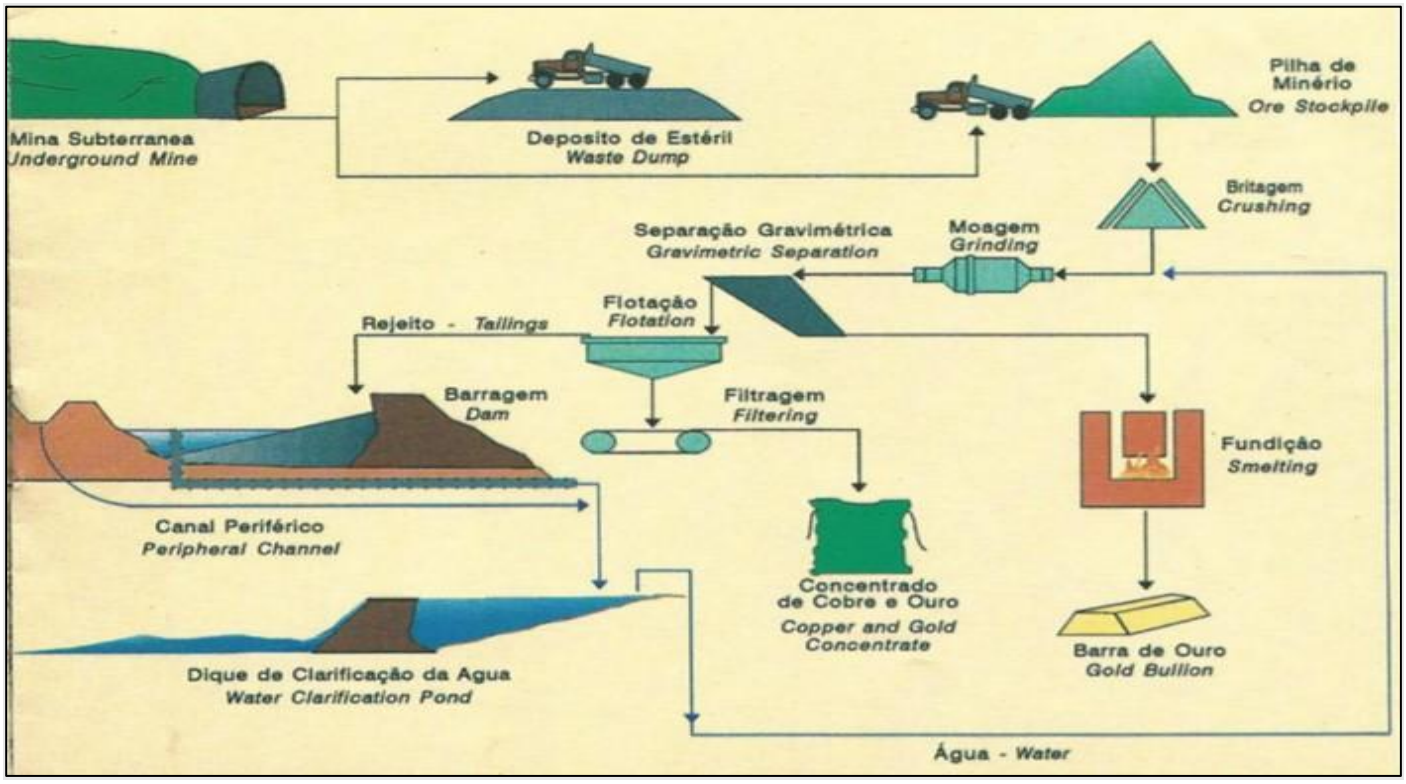
run-of-mine (RoM) material over the life of the Cabaçal operation was around 5.0 g/t Au. RoM mineralogy was composed of sulphides, selenides, bismuth and gold and silver alloys. The main sulphides were chalcopyrite, pyrite and pyrrhotite, with subordinate sphalerite and trace levels of galena.

Figure 6-20: Historical Cabaçal Operations



Source: Meridian, 2022: Night view of the historical Cabaçal beneficiation plant and smelting of gold bars.

Figure 6-21: Mining and Beneficiation Process Flowchart of The Cabaçal Mine 1990



Source: Mineração Manati Ltda.

At the start of operations in 1987, reports indicate recoveries of around 90% for gold were achieved. Eight months later, a report dated August 1988 indicated that in July of that year the plant processed 19,424 t of mineralized material with an average gold head content of 7.3 g/t and recovery of 92%.

During the mill's ramp up period in 1987 and prior to the gravity circuit's installation, the Cabaçal mill was fed using development material from the mine, grading 0.1 g/t Au and 0.3% Cu (Ag not reported). The report states that the produced copper concentrates graded 7.0 g/t Au, 18% Cu, and 80 g/t Ag with recoveries of gold at 80%, copper at 94% and 80% for silver. The lower gold (+silver) recovery is attributed to the gravity circuit not being installed, and the coarse fraction not being recovered during this period. Meridian sees this as a positive attribute, as the overall high metallurgical recoveries are spread across the broad spectrum of gold-copper-silver grades found in the historical Cabaçal mine data.

The positive metallurgical characteristics of the Cabaçal gold mine is largely due to its principal sulphide assemblage. Of the sulphides present, 65% is chalcopyrite, 25% is pyrite and 10% is pyrrhotite. The accessory sulphides are sphalerite, molybdenite, cubanite and galena. The high recoveries for gold are due to its distribution, 42.9% in silicates (as free gold), 31.8% in chalcopyrite (inter- and intra-grain), 9.1% in pyrite, 8.7% pyrrhotite, 1.2% in sphalerite and 6.3%

as intergrowths between sulphides and silicates. Silver is mainly associated with the gold as electrum. There is no known record of smelter penalties.

The gold recoveries at the gravimetric plant were of the order of 45% of the contained metal and the total gold recovery started at 82%, but reached an average, in the more than four years of operation, in the order of 93%, according to information from former Metallurgy Manager at RTZ, Mr Jock Clark. Copper at the beginning of the operation had an average head grade of 0.4% with recovery of around 82%. At the end of operations, the RoM content was more than 1.0% Cu, (having increased significantly with the mining of deeper parts of the mine), with a recovery of 95%. The exported concentrate contained about 22% copper in the last year of the operation with a gold content of around 50 g/t Au in the concentrate. At the beginning of the operation, the concentration of gold had reached up to 150 g/t Au.

Available historical mill reports for the Cabaçal mine when it was operated from 1987 to 1991 by BPM/RTZ including the full year mill summary for 1990, with operational history indicating recoveries of +90% for copper, 90% for gold; and +85% for silver (Table 6-4).

Table 6-4: Cabaçal Operational Mill Recoveries, 1990

Year: 1990	Cabaçal Mill Feed			Flotation Recoveries			Gravity Recoveries		Total Metal Recoveries		
Month	Au (g/t)	Cu (%)	Ag (g/t)	Au%	Cu%	Ag%	Au%	Ag%	Au%	Cu%	Ag%
January	3.03	1.09	5.06	57.9	95.1	85.0	39.1	1.6	97.0	95.1	86.6
February	3.04	1.03	4.90	54.8	95.1	81.9	39.8	1.9	94.6	95.1	83.8
March	3.20	1.00	4.29	56.4	95.1	79.1	36.8	2.1	93.2	95.1	81.2
April	3.37	0.99	4.07	53.5	94.0	79.6	40.5	2.5	94.1	94.0	82.2
May	3.33	1.08	4.77	55.7	94.9	81.4	37.3	2.8	93.0	94.9	84.1
June	3.28	1.07	4.00	52.3	94.1	87.1	40.7	3.4	93.0	94.1	90.5
July	3.53	1.14	4.50	47.2	94.0	87.2	44.8	3.1	92.0	94.0	90.4
August	3.21	1.05	3.59	50.9	93.7	88.3	42.2	3.1	93.1	93.7	91.4
September	4.14	1.04	3.53	49.5	94.6	81.8	44.1	3.8	93.6	94.6	85.7
October	4.17	1.10	3.96	49.8	94.1	83.4	43.6	3.3	93.5	94.1	86.7
November	4.21	1.25	4.44	49.8	95.6	88.3	43.7	3.3	93.5	95.6	91.6
December	4.15	0.92	3.20	47.4	95.0	88.2	45.7	4.1	93.1	95.6	92.3
Averages	**3.50**	**1.06**	**4.23**	**52.0**	**94.6**	**84.1**	**41.5**	**2.8**	**93.6**	**94.6**	**86.9**

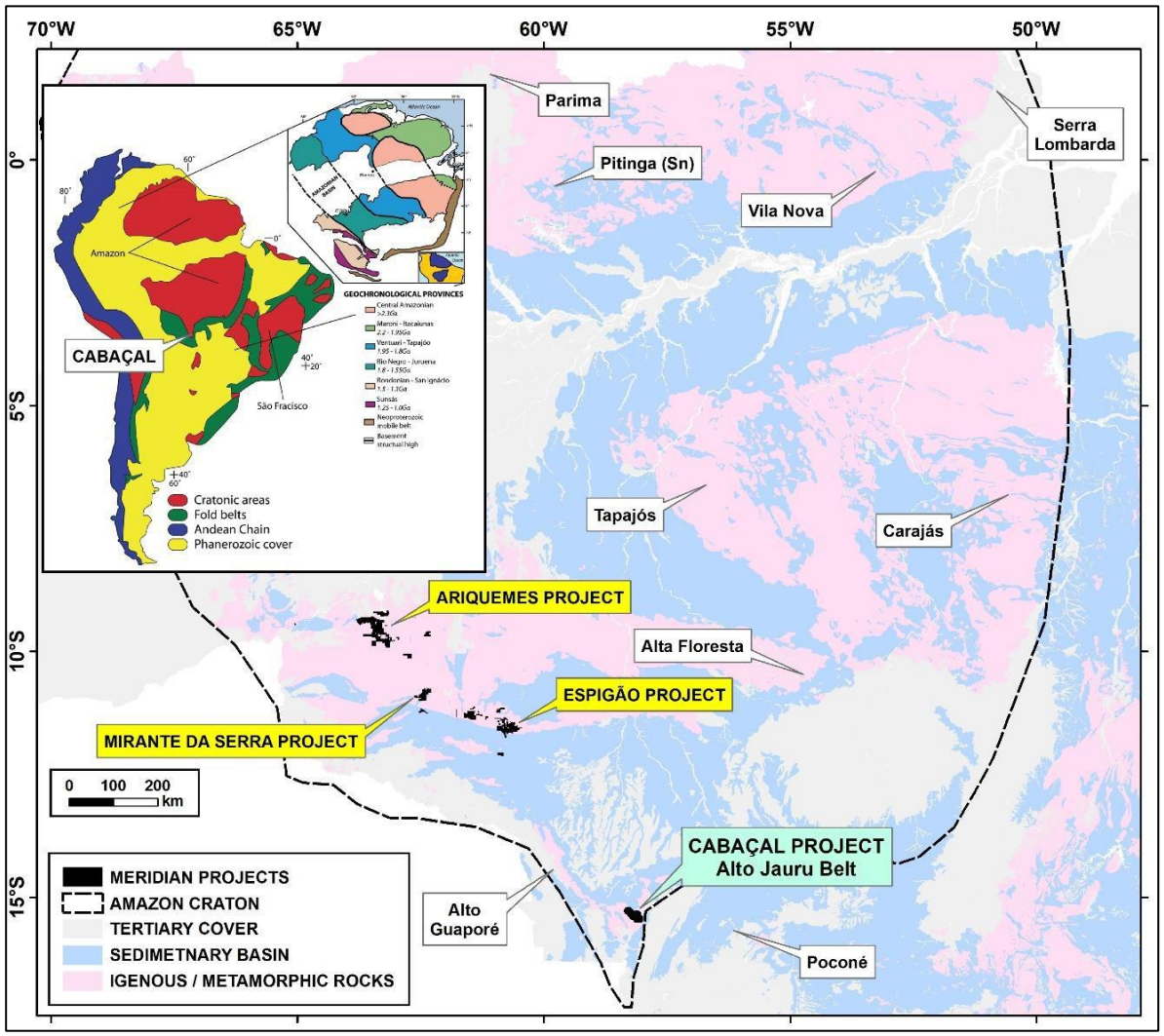
Based on a review of the available data, it is anticipated that conventional processing will be required, similar to methodologies applied by BPM in the late 1980s. Nowadays, there is more modern equipment, which should better facilitate mineral processing, such as equipment for gravimetric recovery and treatment of concentrate in confined systems such as the Albion Process (Glencore Technology). As part of the future metallurgical studies, Meridian will also look at how the lower-grade gold-copper-silver sulphide assemblage can be used as a blending material with higher grading sulphide material so as to maintain a steady feed grade during the trial metallurgical test work. The Santa Helena underground Zn-Cu-(Au-Ag) mine was operated by PML between 2006 and 2008. Full production figures are currently not available.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The South American platform of Brazil is underlain by two cratons: the Amazon Craton and the São Francisco Craton. The state of Mato Grosso lies within the Amazon Craton, hosted by Proterozoic basement rocks of the Jamari Domain/Mato Grosso-San Ignácio Province (Figure 7-1).

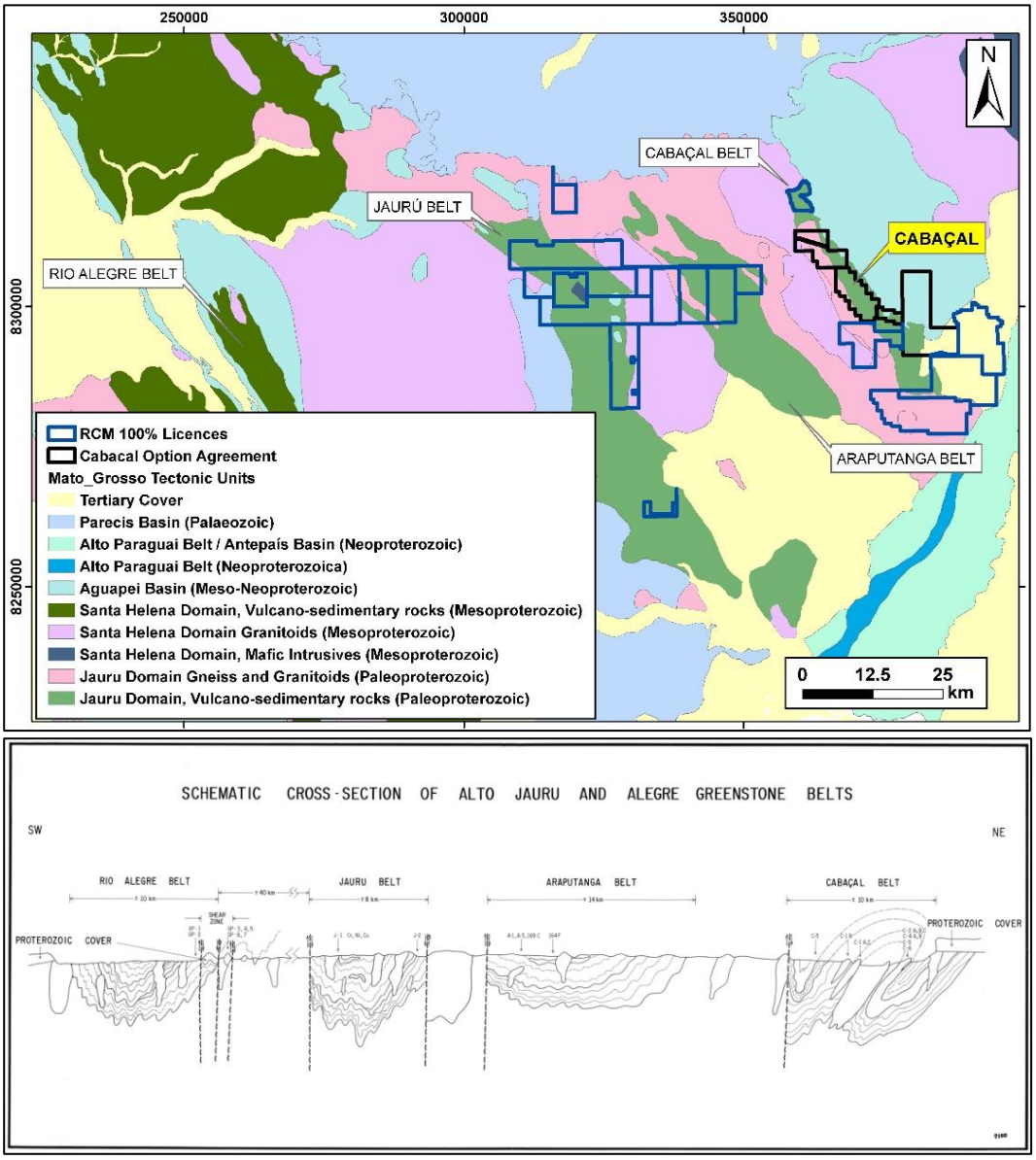
Figure 7-1: Regional Tectonic Setting of the Cabaçal Project Area



Source: Meridian projects in the Amazon Craton, in Mato Grosso and Rondônia. Source: Adapted from Hunt (2011) and CPRM Geology.

The region contains three volcano-sedimentary rock belts that collectively comprise the Alto Jaurú Greenstone Belt (1810-1520 Ma). From east to west, these include the Cabaçal, Araputanga, and Jaurú Belts (Figure 7-2). These belts are separated by granite-gneiss terrains of the Jaurú Domain (orthogneiss, 1810-1520 Ma), Tonalite-trondhjemite-associated granitoids, and granitoids of the Santa Helena Domain (1450-900 Ma). The greenstone belts and crystalline basement are overlain by younger sedimentary rocks of the Parecis Basin (542-0 Ma). In schematic cross-section, the tectonically bounded volcano-sedimentary terranes show stratigraphic repetition, with substantial deformation and complex folding (Figure 7-2). The sequence has also been subjected to tropical weathering.

Figure 7-2: Regional Geology of the District and Schematic Cross-section through the Belts



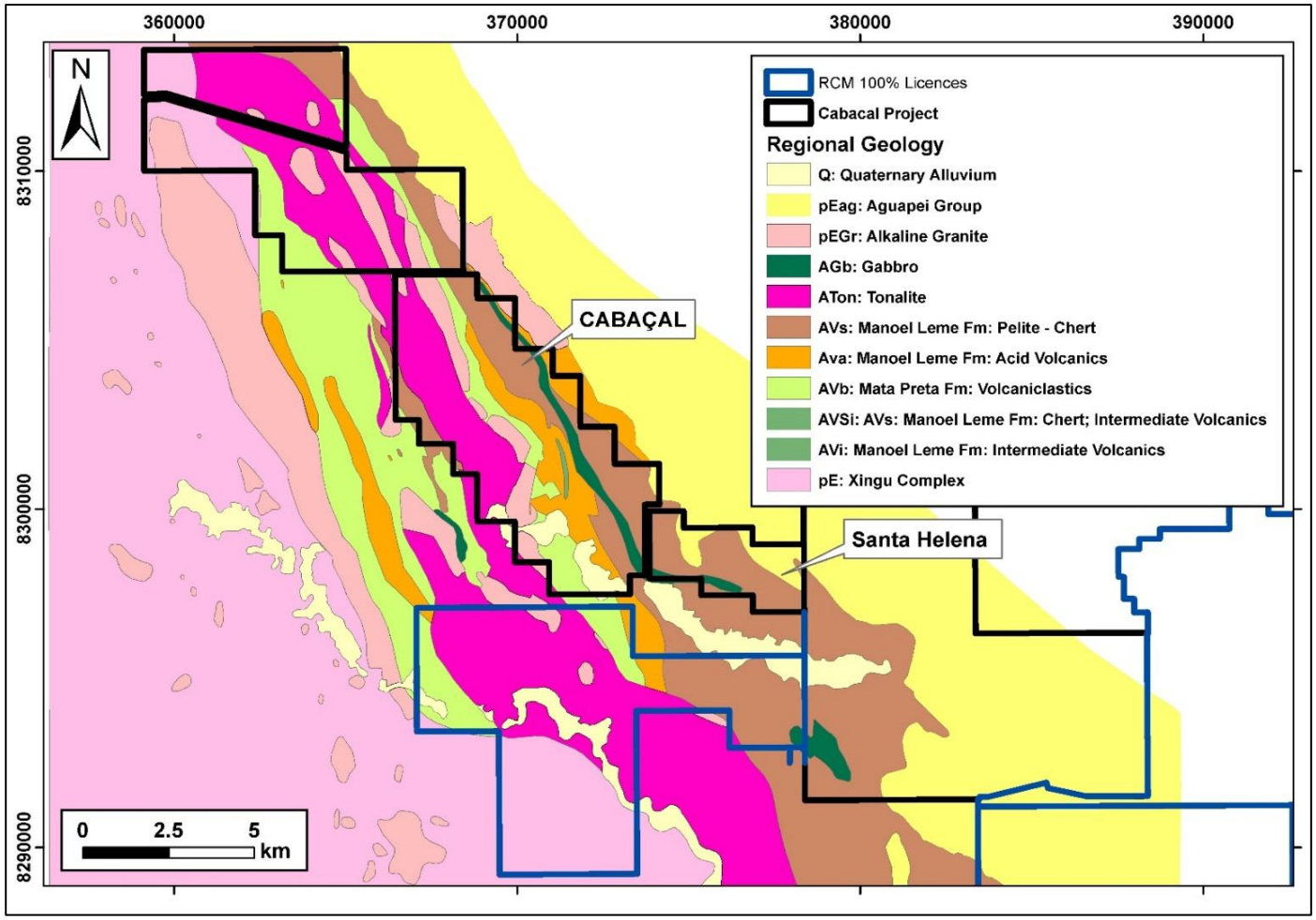
Source: Map: Geology from Lacerda Filho et al (2014); Section: RTZ (2021) Schematic Cross-Section (BRA30000052—046) [Internal document].

The greenstone stratigraphy assigned to the Alto Jaurú Group is divided int o three formations. The Mata Preta Formation is composed of basic submarine volcanics, tholeiitic in character, with subordinate acid to intermediate volcanics and metasediments. The Manoel Leme Formation consists of an acid volcanic sequence of porphyritic lavas and dacitic tuffs at the base and pelitic and chemical metasediments with acid volcanic intercalations at the top of the unit. The Rancho Grande Formation is composed of chemical metasediments with basic volcanics. Each of the three belts has components of the three formations.

7.2 Project Geology

The Manoel Leme Formation in the Cabaçal Belt covers an area of about 35 x 2 km (70 km^2) trending WNW/ESE as shown in Figure 7-3. This formation is the host to the mineralized sequence at Cabaçal, which is interpreted to be situated on the overturned eastern limb of an east-verging anticline.

Figure 7-3: Cabaçal Project Geology Map



Source: Meridian adapted from GIS files supplied by PML (based on original BPM mapping).

Lithological units in the formation include:

- Acid Metavolcanics: Slightly foliated porphyritic lavas of dacitic to rhyodacitic composition with well-preserved plagioclase phenocrysts. Crystal and lapilli metatuffs contain plagioclase and rock fragments.
- Banded Metachert: These rocks contain up to 98% silica with chlorite and sericite. They are finely banded with alternating layers of quartz, calcite, chlorite, and sulphides. They are commonly found above acid metavolcanics and are comprised of chloritized schist, massive and semi-massive sulphides, and banded cherty metatuff. The banded chert can include intervals rich in disseminated and banded sulphide mineralization.
- Chloritized Zones: Composed of chlorite and quartz with smaller amounts of sericite and/or biotite, these zones appear as deformed masses associated with shear zones. These rocks show a close spatial affinity with sulphide mineralization.
- Sulphide Zones: These zones contain disseminated (<40%) and semi-massive/massive (>40%) sulphide mineralization. Mineralization is closely related to the chloritized and banded metachert units. The main sulphide minerals are pyrrhotite, pyrite, sphalerite, chalcopyrite, and galena. At the surface, these zones form gossanous occurrences.
- Banded Cherty Metatuff: Composed of biotite-chlorite-sericite-quartz schist, these rocks exhibit pronounced compositional banding related to primary layering.
- Intermediate Metavolcanics: These rocks consist of metamorphosed lavas and tuffs, primarily composed of biotite, plagioclase, and quartz.

Metabasalts of the Mata Preta Formation are present in the central and western sectors of the Cabaçal Project area.

The Aguapeí Group lies in angular discordance over the greenstone sequence and forms an escarpment on the western margin of the belt. It is primarily composed of quartzites and metasiltstones, with subordinate metaconglomerates.

An extensive tonalite body, known as the Cabaçal Tonalite, extends along the western margin of the of project area, with a strike length of approximately 38 km, trending NW-SE. Xenoliths and/or roof pendants of metasediments and metavolcanics occur in the tonalite.

Granites occur as NW-trending elongated bodies associated with the tonalite. They are homogenous but become foliated near the margins. They are composed of quartz, feldspar, muscovite, and biotite. The texture of these granites can be compared to the Alvorada granite, dated at 1440 ±80 Ma.

Gabbroic intrusions are common in the region and post-date mineralization.

The sequence has undergone folding, initially experiencing ductile deformation followed by later brittle structural overprinting. Most of the structural studies are based on more detailed mine geology reviews.

The area has undergone weathering from the tertiary period to the present. The upper clay saprolite is largely stripped and the weathering profile transitions rapidly from saprolite, typically within the upper 10-15 m, to a narrow transitional saprock interval and then to fresh rock.

7.3 Deposit Descriptions

7.3.1 Lithology and Structure

The overturned geology of the immediate Cabaçal Mine area, illustrated in Figure 7-4 and Figure 7-5, can be classified into several principal lithological units (Mason and Kerr, 1990; Monteiro et al., 1988, Osbourne, 1991). A strong structural and alteration overprint can sometimes obscure the original protolith in these schistose rocks. Multielement geochemistry indicates the presence of subdivisions which may reflect variations in detrital input and/or possible intercalation between volcanic and sedimentary units.

Quartz-sericite-chlorite-(biotite) schist (CTB): Predominantly a tuffaceous meta-sediment, this unit hosts high-grade gold and copper mineralization. Data from multielement analyses (e.g. nickel, chromium, titanium and zircon) show variations indicating transitions from felsic to intermediate to mafic compositions.

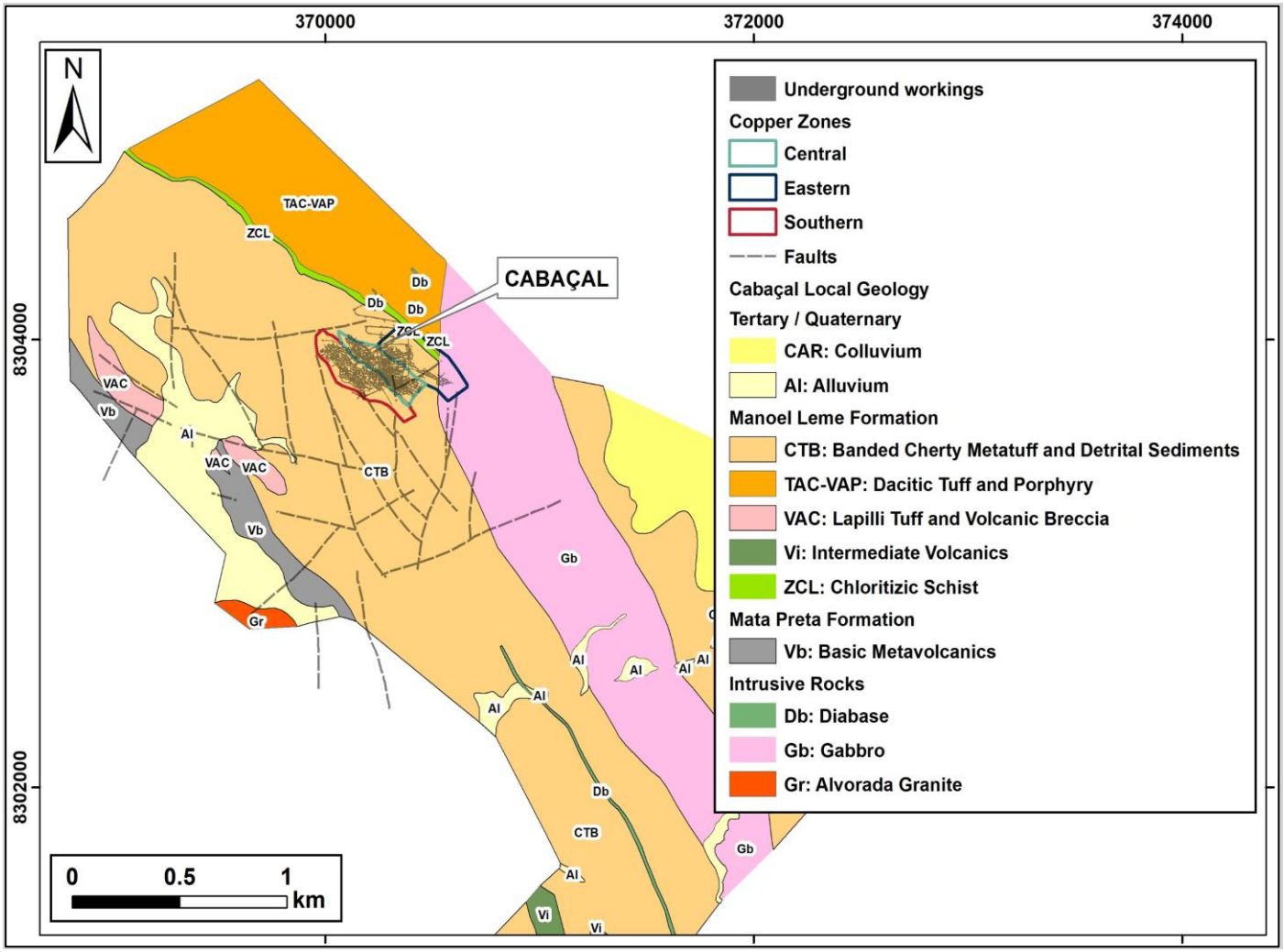
Chlorite-quartz-biotite-(sulphide) schist (ZCL): This distinctive unit is represented by strong shearing, frequently carrying at least 1-5% sulphide minerals (Chalcopyrite > Pyrite > Pyrrhotite). Locally, remnants of a thin magnetite banded iron formation (BIF) (0.3 – 0.5 m) are found near the top of this unit.

Biotite-quartz-carbonate-chlorite schist (Zbi): This narrow horizon is most prominent where the ZCL is thickest. Although it carries little gold mineralization, it can contain some sphalerite and, locally, galena. Locally, this unit is associated with a thin chert band exhibiting sedimentary structures that indicate the sequence is overturned.

Quartz-sericite-biotite-feldspar schist (TAC): This dacitic metavolcanic/volcaniclastic unit (coded VAP where porphyritic textures are present) occupies the structural footwall of the deposit. It is considered barren, although few holes penetrate to any great depths through the unit.

Post-mineralization gabbro intrusion (Gb): A gabbroic intrusion post-dating mineralization developed east of the mine workings (Gb). In long section, the mineralization trend has a shallow plunge, with hinge zones in the mine environment dipping approximately 20° SE. The mine sequence stratigraphy extends an unknown distance to the southeast beneath the mafic sill (shown in Figure 7-4).

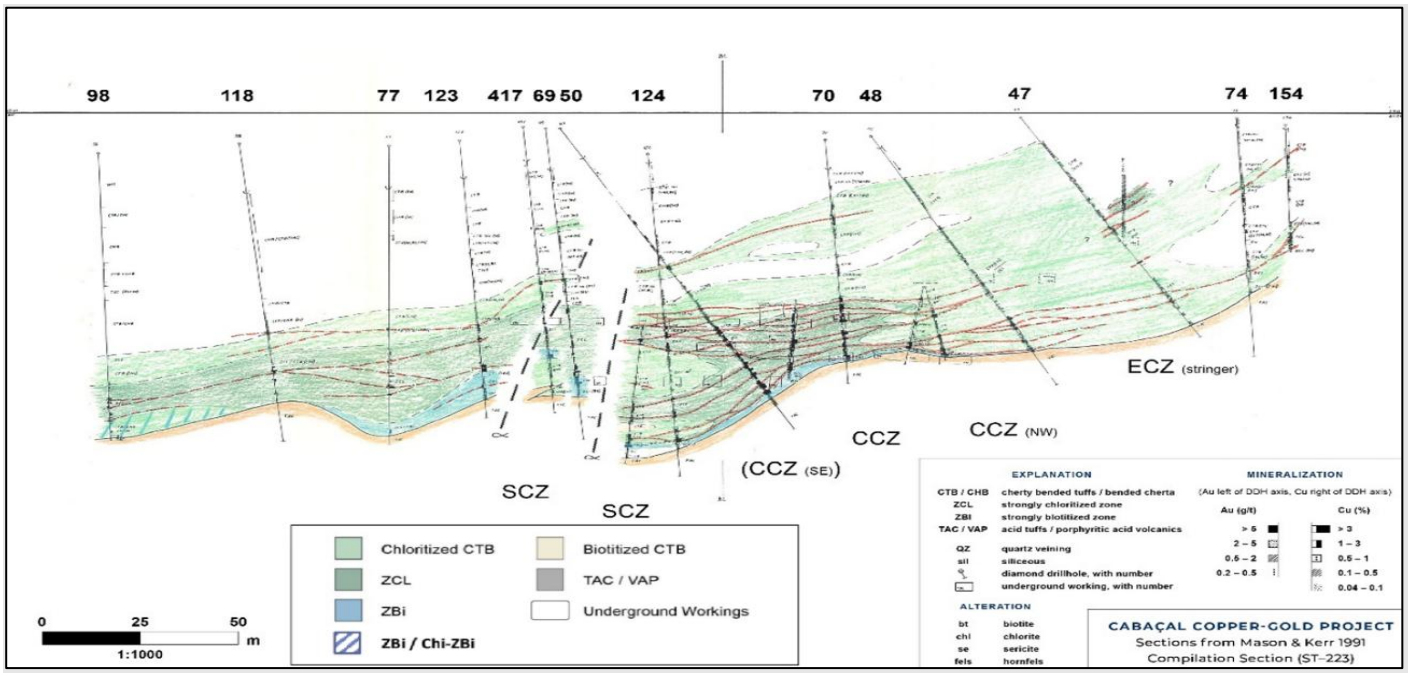
Figure 7-4: Plan View of Cabaçal Local Geology



Source: Meridian adapted from GIS files supplied by PML (based on original BPM mapping).

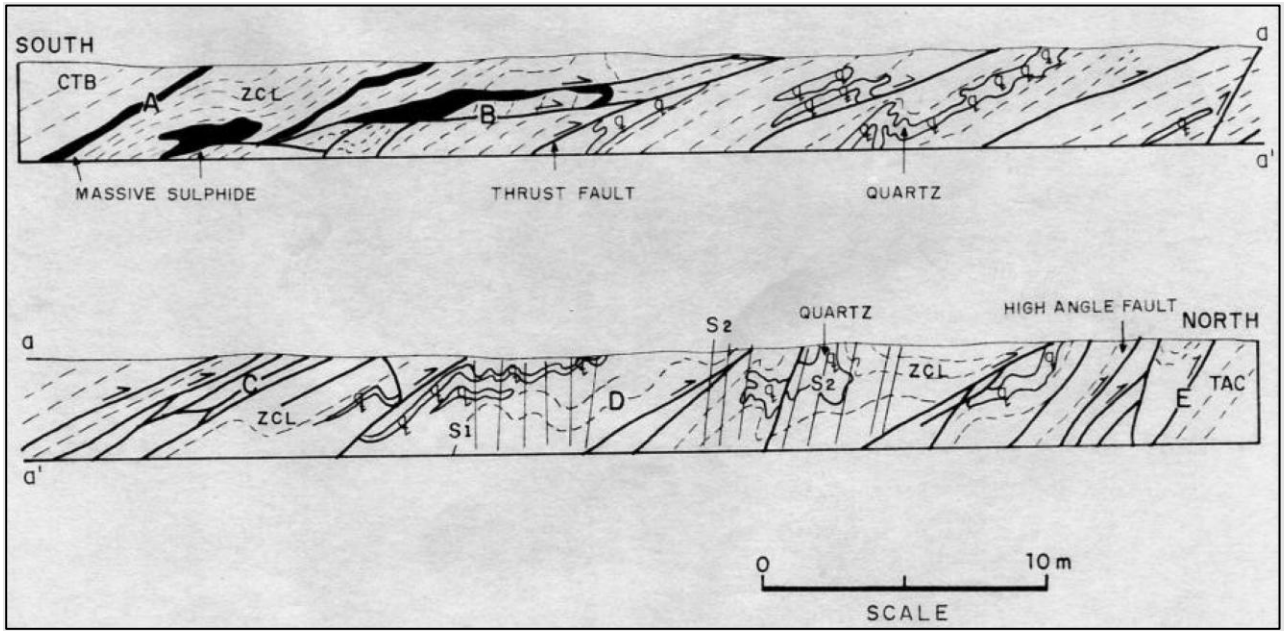
In the SW-NE cross-section (Figure 7-5), the mineral sequence exhibits a gentle southwest dip, with drilling data indicating an undulating basal shear structure that transitions from a moderate dip to a sub-horizonal orientation due to a combination of folding and faulting. A level of interdigitation of the different sub-units of the mine sequence is evident.

Figure 7-5: SW-NE Cross-section of Geology in The Cabaçal Mine Area



Source: Mason and Kerr, 1990.

Figure 7-6: Structural Style Mapping in Underground Access Drive



Note: 195 Level Access. A = CTB/ZCL contact; B = Thrust duplex; C = Sigmoidal shear fractures; D = En echelon folded quartz veins; E = ZCL/TAC contact.
Source: Franke and Osborne, 1988.

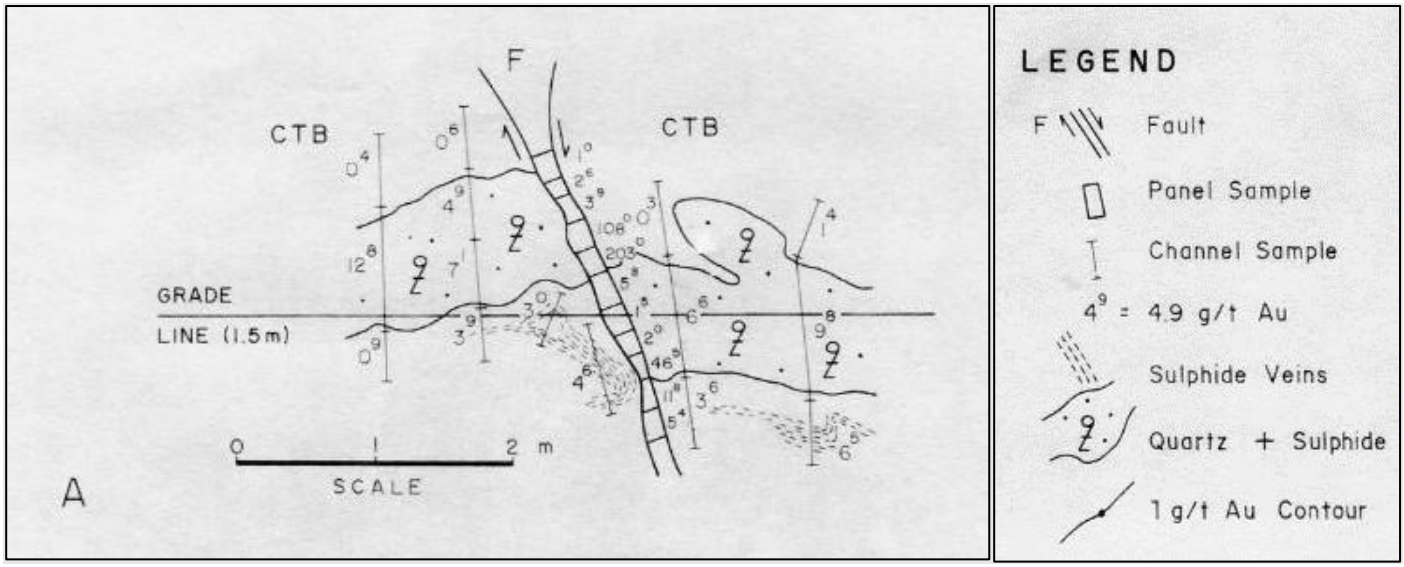
A number of deposit-scale to belt-scale studies and reviews have been conducted on the Cabaçal Project.

Osborne (1989) suggested that the Cabaçal Mine is located within a dilation zone within a regional-scale thrust, where it is in contact with a metavolcanoclastic sequence (CTB) and a metavolcanic pile (TAC). He suggested that mineralization is divided into two different zones that developed as a result of the same deformational history imposed on rocks of different composition and competence.

Osborne observed that the upper zone consists of an en-échelon arrangement of mineralized lenses within the CTB unit and hosts 85% of the total gold mineralization. In this zone, gold is found in sulphide-quartz veins (D1), sulphides in veinlets (D1, D2, D4), and shear quartz veins with sulphide and garnet. Remobilized mineralized material displays a Riedel shear pattern. The gently dipping stratiform mineralization is intersected by late-stage sub-vertical structures, which can physically and chemically redistribute the mineralization (Figure 7-7).

The copper-rich lower zone is a complex system consisting of quartz-sulphide veins and sulphides which are banded or in the form of veins that have been folded and remobilized by thrusting. Surrounding rocks vary from CTB in the sterile or weak mineralization zones, through CTB-CL and ZCL in the highly deformed mineralized areas, up to Zbi in the footwall contact. The chlorite content is higher in the most deformed areas.

Figure 7-7: Example of High-angle Mineralized Fault Cross-Cutting the VMS Mineralization



Note: South wall SN1839. Source: Franke and Osborne, 1988.

8 DEPOSIT TYPES

8.1 Deposit Model

The mineralization host units comprise volcanic, volcanoclastic, and sedimentary rocks deposited in a marine environment, intruded by basic granitic and plutonic rocks. All units have undergone intense metamorphism and deformation, including folding and local faulting.

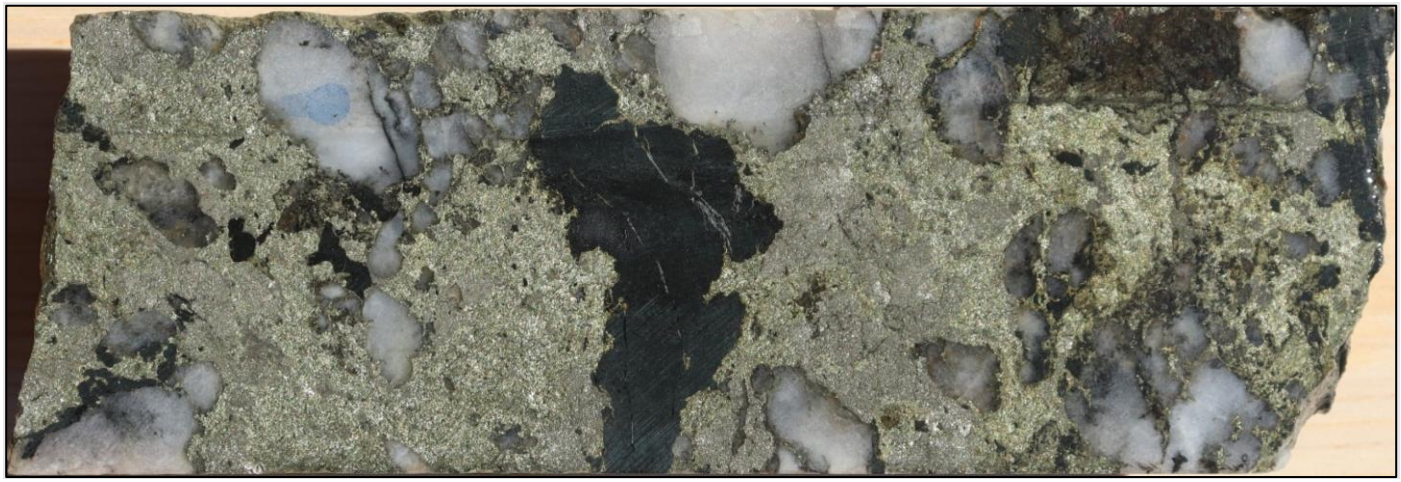
The Cu-Au-Ag mineralization zone extends approximately 650 m down-dip and 2,350 m along strike. It trends approximately 135°, dips 10-20° southwest, and has a shallow southeast plunge of 10-20°. At lower grades, the mineralization demonstrates good continuity, with higher-grade gold-copper trends occurring within a broader low-grade halo. The mineralization spans approximately 200 m in vertical extent, with a true width generally ranging from 10 to 90 m.

The Cabaçal deposit exhibits a range of mineralization styles characteristic of VMS systems, including massive sulphide zones, breccias with sulphide clasts and/or matrix, sulphide stringer zones, and disseminated sulphides (Figure 7-8). One of the most important styles for the gold mineralization involves a later-stage gold event superimposed on the original VMS stratigraphy. This is exemplified by existing gold-rich quartz-sulphide veins, free gold developed within foliation, and gold-only layers within chloritic alteration zones, detached from the primary VMS mineralization envelope (Figure 8-1, Figure 8-2). In addition to drill core observations, photographs from the Cabaçal mine operations (Figure 8-3, Figure 8-4, Figure 8-5) effectively illustrate good examples of the mineralization styles.

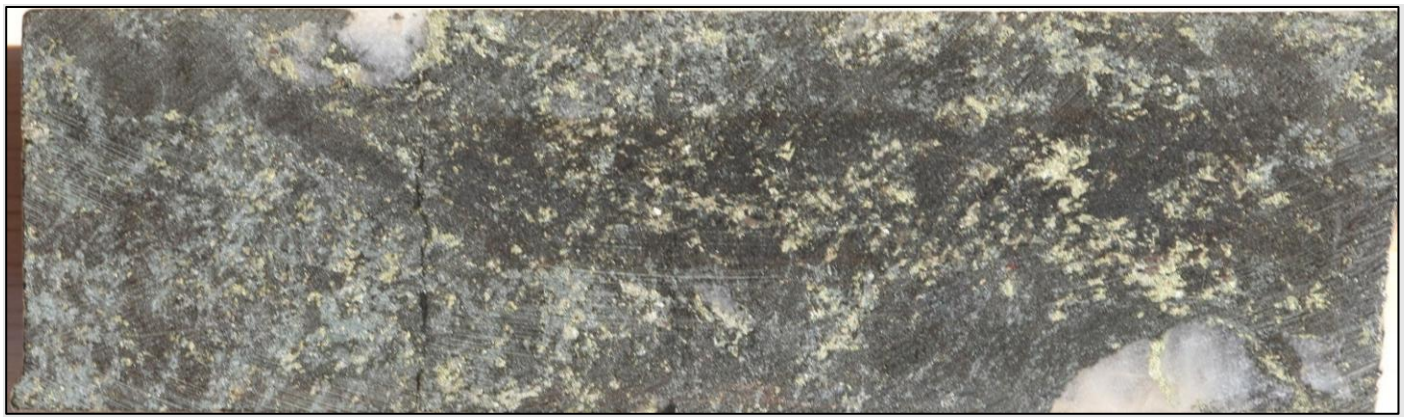
Mineral species at the Cabaçal mine include pyrite, chalcopyrite, pyrrhotite, sphalerite, galena, and gold, along with bismuth, selenium, and tellurium alloys.

In the uppermost part of the Cabaçal deposit, mineralization has undergone oxidation. Erosion has removed much of the upper clay saprolite, resulting in a relatively shallow depth to fresh rock, generally ranging between 5 and 20 m and averaging between 1 and 15 m below surface.

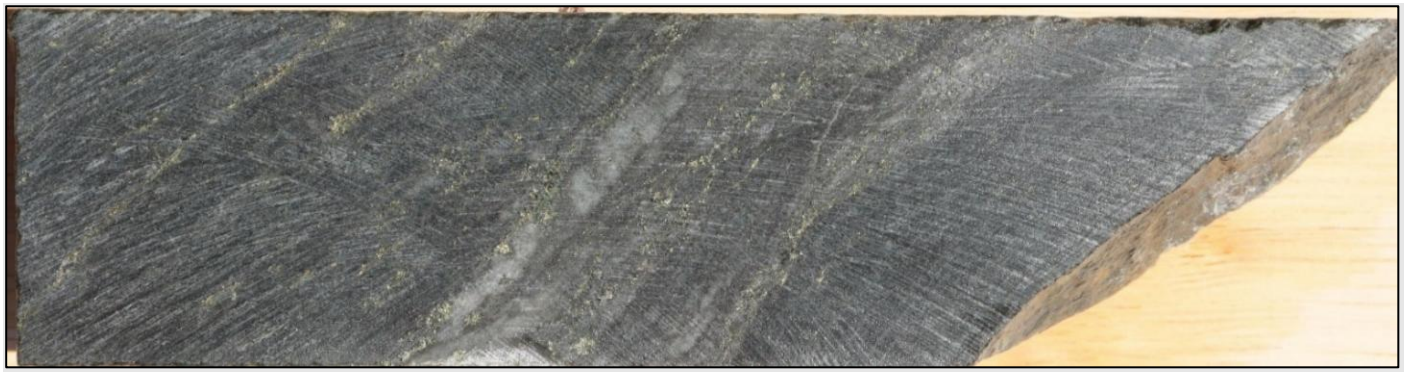
Figure 8-1: Examples of Copper Sulphide Mineralization Styles In Drill Core



CD005: Sample CBDS00514 (55.2 – 55.9 m): Sulphide breccia; 5.0% Cu, 1.9 g/t Au, 26.1 g/t Ag.

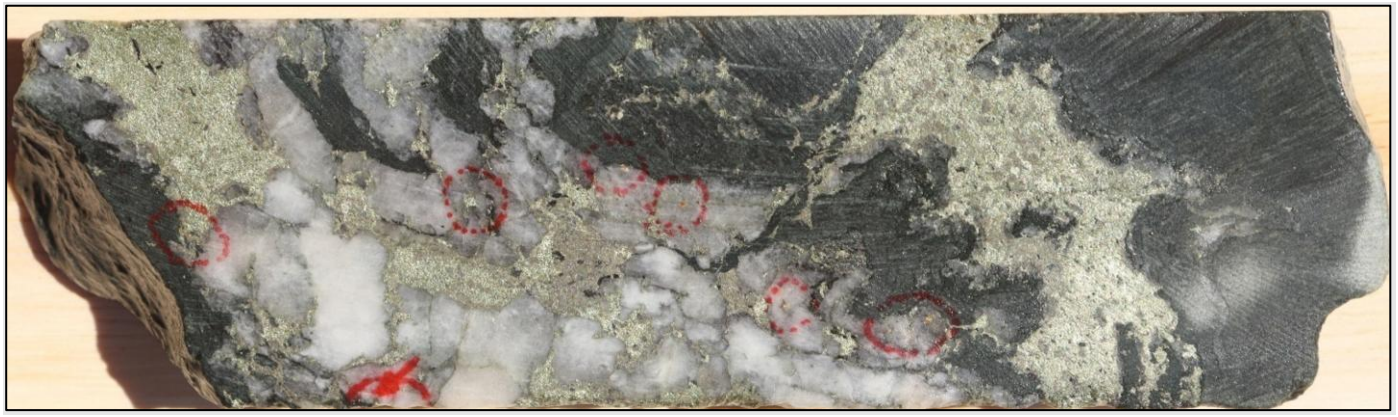


CD012: Sample CBDS01274 (103.0 – 103.65 m): Disseminated sulphides: 3.0% Cu, 11.4 g/t Au, 11.7 g/t Ag.



CD019: Sample CBDS02076 (53.0 – 53.5 m): Disseminated sulphides: 0.7% Cu, 0.2 g/t Au, 1.1 g/t Ag.

Figure 8-2: Examples Gold Mineralization Styles in Drill Core.



CD072: Sample CBDS08327 (79.7- 80.25 m): Quartz-sulphide vein: 299.1 g/t Au, 3.0% Cu, 18.8 g/t Ag.



CD114: Sample CBDS14431 (63.85 – 64.21m): 0.4% Cu, 56.8 g/t Au, 4.1 g/t Ag.



CD110: Sample CBDS14665 (37.65 – 38.4 m): CTB (Chloritic alteration zone; gold-only layer): 0.0% Cu, 8.6 g/t Au, 0.1 g/t Ag.

Figure 8-3: Cabaçal Mineralization: Banded Massive Sulphide of Central Copper Zone



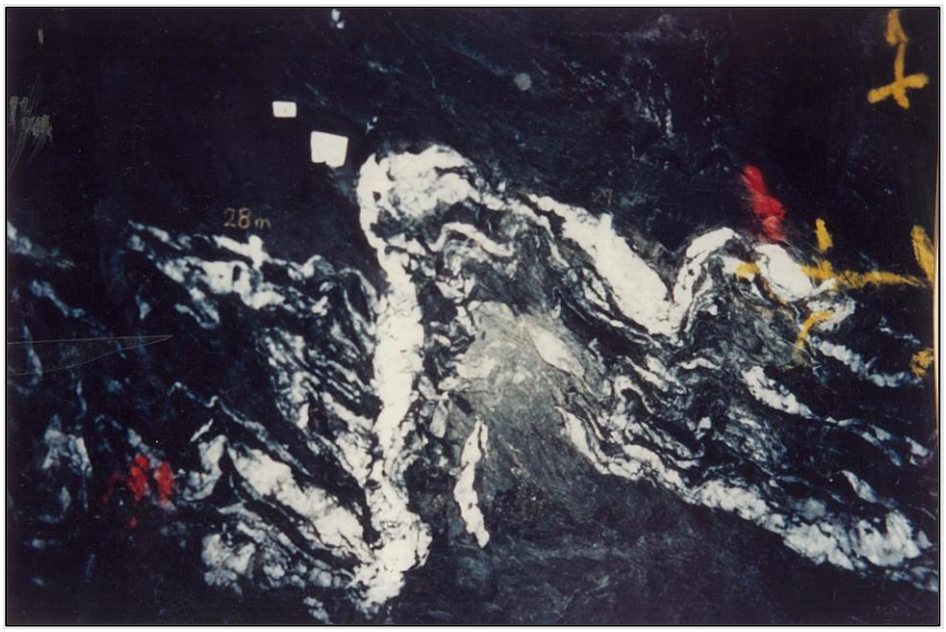
Note: From underground mine face. Source: Mason and Kerr, 1990.

Figure 8-4: Cabaçal Mineralization: High-grade Au-Cu Vein from the Southern Copper Zone



Note: From underground mine face. Source: Mason and Kerr, 1990.

Figure 8-5: Sheared Quartz Vein System, Cabaçal Mine



Source: Mineral Controls at The Cabaçal I Mine, Mato Grosso State, Brazil (Marten, 1988).

8.1.1 Significant Mineralized Zones at Cabaçal

Mason & Kerr (1990) carried out a comprehensive reassessment of all geological data and analytical results from boreholes, supported by observations from selected exposures at the Cabaçal mine front. These studies aimed to establish the geological controls of mineralization and structure, as well as assess the potential for discovering additional resources in the mine and its surroundings.

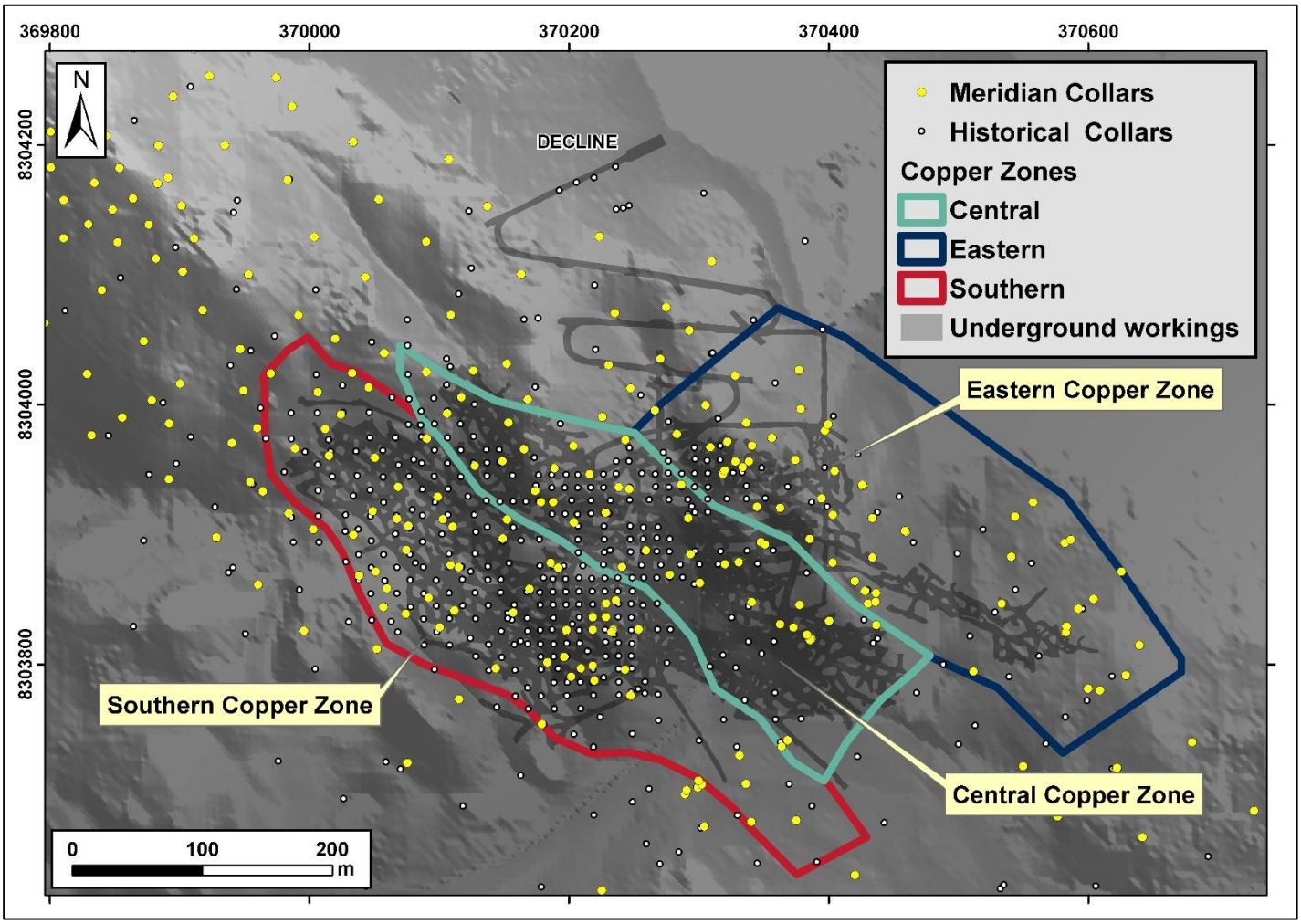
They interpreted the Cabaçal deposit as a gold-rich, intensely deformed VMS system that was overturned and compressed within the lower limb of a large recumbent fold. The mineralization was characterized by a hydrothermal alteration assemblage of sericite-biotite-chlorite-quartz, which has the geometry of a flattened pipe and consists of massive, stringer, and disseminated Cu-Au sulphide mineralization, with a late overprinting gold event.

According to these authors, mineralization at Cabaçal is related to three hydrothermal centres: the Central, East, and South Copper Zones. The main gold zone is a flat stringer zone related to the South Copper Zone (SCZ). In the Central Copper Zone (CCZ), past mining focused on high-grade gold in the core of an intense hydrothermal alteration pipe (ZCl) and, to a much lesser extent, on the massive sulphide lenses. The East Copper Zone (ECZ) exhibits a weaker presence of vein-type copper mineralization, with erratic high-grade gold mineralization of the stringer type. Recent Meridian drill holes in relation to the three hydrothermal alteration centres are shown in Figure 8-6.

The large tonalite intrusion that is developed to the west of the Cabaçal deposit is likely to be a subvolcanic intrusion, providing a heat engine for convection of hydrothermal fluids.

The Cu-Au-Ag mineralization zone extends approximately 650 m down-dip and 2,350 m along strike. The mineral zone strikes approximately 135°, dips at 10-20° to the southwest, and has a shallow southeast plunge of 10-20°. At lower grades, the mineralization exhibits good continuity, with shorter-ranged higher-grade gold-copper trends enveloped by the lower-grade halo. The mineralization outcrops and reaches a vertical depth of 200 m below the surface. The true width of the mineralized zone varies, ranging from 10 to 90 m.

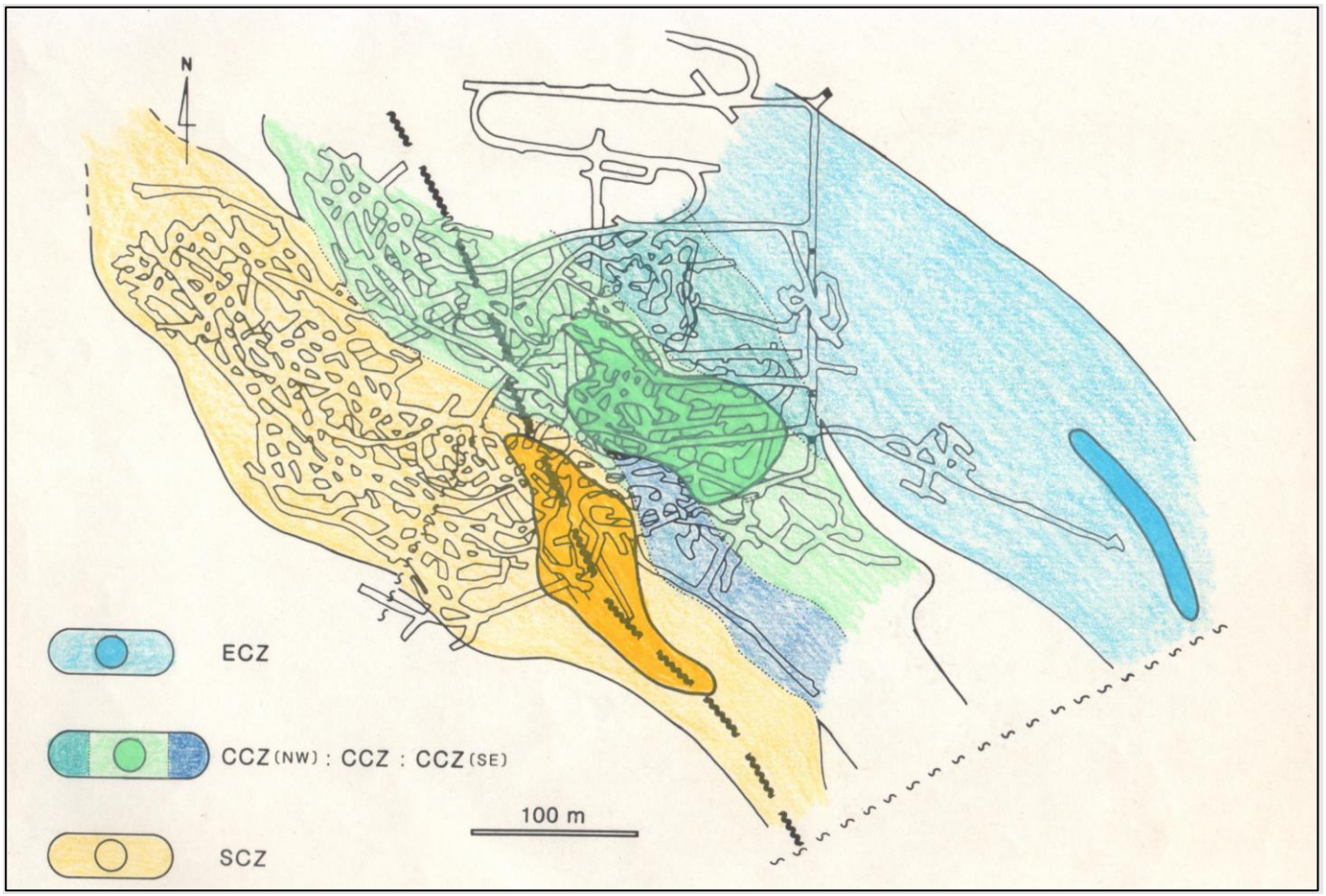
Figure 8-6: Eastern, Central and Southern Copper Zones in Relation to Meridian Resource Collars



Source: Adapted by Meridian from Copper Zones of Mason & Kerr, 1990, with mine development in level plan from RTZ archives.

Figure 8-7 shows where the focus points of chloritic alteration are located within the hydrothermal centres and are interpreted to represent feeder structures.

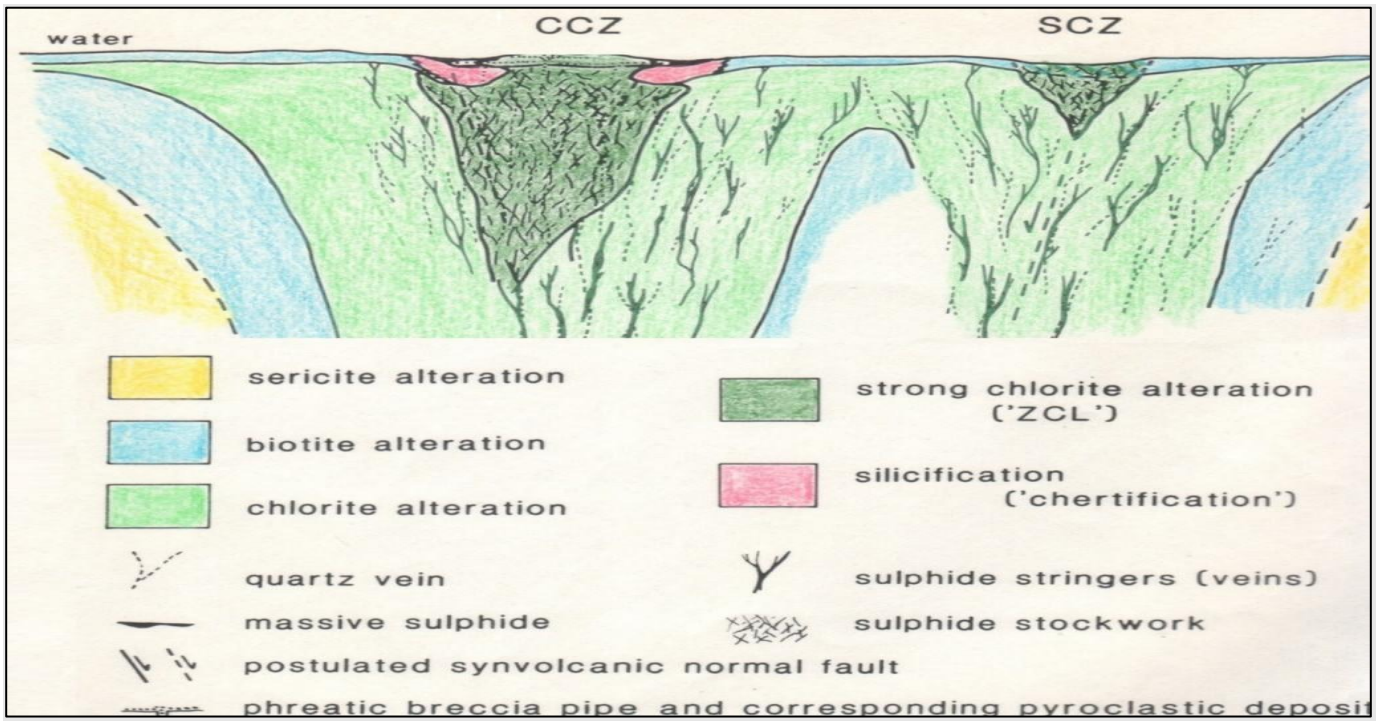
Figure 8-7: Plan of Cabaçal Mine Levels in Relation to the Three Copper Zones



Note: Chloritic cores to copper zones in bold colour. Source: Mason and Kerr, 1990.

The original pre-deformation architecture of these overlapping centres is shown schematically in Figure 8-8.

Figure 8-8: Pre-deformation Schematic Section (sequence now inverted)



Source: Mason and Kerr, 1990.

The attributes of each zone and examples of significant mineralization within them are as follows:

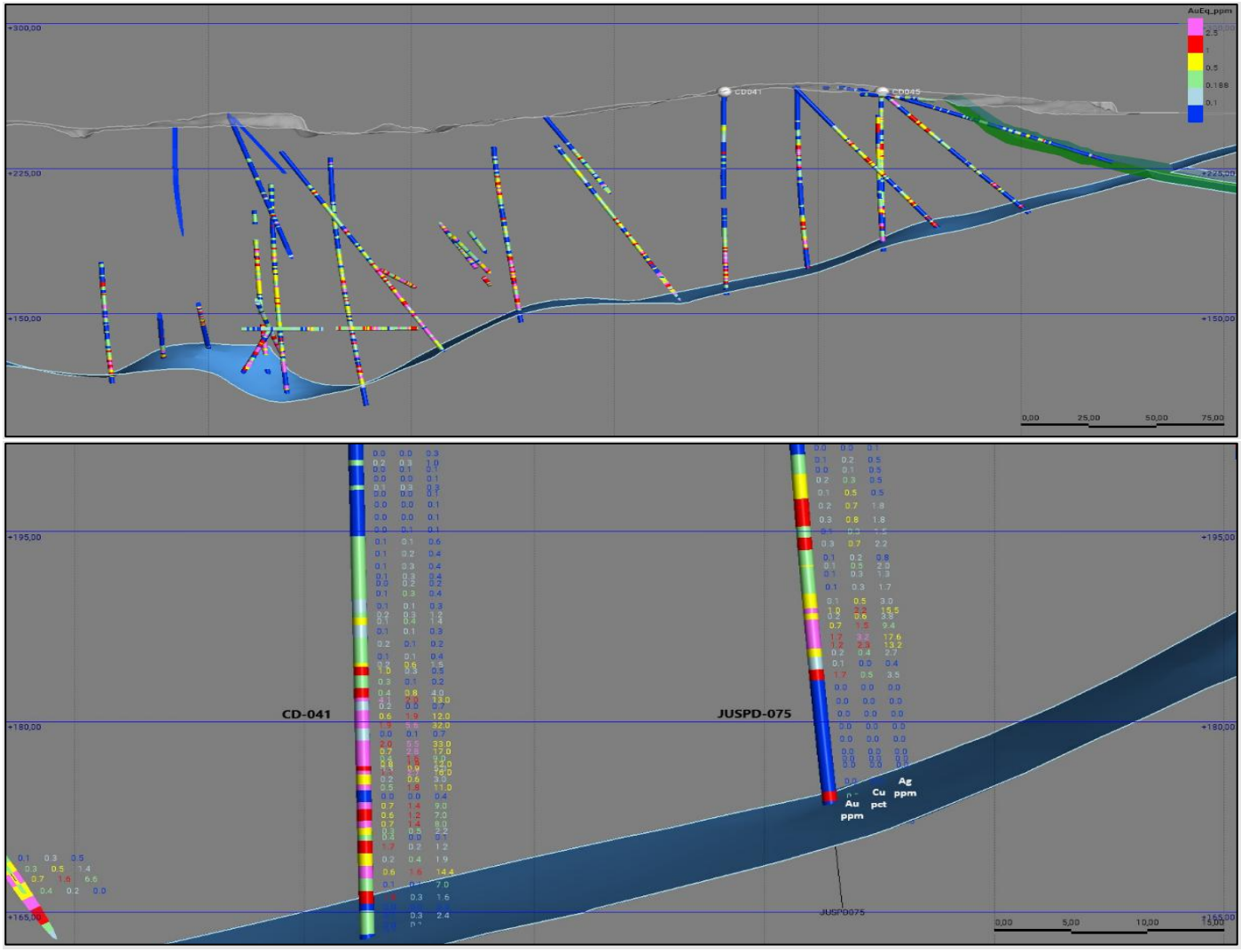
The ECZ is an elongate zone of sulphide stinger zones developed within chloritic CTB. The domain shows some thickening in the basal ZCL at the CTB/TAC contact, which dips at approximately 25° SW, where copper grades can increase to over 1% Cu in SE-plunging shoots. Gold grades tend to be more modest, but high-grade intersections have been identified that warrant further drilling. Examples include: JUSPD119: 5.6 m at 7.7 g/t Au & 1.1% Cu from 45.2 m; JUSPD222: 6.4 m at 60.1 g/t Au, 0.5% Cu & 4.0 g/t Ag from 47.7 m; JUSPD025: 5.0 m at 85.3 g/t Au, 0.7% Cu & 10.0 g/t Ag from 71.5 m. Mason and Kerr (1990) noted that the ECZ corridor was relatively sparsely drilled compared to the other two domains, with the northern, northeastern, and eastern limits of the ECZ not well defined. The mineralization is truncated by the shallow-dipping gabbro intrusion at the SE end of the workings. Limited exploration has been carried out to investigate the potential extension of the deposit east of the gabbro.

The CCZ is cored by a well-developed, intensely chloritized discordant pipe with strong Cu-Au mineralization. It is the only unit that hosts a massive/breccia sulphide layer, in a bed of 5 to 150 cm thick, capped by a 'chert' (potentially a silicified tuffaceous horizon). The massive sulphide consists of layers or lenses with the same sulphide assemblage occurring in the stockwork and stringer veins, suggesting that they are related to the VMS feeder system. A zinc-barren window is centred over the pipe in plan view, but the pipe is flanked by a broad zone of elevated zinc grade values (ranging from 0.1% to 5.8% Zn), dispersed at the top of the ZCL and in the Zbi. This represents characteristic VMS zonation outward from a hotter zone of copper in the throat of the pipe, transitioning to cooler, zinc-rich areas at the margins.

The SCZ is also associated with a major alteration pipe, but the early biotite alteration has not been obliterated by the intense chloritic alteration as in the core of the CCZ. The SCZ was interpreted to represent an intermediate stage of development of the VMS system that was more advanced than the ECZ, but not quite so advanced as the CCZ. The SCZ hosts several high-grade copper mineralization zones near the lower limits of the underground development, including intersections such as JUSPD482: 13.4 m at 1.2 g/t Au, 5.5% Cu, 24.7 g/t Ag & 0.5% Zn, JUSPD596: 15 m at 2.7 g/t Au, 5.2% Cu, 9.5 g/t Ag & 1.2% Zn).

The combination of stringer, disseminated, and breccia sulphides creates a broad, shallow-dipping mineralization footprint, an example of which is shown in Figure 8-9, including Meridian holes CD-041 and CD-45 that targeted the ECZ.

Figure 8-9: Cabaçal Mine Area Cross-Section



Note: Upper grey horizon is surface relief; lower green surface is the TAC contact, with the mine sequence in between. Source: Meridian, 2024.

9 EXPLORATION

9.1 Introduction

Between 2021 and 2024, Meridian carried out a range of exploration activities, primarily focused on Cabaçal and near-mine surroundings, with additional work on regional targets including the southeast Santa Helena mineral centre. These activities included:

- diamond drilling, sampling and assaying
- surface geochemical surveys including soil, trenches and rock chip sampling
- downhole geophysical surveying of historic diamond drillholes
- ground-based electromagnetic geophysical surveys
- remote sensing (WorldView-3 satellite survey over the Cabaçal Belt)
- topographic control (Lidar Surveys, ground control points)
- digital data compilation.

This ground-based work has resulted in the following numbers:

- Diamond drilling: 614 holes for 66,569 m; (519 in Cabaçal and near-mine targets for 58427 m)
- Drill core sampling: 80,516 samples; (69,333 in Cabaçal and near-mine targets)
- Trenching: 48 trenches for 3133 m, with 2970 samples; (33 in Cabaçal and near-mine targets for 1859 m, with 1,722 samples)
- Hydrogeological evaluation: 12 holes for 981 m
- Geotechnical Drilling: 37 holes for 592 m for infrastructure planning
- Auger Drilling: 50 holes for 232 m (16 in Cabaçal and near-mine targets for 67 m) for geochemical reconnaissance
- Soil Sampling: 3,984 samples
- Downhole Borehole Electromagnetic (BHEM) surveys: 115 surveys
- Surface Geophysical Surveys:
    - 11line-km of surface Pole-Dipole Induced Polarization (PDIP) surveys
    - 123 line-km of surface Fixed-Loop Transient Electromagnetic (FLTEM) surveys
    - 6 line-km of surface Dipole-Dipole Induced Polarization (DDIP) surveys
    - 50 line-km of surface Gradient Array Induced Polarization (GAIP) surveys

- 11 line-km of surface Mise a la Masse (MALM) surveys
- 611 surface gravity stations

The diamond drilling program (further discussed in Section 10) serves three main objectives:

1. Validation drilling: Twin historical drill holes to confirm past results in preparation for a new mineral resource estimate.
2. Infill drilling: Target the known mineralization envelope to improve resource definition and support potential upgrades to the mineral resource estimate.
3. Additional exploration drilling: Expand the known mineralization and possibly increase the overall Mineral Resource.

The surface geochemical and geophysical programs are designed to test peripheral areas to the Cabaçal mine for new mineralization. Remote sensing is being used to identify additional targets in both near the mine and within the regional areas covered by Meridian's exploration leases.

9.2 Grids and Surveys

Meridian commissioned the Brazilian survey group, Geosan Geotecnologia Eireli to conduct high-resolution drone orthophotography, independently survey drill hole locations, and generate a digital terrain model with contour data. This work was carried out in three phases on January 18-20, 2021, February 9-10, 2021, and July 7-8, 2021.

The initial terrain model was later updated with a LiDAR survey conducted by the Brazilian survey group, Embratop Geo-Tecnologias Ltda on June 1, 2022 (Giacometti and Pereira, 2022). The survey utilized a Matrice 30 RTK drone equipped with a Zenmuse L1 sensor and a D-RTK2 Mobile Station base. This equipment has a horizontal precision of 1 cm + 1 ppm and a vertical precision of 1.5 cm + 1 ppm. The survey was flown at an altitude of 90 m above ground level, with a velocity of 8 m per second, capturing 352 points per metre. Aerial photography and terrain model data were delivered in UTM SIRGAS format, covering a 1,700-ha corridor.

9.3 Geological Mapping

Meridian has collected 5,433 soil samples to validate, infill, and extend the BPM grid. Samples were collected from the 'B Horizon' using a hand-auger on a 200 x 25 m grid, with closer spacing of 100 m on infill lines. Initial analysis was conducted in the field using a portable XRF, calibrated with certified reference materials, and included blanks and certified references. All samples were later sent to SGS Laboratories (Belo Horizonte) for gold analysis using method FA505. Additionally, 10% of the samples were analysed for a multielement package at SGS using a 4-acid total digestion with an ICP-OES finish (method ICP40B) to verify the portable XRF values. Blanks were inserted at a frequency of 1 in 50 samples, and standards at a frequency of 1 in 20 samples.

The soil sampling program initially focused on the Chiquito Target Area (C2A target area of BPM), located approximately 3 km southeast of the Cabaçal Mine. A total of 1,446 soil samples were collected in areas where geochemical anomalies, with variable Cu, Cu-Au, Zn-Cu-Pb responses, were historically defined, but not closed off with

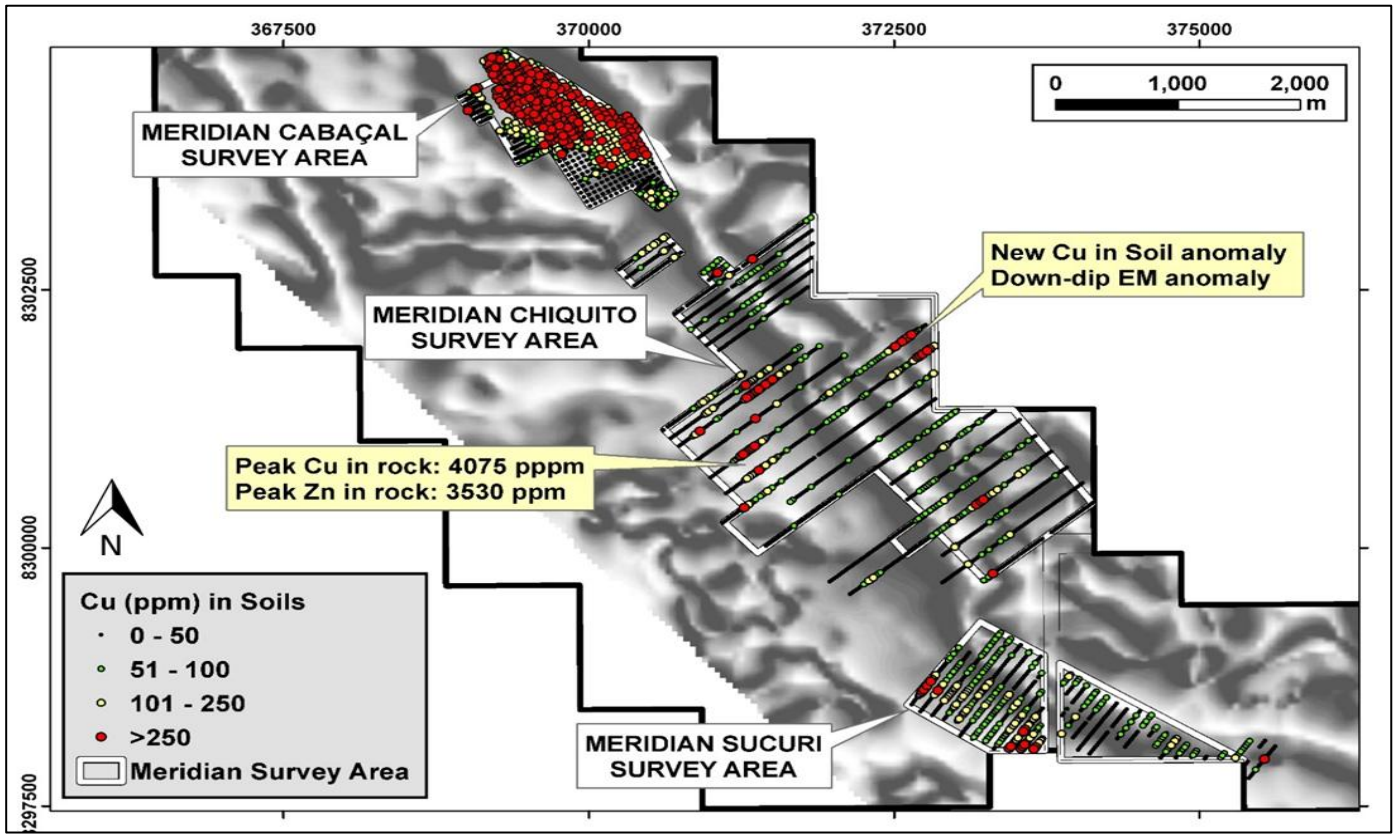
gaps in the sample coverage. The area has limited outcrops. Previous work by BPM defined a north-south trending geochemical anomaly extending over 1.5 km, with a cross-strike footprint of approximately 130-200 m (with peak value of 1,080 ppm Cu). This anomaly is flanked by Pb and Zn anomalies, extending the footprint of this metal anomaly outward to approximately 400 m across strike. Separate Zn-Pb dominant soil responses were identified further south and are associated with historical EM anomalies. The results from the recent soil sampling have confirmed the presence and location of anomalies identified in the historical sampling data. They have also revealed a new Cu-Zn anomaly located 3 km southeast of the Cabaçal Mine. Peak rock chip results to date include 4,075 ppm Cu, and 3,530 ppm Zn (Figure 9-1).

An additional 723 samples were collected over the historical Cabaçal Mine survey area in 2022 and 2023 to increase multi-element sample coverage. This data has helped confirm the lithogeochemical signature of basement units and the trace metals associated with the mineralization expression.

The soil survey program was also extended to the southern sector of the Sucuri Target Area (C2B target area of BPM), where 554 samples were collected to fill gaps in historical sampling coverage. Returning peak values of 104 ppb Au, 888 ppm Cu, 631 ppm Pb, 676 ppm Zn were detected (in separate samples).

Soil geochemistry is being progressively extended along the belt, with additional areas targeted, including the Cigarra target area to the northwest and the Álamo area to the southeast, both of which are still under evaluation.

Figure 9-1: Historical and New Geochemical Soil Results (Cu) in the Chiquito (C2A) and Sucuri (C2B) Targets



Note: Analytic signal magnetics. Source: BPM & Meridian geochemical data, 2022.

9.4 Geophysics Survey

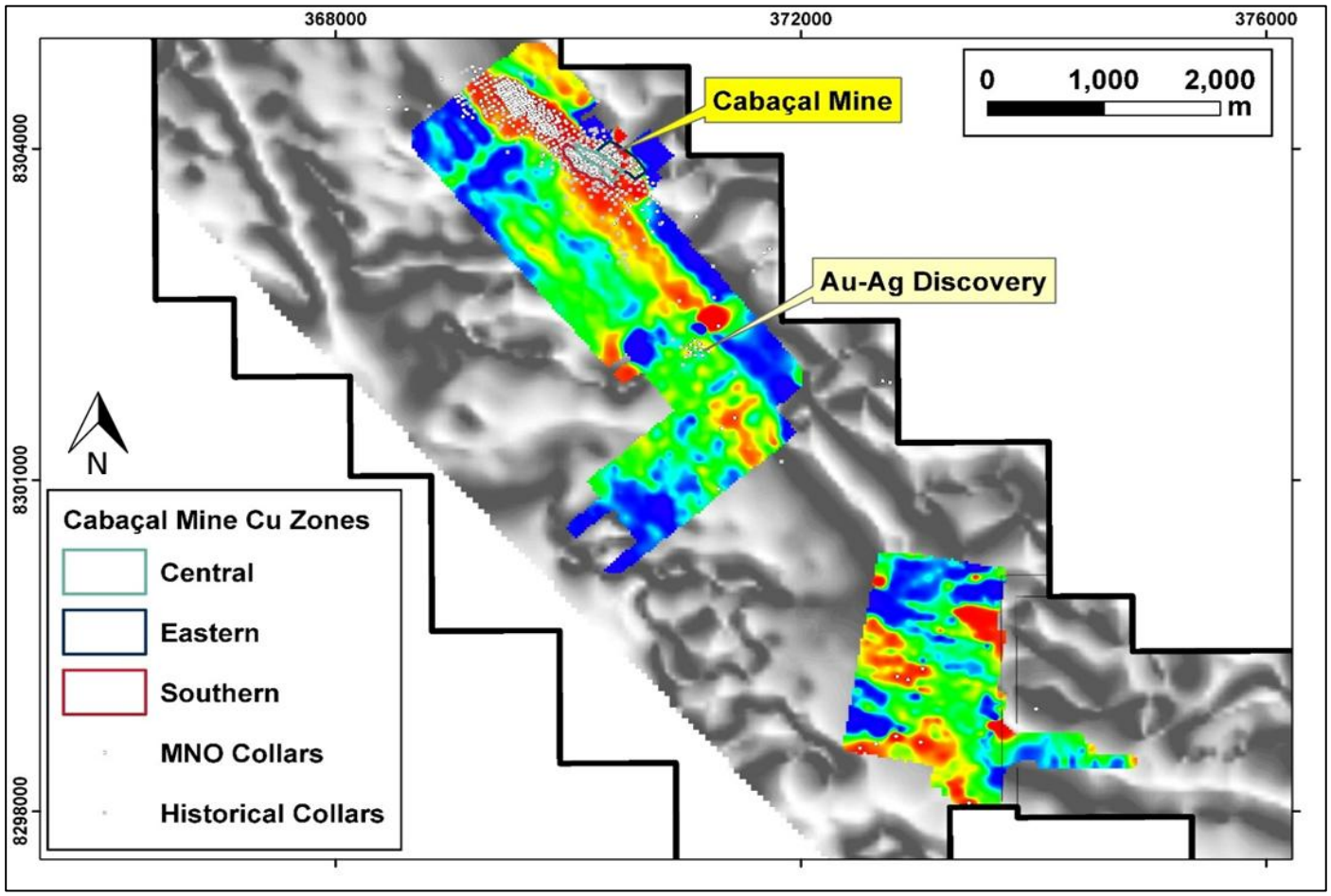
Meridian initially contracted Geomag S/A Prospecções Geofísicas, a company within the Wellfield Services Group, to conduct an orientation survey and downhole electromagnetic surveys over the Cabaçal mine and near-mine areas. Surface measurements were taken using a TEM57-MK2 Transmitter and PROTEM receiver, while subsurface measurements utilized a BH43-3 borehole three-dimensional time domain electromagnetic (TDEM) probe. Subsequently, Meridian acquired its own modern equipment manufactured by Australian Electromagnetic Imaging Technology Pty Ltd (EMIT), including a Digiatlantis probe, an 8-Channel SMARTem24 Receiver, SMARTx4 Transmitter, and a tri-axial fluxgate magnetometer. With an in-house team, Meridian has initiated a program of FLTEM and BHEM surveys. Data is sent to Meridian's independent consultant, Core Geophysics, where the geophysical data is processed and modelled using industry-standard Maxwell software.

Fixed-Loop orientation surveys conducted over the Cabaçal mine with 100 x 50 m station spacings identified a bedrock conductor consistent with a response associated with a broad footprint of disseminated to stringer sulphides. The EM anomaly extends approximately 100-200 m southeast of the historical mine development limits. Additional Fixed-loop surveys have been initiated over bedrock conductors identified from the 2007 VTEM survey, with an initial focus at

Cabaçal West, where three holes were drilled (CD058, CD066, CD075), and further work is pending. Downhole electromagnetic surveys have been completed, with survey work having been completed on 95 holes to date. BHEM surveys in the Cabaçal mine setting correspond with stringer zones encountered in recent Meridian and historical drilling.

Induced Polarization (IP) surveys with a 100 x 50 m grid have been conducted over the Cabaçal area, the northwest extension, and the southern extension through the Chiquito and Sucuri target areas. These surveys revealed several chargeability anomalies consistent with targets for disseminated sulphides (Figure 9-2). Testing of a coincident chargeability response alongside gold-in-soil geochemical led to the discovery of the Chiquito gold-silver target (C4A South BP area), which remains under evaluation. In the 2024 geophysical program, a series of chargeability responses have been identified in the Sucuri area. Survey crews are currently deployed in the Cigarra and Álamo areas, with further work underway in the mine corridor to progressively extend coverage and provide a dataset for shallow-level exploration targets.

Figure 9-2: Chargeability Imagine from Gradient Array Induced Polarization Survey in Cabaçal Mine Corridor



Source: Chargeability image from Core Geophysics superimposed on Analytic Signal magnetics. Meridian, 2024.

9.5 Pits, Trenches, and Bulk Samples

A total of 48 trenches were excavated using a backhoe excavator in the area of main mineralization zone outcrops on the NE side of the deposit for sampling.

The trench walls were cleaned and scraped before sampling began to improve visibility of the rock characteristics and eliminate contaminating materials from the samples.

Descriptions and sample intervals were standardized at 1 m in width, with potential variations based on geological criteria (lithological contact, structures, and characteristics of the rocks observed) ranging between 0.1 and 1.0 m. The sampling and description were carried out within the saprolite zone near the trench floor, or fresh rock.

The described intervals were marked with stakes painted with red spray paint and vertical lines to define the limits of each described/sampled interval. The data collected was recorded in an appropriate log that included the following fields: initial and final depth of the interval, lithology, hydrothermal alteration type, style of hydrothermal alteration, rock code, weathering intensity, veins, total quantity of sulphides, mode of occurrence of sulphides (disseminated or associated with structures), and the percentage of pyrite (Py), galena (Gal), sphalerite (Sph), and chalcopyrite (Cpy).

Intervals showing mineral potential or evidence of mineralization, such as the presence of sulphides, boxworks, gossans, quartz veins, and structures with oxidation halos, were sampled. Additionally, two intervals before and two intervals after the interval with mineral potential were sampled. Samples were collected using a geological hammer or garden shovel and a sampling basin (Figure 9-3). QA/QC control samples were included in the sample batches to ensure accuracy and consistency.

The topographic survey of the trench was carried out after the description, sampling, and photographic recording, using high-precision RTK equipment.

Upon completion of the surveys and records, the geologist responsible for the trench prepared a geological section on a scale of 1:100 on graph paper, incorporating lithological, structural, and sampling information.

Figure 9-3: Trench Sampling



Source: Internal Standard Operational Procedure for Trenches Opening. Meridian, 2024.

9.6 Remote Sensing

In August 2021, Meridian commissioned a WorldView-3 satellite survey to supplement existing regional datasets and aid in exploration targeting. WorldView-3, a high-resolution commercial satellite sensor launched in 2014, provides detailed imagery that is valuable for mineral mapping, providing a fast and effective method for screening large areas for hydrothermal alteration signatures. Meridian timed the survey to align with peak dry season conditions, and with the survey now completed, the data has been interpreted by Dan Taranik of the Exploration Mapping Group in Nevada, United States. Since no archive imagery was available, four new strips of WorldView-3 satellite imagery were acquired, covering a total area of 1,384 km^2. The anomalies from the Worldview-3 survey represent the uppermost surficial signatures of alteration cells where they project to surface. These systems have deeper down-dip/down-plunge extension or strike extensions that may not align with the surface anomalies. This belt-scale data provides a valuable resource for long-term exploration assessment, and the survey data is currently under review.

9.7 Data Compilation

During Meridian's due diligence review, SRK assessed the Cabaçal Project data and historical resource estimates, providing the following recommendations to validate the data and optimize any resource estimation:

- Locate the old drill cores, re-sample, and re-assay all available core.
- Re-survey the drill hole collars and validate them against the current database.
- Establish a twin hole program to compare results with historical data.
- Develop a program for density measurements using new drill holes.
- Create a new geological interpretation and 3D model based on rock type characteristics and mineralization style.
- Use a geostatistical method to improve 3D interpolation of grades.
- Establish a metallurgical test work program.
- Categorize the Mineral Resources as Inferred, Indicated, and Measured, based on increasing geological knowledge and understanding of grade distribution.
- Define and apply a criterion for "reasonable prospect of economic extraction."
- Prepare a Mineral Resource statement.

Meridian has implemented programs to systematically compile archival records, engaging an independent third party, Fazal Sons Inc., a Pakistan-based geologist specializing in data compilation. Ledgers were compiled in MS Excel, internally verified by Meridian staff, and further validated using Surpac and Leapfrog tools. Multiple corroborating datasets were cross-referenced by Meridian staff to ensure consistency. Additionally, values were compared against an MS Excel database provided by RTZ for drilling and surface geochemistry. Meridian has continued to extend this data compilation to include records from Santa Helena. The compiled data is summarized in Table 9-1.

Table 9-1: Prioritized Data for Compilation from RTZ Archives

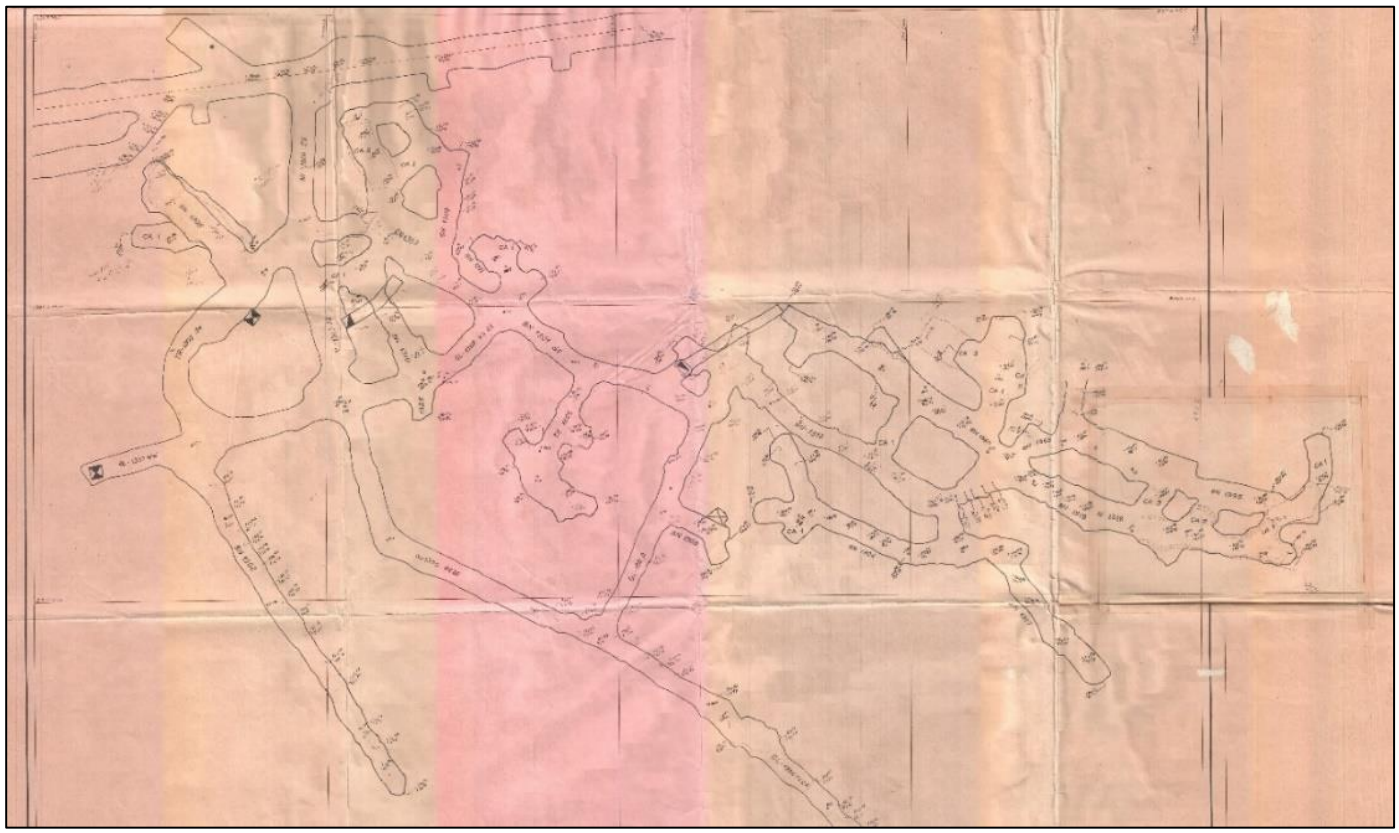
File	Page From	Page To	Total Pages	Type
BRA30000124--086.pdf	46	56	11	C4A: surface collars
BRA30000124--085.pdf	3	6	4	C4A: underground drill collars
BRA30000124--085.pdf	7	11	5	C4A: surface collars
BRA30000124--085.pdf	13	134	122	C4A: underground drill assays
BRA30000124--085.pdf	124	382	259	C4A: surface drill assays
BRA30000124--076.pdf	1	430	430	C4A: Assays : Au-Cu-Ag-Pb-Zn-Ni-As-Bi-Mo
BRA30000124--077.pdf	1	281	281	C4A: Assays : Au-Cu-Ag-Pb-Zn-Ni-As-Bi-Mo
BRA30000124--079.pdf	1	573	573	C4A: Assays : Au-Cu-Ag-Pb-Zn-Ni-As-Bi-Mo
BRA30000124--081.pdf	2	501	500	C4A: Litho/Min; Assays : Au-Cu-Ag
BRA30000124--082.pdf	2	316	315	C4A: Assays: Au-Cu-Ag
BRA30000124--078.pdf	1	555	555	C4A: mineralization and mineral types
BRA30000124--080.pdf	1	62	62	C4A: mineralization and mineral types
BRA30000124--083.pdf	2	408	409	C4A Litho, Weathering, Geotech
BRA30000058--021.pdf	6	6	1	C4A Assays : Au-Cu-Ag
BRA30000058--021.pdf	9	9	1	C4A Assays : Au-Cu-Ag
BRA30000124—060.pdf	2	175	174	C2C: Assays: Au-Cu-Ag-Pb-Zn-Cd-V-Bi-Mo-S
BRA300000124--063.pdf	5	31	32	C2C Assays : Au-Cu-Ag-Pb-Zn
BRA300000124--070.pdf	3	31	32	C2C Assays : Au-Cu-Ag-Pb-Zn-S; density
BRA300000124--061.pdf	2	126	127	C2C Assays : Au-Cu-Ag-Pb-Zn-Cd-V-Bi-Mo-S
BRA300000124--057.pdf	1	10	11	C2C Litho from sections
BRA30000124--046.pdf	2	15	16	C2C Litho and composites from sections
BRA30000058--038.pdf	1	13	14	C2C Litho/Min; Depths from Drill hole sections
BRA30000052--025.pdf	1	7	8	C2C Litho/Min; Depths from Drill hole sections
BRA30000058--044.pdf	1	6	7	C2C Litho/Min; Depths from Drill hole sections
BRA30000058--033.pdf	1	10	11	C2C Litho/Min; Depths from Drill hole sections
BRA30000058--037.pdf	1	5	6	C2C Litho/Min; Depths from Drill hole sections
BRA30000058--041.pdf	1	13	14	C2C Litho/Min; Depths from Drill hole sections
BRA30000124--055.pdf	1	7	8	C2C Litho/Min; Surveys; Depths
BRA30000124--051.pdf	1	7	8	C2C Drill Surveys; Trench Litho, Structure, Assay
BRA30000124--137.pdf	1	63	64	C2C Litho/Min; Depths
BRA30000058--034.pdf	1	9	10	C2C Trench Litho, Structure, Assay
BRA30000058--036.pdf	1	6	7	C2C Trench Litho, Structure, Assay
BRA30000124--052.pdf	2	38	39	C2C Trench Litho, Structure, Assay

Meridian has reviewed all available historical records, including registers and cross sections, to digitally compile historical logging codes. As of the time of writing, the compiled digital data includes:

- 13,637 minerology entries (all related to Cabaçal)
- 4,980 lithology records (2,946 from Cabaçal and near-mine areas)
- 4,779 structural records (4,564 from Cabaçal and near-mine areas; 215 from C2C)
- 35,356 assay records for BPM surface diamond drilling in the Cabaçal Belt (from original ledgers, with further results where assays are lost – 81 composites records, 3,976 from graphic scale bars, and 70 with interval estimates)
- 457 assay records for PML surface diamond drilling in the Cabaçal belt
- 3,054 assay records for RTZ underground diamond drilling in the Cabaçal deposit
- 142 assay records for PML underground diamond drilling in the Santa Helena deposit
- 296 assay records for underground grade control channel samples
- 610 assay records for PML underground grade control channel samples
- 383 trench assay records (all related to Santa Helena)
- 8,756 surface soil geochemical assay records
- 549 density assay readings (361 from Cabaçal and near-mine areas)
- 86 RTZ underground diamond drill hole collar positions
- 723 BPM surface diamond drill hole collar positions.

In addition to the tabulated data, numerous geological, geophysical and geochemical maps are available. Numerous underground mine development plans for the Cabaçal deposit are also available in historical records (Figure 9-4). This data is being systematically digitized and interpreted.

Figure 9-4: Plans of Underground Development, Cabaçal Mine



Source: Hardcopy files donated by Sr Romar Antonio Araujo, former draftsman for BPM. Meridian, 2021.

10 DRILLING

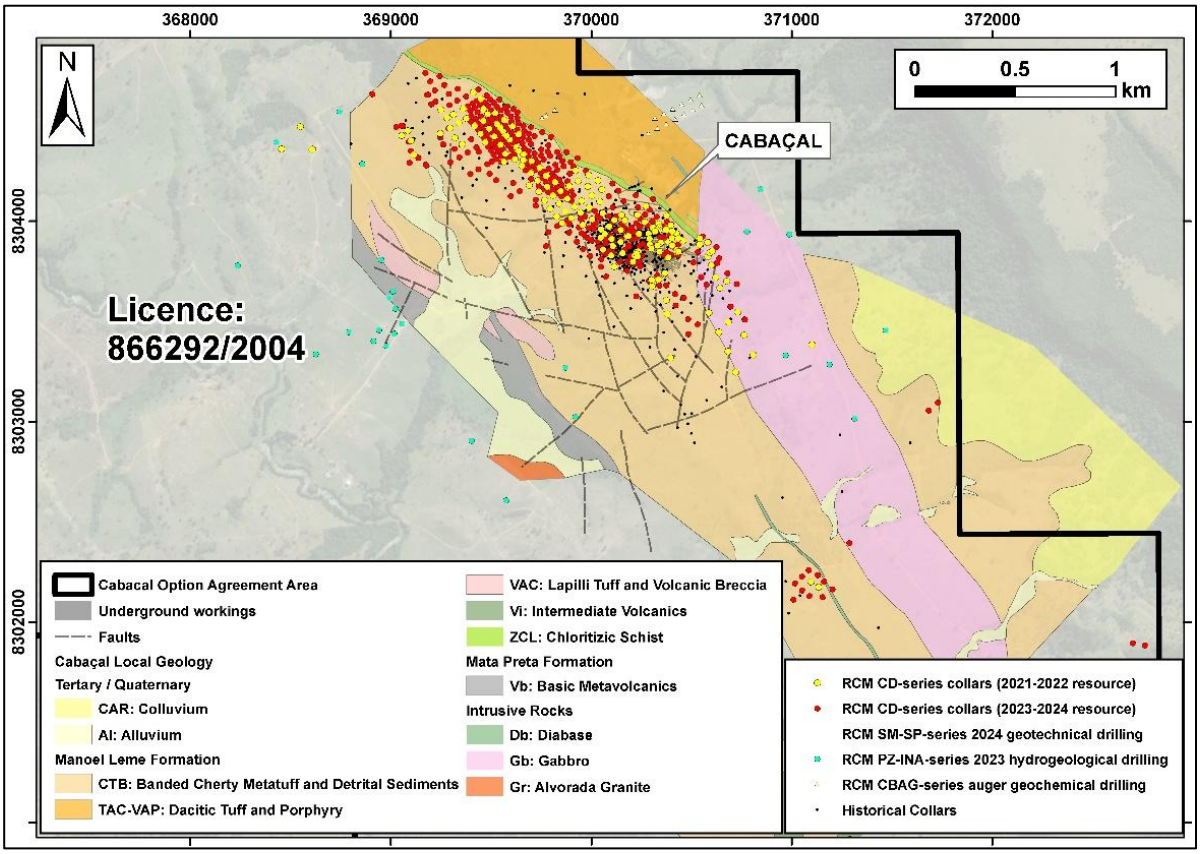
10.1 Introduction

Meridian drilling operations consist of three drilling campaigns, as outlined in Table 10-1 and in Figure 10-1.

Table 10-1: Drill Summary

Campaign	No. of Holes	Type of Drilling	Total metres
2021-2022	224	Diamond Drilling	27,278.92
2022-2024	295	Diamond Drilling	32,701.91
2022-2024	12	Geotechnical RC Drillholes	981
2022-2024	25	Auger Drilling	85.87
Historical	698	Diamond Drilling	69,496.38

Figure 10-1: Drill Collar Location Plan, Extent of Drilling in the 2021-2024 Campaigns to the MRE Effective Date



Source: Meridian, 2024.

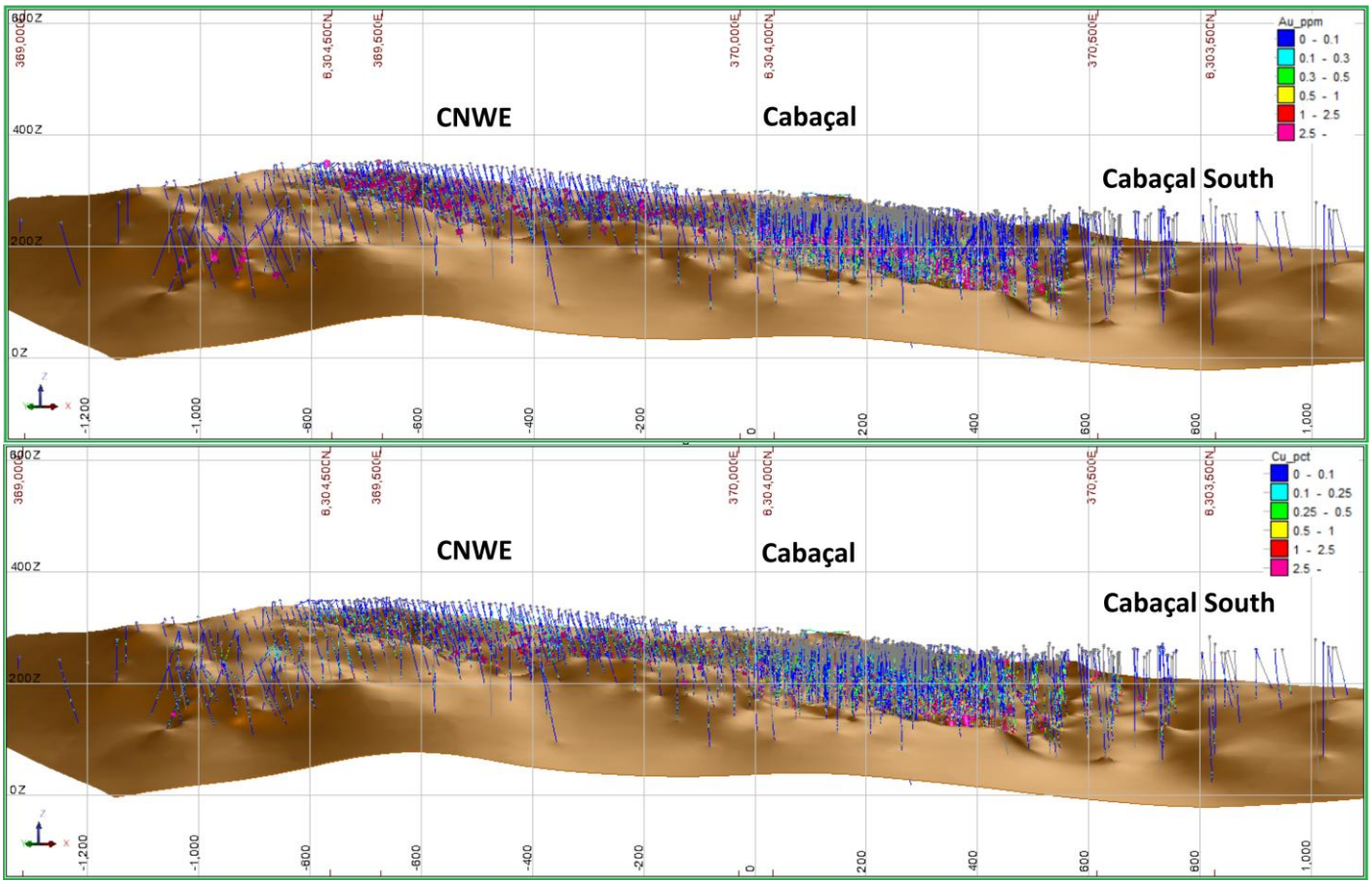
10.2 Extent & Outcomes

Meridian is in the process of diamond drilling a combination of twin holes, infill holes, and resource extension holes to validate the historical database of the Project and define the limits of mineralization. Three rigs have been contracted from Willemita Sondagens Ltda, (CNPJ – 29.049.513/0001-79, Av. Custódio G. Sobrinho, 189 – Centro, 38.780-000 – Vazante, Minas Gerais, Brazil. These include: Maquesonda Mach1200 (Capacity: 200 m with HQ, 400 m with NQ, 800 m with BQ) Maquesonda Original Mach1200 (Capacity: 200 m with HQ, 700 m with NQ, 1000 m with BQ) Maquesonda Original Mach1210 (Capacity: 200 m with HQ, 1000 m with NQ, 1200 with BQ) Rigs are equipped with turbocharged 6-cylinder MWM motor and a conventional wireline coring system. Holes are collared with HQ2 core through the saprolite to maximize recovery, with NQ2 tails. Meridian's drilling to date has extended over a strike length of approximately 1,800 m, centred on the historical workings of the Cabaçal Mine and its extensions to the northwest and southeast. The Company has also engaged Sondservice for some low-angle holes where access required set-up angles of less than 45° (CNPJ – 21.056.118/0001-01, Rua Maria Rita, 375 – Bairro Santa Maria, 32240-640 – Contagem, Minas Gerais, Brazil). SSA350 (Capacity: 65 m with HQ, 170 m with NQ, 350 with BQ for holes with angles greater than -45° and Capacity: 45 m with HQ, 110 m with NQ, 220 with BQ for holes with angles lower than -45°). A total of

519 diamond drill holes, amounting to 59,980.83 m, were included in the drilling database up to the effective date of the Mineral Resource Estimate (MRE), covering the Cabaçal deposit and near-mine sterilization areas. Additional data included 12 hydrogeological reverse circulation (RC) holes totaling 981 m, 37 geotechnical holes totaling 590 m, and 25 auger holes totaling 85.87 m. The 2021-2022 program has returned significantly mineralized intersections of Cu, Au, and Ag in the VMS-style mineralization, extending in the Northwest Extension (CNWE) from the mine along strike over the basal contact.

Meridian's drilling program has returned significant intersections of Cu, Au, and Ag mineralization in the VMS style, with a structural overprint. Mineralization extends into the Northwest Extension (CWNE) from the historical underground mine area along strike over the basal contact (Figure 10-2).

Figure 10-2: View to the NE with Hole Traces Coloured by Au (top) and Cu (bottom)



Source: Meridian, 2024. Drilling and model of the basal contact. Horizontal and vertical gridlines are spaced at 200m intervals for reference.

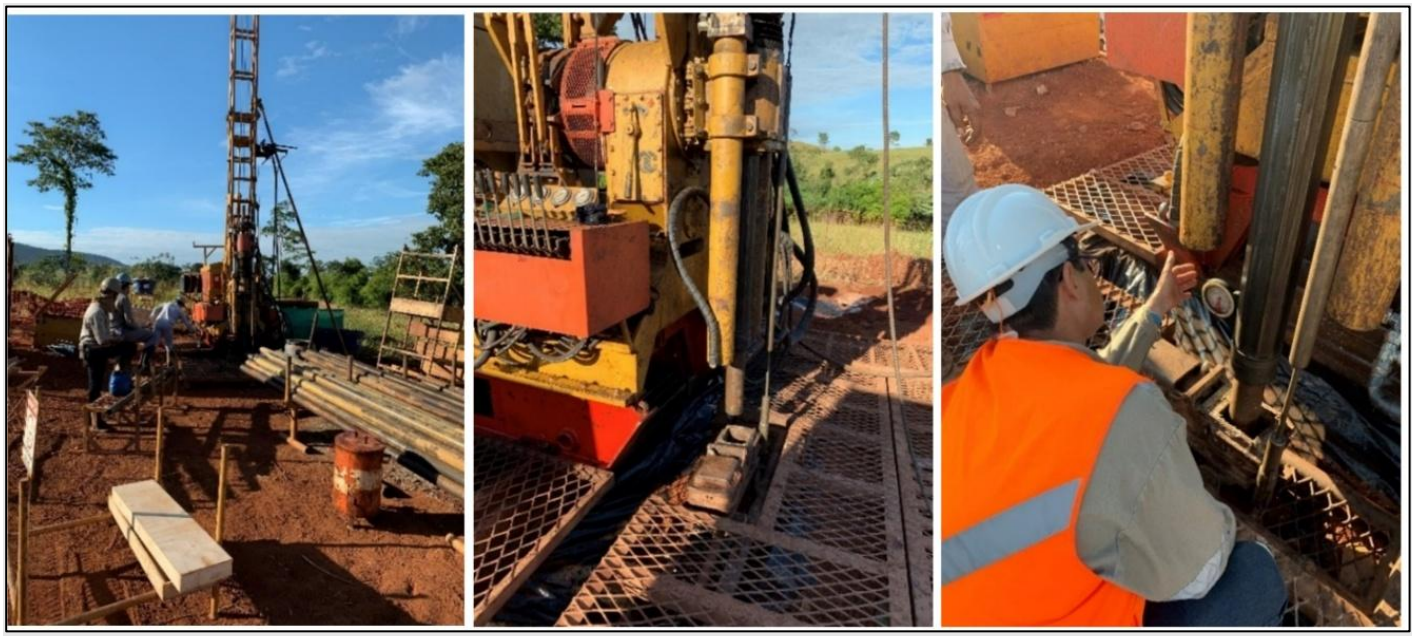
10.3 Procedures

The following describes the procedures used for Meridian's drilling and geochemical sampling.

10.3.1 Drill Hole Layout and Collar Control

Holes are initially planned in 3-D visualization software, namely Surpac and Leapfrog. Proposed sites are field-verified, and collar sites are located with Real Time Kinetic (RTK) survey control, operated by trained technicians. The planned collar sites are marked on the ground with survey pegs, and the azimuth of the planned hole is aligned using a foresight and backsight. Flagging tape is used to mark the pegs, aiding in the drill rig's orientation. Once the rig is positioned, the azimuth is cross-checked, and the mast is verified with an inclinometer to confirm the planned dip (Figure 10-3).

Figure 10-3: Drill Pad and Inclination Check of the Mast



Source: Batelochi, 2021.

Survey equipment is provided by CentroGEO (Rua Manoel Garcia Velho, n° 466 – Bandeirantes – Cuiabá – MT; CNPJ: 06.696.107/0001-00). The equipment includes a Trimble R8s RTK Base GNSS receiver, with antenna and UHF radio, as well as a Trimble TSC3 data collector. This system offers a horizontal precision of 3 mm, and a vertical precision of 3.5 mm. Data is exported from the receiver in UTM South America 1969 Zone 21L and converted to the Geocentric Reference System for the Americas (SIRGAS) in Trimble software.

Collar coordinates are re-verified at the conclusion of drilling using the same equipment. The data is then entered into MS Excel hole registers and the MS Access database. Collar positions are marked with permanent concrete markers and aluminum labels displaying the hole name and details for future reference. The database currently records UTM coordinate details in both SAD69 and SIRGAS2000.

10.3.2 Drill Hole Downhole Survey Control

Drill hole dip and azimuth are controlled by an inclinometer and a compass at the collar set-up. Upon completion, holes are surveyed using a Trushot™ Digital Survey tool rented from Dip Core Brasil Ltda Ernesto Pau-a-Pique (EPP), which provides dip and azimuth readings at 6-m downhole increments. The instrument is unaffected by magnetic interference. The data is processed with Trushot view software and exported into an MS Excel file, listing the depth interval, along with dip (negative for holes drilled downward from surface), azimuth, and calculated easting, northing, and elevation coordinates. This data is uploaded into Meridian's centralized MSAccess database.

10.3.3 Drill Core Processing

The following core handling procedure is used for the current drilling (illustrated in Figure 10-4):

- Drill core is periodically inspected on site at the rig by company geologists and is delivered twice a day to the core farm by drilling contractor, Willemita. Core trays are stacked and strapped to prevent movement during transport, with upper trays sealed with lids. Transport distances range from several hundred metres to a maximum of two kilometres between the drill site and core processing facilities. Core is stored in wooden boxes, with HQ trays holding approximately 2.8 m of core and NQ trays holding approximately 3.7 m.
- Upon delivery of Meridian's core yard, the core is checked for drill run meterage using aluminum tags on core blocks as reported by the drillers. The tags record the depth, meterage advanced, and core recovery.
- Downhole metre lengths for the core are measured by Meridian's technicians and recorded on the boxes. 'From' and 'To' depths are inscribed on each tray, along with 1-m integer marks on the core, along the full length of the hole.
- Geological logging is undertaken by the site geological team under the supervision of experienced management. Logging details include information on lithology, alteration, mineralization, and structure. Geological logging was completed as hardcopy on designed paper sheets and then transferred to digital format using MS Excel templates, with built in validation tools e.g., codes selected from pick lists, meterage validation checks to prevent gaps or overlapping intervals.
- Rock Quality Designation (RQD) and core recovery details are measured by Meridian's technicians.
- Core mark-up includes positioning of a cutting line to preserve the maximum angle of structural fabrics (alpha angle) in the cut core.
- Sampling intervals for both assaying and density are defined by the geologist, with sampling conducted under geological control. The minimum sample interval is 0.25 m, with the maximum generally 1 m, resulting in an overall average sample width of 0.84 m. A small number of samples exceed this 1-m length, usually in sterile material or in very rare cases where core loss occurs, in which samples are measured from core block to core block.
- Core is photographed after the initial mark-up under both wet and dry conditions, in pairs of trays positioned at right angles with proper lighting.
- Samples that include sample numbers and 'From' and 'To' depths are recorded using a tag book system.

- Core is cut in half using a brick saw with a diamond blade. The cut core is then returned to the trays before sample collection. Samples are collected in heavy-duty plastic bags and sealed with tamper-proof zip ties. Core trays are also photographed with half of the core in place with labelled sample intervals, while the other half-core is sampled and bagged.
- Quality control samples, including standards, blanks, and field duplicates, are added to the sample suite. Their sample numbers are recorded in the sample book before being entered into the database.

Figure 10-4: Examples of The Drillhole Procedures Implemented on Cabaçal Project

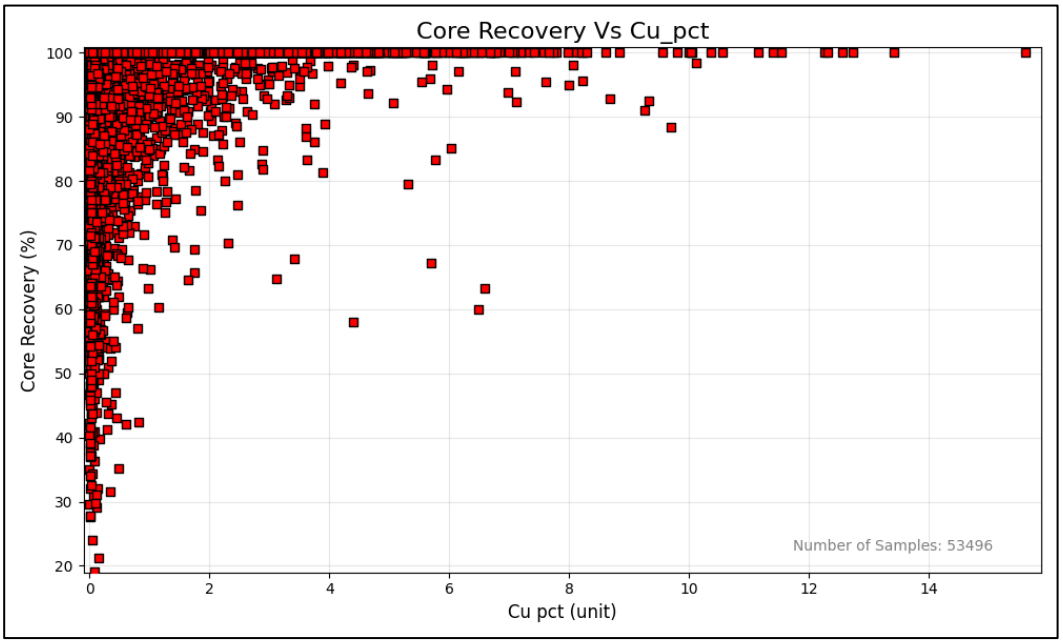


Source: Batelochi (2021); In a clockwise sequence, the photography; sample ready to be collected after sawing; the sampling procedure; core box with the shoulder markers and the sample interval for density determination. Rock Mass Data.

10.3.4 Core Recovery

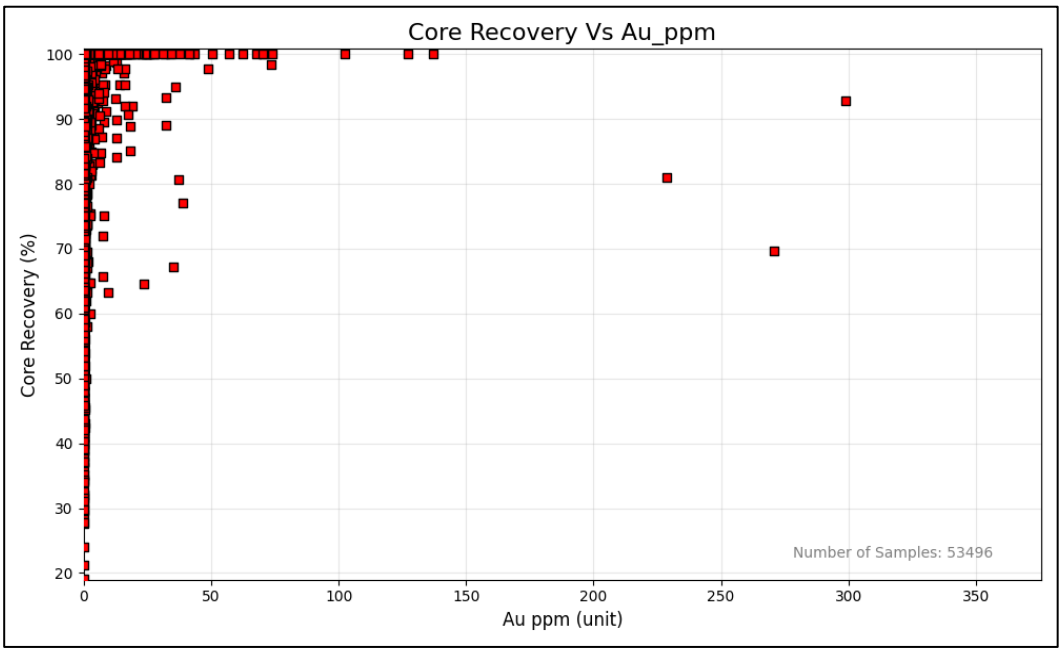
Like the historical core recovery, Meridian's drilling programs have achieved a high percentage of core recovery in the competent rock units of the basement. To date, core recovery in Meridian's program has averaged 97.0%. Core loss is slightly higher in the oxidised samples (89.3% recovered) and transition weather samples (93.9%) compared to fresh rock (98.1%). There is no apparent grade bias associated with core recovery (Figure 10-5, Figure 10-6). Core loss is attributed to intersecting broken ground, or material loss within the saprolite.

Figure 10-5: Core Recovery vs Copper Grade for Meridian CD-Series Cabaçal Samples



Source: CD-series drilling data. Meridian, 2024.

Figure 10-6: Core Recovery vs Gold Grade for Meridian CD-Series Cabaçal Samples



Source: CD-series drilling data. Meridian, 2024.

10.3.5 Core and Sample Storage

The Cabaçal Project office and core shed have been established at the former Manati Mine facilities, located less than 1 km from the Cabaçal mineral deposit. This infrastructure is in suitable condition for exploration and resource definition activities, providing ample space for storage, logging, and sampling (Figure 10-7).

Figure 10-7: Cabaçal Project Facilities and Core Storage



Source: Batelochi, 2021.

A limited amount of historical core has been stored at the Mato Grosso Federal University (UFMT) (Figure 10-8). In general, the core and core boxes are well preserved; however, some boxes have sustained termite damage, prompting company staff to transfer the affected core to plastic trays. The core stored at UFMT has undergone re-assay programs.

Figure 10-8: Historical Drill Holes Stored at UFMT



Note: Examples of quarter and half-core from resampling programs. Source: Batelochi, 2021.

The 12 holes drilled by Avanco in 2015 have been well preserved in a warehouse at the Santa Helena mine site, formally operated by PML (Figure 10-9). The cores have now been relocated to the Company's centralized core storage facility.

Figure 10-9: Drill Holes from the Avanco 2015 Campaign



Note: Core storage at a warehouse at the Santa Helena mine site. Source: Batelochi, 2021.

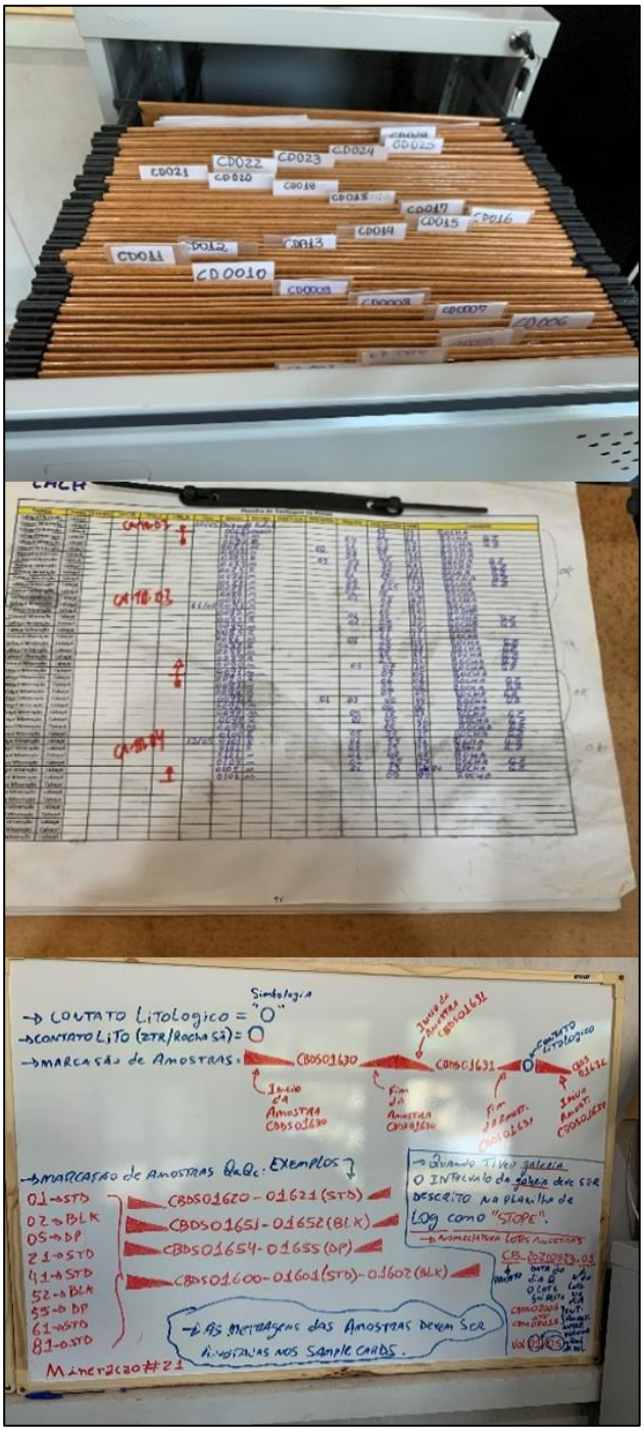
10.3.6 Storage of Documentation and Data

The original documentation for each drill hole or trench has been filed in its respective folder (Figure 10-10).

The database is an MS Access database, with data inputs from MS Excel spreadsheet tables. Project geologists and technicians are responsible for providing the spreadsheets, while the database manager oversees data import, management, and frequency of backups, including storage on Meridian's cloud-based system (Corporate Google Drive).

The MS Access database contains separate tables for collar coordinates and metadata, logging (lithology, mineralogy, structure, alteration), sampling and assay data, density, RQD, downhole surveys, and QA/QC.

Figure 10-10: Cabaçal Project Original Drilling and Trenches Document File



Source: Batelochi, 2021.

10.3.7 Assay Type Database Register

The assay table classifies information using the attribute "Assay_Type," as detailed in registered notes provided by Meridian. The attribute is applied to characterize the source of information for each assayed sample, with values ranging from "0" to "6":

- 0: Hole with assay data pending.
- 1: Samples with original report ledger.
- 2: Samples transcribed by the Project's previous owner from a primary source that was later lost.
- 3: Samples corresponding to composites taken from reports and tables of reserves. These would mostly represent 1-4 samples.
- 4: Samples where grades were measured from bar charts on physical cross sections.
- 5: Sample in post-mineralization intrusions.
- 6: Underground grade control channel samples captured for face-mapping sections and plans.

10.4 Significant Results and Interpretation

Table 10-2 presents the significant mineralized intersections from all campaigns executed in the Project, considering grades higher than 5 ppm of Au.

Table 10-2: Significant Mineralized Intercepts

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
CAIFB057	6.00	6.54	292.69	25.59	0.07
CAIFK002	7.40	8.20	106.00	5.20	0.23
CAIFS014	42.00	42.65	78.90	2.50	0.65
CAIFS020	37.40	38.20	92.91	18.00	3.49
CAIFS041	35.10	36.10	102.23	17.31	4.18
CD046	75.70	76.00	183.39	23.00	0.51
CD049	83.00	83.70	186.86	9.42	0.54
CD054	50.85	51.30	102.61	22.00	7.08
CD072	79.70	80.25	299.07	18.00	2.96
CD094	81.90	82.70	127.00	77.70	10.00
CD205	14.00	14.60	73.60	0.63	0.15
CD264	48.37	48.93	270.72	5.40	1.41
CD470	53.25	54.04	228.50	6.00	2.46
CD481	65.00	65.37	74.10	11.95	0.06
CD514	68.38	68.68	81.40	20.10	1.40
JUSPD007	53.27	54.02	176.00	18.20	3.25
JUSPD025	73.47	73.72	1200.00	89.00	3.03
JUSPD046	66.85	67.30	116.00	13.80	1.95
JUSPD131	91.58	92.00	18.94	1.10	0.09
JUSPD136	65.00	66.00	19.00	1.00	1.01
JUSPD155	56.00	56.50	19.00	4.50	1.70
JUSPD267	46.81	47.81	19.10	2.00	0.76
JUSPD290	64.85	66.00	16.11	1.50	0.27
JUSPD294	72.00	72.50	18.60	1.00	0.04
JUSPD298	82.90	83.50	19.09	1.50	0.12
JUSPD337	62.40	63.00	18.20	14.00	4.30
JUSPD381	58.00	58.40	16.63	0.25	0.65
JUSPD385	74.10	75.00	16.50	2.50	0.60
JUSPD392	78.00	79.00	16.48	1.50	0.40
JUSPD407	79.90	80.90	16.40	0.00	0.09
JUSPD433	61.55	62.50	19.00	7.50	0.24
JUSPD434	56.20	56.70	19.30	1.00	1.47
JUSPD435	66.80	67.30	16.50	31.40	4.15
JUSPD442	66.35	67.30	17.50	4.60	0.17
JUSPD462	70.00	70.60	16.20	0.50	0.04
JUSPD467	29.00	29.80	19.10	1.00	0.36

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
JUSPD050	97.22	97.66	380.00	5.90	0.37
JUSPD062A	56.50	57.00	96.66	8.23	0.64
JUSPD066	76.51	77.21	103.60	13.80	0.66
JUSPD069	66.70	67.44	103.00	37.30	1.23
JUSPD111	59.30	60.34	1182.44	21.60	0.02
JUSPD128	67.64	68.25	436.52	15.00	1.08
JUSPD136	62.19	63.00	131.10	2.10	3.50
JUSPD216	27.85	28.30	1672.05	32.80	1.12
JUSPD222	50.11	51.04	408.87	19.80	1.23
JUSPD294	73.90	74.50	73.50	5.00	0.61
JUSPD296	72.40	72.90	152.53	6.00	0.40
JUSPD322	52.85	53.20	82.28	16.25	1.51
JUSPD337	61.90	62.40	72.82	18.00	1.37
JUSPD393	89.70	90.35	107.00	9.00	1.30
JUSPD398	85.00	85.70	150.00	5.50	0.25
JUSPD403	55.30	55.67	250.00	0.00	2.30
JUSPD409	77.85	78.25	265.26	0.00	1.43
JUSPD411	64.90	65.30	356.00	20.30	0.07
JUSPD424	62.10	62.40	471.00	38.00	0.25
JUSPD431	31.40	32.00	758.00	0.00	3.50
JUSPD471	57.60	58.10	521.60	38.30	4.41
JUSPD484	28.75	29.50	152.40	1.90	0.07
JUSPD491	50.80	51.70	294.20	10.90	0.96
JUSPD504	62.55	63.00	155.20	34.90	4.20
JUSPD505	72.30	73.30	71.80	6.90	0.76
JUSPD508	60.88	61.41	520.00	10.90	0.84
JUSPD516	54.45	54.75	470.00	16.50	2.03
CA_TR_034	48.00	49.00	23.82	10.40	0.10
CAIFB062	29.00	29.48	27.10	11.90	3.50
CAIFK004	21.45	22.30	21.80	6.30	1.98
CAIFK006	10.60	10.90	24.70	6.90	2.25
CAIFK013	18.20	19.00	23.80	0.10	0.01
CAIFS029	23.00	23.45	23.70	0.00	5.95
CAIFS041	49.40	50.40	23.50	1.05	0.15
CAIFS043	43.45	44.10	21.30	4.80	1.96
CAIFS049	3.15	3.65	22.60	5.90	0.89
CD003	156.70	157.70	24.73	10.00	2.31
CD033	57.90	58.80	21.17	3.50	0.42
CD063	131.00	131.35	22.89	3.30	0.65
CD102	63.81	64.75	24.20	0.50	0.14
CD113	14.00	15.00	24.44	0.20	0.10
CD127	69.75	70.15	24.90	0.81	0.65
CD147	22.68	23.30	23.74	1.90	1.64
CD163	40.25	40.60	20.30	8.00	1.40

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
JUSPD492	33.70	34.50	18.40	4.10	1.48
JUSPD497	69.90	70.40	17.50	4.70	1.33
JUSPD501	67.00	67.85	17.94	1.66	0.32
CAIFK006	6.90	7.90	9.90	1.20	0.23
CAIFS014	39.50	40.50	9.96	3.00	0.74
CAIFS019	7.05	7.50	10.87	29.00	11.75
CAIFS020	25.30	26.00	10.13	3.50	1.78
CAIFS024	29.35	29.90	11.10	4.00	2.07
CAIFS041	37.00	38.00	10.50	4.24	1.19
CD003	164.10	164.90	9.94	13.00	1.90
CD010	32.85	33.85	9.82	1.70	0.72
CD110	34.20	35.00	9.69	0.19	0.01
CD155	92.00	92.50	10.18	3.00	0.82
CD170	35.10	35.65	10.88	0.40	0.01
CD240	132.45	132.90	10.31	68.00	12.73
CD288	60.70	61.10	10.33	1.10	0.08
CD308	26.36	26.96	10.48	1.20	0.14
CD309	56.31	56.63	10.51	6.90	0.94
CD333	50.30	50.64	10.00	15.20	6.22
CD341	15.00	15.42	9.99	0.60	0.21
CD361	45.47	46.13	10.87	0.30	0.05
CD511	86.83	87.18	9.79	1.72	0.77
CD571	52.19	52.53	9.73	1.96	1.37
CD581	62.45	63.03	9.82	1.98	0.72
JUSPD011	91.55	91.70	10.03	22.60	4.50
JUSPD025	71.47	72.00	9.80	6.50	0.87
JUSPD046	77.55	78.74	10.40	0.50	0.52
JUSPD062A	59.50	60.00	10.46	2.43	0.65
JUSPD067	86.75	87.64	10.52	10.20	3.80
JUSPD075	32.94	33.80	10.38	24.40	5.80
JUSPD111	106.00	106.52	10.00	0.00	0.05
JUSPD115	117.90	118.44	10.11	9.80	3.30
JUSPD123	108.00	109.00	10.97	2.20	0.68
JUSPD128	68.25	68.74	10.61	6.20	0.44
JUSPD199	46.10	47.00	10.82	3.10	1.05
JUSPD215	75.45	76.20	10.67	3.30	1.95
JUSPD293	74.80	75.12	11.08	8.00	4.10
JUSPD294	72.50	73.00	9.80	1.00	0.15
JUSPD298	83.50	84.40	9.85	1.50	0.15
JUSPD321	47.30	48.00	10.60	1.00	0.01
JUSPD327	34.56	35.20	9.80	1.50	0.39
JUSPD333	69.50	70.20	10.46	0.25	0.21
JUSPD337	84.10	84.54	11.02	8.50	2.40
JUSPD341	40.00	40.80	9.70	9.00	1.60

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
CD356	60.82	61.65	25.83	1.50	0.29
CD481	65.37	66.00	24.10	1.75	0.01
CD544	89.00	89.82	19.95	0.44	0.08
JUSPD003	57.25	57.50	27.10	2.21	4.40
JUSPD062	62.00	63.10	23.66	1.20	0.39
JUSPD062A	61.50	62.00	23.99	1.40	0.34
JUSPD063	57.35	57.62	20.63	1.15	1.58
JUSPD064	97.18	97.56	20.57	9.30	1.23
JUSPD067	92.90	93.15	26.20	17.60	2.60
JUSPD071	82.18	83.00	20.18	1.30	0.61
JUSPD077	80.00	81.00	25.76	0.40	0.05
JUSPD091	70.60	71.20	22.54	16.90	3.35
JUSPD231	43.00	43.50	20.44	0.90	0.23
JUSPD290	53.40	54.60	19.82	2.00	0.18
JUSPD291	80.70	81.20	26.34	3.50	0.37
JUSPD294	71.50	72.00	21.80	1.00	0.27
JUSPD295	80.40	81.50	21.69	3.50	0.03
JUSPD297	70.60	71.00	20.40	3.88	0.83
JUSPD298	49.00	49.40	23.84	13.00	5.04
JUSPD327	64.12	64.60	26.29	29.85	4.32
JUSPD352	57.00	58.05	23.27	0.25	0.36
JUSPD357	68.00	68.75	21.16	11.00	1.84
JUSPD360	87.65	88.65	22.70	4.00	1.03
JUSPD381	57.55	58.00	24.91	0.25	0.58
JUSPD394	22.55	23.30	23.50	3.50	2.45
JUSPD404	60.00	60.50	23.80	0.00	0.50
JUSPD405	69.00	69.54	24.20	7.20	1.67
JUSPD431	29.60	30.20	22.50	0.00	3.45
JUSPD436	30.30	30.90	20.93	21.00	6.36
JUSPD440	36.00	36.50	25.20	1.00	0.01
JUSPD442	67.30	67.75	23.00	13.70	0.92
JUSPD451	32.60	33.00	19.64	0.25	0.45
JUSPD473	69.00	69.85	19.50	4.80	0.95
JUSPD478	58.50	59.25	19.70	1.70	0.83
JUSPD484	40.90	41.50	23.50	1.40	0.89
JUSPD501	64.05	65.15	20.90	10.20	1.50
CAIFB061	7.93	8.57	12.80	14.40	3.33
CAIFK014	7.95	9.05	11.30	0.70	0.10
CAIFS027	27.50	28.50	11.37	4.32	1.31
CAIFS035	54.60	55.10	13.10	0.90	0.16
CAIFS040	16.30	17.30	11.30	10.10	1.84
CAIFS043	48.80	49.60	12.50	4.10	1.35
CD012	103.00	103.65	11.37	14.00	2.96
CD054	79.70	80.25	11.55	6.00	2.80

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
JUSPD342	65.80	66.70	10.60	3.50	1.09
JUSPD344	38.70	39.40	9.78	0.25	0.03
JUSPD355	77.00	78.00	10.90	1.00	0.02
JUSPD365	43.55	44.70	10.45	0.25	0.22
JUSPD419	121.75	122.50	9.70	0.00	1.18
JUSPD441	33.15	33.50	10.60	7.50	1.70
JUSPD453	52.00	53.00	10.10	3.10	0.70
JUSPD467	30.70	31.30	10.20	0.40	0.02
JUSPD471	54.10	54.60	11.10	3.80	0.04
JUSPD472	58.85	59.70	10.30	6.50	1.53
JUSPD475	65.00	66.00	10.50	4.60	1.45
JUSPD505	71.55	72.30	10.90	2.70	0.52
JUSPD546	61.00	61.80	10.10	1.50	0.90
CAIFS015	13.00	14.10	35.67	4.00	0.50
CAIFS020	38.20	38.70	27.82	6.00	2.46
CAIFS039	17.00	18.05	31.80	9.90	2.20
CD009	87.94	88.94	35.76	17.00	3.32
CD045	6.00	7.00	28.96	6.00	0.12
CD072	80.90	81.35	32.25	3.40	0.83
CD086	47.65	48.10	31.10	5.00	0.65
CD101	86.65	87.05	37.70	6.08	1.35
CD147	21.55	22.22	35.02	8.00	5.70
CD171	55.35	55.65	27.69	20.00	3.79
CD205	39.88	40.45	37.30	2.16	0.97
CD210	95.00	95.55	33.50	2.26	0.48
CD216	78.80	79.35	32.30	0.56	0.46
CD240	132.90	133.60	34.11	68.00	12.56
CD267	41.25	41.95	30.93	1.05	0.07
CD544	92.64	93.19	32.80	2.14	0.34
CD595	110.11	110.51	32.20	3.25	0.82
JUSPD007	45.66	45.76	35.00	3.60	1.10
JUSPD011	79.88	80.43	34.20	12.30	1.60
JUSPD046	53.48	54.00	31.90	6.70	0.03
JUSPD062A	58.50	59.00	29.77	3.25	0.96
JUSPD102	162.10	163.10	37.40	0.00	0.03
JUSPD119	45.24	46.24	37.19	7.70	0.34
JUSPD122	88.50	88.86	33.43	7.88	2.56
JUSPD135	57.31	57.80	38.43	2.00	2.80
JUSPD249	33.00	33.60	28.78	0.63	0.75
JUSPD296	72.90	73.30	32.26	0.25	0.18
JUSPD316	55.90	56.70	32.50	8.50	2.65
JUSPD322	44.80	45.70	30.44	3.00	2.03
JUSPD326	58.40	58.97	35.55	5.00	0.97
JUSPD327	30.93	31.34	32.38	0.25	0.13

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
CD068	34.80	35.65	11.51	2.30	0.44
CD071	55.40	55.80	12.24	1.00	0.24
CD096	148.50	149.15	11.85	9.78	3.57
CD109	52.10	52.90	12.05	0.14	0.05
CD128	66.82	67.70	12.99	1.00	0.24
CD185	40.00	40.70	12.69	7.00	0.61
CD215	81.00	81.35	11.25	2.85	0.80
CD223	40.65	41.09	12.40	0.66	0.04
CD240	135.75	136.35	12.32	91.00	15.60
CD266	50.65	51.00	12.69	14.60	0.96
CD276	72.30	72.60	11.38	1.60	0.90
CD333	45.80	46.55	13.22	0.50	0.04
CD347	96.20	96.64	12.92	8.30	0.84
CD388	66.65	67.07	13.05	1.80	0.74
CD458	62.90	63.49	12.65	4.88	0.45
CD474	71.75	72.57	12.70	1.00	0.01
CD493	109.71	110.22	12.45	7.81	2.85
CD525	41.69	42.04	11.75	1.84	0.98
CD595	110.51	111.00	11.25	1.10	0.52
JUSPD009	22.78	23.14	12.10	1.00	0.27
JUSPD062A	52.00	52.50	12.86	1.50	0.06
JUSPD065	66.00	67.00	12.44	7.50	0.01
JUSPD195	57.44	57.62	11.57	21.58	4.04
JUSPD216	28.30	28.80	12.44	0.30	0.09
JUSPD266	50.63	50.88	11.23	35.50	9.05
JUSPD283	44.10	44.45	12.00	4.50	0.68
JUSPD304	59.00	59.70	11.60	5.50	0.83
JUSPD315	55.60	56.30	12.40	0.50	0.01
JUSPD335	90.40	90.75	12.20	8.00	3.63
JUSPD362	70.40	71.15	12.80	1.50	0.52
JUSPD383	49.90	50.75	12.52	5.00	1.59
JUSPD392	74.70	75.70	12.00	0.25	0.06
JUSPD405	83.00	83.80	11.30	2.30	0.14
JUSPD408	78.35	78.80	11.60	5.10	1.66
JUSPD434	55.70	56.20	11.70	11.30	0.02
JUSPD441	54.45	55.40	11.80	0.00	1.42
JUSPD443	76.20	77.00	11.60	3.60	0.24
JUSPD463	91.80	92.70	12.40	6.90	1.31
JUSPD468	27.50	28.00	12.90	0.50	0.00
JUSPD471	54.60	55.10	11.40	4.20	0.04
JUSPD484	66.60	67.20	11.60	1.60	0.18
JUSPD495	30.80	31.70	12.90	1.30	0.68
JUSPD498	56.00	56.70	12.80	3.80	0.60
JUSPD500	66.25	66.85	11.70	34.40	5.40

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
JUSPD361	68.50	69.50	37.00	1.00	0.28
JUSPD381	58.40	58.80	29.13	0.25	1.22
JUSPD384	62.60	63.50	29.80	2.29	0.50
JUSPD405	82.35	83.00	31.70	9.00	1.37
JUSPD413	53.10	53.85	33.50	0.00	0.76
JUSPD424	65.30	66.20	30.60	6.30	0.04
JUSPD440	53.70	54.20	30.00	3.80	0.89
JUSPD468	26.50	27.00	30.00	1.95	0.03
JUSPD480	107.65	108.75	36.90	0.00	2.30
JUSPD491	48.80	49.60	30.50	2.70	0.13
JUSPD497	69.00	69.90	38.30	8.70	2.72
JUSPD498	55.00	56.00	29.70	5.00	0.90
JUSPD501	69.50	70.80	30.00	13.10	1.35
JUSPD524	57.00	58.50	37.10	0.00	0.39
JUSPD527	67.60	68.15	29.60	8.70	0.02
CAIFS019	25.10	25.85	14.30	8.60	3.67
CAIFS040	22.75	23.55	15.30	25.50	6.60
CAIFS043	51.80	52.45	15.70	6.40	0.87
CAIFS049	8.80	9.30	16.00	2.90	0.90
CD006	128.95	129.95	15.61	38.00	7.10
CD031	123.15	124.00	14.24	15.00	4.19
CD049	86.50	87.35	16.08	1.20	0.72
CD071	46.60	47.00	13.52	0.20	0.00
CD072	80.25	80.90	15.50	2.70	0.64
CD104	42.80	43.25	13.50	10.70	5.17
CD109	52.90	53.20	14.55	2.38	1.83
CD128	70.90	71.47	14.48	11.00	2.96
CD207	33.75	34.20	13.70	0.07	0.00
CD232	72.89	73.33	13.40	15.95	1.98
CD276	62.34	62.64	13.92	3.50	1.32
CD365	42.46	42.86	14.81	1.00	0.09
CD483	14.10	14.59	14.45	6.90	2.17
CD544	117.33	117.80	14.65	1.03	0.38
CD595	111.93	112.26	14.00	2.13	1.77
JUSPD003	56.36	56.80	14.60	1.51	2.96
JUSPD011	77.55	78.21	13.60	11.90	2.98
JUSPD025	75.50	76.50	14.00	4.30	0.63
JUSPD033	85.81	86.50	13.25	10.80	1.68
JUSPD046	53.29	53.48	14.60	18.83	3.48
JUSPD050	108.60	109.45	13.60	4.30	1.80
JUSPD060	71.50	72.00	14.74	2.90	1.12
JUSPD067	85.34	86.20	15.67	9.50	3.90
JUSPD114	95.06	95.42	13.61	1.70	0.10
JUSPD122	83.25	84.00	15.89	0.00	0.22

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
JUSPD503	53.15	53.75	11.30	1.70	0.39
JUSPD532	77.30	78.15	11.66	0.68	0.19
CAIFK008	26.40	26.90	38.70	44.60	9.43
CAIFK014	16.35	17.05	40.60	1.00	0.47
CAIFS023	21.05	22.05	38.70	2.90	0.40
CAIFS039	15.80	16.40	41.20	13.20	3.30
CAIFS041	13.90	14.40	58.34	12.21	3.00
CD054	49.20	49.65	70.70	15.00	3.11
CD062	37.50	38.00	43.32	3.40	0.35
CD106	85.40	85.80	67.80	4.28	0.19
CD114	63.85	64.21	56.81	3.00	0.37
CD115	60.20	60.55	41.30	10.15	2.75
CD194	52.87	53.22	70.10	2.90	2.54
CD205	31.05	31.50	48.70	0.60	0.10
CD228	58.40	58.70	62.50	17.10	4.27
CD264	50.77	51.77	38.87	0.70	0.27
CD273	55.65	56.00	50.41	8.00	0.16
CD586	63.41	63.71	38.50	4.95	0.92
JUSPD011	80.43	80.63	40.00	17.10	3.20
JUSPD025	73.72	74.60	59.83	10.38	0.37
JUSPD046	62.32	62.65	40.77	3.15	1.53
JUSPD050	97.66	98.10	38.70	1.90	0.04
JUSPD059	42.80	43.00	62.13	21.50	2.04
JUSPD062A	57.50	58.00	49.45	1.80	0.88
JUSPD065	63.25	64.00	45.62	7.20	0.04
JUSPD125	77.79	78.57	47.33	1.87	0.65
JUSPD126	77.00	77.60	54.13	3.40	0.03
JUSPD135	52.00	52.36	61.03	2.30	0.45
JUSPD284	49.50	50.05	60.50	5.00	0.98
JUSPD294	75.00	75.50	42.20	3.50	0.39
JUSPD344	39.40	39.70	63.02	0.25	0.15
JUSPD347	74.00	74.50	47.66	8.00	1.32
JUSPD358	37.40	37.90	47.97	11.00	3.33
JUSPD401	87.10	88.00	48.60	1.20	0.14
JUSPD403	55.67	56.16	38.50	0.00	0.36
JUSPD409	93.50	94.40	55.10	0.00	0.85
JUSPD431	29.10	29.60	60.27	0.00	1.94
JUSPD435	67.30	68.20	59.00	35.40	1.18
JUSPD452	50.00	50.70	47.70	5.50	1.20
JUSPD462	80.65	81.60	47.10	2.00	0.33
JUSPD466	54.70	55.60	59.80	11.50	0.88
JUSPD477	51.20	52.00	46.63	6.81	1.34
JUSPD491	50.00	50.80	60.00	2.40	0.00
JUSPD498	56.70	57.70	39.70	5.50	0.41

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
JUSPD136	56.62	57.13	15.69	1.40	0.30
JUSPD267	47.81	48.73	13.82	1.00	0.23
JUSPD291	59.40	60.20	14.44	2.50	0.89
JUSPD294	71.00	71.50	14.70	0.50	0.21
JUSPD295	87.50	88.50	13.85	11.99	2.14
JUSPD298	88.25	89.20	15.58	6.70	1.11
JUSPD306	65.20	66.00	14.50	12.00	3.93
JUSPD306	68.00	68.50	13.60	10.00	2.63
JUSPD320	57.35	58.00	13.50	11.00	1.88
JUSPD321	49.00	50.00	13.40	1.50	0.01
JUSPD322	49.80	50.75	15.08	10.50	3.61
JUSPD340	41.60	42.25	15.13	1.50	2.92
JUSPD361	70.50	71.50	13.60	2.00	0.26
JUSPD380	49.00	50.00	15.17	1.50	0.24
JUSPD387	87.00	88.00	14.10	1.00	0.12
JUSPD398	140.80	141.50	15.10	42.50	2.35
JUSPD432	49.40	49.80	15.10	10.20	2.49
JUSPD441	52.90	53.65	13.60	0.00	0.99
JUSPD442	66.00	66.35	13.70	7.90	0.84
JUSPD461	101.00	102.00	13.70	4.20	0.69
JUSPD464	95.00	95.60	15.00	4.10	0.77
JUSPD466	53.70	54.70	14.50	6.30	0.97
JUSPD486	48.25	48.75	14.00	7.20	1.40
JUSPD532	78.15	78.85	14.20	0.86	0.15
CAIFK013	20.30	20.85	8.60	0.10	0.04
CAIFS008	25.30	26.00	9.31	2.50	0.50
CAIFS020	43.80	44.10	9.51	0.25	0.40
CAIFS025	16.05	17.00	9.25	3.98	1.52
CAIFS040	37.00	38.00	8.60	1.80	0.84
CD028	36.95	37.95	9.38	2.10	0.53
CD054	48.70	49.20	9.18	2.60	0.60
CD088	65.50	65.85	9.60	16.68	5.25
CD110	37.65	38.40	8.57	0.13	0.04
CD128	70.00	70.55	9.07	7.00	1.88
CD193	55.60	55.95	9.31	8.00	2.97
CD195	86.80	87.35	9.44	2.20	2.79
CD209	31.51	32.15	9.15	0.58	0.26
CD267	59.28	59.58	8.74	0.80	0.15
CD282	103.10	103.44	9.12	8.10	2.44
CD285	35.60	36.18	9.60	1.30	0.12
CD356	71.76	72.12	9.14	1.30	0.39
CD414	44.88	45.44	9.65	17.60	3.75
CD460	76.12	76.45	9.36	23.90	2.92
CD483	12.73	13.52	8.70	4.03	0.18

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
JUSPD518	52.70	53.00	58.30	4.00	1.00
JUSPD536	79.50	80.00	52.80	4.50	0.26
CAIFB049	22.60	23.09	16.91	2.93	1.02
CAIFS021	31.50	32.50	16.15	3.00	0.49
CAIFS025	18.70	19.20	18.27	3.53	1.66
CAIFS039	10.85	11.50	16.40	10.50	1.96
CAIFS048	16.00	17.00	16.80	1.80	0.02
CD015	82.00	82.35	18.73	6.10	0.09
CD023	115.70	116.00	16.85	5.00	0.36
CD024	134.75	135.75	17.01	5.00	0.42
CD049	88.00	89.00	19.08	9.00	0.63
CD054	45.10	46.00	16.18	8.00	0.60
CD072	81.35	81.85	16.28	3.00	1.41
CD099	38.20	38.65	18.10	9.38	3.92
CD100	60.60	61.54	18.35	1.26	0.79
CD106	84.95	85.40	18.00	3.83	0.99
CD194	53.90	54.28	16.24	0.10	0.06
CD211	42.00	42.40	16.79	0.04	0.01
CD228	59.13	59.45	18.00	7.38	1.70
CD266	63.42	63.74	17.39	0.10	0.16
CD301	85.87	86.87	18.79	3.50	0.04
CD303	48.38	48.68	16.72	7.30	1.05
CD566	93.40	94.24	16.90	10.35	0.67
CD614	127.00	127.45	16.90	8.53	6.26
JUSPD011	75.55	75.68	17.30	3.70	0.31
JUSPD031	155.57	156.32	18.74	9.80	2.27
JUSPD046	61.55	61.74	19.30	3.50	0.08
JUSPD050	96.50	97.22	17.50	0.50	0.07
JUSPD062	57.00	57.75	19.32	14.00	1.59
JUSPD124	86.48	86.81	18.49	39.00	8.50
JUSPD125	73.03	73.85	16.50	4.80	0.75
JUSPD128	67.31	67.64	19.22	0.90	0.69

Hole ID	From	To	Au (ppm)	Ag (ppm)	Cu (%)
CD485	46.38	46.96	8.55	0.09	0.21
CD566	96.43	96.95	9.38	1.38	0.55
JUSPD007	76.41	77.00	9.10	21.40	3.40
JUSPD067	67.00	67.67	9.16	8.99	2.77
JUSPD069	66.00	66.70	9.02	2.30	0.38
JUSPD081	66.00	67.00	8.94	1.20	0.08
JUSPD091	77.80	78.25	8.95	17.30	4.05
JUSPD098	111.45	112.00	9.20	0.00	0.01
JUSPD106	35.20	35.55	9.05	1.00	0.06
JUSPD122	104.80	105.05	9.64	6.00	1.68
JUSPD131	101.18	102.16	9.55	11.59	3.47
JUSPD139	41.20	41.64	9.60	3.70	0.68
JUSPD293	55.55	56.20	9.61	0.50	0.25
JUSPD294	73.00	73.90	9.00	0.25	0.23
JUSPD301	46.20	47.20	9.32	8.73	1.22
JUSPD306	76.20	77.30	8.80	3.50	1.38
JUSPD337	77.75	78.40	9.07	12.00	4.54
JUSPD340	65.50	66.10	9.56	0.25	0.04
JUSPD346	62.20	63.25	9.00	18.00	4.64
JUSPD364	76.10	76.95	8.98	16.00	2.70
JUSPD367	68.45	69.05	9.00	25.50	4.10
JUSPD383	50.75	51.50	8.62	0.25	0.81
JUSPD387	86.00	86.45	8.60	2.50	0.65
JUSPD394	53.00	53.50	8.80	5.00	0.65
JUSPD424	85.80	86.10	9.60	0.00	4.23
JUSPD436	28.10	29.20	9.05	10.00	2.04
JUSPD477	60.30	61.20	9.00	0.80	0.30
JUSPD491	59.40	60.15	9.60	0.80	0.20
JUSPD501	72.60	73.60	9.20	4.90	1.46
JUSPD503	54.50	55.15	9.60	4.20	1.10
JUSPD517	56.20	56.70	8.80	2.10	1.10
JUSPD546	55.90	56.65	9.20	1.90	0.52

10.5 Comments on Drilling

Meridian has also reviewed all sources of information from historical records and cross sections to digitally compile the historical logging codes.

The diamond drilling methods used in the current drilling campaigns are in compliance with industry standards.

11 SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Historical Sampling

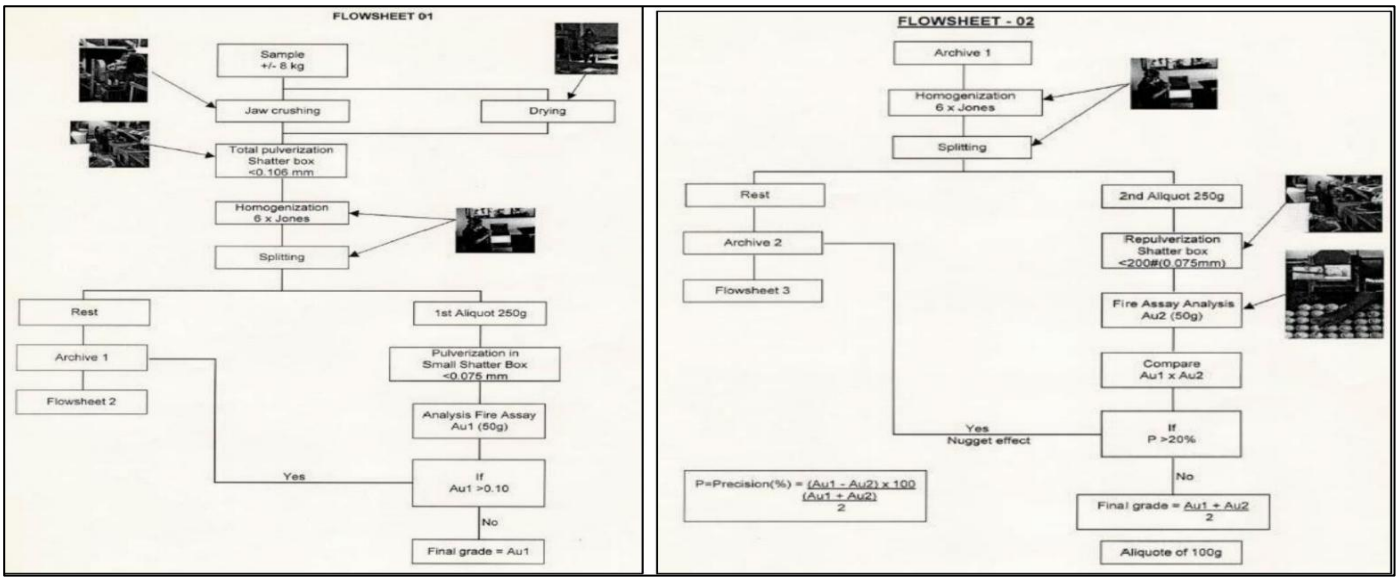
Documentation from the 1987 Mineração Santa Martha S.A. report dated June 1987 provides information on the sample preparation technique.

Based on a study of the Cabaçal microscopy and using Gy's sampling formula, the milling and pulverizing of entire core intervals to a nominal -200 mesh and analysing of 50 g fire assay charges were established as standard procedures for the Cabaçal deposit drill core. In the early drilling (about 10% of the completed holes) AQ and BQ diameter cores were obtained, whereas HQ and NQ diameter core sizes were used during the evaluation drilling. Early tests of the milling and pulverizing equipment with Cabaçal core established the milling times necessary to achieve nominal -200 mesh granulometry for this material.

BPM had its own laboratory in the Cabaçal mine for sample preparation and production sample analysis. Exploration sample preparation was initially conducted by BPM through its LABPM Laboratory (located at the corner of Rua Pereira Passos and Avenida Kennedy, Caxias, Rio de Janeiro – RJ, Brazil; later becoming a commercial laboratory - Nomos - following the 1989 RTZ acquisition of BPM). The author is not aware if BPM was accredited or not.

Original laboratory managers have provided a report summarizing laboratory procedures, flowsheets, and quality control protocols (Vilar da Silva, 2021; Figure 11-11).

Figure 11-1: Nomos Laboratory Flowsheet



Source: Vilar da Silva, 2021.

Initially, the gold analysis was by atomic absorption, with an aqua regia digest, and in the extraction an organic solvent MIBK was used, for aliquots of 50 grams. Subsequently, fire assay analyses were adopted; after tests showed that this method was more efficient, with better reproducibility of the assay result for gold. In addition, the sample prep adopted the procedure of crushing the entire sample entirely at -200 mesh, and later quartering to obtain a 50-gram aliquot.

Copper and silver were analysed by atomic absorption, using a three-acid digest for copper and aqua regia digest for silver. Selected core samples were also analysed for Pb, Zn, Bi, Mo and As. Pb and Bi were obtained by aqua regia digest with an atomic absorption finish. Multielement analyses were carried out on 39 drill core samples for Cabaçal to better understand the character of the hydrothermally altered and metamorphosed rocks (Au, Cu, Ag, Bi, Mo, Pb, Ca, Mg, Ti, Mn, Ba, Co, Cr, Ga, Ni, Sc, Sr, Y, Yb and Zn).

A range of analytical techniques, appropriate to the times, was completed (e.g., Fire Assay, Aqua regia/AA and XRF). Using correlation coefficients, they estimated that 37 of the 39 samples could be classified as being originally andesites, and two as dacites.

Original laboratory reports are not available for the Cabaçal samples, and data has been compiled from available drill hole data registers and sections. Assay data for 279 surface holes is missing either in part or in full. For these holes, semiquantitative values based on numbers depicted on graphic cross-sections have been inserted into the digital database to guide geological interpretation.

Samples from Avanco's drilling were analysed at SGS Geosol – Laboratórios Ltda, - Vespasiano – MG Brazil, for Ag, Cu, Pb, Zn, by method AAS41B (4-acid digest with atomic absorption finish, and gold by method FAA505 – fire assay of a 50 g charge with atomic absorption finish).

11.2 Meridian Sampling Methods

The procedures adopted in the Project for collecting samples involve different processes, which will be described below. To prosecute the sampling, the person in charge must wear appropriate protective equipment, such as safety glasses and tactile gloves. The materials used in the sampling procedure are sampling spoon, a spatula, a hammer and a brush to clean the sampling spoons.

Samples must be at least 30 cm and maximum of 100 cm (samples larger than 100 cm occur due to low recovery of some intervals). Sample marking considers the following factors:

- Respect the lithological contacts marked during the description
- Define homogeneous ore intervals
- Respect the change in hole diameter, not mixing materials with different diameters
- Should preferably respect the core recovery
- In case of core loss, the sample interval (from and to) should be recorded on a wooden plaque, and recorded with NR or NSR (No Sample Recovery)

- In cases of intervals where it was not possible to identify the exact location of the core loss, the procedure is to distribute the loss over the interval, and the measurements should be made using the box closing formula (Core length X Advance/Recovery)
- In case of intervals with Visible Gold (VG), the minimum sample size should be 50 cm or, in case of low recovery of these samples, they should be large enough to reach a minimum mass of 1 kg.

The sample interval must be marked on the box, on the left side of the sample, represented by two triangles, one at the beginning of the sample and the other at the end, both pointing towards each other, that is, towards the centre of the interval.

Below the triangle that marks the beginning of the sample, the sample code (SAMPLE_ID) must be written, which is represented by 4 letters followed by 5 numbers (CBDS10532), where the letters indicate the project and type of sample (CB=Cabaçal and DS=Drill Sample) and the numbers indicate the sample sequence. This code is directly linked to the hole to which the sample belongs (HOLE_ID) and the footage (From - To).

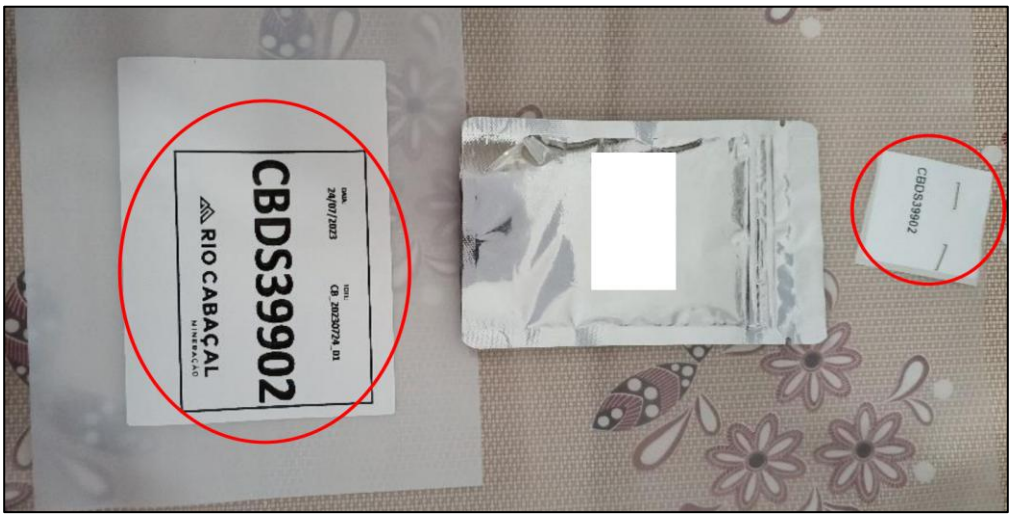
The person in charge must check the depths to confirm that there are no samples below or above the length limit, always checking the last sample number used to avoid sample conflicts in the database.

All this information must be recorded in the “Sampling” spreadsheet, as well as the sample type (SAMPLE_TYPE), sample category (SAMPLE_CATEGORY), initial and final sample depth (SAMPFROM-SAMPTO), sample recovery (Recovery_metre), sample weights, sampling date, person responsible and batch name (BATCHID).

After the entire procedure has been completed and the checks have been made, the core is ready to proceed to the cutting saw. The saw operator must saw the sample along the solid blue line and return the core to the box, always leaving it assembled and with the cores with blue dots on the right side. After the core has been serrated, the box is returned to its original position on the bench. The team of trained technicians and assistants are authorized to collect the sample.

The sample collection procedure begins with the preparation of sample bags. The sample codes must be printed on two labels, one of which must be in the white identification of the plastic bag and the other stapled to the top/inside of the sample bag (Figure 11-2). After the sampling process is complete, the sample bag must be sealed with nylon clamps.

Figure 11-2: Sample Bag with Respective Labels Marked in Red



Source: Rio Cabaçal Mineração, 2024 (POP for Description and Geological Sampling of Diamond Rotary Drilling core).

Samples must be collected sequentially, from the beginning to the end of the hole, avoiding possible errors in mixing samples, since the last piece to be collected will be in contact with the previous sample, which will have already been collected, with only half of the core remaining (Figure 11-3).

Figure 11-3: Sample Collection Procedure



Source: Rio Cabaçal Mineração, 2024 (POP for Description and Geological Sampling of Diamond Drilling core).

11.3 Density Determinations

Density measurements were taken on core samples via the immersion in water method, i.e., weight in air weight in water – Archimedes method.

For weathered samples, representative sections of whole core, 10-15 cm in length, from different domains of the overburden and weathered basement were selected for measurement (on average 15 samples per hole). If samples could not be processed immediately, they were wrapped in plastic cling wrap and placed in a refrigerator to preserve moisture content and measured at the earliest opportunity. The clingfilm wrap retains any natural air in porous core (although the Cabaçal weathered core is not vuggy).

A SCOUT – SPX Scale was used to weigh the samples, with an upper capacity of 6.2 kg, measuring in increments of 0.1 g (Figure 11-4). The scale was zeroed before each sample. The Company has purchased stainless steel standard weights of 200g, 500g and 1000 g from Ricelake International to test the scale mass calibration.

Figure 11-4: Density Weighing and Immersion Station



Source: Meridian, 2022.

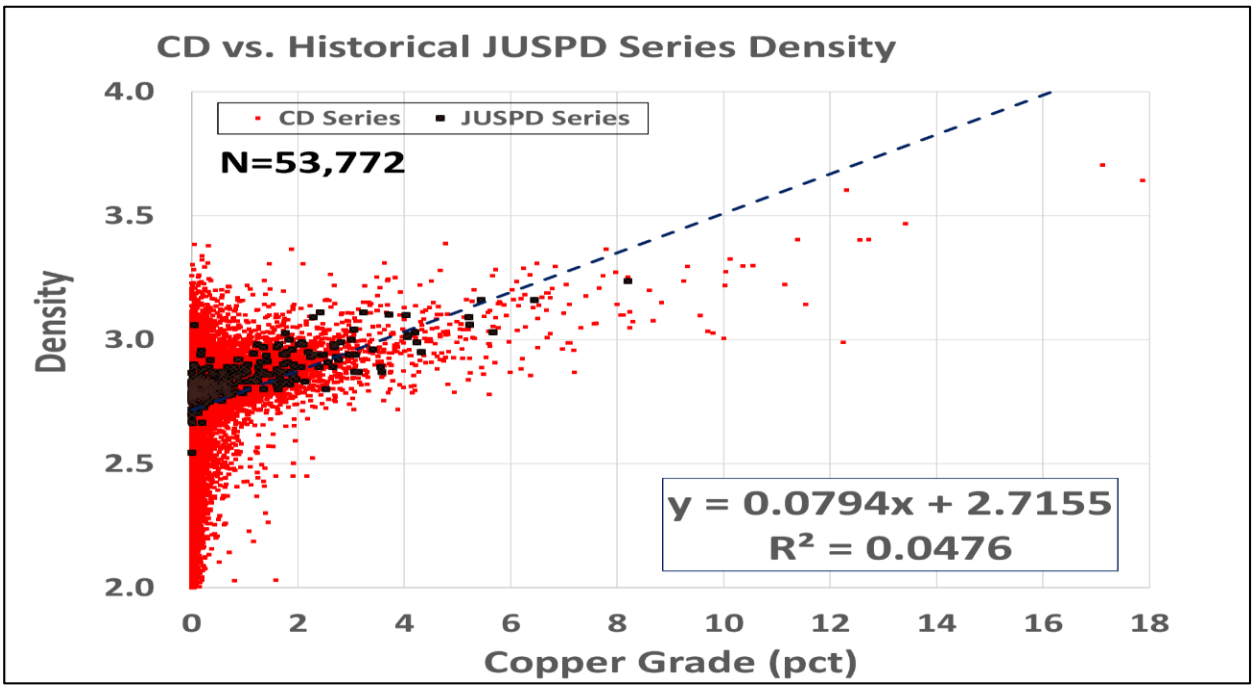
Initially, for holes up to CD131, readings were conducted on fresh rock samples of representative sections of half-core, 10 to 15 cm in length. Samples from the oxide zone were weighed first in their moist state, then dried in an oven at 105° for two hours (based of tests of moisture loss) and re-weighed to determine moisture content. Density on fresh core from basement samples was made on half-core after cutting, with no coating of the sample being necessary. For holes after CD132, the procedure was adjusted to take readings on full half-core sample intervals, with the cut core inserted into a suspended PVC cradle.

To the resource cut-off date, 54047 readings have been taken from Meridian's drilling campaign, summarized by rock code, weathering and mineralization in Table 11-1 and illustrated in Figure 11-4 and Figure 11-5. This compares to 361 records recovered from the historical record, which are paired with assay data. The limited historical data associated with the JUSPD holes will likely mean that there are not sufficient data points to interpolate density block values for all areas of the deposit and default values will need to be assigned to modelled lithological/mineralization domains.

Charting copper grade against density data from Meridian's drilling show a general increase in density with copper grade that was seen in the historical JUSPD series of holes. However, other sulphide minerals (pyrite, pyrrhotite, sphalerite) and oxide minerals (magnetite) contribute to rock mass density, creating a spread of values (Figure 11-4). A plot of density against hole depth and weathered status (Figure 11-5) shows the reduction in density with decreasing downhole depths (focused principally in the 0-25 m depth range).

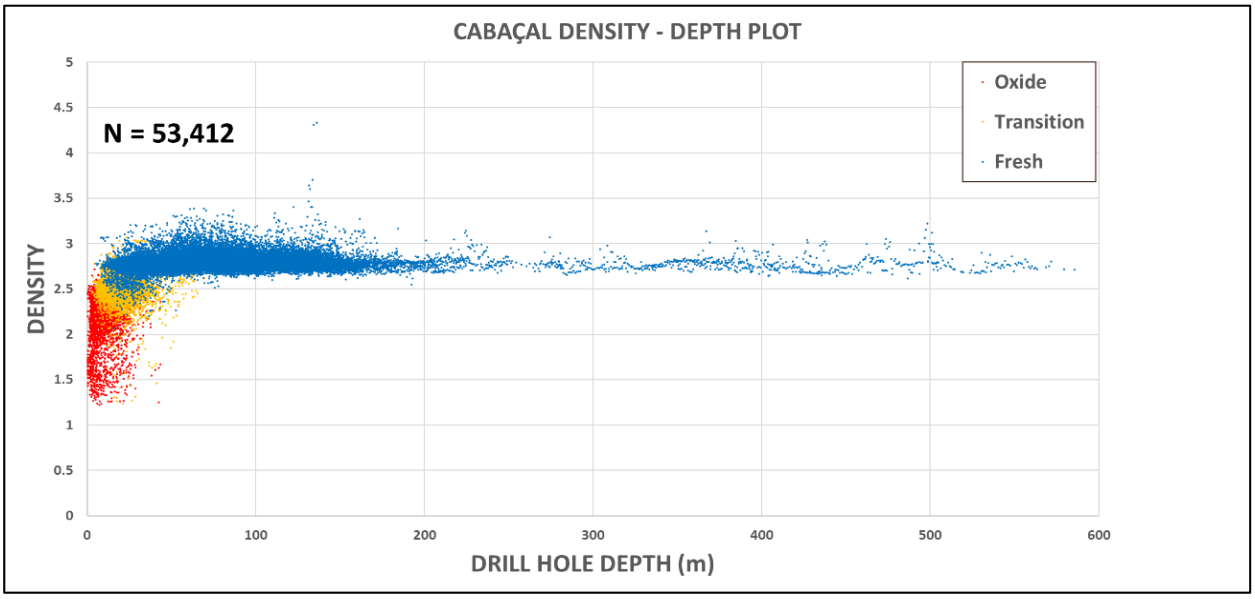
When charting density in fresh rock of the lower sectors of the mine sequence, sequence, there is a tighter correlation of between the copper grade and density trend. This lower unit is more ferro-magnesian, higher content of chlorite, along with vanadium and titanium, interpreted to indicate some mafic contribution to the volcanic/volcaniclastic package, compared to the more quartz-sericite domain upper levels of the mine sequence package. Points on Figure 11-6 represent values selected on a >10 ppm V threshold against copper. There is some interstratification of the quartz-sericite chert package before this lower composition becomes more dominant. A chart also of the >1% Cu samples shows a tighter clustering Figure 11-7.

Figure 11-5: 2021-2024 Drill Campaign Density Plot Against Copper Grade



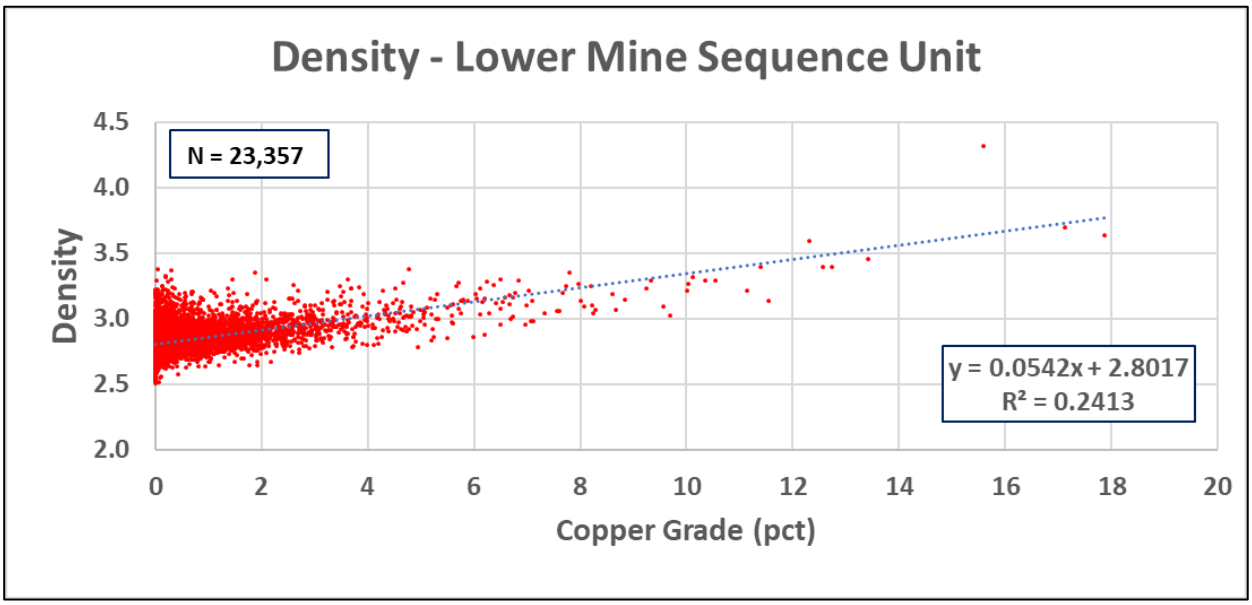
Source: Meridian, 2024.

Figure 11-6: Density Plot Against Drill Hole Depth



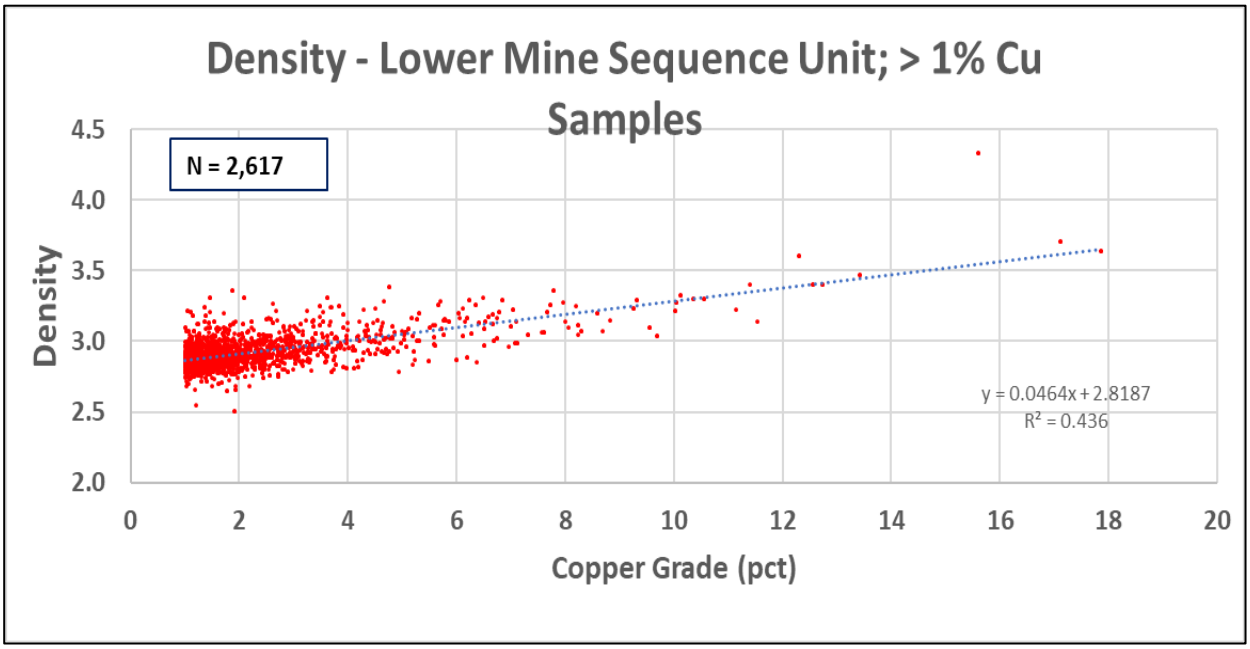
Source: Meridian, 2024. Reduction in density evident in upper meterage transitioning to saprolite.

Figure 11-7: Chart of >10 ppm vanadium vs. Copper grade, Marking the Lower Sequence



Source: Meridian, 2024.

Figure 11-8: Copper Grade vs. Density for >1% Copper Samples



Source: Meridian, 2024.

Table 11-1: Density by Lithology, Meridian Drilling Campaign

Lithology	Fresh – Barren				Fresh – Mineralized			
	Number	Average	Max	Min	Number	Average	Max	Min
AVA	871	2.743	2.977	2.419	62	2.787	2.933	2.654
AVI	66	2.788	2.912	2.664	1	2.858	2.858	2.858
CHB	2346	2.752	3.11	2.264	1257	2.77	3.258	2.218
CTB	18629	2.785	3.303	2.065	13025	2.804	3.384	2.332
DIA	241	2.892	3.207	2.53	6	2.939	3.007	2.822
GBR	112	2.961	3.069	2.508				
QZVN	40	2.737	2.876	2.644	33	2.763	3.142	2.636
TAC/VAP	4107	2.735	3.167	2.201	15	2.761	2.875	2.707
ZBI	96	2.799	2.977	2.645	130	2.894	3.272	2.691
ZCL	1565	2.834	3.208	2.343	2718	2.886	4.33	2.464
Lithology	**Transition – Barren**				**Transition – Mineralized**			
	Number	Average	Max	Min	Number	Average	Max	Min
AVA	37	2.473	2.8	2.178	12	2.46	2.563	2.265
CHB	1773	2.518	2.89	1.55	844	2.54	3.03	1.921
CTB	1155	2.552	2.927	1.24	562	2.576	2.97	2.059
DIA	6	2.168	2.698	1.262	2	2.452	2.664	2.239
GBR	24	2.835	3.066	2.245				
QZVN	5	2.518	2.599	2.439	2	2.517	2.577	2.457
TAC/VAP	78	2.405	2.712	1.638	7	1.95	2.483	1.417
ZCL	3	2.469	2.547	2.411	15	2.371	2.655	2.104
Lithology	**Oxidised – Barren**				**Oxidised – Mineralized**			
	Number	Average	Max	Min	Number	Average	Max	Min
AVA	12	2.142	2.541	1.742	1	2.476	2.476	2.476
CHB	1661	2.232	2.913	1.232	344	2.284	2.586	1.256
CTB	1146	2.142	2.69	1.263	198	2.193	2.779	1.358
DIA	16	1.436	2.099	1.224	7	1.473	1.709	1.252
GBR	99	1.637	2.248	1.259	1	1.531	1.531	1.531
SOL	54	1.671	2.447	1.315	2	1.853	1.909	1.796
TAC/VAP	17	2.014	2.446	1.448				
ZCL	4	2.464	2.53	2.354	4	2.102	2.342	1.606

SOL	Soil
TAC/VAP	Acid Tuff/Porphyritic Acids Volcanic (Footwall)
AVA	Acid Metavolcanics
AVI	Intermediate Metavolcanics
CHB	Banded Chert
CTB	Banded Tuffaceous Chert
DIA	Diabase Dyke
GBR	Gabbro
QZVN	Quartz vein
ZBI	Biotite Zone
ZCL	Chlorite Zone

11.4 Sample Security and Storage

Drill core, and surface geochemical samples (soils and rock chip) are stored at Meridian's core farm on private property under 24-hour supervision.

Upon cutting, samples are sealed in plastic sample bags, which are securely fastened with one way zip ties to prevent easy tampering. The samples are taken by Meridian staff to the office at São José de Quarto Marcos for dispatch by commercial couriers or Company Staff to sample preparation facilities managed by independent laboratories.

Pulps are packaged in taped, bar-coded boxes labelled with batch and client details. The Company monitors site-measured sample weights against laboratory registered sample weights to assess any potential discrepancies.

11.5 Analytical and Test Laboratories

Two laboratories that are independent of the issuer have been used:

- SGS Laboratory depot at Goiania for sample preparation (SGS Unigeo Rua 144, n186 - Setor Marista, Goiania – GO, 74170-030, Brazil) Brazil (ISO 9001:2015 and ISO14001:2015; ABS 32982 and ABS 39911). Pulps are then sent to the SGS analytical laboratory Vespasiano, Minas Gerais, Brazil. Samples remain in the secure chain of custody, being transported by SGS personnel.
- ALS Laboratory depot at Cuiaba for sample preparation (ALS Brasil Limitada Rua K, No. 346 – Galpão 01 CEP: 78.098-370, Distrito Industrial Cuiabá, Mato Grosso, Brasil) (ISO 9001:2015 and ISO 17025:2025). Pulps are then sent to the ALS analytical laboratory in ALS Peru Calle 1 LT-1A Mz-D, esq. Calle A Urb. Industrial Bocanegra Callao 01, Lima, Peru). ALS utilizes freight courier via DHL or FEDEX for transport of pulps.

11.6 Sample Preparation and Analysis

The assays for the drilling campaign have been processed at the ISO-accredited sample preparation and analytical facilities of SGS Geosol Laboratórios Ltda, Vespasiano, Minas Gerais, Brazil (ISO 9001:2015 and ISO14001:2015; ABS 32982 and ABS 39911). The following procedures are applied:

- Sample preparation is undertaken using a standard procedure (preparation code PRP102_E). Individual submitted samples weigh 0.2 – 4.9 kg, with an average of 1.7 kg; The procedure involves:
    - Drying at 105°Celsius;
    - Crushing so that 75% passes <3 mm, homogenization of the sample, splitting with a Jones riffle splitter to give a split sample mass of 250-300g; and
    - Pulverization of 250 to 300 g with 95% passing mesh size 150#.
- Gold analysis is by fire assay of a 50 g charge with an AAS finish. (Method code FAA505; Analytical range 5 – 100,000 ppb Au). Samples that pass the upper limit of detection are repeated by method code FAA525 (50 g fire assay with AAS finish, calibrated for high-grade samples, 0.01 ppm lower limit of detection). Samples with a copper

content of >10% are repeated by method code FAA35V (fire assay to extinction). Samples with visible gold are analysed by metallic screen fire assay (Method code MET150-FAASCR).

- Copper, zinc and lead are analysed as part of a multielement package through a 4-acid total digest method (HCl, HNO3, HF and HclO4), with analysis by ICP-OES finish. Elements and analytical range for method Code ICP40B are listed in Table 11-2. Results greater than 1% Cu, Zn, or Pb are repeated under high-grade Method Code ICP40B_S.
- Silver analysis is by 4-acid total digest method (HCl, HNO3, HF and HclO4), with an ICP-OES finish (Analytical range 3 – 100 ppm Ag). Samples are repeated with method code AAS12E (Aqua Regia digest with AAS; Analytical range 0.2 – 300 ppm Ag). This provides a more precise grade on samples below 3 ppm, although aqua regia being a partial digest may under-report the value. Silver grades above 20 ppm Ag are also repeated by method code CAA41DA which comprises determination of silver by a 4-acid digest and AAS finish with an analytical range >1 ppm and no upper limit limitation.
- The ICP-OES analytical method provides assays for a 32-element suite, which can be used for lithogeochemical studies including waste rock characterization and identification of mineralized material pathfinder elements.

Table 11-2: Elements and Ranges in SGS Method Code ICP40B

Ag	3 – 100 (ppm)	Al	0.01 – 10 (%)	As	10 – 10000 (ppm)	Ba	3 – 10000 (ppm)
Be	3 – 10000 (ppm)	Bi	20 – 10000 (ppm)	Ca	0.01 – 15 (%)	Cd	3 – 10000 (ppm)
Co	8-0000 (ppm)	Cr	3 – 10000 (ppm)	Cu	3 – 10000 (ppm)	Fe	0.01 – 15 (%)
K	0.01 – 15 (%)	La	20 – 10000 (ppm)	Li	3 – 10000 (ppm)	Mg	0.01 – 15 (%)
Mn	0.01 – 15 (%)	Mo	3 – 10000 (ppm)	Na	0.01 – 15 (%)	Ni	3 – 10000 (ppm)
P	0.01 – 15 (%)	Pb	8 – 10000 (ppm)	S	0.01 – 10 (%)	Sb	10 – 10000 (ppm)
Sc	5 – 10000 (ppm)	Se	20 – 10000 (ppm)	Sn	20 – 10000 (ppm)	Sr	3 – 10000 (ppm)
Th	20 – 10000 (ppm)	Ti	0.01 – 15 (%)	Tl	20 – 10000 (ppm)	U	20 – 10000 (ppm)
V	8 – 10000 (ppm)	W	20 – 10000 (ppm)	Y	3 – 10000 (ppm)	Zn	3 – 10000 (ppm)
Zr	3 – 10000 (ppm)						

The Company undertakes umpire checks on pulp samples through ALS Laboratories in Lima, Peru and has periodically used ALS as the primary laboratory during phases of the campaign. The ALS laboratory deploys the following method codes:

- Up to February 2024, gold was analysed by fire assay and AAS finish of a 30 g charge (Method Code Au-AA23; Analytical range 0.005-10 ppm Au).
- After February 2024, gold was analysed by fire assay and AAS finish of a 50 g charge (Method Code Au-AA24; Analytical range 0.005 – 10 ppm Au)).
- Over-range samples (>10 g/t) are repeated by Au-GRA22 (Au by fire assay and gravimetric finish of a 50 g charge; Analytical range: 0.05 – 10,000 ppm).
- Samples with visible gold are analysed by metallic screen fire assay (Method code Au-SCR21).
- Up to March 2024, silver was analysed by Method Code ME-MS62 (0.01 – 100 ppm range).

- Up to March 2024, copper, zinc and lead were analysed as part of a multielement package (Method Code ME-ICP61a), through a 4-acid total digest method (HCl, HNO3, HF and HClO4), with analysis by Inductively coupled plasma atomic emission spectroscopy (ICP AES finish). Elements and analytical range for method Code ME-ICP61a are listed in Table 11-3.
- After March 2024 silver, copper, zinc and lead are analysed as part of a multi-element package (Method Code ME-MS61), through a 4-acid total digest method (HCl, HNO3, HF and HClO4), with analysis by Inductively coupled plasma mass spectrometry (ICP MS finish). Results greater than 1% for Cu, Pb, Zn and greater than 100 ppm for Ag are repeated with ICP AES Method Code OG62.

Table 11-3: Elements and Ranges in ALS Method Codes ME-ICP61a and ME-MS61

Ag	1 – 200	Cr	10 – 100,000	Mo	10 – 50,000	Sr	10 – 100,000
Al	0.05% - 30%	Cu	10 – 100,000	Na	0.05% - 30%	Th	50 – 50,000
As	50 – 100,000	Fe	0.05% - 50%	Ni	10 – 100,000	Ti	0.05% - 30%
Ba	50 – 50,000	Ga	50 – 50,000	P	50 – 100,000	Tl	50 – 50,000
Be	10 – 10,000	K	0.1% - 30%	Pb	20 – 100,000	U	50 – 50,000
Bi	20 – 50,000	La	50 – 50,000	S	0.05% - 10%	V	10 – 100,000
Ca	0.05% - 50%	Mg	0.05% - 50%	Sb	50 – 50,000	W	50 – 50,000
Cd	10 – 10,000	Mn	10 – 100,000	Sc	10 – 50,000	Zn	20 – 100,000
Co	10 – 50,000						

Ag	0.01 – 100	Cu	0.2 – 10,000	Mo	10 – 50,000	Sr	10 – 100,000
Al	0.01% - 50%	Fe	0.01% – 50%	Na	0.05% - 30%	Th	50 – 50,000
As	0.2 – 10,000	Ga	0.05 – 10,000	Ni	10 – 100,000	Ti	0.05% - 30%
Ba	10 – 10,000	Ge	0.05 – 500	P	50 – 100,000	Tl	50 – 50,000
Be	0.05 – 1,000	Hf	0.1 – 500	Pb	20 – 100,000	U	50 – 50,000
Bi	0.01 – 10,000	In	0.005 – 500	S	0.05% - 10%	V	10 – 100,000
Ca	0.01% - 50%	K	0.01% - 10%	Sb	50 – 50,000	W	50 – 50,000
Cd	0.02 – 1,000	La	10 – 100,000	Sc	10 – 50,000	Zn	20 – 100,000
Ce	0.01 – 10,000						
Co	0.1 – 10,000						
Cr	1 – 10,000						
Cs	0.05 – 10,000						

11.7 Quality Assurance and Quality Control

11.7.1 Historical QA/QC Procedures

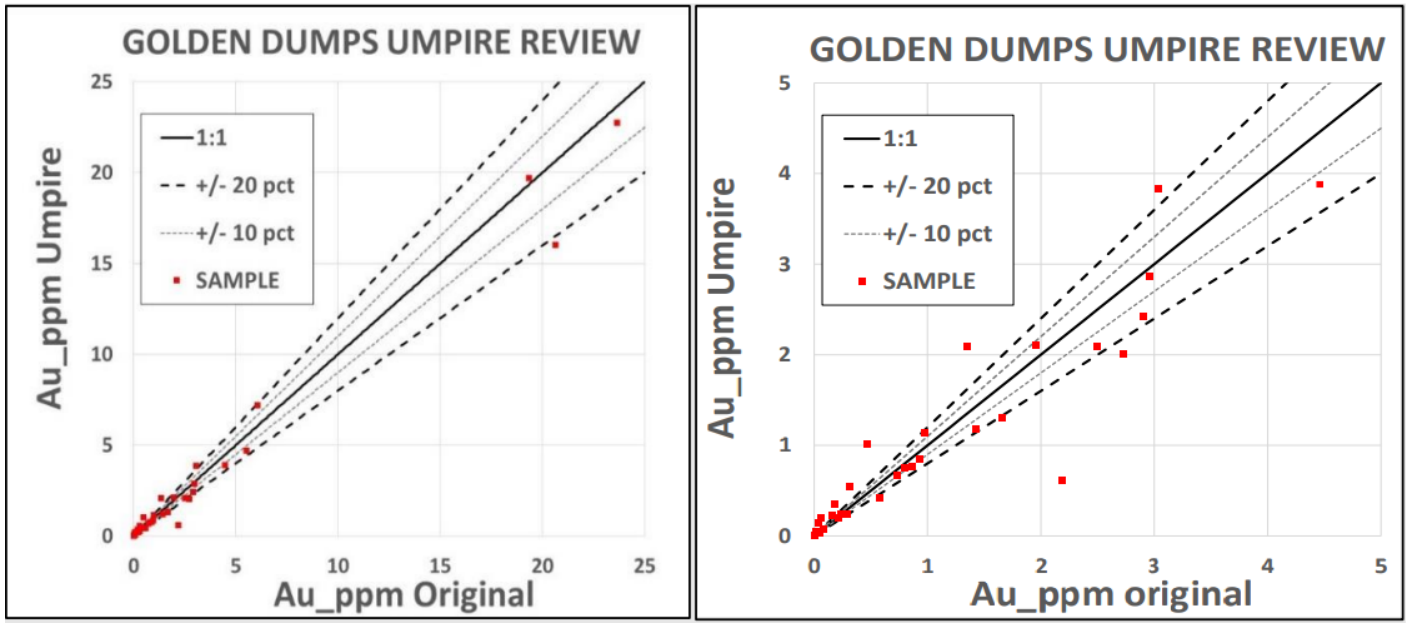
Documentation from the 1987 Mineração Santa Martha S.A. report dated June 1987 indicates that a duplicate analysis program was applied as part of a close quality control program for gold analysis:

Duplicates for 20 % of all Cabaçal deposit cores were analysed to maintain close control over variability associated with preparation and analysis.

At an early stage of the infill drilling program in May 1985, a series of check analyses on 42 pulps from holes JUSPD052, 58, 62 and 63 from the Cabaçal deposit were carried out at "Golden Dumps Research Laboratory," South Africa (Figure 11-9). The umpire samples included pulp blanks and standards, which returned acceptable results. No systematic bias was identified from these checks.

BPM's selection of the Golden Dumps laboratory was based on its reputation as one of the best facilities of the era for fire assay gold analysis. BPM concluded, based on blank analysis, standard analysis and laboratory precision, that its own fire assay laboratory performed in a competent and consistent manner in analysis of the Cabaçal deposit drill core.

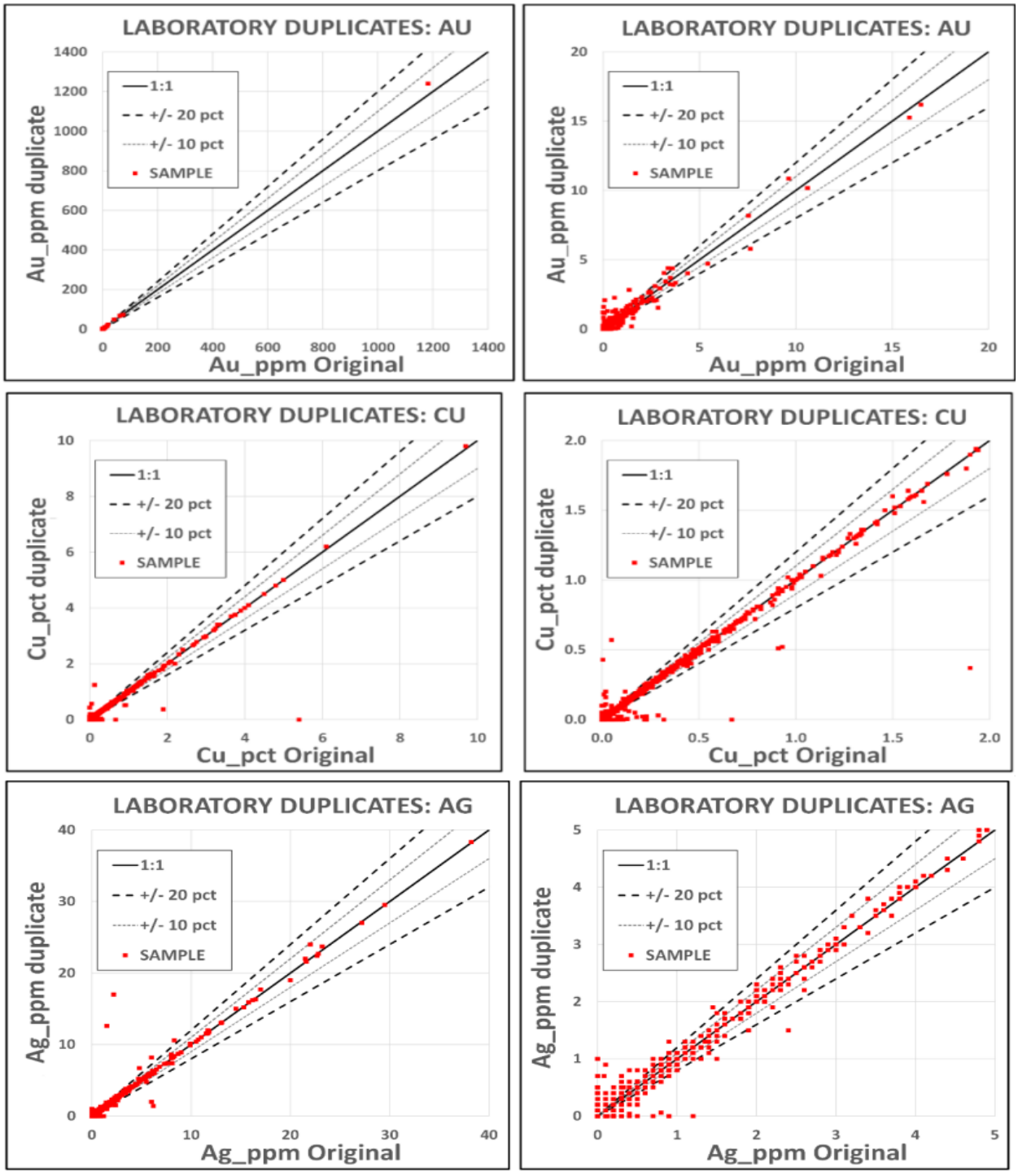
Figure 11-9: Umpire Analysis BP Minerals Laboratory and Golden Dumps Research Laboratory



Source: Meridian, based on BPM data in BRA30000124–088. Charts to the right are an expanded view of the lower grades.

Data from the BPM Cabaçal drilling is available for 1,788 laboratory pulp duplicates for gold analysis (grade range: below detection to 1,240 g/t Au), 1,697 laboratory pulp for copper analysis (grade range: below detection to 9.8% Cu) and 1,730 laboratory pulp duplicates for silver analysis (grade range: below detection to 38.3 g/t Ag). Results show no evidence of any systemic bias (Figure 11-10). No specific analytical records of blank analysis or Certified Reference Materials have yet been located, other than that associated with the Golden Dumps umpire analyses.

Figure 11-10: Compiled BP Minerals Duplicate Analyses



Source: Meridian, based on data in BRA30000124-076, 124-077, 124-079. Charts to the right are an expanded view of lower grades

Avanco's drilling was accompanied by a quality control program, involving submission of quarter-core field duplicates (one in 40 samples), pulp blanks (one in 40 samples), Certified Reference Materials manufactured by Geostats (GBM998- 4, GBM399-6; one in forty samples)

11.7.2 Meridian QA/QC Program

Table 11-4 provides definitions of quality control tools and measures that are undertaken by Meridian and by the commercial laboratories as checks to monitor analytical results reported.

Table 11-4: Quality Control Definitions

Item	Description
Standard	Certified Reference Material (CRM) used to measure accuracy of the sample prep and analysis of the samples.
Blank Standard	A Certified Reference Material (CRM) with a value at or near to the detection limit of the element analysed, used to monitor contamination.
Field Duplicate	This sample provides a check in particular on the short scale continuity of the metal grades – taken as a paired quarter of core collected in the field.
Laboratory Duplicate	This sample provides a check on sample homogeneity from the sample prep stage and the repeatability of the sample extraction. The sample is normally nominated by the on-site geologist Sample collected as a sub-sample of the originally submitted 1-5kg sample after crushing and pulverizing. Referred to as a pulp duplicate
2nd Lab Checks (Umpire Lab)	This sample provides a check on the accuracy of the original lab assays, preferably using a different analytical method. Completed by a second independent commercial laboratory.
Laboratory Replicate	A second measurement (often analytical reading) of the same sub-sample after sample digest; a check for sample prep homogeneity and machine calibration. It is usually nominated by the laboratory and therefore not an independent check.
Twin Hole	A repeat hole, usually a diamond hole, located in very close proximity to an original hole, i.e., nominally <5m spatial difference. It is used to validate any previous drilling and is a check that the sampling is representative and provides a measure of the short scale grade continuity.

Source: Meridian, 2024.

11.7.3 Standards

Quality Assurance is monitored through the use of Company-submitted certified analytical standards supplied by ITAK (609, Sebastião Simão de Almeida St, Sion; João Monlevade; Minas Gerais, Brazil, 35931-209), OREAS (Ore Research & Exploration Pty Ltd, 37A Hosie Street, Bayswater North Vic 3153, Australia), , and Rocklabs (purchased through STG Mining do Brasil, Rua Ministro Hermenegildo de Barros, 259 Belo Horizonte, Minas Gerais, 31710230). Standards are inserted at a rate of 1 in 20 samples. Details of the standards are included in Table 11-5.

Table 11-5: Company-submitted Standards

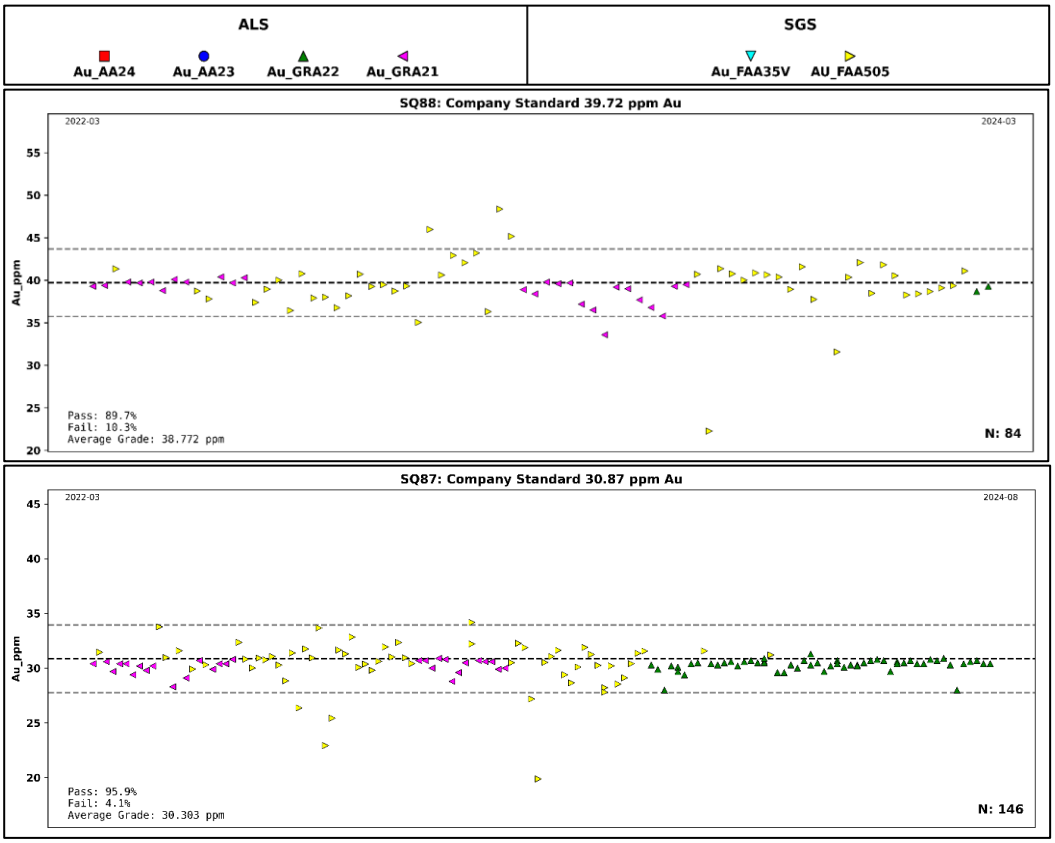
Standard	Count	Certified Values				
		Au_g/t	Ag_g/t	Cu_ppm	Pb_ppm	Zn_ppm
ITAK-635	190	3.955	36.6			
ITAK-636	184	13.28	97.2			
ITAK-809	45	0.276		3580		
ITAK-824	112	0.25	12.15	26780		
ITAK-825	4	0.21	6.98	57600		
ITAK-833	3	1.83	5.2	15710		
ITAK-845	124	0.311	1.44	3160		
ITAK-852	12	0.477		64800		
ITAK-862	107	0.782	2.27	10410	11.76	
OREAS-47	10	0.044	0.13	159	284	226
OREAS-111	272		10.1	23700	377	4196
OREAS-112	273		13.2	51000	360	4351
OREAS-140	1		1.03	1529	26.7	1706
OREAS-502d	223	0.499	1.76	7760	82	305
OREAS-504d	222	1.46	2.69	11000	116	446
OREAS-523	172	1.04	2.61	17200	26.3	40.2
OREAS-620	398	0.685	38.5	1730	7740	31500
OREAS-621	27	1.25	69.2	3630	13600	52200
OREAS-624	139	1.16	45.3	31000	6240	24000
OREAS-625	104	0.667	11.7	1710	8220	31700
OREAS-626	84	1.26	29.6	3600	15000	51700
OREAS-627	89	1.88	62.8	4770	22600	100400
OREAS-628	74	0.868	10.2	17400	2610	10400
OREAS-629	88	1.18	18.7	31200	6570	23200
OREAS-905b	5	0.381	0.6	1440	13.9	91
OREAS-905	16	0.391	0.518	1530	30.4	139
OREAS-906	18	0.049	0.754	3100	36.31	163
OREAS-907	19	0.1	1.35	6380	46.2	207
OREAS-907b	1	0.119	1.19	6230	36.9	171
SL105	93	5.05	30.4			
SL107	186	5.069	30.1			
SN104	87	9.182	46.7			
SN118	149	8.917	49.9			
SP73	92	18.17				
SP116	86	18.091				
SQ87	149	30.87				
SQ88	88	39.72	160.8			
SQ130	117	39.47	158.6			

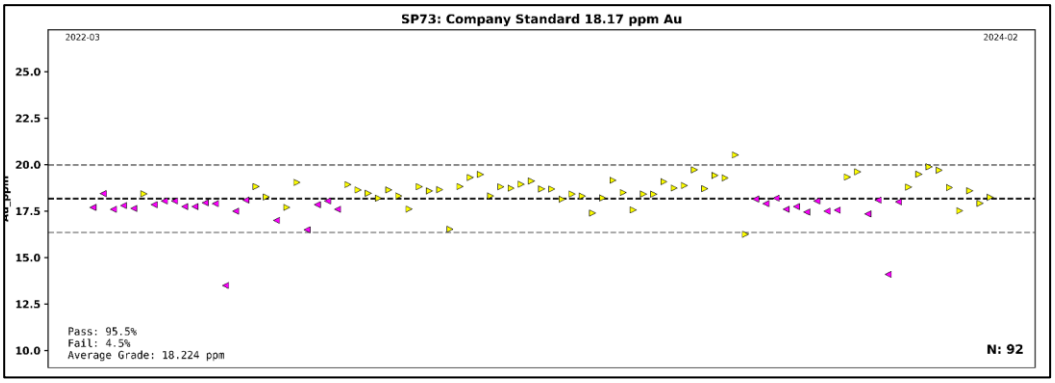
Source: Meridian, 2024.

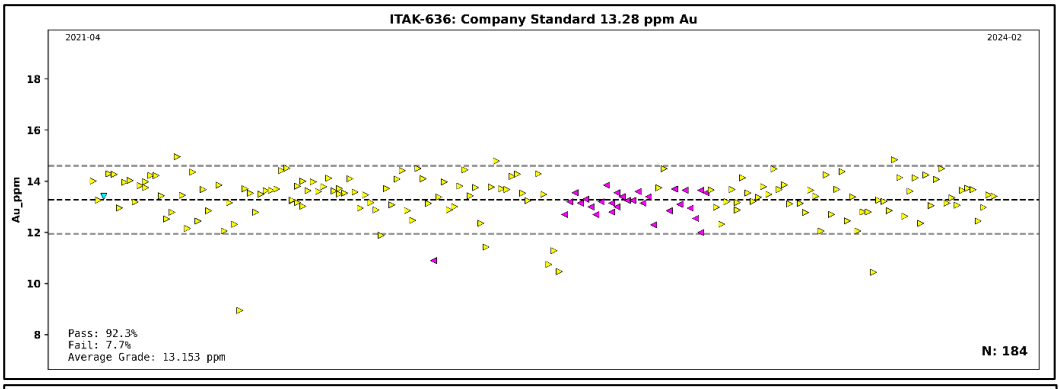
Selected examples of assay results for standards are illustrated in Figure 11-8 to Figure 11-13, focusing on those used more continuously through the sampling campaign.

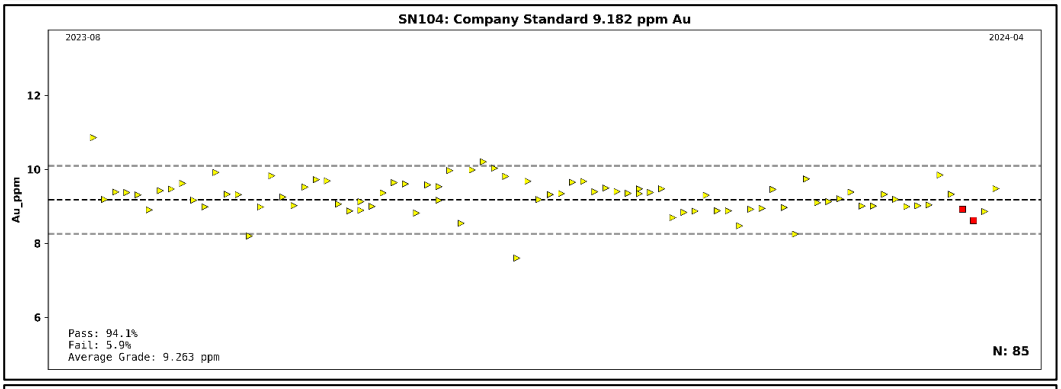
Generally, the results indicated reasonable accuracy with no obvious bias associated with the high-grade gold standards. The results for the moderate-grade standard OREAS-624 indicated significant variability and a tendency to negative bias with the SGS data but much better consistency with the ALS check samples. The other moderate gold standards indicate variability with the SGS results but no obvious bias. The ALS results appear much more consistent indicating that there is perhaps not a problem with the standard itself. Copper results report well compared to control limits. Some higher-grade standards show a very slight tendency to negative bias, with OREAS-629 and ITAK-862 having most results plotting close to but slightly below the control line. This was reported to ALS who reviewed their laboratory controls, which did not reflect any bias during the reporting period. At low levels of Silver, SGS results showed some imprecision. From May 2023 onward, SGS changed the limit of detection from 3 ppm Ag for Inductively coupled plasma - optical emission spectrometry, to 0.5 g/t Ag. Prior to this silver, below the 3 g/t detection limit was analysed by Aqua Regia digest and AAS finish (AAS12E method), where methods tend to under-report silver grades. Results for a further low-grade silver standard, ITAK-845 (1.44 g/t) are consistently under-reported. The vendor of the standard was queried on the certified value - it appears that fewer laboratories were involved in the certification of the silver value and the standard was discontinued. The is some indication that ALS and SGS are under-reporting very high-grade levels of silver (>90 g/t) These values are less common at Cabaçal, but more common at Santa Helena. Overall silver is a minor component of the Cabaçal Resource. The standards perform well where silver is at higher grades (>3 g/t Ag).

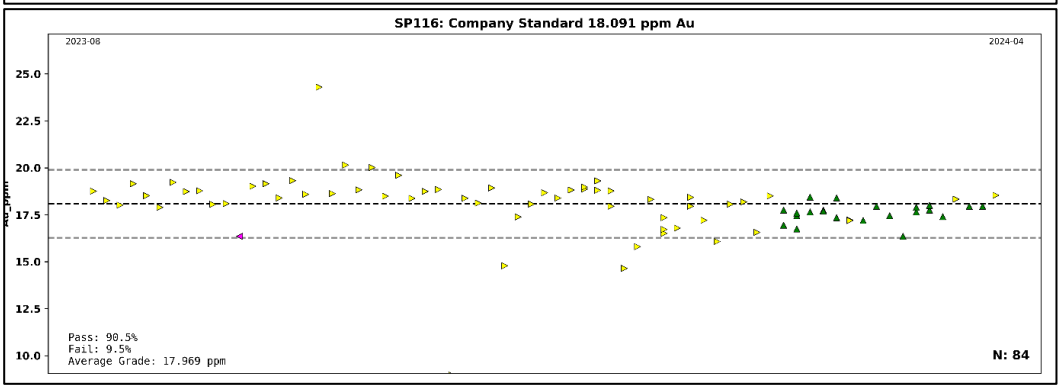
Figure 11-11: Examples of Company-submitted Higher-grade Au Standards

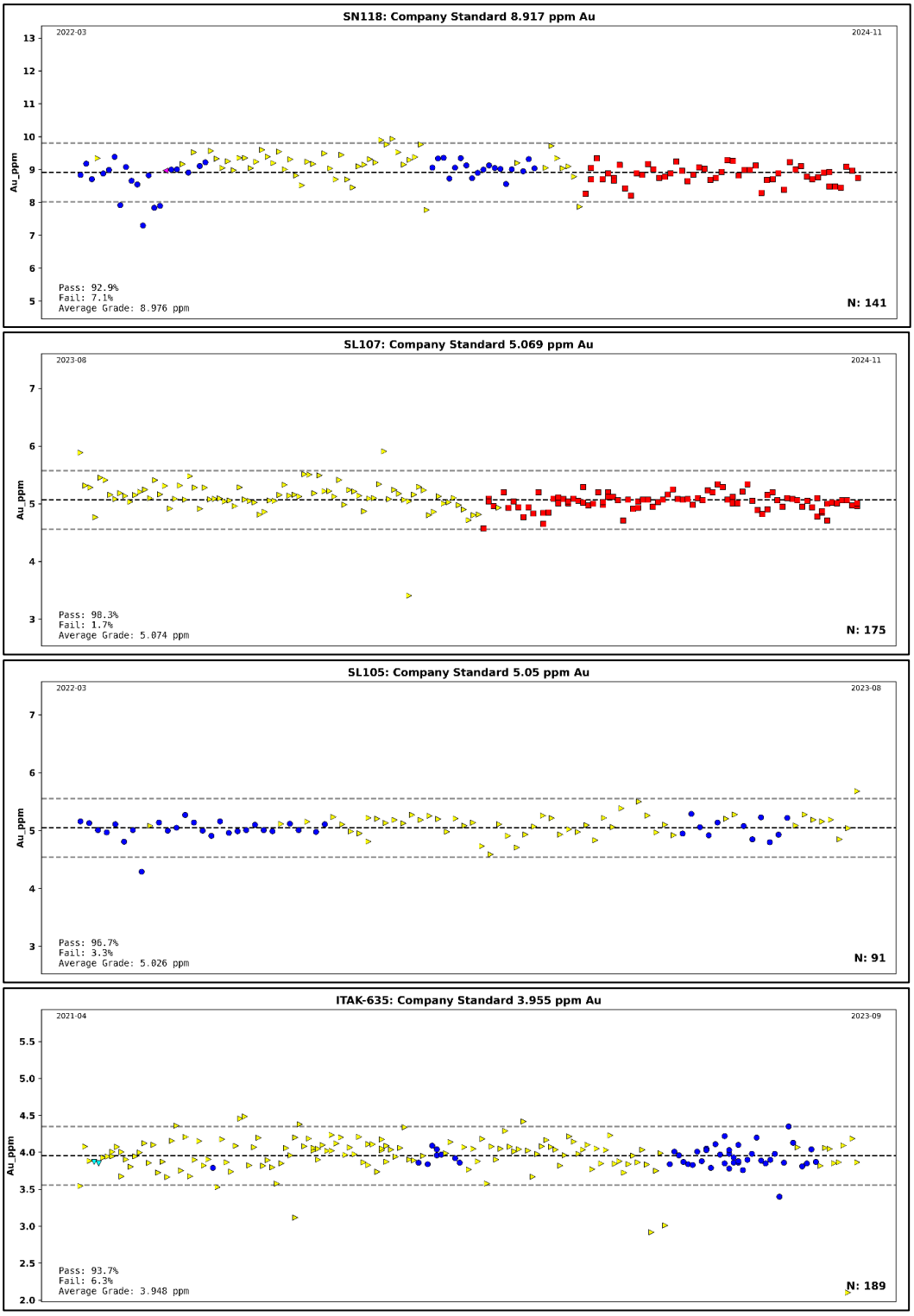



SP73: Company Standard 18.17 ppm Au
2022-03
2024-02
25.0
22.5
20.0
17.5
15.0
12.5
10.0
Pass: 95.5%
Fail: 4.5%
Average Grade: 18.224 ppm
N: 92


ITAK-636: Company Standard 13.28 ppm Au
2021-04
2024-02
Au_ppm
18
16
14
12
10
8
Pass: 92.3%
Fail: 7.7%
Average Grade: 13.153 ppm
N: 184

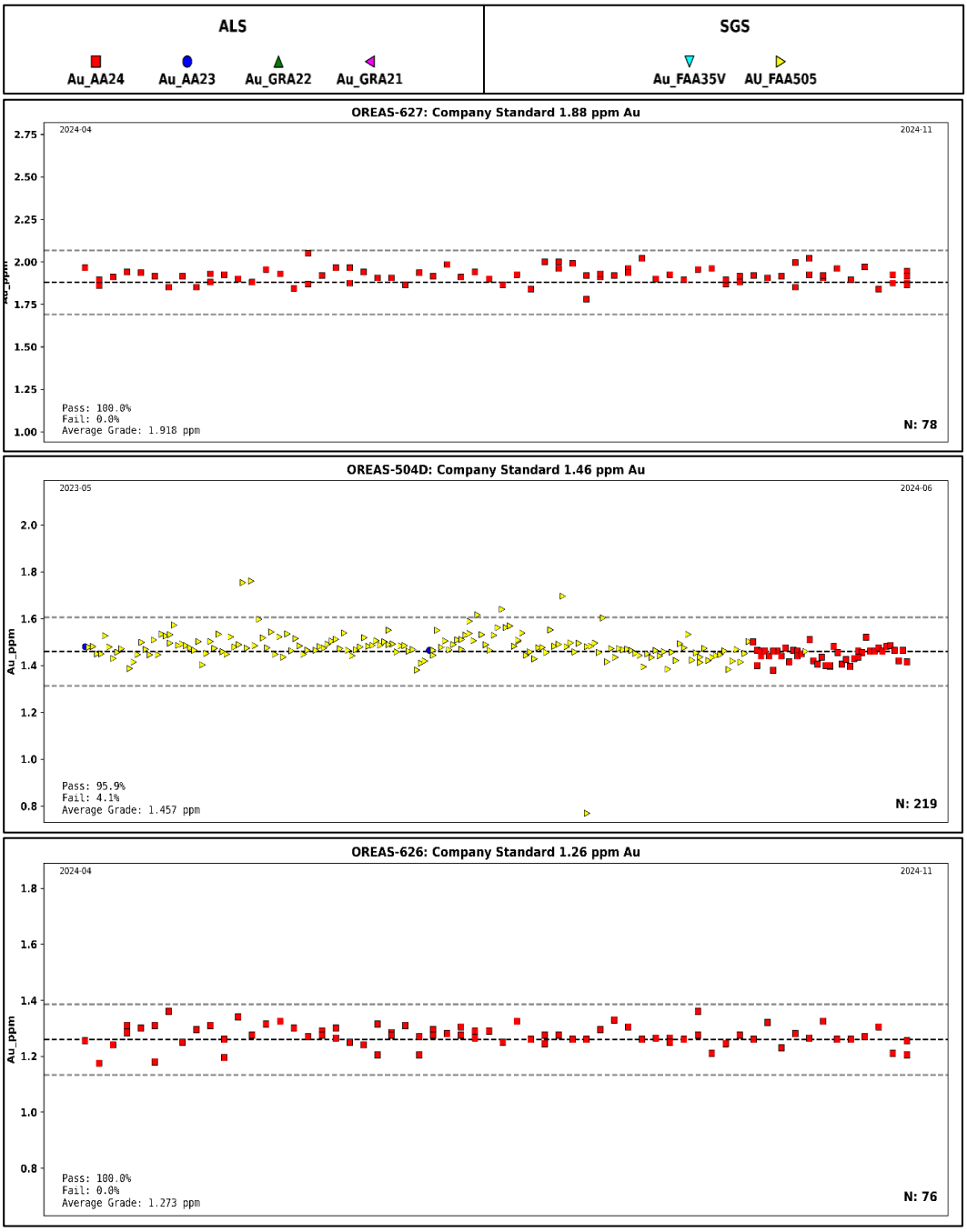

SN104: Company Standard 9.182 ppm Au
2023-08
2024-04
Au_ppm
12
10
8
6
Pass: 94.1%
Fail: 5.9%
Average Grade: 9.263 ppm
N: 85

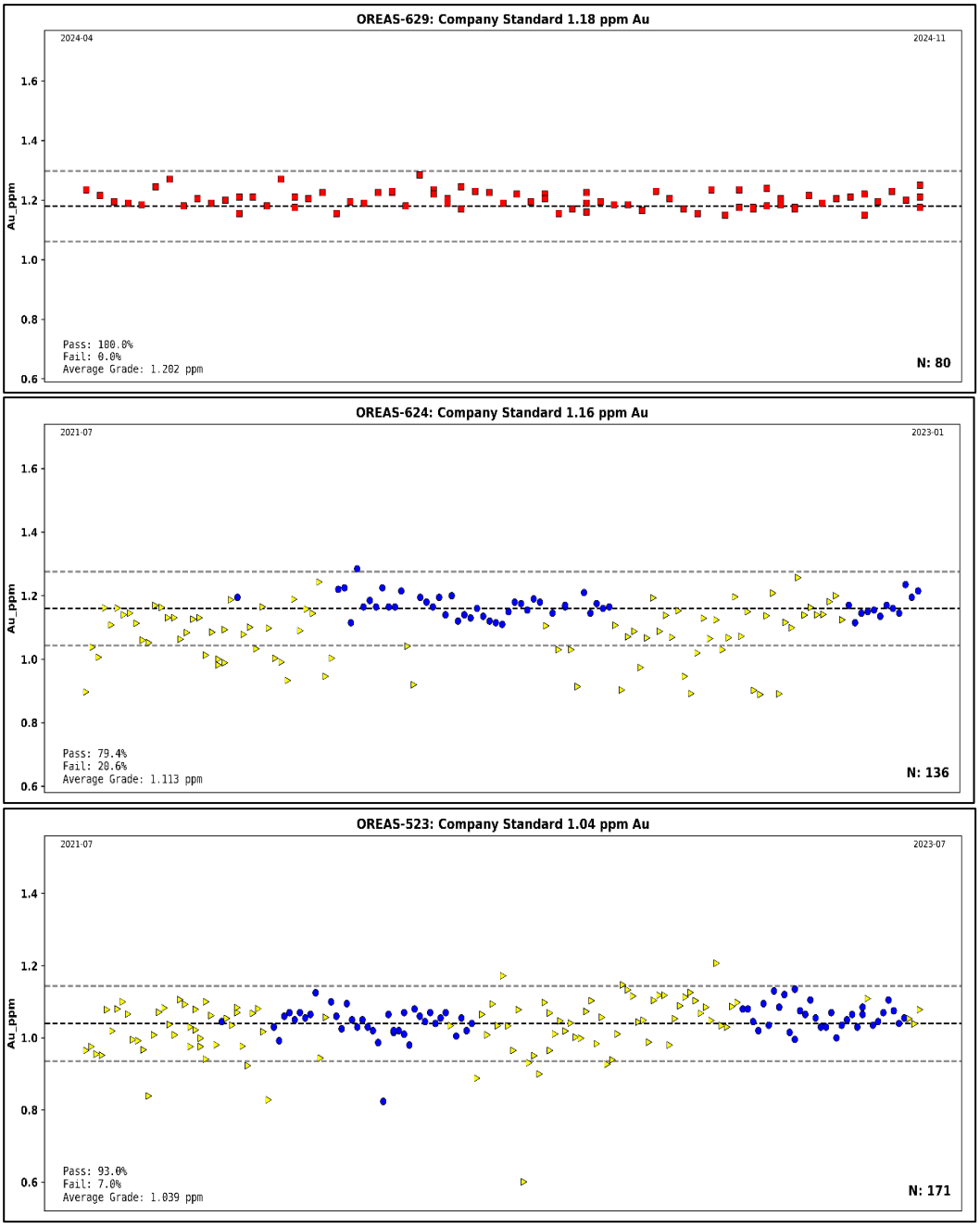

SP116: Company Standard 18.091 ppm Au
2023-08
2024-04
25.0
22.5
20.0
17.5
15.0
12.5
10.0
Pass: 90.5%
Fail: 9.5%
Average Grade: 17.969 ppm
N: 84



Source: Meridian, 2024. Charts plotted with +/- 10% control lines.

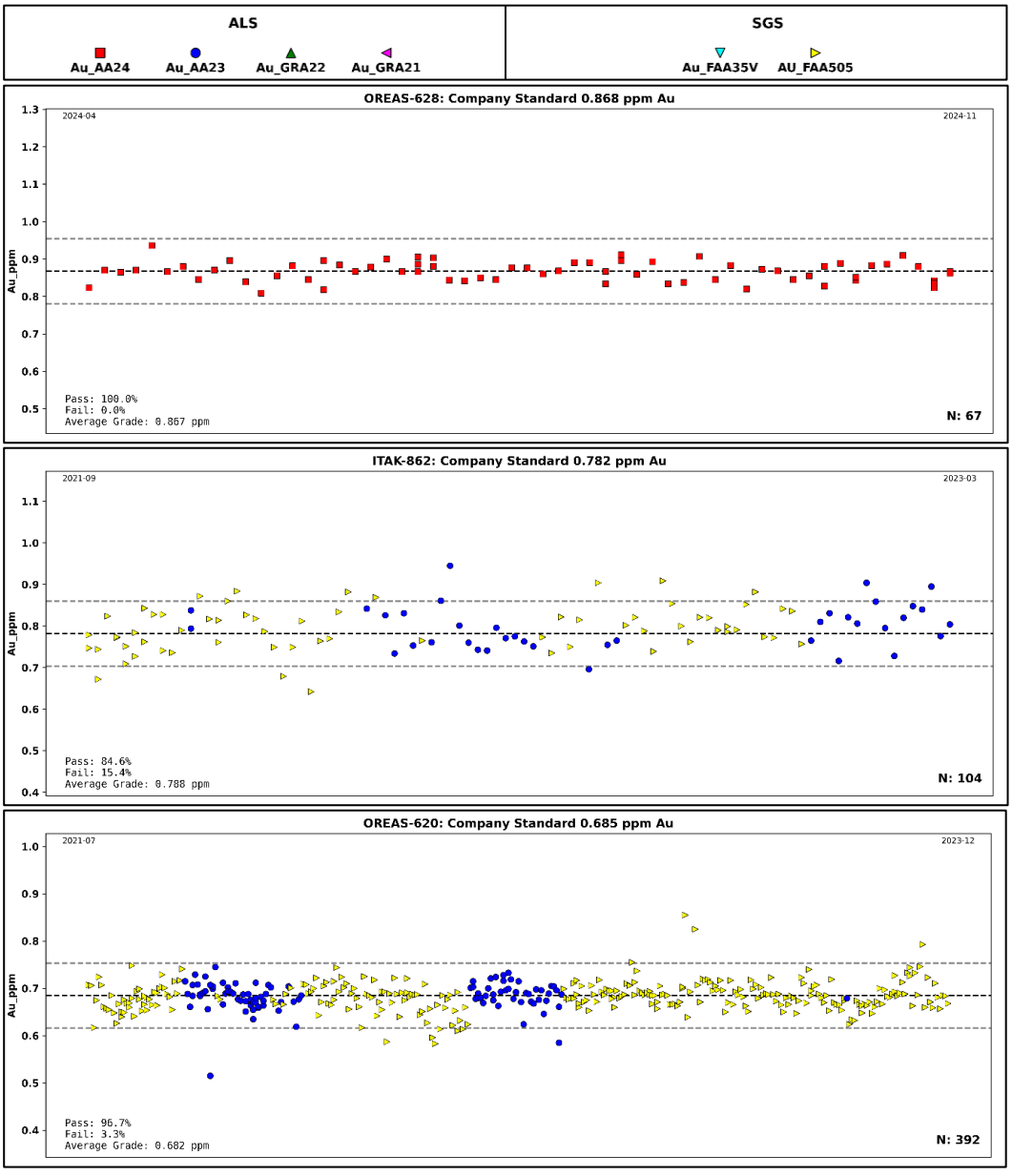
Figure 11-12: Examples of Company-submitted Moderate-grade Au Standards

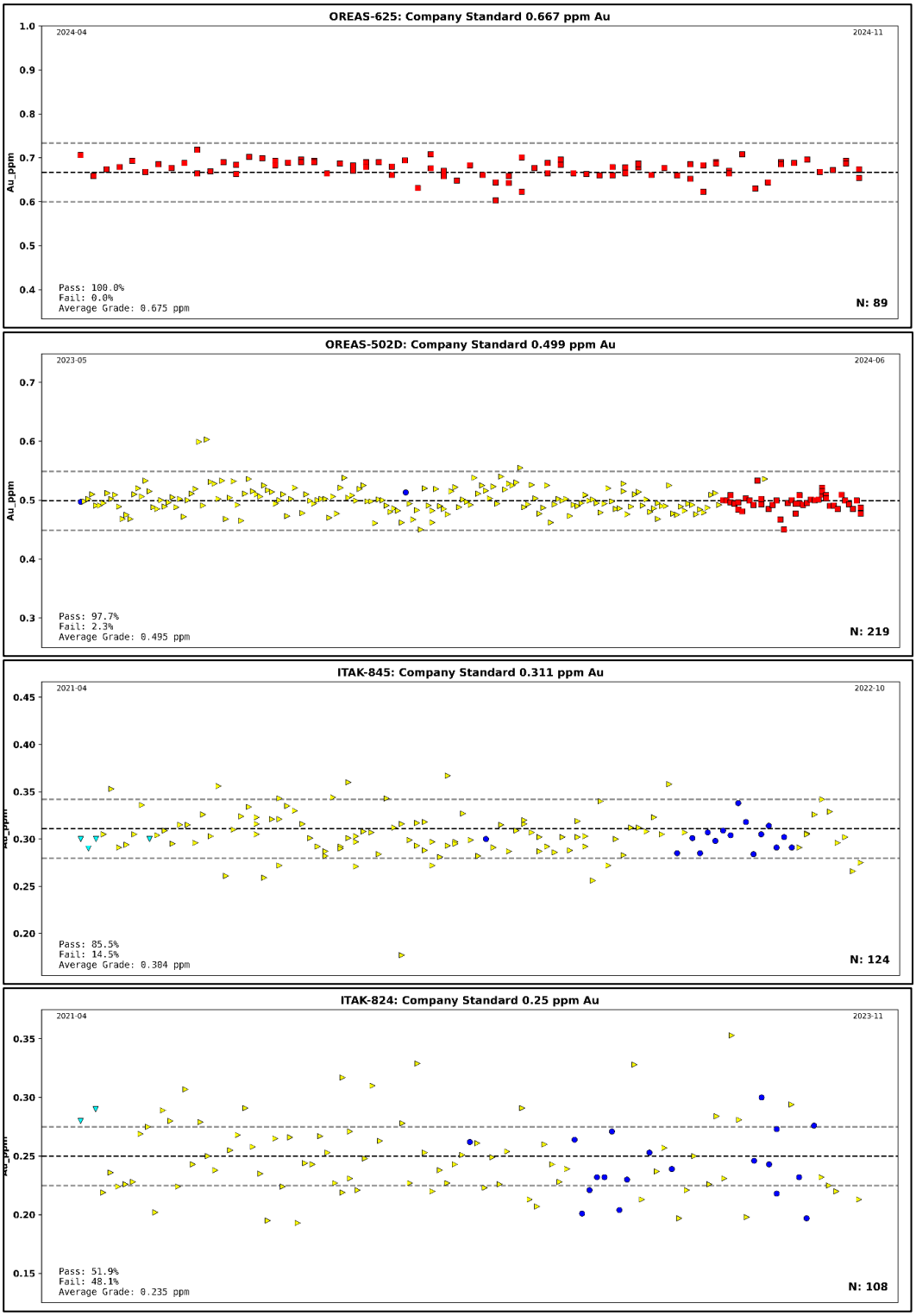




Source: Meridian, 2024. Charts plotted with +/- 10% control lines.

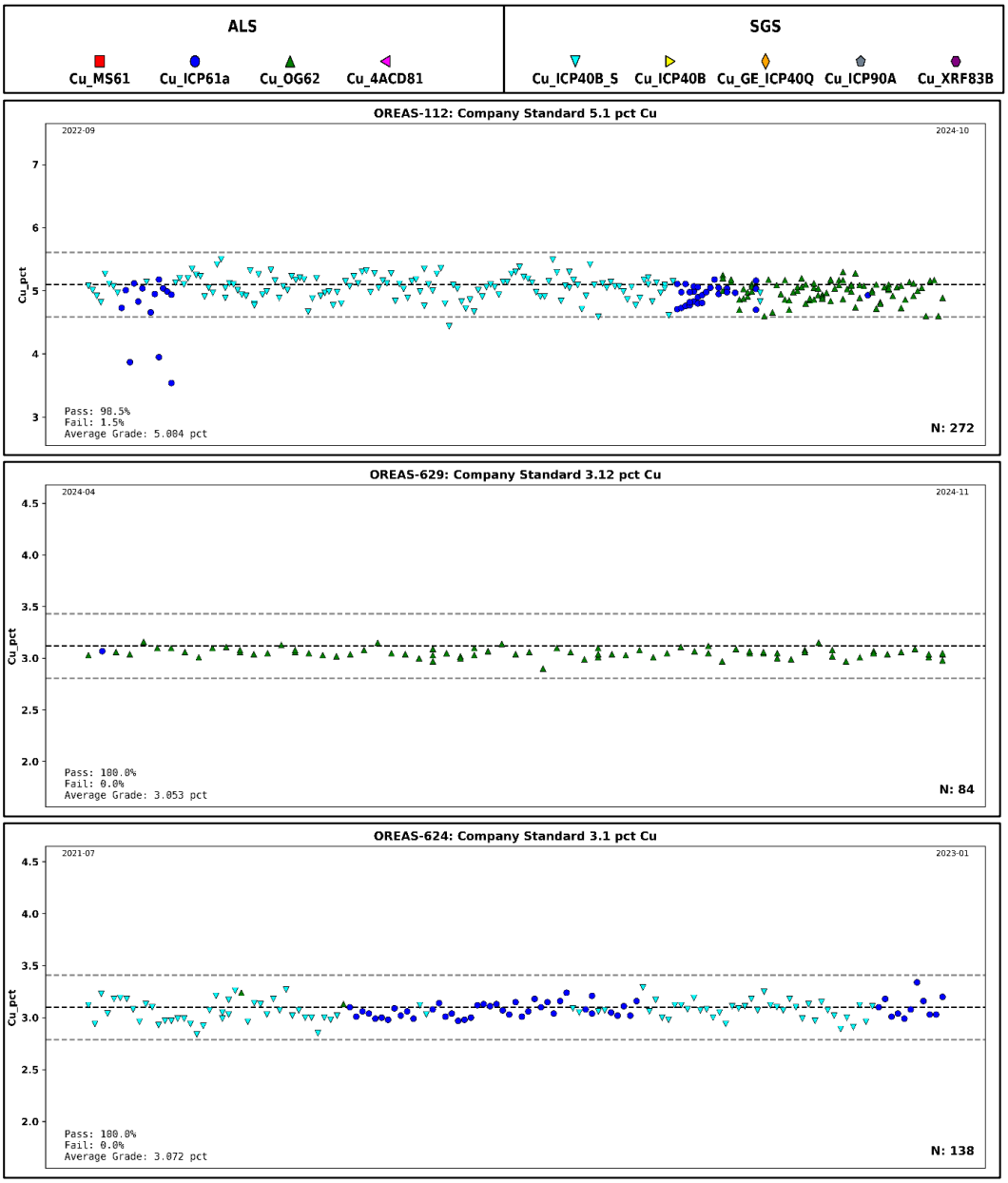
Figure 11-13: Examples of Company-submitted Lower-grade Au Standards

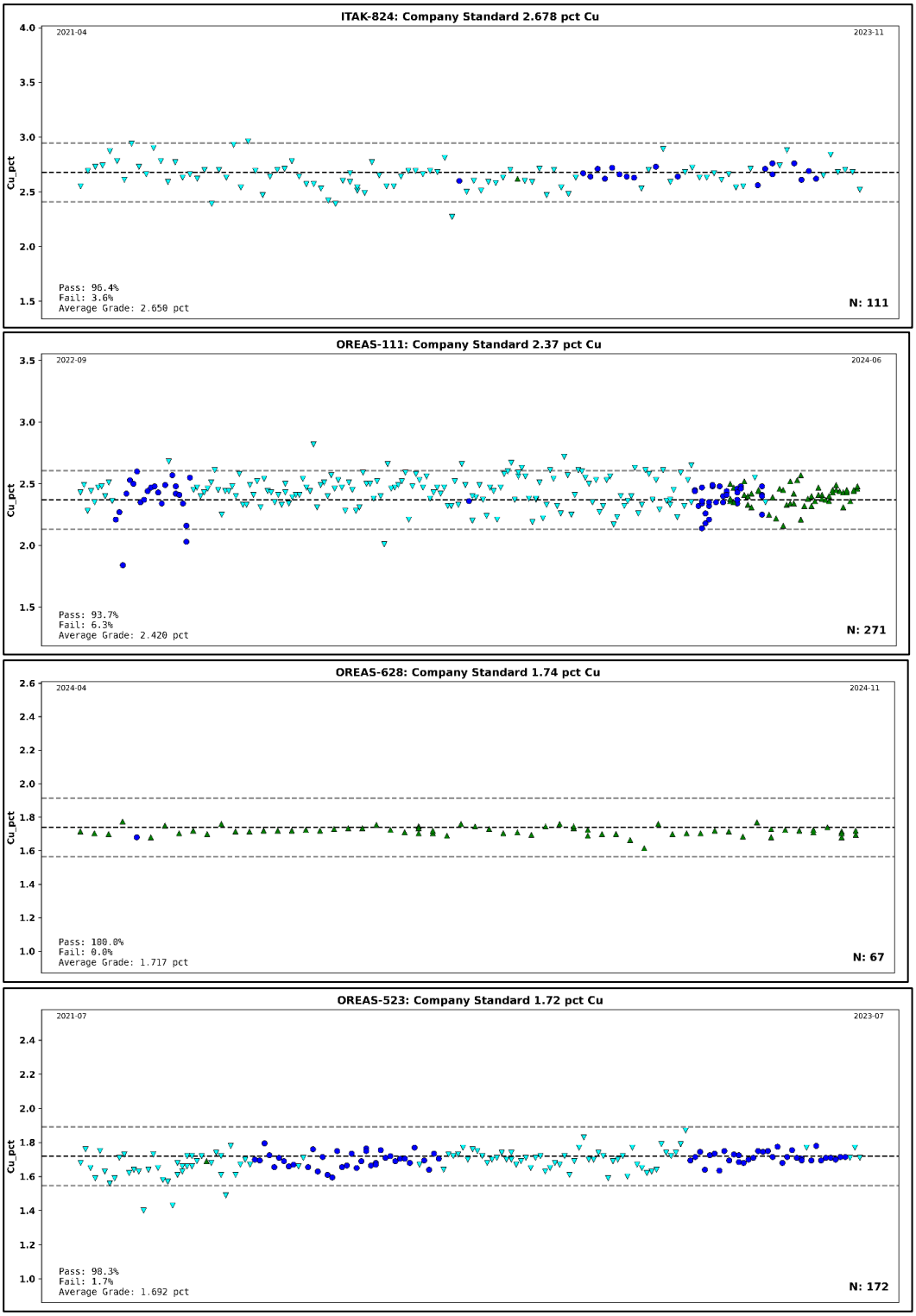


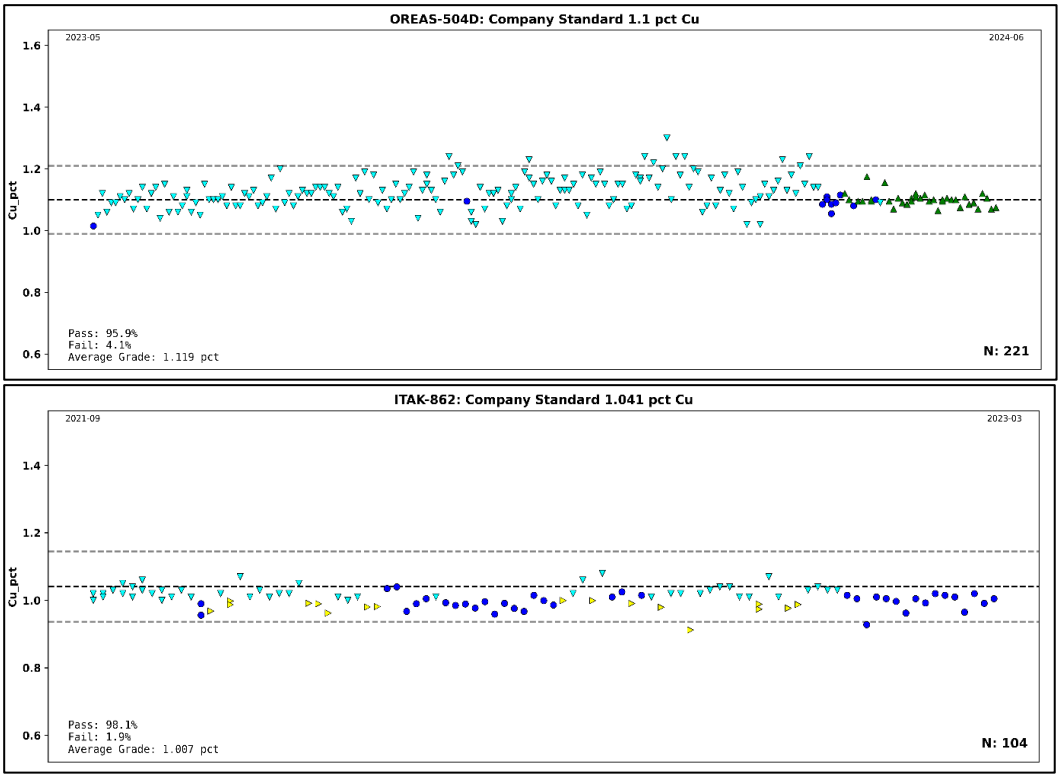


Source: Meridian, 2024. Charts plotted with +/- 10% control lines.

Figure 11-14: Examples of Company-submitted Higher grade Cu Standards

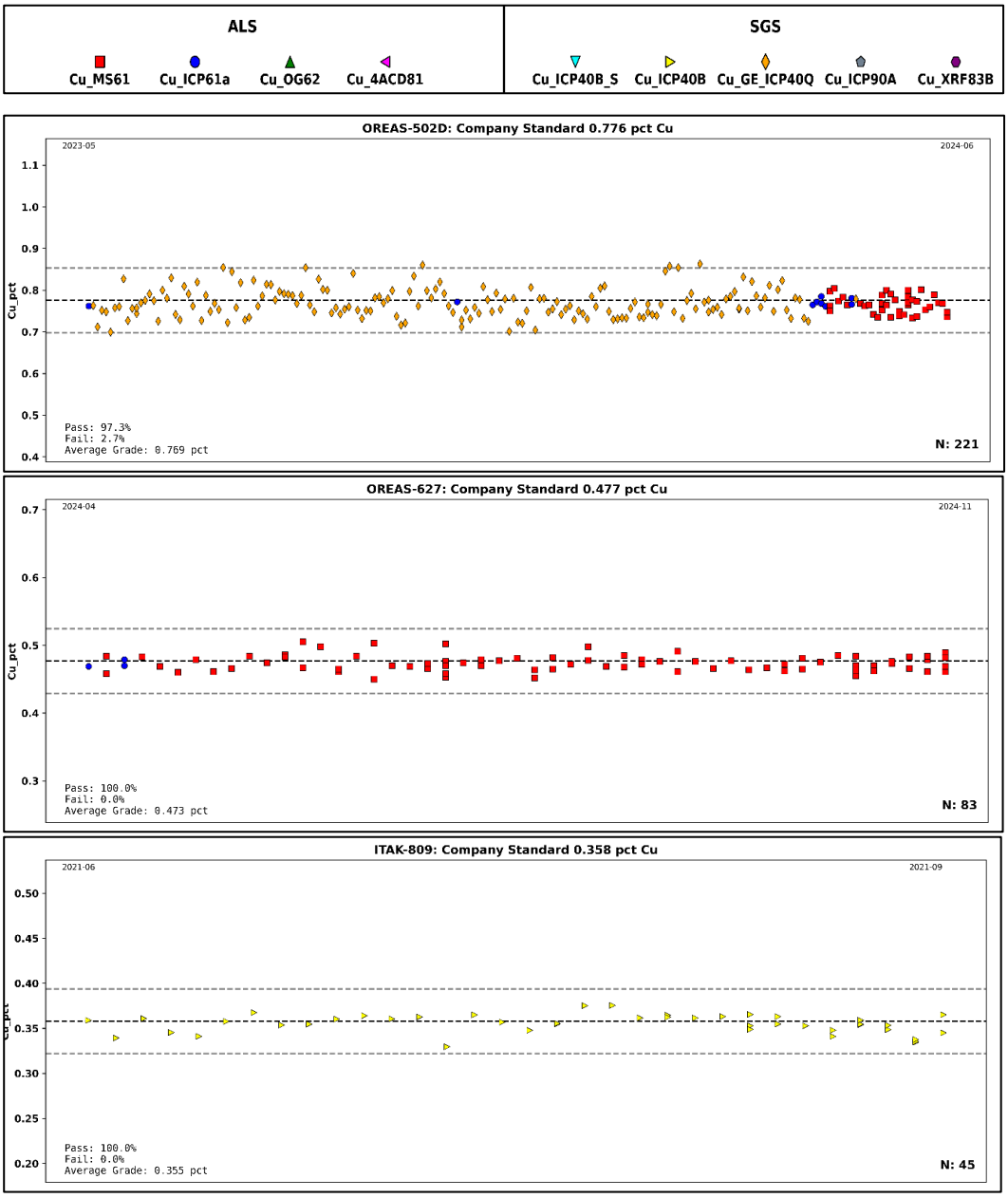


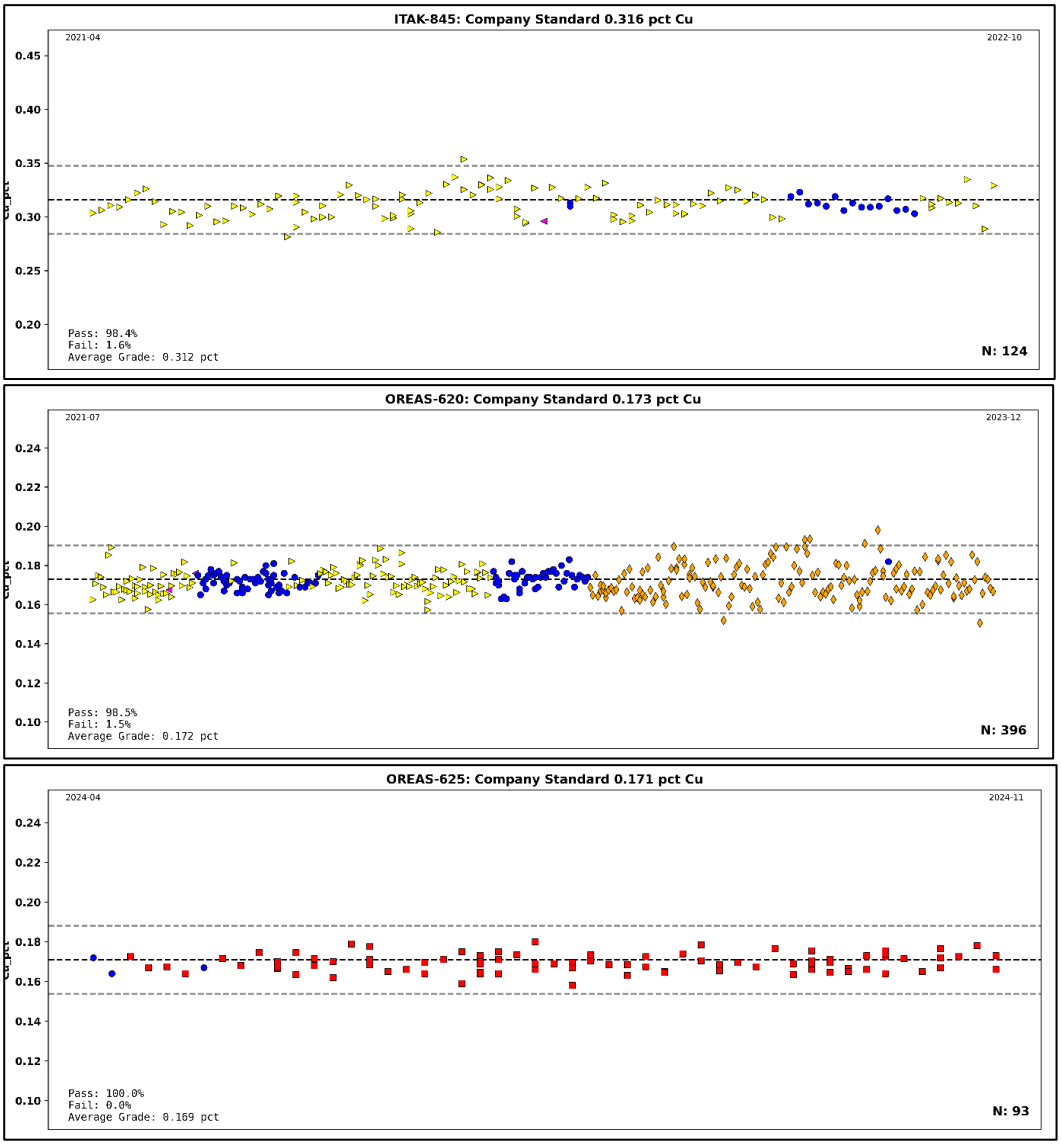

ITAK-824: Company Standard 2.678 pct Cu
2021-04
2023-11
Cu_pct
Pass: 96.4%
Fail: 3.6%
Average Grade: 2.650 pct
N: 111
OREAS-111: Company Standard 2.37 pct Cu
2022-09
2024-06
Cu_pct
Pass: 93.7%
Fail: 6.3%
Average Grade: 2.420 pct
N: 271
OREAS-628: Company Standard 1.74 pct Cu
2024-04
2024-11
Cu_pct
Pass: 100.0%
Fail: 0.0%
Average Grade: 1.717 pct
N: 67
OREAS-523: Company Standard 1.72 pct Cu
2021-07
2023-07
Cu_pct
Pass: 98.3%
Fail: 1.7%
Average Grade: 1.692 pct
N: 172



Source: Meridian, 2024. Charts plotted with +/- 10% control lines.

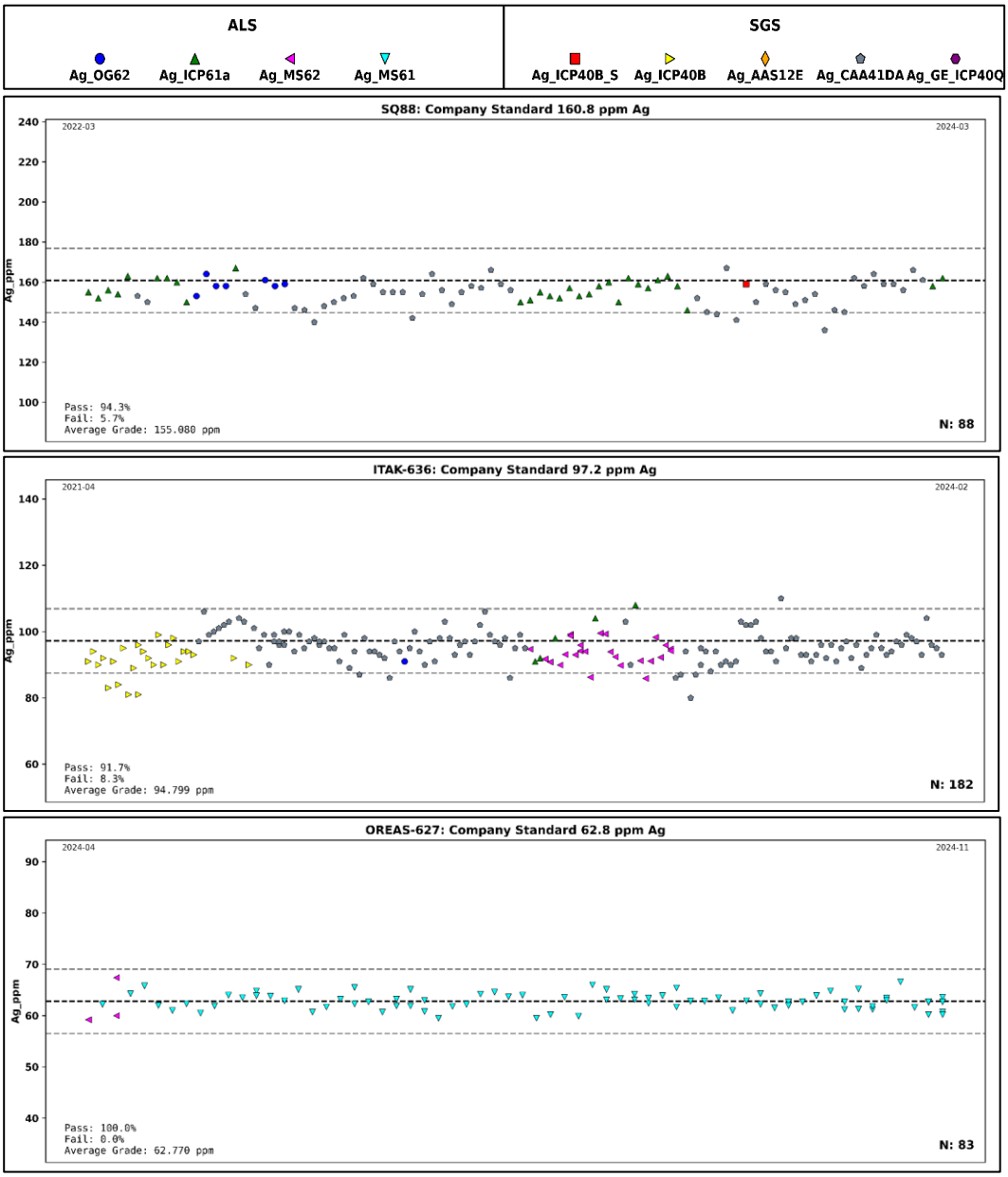
Figure 11-15: Examples of Company-submitted Lower-grade Cu Standards

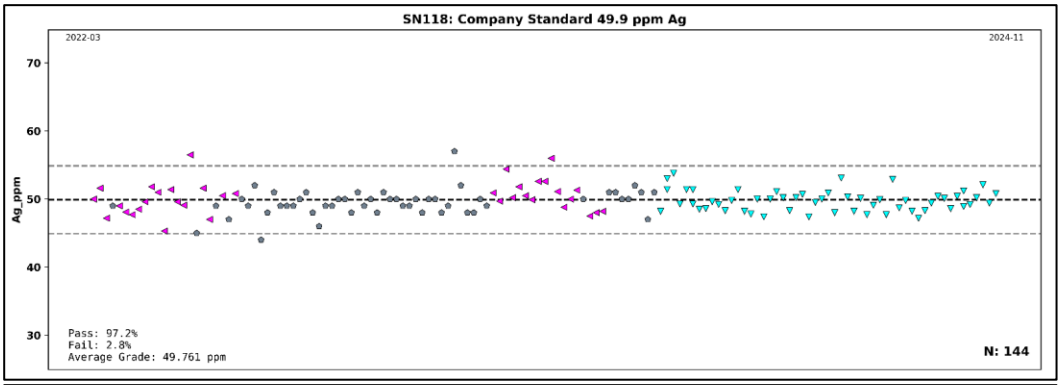


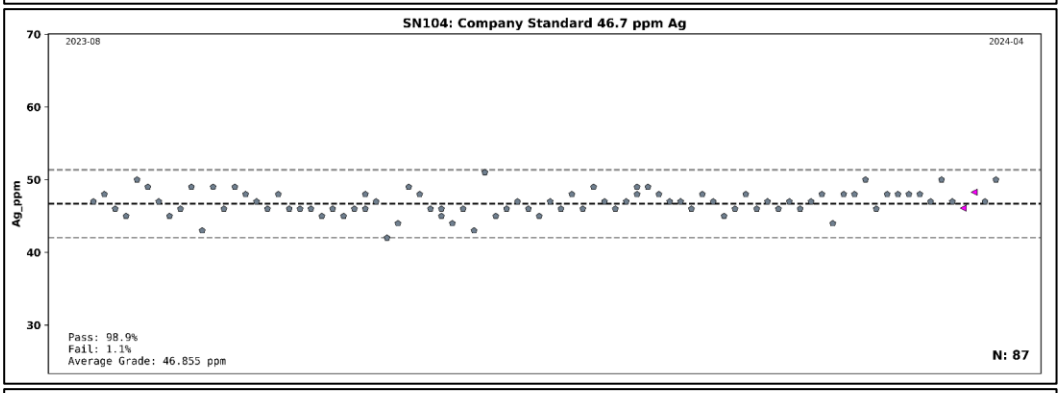


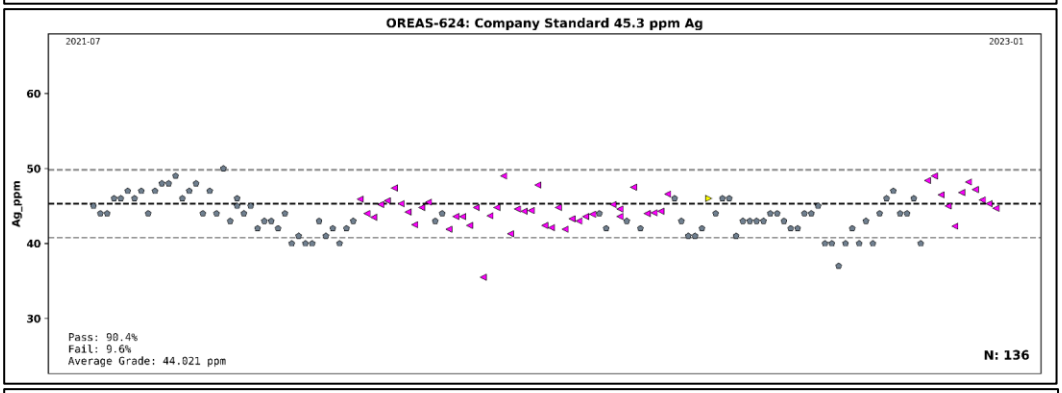
Source: Meridian, 2024. Charts plotted with +/- 10% control lines.

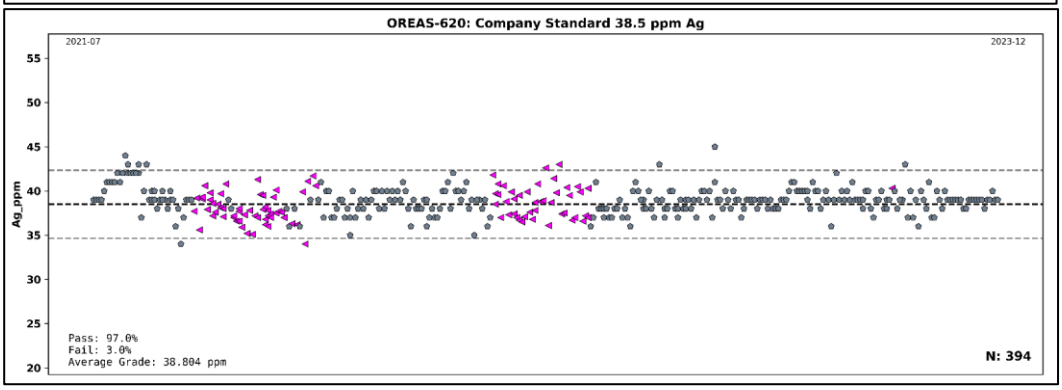
Figure 11-16: Examples of Company-submitted Ag Standards

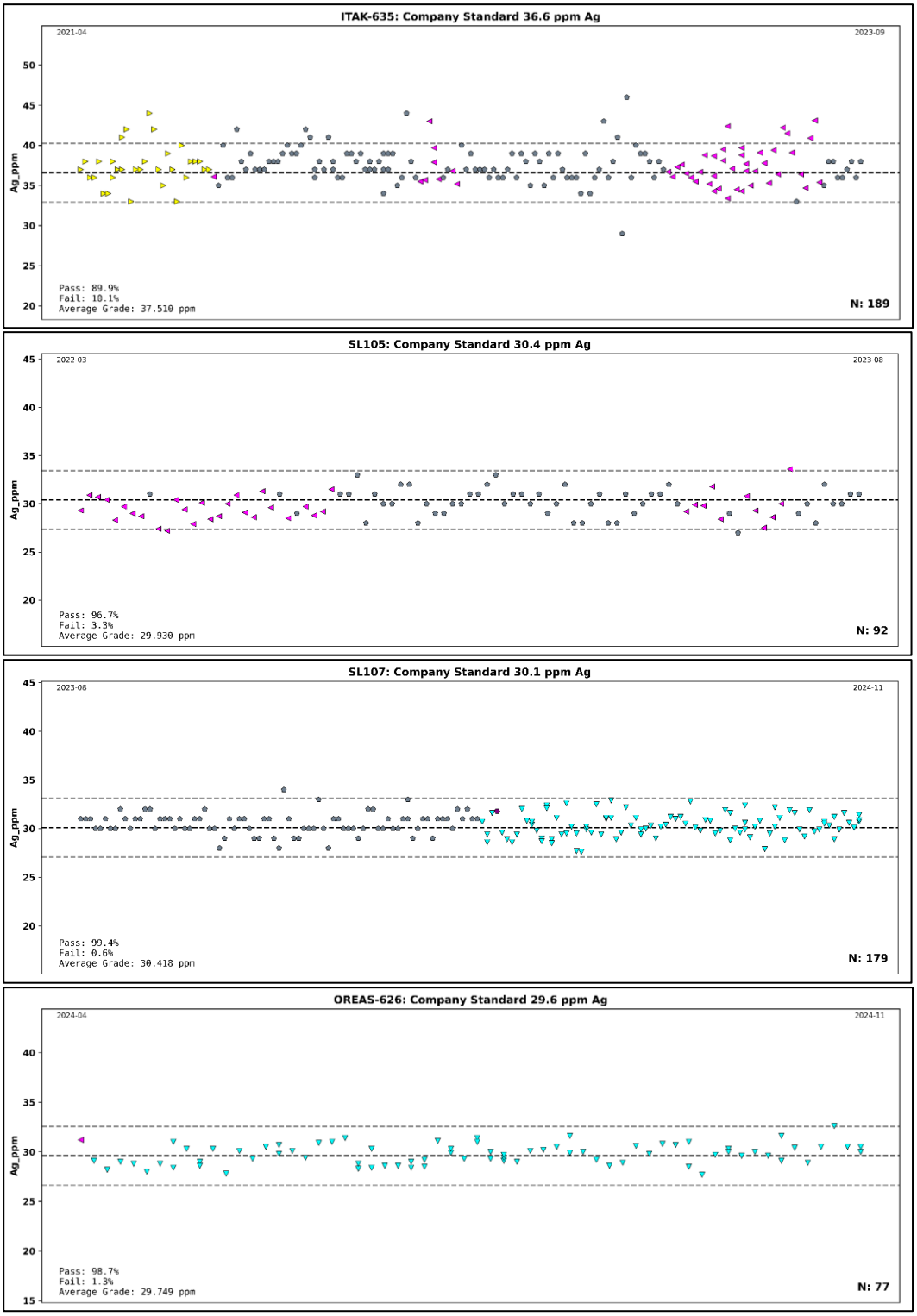


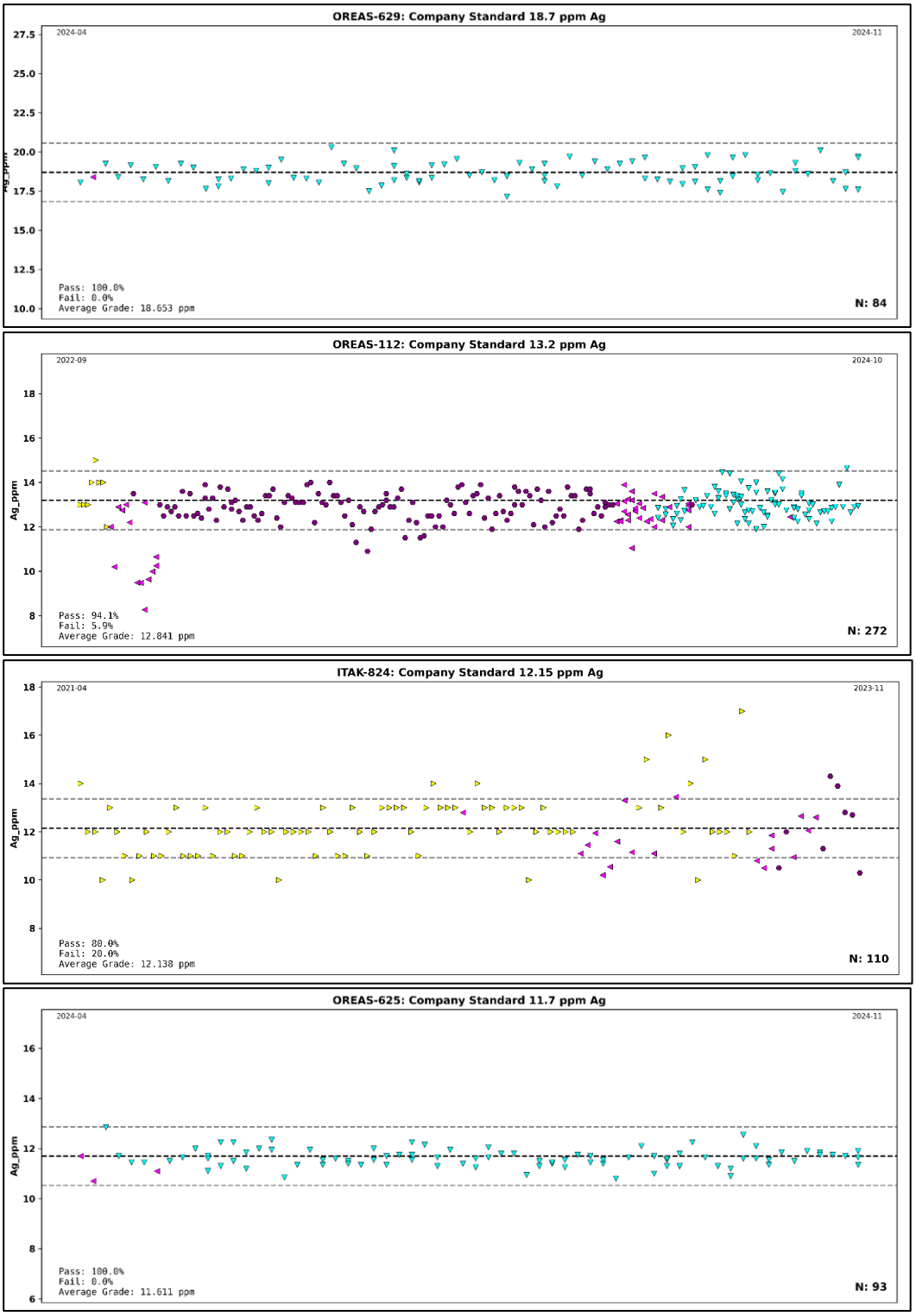

SN118: Company Standard 49.9 ppm Ag
2022-03
2024-11
Ag_ppm
70
60
50
40
30
Pass: 97.2%
Fail: 2.8%
Average Grade: 49.761 ppm
N: 144

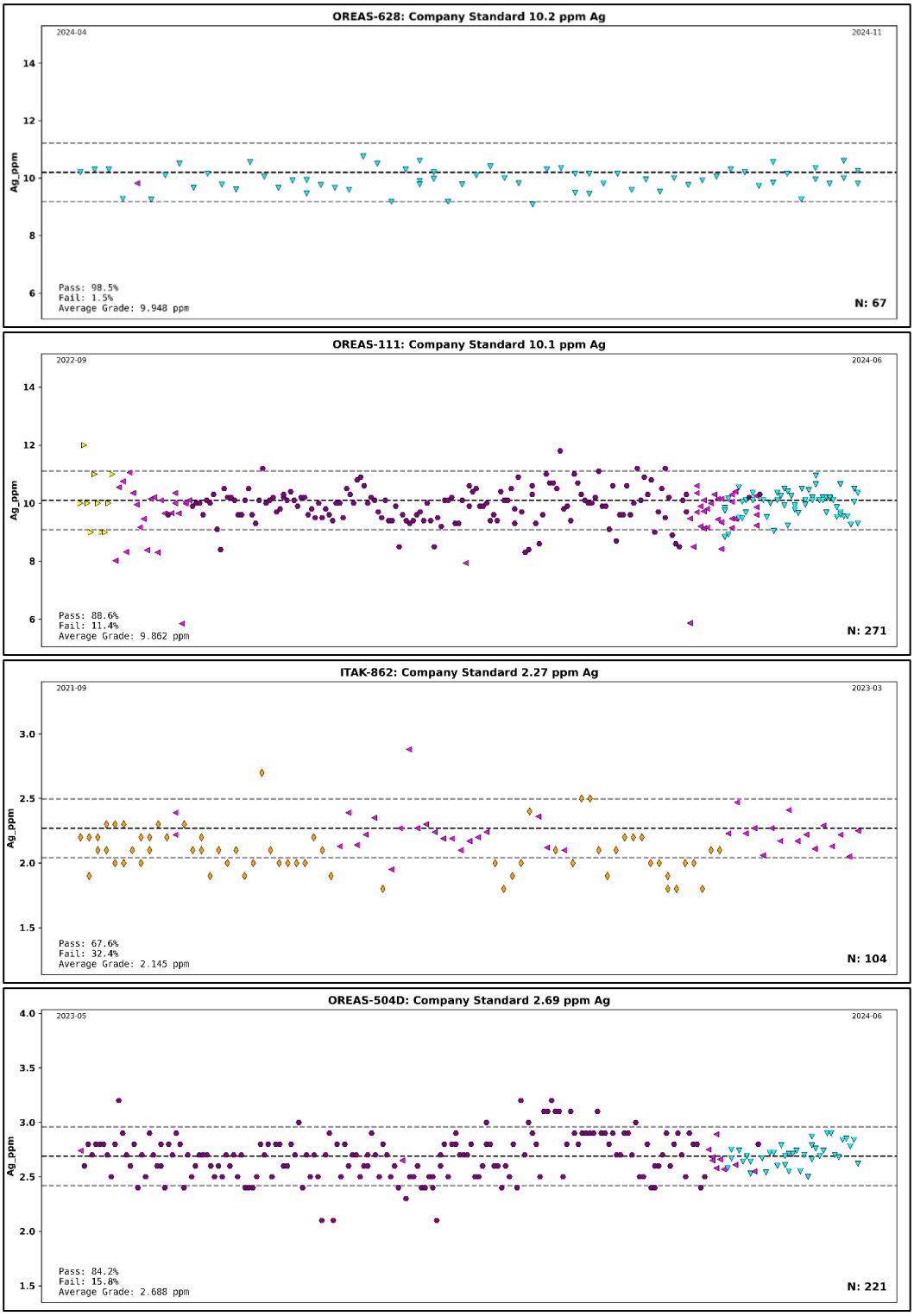

SN104: Company Standard 46.7 ppm Ag
2023-08
2024-04
Ag_ppm
70
60
50
40
30
Pass: 98.9%
Fail: 1.1%
Average Grade: 46.855 ppm
N: 87


OREAS-624: Company Standard 45.3 ppm Ag
2021-07
2023-01
Ag_ppm
60
50
40
30
Pass: 90.4%
Fail: 9.6%
Average Grade: 44.021 ppm
N: 136


OREAS-620: Company Standard 38.5 ppm Ag
2021-07
2023-12
Ag_ppm
55
50
45
40
35
30
25
20
Pass: 97.0%
Fail: 3.0%
Average Grade: 38.804 ppm
N: 394


ITAK-635: Company Standard 36.6 ppm Ag
2021-04
2023-09
Ag_ppm
50
45
40
35
30
25
20
Pass: 89.9%
Fail: 10.1%
Average Grade: 37.510 ppm
N: 189
SL105: Company Standard 30.4 ppm Ag
2022-03
2023-08
Ag_ppm
45
40
35
30
25
20
Pass: 96.7%
Fail: 3.3%
Average Grade: 29.930 ppm
N: 92
SL107: Company Standard 30.1 ppm Ag
2023-08
2024-11
Ag_ppm
45
40
35
30
25
20
Pass: 99.4%
Fail: 0.6%
Average Grade: 30.418 ppm
N: 179
OREAS-626: Company Standard 29.6 ppm Ag
2024-04
2024-11
Ag_ppm
40
35
30
25
20
15
Pass: 98.7%
Fail: 1.3%
Average Grade: 29.749 ppm
N: 77


OREAS-629: Company Standard 18.7 ppm Ag
2024-04
2024-11
Ag_ppm
Pass: 100.0%
Fail: 0.0%
Average Grade: 18.653 ppm
N: 84
OREAS-112: Company Standard 13.2 ppm Ag
2022-09
2024-10
Ag_ppm
Pass: 94.1%
Fail: 5.9%
Average Grade: 12.841 ppm
N: 272
ITAK-824: Company Standard 12.15 ppm Ag
2021-04
2023-11
Ag_ppm
Pass: 80.0%
Fail: 20.0%
Average Grade: 12.138 ppm
N: 110
OREAS-625: Company Standard 11.7 ppm Ag
2024-04
2024-11
Ag_ppm
Pass: 100.0%
Fail: 0.0%
Average Grade: 11.611 ppm
N: 93


OREAS-628: Company Standard 10.2 ppm Ag
2024-04
2024-11
Ag_ppm
14
12
10
8
6
Pass: 98.5%
Fail: 1.5%
Average Grade: 9.948 ppm
N: 67
OREAS-111: Company Standard 10.1 ppm Ag
2022-09
2024-06
Ag_ppm
14
12
10
8
6
Pass: 88.6%
Fail: 11.4%
Average Grade: 9.862 ppm
N: 271
ITAK-862: Company Standard 2.27 ppm Ag
2021-09
2023-03
Ag_ppm
3.0
2.5
2.0
1.5
Pass: 67.6%
Fail: 32.4%
Average Grade: 2.145 ppm
N: 104
OREAS-504D: Company Standard 2.69 ppm Ag
2023-05
2024-06
Ag_ppm
4.0
3.5
3.0
2.5
2.0
1.5
Pass: 84.2%
Fail: 15.8%
Average Grade: 2.688 ppm
N: 221



Source: Meridian, 2024. Charts plotted with +/- 10% control lines.

Meridian discusses outliers with the analytical laboratories. Any analytical batches with more significant outliers are incorporated into the umpire test work program, along with routine periodic checks. SGS made modest adjustments and reissued reports for a number of early laboratory reports where copper was reporting lower-grade values.

8.1% of company-submitted standards for one of copper, gold or silver fell out of 10% tolerate limits of certified values. Of this total, 5.0% relate to silver which has low relative value contribution to the resource, and is impacted particularly by precision of analysis at lower levels where partial digest analytical methods are applied. Of the other outliers, 2.6% related to gold and 0.5% related to copper standards, with over half falling outside of mineral zones. SGS was contacted in relation to some of the larger deviations observed, and noted when a higher sulfidation standard appears in a

sequence with little or no sulphide, the lead button in the fire assay may have a higher than expected mass. In the case of routine core-pulp samples, there is sufficient mass to correct when this effect is noted in the QA/QC programs, whereas for the standard, after the consumption of the 30-50g charge, there is insufficient mass to generate a new aliquot. Each analytical submission includes standards covering a range for grades and failures tend to be isolated rather than systematic where observed.

It is also notable that 3.1% of this total relates to three individual discontinued standards – ITAK-824, ITAK-845 and OREAS-523. Variation seen in low level silver standard ITAK-824 may reflect either a certification issue or under-reporting issue related the partial digest and/or the matrix of that particular standard. Low-grade gold standard ITAK-824 which showed scatter at both ALS and SGS accounted for 0.5% of variations outside of tolerance limits and was also discontinued Variance in OREAS-523 may reflect again precision in partial digest at low silver grades – this standard is derived from magnetite-bearing IOCG mineralization. 1.5% of gold or copper values falling outside of 10% tolerance limits were in sterile zones, most relating to gold.

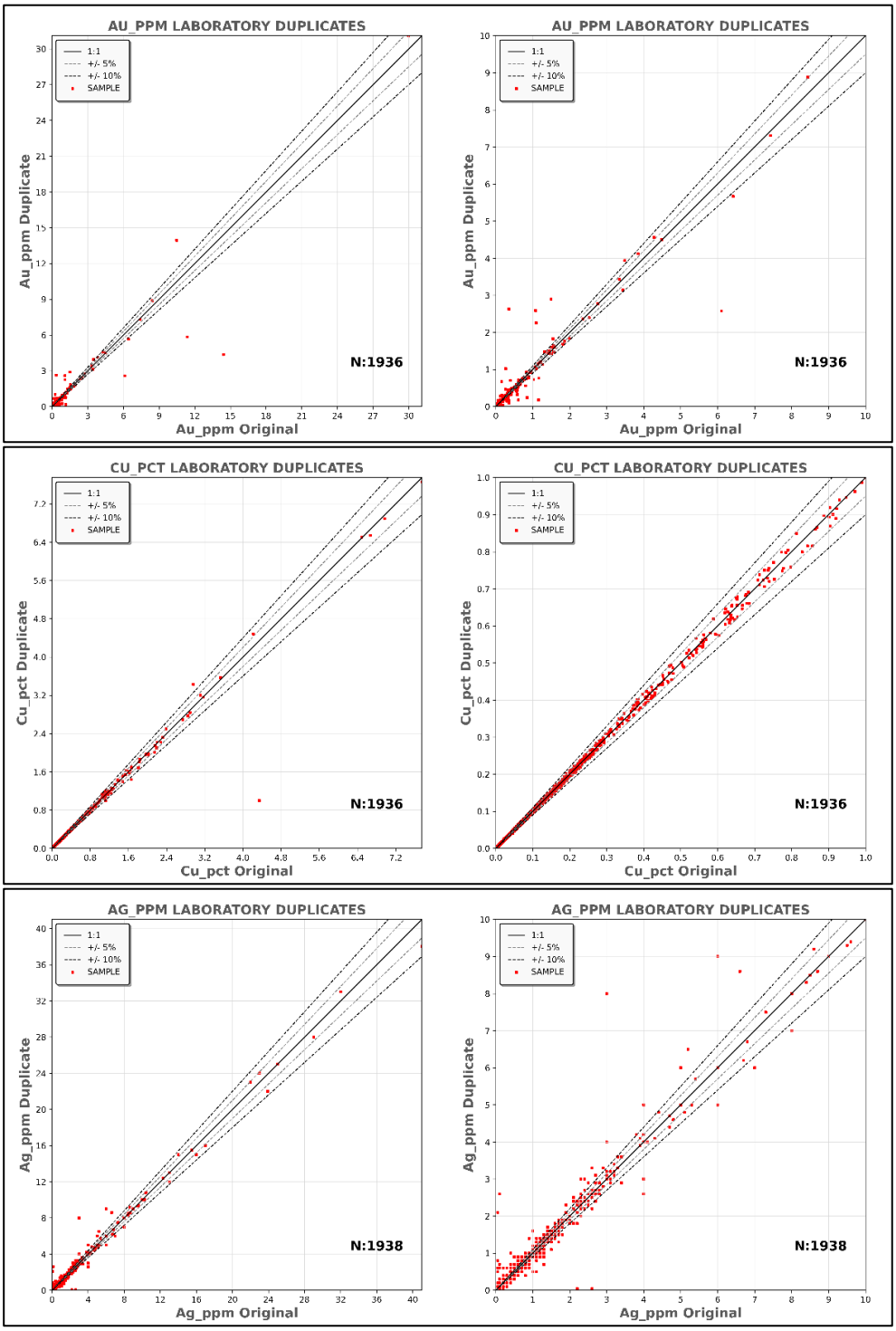
In addition to umpire checks, 822 repeat check analysis have been done by the laboratories at the Company's request where quality control deviations are noted. Disconsidering certain standard which showed consistent bias or poor precision in the laboratories, the variations are not atypical of patterns seen in commercial laboratories. The average standard values noted on the charts compared to their certified values indicates overall close alignment, and no overall material laboratory bias is evident. Standards showing the greater deviations tended towards slight negative bias, for gold: SQ88, SQ87, ITAK-845; for copper: ITAK-824, ITAK-862, OREAS-523, OREAS-625 and OREAS-629, and for silver ITAK-636, ITAK-862, SQ88, OREAS-112, OREAS-624 and OREAS-628.

11.7.4 Duplicates

Pulp duplicates reported by the laboratories are illustrated in Figure 11-17 and Figure 11-18. Two graphs are used for each element – one to show the whole dataset and one to show the lower grades where there is an increased number of samples. These duplicates are laboratory nominated and are taken at a frequency of one in 20 samples. For SGS laboratory duplicates there are 1,936 samples for gold, 1,936 samples for copper, and 1,938 samples for silver and for ALS laboratory duplicates there are 1,114 samples for gold, 1,384 samples for copper and 2,017 samples for silver. There is no evidence for any bias in the copper and silver results, but the relatively low-grade gold data suggests a small positive bias with the duplicate samples. As these data are not used in the any resource modelling the issue is not considered too significant.

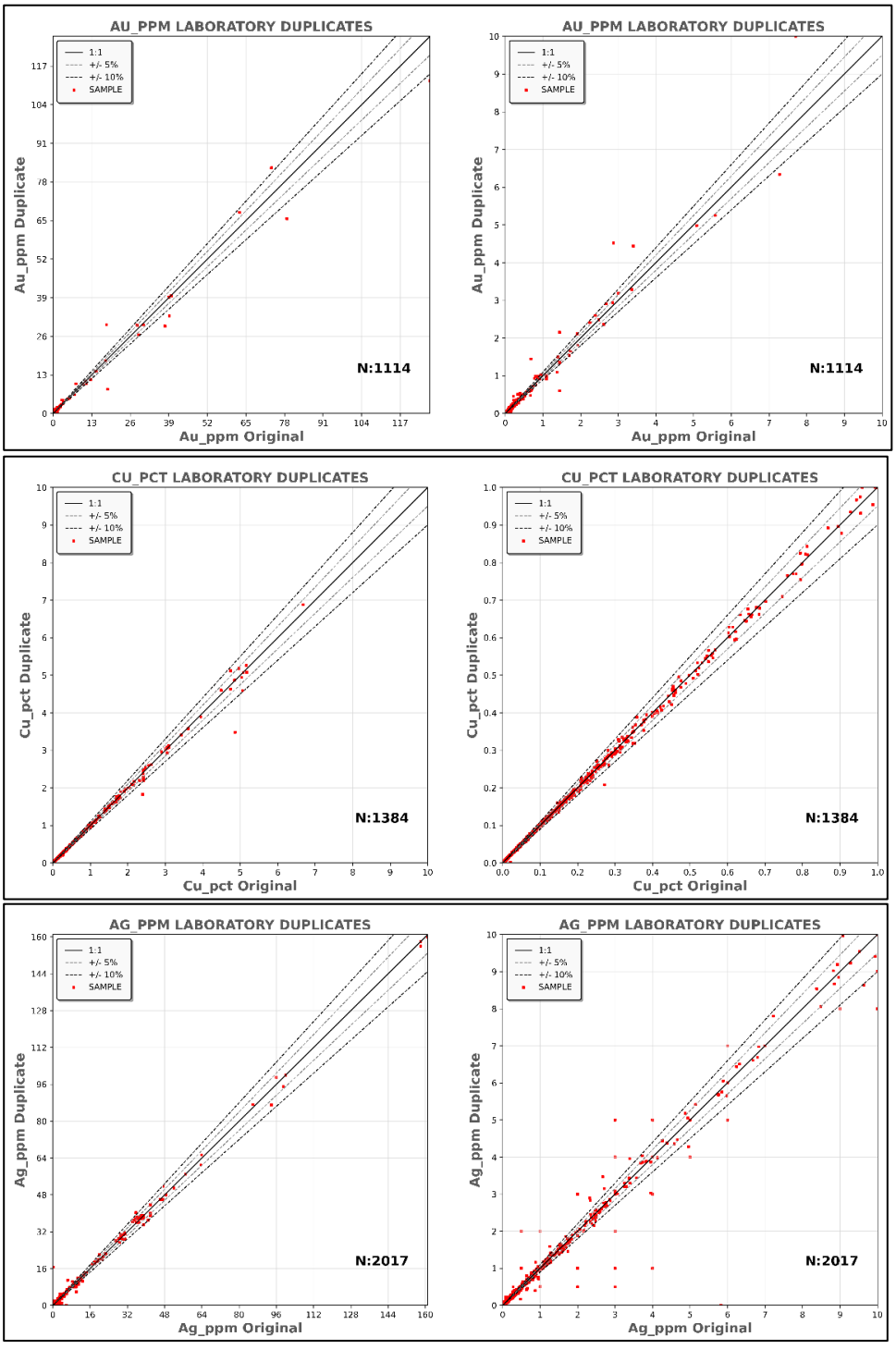
Field duplicates, selected by Meridian geologists, are taken as pairs of quarter-core from the same interval submitted as separate sample numbers. Results are illustrated in Figure 11-19. The results show a wide scatter characteristic of field duplicate samples but show no systematic bias. There are 1,709 samples for gold, 1,709 samples for copper, and 1,709 samples for silver.

Figure 11-17: SGS Laboratory Duplicates



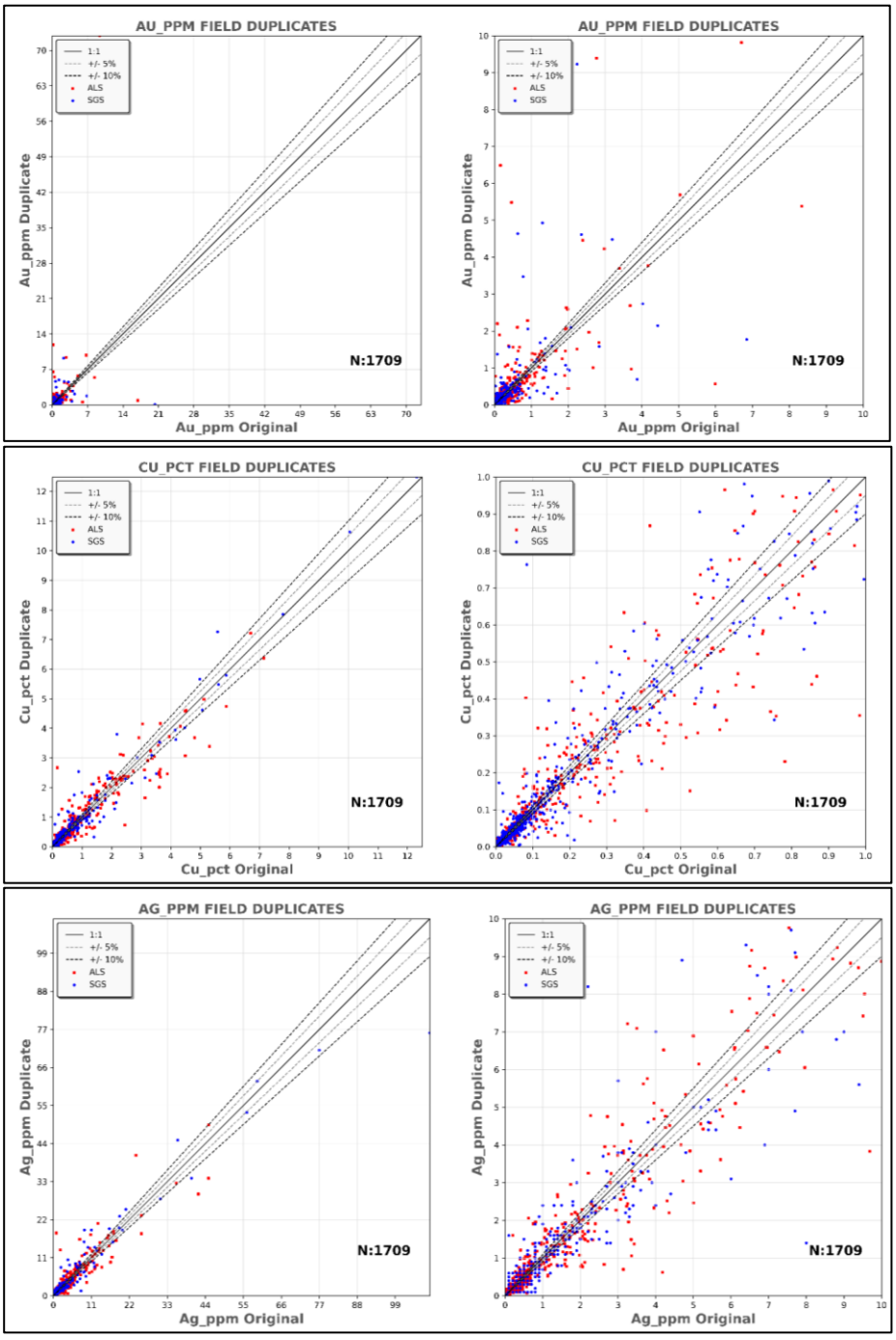
Source: Meridian, 2024. Chart to the right is an expanded view of the lower grades.

Figure 11-18: ALS Laboratory Duplicates



Source: Meridian, 2024. Chart to the right is an expanded view of the lower grades.

Figure 11-19: Meridian Field Duplicates



Source: Meridian, 2024. Chart to the right is an expanded view of the lower grades.

11.7.5 Blanks

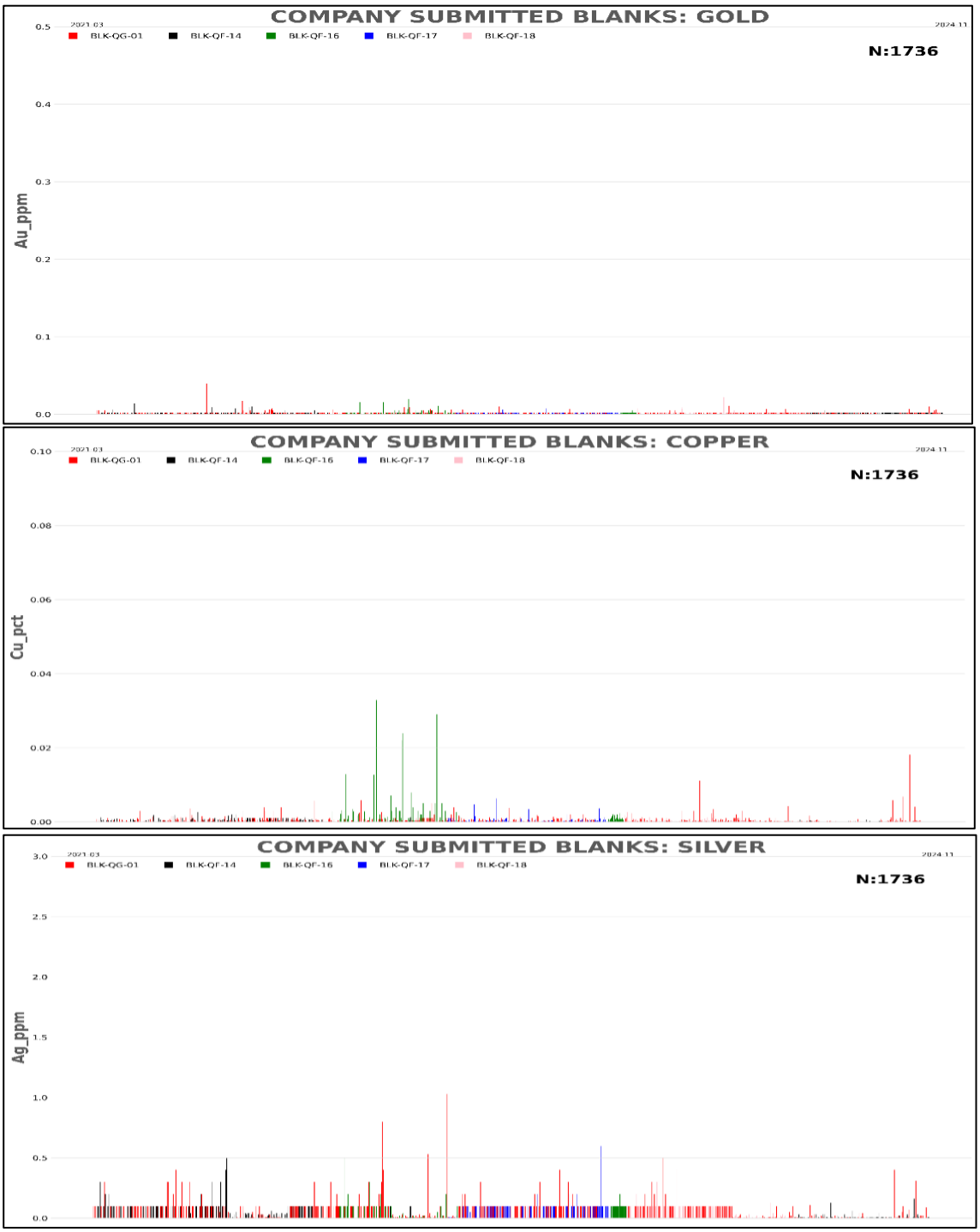
Meridian has utilized five pulp blanks and one coarse blank supplied by ITAK (QF-14, QF-16, QF-17, QF-18, QF-19 and QG-01), inserted at a rate of 1 in 50 samples (Table 11-6).

Table 11-6: Company-submitted Blanks

Standard	Certified Value					
	Count	Au_g/t	Ag_g/t	Cu_ppm	Zn_ppm	Pb_ppm
BLK-QF-14	197	<0.005	0.01	0	1.25	12.7
BLK-QF-16	148	<0.005	0.01	0	1.15	2
BLK-QF-18	156	<0.005	0.05	2.8	6.8	1.5
BLK-QF-17	154	<0.005	0.1	0	1	2
BLK-QF-19	171	<0.005	0.2	1	1	1
BLK-QG-01	915	<0.005	1.26	10	0.5	3.55

Figure 11-7 shows the results of Meridian's blank standards for gold, copper, and silver. The results are all acceptable indicating no systematic contamination of samples.

Figure 11-20: Company-submitted Blanks



Source: Meridian, 2024.

11.7.6 Check Assaying

Samples submitted to SGS Brazil have been checked at ALS Global in Peru is used as an umpire laboratory. When ALS Peru has been used as a primary laboratory, samples have been sent to SGS in Brazil as an umpire laboratory.

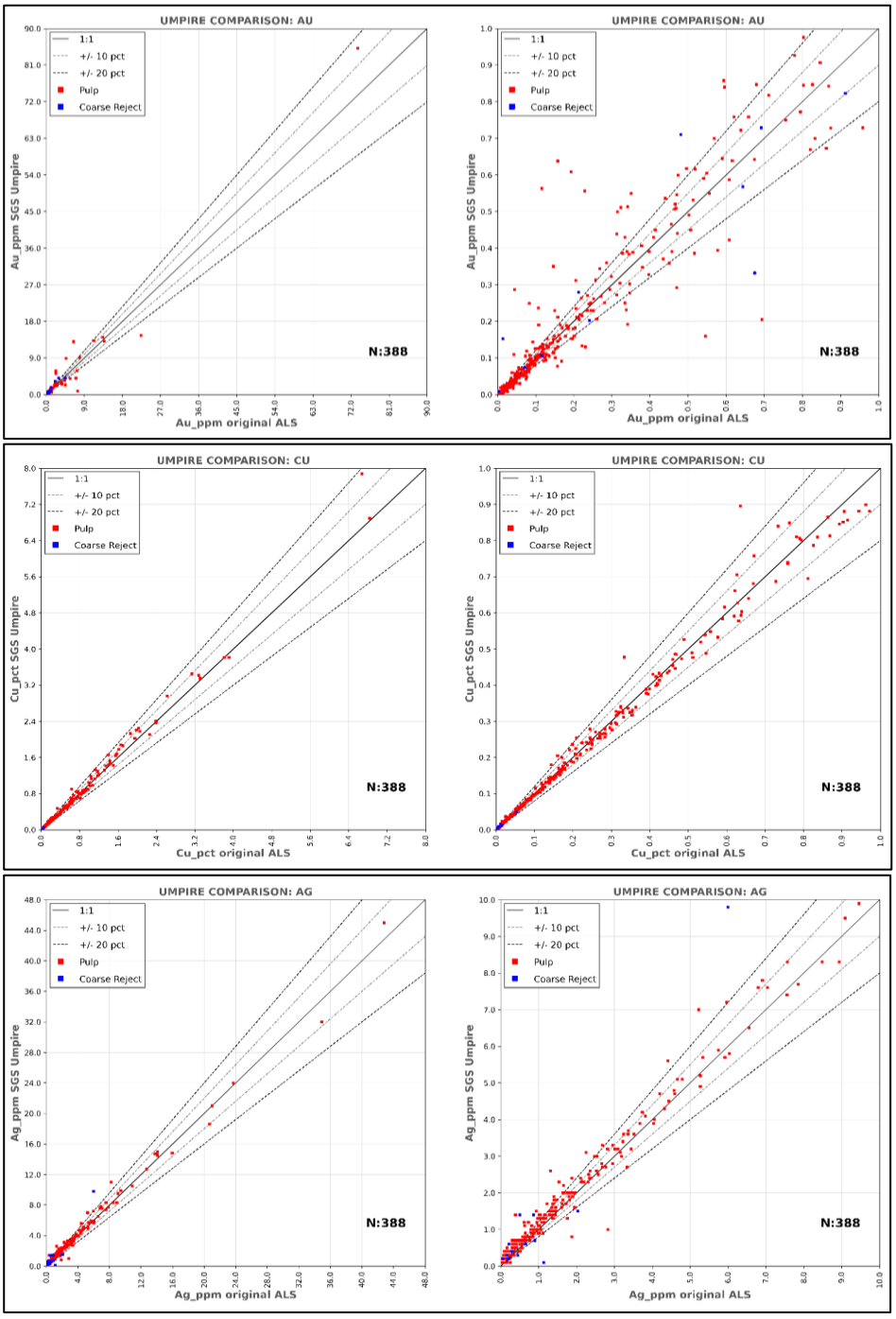
A first batch of 292 duplicate pulp samples from SGS were submitted to ALS in May 2021. A second batch of 354 check samples was submitted in October 2021. A third set of check samples was sent in September 2023 – with 444 pulps and 100 coarse rejects sent to ALS for check against original SGS results, and 337 pulps and 18 coarse rejects sent to SGS from for a comparison against original ALS results.

Whilst there is some scatter for gold at lower grades there appears to be no systematic bias which supports the accuracy of the original assays. The copper results indicate no bias, but the silver results show a modest positive bias for the 2nd lab check at low grades. Noting the relatively low silver grade this bias is not considered significant at this stage.

Results relating to batches where Cu standards were below expected certified values showed on average higher Cu values in the umpire analyses from ALS from the July-August 2021 period. SGS reissued certificates with small adjustments to the low-grade copper results.

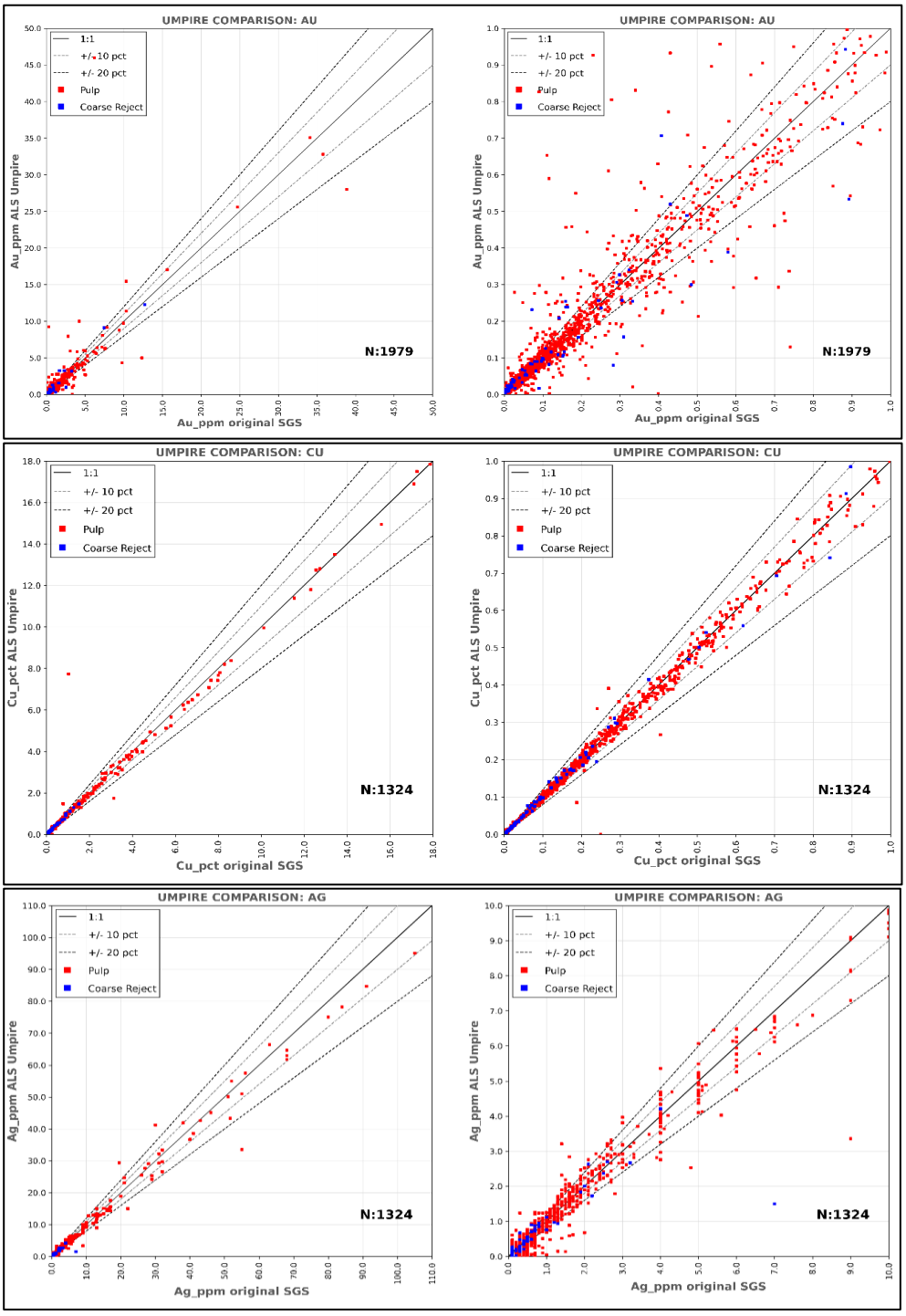
Results are plotted in Figure 11-21 and Figure 11-22.

Figure 11-21: ALS Original Assays Vs SGS Umpire Results



Source: Meridian, 2024: Chart for Cu, Au, Ag, which detail of lower-grade population to the left

Figure 11-22: SGS Original Assays Vs ALS Umpire Results



Source: Meridian, 2024: Chart for Cu, Au, Ag. Chart to the right is an expanded view of the lower grades.

In the QP's opinion, the sampling and analytical methodology used for the current drill core sampling is considered standard industry practice and adequate for mineral exploration purposes.

Sample security procedures are considered to be of standard industry practice and effective with sufficient QA/QC measures to amplify any suspicious outcomes.

11.7.7 Meridian Twin Drilling Program

Twenty-nine (29) twin hole pairs have been completed as detailed in Table 11-7. Twin holes target positions where data is either preserved in full or in part from historical BP surface campaigns, including holes where data has been transcribed from graphic bar charts where primary sources were missing.

Table 11-7: Historical Hole – Meridian Hole Twin Pairs By Copper Zone.

ECZ	CCZ	SCZ	CNWE
JUSPD068 – CD015 (1)	JUSPD048 – CD014 (1)	JUSPD066 – CD029 (1)	JUSPD009 – CD084 (1)
JUSPD221 – CD034 (1)	JUSPD076 – CD012 (1)	JUSPD280 – CD016 (1)	
JUSPD264 – CD005 (1)	JUSPD352 – CD033 (1)	JUSPD295 – CD031 (1)	
JUSPD265 – CD017 (1)	JUSPD368 – CD028 (1)	JUSPD296 – CD027 (1)	
JUSPD300 – CD030 (1)	JUSPD436 – CD498 (2)	JUSPD355 – CD026 (1)	
JUSPD301 – CD018 (1)	JUSPD565 – CD487 (4)	JUSPD385 – CD032 (1)	
JUSPD325 – CD020 (1)	JUSPD567 – CD485 (4)	JUSPD423 – CD491 (2,4)	
JUSPD587 – CD483 (4) (1)		JUSPD424 – CD481 (2,4)	
		JUSPD484 – CD477 (2,4)	
		JUSPD491 – CD470 (2,4)	
		JUSPD557 – CD495 (4)	
		JUSPD580 – CD469 (4)	
		JUSPD596 – CD240 (4)	

Assay Type (1) = original data; Assay Type (2) = original source lost; Assay Type (4) = scaled from graphic chart.

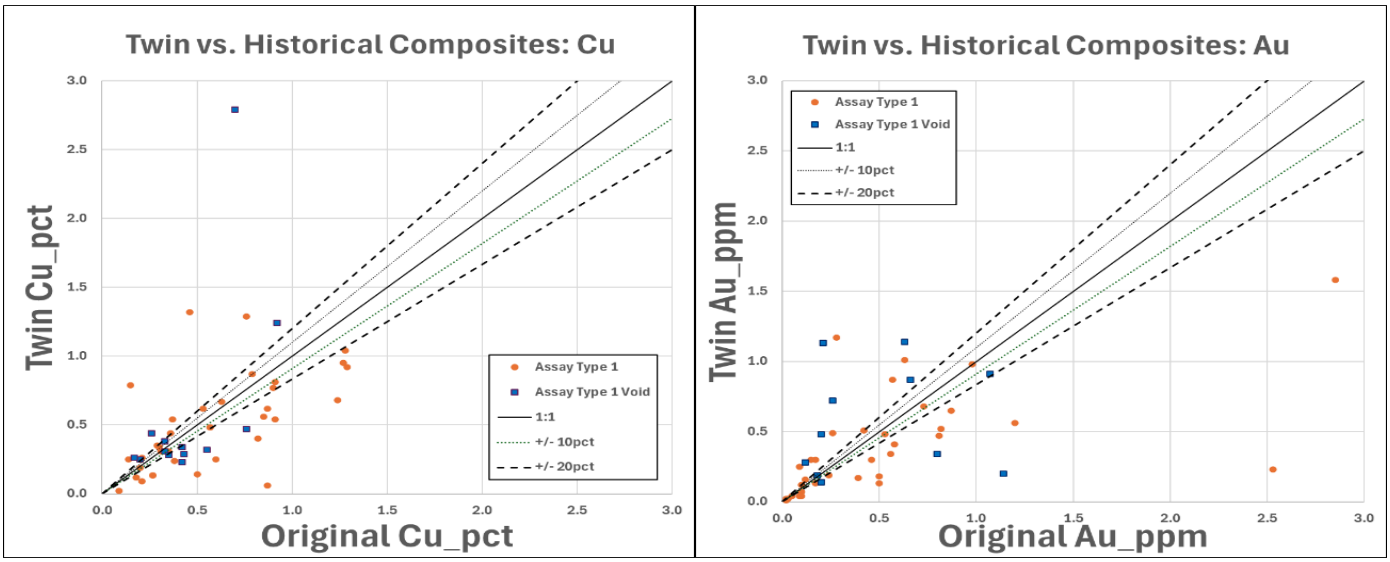
The nature of the mineralization and the method of hole twinning means comparison of individual sample results has the potential to be not so meaningful. However, comparison of average metal grades for similar sized mineral intercepts and comparison of the pattern of the downhole grades can be used to ascertain any bias associated with the historical holes. The hole twinning has confirmed the general pattern and footprint of mineralization. Comparisons of average metal grades for defined mineral intervals for the twin hole results for both elements show a similar scatter to the resampling data (Figure 11-23; Figure 11-24; Table 11-8; Table 11-9).

In some cases, holes have intersected voids which can directly influence the comparison. These cases are symbolized differently on the comparison charts. Composites are compared above and below the void, although sampling intervals may not precisely match. The results show some expected scatter but an expected correlation in the position and tenor of mineralization. Some outliers include:

- CD470-JUSPD491 pair, where CD470 intersected high-grade gold mineralization outside of the mined high-grade position indicated by the JUSPD491 position

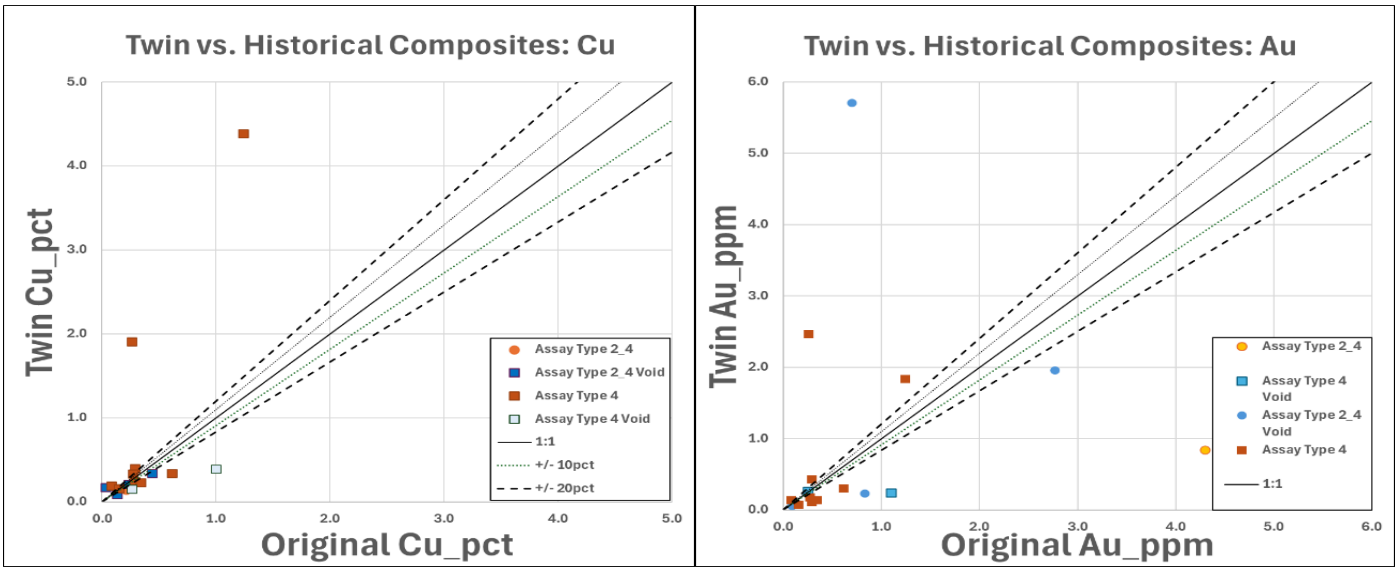
- CD240-JUSPD596 pair, where the capping of historical data scaled from the graphic bar charts limited the estimate of high-grade copper content
- CD012-JUSPD076 pair

Figure 11-23: Twin Hole Composite Comparison – Assay Type 1



Source: Meridian, 2024.

Figure 11-24: Twin Hole Composite Comparison – Assay Type 2-4



Source: Meridian, 2024.

Table 11-8: Composites from Original Hole and Adjacent Twin Results – Assay Type 1

JUSPD Hole ID	From (m)	To (m)	Interval (m)	Cu (pct)	Au (ppm)	Ag (ppm)	Distance (m)	Meridian Hole ID	From (m)	To (m)	Interval (m)	Cu (pct)	Au (ppm)	Ag (ppm)
JUSPD068	11.00	32.60	21.60	0.20	0.10	0.55	0.26	CD015	12.00	32.00	20.00	0.19	0.07	0.70
JUSPD068	39.39	53.00	13.61	0.36	0.10	0.42	0.26	CD015	39.00	52.67	13.67	0.44	0.12	0.74
JUSPD068	56.85	87.00	30.15	0.76	0.66	3.38	0.26	CD015	56.37	86.68	30.31	0.47	0.87	1.50
JUSPD264	42.35	68.00	25.65	1.29	0.82	6.42	5.85	CD005	43.50	69.15	25.65	0.92	0.52	5.66
JUSPD264	77.15	79.15	2.00	0.79	0.17	4.17	5.85	CD005	75.35	77.10	1.75	0.87	0.30	5.05
JUSPD076	29.00	54.90	25.90	0.31	0.03	0.94	0.34	CD012	23.75	53.50	29.75	0.31	0.02	0.90
JUSPD076	83.00	97.45	14.45	1.27	0.81	5.13	0.34	CD012	82.50	97.68	15.18	0.95	0.47	3.90
JUSPD076	100.90	103.00	2.10	0.70	0.12	0.55	0.34	CD012	101.63	103.70	2.02	2.79	6.18	11.31
JUSPD048	22.00	41.11	19.11	0.30	0.02	0.43	4.16	CD014	21.00	40.00	19.00	0.34	0.02	0.57
JUSPD048	41.11	75.00	33.89	0.26	0.12	0.11	4.16	CD014	41.35	74.40	33.05	0.44	0.28	0.28
JUSPD280	24.10	34.00	9.90	0.35	0.05	0.77	0.03	CD016	20.00	34.00	14.00	0.31	0.04	0.73
JUSPD280	42.50	68.00	25.50	0.60	0.46	4.56	0.03	CD016	42.50	68.45	25.95	0.25	0.30	1.38
JUSPD265	44.63	67.82	23.19	0.76	0.42	3.76	0.08	CD017	44.60	67.60	23.00	1.29	0.51	5.96
JUSPD301	36.00	45.50	9.50	0.43	0.80	3.52	0.06	CD018	36.00	45.39	9.39	0.29	0.34	0.75
JUSPD325	49.00	71.00	22.00	1.28	0.87	8.59	0.09	CD020	49.00	71.55	22.55	1.04	0.65	5.51
JUSPD355	34.00	43.00	8.50	1.24	0.50	2.38	0.11	CD026	33.10	42.00	8.90	0.68	0.18	1.68
JUSPD355	48.00	51.85	3.85	0.37	0.15	0.44	0.11	CD026	48.00	51.40	3.40	0.54	0.30	0.97
JUSPD355	69.80	76.00	6.20	0.18	0.57	0.66	0.11	CD026	70.00	76.23	6.23	0.12	0.87	0.51
JUSPD355	83.40	102.00	18.60	0.55	1.14	2.60	0.11	CD026	84.50	102.70	18.20	0.32	0.20	1.46
JUSPD355	108.50	118.10	9.60	0.46	0.26	0.96	0.11	CD026	108.00	117.50	9.50	1.32	0.49	3.34
JUSPD296	48.00	55.50	7.50	0.29	0.39	0.42	0.47	CD027	48.00	55.00	7.00	0.35	0.17	0.83
JUSPD296	62.30	70.40	8.10	0.20	0.20	0.25	0.47	CD027	62.75	70.13	7.38	0.25	0.48	0.43
JUSPD296	76.20	88.70	12.50	0.33	0.26	1.27	0.47	CD027	76.11	88.50	12.39	0.31	0.72	1.19
JUSPD368	17.70	21.40	3.70	0.14	0.10	0.67	1.87	CD028	17.60	21.00	3.40	0.25	0.04	0.46
JUSPD368	29.70	40.00	10.30	0.21	2.85	0.43	1.87	CD028	28.00	38.45	10.45	0.09	1.58	0.35
JUSPD368	47.00	58.00	11.00	0.35	0.63	0.27	1.87	CD028	46.00	58.19	12.19	0.28	1.14	0.52
JUSPD368	63.65	85.70	22.05	0.33	0.18	1.54	1.87	CD028	63.35	83.00	19.65	0.38	0.19	2.03
JUSPD066	42.52	52.00	9.48	0.38	0.09	1.20	3.56	CD029	42.00	51.00	9.00	0.24	0.04	0.90
JUSPD066	54.22	58.88	4.66	0.57	0.73	1.65	3.56	CD029	54.00	58.50	4.50	0.48	0.68	1.30
JUSPD066	65.00	72.00	7.00	0.21	0.09	0.23	3.56	CD029	64.93	72.86	7.93	0.26	0.25	0.14
JUSPD066	81.60	140.60	59.03	0.91	0.56	3.52	3.56	CD029	81.37	143.90	62.53	0.81	0.34	3.78
JUSPD300	24.00	26.70	2.70	0.87	0.98	7.61	1.72	CD030	23.00	26.00	3.00	0.06	0.98	0.00
JUSPD300	37.00	64.55	27.55	0.15	0.28	0.86	1.72	CD030	39.00	63.50	24.50	0.79	1.17	3.62
JUSPD295	33.00	45.20	12.20	0.91	0.50	2.02	3.48	CD031	32.10	42.80	10.70	0.54	0.13	1.07

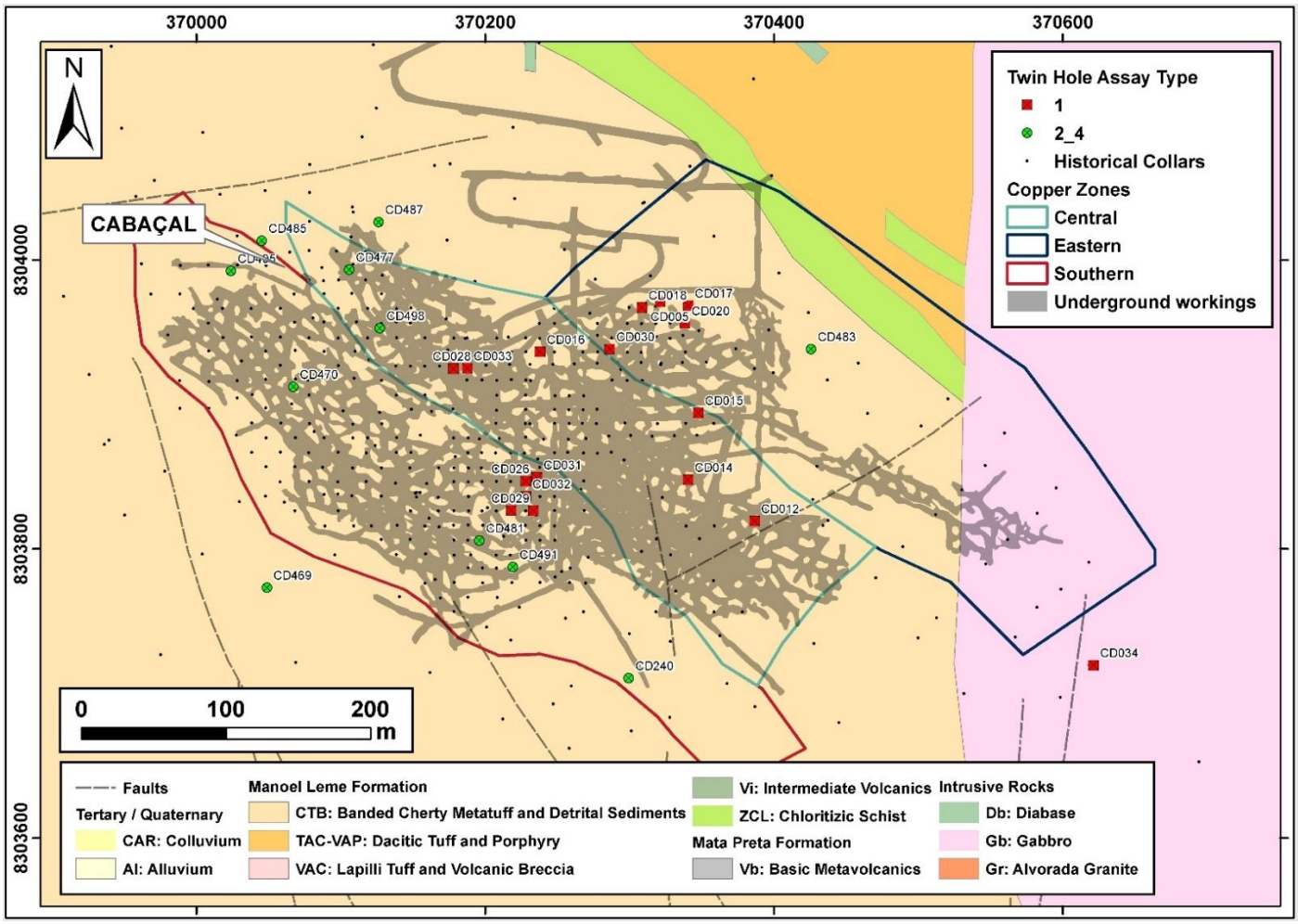
JUSPD Hole ID	From (m)	To (m)	Interval (m)	Cu (pct)	Au (ppm)	Ag (ppm)	Distance (m)	Meridian Hole ID	From (m)	To (m)	Interval (m)	Cu (pct)	Au (ppm)	Ag (ppm)
JUSPD295	70.10	78.80	8.70	0.17	0.21	0.36	3.48	CD031	70.00	78.92	8.92	0.26	1.13	0.61
JUSPD295	86.40	99.00	12.60	0.82	2.53	3.87	3.48	CD031	86.70	99.00	12.30	0.40	0.23	1.47
JUSPD295	112.00	127.80	15.80	0.87	0.63	3.57	3.48	CD031	111.55	127.70	16.10	0.62	1.01	2.17
JUSPD385	45.00	72.10	27.10	0.42	0.20	0.54	0.35	CD032	45.00	71.84	26.84	0.23	0.14	0.42
JUSPD385	84.00	103.80	19.80	0.27	0.17	1.47	0.35	CD032	83.00	104.00	21.00	0.13	0.13	0.06
JUSPD385	113.00	126.00	13.00	0.90	0.24	4.49	0.35	CD032	111.00	124.00	13.00	0.77	0.19	2.42
JUSPD352	35.20	42.50	7.30	0.09	1.20	0.25	1.32	CD033	35.00	42.00	7.00	0.02	0.56	0.10
JUSPD352	45.00	47.80	2.80	0.85	0.58	0.79	1.32	CD033	45.00	48.00	3.00	0.56	0.41	1.02
JUSPD352	50.60	59.00	8.40	0.42	3.47	0.35	1.32	CD033	50.70	59.35	8.65	0.34	2.66	1.13
JUSPD352	62.00	71.20	9.20	0.92	1.07	5.00	1.32	CD033	61.80	72.00	10.20	1.24	0.91	7.73
JUSPD352	80.55	87.00	6.45	0.63	0.12	2.29	1.32	CD033	81.30	86.90	5.60	0.67	0.16	2.27
JUSPD221	46.97	52.23	5.26	0.50	0.02	0.84	2.94	CD034	48.00	54.60	6.60	0.14	0.01	0.36
JUSPD221	59.00	77.92	18.92	0.53	0.53	1.60	2.94	CD034	60.25	78	17.75	0.62	0.48	2.31

Table 11-9: Composites from Original Hole and Adjacent Twin Results – Assay Types 2-4

JUSPD Hole ID	From (m)	To (m)	Interval (m)	Cu (pct)	Au (ppm)	Ag (ppm)	Distance (m)	Meridian Hole ID	From (m)	To (m)	Interval (m)	Cu (pct)	Au (ppm)	Ag (ppm)
JUSPD484	9.50	24.50	15.00	0.06	0.08	0.01	1.82	CD477	10.52	25.10	14.58	0.19	0.14	0.34
JUSPD557	34.50	49.00	14.50	0.26	1.10	0.01	2.44	CD495	34.72	49.33	14.61	0.15	0.24	0.21
JUSPD484	33.60	74.20	40.60	0.44	0.83	1.75	1.82	CD477	32.73	75.13	42.40	0.34	0.23	1.56
JUSPD491	19.85	48.80	28.95	0.13	0.09	0.01	2.44	CD470	19.80	48.72	28.92	0.09	0.06	0.31
JUSPD491	53.20	87.10	33.90	0.23	0.70	0.15	2.44	CD470	53.25	87.36	34.11	0.21	5.71	0.58
JUSPD424	47.00	90.00	43.00	0.21	4.30	0.67	1.99	CD481	47.65	91.40	43.75	0.14	0.84	0.63
JUSPD587	11.90	77.00	65.10	0.33	0.61		1.20	CD483	9.37	77.01	67.64	0.34	0.30	1.32
JUSPD567	12.00	69.00	57.00	0.33	0.29	0.01	1.10	CD485	13.27	69.39	56.12	0.24	0.43	0.86
JUSPD596	126.70	157.40	30.70	2.02	1.24	0.01	2.04	CD240	128.85	159.85	31.00	4.39	1.84	24.60
JUSPD580	67.00	115.00	48.00	0.11	0.15	0.01	1.23	CD469	67.00	114.55	47.55	0.16	0.07	0.36
JUSPD565	11.50	75.80	64.30	0.20	0.34	0.01	0.89	CD487	12.15	74.35	62.20	0.23	0.14	0.71
JUSPD423	65.50	72.00	4.00	0.03	2.77	0.01	1.69	CD491	69.40	71.40	2.00	0.17	1.96	1.58
JUSPD423	75.80	90.20	14.40	1.00	0.25	0.01	1.69	CD491	76.00	89.32	13.32	0.39	0.26	1.25
JUSPD423	92.50	109.00	16.50	0.74	0.29	0.01	1.69	CD491	90.75	107.00	16.25	0.40	0.11	1.67
JUSPD187	17.00	78.50	61.50	0.28	0.27	0.01	5.35	CD492	16.80	76.23	59.43	0.33	0.18	0.70
JUSPD187	80.38	91.20	10.82	0.52	0.26	0.01	5.35	CD492	77.10	87.19	10.09	1.91	2.47	7.08

The location of existing twin holes is illustrated in Figure 11-25.

Figure 11-25: Twin Hole Locations



Source: Meridian, 2024. Geology and workings adapted from GIS files of PML (based on original BPM maps).

The twin hole composite comparisons show good accuracy but poor precision between the original and the recent drillholes with any bias between the two data sets as not being significant under the Chi2 test. It is noted that the original analytical methods employed a three-acid digest for the base metal mineralization, compared to a 4-acid total digest in the current program.

11.8 Comment on Sample Preparation, Analyses and Security

Current sampling preparation procedures presented by Meridian are considered by the QP as compliant with Industry good practices.

Historical information from previous companies sampling preparation procedures was registered as in accordance to industry standards. Historical analytical procedures included submissions of standards and blanks, coupled with umpire analysis. Limited records of the original quality control data have been preserved, and Meridian has conducted umpire sampling and twin drilling to support the use of this data in the classification of the mineral resource estimate. Some of the sampling and assay database does not have sufficient information to confirm the quality to ensure the appropriate level of confidence to support a mineral resource estimate. Meridian has applied a categorical attribute ("Assay Type") to identify samples to treat as historical information.

The security procedures designed to prevent sample interference are acceptable.

Meridian's QA/QC program is considered by the QP compliant with industry standards and its analysis show the results inside sufficient level of confidence to support Mineral Resource Estimate. The following is a summary of outcomes:

- The standards indicate minor issues with the analytical results. Reports were reissued to correct for a slight under-reporting lower-grade copper results from the early stages of the program (0.1 – 1% Cu grade range), some of the lower-grade gold standards with SGS indicate significant variability but generally no significant bias.
- Assay results for blank standards show no significant contamination issues.
- Field duplicates from diamond core show reasonable correlation for copper and silver and a higher degree of variance for gold (with some pairs having results outside of +/-20% precision limits, but a feature seen in projects with high-grade free gold). It is recommended to perform a new duplicate campaign using crushed and pulverized samples returned from laboratory to study this issue.
- Umpire assay analysis, where samples are submitted to a reanalysis in another commercial labs, show precision inside acceptance limits.
- A collection of internal lab duplicate samples (second pulp samples and select coarse rejects) has indicated no issue with the sample homogenization and subsequent acid digest and analysis.
- Results from twin holes show a high percentage of sample pairs results outside precision limits for assay types 2 and 4, according to QP opinion. This feature may also be caused by differences in assay procedures, the intersection of voids in Meridian's drilling (where a complete profile is not preserved compared to the original hole), and a degree of grade variability associated with coarse gold.

The density data measuring method is appropriate, and the results are reasonable.

The authors opinion is that the methodology of sample preparation security analytical procedures are suitable to the use of assay results in the Mineral resource estimate.

12 DATA VERIFICATION

12.1 Data Verification Until October 2023

The authors used publicly available geoscientific data from the CPRM available from the CPRM (GEOSGB online geological GIS data) and ANM (SIGMINE online mineral licence GIS data) in an appropriate industry-standard GIS software package to successfully verify some of the diagrams created by Meridian.

The authors have relied on a series of site visits to the Cabaçal Project completed by geologist Marcelo Batelochi (MB Geologia Ltda, Belo Horizonte, Minas Gerais, Brazil). The first visit was conducted between June 7 and 11, 2021. A second visit was made between August 29 and September 1, 2022. A third visit was held between October 9 and 13, 2023. On the first and second visits, he was accompanied by the Project Staff and Dr Adrian McArthur - Chief Executive Officer, President & Director of Meridian, and Company QP. On the third visit, he was accompanied by project staff and Mr Erich Marques, Company QP. The visits included:

- An inspection of historical drill core stored at UFMT in Cuiabá, capital of Mato Grosso
- A review of scanned historical maps, reports, and ledgers from the RTZ archives
- An inspection of various exposures around the historical workings at the Cabaçal Mine
- A review of the current drill sites, and rig set-up procedures
- A review of the current drill core for geological understanding
- A review of the Meridian logging and sampling procedures
- A review of the data compilation protocols for historical data and data flow for the current program
- Field checks of a selection of recent and historical drill collars
- Checks of a selection of assay records in the MS Access database against original laboratory reports and assay ledgers.

The field practices, management and storage system for the data reviewed during the site visit is in accordance with good practices. The field inspection of the drill holes confirmed their location in accordance with database records. It is recommended that, as the project advances to a feasibility study (FS), robust database management software be implemented, to provide formal tools for storage, data validation, and extraction and plotting routines.

12.2 Data Verification Until September 2024

Additionally, on September 17, 2024, a one-day site visit was conducted by Juliano Lima from GE21 Consultoria Mineral. During the visit, Meridian was preparing the sites and laying out two new diamond drill holes – CD608 and CD619, and their locations were confirmed (Figure 12-1, Figure 12-2and Figure 12-3). During a field interview with the geologist, sampling and density methods were described. The process was performed as Meridian procedures. The geological data from drill hole CD608 was used as lithological data in the database for resource estimation, despite assays being pending at the time of estimation.

Figure 12-1: Location of Drill Hole CD608



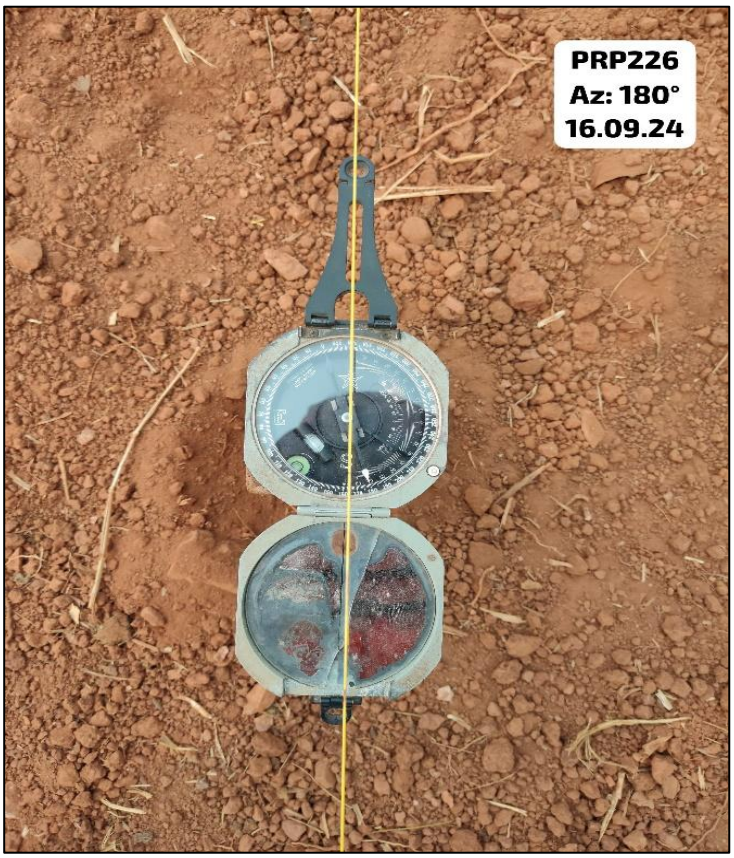
Source: Meridian, 2024.

Figure 12-2: Location of Drill Hole CD609



Source: Meridian, 2024.

Figure 12-3: Drill Hole CD608 Azimuth Orientation



Source: Meridian, 2024.

12.2.1 Collar Locations

Mr Batelochi conducted checks during the site visits. Verification of collar locations consisted of recording X and Y coordinates of selected drillholes using a handheld GPS and comparing the coordinates with the data written on the tagged collars located on the ground (Figure 12-1). (Z coordinates in this case are not relevant due to the acknowledged elevation errors associated with the use of handheld GPS devices). Collar tags for 25 drill holes were checked comprising 13 current holes and 12 historical holes (Figure 12-1; Figure 12-2). These sets of coordinates were then compared with the coordinates in the digital database. The collar locations from the handheld GPS show that the database coordinates are acceptable, indicating a difference of <10 m in any horizontal direction for most instances (Figure 12-1). The database and drill holes planned to date coordinates has been recorded in the SAD69 UTM datum, to facilitate ease of planning with the historical database, maps, and development, all of which have been registered in this coordinate system. In November 2022, Meridian migrated to the SIRGAS2000 datum, converting previous data to the uniform national system.

Figure 12-4: Drill Hole Location Quick Check Procedure



Source: Meridian, 2022. CD0017 (Meridian campaign) and JUSPD101 (Historical).

Figure 12-5: Drill Hole Location of AMCD15005



Hole Id: AMCD15005	x	y
Geodesic Coords (SIRGAS2000)	370,269.80	8,303,646.44
Coords from Hand GPS	370,271.00	8,303,646.00
SAD69 Coords (Database)	370,324.26	8,303,687.70
Coords at the Collar Tag (SAD 69)	370,320.00	8,303,690.00
Dist Database/Collar tag (SAD69)		4.84

Source: Meridian, 2022 Avanco hole AMCD15005. Showing marker coordinates compared to database (UTM|SAD69| 21L zone).

Table 12-1: Collar Field Checks Conducted During Site Visit By Independent QP, June 2021

Hole ID	SAD69 Coords (Database)		Geodesic Coords (SIRGAS2000)		Coords from Hand GPS		X and Y Difference (m)
	X	Y	X	Y	X	Y	
Historical Drill Holes (80's)							
JUSPD589	370,672.67	8,303,832.03	370618.21	8,303,790.77	370,619	8,303,791	0.8
JUSPD101	370,355.91	8,303,715.47	370,301.45	8,303,674.21	370,302	8,303,674	0.6
JUSPD025	370,492.06	8,303,861.04	370,437.60	8,303,819.78	370,484	8,303,862	8.1
JUSPD104	370,488.63	8,303,857.62	370,434.17	8,303,816.36	370,481	8,303,858	7.6
JUSPD265	370,395.17	8,304,009.68	370,340.71	8,303,968.42	370,336	8,303,969	4.7
JUSPD110	370,309.59	8,304,048.53	370,255.13	8,304,007.27	370,254	8,304,008	1.3
JUSPD541	370,193.20	8,303,947.78	370,138.74	8,303,906.52	370,138	8,303,906	0.9
JUSPD376	369,173.29	8,304,454.32	369,118.83	8,304,413.06	369,119	8,304,413	0.2
JUSPD101	370,355.91	8,303,715.47	370,301.45	8,303,674.21	370,302	8,303,674	0.6
JUSPD589	370,672.67	8,303,832.03	370,618.21	8,303,790.77	370,619	8,303,791	0.8
JUSPD375	369,109.46	8,304,468.22	369,055.00	8,304,426.96	369,058	8,304,425	3.6
Current Drilling Campaign and Avanco Due Dilligence (2015)							
CD002	370,654.14	8,303,822.59	370,599.68	8,303,781.33	370,600	8,303,782	0.7
CD004	370,354.47	8,303,748.30	370,300.01	8,303,707.04	370,300	8,303,706	1.0
CD006	370,353.63	8,303,747.31	370,299.17	8,303,706.05	370,299	8,303,705	1.1
CD009	370,353.61	8,303,746.55	370,299.15	8,303,705.29	370,299	8,303,703	2.3
CD003	370,358.46	8,303,716.43	370,304.00	8,303,675.17	370,304	8,303,672	3.2
AMCD15005	370,324.26	8,303,687.70	370,269.80	8,303,646.44	370,271	8,303,646	1.3
CD018	370,363.12	8,304,008.26	370,308.66	8,303,967.00	370,306	8,303,969	3.3
CD021	370,382.60	8,303,997.58	370,328.14	8,303,956.32	370,327	8,303,956	1.2
CD020	370,392.92	8,303,997.46	370,338.46	8,303,956.20	370,336	8,303,955	2.7
CD017	370,395.16	8,304,010.68	370,340.70	8,303,969.42	370,341	8,303,969	0.5
CD008	370,390.78	8,304,027.36	370,336.32	8,303,986.10	370,336	8,303,981	5.1
CD007	370,376.35	8,304,012.73	370,321.89	8,303,971.47	370,320	8,303,972	2.0
CD005	370,375.92	8,304,012.28	370,321.46	8,303,971.02	370,320	8,303,972	1.8

A marker for JUSPD230, originally considered dislocated from the database position in the June 2021 field inspection, was subsequently found not to have been in-situ.

Drillhole collar verification from the second site visit comprised identifying drillholes from the collar tags on 31 Meridian drill pads and then recording collar coordinates using a handheld GPS (Table 12-2). These sets of coordinates were then compared with the coordinates in the digital database. The collar locations from the handheld GPS show that the database coordinates are acceptable, indicating a difference of <10m in any horizontal direction for most instances.

Table 12-2: Collar Field Checks Conducted During Site Visit By Independent QP, September 2022

Hole ID	Database Coords (SIRGAS2000)		Coords from Hand GPS WGS84/21L		X and Y Difference (m)
	X	Y	X	Y	
CD065	370,721.24	8,303,245.83	370,721.13	8,303,245.45	0.395
CD073	370,682.84	8,303,350.87	370,681.80	8,303,349.12	2.038
CD076	370,636.66	8,303,446.75	370,635.64	8,303,445.44	1.661
CD161	370,684.21	8,303,496.49	370,686.04	8,303,493.52	3.489
CD175	370,763.24	8,303,431.03	370,763.80	8,303,429.56	1.573
CD157	370,808.13	8,303,332.66	370,806.97	8,303,331.89	1.397
CD052	370,641.69	8,303,666.97	370,642.03	8,303,665.64	1.371
CD124	370,404.52	8,303,948.78	370,403.84	8,303,947.31	1.618
CD088	370,293.45	8,303,884.70	370,291.57	8,303,884.84	1.885
CD062	370,291.81	8,303,912.57	370,292.71	8,303,910.51	2.245
CD048	370,068.19	8,303,936.65	370,069.58	8,303,936.15	1.483
CD102	370,048.52	8,303,917.96	370,048.22	8,303,916.56	1.434
CD047	370,059.66	8,303,858.68	370,060.03	8,303,859.32	0.74
CD128	370,100.16	8,303,828.67	370,100.68	8,303,827.68	1.109
CD111	370,115.17	8,303,773.22	370,116.13	8,303,771.79	1.72
CD098	370,209.07	8,303,796.87	370,208.32	8,303,796.86	0.748
CD085	370,385.61	8,303,818.80	370,384.90	8,303,820.20	1.563
CD012	370,386.63	8,303,819.36	370,386.42	8,303,818.55	0.842
JUSPD076	370,386.84	8,303,819.62	370,389.95	8,303,820.89	3.351
CD089	369,882.86	8,304,170.26	369,883.93	8,304,170.43	1.081
CD056	369,775.14	8,304,226.71	369,775.51	8,304,226.47	0.44
JUSPD212	369,702.37	8,304,240.35	369,704.79	8,304,238.57	3.002
CD138	369,656.04	8,304,276.07	369,657.23	8,304,276.36	1.232
CD046	369,626.14	8,304,370.00	369,626.11	8,304,370.22	0.224
CD122	370,151.96	8,304,031.25	370,151.30	8,304,029.87	1.531
CD115	370,006.16	8,304,009.59	370,007.12	8,304,008.27	1.638
CD072	369,531.70	8,304,483.85	369,533.14	8,304,483.21	1.577
CD097	370,319.83	8,303,949.31	370,322.89	8,303,946.97	3.858
CD081	370,587.63	8,303,543.89	370,589.57	8,303,543.76	1.942
CD054	369,848.22	8,304,149.97	369,847.76	8,304,150.53	0.729
CD132	369,571.50	8,304,336.15	369,570.80	8,304,335.73	0.821

Hole ID	Database Coords (SIRGAS2000)		Coords from Hand GPS WGS84/21L		X and Y Difference (m)
	X	Y	X	Y	
CD259a	370,462	8,303,620	370,460	8,303,622	2.4
CD228	370,152	8,303,912	370,153	8,303,911	0.7
CD240	370,300	8,303,711	370303	8,303,704	7.8
CD245	369,543	8,304,607	369,544	8,304,607	0.7
CD251	370,375	8,303,680	370,374	8,303,683	3.2
CD254	370,609	8,303,780	370,608	8,303,781	0.7
CD256	370,550	8,303,722	370,549	8,303,722	0.9
CD265	370,629	8,303,792	370,629	8,303,791	0.8
CD266	369,551	8,304,524	369,550	8,304,526	2.2
CD271	370,310	8,304,110	370,310	8,304,111	0.8
CD278	370,247	8,304,013	370,247	8,304,015	2.1
CD281	370,270	8,304,035	370,270	8,304,035	0.2
CD284	370,292	8,304,057	370,291	8,304,057	1.7
CD289	370,767	8,303,510	370,767	8,303,511	0.0
CD292	370,225	8,303,626	370,224	8,303,626	0.3
CD308	369,530	8,304,571	369,530	8,304,571	0.6
CD313	369,761	8,304,159	369,760	8,304,160	0.0
CD315	369,516	8,304,591	369515	8,304,593	0.9
CD316	369,739	8,304,175	369,736	8,304,177	3.6
CD317	369,632	8,304,457	369,631	8,304,459	2.6
CD318	369,550	8,304,554	369,549	8,304,556	0.6
cc,320	369,662	8,304,474	369,662	8,304,476	0.5
CD326	369,602	8,304,497	369,601	8,304,497	0.8
CD330	370,420	8,303,638	370,419	8,303,640	2.2
CD331	369,702	8,304,212	369,700	8,304,215	4.2
CD338	369,385	8,304,344	369386	8,304,346	2.5
CC343	369,878	8,304,003	369,879	8,304,004	0.5
CD348	369,441	8,304,347	369,441	8,304,347	0.2
CD350	369,469	8,304,593	369,468	8,304,594	1.7
CD352	369,495	8,304,608	369,495	8,304,610	1.6
CD259a	370,462	8,303,620	370,460	8,303,622	2.4

Only minor issues were noted during the site inspection:

- Collar coordinates labelled for historical hole AMCD15005 were moderately different to the database coordinates; Company staff confirmed that database coordinates are based on DGPS survey control, whilst those marked on the collar are from handheld GPS; the collar marker will be updated;

- The collar tags on the June 2021 visit were not marked with any Datum, although details of the data are recorded in the database. Meridian subsequently has included a stamp for the datum for new drillholes;
- Not all historical collar tags could be found. In some cases, the historical pads are preserved but the collars have been buried. Hole positions have historical survey control and where collar marks are not preserved, often the drill pad is still visible. Various collars have been located by scraping the ground. It is recommended that new tags are assigned to the hole collars as they are located.
- Eleven new holes were not marked with metal tags during field inspection – Meridian advises that temporary markers will be replaced by metal tags, with the program ongoing.

Meridian has transitioned to the use of SIRGAS coordinates in the database for compliance with Brazilian National Instrument from ANM: DNPM Ordinance No. 76/2015.

In Mr Batelochi's opinion, the current procedures for locating drillholes are in accordance with good practices. Recommendations to consolidate the database for future Mineral Resources estimation and feasibility studies include:

- Continue to review historical drillhole collars in the field and compare to the database collar table;
- Supplement Company survey control with checks by an independent surveyor; and
- Historical downhole surveys are limited in number as most holes were vertical where deviation from planned hole traces is considered to be very limited. No checks with the original logs and the drillhole database were completed.

12.2.2 Geological Verification

Geology and mineralization were seen in the cores of the historical drillholes, at UFMT Facilities, and the current drilling campaign, at the Cabaçal Project facilities. The observations in the field corroborate what has been written in both earlier BPM and RTZ reports, and more recent PML reports, and reports released by Meridian.

During the June 2021 review, eleven drill holes were reviewed and checked for 1,575.73 m of drilling:

- CD022 (Meridian surface diamond drill hole; 133.31m);
- CD023 (Meridian surface diamond drill hole; 151.50m);
- CD024 (Meridian surface diamond drill hole; 170.71m);
- CD025 (Meridian surface diamond drill hole; 156.72m);
- AMCD15004 (Avanco diamond drill hole; 157.55m);
- AMCD15005 (Avanco diamond drill hole; 211.55);
- CAIFS034 (RTZ underground diamond drill hole; 53.12m);
- JUCHD029 (BPM surface diamond drill hole; 181.93m);
- JUCHD076 (BPM surface diamond drill hole; 133.18m);
- JUCHD034 (BPM surface diamond drill hole; 104.14m); and

- JUSPD384 (BPM surface diamond drill hole; 122.02m).

During the August 2022 review, twelve drill holes were reviewed and checked for 1,663.91m of drilling:

- CD052 (Meridian surface diamond drill hole; SE Extension: 109.3m);
- CD073 (Meridian surface diamond drill hole; SE Extension: 166.2m);
- CD081 (Meridian surface diamond drill hole; SE Extension: 139.24m);
- CD072 (Meridian surface diamond drill hole; NW Extension: 115.11m);
- CD115 (Meridian surface diamond drill hole; NW Extension: 124.16m);
- CD132 (Meridian surface diamond drill hole; NW Extension: 148.35m);
- CD141 (Meridian surface diamond drill hole; NW Extension: 172.43m);
- CD054 (Meridian surface diamond drill hole; NW Extension: 186.56m);
- CD088 (Meridian surface diamond drill hole; Central Copper Zone: 100.4m);
- CD085 (Meridian surface diamond drill hole; Central Copper Zone: 137.22m);
- CD097 (Meridian surface diamond drill hole; Eastern Copper Zone: 104.89m); and
- CD098 (Meridian surface diamond drill hole; Southern Copper Zone: 160.05m).

During the October 2023 review, eleven drill holes were reviewed and checked for 1205.61m of drilling:

- CD171 (MNO surface diamond drill hole; CNWE Extension: 100.08m);
- CD194 (MNO surface diamond drill hole; CNWE Extension: 121.49m);
- CD205 (MNO surface diamond drill hole; CNWE Extension: 114.67m);
- CD228 (MNO surface diamond drill hole; Central Copper Zone: 101.55m);
- CD240 (MNO surface diamond drill hole; Southern Copper Zone: 176.35m);
- CD248 (MNO surface diamond drill hole; CNWE Extension: 80.9m);
- CD254 (MNO surface diamond drill hole; Eastern Copper Zone: 87.57m);
- CD264 (MNO surface diamond drill hole; CNWE Extension: 98.32m);
- CD267 (MNO surface diamond drill hole; Southern Copper Zone: 98.17m);
- CD294 (MNO surface diamond drill hole; Eastern Copper Zone: 111.11m); and
- CD301 (MNO surface diamond drill hole; Eastern Copper Zone: 115.4m)

As discussed with the current Cabaçal Project Geologists, the QP supports the continuous improvement of the geological understanding of the deposit, to continue the procedures of detailed mapping of lithology, structure, alteration, and mineralization on drill holes, trenches, and other exploration activities. Relogging is recommended for

the more recent Avanco drillholes on account of a different set of logging codes being used. This will make the logging compatible with the current database system as well as acquiring data that had not previously been digitally compiled.

Drill core handling and mark-up procedures were reviewed during the site visits and are considered by the QP of a high-standard suitable for Mineral Resource estimates.

12.2.3 Historical Core Resampling

Meridian's program to validate the assay results of the historical drill database includes a resampling program of historical core held at UFMT, and a twin hole drilling program. These programs compare the results of historical assays from the extensive drilling database of Cabaçal recovered from Rio Tinto to recent drilling and analytical laboratory results. The stored core is in good condition and the impact of post-drilling oxidation is considered minimal.

A total of 355 samples were analysed by Meridian from the UFMT core collection, with the following core sizes being available:

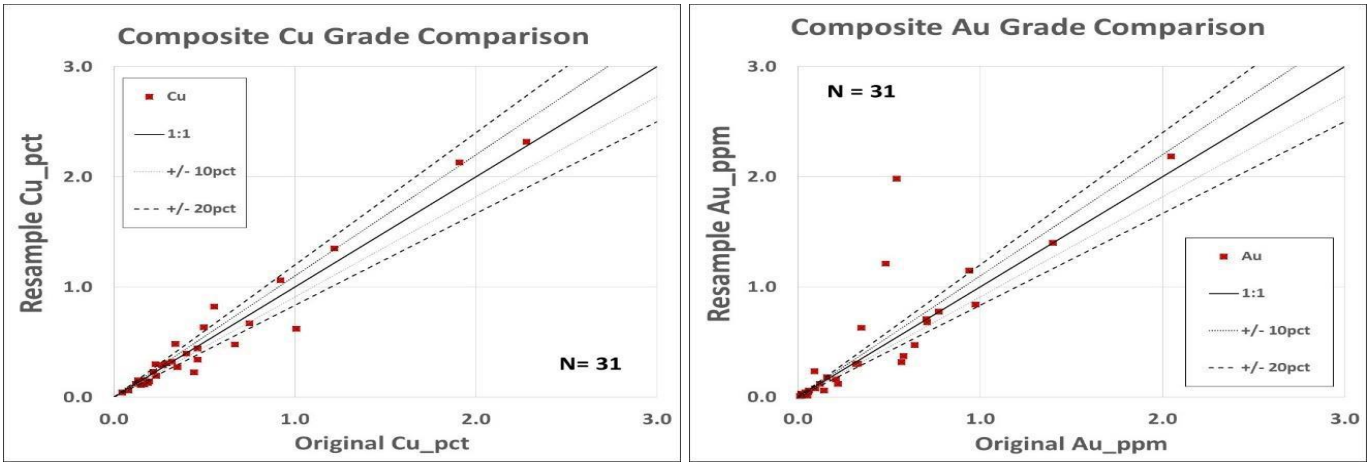
- JUSPD029 (CCZ) – quarter-core
- JUSPD050 (SCZ) – half-core
- JUSPD076 (CCZ) – quarter-core
- JUSPD114 (CCZ) – quarter-core
- JUSPD127 (SCZ) – quarter-core
- JUSPD135 (SCZ) – quarter-core.

Core intervals were marked up for sampling based on available core blocks and tray annotation. Comparison of length-weighted composited intervals for the historical results with the recent analyses indicates good accuracy (Table 12-3; Figure 12-6. The comparisons of the raw data for both gold and copper show good accuracy with moderate precision with any bias between the two data sets, original and recent, as not being significant under the Chi2 test (Figure 12-7).

Table 12-3: Composites from Original Analyses and Resampling Results on Historical Core

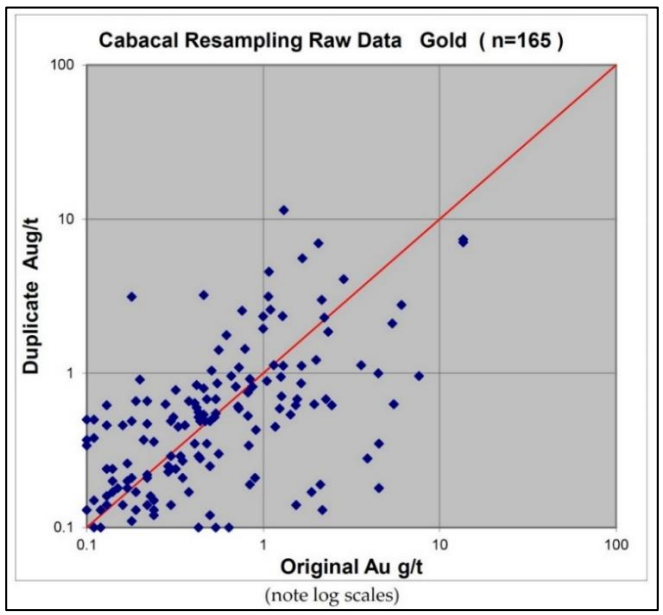
Hole ID	From	To	Interval	Original Composited Grade				Meridian Composited Grade			
				Cu_pct	Au_g/t	Ag_g/t	Zn_pct	Cu_pct	Au_g/t	Ag_g/t	Zn_pct
JUSPD050	44.00	45.81	1.81	0.18	0.04	2.82	0.02	0.13	0.04	0.46	0.02
JUSPD050	70.50	74.00	3.50	0.92	0.71	2.02	0.04	1.06	0.71	2.01	0.04
JUSPD050	84.06	86.00	1.94	0.32	0.12	0.35	0.01	0.32	0.12	0.50	0.01
JUSPD050	91.00	94.00	3.00	0.12	0.77	0.30	0.01	0.12	0.77	0.53	0.01
JUSPD050	98.10	140.00	41.90	1.22	1.40	2.97	0.09	1.35	1.40	3.11	0.08
JUSPD076	22.82	54.90	32.08	0.29	0.02	0.92	0.05	0.31	0.03	0.92	0.01
JUSPD076	60.52	70.09	9.57	0.27	0.06	0.03	0.01	0.29	0.06	0.08	0.01
JUSPD076	77.23	83.81	6.58	1.01	0.33	0.08	0.04	0.62	0.30	2.11	0.08
JUSPD076	85.59	93.06	7.47	0.75	0.35	4.05	0.10	0.67	0.63	3.21	0.10
JUSPD076	93.06	101.95	8.89	2.28	0.54	12.26	0.27	2.32	1.98	9.56	0.28
JUSPD029	87.54	93.00	5.46	0.08	0.16	0.00	0.01	0.06	0.18	0.32	0.01
JUSPD029	99.00	103.00	4.00	0.15	0.58	1.31	0.01	0.11	0.37	0.49	0.01
JUSPD029	108.70	118.00	9.30	1.91	0.71	10.70	0.13	2.13	0.68	0.49	0.14
JUSPD114	53.25	58.19	4.94	0.17	0.02	0.12	n/a	0.16	0.01	11.50	0.01
JUSPD114	61.88	65.85	3.97	0.20	0.05	0.09	n/a	0.14	0.01	0.33	0.01
JUSPD114	70.00	74.00	4.00	0.23	0.06	0.10	n/a	0.20	0.05	0.58	0.03
JUSPD114	85.23	96.84	11.61	0.40	0.94	0.52	n/a	0.40	1.15	0.82	0.02
JUSPD114	101.02	107.88	6.86	0.46	0.57	2.85	n/a	0.44	0.32	2.54	0.04
JUSPD114	114.55	116.67	2.12	0.55	0.32	2.14	n/a	0.82	0.30	3.80	0.08
JUSPD127	26.00	30.00	4.00	0.35	0.03	0.10	n/a	0.27	0.02	0.60	0.04
JUSPD127	46.00	53.90	7.90	0.19	0.97	0.16	n/a	0.13	0.84	0.38	0.01
JUSPD127	57.00	61.00	4.00	0.67	0.48	0.68	n/a	0.48	1.21	0.93	0.05
JUSPD127	65.00	76.00	11.00	0.44	0.64	1.98	n/a	0.23	0.47	0.92	0.01
JUSPD127	80.00	85.00	5.00	0.34	0.09	1.52	n/a	0.48	0.08	2.30	0.10
JUSPD127	90.00	95.00	5.00	0.23	0.14	1.38	n/a	0.23	0.06	1.48	0.02
JUSPD127	98.65	105.65	7.00	0.17	0.21	0.39	n/a	0.12	0.16	0.58	0.01
JUSPD135	29.45	32.46	3.01	0.22	0.01	0.00	n/a	0.23	0.01	0.42	0.02
JUSPD135	37.97	41.00	3.03	0.14	0.02	0.00	n/a	0.16	0.02	1.05	0.05
JUSPD135	52.36	63.36	11.00	0.46	2.05	0.35	n/a	0.34	2.18	1.15	0.01
JUSPD135	67.71	71.27	3.56	0.50	0.22	0.82	n/a	0.63	0.12	2.52	0.03
JUSPD135	78.38	82.00	3.62	0.05	0.09	0.00	n/a	0.04	0.23	0.76	0.01

Figure 12-6: UFMT Historical Core Resampling Results



Source: Meridian, 2022. Composite Grade Comparison: JUSPD050, JUSPD029, JUSPD076, JUSPD114, JUSPD127, JUSPD135

Figure 12-7: Example of Raw Data Comparison from UFMT Historical Core Resampling – Gold



Source: H&SC, 2021. Raw Data plot for JUSPD050, JUSPD029, JUSPD076, JUSPD114, JUSPD127, JUSPD135.

12.2.4 Opinion on Adequacy

Upon completion of the data verification process, it is the QP's opinion that the geological data collection and QA/QC procedures used by Meridian in Cabaçal deposit are consistent with standard industry practices and that the geological database is of suitable quality to support the Mineral Reserves.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Introduction

The Cabaçal Project is a copper, gold-silver-deposit in Brazil, which had been previously explored and underground mined by British Petroleum Minerals and then RTZ (now Rio Tinto) prior to its closure and rehabilitation. It produced a gold-copper concentrate by a flotation and gold doré by gravity concentration recovery process.

13.2 Metallurgical Test Work

Three major test work programs have been completed by Meridian for the Cabaçal Project, which are shown in Table 13-1.

Table 13-1: Metallurgical Test Work Summary

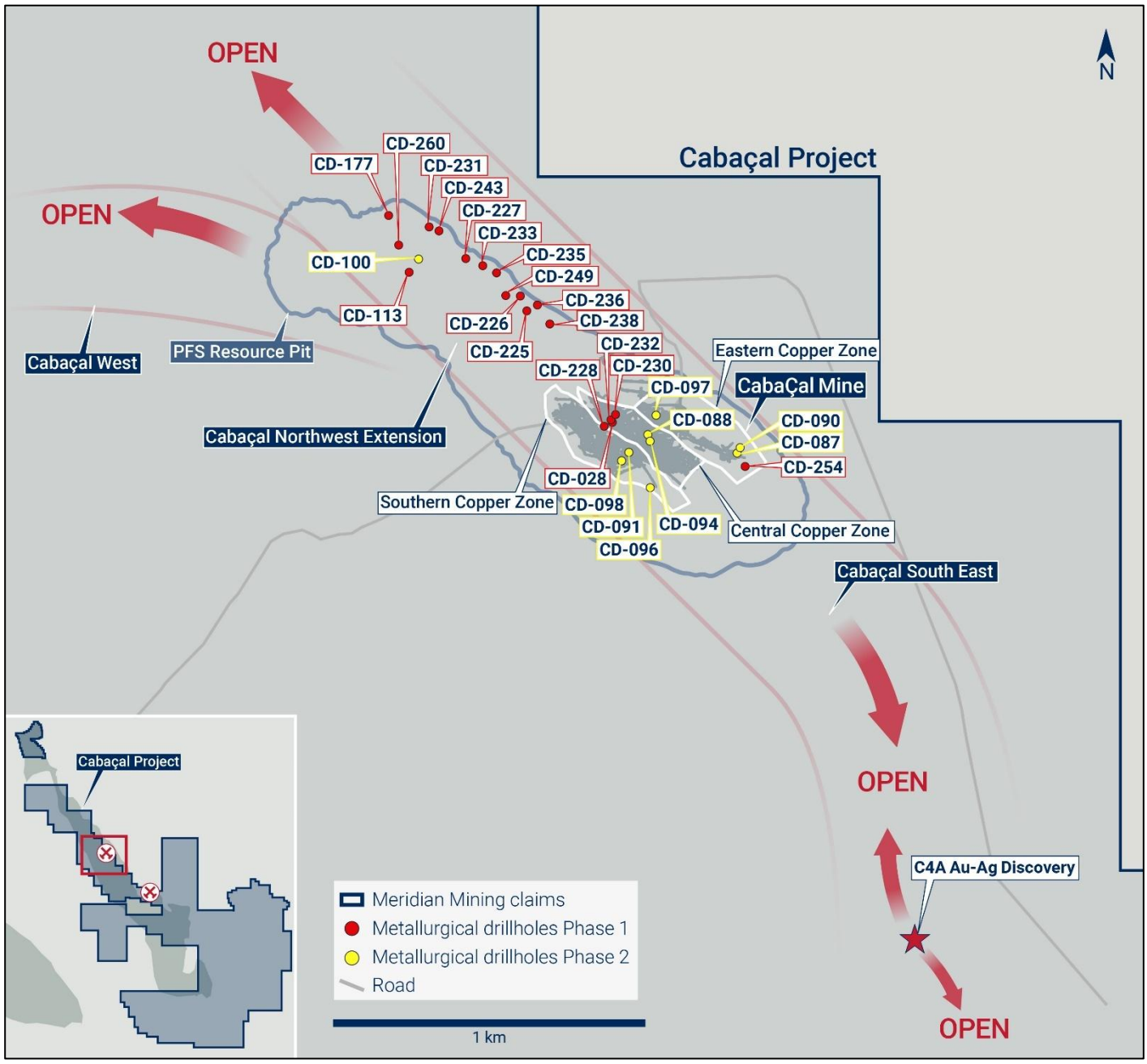
Year	Laboratory/Location	Test work Performed
2022	SGS Lakefield/Canada	Comminution, material-sorting, gravity and flotation tests
2023	SGS Lakefield/Canada	Comminution, gravity and variability flotation
2024	SGS Lakefield/Canada	Flotation optimization and dewatering tests

13.2.1 SGS Lakefield - 2022

13.2.1.1 Sample Selection and Preparation

Meridian drilled 10 HQ MET holes for the metallurgical test program of which seven were used for sample selection. The on-site Geology team selected the collar locations and drill orientation. The holes were to cover the four known main VMS systems (Central Cu Zone, Eastern Cu Zone, South Cu Zone and the Cabaçal Northwest Extension). Most of the samples were within the expected head grade range for the deposit. Figure 13-1Figure 13.1 outlines the locations of the holes shown as metallurgical drill holes-phase 1.

Figure 13-1: Plan View with Location of Metallurgical Drill Holes



Source: Meridian Mining. March 2025

The concept for sample selection was to pick a set of continuous intervals from the four zones to cover a range of expected head assays (Cu, Au, S) and to also cover the three main lithologies (CHB, CTB and ZCL). Meridian selected nine gold-copper samples and a Cu-Au-Zn sample derived from MET holes. Late in the program two additional high-

grade samples picked by the Meridian Geology team were added. The samples were to be used for mineralized material-sorting test work which was cancelled after the samples had been shipped. Table 13-2 summarizes the sample selection data.

Table 13-2: Summary of Sample Selection Data

Zone	Hole_ID	From (m)	To (m)	Mass (kg)	Dispatch Sample_ID	Litho	Met_Sample_ID	SGS_Test_ID
CCZ	CD088	59.00	69.50	63.0	CD088_59.00_79.77	ZCL	CCZ-1	F22
		73.68	79.77					F33
	CD094	13.66	34.00	88.0	CD094_13.66_34	CTB	CCZ-2	F42
	CD094	41.00	48.00	69.5	CD094_41.00_72.40	CTB	CCZ-3	F23
		63.85	72.40					F34
ECZ	CD087	30.00	39.45	72.0	CD087_30.00_57.70	CHB/ ZCL	ECZ-1	F24
		47.40	57.70					F35
	CD097	68.35	87.65	86.5	CD097_68.35_87.65	ZCL/CTB	ECZ-2	F29
SCZ	CD096	73.00	89.50	72.9	CD096_73.00_89.50	CTB	SCZ-1	F25
								F36
	CD098	72.65	91.50	82.9	CD098_72.65_91.50	CTB	SCZ-2	F26
								F37
CNWE	CD100	52.00	69.00	73.8	CD100_52.00_69.00	CTB	CNWE-1	F27
								F38
		75.15	92.84	76.7	CD100_75.15_92.84	CTB	CNWE-2	F28
								F39
ECZ	CD087	57.70	61.30	77.9	Zn_Composite	ZCL	Zn Comp	F30
CCZ	CD088	83.40	86.50			CTB		
		87.70	88.05					
		89.70	90.45					
		93.70	94.30					
ECZ	CD090	47.80	54.35			CTB		
SCZ	CD091	101.00	106.00			CTB		
		110.95	114.00					
CCZ	CD094	79.90	82.70	12.3	CD094_79.90_82.70	ZCL	CCZ-4	F43
Various	CD091	86.35	86.65	0.8	Quartz	Qtz Vein	AuQZV	F44
	CD096	149.15	149.60	1.9		Qtz Vein		
	CD096	150.25	150.71	1.8		Qtz Vein		
	CD097	66.65	67.10	1.6		Qtz Vein		
	CD098	96.05	96.60	2.3		Qtz Vein		
	CD098	97.35	98.00	2.7		Qtz Vein		

13.2.1.2 Head Analysis and Material Characterization

All samples shipped to SGS were submitted for head assays. Table 13-3 summarizes the key assays for the Master Composite sample and the twelve Variability type samples used for flotation testing.

Table 13-3: Head Assays for the Samples Tested

Sample	%Cu	%S (Total)	Au g/t
Master Comp	0.56	1.30	0.75
CCZ-1	1.13	1.76	3.08
CCZ-2	0.22	0.32	0.03
CCZ-3	0.54	0.79	0.63
CCZ-4	3.24	4.66	19.1
ECZ-1	0.70	1.02	0.21
ECZ-2	0.44	0.63	0.15
SCZ-1	0.23	1.00	0.31
SCZ-2	0.52	1.12	0.79
CNWE-1	0.32	1.82	0.90
CNWE-2	0.84	1.93	1.78
Zn Comp	0.84	1.49	0.26
Qtz Veins	3.12	4.87	1.75

The primary sulphide minerals are chalcopyrite, pyrite and pyrrhotite. There are virtually no other copper sulphide minerals present. Zinc, whenever present, is in the form of sphalerite. The ratio of the three primary sulphides is 65:25:10 (chalcopyrite, pyrite, and pyrrhotite) which is aligned with the historical mineralogy of the deposit.

Pyrite has a similar level of liberation to chalcopyrite, which implies that most of pyrite will be liberated during copper flotation. Pyrite can be either recovered as a separate product or report to tailings.

The main non-sulphide minerals are quartz, sericite/muscovite and chlorite, accounting for over 90% of the minerals in the deposit.

13.2.1.3 Comminution

The variability samples were submitted to a standard set of comminution tests.

Table 13-4 summarizes the results of SAG Mill Comminution Test (SMC), Ball Mill Bond Work Index (BWI) Test and Abrasion Index Test (Ai). The average SMC A x b was 44.2, which is considered to be of medium to hard competency for SAG milling. The average Bond Work Index (100 mesh closing) was 10.93 kWh/t, which is considered to be on the soft side and not atypical for VMS deposits. The average Abrasion Index was 0.276 g, which suggests moderate abrasion. The data are mostly near the average value. Ausenco used percentile 75th for design purposes for SMC, SCSE, Ai and BWi results, while the 25th percentile for the Axb parameter was used.

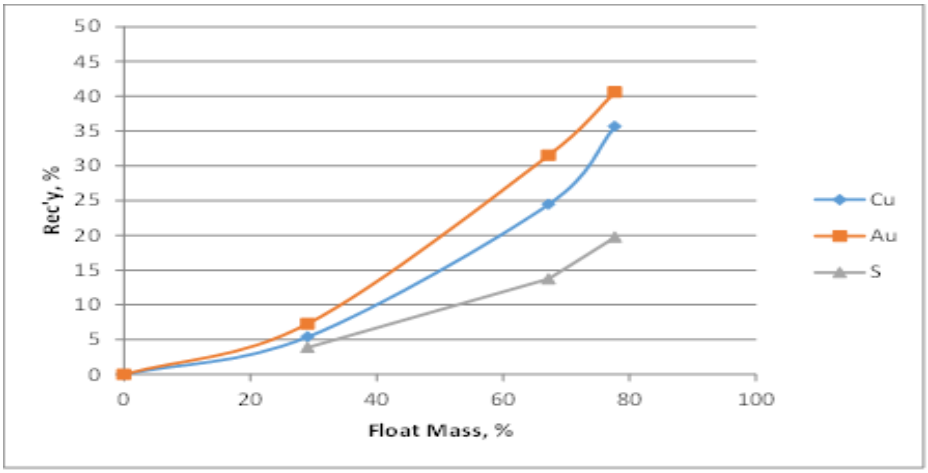
Table 13-4: Summary of Comminution Results

Comp	A x b	SMC (ta)	SCSE (kWh/t)	AI (g)	BWI (kWh/t)
CCZ-1	39.2	0.36	10.30	0.287	11.2
CCZ-2	41.7	0.39	9.82	0.220	8.10
CCZ-3	47.6	0.44	9.28	0.288	9.80
ECZ-1	35.8	0.32	10.8	0.285	15.2
ECZ-2	42.9	0.39	9.80	0.360	9.70
SCZ-1	45.0	0.41	9.56	0.160	8.00
SCZ-2	33.0	0.31	11.00	0.270	9.70
CNWE-1	42.4	0.40	9.75	0.310	12.50
CNWE-2	68.7	0.65	7.90	0.310	11.40
Zn Comp	45.5	0.41	9.71	0.267	13.70
Average	**44.2**	**0.408**	**9.79**	**0.276**	**10.93**
Design (25th/75th Percentile)	**37.4**	**0.410**	**10.30**	**0.281**	**11.90**

13.2.1.4 Heavy Liquid Separation

Meridian desired to assess if some form of material-sorting could benefit the project. Heavy Liquid Separation (HLS) was tested as a proxy for Dense Media Separation (DMS), and additionally planned sorting by various sensor techniques was abandoned after the HLS results became available. A sample of Cabaçal mineralization was crushed to -12 mm and screened on 20 mesh (0.85 mm) to remove the fines. The sample was separated at SG of 2.75, 2.85 and 2.95 producing a float product and three sink products from each SG tested. The overall balance is given in Table 137. Figure 13-2 presents the recovery loss vs. the weight% of float product. Rejecting approximately 30% of the mass, the recovery loss of copper and gold is 5 to 7%. Inferring Table 13-5, when mass rejection is 50%, the metal loss will be 15 to 20%. It is considered that the recovery loss is unacceptable for the mass rejection, considering that copper recovery to the flotation concentrate is around 94% from the mineralization.

Figure 13-2: Metal Recovery Loss vs Wt.% to Float Product



Source: Meridian Mining, 2024.

Table 13-5: Summary of Heavy Liquid Separation Mass Balance

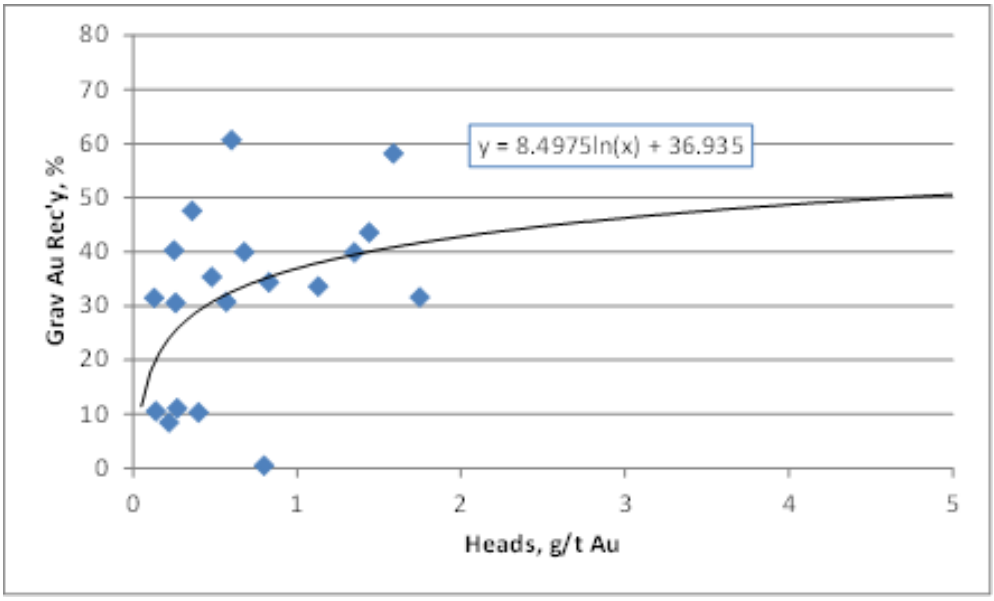
HLS Products	HLS SG	Weight		Assays (%, g/t)			Distribution (%)		
	(t/m³)	(g)	(%)	Cu (%)	Au (g/t)	S (%)	Cu	Au	S
HLS SG 2.95 Sink	2.95	656	11.1	3.12	1.22	14.0	58.0	52.6	76.6
HLS SG 2.85 Sink	2.85	621	10.5	0.75	0.26	1.37	13.2	10.6	7.1
HLS SG 2.75 Sink	2.75	2266	38.2	0.35	0.19	0.62	22.5	28.3	11.7
HLS SG 2.75 Float	2.75	1723	29.0	0.13	0.08	0.32	6.3	8.5	4.6
Feed (Calc.)	2.83	5266	100.0	0.67	0.29	2.28	100.0	100.0	100.0

13.2.1.5 Gravity Recovery

The historical Cabaçal process plant used gravity recovery and reported approximately 45% of the gold in the plant was recovered by this technique. Most of the tests conducted at SGS-L included gravity recovery by passing the ground sample through a MD3 Knelson Concentrator and then upgrading the concentrate on a Mozley Laboratory Separator.

A three stage GRG test was conducted on the Master Composite sample, with the grind size at each stage at 423 µm, 155 µm and 113 µm, respectively. The final GRG number is 64.3, which is quite high and an indication that this material is amenable to gravity gold recovery. Figure 13-3 presents the gold gravity recovery from all tests as a function of the gold head assay. Low head grade samples achieved 10-30% gravity gold recovery while higher head grade samples could achieve up to 60% gravity gold recovery.

Figure 13-3: Gravity Au Recovery vs. Head Au Grade



Source: Meridian, 2024.

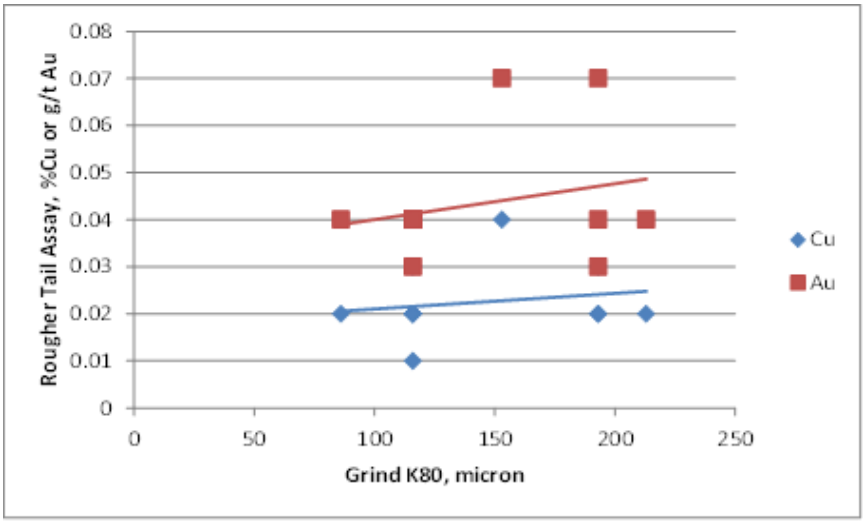
13.2.1.6 Flotation

The rougher conditions used natural pH, potassium amyl xanthate (PAX) collector and Methyl Isobutyl Carbinol (MIBC) frother. The rougher conditions were a mild version of bulk sulphide flotation. Sulphur recovery was typically around 95%, leaving a tailing which was typically less than 0.1% of sulphur content. This was found to be non-acid-generating. Flotation time was set at 13 minutes in the laboratory initially and then reduced to 10 minutes. Mass pull for the master composite was around 5 to 6 percent by weight. The rougher flotation was conducted mostly at a solids percent around 35%.

13.2.1.7 Effect of Primary Grind on Rougher Recovery

A series of tests was conducted to assess the impact primary grind size has on rougher recovery. Considering the grind sizes tested, the data did not suggest that grind size had much impact on tailings grade or metals recovery. Figure 13-4 presents the copper and gold rougher tailing assay as a function of grind size for the initial 12 tests conducted on the Master Composite. The figure suggests that grind has little impact on the recovery. A few data points were notably higher than the trend for both copper and gold in tailing. The full data set suggests they could be erroneous as one test alone accounted for the high copper data point and one of the gold data points. Duplicate gold assays were implemented later in the test program.

Figure 13-4: Effect of Grind on Rougher Tails Assay



Source: Meridian, 2024.

13.2.1.8 Cleaner Flotation Conditions

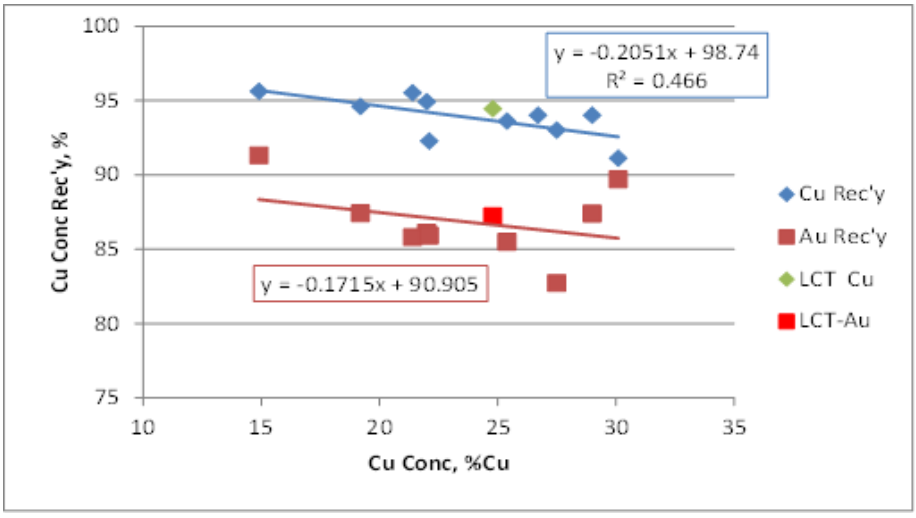
Development of the cleaner circuit was based on initial observations. The initial cleaner test looked as if it produced a good sulphide concentrate, but upon examination by optical microscope, abundant gangue minerals were noted. The second test included a short 5 minute regrind (corresponding to a regrind size of 40 microns), which resulted in much better concentrate grade due to the rejection of gangue minerals. Later cleaner flotation tests used lime for iron

sulphide depression as well as using an alternate, more selective collector (3477, di-thiophosphate) rather than PAX. The final test included a pyrite/pyrrhotite recovery scavenger after gold-copper flotation. The objective was to desulfidize the cleaner tailing so that the combined tailing would be non-acid-generating. Table 13-6 summarizes the key parameters of the tests and the key results. Tests using lime in the regrind and elevated pH above 9 in the cleaner flotation readily produced concentrates with 25% to 30 % of copper. Table 13-6 summarizes the copper recovery vs. copper concentrate grade data from the tests, with the Locked Cycle Test (LCT) result included. The slope between recovery and concentrate grade is quite flat, which suggests that Cabaçal should be operated to produce the higher-grade concentrate.

Table 13-6: Summary of Cleaner Test Conditions and Results

Test	Grind (microns)	Ro PAX (g/t)	Regrind (min)	Lime	pH	Cl Coll	Dosage (g/t)	Grade	Recovery (%)	
								%Cu	Cu	Au *
F-2	116	25	0	0	7.7	PAX	3	14.9	95.6	91.3
F-4	116	25	5	0	8.0	PAX	3	22.0	94.9	86.1
F-8	193	25	10	0	8.0	PAX	2.5	21.4	95.5	85.8
F-9	116	25	5	100	8.9	3477	2.5	25.4	93.6	85.5
F-10	116	25	5	300	11.0	3477	1	26.7	94.0	85.2
F-20	193	25	5	200	9.6	3477	2	29.0	94.0	87.4
F-21	193	25	5	200	10.2	3477	2	30.1	91.1	89.7
F-31	193	25	5	0	7.7	PAX	5	22.1	92.3	85.9
F-32	193	25	5	200	9.6	3477	6	27.5	93.0	82.7
F-32 + Py						PAX	30	19.2	94.6	87.4

Figure 13-5: Copper Recovery vs. Concentrate Grade from Master Composite



Source: Meridian, 2024.

13.2.1.9 Locked Cycle Test (LCT)

A locked cycle test (LCT) is a repetitive batch test that simulates a continuous flotation circuit by recycling tailings between flotation stages to assess the impact of recycled solids and reagent buildup on flotation performance and optimize reagent dosages. The primary goal of an LCT is to simulate the behaviour of a continuous flotation circuit in a laboratory setting, allowing for the evaluation of factors that might not be apparent in single-batch tests.

The LCT result is given in Table 13-7. A 24.8 % copper concentrate was produced with 94.4% copper recovery, 87.2% gold recovery (gravity + float) and 81.9% silver recovery (gravity + float). The pyrite concentrate assayed 44.2 % S and the combined tailing assayed 0.13 % of sulphur. Environmental Acid/Base Accounting (ABA) and Net Acid Generation (NAG) testing suggest the combined tailing should be non-acid-generating. However, a Humidity Cell Test (HCT) is recommended to further confirm in the next stage.

Table 13-7: Locked Cycle Test (LCT) Results

Product	Wt.	Assays, %, g/t				% Distribution			
	%	Cu	Au	Ag	S	Cu	Au	Ag	S
Cu 1st Cl Conc	2.22	24.8	12.7	59.0	36.6	94.4	49.7	74.9	67.1
Mozley Conc	0.12		175	100		0.0	37.5	6.9	0.0
Py 1st Cl Conc	0.62	1.50	2.10	15.2	44.2	1.6	2.3	5.3	22.5
Py Ro Tails	2.12	0.16	0.37	1.52	2.44	0.6	1.4	1.8	4.3
Cu Ro Tails	95.1	0.02	0.05	0.20	0.08	3.5	9.2	11.1	6.3
Comb. Cu Cl Conc & Mozley Conc	2.34	23.5	21.1	61.1	34.7	94.4	87.2	81.9	67.1
Comb. Py Ro Tl & Cu Ro Tl	97.2	0.02	0.06	0.23	0.13	4.1	10.6	12.9	10.6
Head (Calc.)	100	0.58	0.57	1.75	1.21	100	100	100	100
Head (Dir.)		0.56	0.75	1.80	1.30				

A multi-element analysis was also completed for the final copper concentrate generated from the LCT. Results are shown in Table 13-8.

Table 13-8: LCT Final Copper Concentrate Multi-Element Analysis.

Element	Unit	Value	Element	Unit	Value	Element	Unit	Value
Ag	g/t	59	K	g/t	1290	Sr	g/t	< 10
Al	g/t	3240	Li	g/t	< 100	Ti	g/t	248
Ba	g/t	< 30	Mg	g/t	1290	Tl	g/t	< 5
Be	g/t	< 3	Mn	g/t	161	U	g/t	< 5
Bi	g/t	75	Mo	g/t	131	V	g/t	< 80
Ca	g/t	1270	Ni	g/t	32	Y	g/t	14
Cd	g/t	44	Pb	g/t	808	Zn	g/t	7460
Co	g/t	103	Sb	g/t	< 10	F	%	0.010
Cr	g/t	< 50	Se	g/t	< 200	Cl	g/t	< 50
Cu	g/t	239000	Si	g/t	15800	As	g/t	58
Fe	g/t	315000	Sn	g/t	< 30	Hg	g/t	< 0.3

13.2.2 SGS Lakefield - 2023

13.2.2.1 Sample Selection and Preparation

In March 2023, a set of 23 variability samples from across the deposit (including nine through the vertical profile of drill hole CD-228) were collected, covering oxidized, transition and sulphide zones. These samples were selected based on the following objectives:

- Address metallurgical recommendations contained in the PEA NI 43-101 technical report.
- Conduct optimization studies on rougher concentrate regrind size.
- Perform optimization studies on copper cleaner pH and potential depressants.
- Conduct additional variability studies, targeting samples with a Cu head grade between 1 and 3%.
- Perform sedimentation and filtration tests on flotation tailings.
- Assess physical characteristics of mineralized material, concentrate, and tailings.
- Perform further variability test work using the revised flowsheet (grind size, residence times, etc.).
- Review recovery curves based on new metallurgical test results.

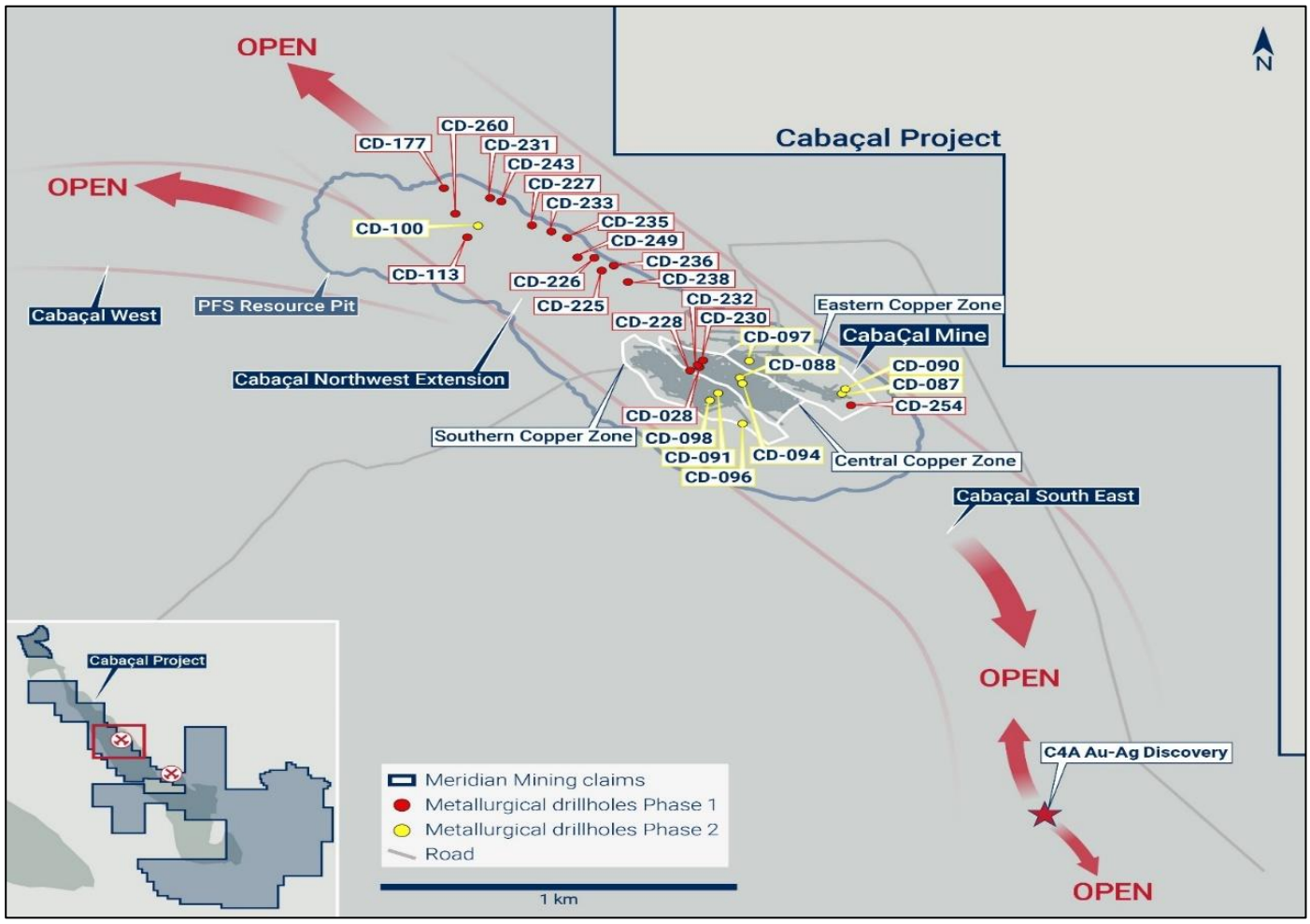
The 2023 samples were labelled CAB S1-23, with S1-9 being from hole CD228 from top to bottom. Samples S1,2,12,13 and 16 were transition zone samples (partially weathered) and samples S10, 11, 14 and 15 were oxidised (fully weathered). Samples S17 and S18 were biotite samples. Sample S21 had some joint oxidation and presented high gold grade, but low sulphur. Sample S22 presented more traces of pyritic material.

The ore samples were crushed to a top size of 1.7 mm, then blended and subsampled into 2-kg replicate test charges with a spinning riffler.

For each intersection sample, the assay heads samples were extracted from the laboratory mill discharge at the time of performing test grinds. This greatly reduced the variance about the assay head grade estimate.

The flotation tests were performed in duplicate, and the average result reported. Sample locations are shown in Figure 13-6 as metallurgical drill holes – phase 2.

Figure 13-6: 2023 Metallurgical Test work Program Sample Locations



Source: Meridian Mining, 2025.

A more detailed description of the location, depth and characteristics of the samples selected for this metallurgical test work program is shown in Table 13-9.

Table 13-9: Summary of Sample Selection Data

Zone	Hole_ID	From (m)	To (m)	Mass (kg)	Dispatch Sample_ID	Litho	Weathering	Met_Sample_ID	SGS_Test_ID
CCZ	CD228	10,80	19,00	8,20	Sample 1	CHBse	SW	CAB-S1	Sample 1
CCZ	CD228	19,00	22,00	3,00	Sample 2	**CTB**se	SW	CAB-S2	
CCZ	CD230	28,00	30,10	2,10		**CTB**se	SW		Sample 2
		n/a	n/a	5,10		CTBse	SW		
CCZ	CD228	26,00	34,00	8,00	Sample 3	CTBse	FR	CAB-S3	Sample 3

Zone	Hole_ID	From (m)	To (m)	Mass (kg)	Dispatch Sample_ID	Litho	Weathering	Met_Sample_ID	SGS_Test_ID
CCZ	CD228	41,00	46,30	5,30	Sample 4	CTBse	FR	CAB-S4	Sample 4
CCZ	CD228	49,05	53,00	3,95	Sample 5	CTBse	FR	CAB-S5	
CCZ	CD028	52,40	57,60	5,20		CTBse	FR		Sample 5
		n/a	n/a	9,15		CTBse	FR		
CCZ	CD228	55,60	61,00	5,40	Sample 6	CTBse	FR	CAB-S6	Sample 6
CCZ	CD228	61,00	66,70	5,70	Sample 7	CTBse	FR	CAB-S7	Sample 7
CCZ	CD228	66,70	72,10	5,40	Sample 8	CTBch	FR	CAB-S8	Sample 8
CCZ	CD228	77,95	84,00	6,05	Sample 9	CTBch	FR	CAB-S9	Sample 9
CNWE	CD225	6,00	9,00	3,00	Sample 10	CTBse	HW	CAB-S10	
CNWE	CD243	7,00	9,00	2,00		CHBse	HW		Sample 10
CNWE	CD243	11,00	12,45	1,45		CTBse	HW		
				6,45		CTBse	HW		
CNWE	CD225	9,50	12,50	3,00	Sample 11	CHBch	MW	CAB-S11	
CNWE	CD231	9,53	10,00	0,47		CHBse	MW		Sample 11
CNWE	CD235	3,00	9,35	6,35		CHBse	MW		
		n/a	n/a	9,82		CHB	MW		
CNWE	CD226	17,65	21,60	3,95	Sample 12	CHBch_se	MW/SW	CAB-S12	
CNWE	CD238	25,40	28,88	3,48		CHBch	MW/SW		Sample 12
		n/a	n/a	7,43		CHB	MW/SW		
CNWE	CD227	17,10	19,22	2,12	Sample 13	CHBse	MW/SW	CAB-S13	
CNWE	CD231	18,85	21,50	2,65		CHBch	SW		Sample 13
CNWE	CD260	18,00	19,00	1,00		CHBch	SW		
		n/a	n/a	5,77		CHB	SW		
CNWE	CD227	19,22	24,00	4,78	Sample 14	CTBse	HW	CAB-S14	
CNWE	CD233	14,00	22,49	8,49		CHB/ZCL	HW		Sample 14
		n/a	n/a	13,27		Basal Zone	HW		
CNWE	CD227	24,00	31,00	7,00	Sample 15	CTBse	HW	CAB-S15	
CNWE	CD236	10,00	12,65	2,65		CTBch	HW		Sample 15
		n/a	n/a	9,65		CTB	HW		
CNWE	CD238	29,50	33,00	3,50	Sample 16	ZCL	MW/SW	CAB-S16	
CNWE	CD177	22,75	27,00	4,25		ZCL	SW		Sample 16
		n/a	n/a	7,75		ZCL	SW		
ECZ	CD254	50,54	55,58	5,04	Sample 17	CHBbi	FR	CAB-S17	Sample 17
ECZ	CD254	63,40	67,64	4,24	Sample 18	ZBI	FR	CAB-S18	Sample 18
CNWE	CD249	38,00	42,40	4,40	Sample 19	CHBch	FR	CAB-S19	Sample 19
CNWE	CD249	42,40	48,98	6,58	Sample 20	CHBch	FR	CAB-S20	Sample 20
CNWE	CD113	25,00	34,50	9,50	Sample 21	CHBse	SW	CAB-S21	Sample 21

Zone	Hole_ID	From (m)	To (m)	Mass (kg)	Dispatch Sample_ID	Litho	Weathering	Met_Sample_ID	SGS_Test_ID
CNWE	CD113	50,15	71,24	21,09	Sample 22	ZCL	FR	CAB-S22	Sample 22
ECZ_Ext	CD232	59,43	63,20	3,78	Sample 23	ZCL	FR	CAB-23	
ECZ_Ext	CD232	72,89	77,45	4,56		ZCL	FR		Sample 23
		n/a	n/a	8,34		ZCL	FR		
					Coarse Reject Test				
	CD097	68,35	87,65	19,30	Sample 24	ZCL/CTB		CAB-24	Sample 24
	CD100	75,15	92,84	17,69	Sample 25	CTB		CAB-25	Sample 25

13.2.2.2 Head Analysis and Material Characterization

The samples had their head grade measured for Au (Fire Assay), Cu (Soluble Cu by FAAS and via XRF), Total S (Leco), Ag (FAAS aqua regia, HF, $KClO_4$ Digestion). Their specific gravities were also measured by pycnometer.

Average Cu and Au grades were 0.61% and 0.75 g/t, respectively. Gold grades ranged from 0.05 to 4.87 g/t, while copper grades ranged from 0.01% to 3.29%. Total Sulphur varied from 0.02% to 4.54%, averaging 1.24%. This shows that different oxidation zones were sampled, as well as different grade ranges.

Main results are presented in Table 13-10.

Table 13-10: 2023 SGS Lakefield Program - Head Analysis.

Sample	Ore Type	Method/Element					
		X-Ray Fluorescence (XRF)	Specific Gravity by Pycnometer	Leco	Fire Assay	Sulphuric Acid Soluble Cu by FAAS	FAAS aqua regia, HF, KClO4 Digestion
		Cu (%)	SG	Total S (%)	Au (g/t)	Cu H_2SO_4 (%)	Ag (g/t)
CAB-S5	Fresh	0.20	2.81	0.44	0.29	< 0.002	< 0.5
CAB-S7	Fresh	0.05	2.81	0.12	0.26	< 0.002	< 0.5
CAB-S8	Fresh	0.41	2.88	0.98	0.26	< 0.002	2.60
CAB-S9	Fresh	0.72	2.90	1.16	0.22	0.01	2.20
CAB-S20	Fresh	2.04	2.88	3.00	2.43	0.02	3.20
CAB-23	Fresh	1.18	2.91	1.90	0.96	0.01	7.20
CAB-S3	Fresh	0.12	2.81	0.43	0.56	< 0.002	< 0.5
CAB-S4	Fresh	0.12	2.82	0.47	0.49	< 0.002	< 0.5
CAB-S10	Fully Oxidised	0.04	2.80	< 0.01	0.89	0.01	< 0.5
CAB-S11	Fully Oxidised	0.04	2.80	< 0.01	0.94	0.01	< 0.5
CAB-S14	Fully Oxidised	0.32	2.90	0.03	0.10	0.03	1.20
CAB-S15	Fully Oxidised	0.22	2.82	< 0.01	0.08	0.01	0.60
CAB-S1	Transition - Some S	0.54	2.81	0.68	0.05	0.02	1.40
CAB-S2	Transition - Some S	0.55	2.81	0.59	0.07	0.02	1.00

Sample	Ore Type	Method/Element					
		X-Ray Fluorescence (XRF)	Specific Gravity by Pycnometer	Leco	Fire Assay	Sulphuric Acid Soluble Cu by FAAS	FAAS aqua regia, HF, KClO4 Digestion
		Cu (%)	SG	Total S (%)	Au (g/t)	Cu H_2SO_4 (%)	Ag (g/t)
CAB-S16	Transition - Some S	0.27	2.87	1.92	0.15	0.10	< 0.5
CAB-S12	Transition - Low S	0.56	2.89	0.15	0.33	0.14	1.30
CAB-S13	Transition - Low S	0.08	2.78	0.02	1.12	0.01	< 0.5
CAB-S17	Biotite	1.81	2.89	2.01	0.67	0.03	10.40
CAB-S18	Biotite	3.29	3.03	4.54	0.80	0.03	16.40
CAB-S21	Minor Joint Oxidation - High Au & Low S	0.01	2.84	0.04	4.87	< 0.002	0.80
CAB-S22	More Pyritic	0.29	2.93	3.86	0.13	< 0.002	1.80
Average		**0.61**	**2.86**	**1.24**	**0.75**	**0.03**	**3.85**
Minimum		**0.01**	**2.78**	**0.02**	**0.05**	**0.01**	**0.60**
Maximum		**3.29**	**3.03**	**4.54**	**4.87**	**0.14**	**16.40**
80th Percentile		**1.09**	**2.90**	**2.41**	**0.96**	**0.03**	**7.84**

13.2.2.3 Comminution

For each variability sample, BWi and SMC tests were completed and results are presented in Table 13-11.

Table 13-11: 2023 SGS Lakefield Comminution Test Results

Sample Designation	Dwi (kWh/m³)	Dwi (%)	Mi Parameters (kWh/t)			SG	A	b	A*b	t_a	SCSE (kWh/t)	BWi (kWh/t)
			Mia	Mih	Mic							
CAB-S1	2.40	7.00	8.60	5.20	2.70	2.71	66.30	1.70	112.70	1.08	6.58	3.60
CAB-S2	3.20	12.00	10.70	6.90	3.50	2.73	58.10	1.45	84.20	0.80	7.29	6.30
CAB-S3	7.30	58.00	20.30	15.30	7.90	2.76	64.20	0.59	37.90	0.36	10.25	7.90
CAB-S4	7.10	56.00	20.00	14.90	7.70	2.75	55.10	0.71	39.10	0.37	10.08	10.70
CAB-S5	8.40	73.00	22.90	17.70	9.20	2.76	64.60	0.51	32.90	0.31	10.97	10.60
CAB-S6	6.70	51.00	19.10	14.20	7.30	2.76	59.00	0.69	40.70	0.38	9.91	11.00
CAB-S7	8.30	71.00	22.60	17.40	9.00	2.75	65.30	0.51	33.30	0.31	10.88	11.90
CAB-S8	7.10	56.00	19.50	14.60	76.00	2.82	52.00	0.76	39.50	0.36	10.19	12.90
CAB-S9	8.00	68.00	21.10	16.20	8.40	2.88	40.70	0.88	35.80	0.32	10.85	13.40
CAB-S10	1.20	2.00	5.40	2.80	1.50	2.52	68.00	3.00	204.00	2.10	5.64	3.30
CAB-S11	2.40	7.00	9.10	5.50	2.80	2.53	65.30	1.62	105.80	1.08	6.71	6.00
CAB-S12	2.60	8.00	9.20	5.70	2.90	2.70	62.90	1.63	102.50	0.98	6.79	6.10
CAB-S13	2.30	6.00	8.30	5.00	2.60	2.67	65.40	1.79	117.10	1.14	6.49	4.10
CAB-S14	1.80	4.00	7.20	4.00	2.10	2.51	64.00	2.24	143.40	1.48	6.16	4.60

Sample Designation	Dwi (kWh/m³)	Dwi (%)	Mi Parameters (kWh/t)			SG	A	b	A*b	t_a	SCSE (kWh/t)	BWi (kWh/t)
			Mia	Mih	Mic							
CAB-S15	1.10	2.00	5.70	2.90	1.50	2.13	68.40	2.88	197.00	2.40	6.27	4.50
CAB-S16	2.20	6.00	7.90	4.70	2.40	2.71	572.00	2.16	123.60	1.18	6.39	6.80
CAB-S17	8.70	76.00	22.80	17.70	9.20	2.86	59.50	0.55	32.70	0.30	11.29	21.50
CAB-S18	10.50	90.00	25.30	20.50	10.60	2.97	62.80	0.45	28.30	0.25	12.55	24.10
CAB-S19	5.70	37.00	16.50	11.80	6.10	2.79	54.90	0.89	48.90	0.45	9.18	9.40
CAB-S20	6.70	51.00	18.70	13.80	72.00	2.81	59.70	0.70	41.80	0.39	9.90	10.30
CAB-S21	4.60	24.00	14.00	9.60	5.00	2.75	61.90	0.98	60.70	0.57	8.30	5.50
CAB-S22	8.60	74.00	21.90	17.00	8.80	2.91	61.20	0.56	34.30	0.31	11.17	9.90
CAB-S23	6.50	48.00	17.60	12.90	6.70	2.90	50.40	0.89	44.90	0.40	9.77	13.40
Average	**5.37**	**38.57**	**15.41**	**11.14**	**11.56**	**2.73**	**82.68**	**1.22**	**75.70**	**0.75**	**8.85**	**9.47**
Minimum	**1.10**	**2.00**	**5.40**	**2.80**	**1.50**	**2.13**	**40.70**	**0.45**	**28.30**	**0.25**	**5.64**	**3.30**
Maximum	**10.50**	**90.00**	**25.30**	**20.50**	**76.00**	**2.97**	**572.00**	**3.00**	**204.00**	**2.40**	**12.55**	**24.10**
75th Percentile	**8.00**	**68.00**	**21.10**	**16.20**	**9.00**	**2.82**	**65.30**	**1.70**	**112.70**	**1.08**	**10.85**	**11.90**
25th Percentile	**2.40**	**7.00**	**8.60**	**5.20**	**2.70**	**2.70**	**58.10**	**0.59**	**37.40**	**0.32**	**6.58**	**5.50**

For design purposes and to bring more conservatism to the project, the BWi used was the 75th percentile (11.90 kWh/t). For the A x b parameter, which indicates more ore competency as the value lowers, the 25th percentile was selected for sizing (37.40).

13.2.2.4 Flotation

13.2.2.4.1 Flowsheet Confirmation Tests

A Master composite sample was prepared in order to validate the optimal flowsheet for the project, named CAB-MC22.

Initially, two flotation tests were completed in order to understand the impact on recoveries by implementing the Aerophine 3418A and Aerofloat 208 reagents, which are highly selective collectors for Cu and precious metals, and are selective against pyrite. Only rougher tests were performed at the conditions shown in Table 13-12.

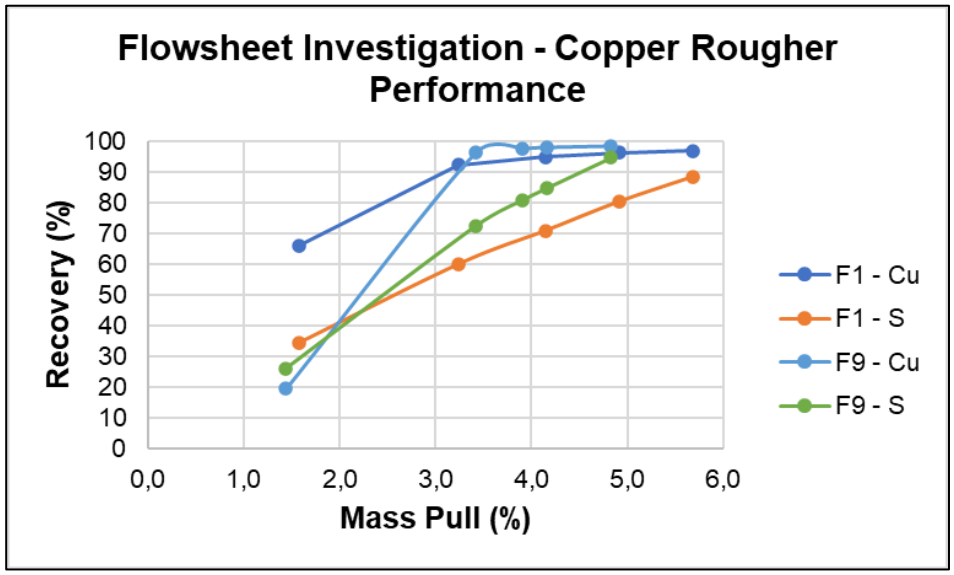
Table 13-12: 2023 SGS Lakefield - Aerofloat 208 Assessment.

Ore Type	Test	Comments	Grind Size (µm)	Reagents (g/t)*			Froth (mins)	pH
			Target P80	3418A	Aero 208	SIBX		
CAB-MC22	FS-MC F1	No Aerofloat 208	175	20	-	25	12	7.9 - 8.0
	FS-MC F9	With Aerofloat 208	175	20	5	25	12	8.0 - 8.1

*MIBC (frother) was used as required.

The test results obtained presented higher Cu and S recoveries when utilizing Aerofloat 208, as shown in Figure 13-7. Based on this test results, it was decided that this new reagent would be used in the flowsheet optimization test work.

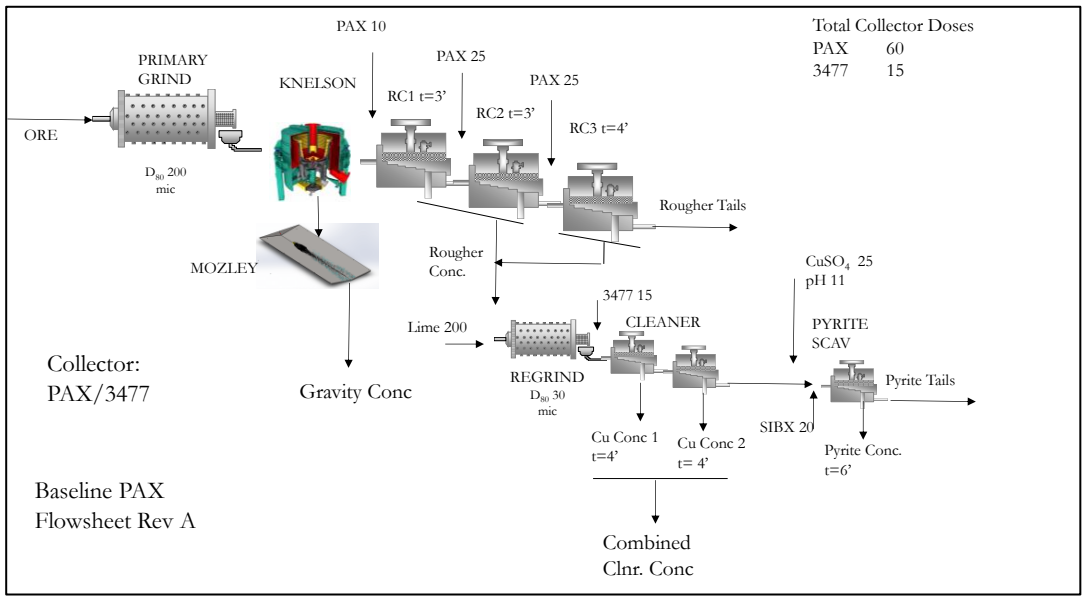
Figure 13-7: 2023 SGS Lakefield - Aerofloat 208 Investigation



Source: Meridian, 2024.

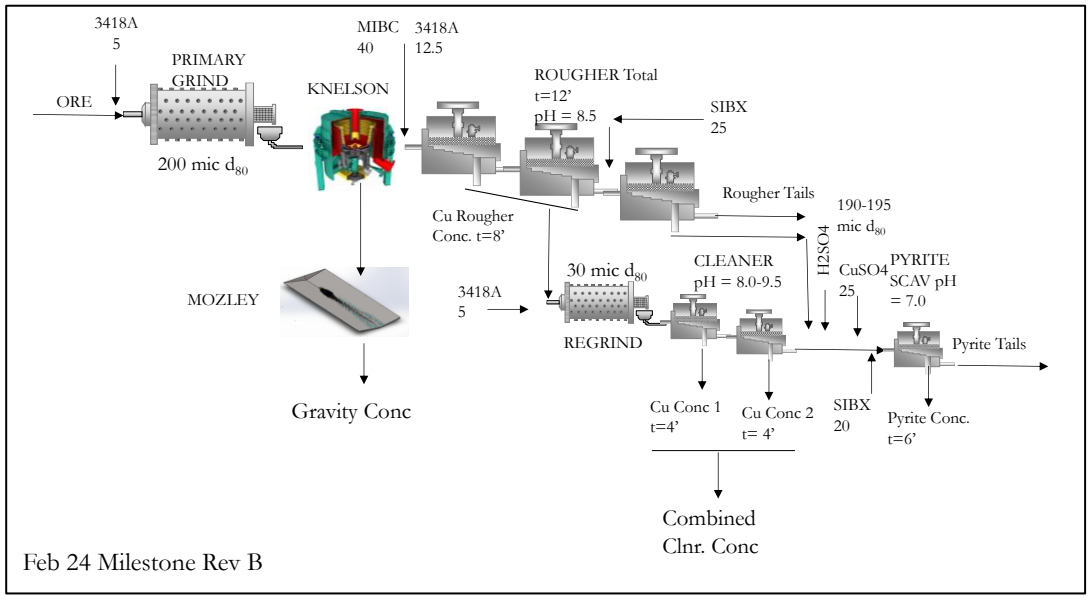
The same master composite sample, CAB-MC22, was used to define the optimal flowsheet in the plant. A series of 12 tests were performed, including gravity concentration, rougher, cleaner and pyrite flotation steps. In total, 03 different process flow sheets were used and were described as (Rev A, Rev B and Rev C Flowsheets). Note that Rev A is the old PAX flowsheet.

Figure 13-8: Cabaçal Flowsheet Rev A (Baseline with PAX Collector)



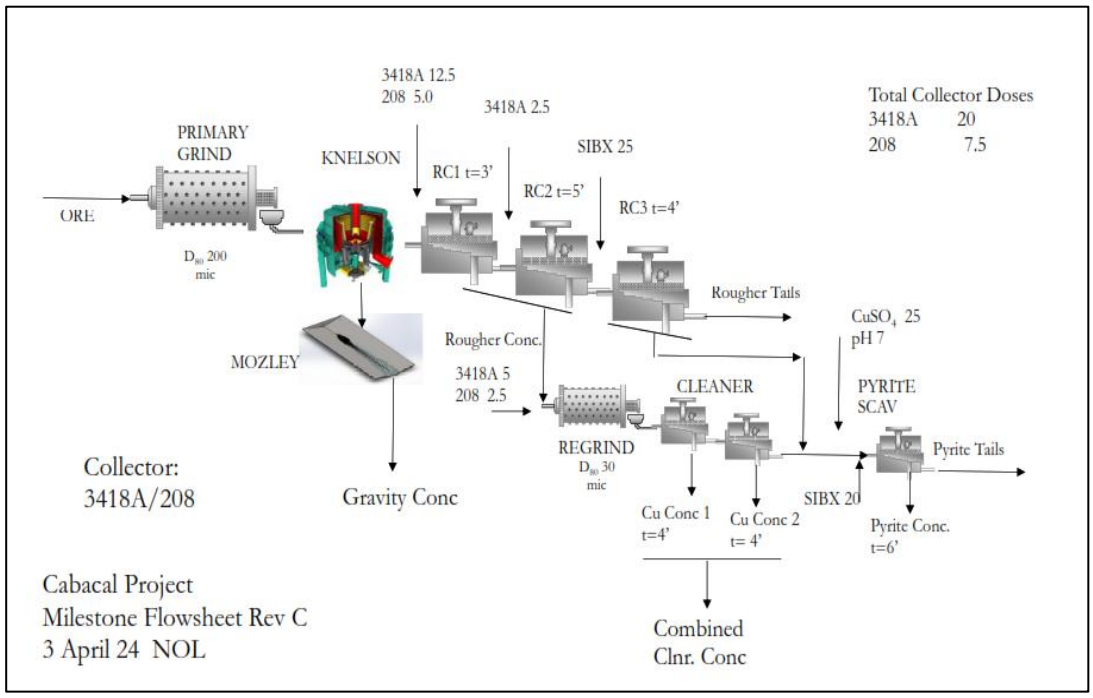
Source: Meridian Mining, 2024.

Figure 13-9: Cabaçal Flowsheet Rev B (3418A/208 Collectors)



Source: Meridian Mining, 2024.

Figure 13-10: 2024 SGS Lakefield - Optimal Flowsheet Resulting From the Testwork Program



Source: Meridian, 2024.

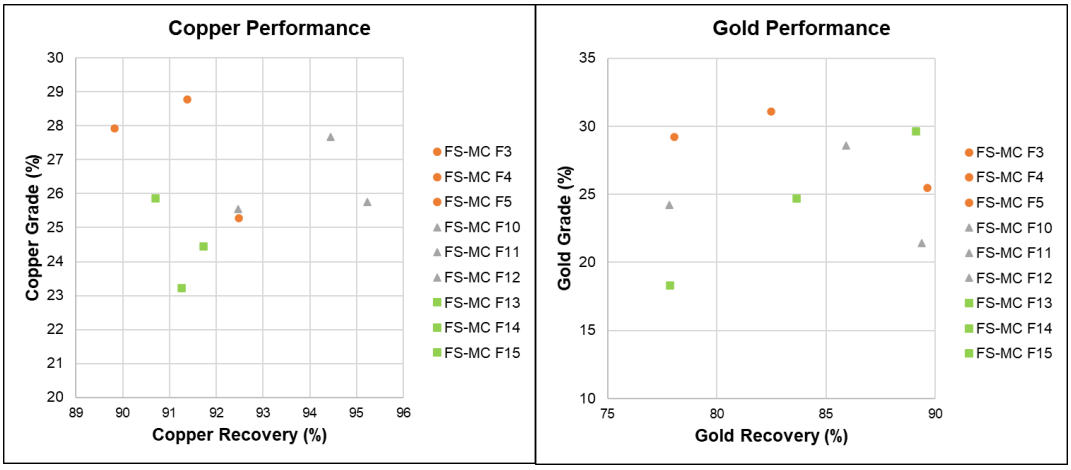
Test results are shown in Table 13-13. Results show higher recoveries in grades for the Rev C flowsheet, as shown in Figure 13-10, which was selected for the PFS project development.

Table 13-13: 2023 SGS Lakefield - Flowsheet Optimization Test work

Test	Comments	Ore	Product	Weight	%	Assays, %	Au, g/t	S	Distribution, %	Au	S
				g		Cu			Cu		
FS-MC F3	Rev B Flowsheet	CAB-MC22	Mozley Conc.	0.80	0.04	-	439	-	-	30.7	-
			Cu 1st Cl + Cl Scav Conc	39.5	2.0	25.8	17.1	33.5	92.5	59.0	57.7
			Gravity + Clnr Conc	**40.3**	**2.0**	**25.3**	**25.5**	**32.8**	**92.5**	**89.6**	**57.7**
			Py Ro Conc	30.6	1.5	1.20	2.10	26.0	3.3	5.6	34.7
			Py Ro Tails	36.5	1.8	0.23	0.46	1.63	0.8	1.5	2.6
			Ro Tails	1884	94.6	0.02	0.02	0.06	3.4	3.3	4.9
			Head (Calc.)	1991	100	0.55	0.58	1.15	100	100	100
FS-MC F4	Rev B Flowsheet	CAB-MC22	Mozley Conc.	4.30	0.2	-	149	-	-	45.3	-
			Cu 1st Cl + Cl Scav Conc	33.2	1.7	32.5	15.8	34.9	91.4	37.2	50.7
			Gravity + Clnr Conc	**37.5**	**1.9**	**28.8**	**31.1**	**30.9**	**91.4**	**82.5**	**50.7**
			Py Ro Conc	24.3	1.2	1.49	2.49	26.6	3.1	4.3	28.3
			Py Ro Tails	36.5	1.8	0.25	0.47	7.49	0.8	1.2	12.0
			Ro Tails	1884	95.0	0.03	0.09	0.11	4.8	12.0	9.1
			Head (Calc.)	1982	100	0.60	0.71	1.15	100	100	100
FS-MC F5	Rev B Flowsheet	CAB-MC22	Mozley Conc.	5.09	0.3	-	121	-	-	43.1	-
			Cu 1st Cl + Cl Scav Conc	33.2	1.7	32.2	15.1	34.7	89.8	35.0	51.4
			Gravity + Clnr Conc	**38.3**	**1.9**	**27.9**	**29.2**	**30.1**	**89.8**	**78.0**	**51.4**
			Py Ro Conc	24.3	1.2	2.24	6.72	24.2	4.6	11.4	26.2
			Py Ro Tails	36.5	1.8	0.28	0.54	6.49	0.9	1.4	10.6
			Ro Tails	1884	95.0	0.03	0.07	0.14	4.7	9.2	11.8
			Head (Calc.)	1983	100	0.60	0.72	1.13	100	100	100
FS-MC F6	Rev A Flowsheet	CAB-MC22	Mozley Conc.	2.44	0.1	-	252	-	-	44.0	-
			Cu 1st Cl + Cl Scav Conc	35.2	1.8	29.0	14.5	34.0	89.8	36.4	52.6
			Gravity + Clnr Conc	**37.6**	**2.0**	**27.1**	**29.9**	**31.8**	**89.8**	**80.4**	**52.6**
			Py Ro Conc	20.8	1.1	2.77	5.65	38.0	5.1	8.4	34.7
			Py Ro Tails	23.2	1.2	0.15	0.44	2.95	0.3	0.7	3.0
			Ro Tails	1841	95.8	0.03	0.08	0.12	4.9	10.5	9.7
			Head (Calc.)	1923	100	0.59	0.73	1.18	100	100	100
FS-MC F7	Rev A Flowsheet	CAB-MC22	Mozley Conc.	3.22	0.2	-	134	-	-	37.2	-
			Cu 1st Cl + Cl Scav Conc	36.8	1.9	28.5	14.8	35.4	90.2	47.0	56.4
			Gravity + Clnr Conc	**40.0**	**2.1**	**26.2**	**24.4**	**32.6**	**90.2**	**84.2**	**56.4**
			Py Ro Conc	19.8	1.0	2.82	3.24	37.5	4.8	5.5	32.2
			Py Ro Tails	17.5	0.9	0.18	0.53	3.53	0.3	0.8	2.7
			Ro Tails	1827	95.9	0.03	0.06	0.11	4.7	9.5	8.7
			Head (Calc.)	1904	100	0.61	0.61	1.21	100	100	100
FS-MC F8	Rev A Flowsheet	CAB-MC22	Mozley Conc.	2.99	0.2		414		0.0	61.3	0.0
			Cu 1st Cl + Cl Scav Conc	34.2	1.8	28.7	16.3	34.4	92.0	27.7	52.9
			Gravity + Clnr Conc	**37.2**	**1.9**	**26.4**	**48.2**	**31.6**	**92.0**	**89.0**	**52.9**
			Py Ro Conc	21.6	1.1	2.09	3.85	36.70	4.2	4.1	35.6
			Py Ro Tails	18.8	1.0	0.16	0.52	5.75	0.3	0.5	4.9
			Ro Tails	1837	96.1	0.02	0.07	0.08	3.4	6.4	6.6
			Head (Calc.)	1912	100	0.56	1.05	1.16	100	100	100
FS-MC F10	Rev C Flowsheet	CAB-MC22	Mozley Conc.	2.94	0.15	-	126	-	-	28.0	-
			Cu 1st Cl + Cl Scav Conc	36.7	1.9	29.9	20.8	35.6	94.5	57.9	56.4

Test	Comments	Ore	Product	Weight	%	Assays, %	Au, g/t	S	Distribution, %	Au	S
				g		Cu			Cu		
			Gravity + Clnr Conc	**39.6**	**2.0**	**27.7**	**28.6**	**33.0**	**94.5**	**85.9**	**56.4**
			Py Ro Conc - 6min	22.5	1.2	0.97	2.92	29.0	1.9	5.0	28.2
			Py Ro Tails	20.8	1.1	0.27	0.44	8.19	0.5	0.7	7.4
			Ro Tails	1851	95.7	0.02	0.06	0.10	3.2	8.4	8.0
			Head (Calc.)	1934	100	0.60	0.68	1.20	100	100	100
FS-MC F11	Rev C Flowsheet	CAB-MC22	Mozley Conc.	7.08	0.4	-	62.5	-	-	35.2	-
			Cu 1st Cl + Cl Scav Conc	33.2	1.7	31.0	16.1	35.2	92.5	42.6	56.4
			Gravity + Clnr Conc	**40.3**	**2.1**	**25.6**	**24.2**	**29.0**	**92.5**	**77.8**	**56.4**
			Py Ro Conc - 6min	10.8	0.6	1.98	10.8	33.0	1.9	9.3	17.2
			Py Ro Tails	16.9	0.9	0.41	0.80	13.8	0.6	1.1	11.3
			Ro Tails	1849	96.5	0.03	0.08	0.17	5.0	11.8	15.2
			Head (Calc.)	1916	100	0.58	0.65	1.08	100	100	100

Figure 13-11: 2023 SGS Lakefield - Flowsheet Investigation Test Results



Source: Meridian Mining, 2024.

13.2.3 SGS Lakefield - 2024

The metallurgical test work program initiated in 2023 with SGS Lakefield continued in 2024, using the same samples that had been selected for the 2022 and 2023 programs.

In this test work program, the selected flowsheet (Rev C) was tested at different conditions in order to optimize the results already obtained in 2023:

- Rougher flotation time had its time extended to verify gains in recovery;
- Pyrite minerals were floated from the rougher tails for separate storage.

In addition, variability tests were performed at the selected flowsheet, as well as the recovery curves were updated. Tails samples generated from this test work program were also tested for settling/thickening tests.

13.2.3.1 SGS Lakefield - 2024

Table 13-14 shows the test results obtained after extending the rougher flotation time and implementing the pyrite flotation step.

Table 13-14: 2024 SGS Lakefield - Extended Rougher Time and Pyrite Flotation Test work

Test	Comments	Ore	Product	Weight	%	Assays, %	Au, g/t	S	Distribution, %	Au	S
				g		Cu			Cu		
FS-MC F10	Rev C Flowsheet	CAB-MC22	Mozley Conc.	2.94	0.15	-	126	-	-	28.0	-
			Cu 1st Cl + Cl Scav Conc	36.7	1.9	29.9	20.8	35.6	94.5	57.9	56.4
			Gravity + Clnr Conc	**39.6**	**2.0**	**27.7**	**28.6**	**33.0**	**94.5**	**85.9**	**56.4**
			Py Ro Conc - 6min	22.5	1.2	0.97	2.92	29.0	1.9	5.0	28.2
			Py Ro Tails	20.8	1.1	0.27	0.44	8.19	0.5	0.7	7.4
			Ro Tails	1851	95.7	0.02	0.06	0.10	3.2	8.4	8.0
			Head (Calc.)	1934	100	0.60	0.68	1.20	100	100	100
FS-MC F11	Rev C Flowsheet	CAB-MC22	Mozley Conc.	7.08	0.4	-	62.5	-	-	35.2	-
			Cu 1st Cl + Cl Scav Conc	33.2	1.7	31.0	16.1	35.2	92.5	42.6	56.4
			Gravity + Clnr Conc	**40.3**	**2.1**	**25.6**	**24.2**	**29.0**	**92.5**	**77.8**	**56.4**
			Py Ro Conc - 6min	10.8	0.6	1.98	10.8	33.0	1.9	9.3	17.2
			Py Ro Tails	16.9	0.9	0.41	0.80	13.8	0.6	1.1	11.3
			Ro Tails	1849	96.5	0.03	0.08	0.17	5.0	11.8	15.2
			Head (Calc.)	1916	100	0.58	0.65	1.08	100	100	100
FS-MC F12	Rev C Flowsheet & Extended Py Rougher	CAB-MC22	Mozley Conc.	2.79	0.1	-	130	-	-	34.3	-
			Cu 1st Cl + Cl Scav Conc	41.2	2.1	27.5	14.1	36.3	95.2	55.1	64.4
			Gravity + Clnr Conc	**44.0**	**2.3**	**25.8**	**21.4**	**34.0**	**95.2**	**89.4**	**64.4**
			Py Ro Conc - 15min	28.1	1.4	0.63	1.10	24.8	1.5	2.9	30.0
			Py Ro Tails	25.0	1.3	0.08	0.28	1.43	0.2	0.7	1.5
			Ro Tails	1851	95.0	0.02	0.04	0.05	3.1	7.0	4.0
			Head (Calc.)	1948	100	061	0.54	1.19	100	100	100
FS-MC F13	Rev C Flowsheet & Extended Py Rougher	MC2023	Mozley Conc.	2.42	0.1	-	209	-	-	31.5	-
			Cu 1st Cl + Cl Scav Conc	52.1	2.7	24.3	16.1	33.3	91.3	52.1	64.9
			Gravity + Clnr Conc	**54.5**	**2.9**	**23.2**	**24.7**	**31.8**	**91.3**	**83.6**	**64.9**
			Py Ro Conc - 5min	25.8	1.4	1.18	1.88	25.8	2.2	3.0	24.9
			Py Ro Conc - 8min	7.0	0.4	1.05	1.95	10.1	0.5	0.8	2.6
			Py Ro Tails	41.2	2.2	0.30	0.56	1.45	0.9	1.4	2.2
			Ro Tails	1780	93.3	0.04	0.10	0.08	5.1	11.1	5.3
			Head (Calc.)	1908	100	0.73	0.84	1.40	100	100	100
FS-MC F14	Rev C Flowsheet & Extended Py Rougher	MC2023	Mozley Conc.	2.94	0.1	-	123	-	-	27.5	-
			Cu 1st Cl + Cl Scav Conc	53.0	2.6	27.3	12.5	33.4	90.7	50.4	63.5
			Gravity + Clnr Conc	**55.9**	**2.8**	**25.9**	**18.3**	**31.6**	**90.7**	**77.9**	**63.5**
			Py Ro Conc - 5min	25.4	1.3	1.21	2.92	28.6	1.9	5.6	26.0
			Py Ro Conc - 8min	8.2	0.4	1.12	1.69	11.5	0.6	1.1	3.4
			Py Ro Tails	47.6	2.4	0.32	0.74	1.43	1.0	2.7	2.4
			Ro Tails	1865	93.1	0.05	0.09	0.07	5.8	12.8	4.7
			Head (Calc.)	2002	100	0.80	0.66	1.39	100	100	100
		MC2023	Mozley Conc.	3.14	0.2	-	290	-	-	48.8	-

Test	Comments	Ore	Product	Weight	%	Assays, %	Au, g/t	S	Distribution, %	Au	S
				g		Cu			Cu		
FS-MC F15	Rev C Flowsheet & Extended Py Rougher		Cu 1st Cl + Cl Scav Conc	53.0	2.8	25.9	14.2	33.6	91.7	40.3	78.2
			Gravity + Clnr Conc	**56.1**	**2.9**	**24.5**	**29.7**	**31.7**	**91.7**	**89.1**	**78.2**
			Py Ro Conc - 5min	7.3	0.4	1.25	2.05	27.1	0.6	0.8	8.7
			Py Ro Conc - 8min	7.3	0.4	1.14	1.86	13.5	0.6	0.7	4.3
			Py Ro Tails	44.2	2.3	0.36	0.68	2.10	1.1	1.6	4.1
			Ro Tails	1809	94.0	0.05	0.08	0.06	6.0	7.7	4.8
			Head (Calc.)	1924	100	0.78	0.97	1.18	100	100	100

Extended flotation time in the rougher stage did not result in increased recovery, while the inclusion of the pyrite flotation step reduced the rougher tails Sulphur grade from 0.10-0.17% to 0.05 to 0.08%.

13.2.3.2 Variability Tests on Confirmed Flowsheet

Once the flowsheet was optimized and selected, flotation variability tests were performed. Average results are shown in Table 13-15.

Table 13-15: 2023 SGS Lakefield - Variability Flotation Tests on Selected Flowsheet

Product		Weight		Assays, %, g/t				% Distribution			
		g	%	Cu	Au	Ag	S	Cu	Au	Ag	S
S1	Cu 1st Cl Conc 1	58.1	1.5	32.2	45.2	65.5	33.8	93.6	80.4	62.9	65.2
	Cu Ro Conc.	128.1	3.3	15.3	24.9	38.1	22.6	98.1	97.7	80.6	96.3
	Py Ro Conc	21.2	0.5	1.19	5.26	24.5	33.8	1.3	3.4	8.6	23.9
	Py Ro Tails	42.0	1.1	0.22	0.38	2.46	0.65	0.5	0.5	1.7	0.9
	Ro Tails	3727.2	96.7	0.01	0.02	0.31	0.03	1.9	2.3	19.4	3.7
	Head (Calc.)	3855.3	100.0	0.52	0.85	1.57	0.78	100.0	100.0	100.0	100.0
S2	Cu 1st Cl Conc 1	60.2	1.6	31.9	8.6	52.0	33.2	94.2	65.5	76.7	74.8
	Cu Ro Conc.	133.2	3.4	15.0	5.4	27.8	19.3	98.2	90.6	90.9	96.5
	Py Ro Conc	16.2	0.4	1.08	1.68	15.4	23.6	0.9	3.4	6.1	14.3
	Py Ro Tails	48.4	1.3	0.23	0.15	0.91	0.36	0.5	0.9	1.1	0.6
	Ro Tails	3727.8	96.6	0.01	0.02	0.10	0.02	1.8	9.4	9.1	3.5
	Head (Calc.)	3861.0	100.0	0.53	0.20	1.06	0.69	100.0	100.0	100.0	100.0
S3	Cu 1st Cl Conc 1	17.8	0.5	23.6	90.0	45.9	31.9	86.2	60.1	65.2	34.4
	Cu Ro Conc.	81.8	2.1	5.5	28.7	12.8	18.2	92.3	88.0	83.6	89.9
	Py Ro Conc	16.7	0.4	0.80	35.50	5.0	33.2	2.7	22.2	6.6	33.6
	Py Ro Tails	41.7	1.1	0.09	0.87	0.71	7.10	0.8	1.4	2.4	17.9
	Ro Tails	3749.7	97.9	0.01	0.09	0.05	0.04	7.7	12.0	16.4	10.1
	Head (Calc.)	3831.5	100.0	0.13	0.70	0.33	0.43	100.0	100.0	100.0	100.0

Product		Weight		Assays, %, g/t				% Distribution			
		g	%	Cu	Au	Ag	S	Cu	Au	Ag	S
S4	Cu 1st Cl Conc 1	40.3	0.7	20.5	84.5	59.7	30.2	90.9	85.2	79.1	38.9
	Cu Ro Conc.	149.8	2.6	5.7	25.4	18.6	19.9	93.7	95.3	91.9	95.2
	Py Ro Conc	34.5	0.6	0.39	10.72	7.2	39.5	1.5	9.3	8.1	43.4
	Py Ro Tails	72.9	1.3	0.07	0.46	0.74	4.97	0.6	0.8	1.8	11.5
	Ro Tails	5678.4	97.4	0.01	0.03	0.04	0.03	6.3	4.7	8.1	4.8
	Head (Calc.)	5828.2	100.0	0.16	0.69	0.52	0.54	100.0	100.0	100.0	100.0
S5	Cu 1st Cl Conc 1	56.3	1.0	22.0	31.4	38.5	29.0	93.8	80.2	77.1	58.5
	Cu Ro Conc.	166.7	2.9	7.6	11.7	15.1	15.9	95.7	88.0	89.2	94.6
	Py Ro Conc	28.4	0.5	0.43	5.02	9.2	29.9	0.9	6.5	9.3	30.3
	Py Ro Tails	80.1	1.4	0.06	0.36	0.50	1.59	0.4	1.3	1.4	4.6
	Ro Tails	5680.1	97.1	0.01	0.05	0.05	0.03	4.3	12.0	10.8	5.4
	Head (Calc.)	5846.8	100.0	0.23	0.38	0.48	0.48	100.0	100.0	100.0	100.0
S6	Cu 1st Cl Conc 1	63.7	1.7	27.7	143.2	96.2	32.0	95.3	65.2	71.7	72.4
	Cu Ro Conc.	154.7	4.0	11.7	84.4	51.5	17.6	98.0	93.3	93.3	96.7
	Py Ro Conc	23.2	0.6	0.64	67.50	30.0	23.3	0.8	11.2	8.2	19.2
	Py Ro Tails	60.2	1.6	0.05	23.49	13.58	0.76	0.2	10.1	9.6	1.6
	Ro Tails	3671.0	96.0	0.01	0.25	0.16	0.03	2.0	6.7	6.7	3.3
	Head (Calc.)	3825.7	100.0	0.48	3.66	2.23	0.74	100.0	100.0	100.0	100.0
S7	Cu 1st Cl Conc 1	10.3	0.3	17.8	92.7	38.1	22.4	79.8	66.8	17.0	43.3
	Cu Ro Conc.	63.1	1.6	3.0	18.4	6.7	7.2	83.6	81.5	18.4	85.8
	Py Ro Conc	10.1	0.3	0.42	11.36	0.0	21.3	1.8	8.0	0.0	40.4
	Py Ro Tails	38.4	1.0	0.05	0.44	0.85	0.30	0.8	1.2	1.4	2.1
	Ro Tails	3766.7	98.4	0.01	0.07	0.50	0.02	16.4	18.5	81.6	14.2
	Head (Calc.)	3829.8	100.0	0.06	0.37	0.60	0.14	100.0	100.0	100.0	100.0
S8	Cu 1st Cl Conc 1	98.7	1.7	23.7	9.9	136.3	31.1	95.7	80.7	84.4	47.9
	Cu Ro Conc.	274.8	4.7	8.7	4.0	54.9	21.6	97.7	90.8	94.6	92.8
	Py Ro Conc	62.8	1.1	0.41	1.53	19.3	36.8	1.0	7.9	7.6	36.1
	Py Ro Tails	110.0	1.9	0.07	0.25	2.07	4.33	0.3	2.2	1.4	7.4
	Ro Tails	5576.5	95.3	0.01	0.02	0.15	0.08	2.3	9.2	5.4	7.2
	Head (Calc.)	5851.3	100.0	0.42	0.21	2.73	1.10	100.0	100.0	100.0	100.0
S9	Cu 1st Cl Conc 1	145.6	2.5	28.5	11.2	82.3	32.3	97.1	86.7	87.2	66.2
	Cu Ro Conc.	341.2	5.9	12.3	5.1	38.4	20.2	98.3	92.2	95.2	97.2
	Py Ro Conc	56.4	1.0	0.41	1.50	14.7	36.7	0.5	4.5	6.0	29.2
	Py Ro Tails	135.1	2.3	0.08	0.13	1.06	0.21	0.2	0.9	1.0	0.4
	Ro Tails	5480.7	94.1	0.01	0.03	0.12	0.04	1.7	7.8	4.8	2.8
	Head (Calc.)	5821.9	100.0	0.73	0.32	2.36	1.22	100.0	100.0	100.0	100.0
S10	Cu 1st Cl Conc 1	5.9	0.2	0.4	158.0	0.0	0.3	1.5	68.2	0.0	3.6

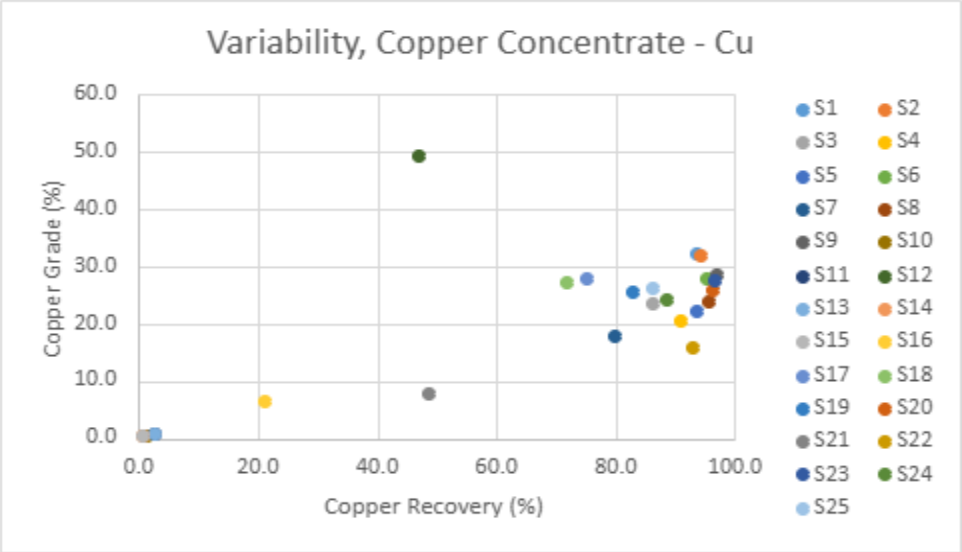
Product		Weight		Assays, %, g/t				% Distribution			
		g	%	Cu	Au	Ag	S	Cu	Au	Ag	S
	Cu Ro Conc.	96.4	2.5	0.1	10.5	0.4	0.1	8.1	74.1	2.1	16.7
	Py Ro Conc	6.1	0.2	0.18	3.10	0.0	0.3	0.8	1.4	0.0	4.2
	Py Ro Tails	81.4	2.1	0.09	0.19	0.50	0.05	5.4	1.2	2.1	8.9
	Ro Tails	3730.9	97.5	0.03	0.09	0.50	0.01	91.9	25.9	97.9	83.3
	Head (Calc.)	3827.3	100.0	0.04	0.36	0.50	0.01	100.0	100.0	100.0	100.0
S11	Cu 1st Cl Conc 1	4.9	0.1	0.9	418.3	25.4	0.5	2.8	69.3	6.1	5.1
	Cu Ro Conc.	68.1	1.8	0.2	32.1	2.4	0.1	7.2	73.9	7.8	19.7
	Py Ro Conc	7.2	0.2	0.17	5.48	0.4	0.1	0.8	1.3	0.1	1.6
	Py Ro Tails	50.8	1.3	0.10	0.41	0.50	0.11	3.2	0.7	1.2	12.3
	Ro Tails	3765.8	98.2	0.04	0.20	0.50	0.01	92.8	26.1	92.2	80.3
	Head (Calc.)	3833.9	100.0	0.04	0.77	0.53	0.01	100.0	100.0	100.0	100.0
S12	Cu 1st Cl Conc 1	20.6	0.5	49.2	48.6	86.8	20.3	46.9	54.5	39.4	75.5
	Cu Ro Conc.	69.4	1.8	16.9	16.6	27.2	6.6	54.4	62.9	41.6	82.9
	Py Ro Conc	6.3	0.2	4.43	7.27	7.1	5.4	1.3	2.5	1.0	6.2
	Py Ro Tails	38.9	1.0	0.79	0.64	1.36	0.19	1.4	1.4	1.2	1.3
	Ro Tails	3779.3	98.2	0.26	0.18	0.70	0.03	45.6	37.1	58.4	17.1
	Head (Calc.)	3848.7	100.0	0.56	0.48	1.18	0.14	100.0	100.0	100.0	100.0
S13	Cu 1st Cl Conc 1	15.5	0.3	0.8	531.7	81.4	2.6	2.7	83.4	29.8	17.4
	Cu Ro Conc.	66.7	1.1	0.4	125.1	20.2	1.1	4.9	84.4	31.8	32.6
	Py Ro Conc	9.0	0.2	0.27	6.68	6.8	3.0	0.5	0.6	1.4	11.8
	Py Ro Tails	41.3	0.7	0.20	0.98	0.58	0.12	1.7	0.4	0.6	2.1
	Ro Tails	5772.2	98.9	0.08	0.27	0.50	0.03	95.1	15.6	68.2	67.4
	Head (Calc.)	5838.9	100.0	0.08	1.69	0.72	0.04	100.0	100.0	100.0	100.0
S14	Cu 1st Cl Conc 1	24.4	0.6	0.4	8.6	4.9	0.2	0.8	33.4	2.3	3.9
	Cu Ro Conc.	388.1	10.0	0.4	0.9	1.1	0.1	11.3	52.8	8.0	18.3
	Py Ro Conc	19.9	0.5	0.42	1.70	1.3	0.1	0.6	5.4	0.5	1.8
	Py Ro Tails	334.3	8.6	0.37	0.07	0.65	0.03	9.5	3.7	4.2	10.8
	Ro Tails	3509.5	90.0	0.32	0.08	1.35	0.03	88.7	47.2	92.0	81.7
	Head (Calc.)	3897.6	100.0	0.33	0.16	1.32	0.03	100.0	100.0	100.0	100.0
S15	Cu 1st Cl Conc 1	19.8	0.5	0.3	18.1	8.8	0.1	0.7	54.4	7.0	2.5
	Cu Ro Conc.	228.6	6.1	0.3	1.8	1.6	0.0	7.8	62.8	14.4	12.8
	Py Ro Conc	15.8	0.4	0.31	0.53	1.1	0.1	0.6	1.3	0.7	2.2
	Py Ro Tails	183.7	4.9	0.29	0.07	0.60	0.02	6.2	2.0	4.5	7.5
	Ro Tails	3523.4	93.9	0.23	0.07	0.60	0.01	92.2	37.2	85.6	87.2
	Head (Calc.)	3752.0	100.0	0.23	0.18	0.66	0.01	100.0	100.0	100.0	100.0
S16	Cu 1st Cl Conc 1	50.5	0.9	6.4	29.1	28.4	33.1	21.1	72.0	32.0	15.4
	Cu Ro Conc.	134.7	2.3	2.8	11.1	12.0	17.2	24.8	73.0	36.1	21.3

Product		Weight		Assays, %, g/t				% Distribution			
		g	%	Cu	Au	Ag	S	Cu	Au	Ag	S
	Py Ro Conc	18.3	0.3	1.21	0.73	5.0	28.4	1.5	0.7	2.0	4.8
	Py Ro Tails	62.7	1.1	0.37	0.13	0.50	0.32	1.5	0.4	0.7	0.2
	Ro Tails	5716.4	97.7	0.20	0.10	0.50	1.49	75.2	27.0	63.9	78.7
	Head (Calc.)	5851.1	100.0	0.26	0.35	0.76	1.85	100.0	100.0	100.0	100.0
S17	Cu 1st Cl Conc 1	174.7	4.6	28.0	9.6	120.2	29.4	75.3	56.9	55.0	72.3
	Cu Ro Conc.	310.6	8.2	16.3	6.3	78.4	17.5	78.2	65.8	63.8	76.4
	Py Ro Conc	28.7	0.8	1.31	3.25	35.4	2.2	0.6	3.1	2.7	0.9
	Py Ro Tails	83.9	2.2	0.33	0.56	6.93	0.35	0.4	1.6	1.5	0.4
	Ro Tails	3497.3	91.8	0.41	0.29	3.95	0.48	21.8	34.2	36.2	23.6
	Head (Calc.)	3807.9	100.0	1.70	0.78	10.02	1.87	100.0	100.0	100.0	100.0
S18	Cu 1st Cl Conc 1	327.2	8.5	27.3	5.5	127.0	32.3	71.9	55.2	66.3	59.4
	Cu Ro Conc.	519.1	13.5	18.5	4.2	88.7	23.9	77.1	65.9	73.4	69.8
	Py Ro Conc	35.1	0.9	2.56	1.74	19.3	8.3	0.7	1.9	1.1	1.6
	Py Ro Tails	74.3	1.9	1.12	0.53	7.47	2.02	0.7	1.2	0.9	0.8
	Ro Tails	3331.2	86.5	0.85	0.33	5.00	1.61	22.9	34.1	26.6	30.2
	Head (Calc.)	3850.3	100.0	3.23	0.85	16.28	4.62	100.0	100.0	100.0	100.0
S19	Cu 1st Cl Conc 1	11.6	0.3	25.5	38.7	33.3	28.3	82.8	50.3	65.1	58.0
	Cu Ro Conc.	52.4	1.4	6.1	15.6	8.8	9.3	89.4	91.5	77.7	86.6
	Py Ro Conc	7.6	0.2	1.00	0.00	4.1	16.4	2.1	0.0	5.3	22.1
	Py Ro Tails	30.1	0.8	0.12	12.22	0.40	0.22	1.0	41.2	2.0	1.2
	Ro Tails	3773.0	98.6	0.01	0.02	0.04	0.02	10.6	8.5	22.3	13.4
	Head (Calc.)	3825.4	100.0	0.09	0.23	0.16	0.15	100.0	100.0	100.0	100.0
S20	Cu 1st Cl Conc 1	294.7	7.6	25.7	8.4	35.0	34.9	96.5	90.0	82.2	88.2
	Cu Ro Conc.	475.7	12.3	16.4	5.6	24.7	24.2	99.1	97.5	93.8	98.8
	Py Ro Conc	24.0	0.6	1.60	1.10	11.0	6.8	0.5	1.0	2.1	1.4
	Py Ro Tails	106.2	2.8	0.11	0.16	1.05	0.23	0.1	0.6	0.9	0.2
	Ro Tails	3378.9	87.7	0.02	0.02	0.23	0.04	0.9	2.5	6.2	1.2
	Head (Calc.)	3854.6	100.0	2.04	0.71	3.26	3.03	100.0	100.0	100.0	100.0
S21	Cu 1st Cl Conc 1	6.3	0.2	7.7	1543.3	69.6	11.2	48.5	74.8	18.5	31.9
	Cu Ro Conc.	41.9	1.1	1.5	268.0	11.3	3.0	62.2	86.4	19.9	56.9
	Py Ro Conc	6.5	0.2	0.58	19.19	2.3	7.6	3.8	1.0	0.6	22.3
	Py Ro Tails	25.5	0.7	0.21	3.45	0.73	0.23	5.4	0.7	0.8	2.7
	Ro Tails	3796.8	98.9	0.01	0.46	0.50	0.03	37.8	13.6	80.1	43.1
	Head (Calc.)	3838.7	100.0	0.03	3.38	0.62	0.06	100.0	100.0	100.0	100.0
S22	Cu 1st Cl Conc 1	67.4	1.7	15.9	3.6	84.0	39.0	92.9	53.5	75.7	17.9
	Cu Ro Conc.	404.2	10.5	2.8	1.0	17.3	35.4	97.0	85.0	93.6	97.4
	Py Ro Conc	225.6	5.9	0.11	0.51	4.2	47.0	2.1	25.2	12.8	72.1

Product		Weight		Assays, %, g/t				% Distribution			
		g	%	Cu	Au	Ag	S	Cu	Au	Ag	S
	Py Ro Tails	100.0	2.6	0.05	0.11	1.40	6.87	0.4	2.4	1.9	4.7
	Ro Tails	3447.9	89.5	0.01	0.02	0.14	0.11	3.0	15.0	6.4	2.6
	Head (Calc.)	3852.1	100.0	0.30	0.12	1.94	3.82	100.0	100.0	100.0	100.0
S23	Cu 1st Cl Conc 1	164.3	4.6	27.5	32.4	149.2	35.0	96.8	80.4	87.4	77.4
	Cu Ro Conc.	300.6	8.5	15.4	21.6	90.1	24.2	98.9	98.0	96.6	98.0
	Py Ro Conc	35.7	1.0	0.74	10.12	36.8	29.3	0.6	5.5	4.7	14.1
	Py Ro Tails	82.3	2.3	0.11	2.99	3.10	0.47	0.2	3.7	0.9	0.5
	Ro Tails	3235.4	91.5	0.02	0.04	0.30	0.05	1.1	2.0	3.4	2.0
	Head (Calc.)	3536.0	100.0	1.32	1.87	7.93	2.10	100.0	100.0	100.0	100.0
S24	Cu 1st Cl Conc 1	34.4	1.8	24.3	9.4	146.0	28.3	88.5	74.8	75.5	73.7
	Cu Ro Conc.	63.5	3.3	14.3	6.2	90.3	19.9	96.1	91.5	86.1	95.8
	Py Ro Conc	6.8	0.4	2.78	1.95	35.6	25.1	2.0	3.1	3.6	12.9
	Py Ro Tails	16.8	0.9	0.44	0.23	3.70	0.61	0.8	0.9	0.9	0.8
	Ro Tails	1844.0	96.7	0.02	0.02	0.50	0.03	3.9	8.5	13.9	4.2
	Head (Calc.)	1907.5	100.0	0.50	0.23	3.49	0.69	100.0	100.0	100.0	100.0
S25	Cu 1st Cl Conc 1	56.3	3.0	26.3	25.0	54.0	35.7	86.3	72.9	63.6	50.5
	Cu Ro Conc.	106.3	5.6	15.5	16.6	36.5	30.5	95.8	91.6	81.2	81.5
	Py Ro Conc	13.8	0.7	4.53	11.30	21.7	36.8	3.6	8.1	6.3	12.8
	Py Ro Tails	21.1	1.1	1.17	0.67	6.30	2.42	1.4	0.7	2.8	1.3
	Ro Tails	1801.8	94.4	0.04	0.09	0.50	0.41	4.2	8.4	18.8	18.5
	Head (Calc.)	1908.1	100.0	0.90	1.01	2.51	2.09	100.0	100.0	100.0	100.0

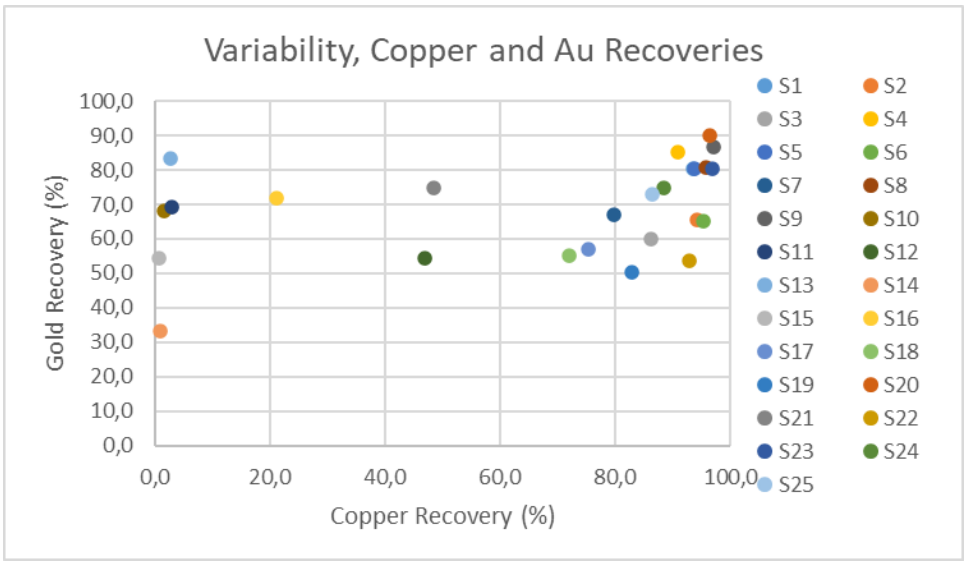
The results show, overall, high Cu and Au recoveries. Most of the Cu recoveries were higher than 80%, with the exception of samples S10, 11, 13, 14 and 15, which presented Cu recoveries lower than 5%. These specific samples represented oxidised material and showed insignificant Cu recoveries. Final concentrate Cu grades varied from 20 to 30% for most of the samples. Figure 13-11 and Figure 13-12 show the behaviour of Cu and Au recoveries, as well as Cu concentrate grade, for all the samples tested.

Figure 13-11: 2024 SGS Lakefield - Cu Concentrate Grade vs Cu Final Recoveries



Source: Meridian, 2024.

Figure 13-12: 2024 SGS Lakefield - Au vs Cu Final Recoveries



Source: Meridian, 2024.

13.2.3.3 Thickening

As part of the test program, a rougher tailings sample was subject to settling/thickening tests. Name of the sample and its respective tests are summarized in Table 13-16.

Table 13-16: 2024 SGS Lakefield - Thickening Test Sample ID

Sample ID	Test Program
FS-MC-F1-9 Ro Tails	Flocculant Scoping, Static Settling, Dynamic Thickening

Particle size distribution (PSD) measurements were conducted on representative cut of pulp from the sample. The measurement was performed using Malvern laser particle sizer fitted with a wet dispersion system as well as screen sieve analysis. Particle size measurements are summarized in Table 13-17.

Table 13-17: 2024 SGS Lakefield - Thickening Test Sample Characterization.

Sample ID	Particle Sizing			Particle Sizing $^{2}K_{80}$, µm	SG of Dried Solids	^{3}Testing pH
	^{1}d80, µm	^{1}<20 µm % vol	1<1µm % vol			
FS-MC-F1-9 Ro Tails	106	27.8	0.4	175	2.79	8.0

Notes: **1.** Determined using laser diffraction. **2.** Determined using screen (sieve) size analysis. **3**. Determined after the sample was reslurried in river water.

Flocculant scoping tests were performed on FS-MC-F1-9 Ro Tails at 10%w/w solids using a range of anionic, nonionic, and cationic flocculants produced by BASF. Scoping results indicated that the sample showed the best response to Magnafloc 155, which is a high molecular weight, anionic polyacrylamide flocculant.

A series of static settling tests at varying feed solids dilution were performed in 2L graduated cylinders fitted with a rotating “picket-style” rake. The static settling test results were used as preliminary starting conditions for subsequent dynamic (continuous) thickening test. The selected best conditions are summarized in Table 13-18.

Table 13-18: 2024 SGS Lakefield - Preliminary Static Settling Test Results Summary - Best Conditions

Sample ID	Reagent ^{1}Magnafloc	Reagent Dosage (g/t)	^{2}Feed % w/w	^{3}U/F % w/w	Unit Area $m^2/(t/d)$	^{4}ISR $m^3/m^2/d$	^{5}Supernatant Clarity	^{6}TSS mg/L
FS-MC-F1-9 R0 Tails	155	10	16	66	0.06	429	Clear	10

Note: All values were calculated without a safety factor.
Test conditions: 2L cylinder with rotating picket-style raking, room temperature.
1. Magnafloc: A reagent line from BASF.
2. Diluted thickener feed.
3. Final thickened “underflow” density.
4. Initial Settling rate.
5. Supernatant visual clarity at 10 minutes of elapsed settling time.
6. Supernatant total suspended solids (TSS) at 10 minutes of elapsed settling time.

Once defined the optimal flocculant, % solids and reagent dosage range, dynamic thickening tests were performed.

The dynamic thickening test was conducted using Magnafloc 155 flocculant at a diluted thickener feed density of 15.0% w/w solids. The effect of flocculant dosage was examined at a constant 0.04 $m^2/(t/d)$ thickener unit area to prevent underflow plugging. A dosage of 10 g/t Magnafloc 155 flocculant produced an overflow TSS of 201 mg/L. Increasing the dosage to 15 g/t decreased the overflow TSS to 183 mg/L. Further increasing the dosage to 20 g/t decreased the overflow TSS to 101 mg/L. Subsequent dynamic thickening testing was conducted using a constant dosage of 20 g/t

Magnafloc 155 and was tested over a range of thickener unit areas to observe the effect of unit area at a constant flocculant dosage.

The thickener unit areas which were examined ranged from 0.05 to 0.10 m^2/(t/d) at a constant 20 g/t flocculant dosage. The underflow density was 54.3% w/w solids at 0.05 m2/(t/d) and increased to 62.6% w/w solids at 0.10 m^2/(t/d). During testing, the underflow encountered pumping difficulty and discharging became intermittent. Signs of underflow plugging were observed at 0.10 m^2/(t/d). Overflow TSS decreased from 110 mg/L at 0.05 m^2/(t/d) to 52 mg/L at 0.10 m^2/(t/d). Dynamic thickening results are summarized in Table 13-19.

Table 13-19: 2024 SGS Lakefield - Summary of Dynamic Thickening Tests by Unit Area

Dosage flocc't (g/t)	Unit Area m^2/(t/d)	Solids Loading (t/m^2/h)	Net Rise Rate $m^3/m^2/d$	Underflow % w/w solids	Overflow TSS (mg/L)	Residence Time (h)	U/F Yield Stress (Pa)
20	0.05	0.83	109.3	54.3	110	0.19	No yield
20	0.06	0.69	91.1	57.4	56	0.22	2
20	0.08	0.52	68.3	60.4	55	0.30	3
20	0.10	0.42	54.7	62.6	52	0.37	5
			Underflow extended for 30 minutes:	69.3			37

Note: Bed height was maintained around 141 mm.

13.3 Deleterious Elements

Project and test work data have indicated that high Sulphur grade in tailings can be problematic for the project, as they can exceed the environmental discharge limit if not treated in the plant.

The PFS design includes a pyrite flotation step, which receive the rougher tails (final tails) and separate it into two different streams:

1. Pyrite concentrate (high Sulphur grade tails).
2. Final tails (low Sulphur grade tails).

This pyrite flotation recovers most of the sulphur contained in the rougher tails. According to the project's mass balance and test work, sulphur tails in the final tails stream will not exceed 0.1%, while the sulphur grade in the pyrite concentrate stream (high sulphur grade tails) will exceed 25%. Due to the high S content in the pyrite concentrate stream, a separate, lined facility, will be built, where it will be thickened, filtered and disposed of on a lined dry stack tailings facility.

. A multi-element analysis was completed in 2022 on the final copper concentrate generated in the locked cycle test (LCT). The results, presented in Table 13-8, show no significant concentration of deleterious elements that would have negative impact on transportation and commercial aspects for the project.

13.4 Recovery Estimates

Based on the historical and new test work developed, the grade vs recovery curves have been updated by Meridian Cabaçal in order to incorporate the optimizations applied to the project and new samples tested.

The basis of this final revision is as follows:

- The resource estimator QP has defined three categories of ore at Cabaçal as follows:
  - Fresh ore: >0.1 sulphur
  - Partly weathered ore: between 0.1 and 0.01% sulphur
  - Heavily weathered ore: < 0.01 % sulphur.
  - These limits will be used to demarcate the resource.

For the few data points excluded from the grade-recovery model, these were averaged, and that average used to report grades and recoveries for that high-grade range. No extrapolation beyond the actual data limits of each model will be performed.

The database used for the update of the recovery curves is shown in Table 13-20.

Table 13-20: PFS - Updated Recovery Curves Database

Sample	Ore Grades, % or g/t			Recoveries, %		
	Cu	Au	Ag	Cu	Au	Ag
MC22	0.60	0.68	3.34	94.5	85.9	78.5
MC23	0.73	0.84	3.44	91.3	83.6	80.2
CCZ-1	1.16	1.16	3.28	94.5	91.2	79.5
CCZ-2 (Rpt)	0.22	0.06	0.95	91.6	57.3	48.1
CCZ-3	0.51	0.38	1.28	92.8	72.4	55.6
ECZ-1 (Rpt)	0.76	0.26	1.99	90.6	77.7	73.1
SCZ-1	0.24	0.29	0.74	83.8	78.3	26.1
SCZ-2	0.51	0.75	2.41	91.9	65.1	71.1
CNWE-1	0.32	0.49	1.30	93.7	90.5	53.4
CNWE-2	0.79	2.73	2.65	96.5	95.6	72.9
ECZ-2	0.39	0.21	3.38	95.4	87.7	81.6
CCZ-4	3.17	18.60	16.98	96.2	95.3	86.5
CAB-S5	0.19	0.44	0.92	92.1	87.5	42.1
CAB-S7	0.06	0.43	0.78	77.8	75.0	32.2
CAB-S8	0.42	0.28	2.99	94.7	87.0	75.6
CAB-S9	0.69	0.40	2.70	95.1	79.5	75.9
CAB-S20	1.98	0.91	3.58	96.8	69.9	76.0
CAB-S23	1.24	2.45	8.44	96.2	93.5	88.7
S3+S4	0.12	0.64	0.83	86.1	89.4	36.9
S1+S2+S16	0.41	0.13	1.28	73.3	64.5	42.8
CAB-S10, 11, 14, 15	**0.14**	**0.62**	**0.61**	**1.2**	**62.1**	**17.9**

Sample	Ore Grades, % or g/t			Recoveries, %		
	Cu	Au	Ag	Cu	Au	Ag
S12+S13	**0.17**	**3.98**	**0.86**	**33.5**	**90.1**	**37.1**
CAB-S17	**1.65**	**0.84**	**10.32**	**87.5**	**69.5**	**68.9**
CAB-S18	**3.11**	**0.77**	**16.07**	**86.6**	**71.1**	**79.3**
CAB-S21	**0.02**	**4.57**	**0.62**	**46.3**	**91.3**	**17.0**

Samples marked in **bold** have been excluded from the model. **CAB-S17, S18** - Biotite rich ore. CAB-S10, S11, S12, S13, S14, S15, S21 - Less than 0.1%S in Feed.

The sulphur data are shown in Table 13-21.

Table 13-21: Summary of Sulphur Data

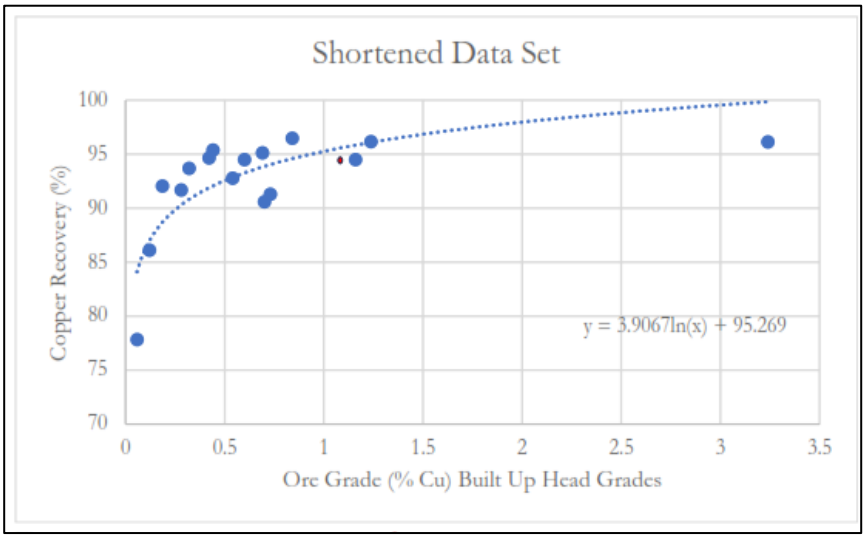
Sample	SULPHUR (Total)		
	Ore Grade %	Concentrate Grade %	Recovery %
MC22	1.20	33.0	56.4
MC23	1.40	31.8	64.9
CCZ-1	1.68	33.0	74.5
CCZ-2	0.30	24.3	72.0
CCZ-3	0.73	30.0	70.8
ECZ-1	0.98	30.7	62.2
SCZ-1	0.82	35.6	29.0
SCZ-2	0.98	35.2	54.0
CNWE-1	1.59	41.9	44.0
CNWE-2	1.71	36.2	57.9
ECZ-2	0.57	34.8	79.8
CCZ-4	4.60	35.6	75.8
CAB-S5	0.36	33.9	62.4
CAB-S7	0.11	32.3	53.6
CAB-S8	1.02	34.3	48.4
CAB-S9	1.07	34.3	69.8
CAB-S20	2.94	35.2	78.6
CAB-S23	1.94	35.1	73.9
S3+S4	0.37	35.8	42.9
S1+S2+S16	1.03	35.9	43.1
CAB-S10+11+14+15	0.01	0.6	14.8
S2+S13	0.02	0.0	0.0
CAB-S17	1.84	29.5	83.9
CAB-S18	4.52	31.5	71.0
CAB-S21	0.05	29.6	49.5

13.4.1 Cu Recovery Curve

The resulting recovery curve is shown in Figure 13-.

Rec = 3.9067 ln (Grade) + 95.269

Figure 13-14: PFS Updated Cu Grade vs Recovery Curve.



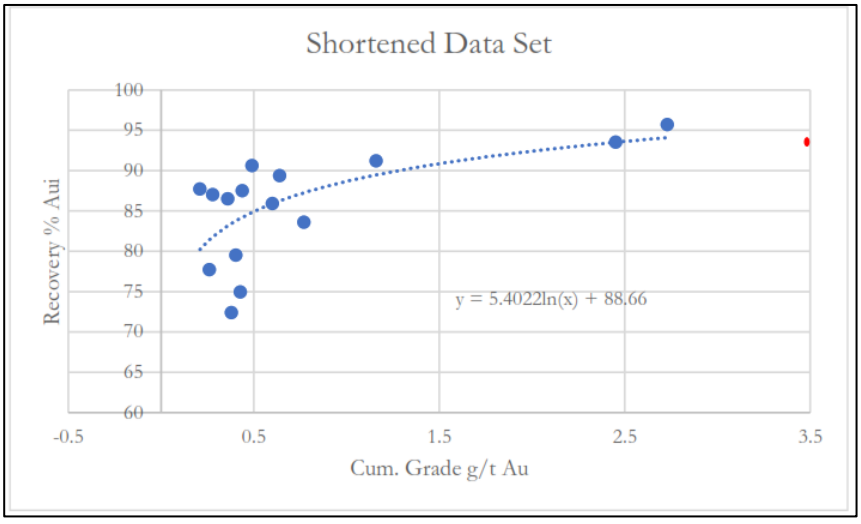
Source: Meridian, 2024.

13.4.2 Au Recovery Curve

The resulting recovery curve is shown in Figure 13-.

Rec = 5.4022 ln (Grade) + 88.66

Figure 13-15: PFS Updated Au Grade vs Recovery Curve



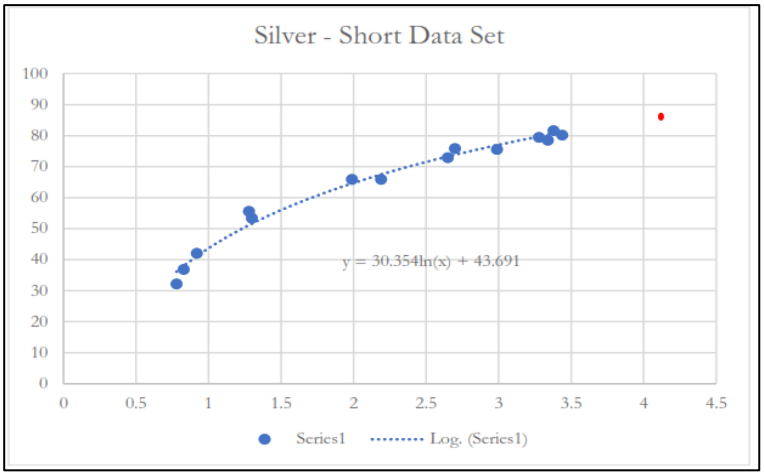
Source: Meridian, 2024.

13.4.3 Ag Recovery Curve

The resulting recovery curve is shown in Figure 13-.

Rec = 30.354 ln (Grade) + 43.691

Figure 13-16: PFS Updated Ag Grade vs Recovery Curve



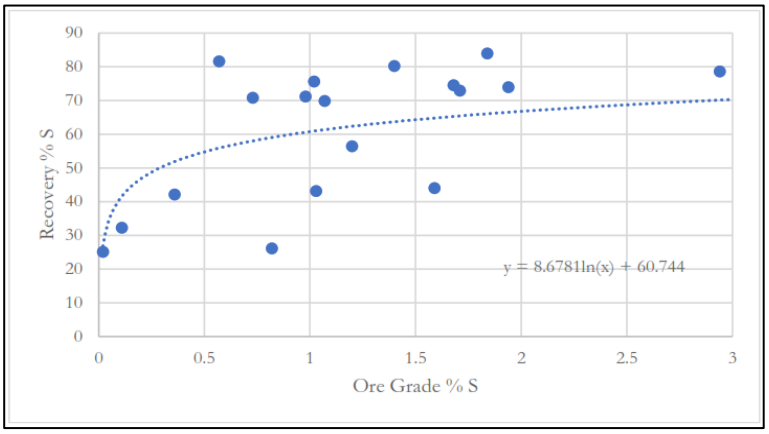
Source: Meridian, 2024.

13.4.4 S Recovery Curve

The resulting recovery curve is shown in Figure 13-.

Rec = 8.6781 ln (Grade) + 60.744

Figure 13-17: PFS Updated S Grade vs Recovery Curve



Source: Meridian, 2024.

13.5 Comments on Mineral Processing and Metallurgical Testing

Flotation test work development provided enough information for the project to define the optimal process route, reagent consumption and recoveries.

Gravity circuit has been better developed and will treat 30% of the mill circulating load during normal operating conditions, which is expected to recover 28% of the gold contained in the RoM.

Comminution data have been obtained for the main mineralized zones and metallurgical domains within the pit and sizing was completed using the 75th percentile of the data, which includes conservatism and safety for the project. However, the 80th percentile hardness is a better value to use (Starkey et al., 2015).

Flotation will be the only mechanism to recover copper, with an estimated 93.6% average recovery through LoM, considering rougher, cleaner, cleaner scavenger and pyrite flotation steps. Final Cu concentrate grade is expected to average approximately 30%, while Au will be in the average of 18 g/t in the same stream.

Through gravity and flotation, overall 86% gold recovery will be achieved according to the PFS development.

Pyrite flotation has been implemented to process the rougher tails in order to generate a low mass, high S grade tails stream. With this flotation stage, it is expected that the final flotation tails will not exceed 0.1% S.

Enough variability tests have been done on flotation to support the selected flow sheet. Furthermore, the process route selected for this project is well known and is used in several other Cu/Au projects around the world.

For the next phase of engineering, additional test work must be completed to validate all the remaining open items.

- Additional comminution tests:
  - RWi
  - Regrind mill specific energy
- Conduct laboratory scale flotation tests with Jameson cells for recovery validation
- Optimization primary grind size. Actual project considers 200 microns, but preliminary tests indicate potential recovery gains with a slightly finer grind (150 microns)
- Filtration tests on flotation final tailings
- Sedimentation and filtration tests on flotation sulphide tailings
- Sedimentation and filtration tests on flotation concentrate
- More thorough investigation of deleterious elements (arsenic, zinc, etc.)
- Bulk materials and concentrate handling test work
- Environmental test work
- Pilot plant testing to derisk the project and to generate enough samples for all the test requirements mentioned in the previous items.

14 MINERAL RESOURCE ESTIMATES

14.1 Introduction

The QP received from Meridian a geological database and an updated topography of the Cabaçal deposit, such as an underground inactive mine restored wireframe, to perform a 3D modelling aiming to detail the Au-Cu-Ag mineralization and consequently declare the mineral resources estimation for the deposit. The main factors considered for the resource estimate classification were quantity and spatial arrangement of data, interpretation of mineralization controls, type of mineralization and data quality. The Mineral Resource was marked off within the geological and mining right limits. The Mineral Resources reported in this section have been classified under the 2014 CIM Definition Standards for Mineral.

An initial review of the drilling data indicated a multi-stage mineral system with an early gold-bearing VMS-style mineralization overprinted by a late-stage structural gold event. The mineralization host units are volcanic, volcanoclastic, and sedimentary rocks deposited in a marine environment. These units were intruded by basic granitic and plutonic dykes and bodies. All the rocks are intensely metamorphosed and deformed, with folding and local faulting.

The QP has produced a resource model using Ordinary Kriging (OK) for the gold, copper and silver grade estimation.

This section presents the main evaluations made to consolidate the Mineral Resources of the Cabaçal Project. The steps for validation were:

- Database analysis
- Grade shell modelling
- Analysis of sample support
- Descriptive statistic of the mineralized domains
- Density
- Variography
- Block model
- Grade estimate

14.2 Database

The mineral exploration data was applied to define the 3D geological model and resource estimate. It was compiled into Leapfrog software for the audit and validation of the organization, integrity and security of the data. Table 14-1 presents the quantitative of the database used in the Project.

All data from drilling programs were received in MS Excel format containing:

- Collar – Table with the location, azimuth, inclination and final length of the drill holes
- Survey – Hole inclination and azimuth information along the drill holes trace
- Assay – Analysis for density and grade analysis Au (ppm), Ag (ppm), Cu (%), Pb (%), Zn (%), Al (%), Ba (ppm), Bi (ppm), Ca (%), Cr (ppm), Fe (%), K (%), La (ppm), Li (ppm), Mg (%), Mn (%), Na (%), P (%), S (%), Sr (ppm), Ti (%), V (ppm), Y (ppm), As (ppm), B (%), Be (ppm), C (%), Ce (ppm), Cd (ppm), Co (ppm), Cs (ppm), Dy (ppm), Er (ppm), Eu (ppm), Ga (ppm), Gd (ppm), Ge (ppm), Hf (ppm), Hg (ppm), Ho (ppm), In (ppm), Lu (ppm), Mo (ppm), Nd (ppm), Ni (ppm), Pd (ppb), Pr (ppm), Pt (ppb), Rb (ppm), Re (ppm), Sb (ppm), Sc (ppm), Se (ppm), Sn (ppm), Ta (ppm), Tb (ppm), Tl (ppm), Tm (ppm), U (ppm), W (ppm), Yb (ppm), Zr (ppm). Also contains attributes for lithology and weathering classification.

Table 14-1: Quantitative for Cabaçal Geological Database

Table	N° holes/Trenches	Records
Collar	1 398	131 538.79 m
Survey	1 398	19 826
Assay	109 627	88 666.63 m
Lithology	98 559	78 318.59m
Weathering	98 559	78 318.59m

Source: GE21, 2025.

Standard validation of this database includes checking for overlaps, inconsistencies in interval depths, missing intervals, etc. No significant errors or inconsistencies were detected during the database validation process.

Historical drilling information was properly digitized and imported into the database together with the current drilling data. A confidence level classification process was properly applied to the database in the "Assay_Type" attribute (inside Assay table) to define the chemical results within a sufficient confidence level for grade estimation. Assay Types values 1 and 2 were considered inside acceptance limits of confidence level to be applied on grade estimate. All other data were used in geological modelling to support the appropriate continuity of the mineralization model.

The database is considered suitable for the purposes of mineral resource estimation.

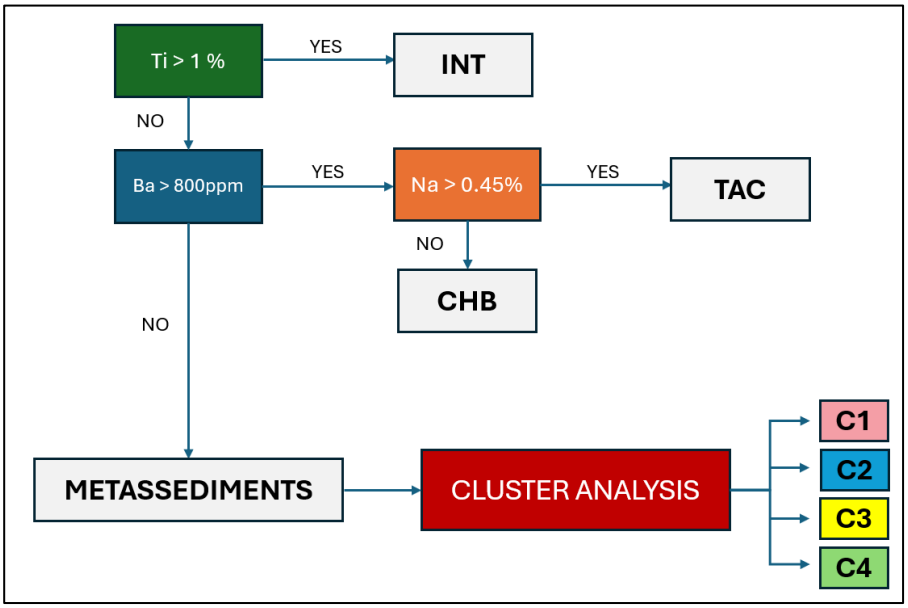
14.3 Topography

Meridian provided a high-resolution drone terrain model was subsequently updated with a LiDAR survey conducted by Embratop Geo-Tecnologias Ltda on June 1, 2022 (Giacometti and Pereira, 2022). This survey result was considered the topographic surface for Cabaçal Project development, with a 2 m resolution.

14.4 Geological Models

14.4.1 Grade shell modelling

Figure 14-1: Classification Key used for Preliminary Geological Modelling



Legend: Intrusive basic rocks were separated with titanium grade above 1%, considering its mineralogical composition (pyroxenes, ilmenite, titanite, etc.), post-mineralizatiOn intrusions (INT), basal acid volcanic TAC unit (TAC), banded metachert (CHB). Source: GE21, 2025.

Geological modelling cut-off grade of 0.1 g/t of equivalent gold (Au_{eq}) for a marginal grade envelope (BRG), 0.23 g/t of equivalent gold for the low-grade domain, and 1 g/t of equivalent gold for the high-grade domain were applied to define the mineralization zones. These geological cut-off grades were defined based on the continuity of the mineralization zones grades observed in drillhole vertical sections.

The equivalent gold calculation based on commodities prices and Meridian's metallurgical tests studies was:

Six main domains were modelled:

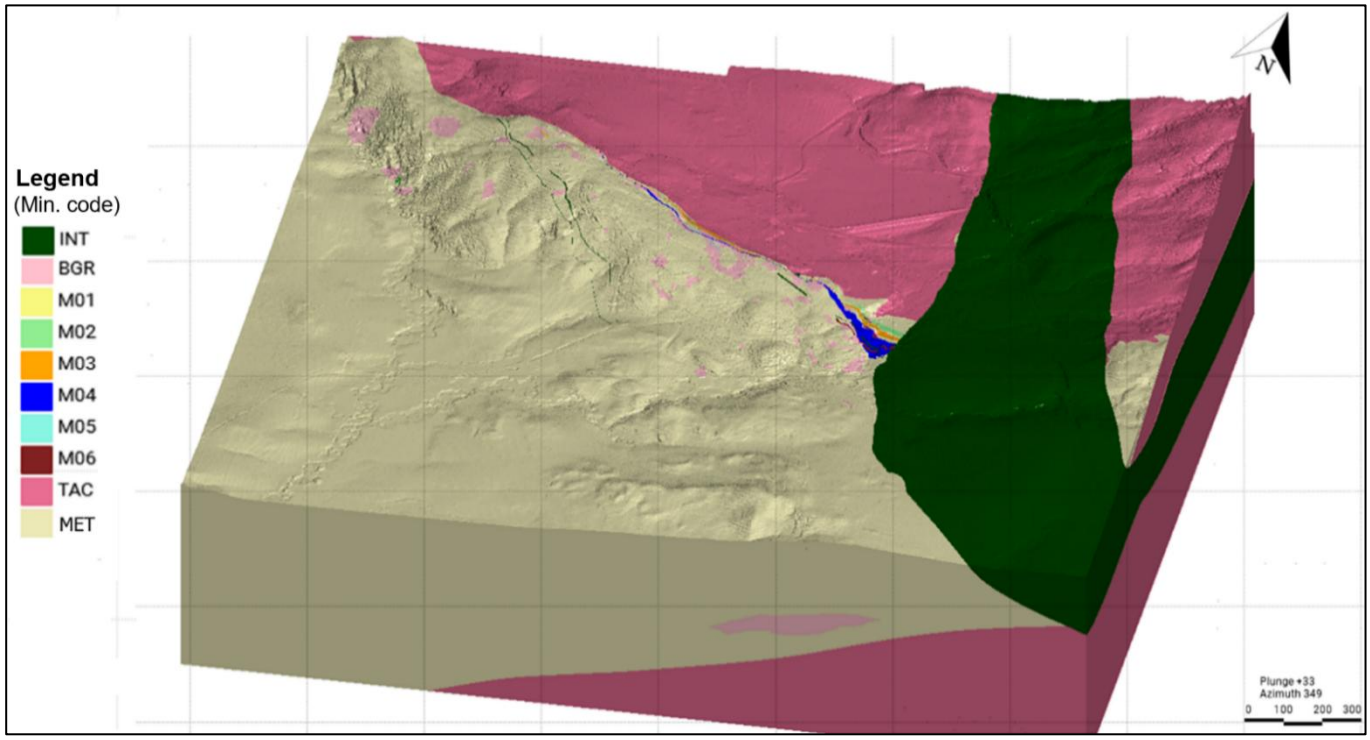
- TAC - basal acid volcanic units.
- MET - host sequence of metasedimentary units.
- BGR - a mineralized envelope with marginal grades above 0.1g/t of equivalent gold (AuEq).
- LG – AuEq low-grade domain (AuEq>0.23 g/t).
- HG - AuEq high-grade domain (>1g/t. HG).
- INT - gabbro body and other post-mineralization intrusions.

Meridian provided the wireframes of the INT domain, which were validated by the QP. TAC domain was modelled using Leapfrog's intrusion algorithm for implicit modelling, and all the mineralized bodies of LG and HG were modelled using a vein interpolator using Leapfrog software. BRG domain was modelled using a numeric model, with a 0.1 g/t cut-off grade (Figure 14-2).

An interval selection on drillhole samples using cut-off of 0.23g/t for low-grade mineralization zones (LG) and 1 g/t for high-grade mineralization zones (HG) was applied to define mineralization model (Figure 14-3 to Figure 14-6).

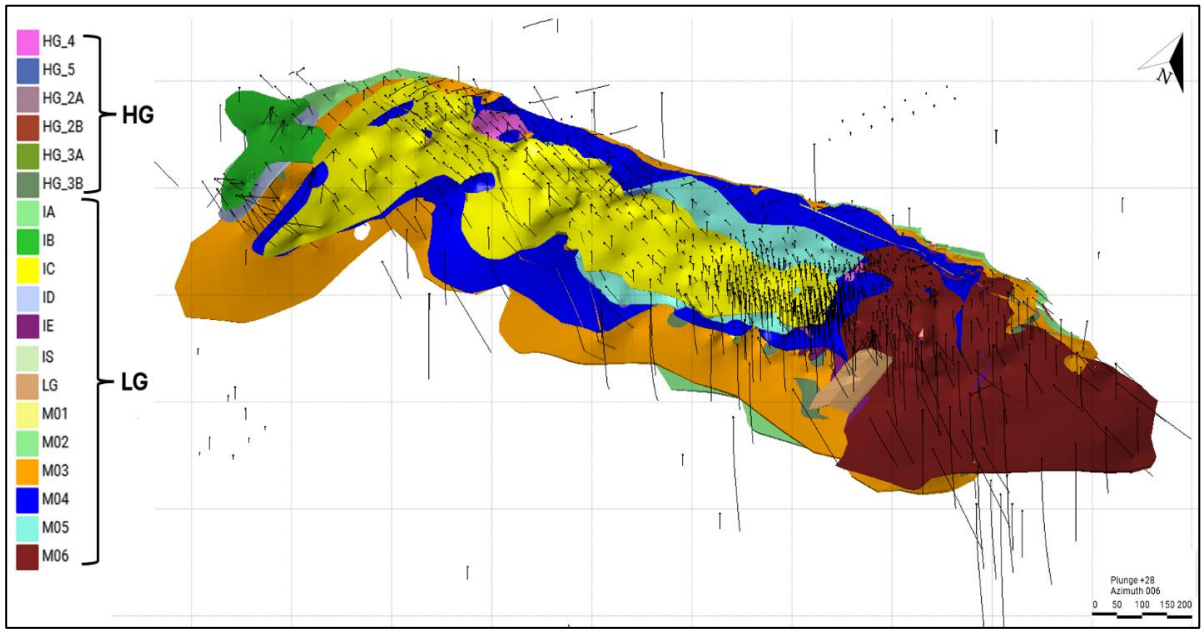
Each mineralization zone was named with a code to treat it individually during grade estimate (Table 14-2).

Figure 14-2: Geological Models with Principal Macrodomains



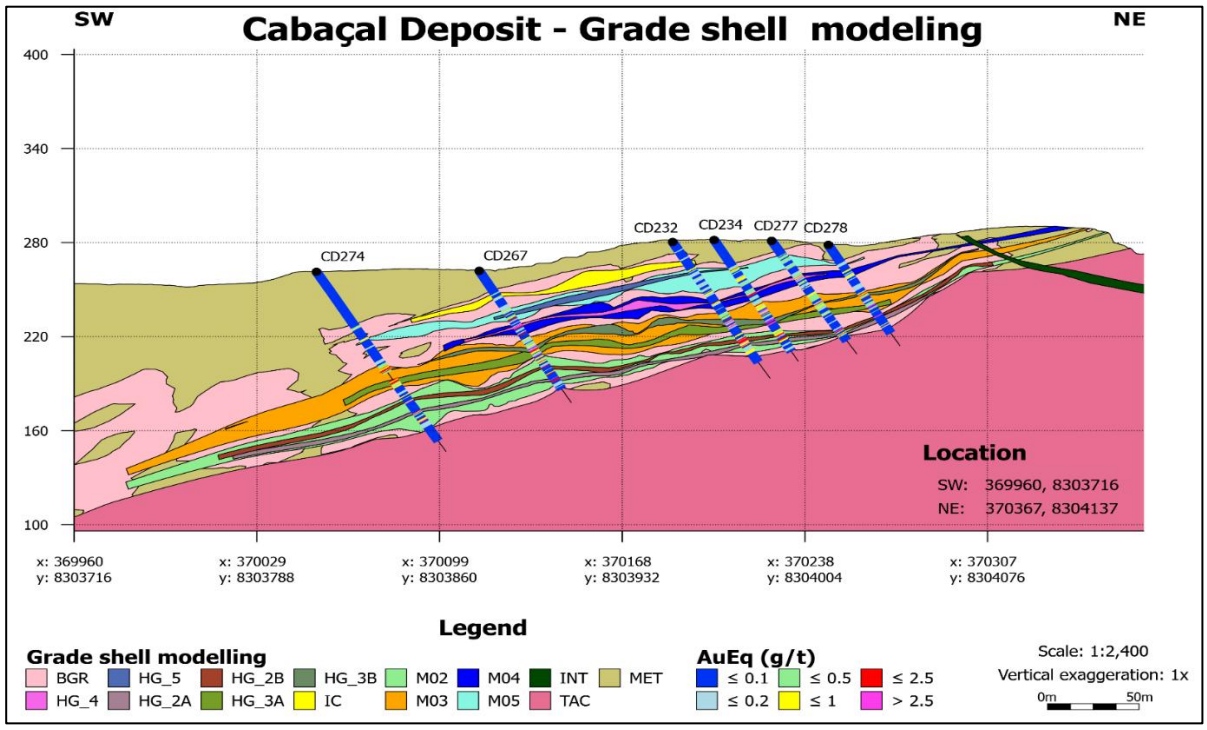
Source: GE21, 2025.

Figure 14-3: Low-grade and High-grade Wireframes



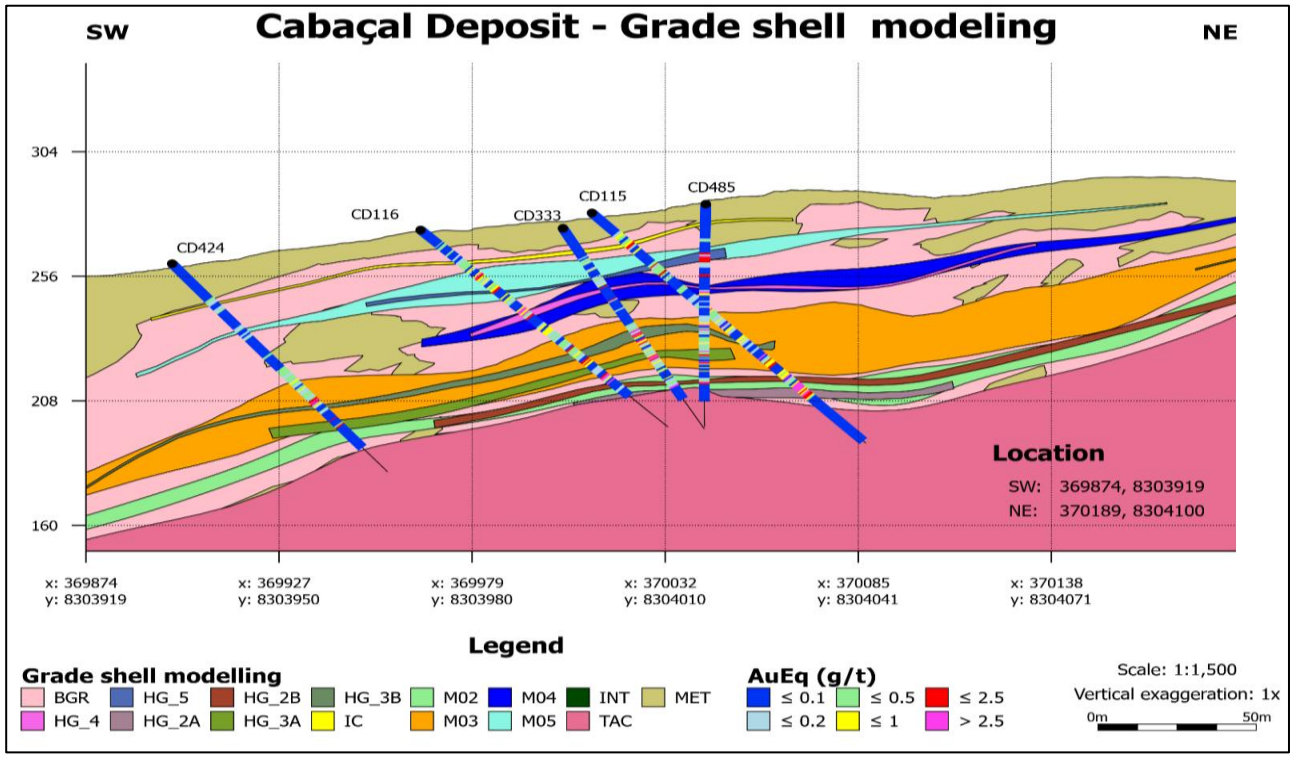
Source: GE21, 2025.

Figure 14-4: Transversal Cross-section of Mineralization Zone Model



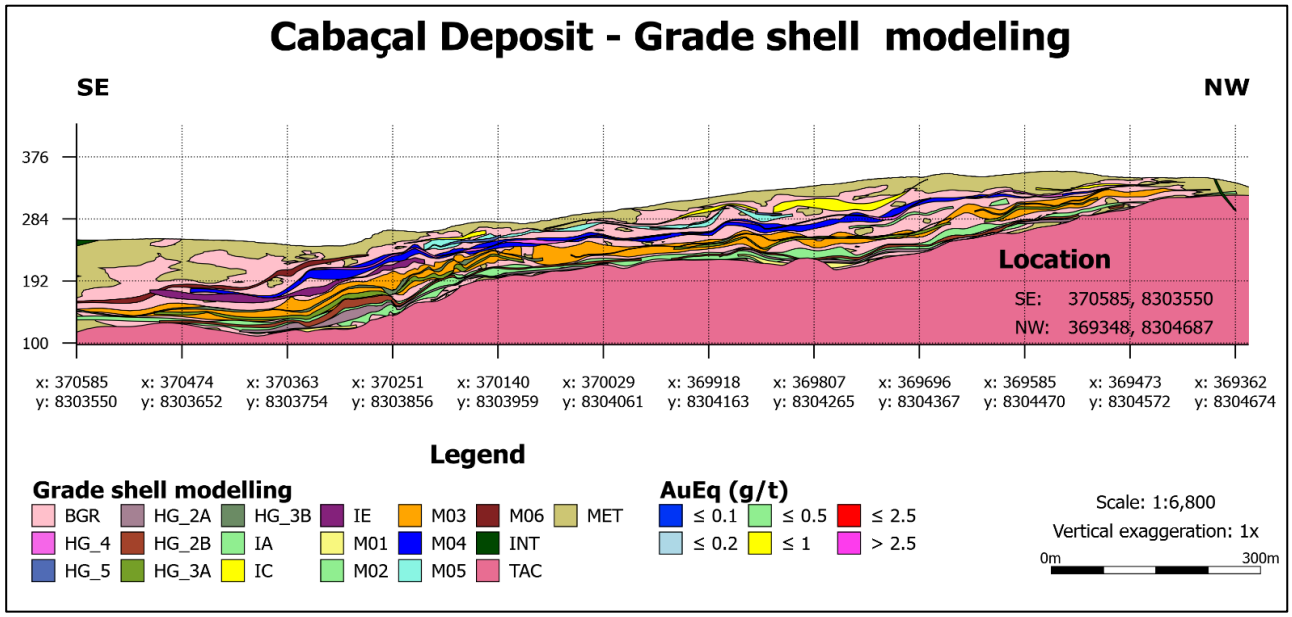
Source: GE21, 2025.

Figure 14-5: Transversal Cross-section of Mineralization Zone Model



Source: GE21, 2025.

Figure 14-6: Longitudinal Section of Mineralization Zone Model



Source: GE21, 2025.

Table 14-2: Modelled Mineralized Domains

Domain	Solid	Description
HG	HG_2A	High-grade domains
	HG_2B	
	HG_2A	
	HG_2B	
	HG_4	
	HG_5	
LG	IA	Low-grade domains
	IB	
	IC	
	ID	
	IE	
	M01	
	M02	
	M03	
	M04	
	M05	
	M06	
	LG	
BRG		Mineralized background
INT		Intrusive rocks
MET		Host Metasedimentary rocks
TAC		VMS footwall unit

Source: GE21, 2025.

14.5 Exploratory Data Analysis

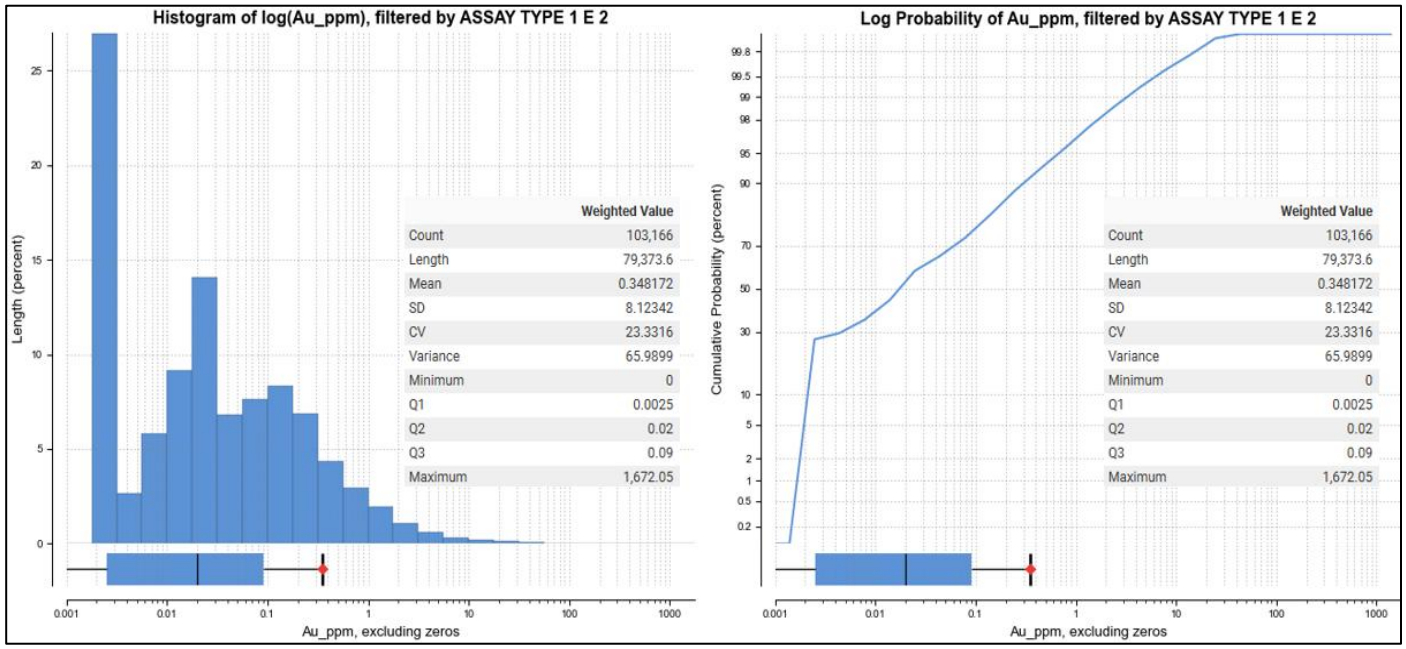
The software Leapfrog and MiniTab were used for exploratory data analysis (EDA), with the aim of checking the modal distributions and anomalous values of the analysed variables, to assist the variographic structural analysis as well as characterizing the data to be used in the grade estimation. Table 14-3 presents the EDA statistical summary considering Cabaçal's database, and Table 14-4 presents the EDA statistical summary for mineralized domains.

Table 14-3: Cabaçal Descriptive Statistics, Considering All Domains

Name	Count	Length	Mean	Standard deviation	CV	Variance	Min.	1st Q	Median	3rd Q	Max
Au (ppm)	103166	79373.61	0.35	8.12	23.33	65.99	0.00	0.00	0.02	0.09	1672.05
Ag (ppm)	103638	79808.58	0.80	3.05	3.82	9.27	0.00	0.07	0.17	0.50	248.00
Cu (%)	103235	79438.72	0.18	0.55	3.01	0.30	0.00	0.00	0.03	0.13	21.80
AuEq (g/t)	103638	79808.58	0.54	7.95	14.65	63.22	0.00	0.01	0.04	0.25	1623.74

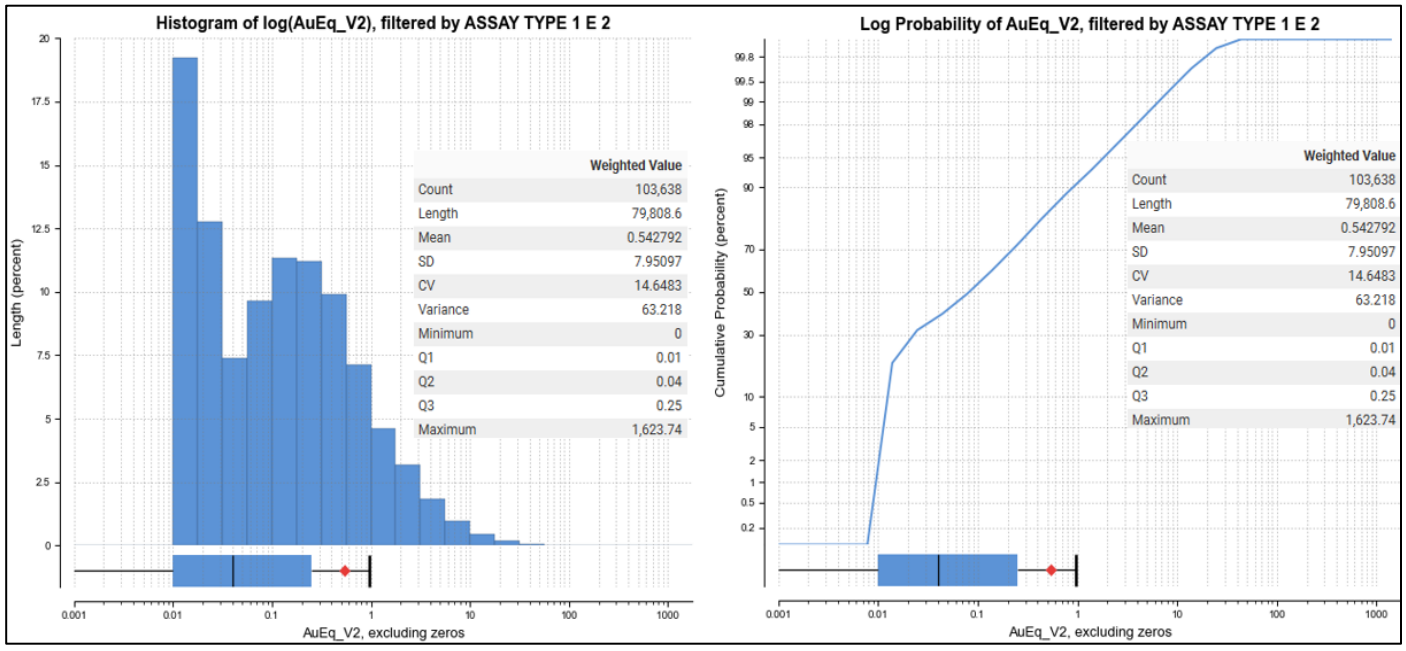
Source: GE21, 2025.

Figure 14-7: Histogram (left) and Log-probability Charts for Au (ppm)



Source: GE21, 2025.

Figure 14-8: Histogram (left) and Log-probability Charts for AuEq (g/t)



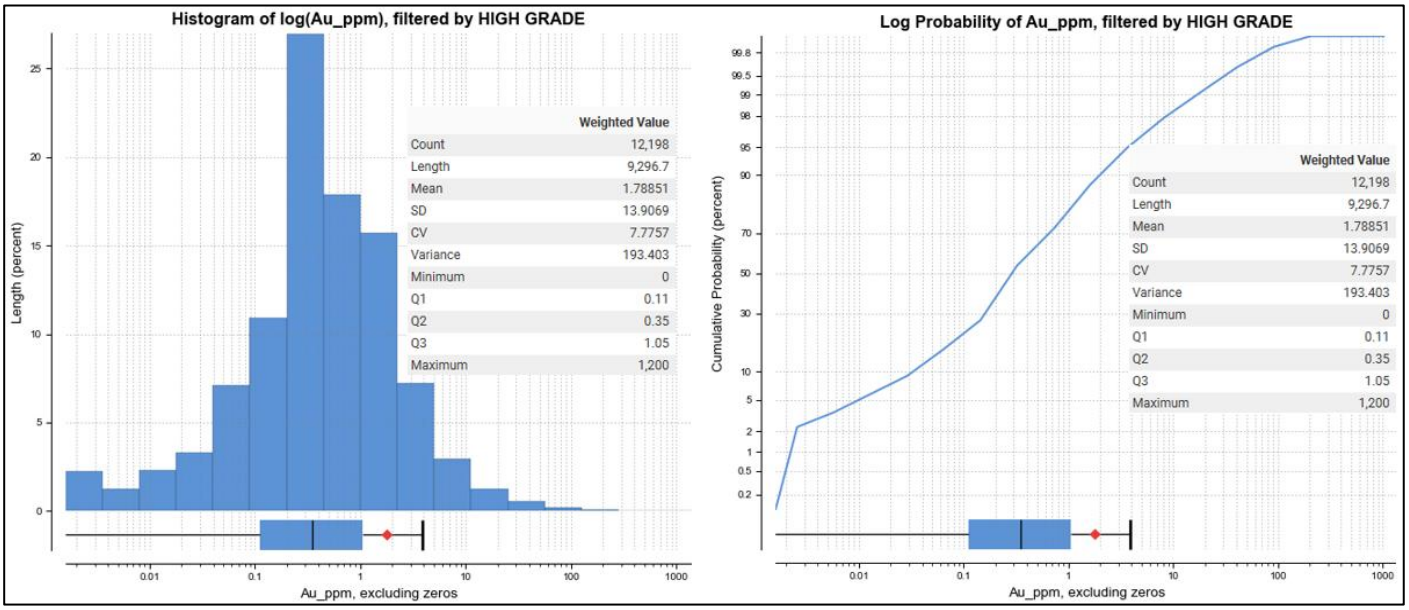
Source: GE21, 2025.

Table 14-4: Cabaçal descriptive statistic for mineralized domains

Name	Variable	Count	Length	Mean	Standard deviation	CV	Variance	Min.	1st Q	Median	3rd Q	Max
HG	Au(ppm)	12198	9296.72	1.79	13.91	7.78	193.40	0.00	0.11	0.35	1.05	1200.00
	Ag(ppm)	12393	9448.94	3.24	6.27	1.93	39.28	0.00	0.25	1.18	3.50	114.00
	Cu (%)	12103	9237.28	0.80	1.23	1.54	1.51	0.00	0.07	0.35	1.00	17.87
	Au_{Eq} (g/t)	12393	9448.94	2.70	13.59	5.03	184.71	0.00	0.29	1.08	2.40	1169.05
LG	Au(ppm)	33214	26148.97	0.54	12.86	23.90	165.28	0.00	0.02	0.08	0.26	1672.05
	Ag(ppm)	33631	26468.65	0.99	2.70	2.73	7.27	0.00	0.10	0.30	1.00	157.30
	Cu (%)	33001	26006.63	0.27	0.56	2.06	0.31	0.00	0.02	0.14	0.30	21.80
	Au_{Eq} (g/t)	33631	26468.65	0.83	12.45	15.05	155.09	0.00	0.09	0.29	0.58	1623.74
BGR	Au(ppm)	29062	23514.08	0.07	1.38	19.52	1.90	0.00	0.00	0.01	0.04	276.70
	Ag(ppm)	29321	23717.74	0.33	1.03	3.13	1.07	0.00	0.01	0.10	0.30	72.00
	Cu (%)	29053	23504.93	0.07	0.21	2.96	0.04	0.00	0.00	0.02	0.07	9.30
	Au_{Eq} (g/t)	29321	23717.74	0.13	1.39	10.32	1.92	0.00	0.01	0.04	0.12	270.33

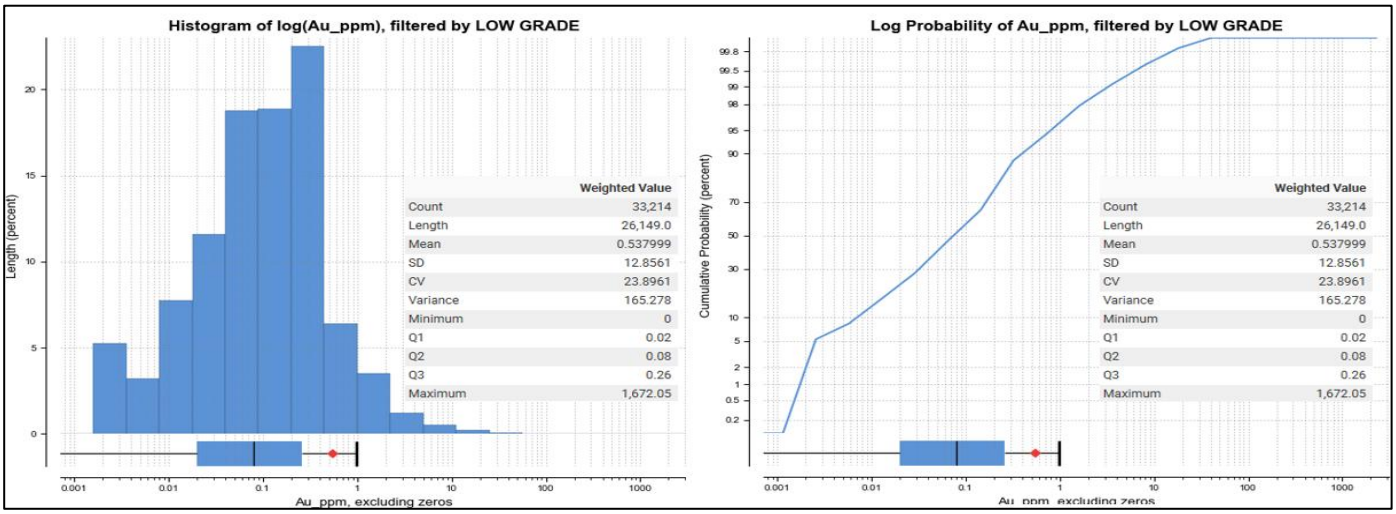
Source: GE21, 2025.

Figure 14-9: Histogram (left) and Log-probability Charts for Au(ppm) for High-grade Domain.



Source: GE21, 2025.

Figure 14-10: Histogram (left) and Log-probability Charts for Au(ppm) for Low-grade Domain.



Source: GE21, 2025.

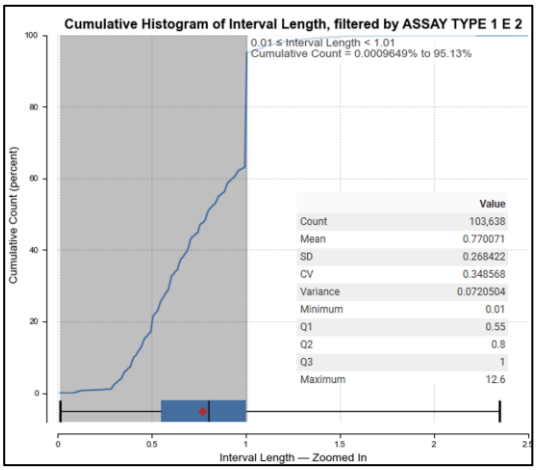
14.6 Composites

Sample compositing is carried out from the raw sample data set, before estimation, in order to:

- Reduce the impact of random variability
- Minimize the effect of different sample sizes on the variance in gold content

The nominal sample length of 1m was selected to be used in sample compositing based on the analysis of composite support for Cabaçal deposit (Figure 14-11). Only assay types 1 and 2 inside mineralization zones were composited. Composites smaller than 0.50 m were distributed equally within the domain.

Figure 14-11: Cumulative Histogram for Interval Length, for Assay Types 1 and 2



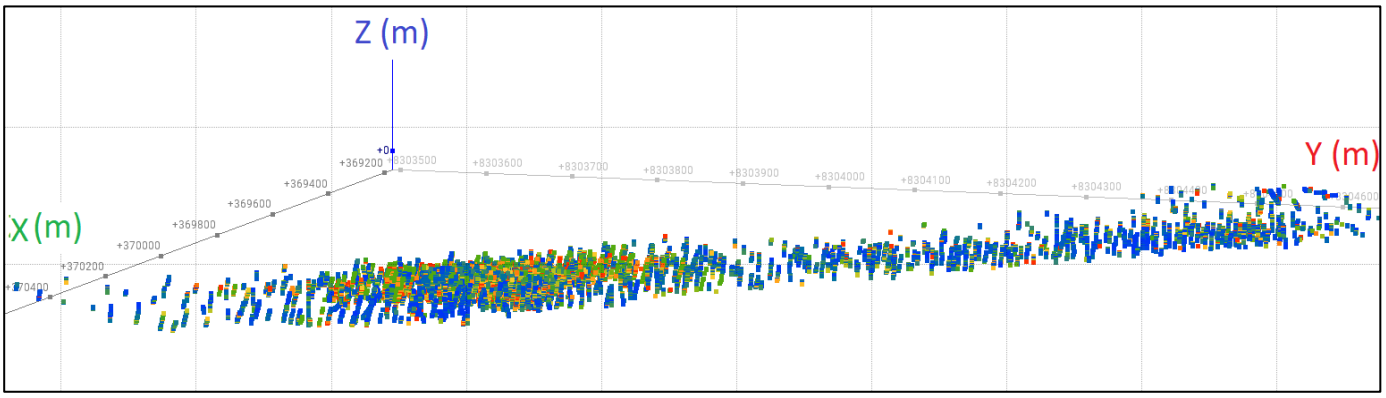
Source: GE21, 2025.

14.7 Variography

Variograms were constructed for the composites inside domains M03 and M02 (that are the most continuous and significant domains), for Au (ppm), Ag (ppm) and Cu (%) variables.

An unfolding methodology was applied to samples of M03 and M02 individually using the Isatis Neo software. Composites were projected onto a flat mathematical surface to produce the variography analysis along folded mineralized domains (Figure 14-12). The geometry of the mineralization zones was applied block by block as structural information to be used as the input of dynamic anisotropy function to return the variogram to geographical space during the grade estimation.

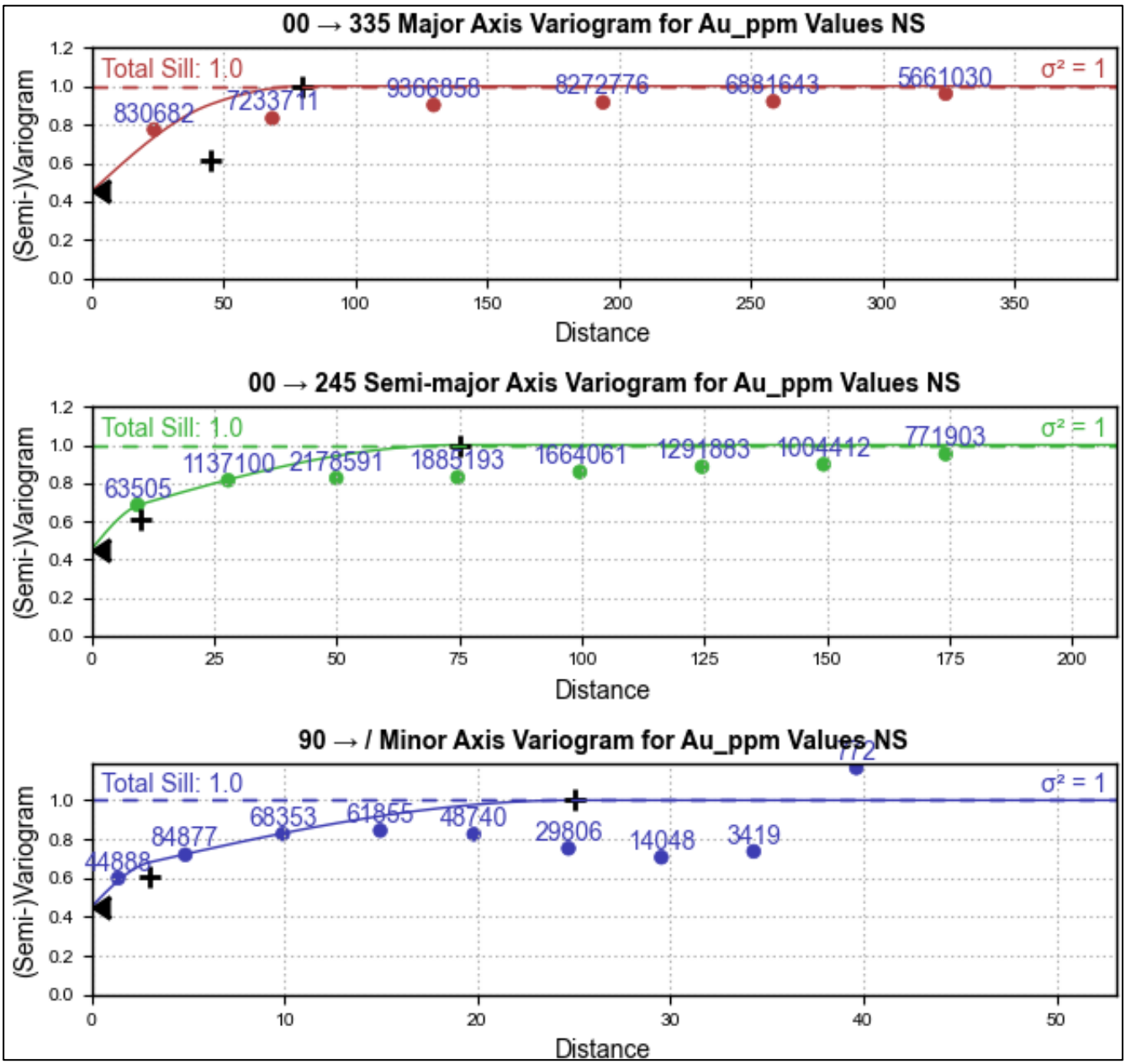
Figure 14-12: Unfolding Methodology, Applied to M03 Body Samples



Source: GE21, 2025.

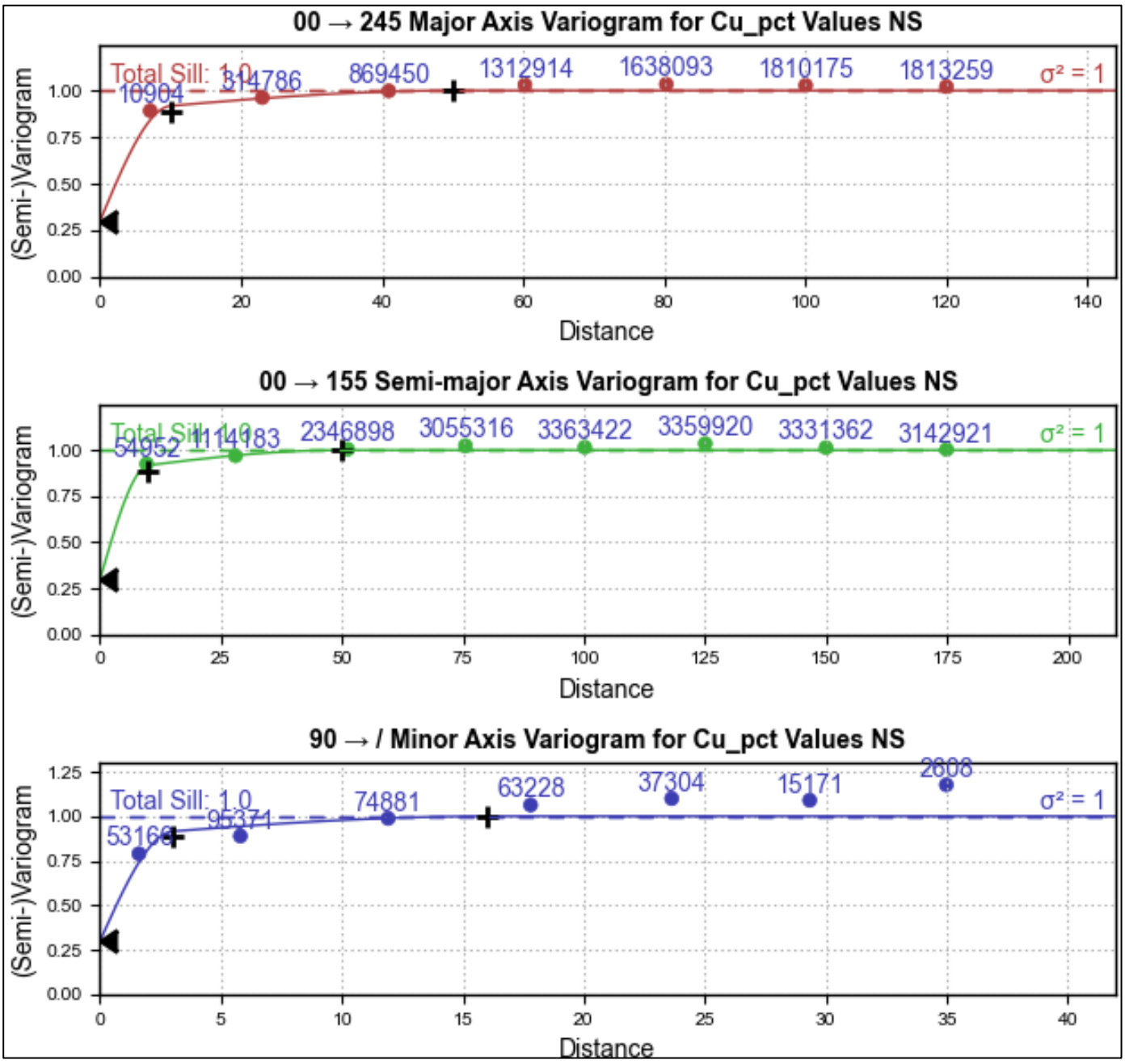
The variograms interpreted for the M03 body were used for the other mineralized domains, as they did not have enough samples to produce an individualized variogram. Figure 14-13 to Figure 14-15 presents the variograms for Au (ppm), Cu (%) and Ag (ppm) for M03 low-grade body. Table 14-5 presents the variographic parameters for each fitted variogram.

Figure 14-13: Variogram Model for M03 (Au ppm)



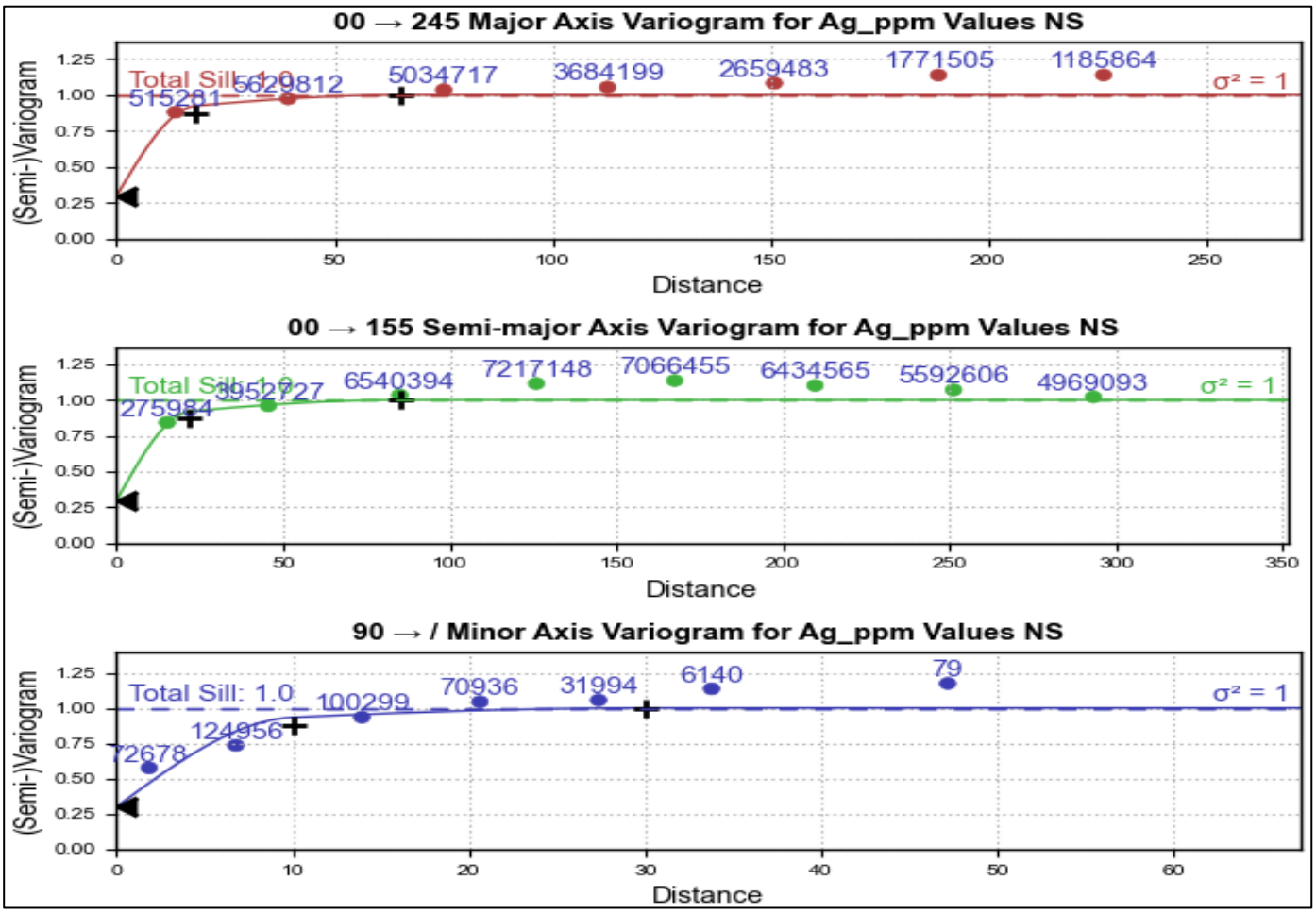
Source: GE21, 2025.

Figure 14-14: Variogram model for M03 (Cu%)



Source: GE21, 2025.

Figure 14-15: Variogram Model for M03 (Ag ppm)



Source: GE21, 2025.

Table 14-5: Variogram Parameters for M02 and M03 Bodies

Domain	Variable			Structure 1					Structure 2				
		Variance	Nugget	Sill	Structure	Y_1	X_1	Z_1	Sill	Structure	Y_2	X_2	Z_2
M03 (Applied to remanescent domains)	Au_ppm	1	0.45	0.16	Spherical	45	10	3	0.39	Spherical	80	75	25
	Cu_pct	1	0.3	0.58	Spherical	10	10	3	0.12	Spherical	50	50	16
	Ag_ppm	1	0.3	0.57	Spherical	18	22	10	0.13	Spherical	65	85	30
M02	Au_ppm	1	0.33	0.23	Spherical	20	20	2	0.43	Spherical	80	80	13
	Cu_pct	1	0.25	0.55	Spherical	15	15	2	0.2	Spherical	90	90	25
	Ag_ppm	1	0.3	0.56	Spherical	15	15	3	0.14	Spherical	80	75	15
General Parameters:													
Variogram Type: Spherical. Normalized variographic parameters: Y_n=major axis. X_n=semi major axis and Z_n=minor axis													

Source: GE21, 2025.

14.8 Block model

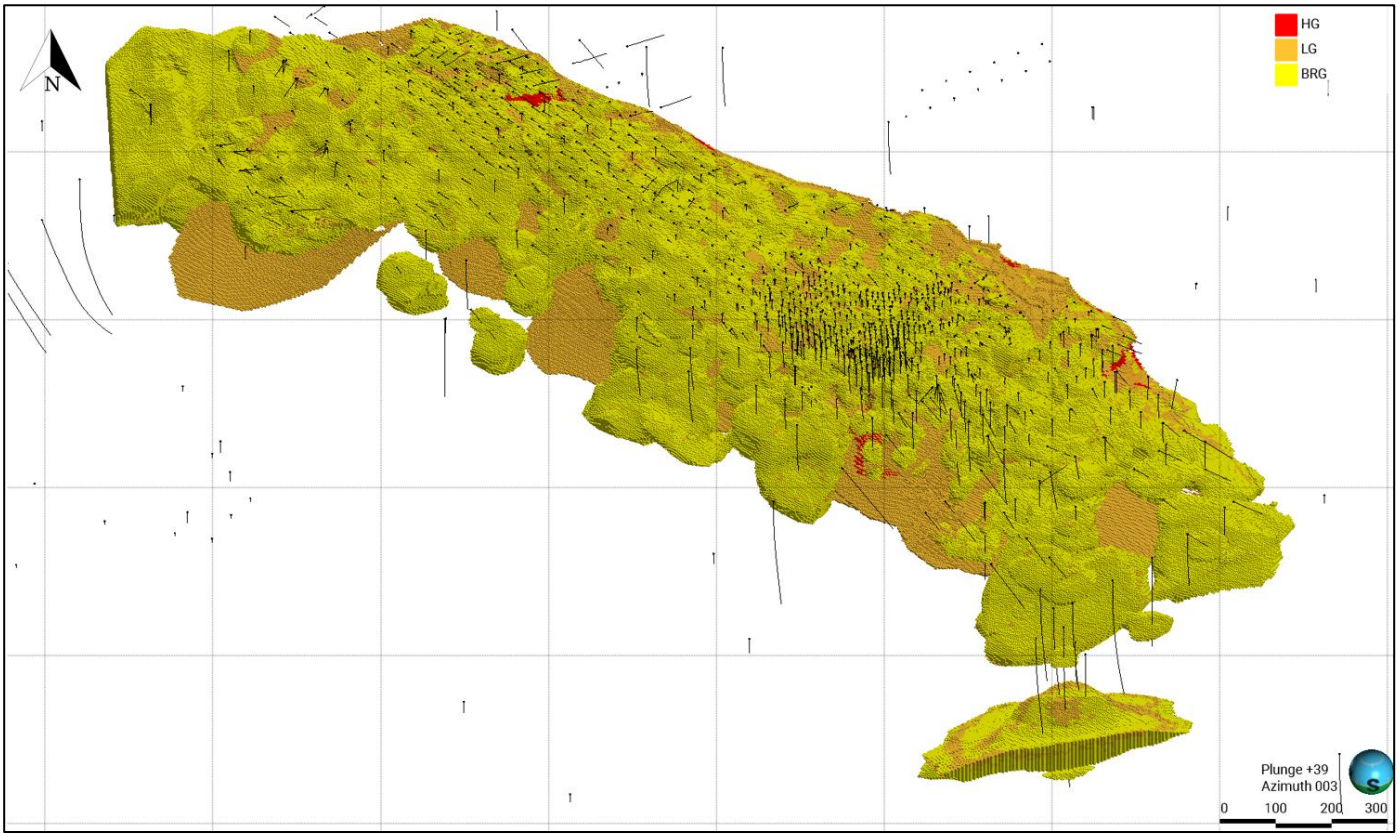
The block model for Cabaçal Project was built using Leapfrog software (Figure 14-16) as summarized in Table 14-6. The dimensions of the blocks were based on the one quarter (of the area) of the average spacing of the drilling grid. Sub-blocks were used to ensure an appropriate adherence between modelled surfaces/solids and the block model.

Table 14-6: Block Model Summary for Cabaçal Project

	X	Y	Z
Minimum	368150.00	8302386.63	-90.00
Maximum	371433.63	8305527.28	380.00
Blocks dimensions	10	10	5
Subblocks dimensions	5	2.5	1.25
Rotation	40	0	0

Source: GE21, 2025.

Figure 14-16: Block Model with the Mineralized Domains Considered in Estimation



Source: GE21, 2025.

Table 14-7: Descriptive of Block Model Attributes for Cabaçal Project

Attribute	Type	Description
Grade Zone	Character	Grade Zones (high-grade, low-grade and host rock)
Resource Classes	Character	Mineral Resources Classes. 1= Measured. 2=Indicated. 3=Inferred.
Ag_Recov	Float	Silver recovery
Au_Equiv_Rec	Float	Recovered equivalent gold
Au_Equiv	Float	Equivalent gold
Au_Pass	Float	Gold estimation passes
Au_Recov	Float	Gold recovery
Cu_Recov	Float	Copper recovery
GM_GE21_PitShell	Character	RPEEE pit
GM_GE21_VoidUG	Character	Underground void from previous underground mine
GM_Mineralization	Character	Grade shell model
Weathering Model	Character	Weathering model
IQD_Density_GE21	Float	Density estimated by IQD
NN_Ag_MinBRG	Float	Silver estimation by Nearest Neighbour
NN_Au_MinBRG	Float	Gold estimation by Nearest Neighbour
NN_Cu_MinBRG	Float	Copper estimation by Nearest Neighbour
NN_S_MinBRG	Float	Sulphur estimation by Nearest Neighbour
OK_Ag_MinBRG	Float	Silver estimation by Ordinary Kriging
OK_Au_MinBRG	Float	Gold estimation by Ordinary Kriging
OK_Cu_MinBRG	Float	Copper estimation by Ordinary Kriging
OK_S	Float	Sulphur estimation by Ordinary Kriging

Source: GE21, 2025.

14.9 Estimation Methods

The Ordinary Kriging (OK) estimation method was applied to estimate the Au (ppm), Cu (%) and Ag (ppm) grade for mineralized domains. OK is one of the most widely used geostatistical methods in the sector. In this interpolation, the blocks are estimated based on regularized intervals (composites). Estimated points are weighted to minimize the variance error in the space, considering the spatial location of the selected composites and the modelled variogram. Variography describes the correlation between regularized samples in relation to the distance and the direction of the search.

The estimates were separated for each domain, respecting the composites of each mineralized horizons. Grades were estimated considering hard boundary domains. The estimation was made using five progressive steps, varying the neighbouring search main radius, named P1, P2, P3, P4 and P5, which were defined based on the range of the variogram model for each domain. The strategy applied in the grade estimate is summarized in Table 14-8.

Table 14-8: Estimation Strategy Parameters for Mineralized Domains

Mineralized Zones	Variable	Pass	Ellipsoid Ranges			No. of Samples		Outlier Restrictions			Max Samples per Hole
			Major	Intermediate	Minor	Min	Max	Method	Percentage of Ellipsoid Range	Threshold	
HG_2A, HG_2B, HG_2A, HG_2B, HG_4, HG_5, IA, IB, IC, ID, IE, M01, M02, M03, M04, M05, M06, LG	Au (ppm)	P1	27	27	4	5	10	Discard	100	40ppm	3
		P2	53	53	9	5	10	Discard	50		3
		P3	80	80	13	5	10	Discard	33.3		3
		P4	120	120	20	5	10	Discard	16.5		3
		P5	<120	<120	<20	2	10	Discard	10		3
	Ag (ppm)	P1	27	27	4	5	10	Discard	100	31ppm	3
		P2	53	53	9	5	10	Discard	50		3
		P3	80	80	13	5	10	Discard	33.3		3
		P4	120	120	20	5	10	Discard	16.5		3
		P5	<120	<120	<20	2	10	Discard	10		3
	Cu (%)	P1	27	27	4	5	10	Discard	100	7%	3
		P2	53	53	9	5	10	Discard	50		3
		P3	80	80	13	5	10	Discard	33.3		3
		P4	120	120	20	5	10	Discard	16.5		3
		P5	<120	<120	<20	2	10	Discard	10		3
BGR	Au (ppm)	P1	27	27	4	5	10	Cap	0	6ppm	3
		P2	53	53	9	5	10	Cap	0		3
		P3	80	80	13	5	10	Cap	0		3
		P4	120	120	20	5	10	Cap	0		3
		P5	<120	<120	<20	2	10	Cap	0		3
	Ag (ppm)	P1	27	27	4	5	10	Cap	0	31ppm	3
		P2	53	53	9	5	10	Cap	0		3
		P3	80	80	13	5	10	Cap	0		3
		P4	120	120	20	5	10	Cap	0		3
		P5	<120	<120	<20	2	10	Cap	0		3
	Cu (%)	P1	27	27	4	5	10	Cap	0	2%	3
		P2	53	53	9	5	10	Cap	0		3
		P3	80	80	13	5	10	Cap	0		3
		P4	120	120	20	5	10	Cap	0		3
		P5	<120	<120	<20	2	10	Cap	0		3
The estimation domains for copper considered each weathering horizon as well, besides the mineralization wireframes.											
Outlier Restriction Methods: Discard = Samples beyond the restriction distance range and grade higher than the grade threshold were discarded on grade estimate process; Cap = Samples with grade higher than the threshold were capped on grade estimate process											

Source: GE21, 2025.

14.10 Density Assignment

Density data was supplied by Meridian inside the drillhole database with selected intervals of 10-15cm in length in drillholes up to CD131, and in full length of samples in subsequent drillholes. The density values were measured using the technique based on Archimedes principle. Outlier values of density for each domain were treated before the estimation in the block model. A total of 54,047 density test results are present in the database. The basic statistics of the density data are shown in Table 14-9, classified by weathering horizons.

Table 14-9: Density Statistic Values in The Database

Name	Weathering	Count	Mean	SD	CV	Variance	Minimum	1Q	Median	3Q	Maximum
Density (t/m³)	Saprolite	3353	2.16	0.29	0.13	0.08	1.23	2.06	2.23	2.37	2.91
	Saprock	4980	2.54	0.19	0.08	0.04	1.24	2.44	2.54	2.68	3.10
	Freshrock	43348	2.79	0.07	0.03	0.01	1.69	2.75	2.78	2.81	4.33
	Total	**54047**	**2.71**	**0.21**	**0.08**	**0.04**	**1.22**	**2.72**	**2.77**	**2.80**	**4.33**

Source: GE21, 2025.

Due the low number of samples inside saprolite and saprock mineralization zones, the QP assumed a fixed value of 2.16 t/m³ by average density on saprolite and 2.54 t/m³ for Saprock horizon.

Sulphide minerals (such as chalcopyrite, pyrite, pyrrhotite, and sphalerite) and oxide minerals (magnetite) contribute to the influence in rock mass density. Due to this feature, the density estimation was carried out for fresh rock horizons using an IDW interpolator. The IDW search parameters for each modelled geological domain in fresh rock are summarized in Table 14-10. The basic statistical analysis of the estimated density considering each domain is presented in Table 14-11. The IDW estimated density values block by block were used in fresh rock as density parameter for mineral resource model.

Table 14-10: Density Estimation Strategy

		Ellipsoid Ranges			Number of Samples		Drillhole Limit
Domain	Numeric Values	Maximum	Intermediate	Minimum	Minimum	Maximum	Max Samples per Hole
LG	DENSITY	5000	5000	1500	5	15	5
HG		5000	5000	1500	5	15	5
BRG		5000	5000	1500	5	15	5
INT		5000	5000	1500	5	15	5
MET		5000	5000	1500	5	15	5
TAC		5000	5000	1500	5	15	5

Source: GE21, 2025.

Table 14-11: Block Model's Density Statistics Values by Domain

Density domain		Mean	SD	CV	Variance	Min	Lower quartile	Median	Upper quartile	Max
Saprock		2.54	0.00	0.00	0.00	2.54	2.54	2.54	2.54	2.54
Saprolite		2.16	0.00	0.00	0.00	2.16	2.16	2.16	2.16	2.16
Freshrock	HG	2.85	0.05	0.02	0.00	2.31	2.82	2.85	2.88	3.59
	LG	2.80	0.04	0.02	0.00	2.32	2.78	2.80	2.82	3.18
	BRG	2.78	0.05	0.02	0.00	2.22	2.76	2.78	2.80	3.05
	MET	2.43	0.42	0.17	0.17	1.49	2.04	2.72	2.77	3.11
	TAC	2.71	0.04	0.01	0.00	1.95	2.70	2.72	2.74	3.00
	INT	2.85	0.17	0.06	0.03	1.59	2.83	2.90	2.92	3.03

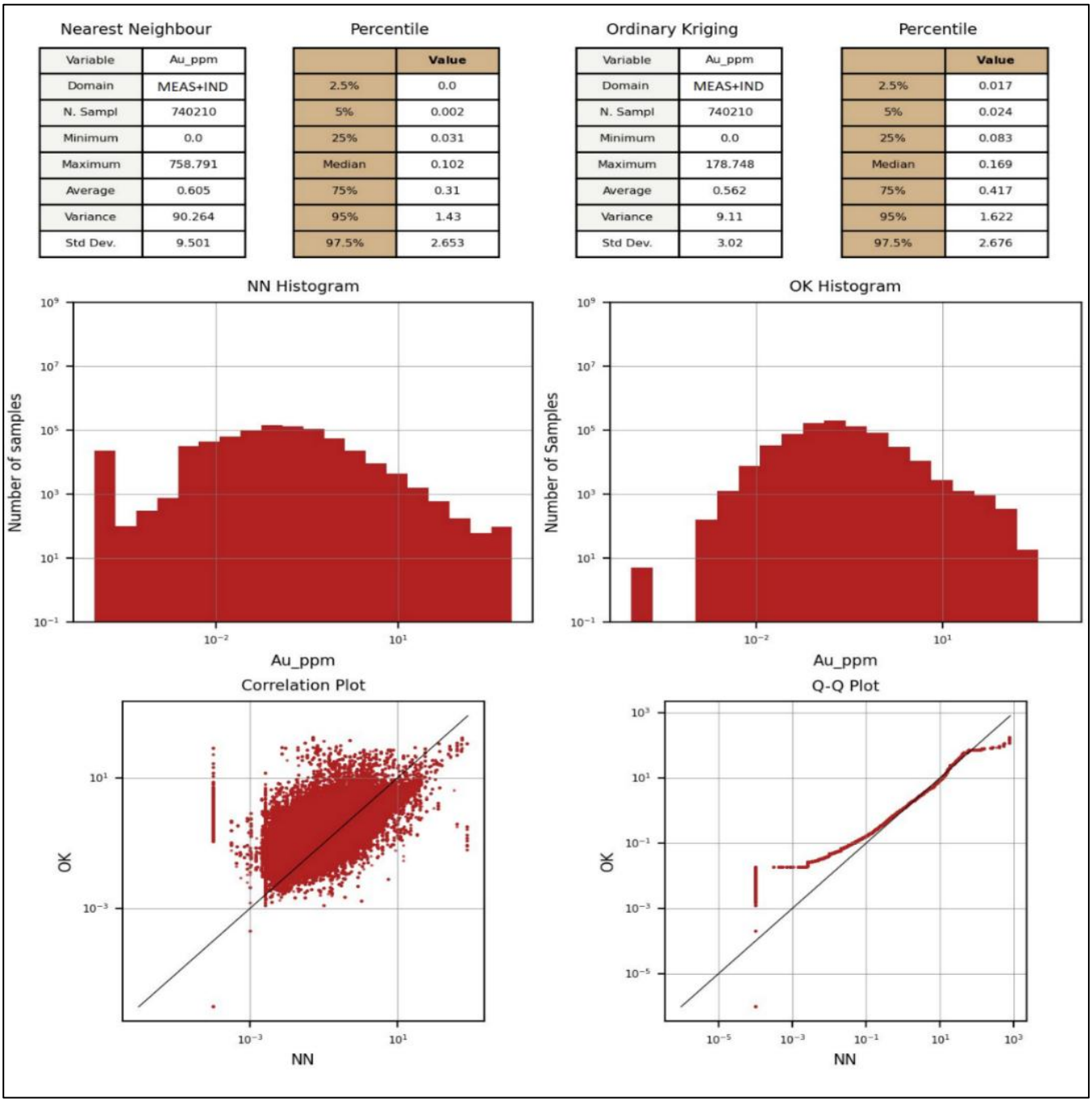
Source: GE21, 2025.

14.11 Block Model Validation

The analysis of the global bias was conducted on Au (ppm), Cu (%) and Ag (ppm) by comparing the estimated grade, block by block, with the grade estimated by the Nearest Neighbour method, which aims to represent the original sample population in the deposit.

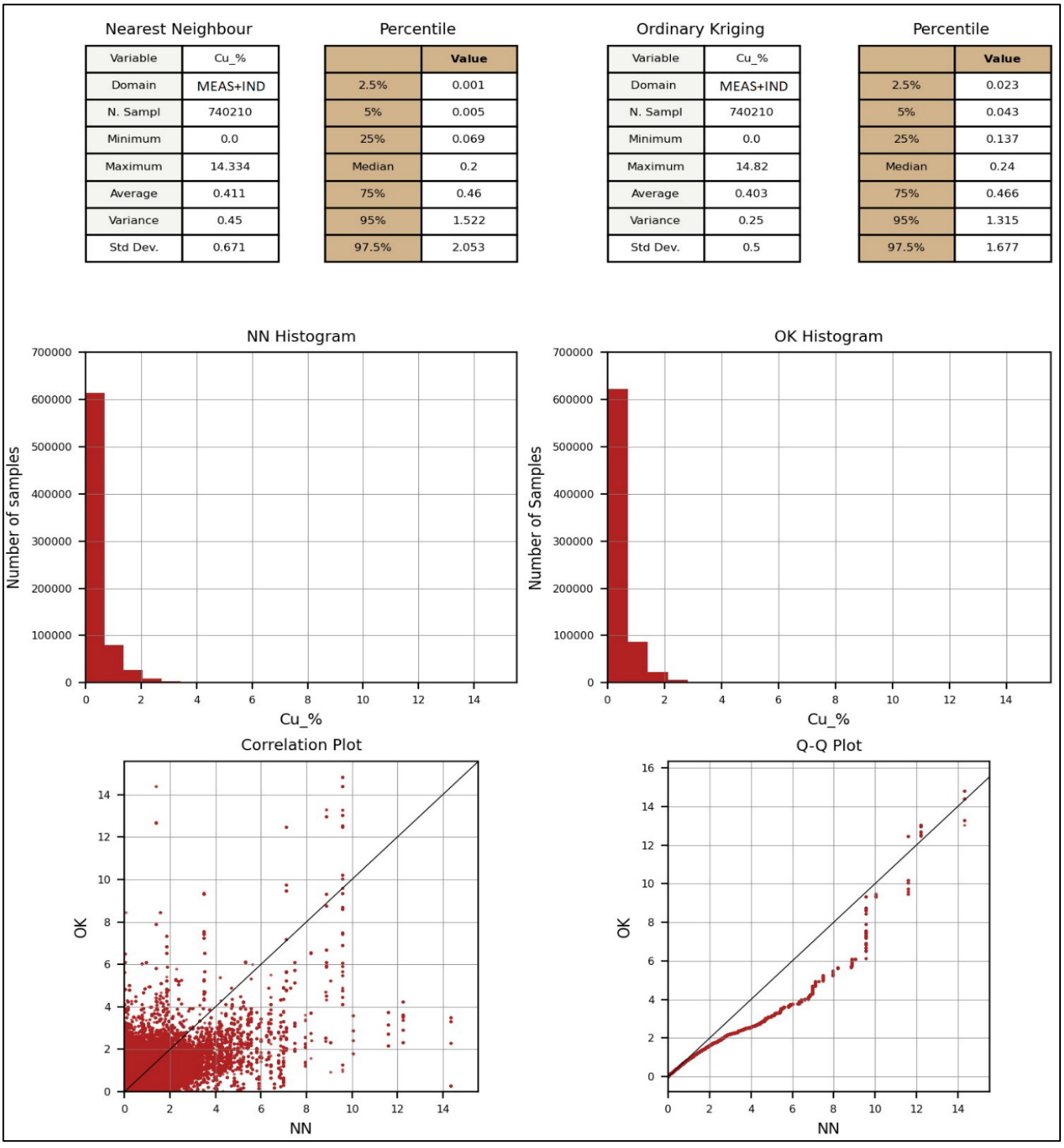
It is expected that the mean and/or median of the two populations will remain close, honoring the hypothesis of the law of permanence and evaluating the decrease in variance as a function of increased support. The results are shown in Figure 14-17 to Figure 14-19.

Figure 14-17: NN Check for Au (ppm), Considering Measured and Indicated Resource



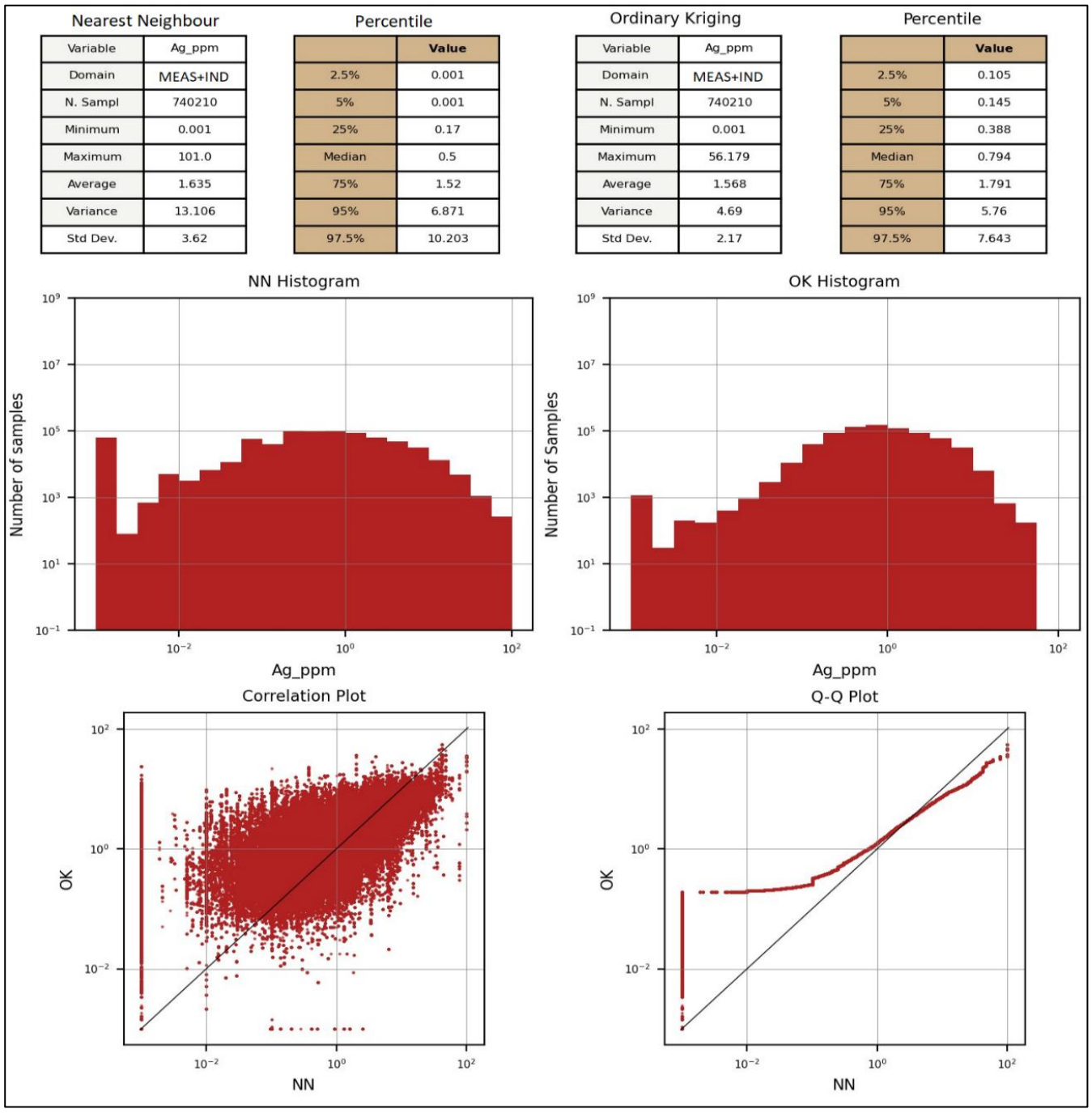
Source: GE21, 2025.

Figure 14-18: NN Check for Cu (%), Considering Measured and Indicated Resource



Source: GE21, 2025.

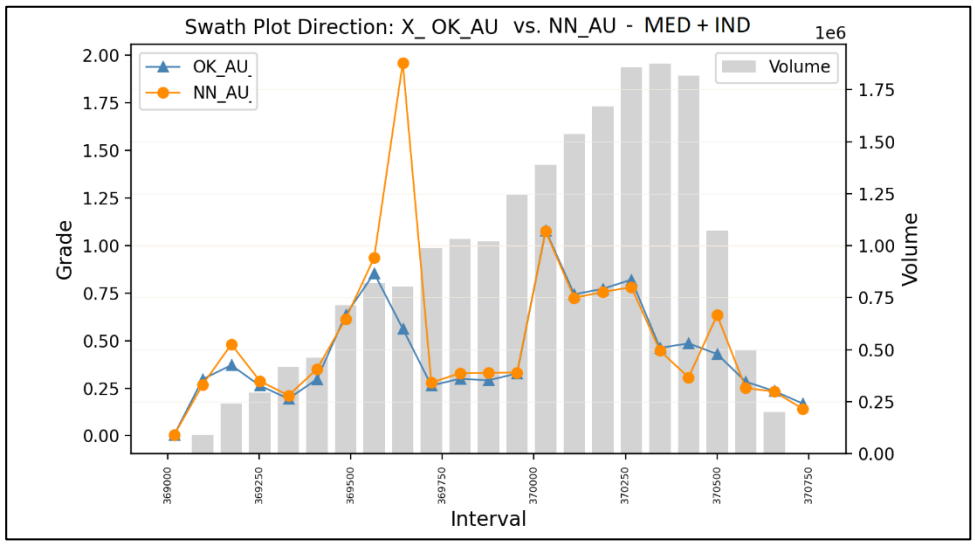
Figure 14-19: NN Check for Ag (ppm), Considering Measured and Indicated Resource



Source: GE21, 2025.

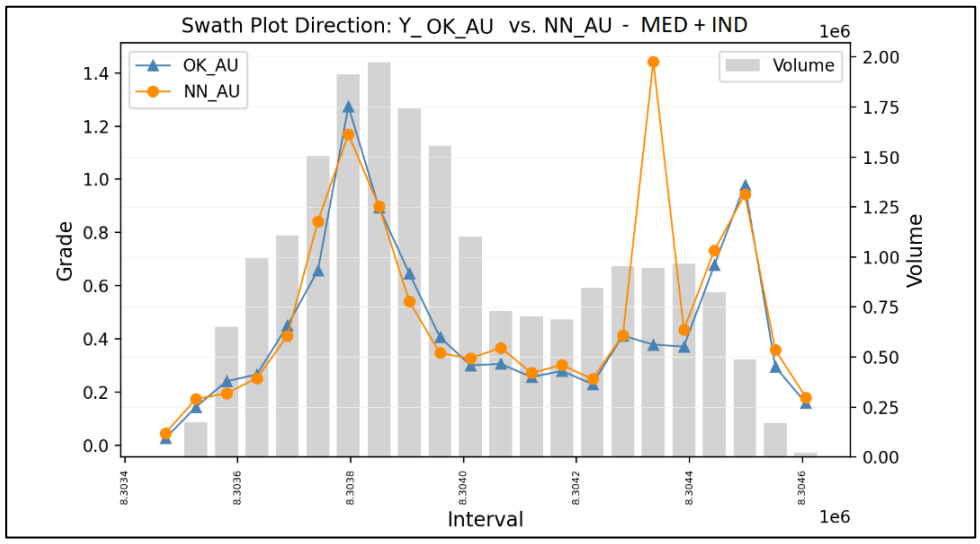
Swath plot graphs were carried out in order to analyse the occurrence of local biases. The method compares the average grades estimated in the block model by ordinary kriging and nearest neighbour methods along the x, y or z coordinates (Figure 14-20 to Figure 14-28). The QP considers that the validation did not demonstrate an excessive smoothing effect by the ordinary kriging. The local bias was considered by the QP inside acceptance limits for the estimation of mineral resources.

Figure 14-20: Swath Plot Graph for Au(ppm), Measured and Indicated Categories, X Direction



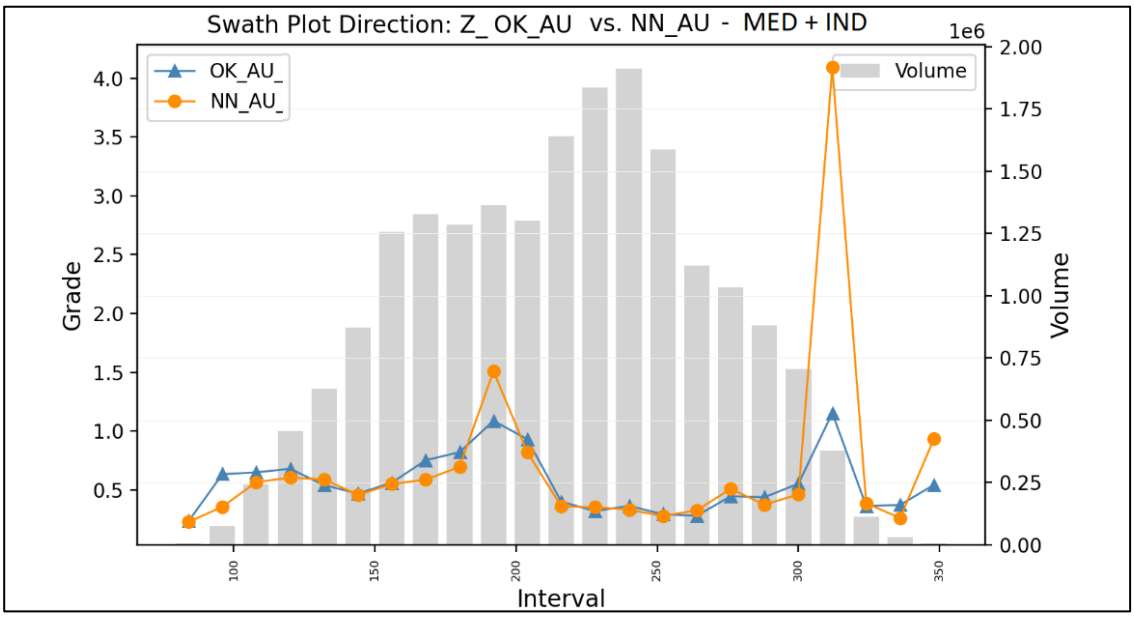
Source: GE21, 2025.

Figure 14-21: Swath Plot Graph for Au(ppm), Measured and Indicated Categories, Y Direction



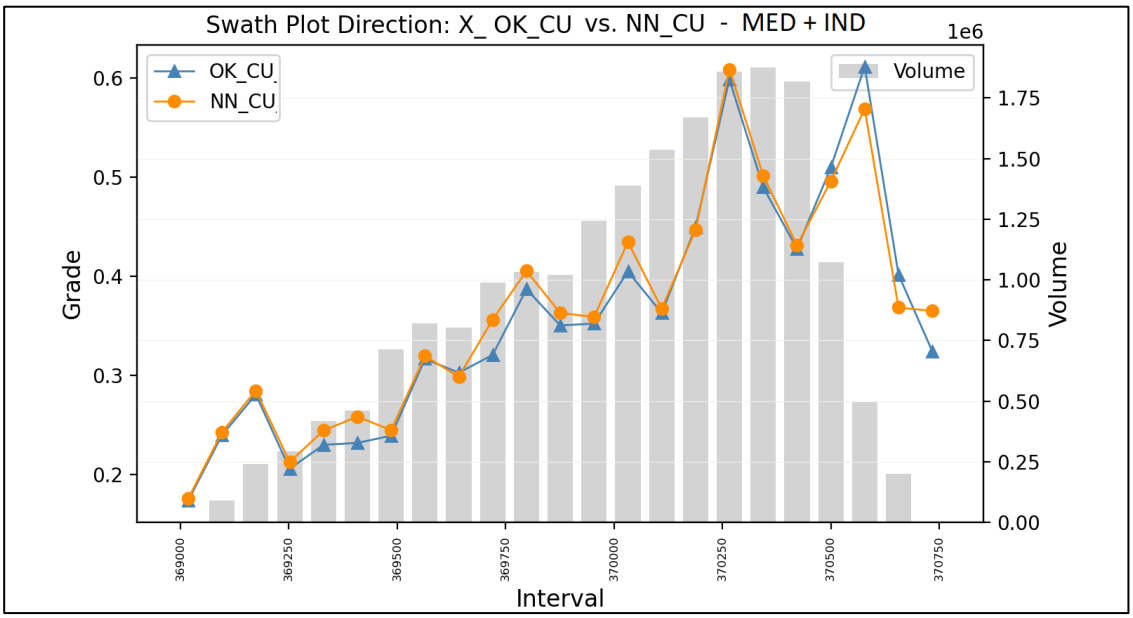
Source: GE21, 2025.

Figure 14-22: Swath Plot Graph for Au(ppm), Measured and Indicated Categories, Z Direction



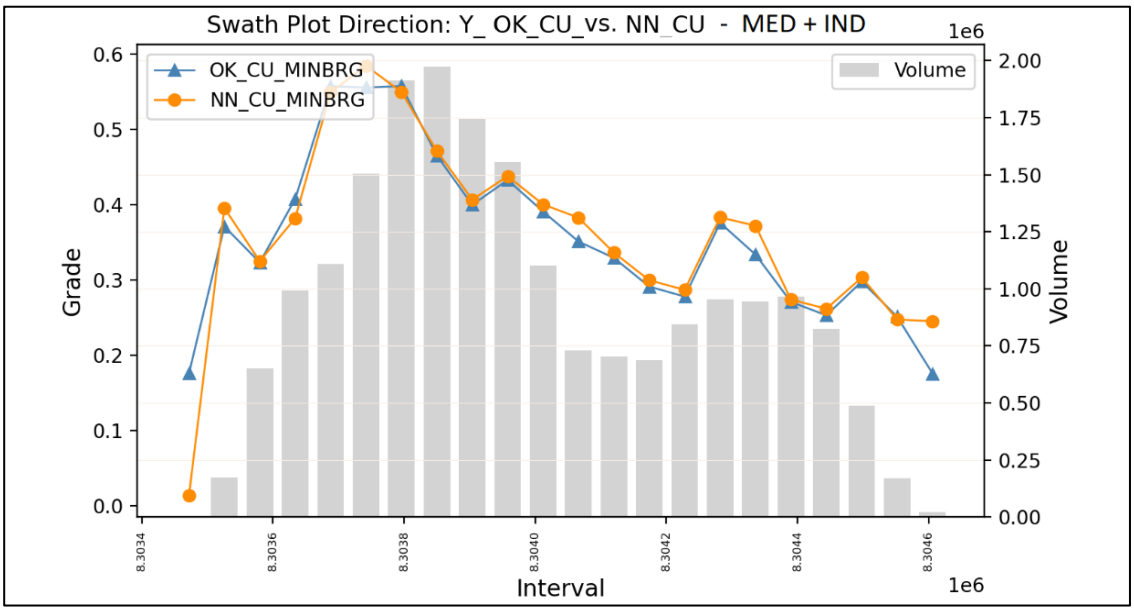
Source: GE21, 2025.

Figure 14-23: Swath Plot Graph for Cu (%), Measured and Indicated Categories, X Direction



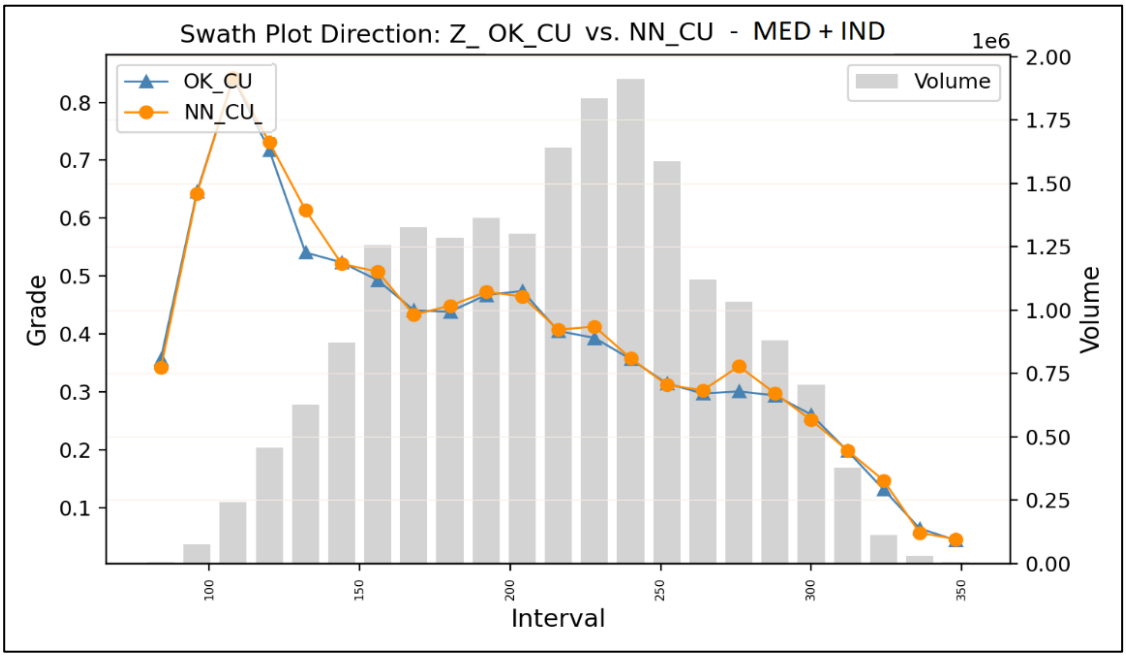
Source: GE21, 2025.

Figure 14-24: Swath Plot Graph for Cu (%), Measured and Indicated Categories, Y Direction



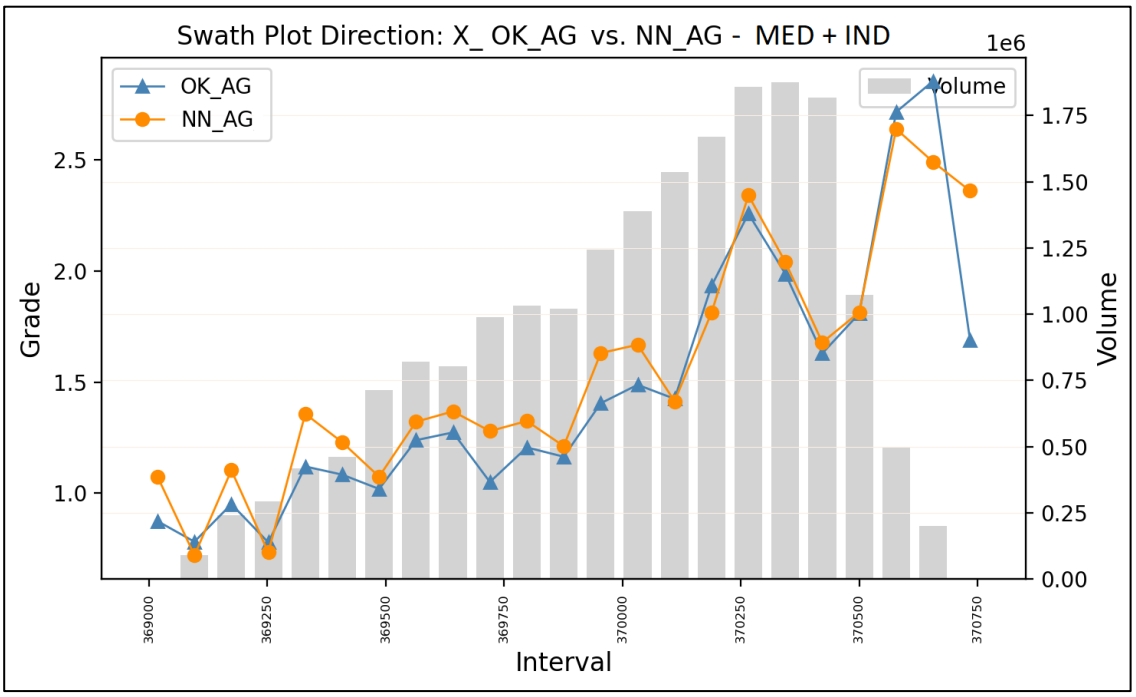
Source: GE21, 2025.

Figure 14-25: Swath Plot Graph for Cu (%), Measured and Indicated Categories, Z Direction



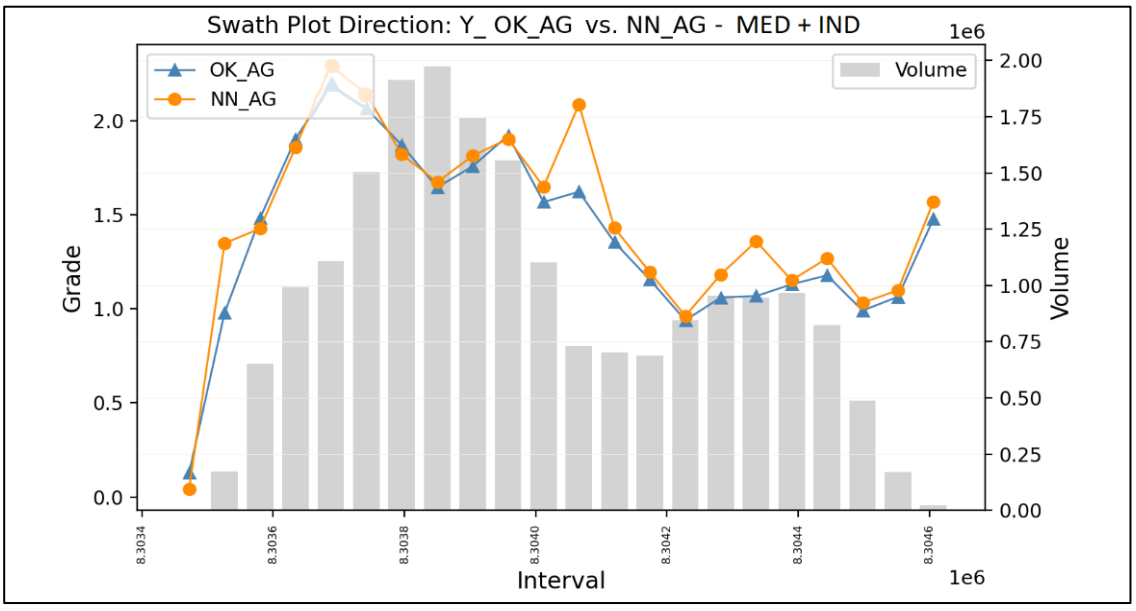
Source: GE21, 2025.

Figure 14-26: Swath Plot Graph for Ag (ppm), Measured and Indicated Categories, X Direction



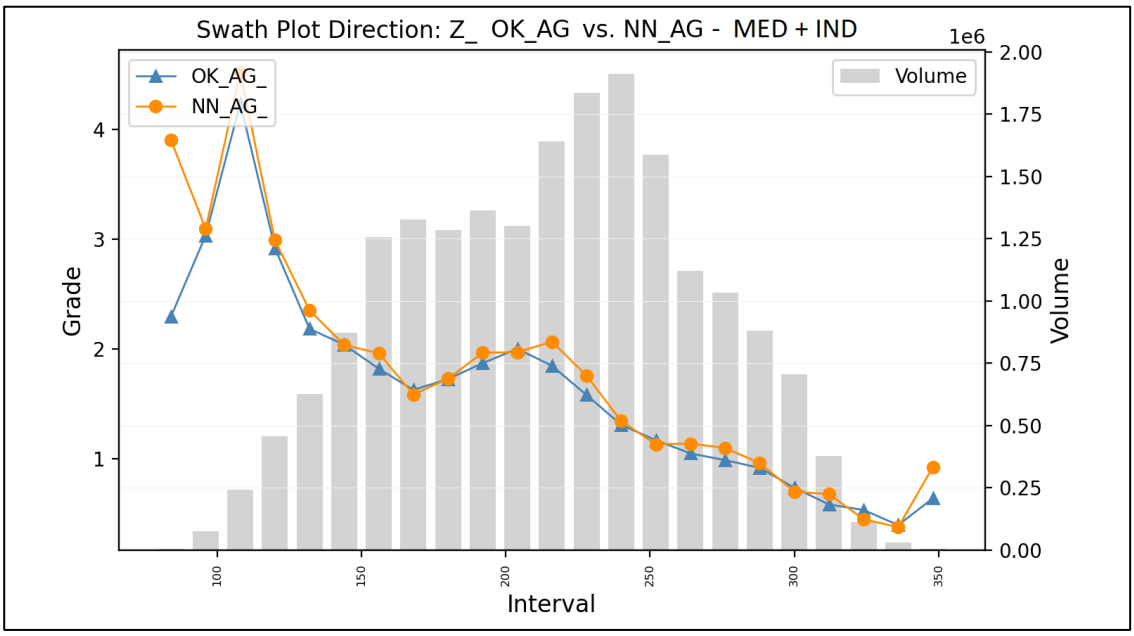
Source: GE21, 2025.

Figure 14-27: Swath Plot Graph for Ag (ppm), Measured and Indicated Categories, Y Direction



Source: GE21, 2025.

Figure 14-28: Swath Plot Graph for Ag(ppm), Measured And Indicated Categories, Z Direction



Source: GE21, 2025.

14.12 Classification of Mineral Resources

The classification of mineral resources for the Cabaçal deposit was determined by the QP's using the definitions of the Resources established by the CIM. This process involved assessing data quality and quantity, and resource classification was also based on search pass numbers used in grade interpolation. The approach considers drillhole sample distribution, confidence in input data, and proximity to the block centroid. Additional factors influencing classification include geological modelling, variography, sampling techniques, QA/QC procedures, density measurements, core recovery, interpolation methodology, and reconciliation with past production records. The definitions of the Resources established by the CIM are as follows:

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 Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated based on 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 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.

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

The following are the principal assumptions which were used in the generation of the Mineral Resource classification:

- Measured: GE21 considered for classify a measured mineral resource blocks estimated by pass 1 and 2 of gold estimative for mineralized domains (low and high-grade).
- Indicated: GE21 considered as indicated resource blocks estimated for gold estimation by passes 3, 4 and 5 for mineralized domains (low and high-grade) and also for the mineralized background, with blocks estimated by passes 1 to 3 with grades above 0.25 g/t of equivalent gold.
- Inferred: There were no blocks classified as inferred within the open-pit shell. Inferred resource class was classified by underground mining stope optimization process.

14.13 Reasonable Prospects for Eventual Economic Extraction

The Mineral Resource was limited by an optimized resource open-pit and mining stope optimization based on the current cost and assumed a forecasted commodity price. This was considered to define the Reasonable Prospect for Eventual Economic Extraction (RPEEE).

The CIM - NI 43-101 guidelines stipulate that the economic factors of the project should be up-to-date, well-founded and based on best industry practices, considering elements such as location, scale and continuity of the deposit, mining method, metallurgical processes, costs, long-term metal prices.

For deposits that are suitable for open-pit mining, it was adopted by the author the use of a geometric boundary defined by a pit based on Lerchs-Grossman as an effective practice to ensure that all necessary factors are considered in accordance with the CIM guidelines. This method is seen as a tool for efficiently assessing whether mined material presents Reasonable Prospects for Possible Economic Extraction. Therefore, only the mineralized blocks within the conceptual pit model were considered as Mineral Resources.

The parameters used for optimization were based on:

- Prices for metals are based on current prices at the time of writing this report and conducting technical studies.
- Mining and processing costs are based on other mining companies operating nearby with operations of a similar potential size and style of mineralization and mining methodologies.
- General slope angle is based on similar nearby projects with similar geotechnical conditions of the host rock.
- Mass Recovery is based on the metallurgical tests provided by Meridian.
- The optimization cut-off grade was stipulated based on metallurgical recovery.
- Maximum mining recovery and no dilution were assumed.

Table 14-12 summarizes the parameters used if the pit optimization study to assess the Reasonable Prospect of Economic Extraction (RPEEE) of the Cabaçal Project.

Table 14-12: Parameters Used for Open Pit RPEEE

	Item		Unit	Value (RPEEE)
Revenue	Economic	Selling Prices	USD/oz Au	2 119.00
			USD/oz Ag	26.89
			USD/lb Cu	4.16
	RoM	Density	t/m^3	Block Model
		Grades	g/t	Block Model
		Resource Classification	-	Measured + Indicated + Inferred
	Mining	Mining Recovery	%	100
		Mining Dilution		0
	Block Model	X (sub-blocked)	m	10
		Y (sub-blocked)		10
		Z (sub-blocked)		5
	Global Pit Slope		°	54/35
	Cut-off	AuEq	g/t	0.188
	Process	Metallurgical Recovery	Au%	Applied block by block with equation based on metallurgical test results
			Ag%	
			Cu%	
Costs	Mining	RoM	USD/t Moved	2.11
		Waste		
	Processing		USD/t RoM	8.20
	Logistics			1.64
	G&A			1.66
	Royalties		%	1.50

Source: GE21, 2025.

There was no inferred resource classified inside the open-pit constrain. All open-pit mineral resource was classified as measured or indicated resource.

A Stope optimization process using Datamine software was applied to mineralization zone below the optimized open pit. Table 14-13 summarizes the parameters used if the stope optimization study to assess the Reasonable Prospect of Economic Extraction (RPEEE) of the Cabaçal Project.

Table 14-13: Parameters Used for Underground RPEEE

Item				Unit	Value (RPEEE)
Revenue	Economic	Selling Prices		USF/oz Au	2 119.00
				USD/oz Ag	26.89
				USD/lb Cu	4.16
	RoM	Density		t/m^3	Block Model
		Grades		g/t	Block Model
		Resource Classification		-	Inferred
	Block Model	X (sub-blocked)		m	10
		Y (sub-blocked)			10
		Z (sub-blocked)			5
	Stopes	Rooms	Height	m	4-8
			Width	m	5
		Pillars	Height	m	4-8
			Width	m	2.5
		Dip		°	25
	Cut-off	AuEq		g/t	0.948
	Process	Metallurgical Recovery		Au%	68.4
				Ag%	36.7
				Cu%	93.1
	Mining	RoM		USD/t Moved	32
Costs	Processing			USD/t RoM	8.20
	Logistics				1.64
	G&A				1.66
	Royalties			%	1.50

Source: GE21, 2025.

14.14 Mineral Resource Statement

The Cabaçal open-pit Mineral Resources are presented in Table 14-14, Figure 14-29, and Figure 14-30 present the Cabaçal Mineral Resource block model classified by resource category.

Cabaçal underground Mineral Resources are presented in Table 14-15 and stopes applied for Inferred category classification is presented in Figure 14-31.

Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources will be converted into Mineral Reserves in the future. The responsible

Qualified Person (QP) is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant issues that would materially affect the Mineral Resource estimate.

Table 14-14: Cabaçal Gold-Copper Project Open-Pit Mineral Resource

Resource Classification	Mass Mt	Average Value			Material Content		
		Au (g/t)	Cu (%)	Ag (g/t)	Au (koz)	Cu (kt)	Ag (koz)
Measured	43.68	0.59	0.41	1.53	834.16	178.80	2,152.32
Indicated	7.75	0.28	0.33	1.32	70.15	25.68	328.40
Measured+Indicated	**51.43**	**0.55**	**0.40**	**1.50**	**904.31**	**204.47**	**2,480.72**

Notes:

1. Measured and Indicated Resource estimate reported inside open pit constrains. Inferred category was not classified inside open pit constrains.
2. The Mineral Resource Estimates were prepared in accordance with the CIM Standards, and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit
3. Mineral Resources are not Mineral Reserves and are not demonstrably economically recoverable.
4. Grades reported using dry density.
5. The effective date of the MRE was November 15, 2024.
6. The QP responsible for the Mineral Resources is geologist Leonardo Soares (MAIG #5180).
7. The MRE numbers provided have been rounded to the estimate relative precision. Values cannot be added due to rounding.
8. The MRE is delimited by Mining tenement areas.
9. The MRE was estimated using ordinary kriging in 10m x 10m x 5m blocks with sub-blocks of 5.0m x 2.5m x 1.25m.
10. The MRE report table was produced in Leapfrog Geo software.
11. The MRE was restricted by a pit shell defined using metal prices of USD2 119/oz Au, Mining cost of USD2.11/t mined, processing cost ofUSD8.20/t processed, metallurgical recovery calculated block by block based on metallurgical tests, G&A costs of USD1.66/t processed, and USD1.64/t processed logistics.
12. Equivalent Gold grade was calculated with the following formula: AuEq = (Au_grade * %Au_Recovery) + (1.346*(Cu_grade * %Cu_Recovery)) + (0.013*(Ag _grade * %Ag_Recovery)).
13. The resource cut off grade applied for low and high grade domains in Measured and Indicated resources was 0.188 g/t AuEq, and for the mineralized background was 0.25g/t AuEq.

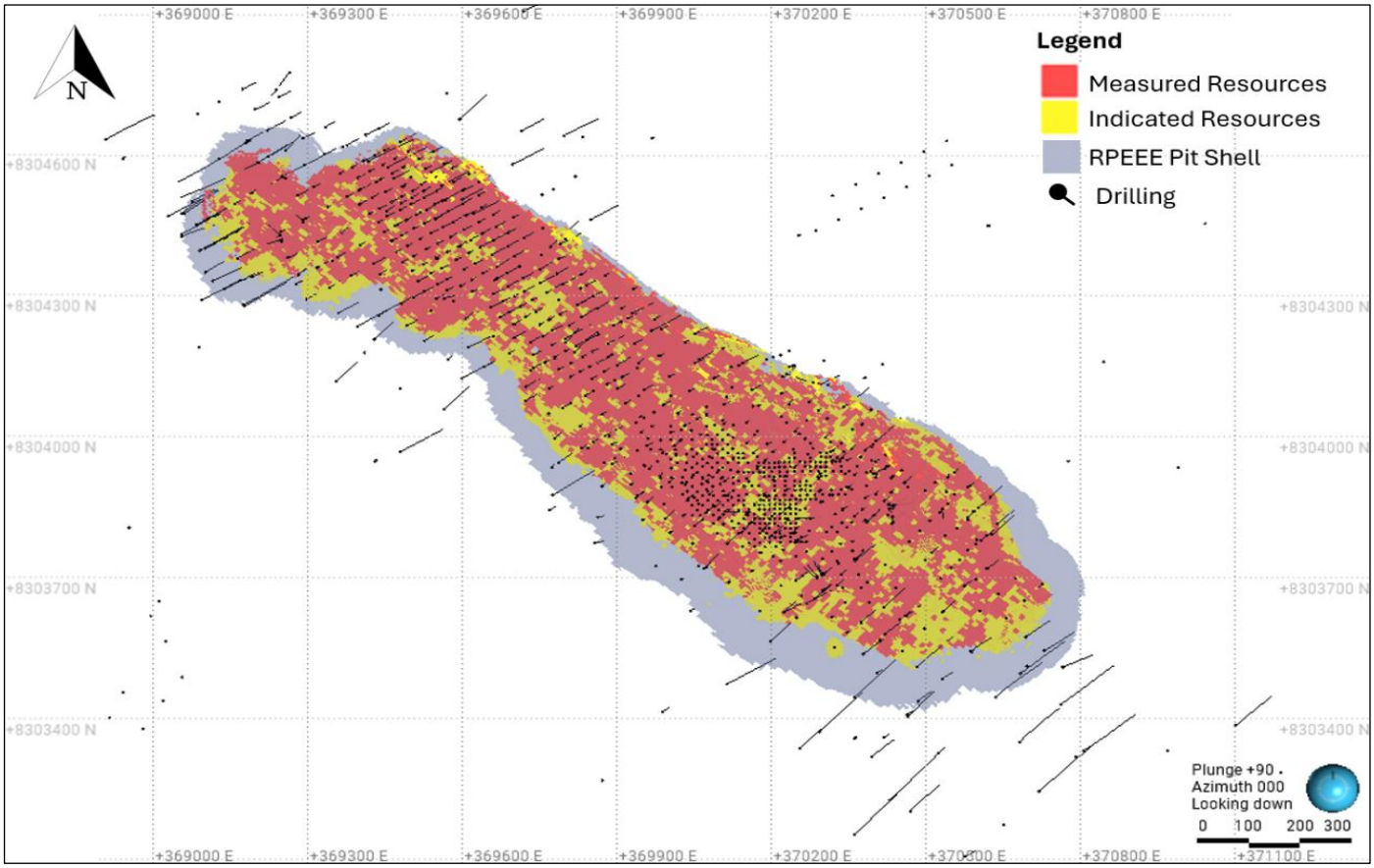
Table 14-15: Cabaçal Gold-Copper Project Underground Mineral Resource

Resource Classification	Mass Mt	Average Value			Metal Content		
		Au (g/t)	Cu (%)	Ag (g/t)	Au (koz)	Cu (kt)	Ag (koz)
Inferred	0.26	0.96	0.49	1.36	8.15	1.29	11.54

Notes:

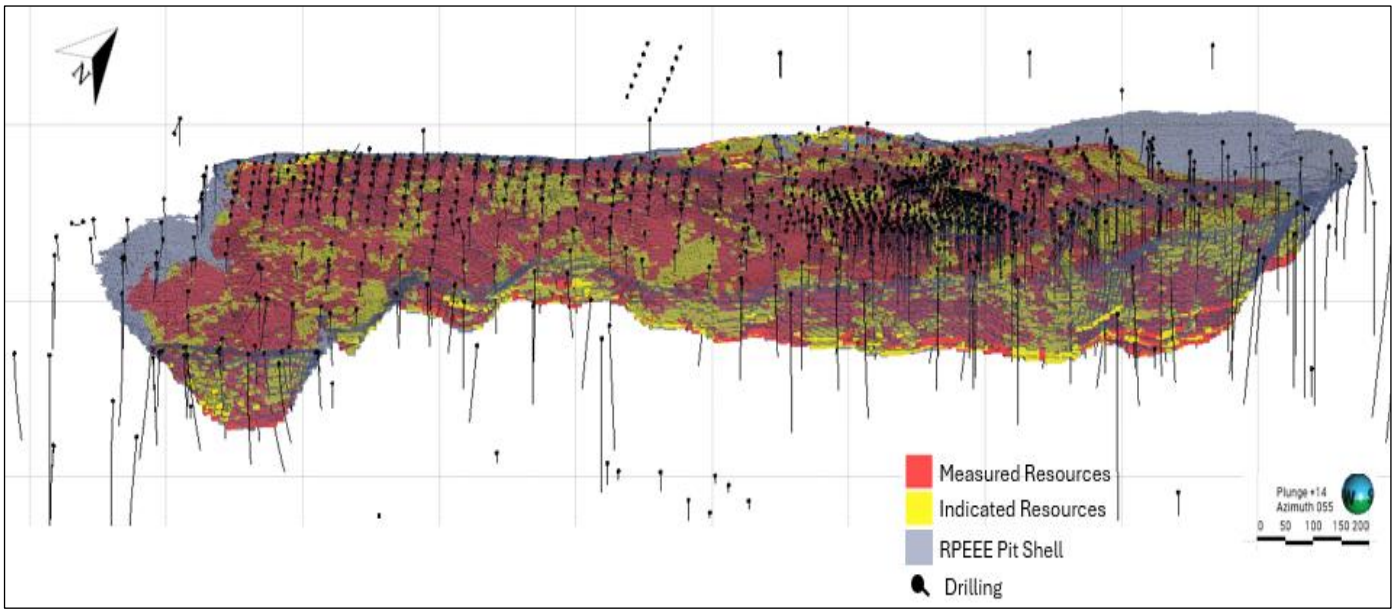
1. Inferred Resource category is reported inside underground grade shell.
2. The mineral resource estimates were prepared in accordance with the CIM Standards, and the CIM Guidelines, using geostatistical and/or classical methods, plus economic and mining parameters appropriate to the deposit.
3. Mineral Resources are not Mineral Reserves and are not demonstrably economically recoverable.
4. Grades reported using dry density.
5. The effective date of the MRE was November 15, 2024.
6. The QP responsible for the Mineral Resources is geologist Leonardo Soares (MAIG #5180).
7. The MRE numbers provided have been rounded to the estimate relative precision. Values cannot be added due to rounding.
8. The MRE is delimited by Mining tenement areas.
9. The MRE was estimated using ordinary kriging in 10m x 10m x 5m blocks with sub-blocks of 5.0m x 2.5m x 1.25m.
10. The MRE report table was produced in Leapfrog Geo software.
11. The MRE was restricted by an underground optimized stopes defined using metal prices of USD2 119/oz Au, Mining cost of USD32.0/t mined, processing cost of USD8.20/t processed, metallurgical recovery calculated block by block based on metallurgical tests, G&A costs of USD1.66/t processed, and USD1.64/t processed logistics.12. Equivalent Gold grade was calculated with the following formula: AuEq = (Au_grade * %Au_Recovery) + (1.346*(Cu_grade * %Cu_Recovery)) + (0.013*(Ag _grade * %Ag_Recovery)).
13. The resource cut off grade applied to underground Inferred resources was 0.96 g/t AuEq.

Figure 14-29: Mineral Resource Classification Plan View



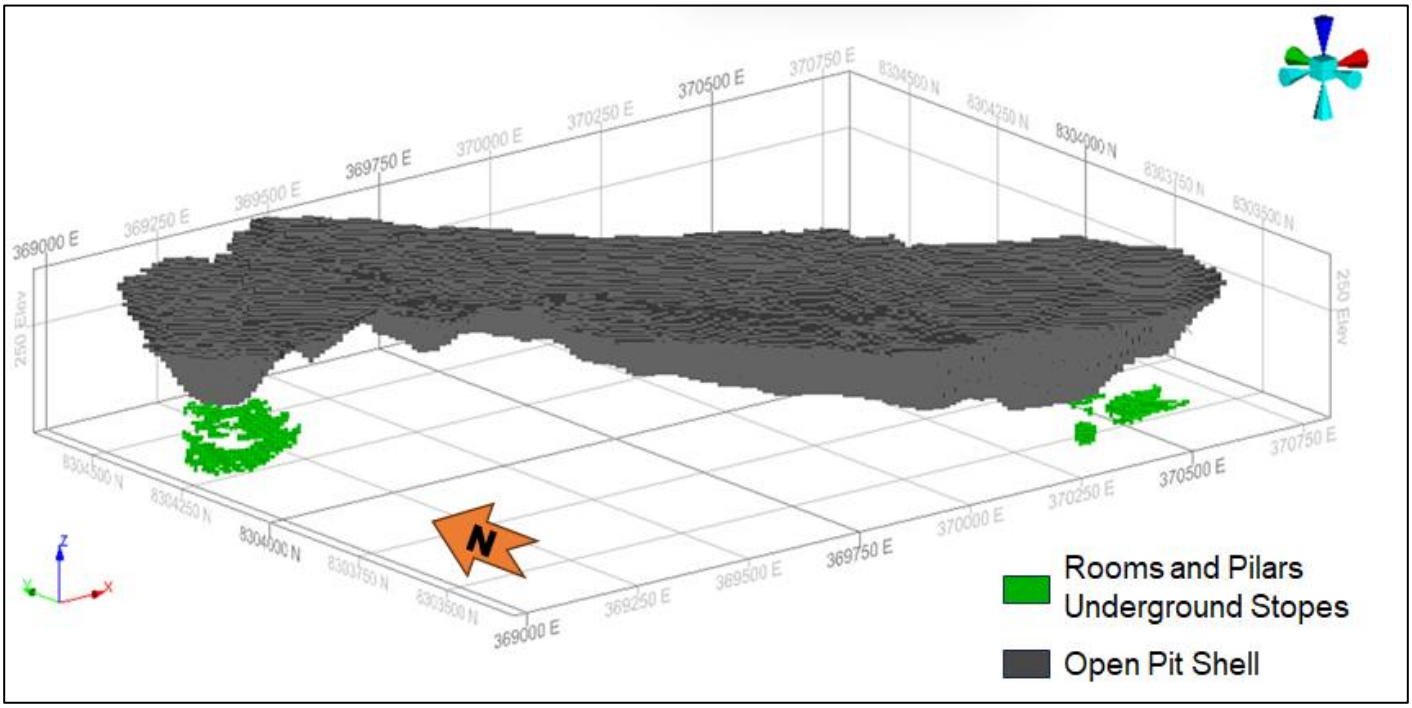
Source: GE21, 2025.

Figure 14-30: Mineral Resource Classification - Oblique View



Source: GE21, 2025.

Figure 14-31: Underground Stope Optimization for Mineral Resource Classification - Oblique View



Source: GE21, 2025.

14.15 Discussion

Factors affecting the MRE:

- The sampling methods: The bulk of the resource estimates have been generated from diamond drilling results which is generally considered the best sampling technique (assuming good core recoveries) and thus provides increased confidence for the MRE.
- Density data: There is a substantial amount of density data, which appears to be of good quality and was estimated by IQD. The range in densities for the mineralization and surrounding host rock is relatively small, which increases the confidence in the estimated density data.
- The QA/QC procedures and outcomes: These are to industry standard for the Meridian drilling.
- Drillhole spacing. The drill hole spacing is considered appropriated for MRE and Mineral Resources Classification as measured and indicated.
- Density data. The density measuring technique, i.e., immersion in water weight in air/weight in water, is an industry-standard technique. Sample selection for density measurement is appropriate with most of the core being competent. Such is the quantity of data that it is feasible to generate block grades for density by using IQD for fresh rock domains. This is a more accurate method than applying broad scale default values to the various rock types. It is also noted that the range in densities is relatively small which adds to the general high level of confidence in the tonnages of the MRE.
- Reporting constraints: A 0.188 g/t gold equivalent cut-off was used to report the MRE and this is based on optimized open pit. The pit shell was also used as a constraint for the open-pit resource reporting. A cut-off grade of 0.948 g/t AuEq was applied in underground mining stope optimization process based on physical and economical parameters. Stopes were applied as a constraint for the underground resource reporting.
- The QP is not aware of political, environmental, or other risks that could materially affect the potential development of the Mineral Resources.

15 MINERAL RESERVE ESTIMATES

15.1 Introduction

Cabaçal is a VMS polymetallic deposit containing gold, copper, and silver. It was historically mined from 1987 to 1991 by Mineração Manati Ltda (BP/RTZ) using selective underground mining with the room-and-pillar method. During this period, a total of 973,031 tonnes of ore were processed, with an average grade of 4.91 g/t Au and 0.80% Cu. Mining operations ceased due to a period of subdued metal prices, leaving behind remaining ore resources and reserves.

Meridian acquired the Project in 2021 and has since been evaluating it for an open-pit mining operation integrated with a beneficiation plant. The Cabaçal mineral reserves, estimated by Porfírio Cabaleiro, QP from GE21 Consultoria Ltda, total 41.70 Mt of ore with an average grade of 0.63 g/t Au, 1.64 g/t Ag and 0.44% Cu, for a cut-off of 0.249 g/t AuEq. No inferred resource was counted as mineral reserve. The life of mine is 10.6 years, accounting for the duration of plant operations. The reserve statement for Cabaçal is based on updated resource estimates and technical parameters, as detailed in this report. A summary of Mineral Reserves for the Cabaçal Pit is provided in Table 15-1.

Table 15-1: Cabaçal Gold-Copper Project – Mineral Reserves Estimate (Effective Date – February 11, 2025)

Reserve Classification	Mass Mt	Average Value			Material Content		
		Au (g/t)	Ag (g/t)	Cu (%)	Au (k oz)	Ag (k oz)	Cu (M lb)
Proven	37.11	0.67	1.64	0.45	797.103	1 962.660	364.903
Probable	4.59	0.36	1.57	0.40	52.773	231.754	40.480
Proven+Probable	**41.70**	**0.63**	**1.64**	**0.44**	**849.876**	**2 194.414**	**405.384**

Notes:

1. Mineral Reserves estimates were prepared in accordance with the CIM Standards
2. Mineral Reserves are the economic portion of the Measured and Indicated Mineral Resources
3. No Inferred Resource was counted as Mineral Reserve.
4. Mineral Reserves were estimated by Porfírio Cabaleiro BSc (Min Eng), FAIG, a GE21 associate, who meets the requirements of a "Qualified Person" as established by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014) (the CIM Standards)
5. The Mineral Reserves are reported with an effective date of February 11, 2025.
6. The reference point at which the Mineral Reserves are defined is the point where the ore is delivered from the open pit to the crushing plant.
7. Mineral Reserves were estimated using the GEOVIA Whittle 4.3 software and following the geometric and economic parameters
8. Geometric and economic parameters include: Mine recovery of 97% and 3% dilution, copper, gold, silver selling cost of USD4.16/lb, USD2 119/oz, USD26.89/oz, respectively, Mining costs of USD2.98/t for mineralization and waste, Processing costs of USD9.83/t of ore feed, General and Administrative (G&A) costs of USD2.11/t of process ore, Copper, Gold, Silver selling cost of USD2.77/t of process ore. Exchange rate: $1.00 = R$5.99, Specific values for the Deposit: Pit slope angles ranging from 35° to 54°, Copper concentrate metallurgical recovery of 93.25%, Gold overall metallurgical recovery of 90.89%. Silver overall metallurgical recovery of 68.82%, Strip Ratio 2.33 (tonne per tonne).

15.2 Estimation Procedure

Mineral Reserves represent the economically mineable portions of Measured and Indicated Resources, as classified in Section 14. The Mineral Reserves for the Cabaçal deposit, estimated by Porfírio Cabaleiro, QP from GE21, have an effective date of February 11, 2025, in accordance with CIM guidelines.

The conversion of Resources to Reserves considered factors such as metallurgical recoveries, mining dilution, ore loss, mining and processing costs, SG&A, logistics, and projected prices for gold, copper, and silver.

The final pit design was guided by an optimization process conducted by Porfírio Cabaleiro using GEOVIA Whittle 4.7 software. The design and mining plan presented in this report are based on the Proven and Probable Reserves outlined in this section. The mine schedule for the deposit is detailed in Section 16.

The optimal pit geometry was determined by generating an optimal sequence of pushbacks, which represent increments in the pit's geometry resulting from the repeated use of the three-dimensional Lerchs-Grossman algorithm. This process was conducted using revenue factors, adjusting the product price to optimize blocks values.

This sequence of pit expansions, or pushbacks, is the basis of open-pit mine planning when using Whittle software, as it models the progressive development of the pit's geometry over time. The optimal pit sequence was obtained by adjusting the revenue factor from 10% to 200% relative to the product's selling price. To determine the pit's evolution over time, an annual processing plant feed rate between 2.5 Mt/a and 4.5 Mt/a of RoM was implemented. The production plan includes expansion plant capacity from 2.5 to 4.5 Mt/a in Year 4 to compensate plant feed grade reduction.

The metallurgical recovery applied in the reserves estimation was reported on July 10, 2024, by Norman O. Lotter, Ph.D., P.Eng., from Flowsheets Metallurgical Consulting Inc. According to this study, the metallurgical recovery for the Cabaçal Project's process route is primarily influenced with the weathering profile and, secondly, by the metal grade of each mineable block. To account for this, a weathering surface was created and applied to the block model during resource estimation. Based on the weathering classification, the following formulas were used to calculate metallurgical recovery:

- Oxide ore
  - Copper Rec = 1.2%
  - Gold Rec = 62.1%
  - Silver Rec = 17.9%
- Fresh ore
  - Copper Rec = 3.906 ln($Grade$) + 95.27 up to 3% Cu. Above 3% Cu a cap of 97% recovery was applied
  - Gold Rec = 5.402 $*$ $Ln(Grade)$ + 88.66 up to 4 g/t Au. Above 4 g/t Au a cap of 96% recovery was applied
  - Silver Rec = 30.354 $*$ $Ln(Grade)$ + 43.691 up to 4 g/t Ag. Above 4 g/t Ag a cap of 87.6% recovery was applied

- Transitional ore

In the transition zone, metallurgical recovery is more complex. Copper recovery is clearly related to the remaining sulphur content in the sample, whereas gold and silver recoveries are more dependent on their respective grades. The following rules were applied to the block model:

- Blocks containing more than 0.1% sulphur (S): fresh rock recovery formula was applied.
- Blocks containing less than 0.01% sulphur (S): oxide recovery formula was applied.
- Blocks with sulphur content between 0.01 and 0.1%:
    - Copper recovery was determined using a pro-rata adjustment of the fresh rock recovery formula.
    - Gold and silver recoveries were based on the average transition composite recoveries - i.e. 77.3% gold recovery (average of 90.1% and 64.5%), 40.0% silver recovery (average of 37.1% and 42.8%).

The modifying factors applied to the Cabaçal mine include a 3% dilution and a 97% mining recovery, both derived from historical operational data. The pit geotechnical parameters were based on studies conducted in 2023 and 2024, specifically for the open-pit project. Underground mining voids from historical operations have been excluded from resources and reserves. The underground mining topography was provided by Meridian.

Table 15-2 presents the optimization parameters applied, and the optimal pit results obtained using GEOVIA Whittle 4.7 software for the Cabaçal Pit.

Table 15-2: Pit Optimization Parameters for Cabaçal Pit

	Item		Unit	Value (PFS)
Revenue	Economic	Selling Prices[1]	USD/oz Au	2 119.00
			USD/oz Ag	26.89
			USD/lb Cu	4.16
	RoM	Density	t/m^3	Block Model
		Grades	g/t	Block Model
		Resource Classification	-	Measured + Indicated
	Mining	Mining Recovery	%	97
		Mining Dilution		3
	Block Model	X (sub-blocked)	m	10
		Y (sub-blocked)		10
		Z (sub-blocked)		5
	Global Pit Slope[2]			54 (Freshrock)/35 (Saprolite+Saprock)
	Process	Metallurgical Recovery	Au%	5.402 x ln(Au_Grade_ppm)+88.66
			Ag%	30.354 x ln(Ag_Grade_ppm)+43.691
			Cu%	3.906 x ln(Cu_Grade_pct)+95.27
Costs[3]	Mining	RoM	USD/t Moved	2.98
		Waste		
	Processing		USD/t RoM	9.83
	Logistics			2.77
	G&A			2.11

Notes: 1. Metal selling price was supplied by Meridian.2. Global pit slope carried out by André Zingano - Fundação Luiz Englert – 2024.3. Costs based on market quotations. Source: GE21, 2024.

15.3 Cabaçal Pit

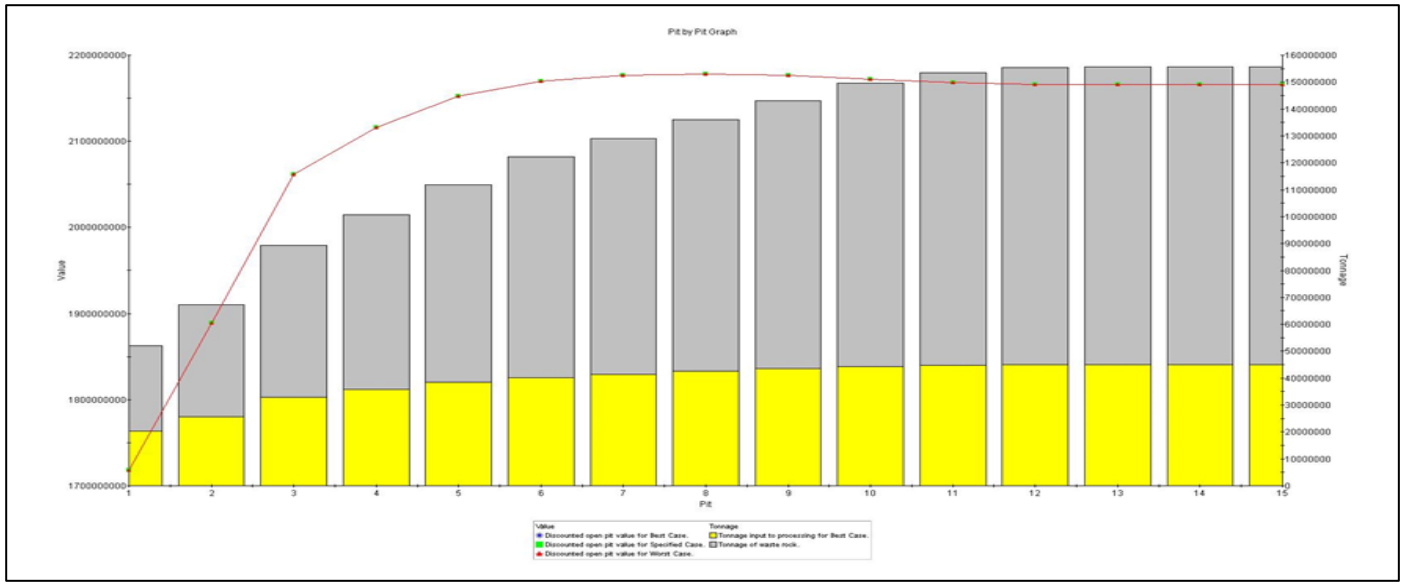
The optimization results, shown pit-by-pit, are presented in Table 15-3 and Figure 15-1. Pit number 8 was selected.

Table 15-3: Nested Pits Results for Cabaçal Pit

Pit	Revenue Factor	Rock	Ore	Strip Ratio	Au	Ag	Cu
		(Mt)	(Mt)		(g/t)	(g/t)	(%)
1	0.3	51.956	8.743	4.94	2.074	3.457	0.898
2	0.4	67.363	13.037	4.17	1.536	2.943	0.778
3	0.5	89.255	19.579	3.56	1.125	2.471	0.666
4	0.6	100.774	25.100	3.01	0.924	2.175	0.588
5	0.7	111.787	30.703	2.64	0.791	1.946	0.526
6	0.8	122.310	35.416	2.45	0.71	1.801	0.486
7	0.9	128.969	39.375	2.28	0.652	1.701	0.456

Pit	Revenue Factor	Rock (Mt)	Ore (Mt)	Strip Ratio	Au (g/t)	Ag (g/t)	Cu (%)
8	**1**	**136.148**	**42.585**	**2.2**	**0.614**	**1.622**	**0.435**
9	1.1	143.049	45.099	2.17	0.588	1.570	0.42
10	1.2	149.556	47.206	2.17	0.568	1.532	0.408
11	1.3	153.500	48.625	2.16	0.555	1.505	0.401
12	1.4	155.347	49.560	2.13	0.547	1.488	0.396
13	1.5	155.595	50.148	2.1	0.541	1.476	0.392
14	1.6	155.600	50.519	2.08	0.538	1.468	0.39
15	1.7	155.602	50.819	2.06	0.535	1.462	0.388

Figure 15-1: Cabaçal Pit – Pit Optimization Results Graph



Source: GE21, 2025

15.4 Ultimate Pit Design

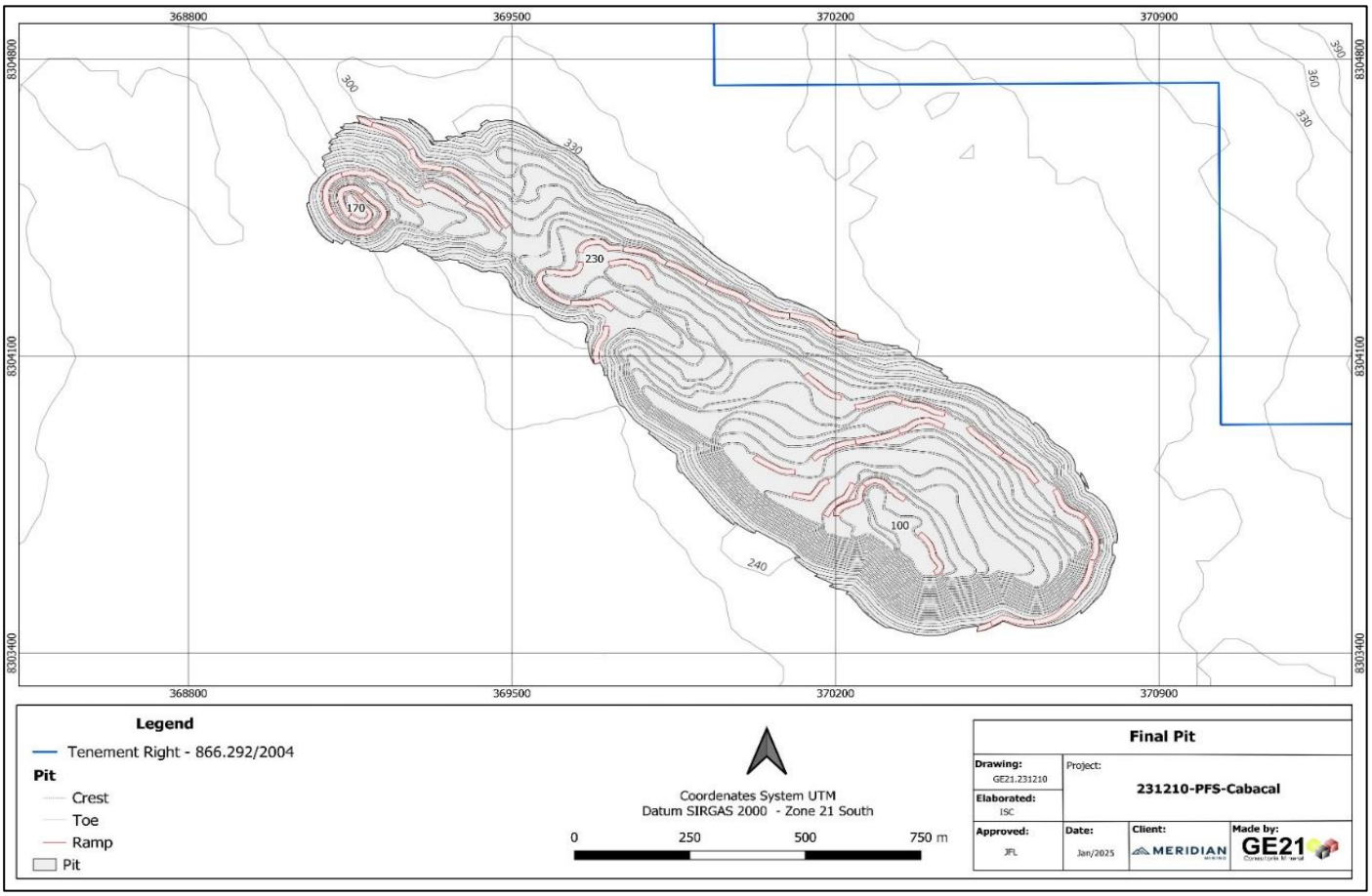
The Ultimate Pit Design involves projecting an operational pit, based on the optimal pit, allowing for the safe and efficient development of mining operations. The methodology involves establishing an outline of the toes and crests of the benches, safety berms, work sites, and mine site access ramps, while adhering to the geometric and geotechnical parameters used.

Table 15-4 presents the geometric parameters adopted for the mine design of Cabaçal Pit. The final pit design was developed for 55-ton trucks and 74-ton excavators. Figure 15-2 presents the final pit designs for the deposit.

Table 15-4: Mining Design Parameters for Cabaçal Ultimate Pit

Description	Units	Value
Road Ramp Width	m	15
Ramp Grade	%	10
Bench Face Angle (detailed in section 16)	degrees	47 to 51
Bench Height	m	10
Berm Width	m	4
Minimum Bottom Area	m²	30

Figure 15-2: Cabaçal Final Pit Design



Source: GE21, 2025.

15.5 Comments on Mineral Reserve Estimates

The underground mining topography used for Mineral Reserves depletion was digitalized from old mining plans in physical format. Several diamond drill holes were carried out to validate this information.

The responsible QP is not aware of any environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors that would materially affect the estimation of Mineral Reserves that are not discussed in this Technical Report.

16 MINING METHODS

The mine plan and equipment sizing was developed by Juliano Lima, QP from GE21, focusing on a single selective open-pit mining operation, extracted through consecutive mining phases or pushbacks. The mill throughput is based on an economic study, with an initial processing capacity of 2.5 Mt/a of RoM for the first three years, increasing to 4.5 Mt/a from Year 4 onward.

Pre-stripping requirements total 10.3 Mt, with mining activities have been scheduled for 9 months before the plant start-up. The mining schedule requires an average mine extraction of 12.9 Mt/a during 10.75 years of mining activities.

The mine equipment requirements were determined based on the plant production schedule, bench heights, and operating conditions. The Cabaçal PFS considers an open pit mining operation using 55-ton conventional trucks manufactured in Brazil and 74-ton hydraulic excavators. Most of the ore and waste rock will be drilled, blasted, loaded onto trucks, and transported to the crusher area, stockpiles, or waste dumps. Ancillary activities will include, but not be limited to, road maintenance, road-dust control, site dewatering, waste dump and stockpile maintenance, and grade control. The entire mining operation will encompass all stages, from rock blasting to plant feed and final disposal of the waste.

16.1 Overview Process Design

Prior to updating the Mineral Reserves estimates, designs, and production schedule, Juliano Lima carried out a trade-off study to determine the optimal loader/truck combination using the 2023 PEA, pit designs, and production, as the base case scenario. The following scenarios were evaluated:

- CAT 777 off-road truck, CAT 6015 (ore) and CAT 6020 (waste) excavators
- 55-ton road truck and CAT 374 excavator
- 44-ton road truck and CAT 374 excavator

Based on this study, Juliano Lima recommended the scenario with a 55-ton conventional truck and a 4.6 m^3 bucket hydraulic excavator as the most advantageous, offering lower costs and improved mining selectivity. The mine design ramps, sequencing, and equipment sizing were based on the findings of this study.

Near the surface, there is weathered rock with free-digging material, which accounts for 0.38% of the total ore and 20% of the total waste. The remaining ore and waste consist of transitional material—5% of the total ore and 14% of the total waste—and fresh rock. A proper drill and blast plan was designed for transitional ore, transitional waste, fresh rock ore, and fresh rock waste. Ten- metre mine benches were designed with a focus on geotechnical stability and minimizing ore dilution. Additionally, a geotechnical study was carried out to address mine stability above old underground workings.

The waste dumps construction method follows an ascending approach, incorporating surface drainage to ensure structural stability. Waste rock will be transported by truck, spread uniformly, and levelled by bulldozers. This process involves stacking additional layers above the initial bank while maintaining access ramps for trucks. Berm drainage is planned to be implemented at the end of each waste dump bench.

16.2 Geotechnical Considerations

The geotechnical study was conducted by Professor André Zingano through the Fundação Luiz Englert, an organization founded by professors from the college Universida do Rio Grande do Sul - UFRGS. The results and recommendations presented in this report are based on the analyses and assessments conducted by Professor Zingano and his team.

Zingano was commissioned to produce a pre-feasibility level pit slope design study to support the mine designs. The conclusions of this study have been incorporated into the pit optimization and design process. Zingano's scope of work included rock mass classification and pit wall stability analysis. This work was supported by geotechnical core logging, soil characterization tests, and shear strength tests (Table 16-1).

Table 16-1: Geotechnical Test for Cabaçal

Soil	Rock
Grain size distribution and density	Triaxial compression test
Atterberg limits	Indirect tensile test
Direct shear test	Sonic velocity measurements

Note: Soil tests were conducted at the Soil Mechanics Laboratory of UFSM, and rock tests were conducted at the Rock Mechanics Laboratory of UFRGS.

The results from geotechnical tests are presented in Table 16-2 and Table 16-3. The rock mass properties were defined using the Hoek-Brown criterion for fractured rock mass. This criterion incorporates the geomechanical classification from the geomechanical description and the triaxial test data.

Table 16-4 presents the mechanical properties applied in the stability analysis models.

Table 16-2: Soil and Weathered Material Properties

Material	CHB	CTB	GBR
Soil	Clayey silt with fine sand	Clayey silt with fine sand	Clayey silt with fine sand
Plasticity	Medium	Medium	Medium
Density (kN/m^3)	13.87	13.64	13.73
Cohesion (MPa)	48.93	0	7.63
Friction Angle (°)	28.01	33.39	30.84

The open pit is to be developed in rock mass conditions ranging from good to very good, where rock mass failure is not a significant concern. The quality of the rock mass has been demonstrated through historical underground room-and-pillar mining. The locations of the underground workings, along with their filled or unfilled status, are well understood. Risks to pit walls and ground stability were assessed and mitigated through careful pit design and planning. However, it is crucial for the mining operation to adhere to the prescribed guidelines.

Table 16-3: Cabaçal Intact Rock Properties

Rock	CHB	CTB	GBR	TAC	ZCL
USC (MPa)	33.2	25.8	28.5	27.3	72.3
Mi	16.3	25.7	12.0	26.8	4.2
E (GPa)	21.4	22.1	37.4	37.2	23.3
Cohesion (MPa)	6.1	4.5	5.5	4.7	18.6
Friction Angle (°)	48.0	52.2	44.9	52.	32.9

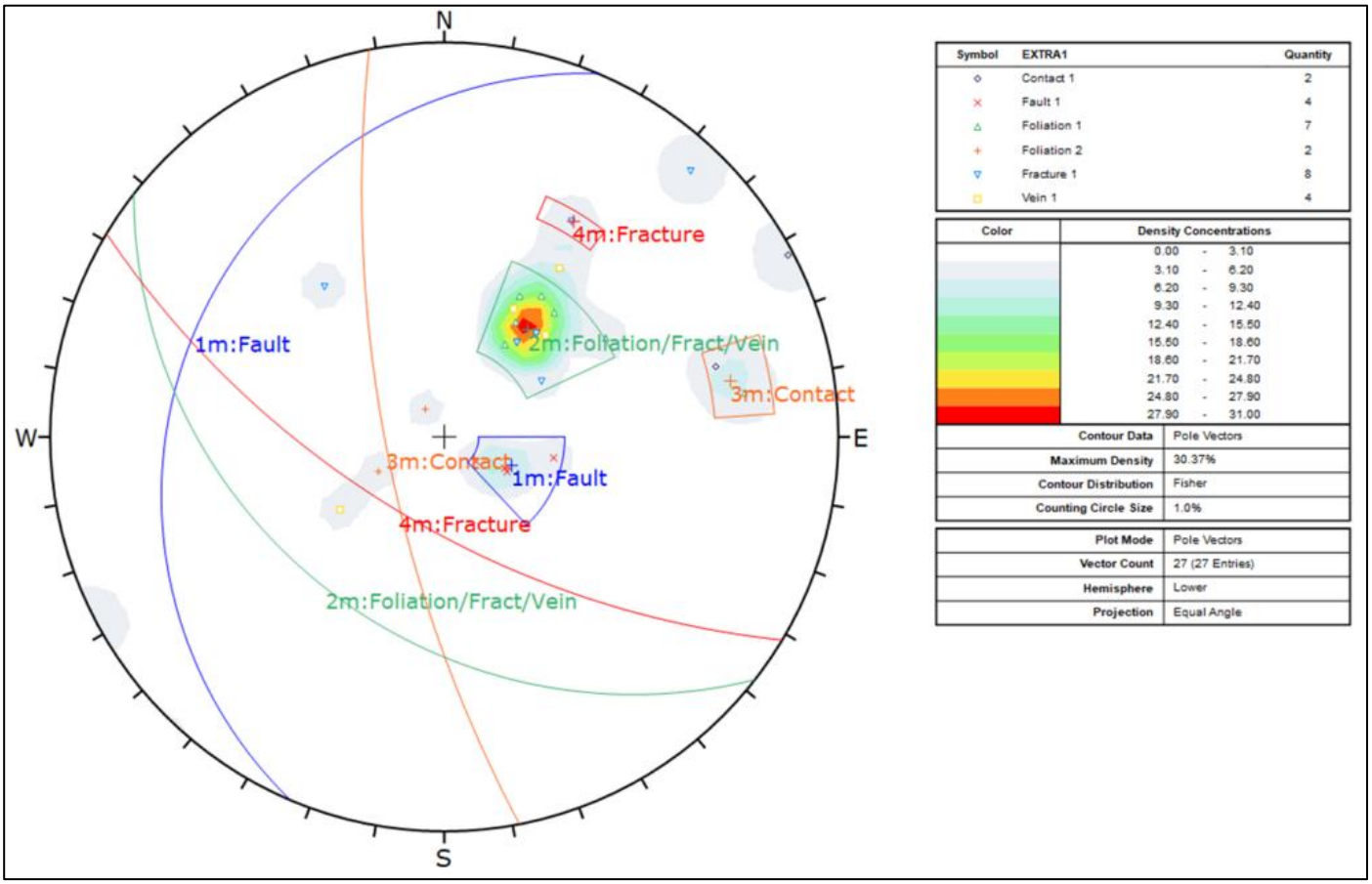
Table 16-4: Rock Mass Properties

Rock	CHB	CTB	GBR	TAC	ZCL
USC (MPa)	33.2	25.8	28.5	27.3	72.7
GSI	56	54	43	65	56
Mb	3.396	4.982	1.567	7.685	0.889
s	0.0075	0.006	0.0018	0.0205	0.0075
a	0.504	0.504	0.509	0.502	0.504
δ_m (MPa)	8.3	7.7	4.6	10.4	10.0
E_m (GPa)	9.2	8.5	7.3	23.5	10.0
Cohesion (MPa)	2.1	1.8	1.3	2.2	3.2
Friction Angle (°)	36.5	39.9	29.9	43.5	25.1

Three methods were used for slope stability analysis: (i) analytical methods using the Bishop, Morgenstern-Price, and Janbu methodologies for circular failure in global slopes; (ii) the limit equilibrium method for sliding and toppling failures along fracture-conditioned planes in bench slopes; and (iii) the numerical method using finite elements for global slope analysis.

The geotechnical domains were defined based on discontinuities measured in oriented drill cores, with over 6,000 data points collected. This data was processed to categorize the discontinuities into four families (Figure 16-1).

Figure 16-1: Stereonet with Main Structures and Discontinuity Families



Type	Dip/Dip Direction	Stereogram Colour
Fault	21/293	Blue
Foliation/Fracture/Vein	38/218	Green
Contact	73/259	Orange
Fracture	65/211	Red

Source: Fundação Luiz Englert, 2023.

Kinematic analysis was performed using stereonets, based on mine discontinuities and pit sectorization, to identify potential failure types. A total of 18 sectors were analysed for bench slope stability. Figure 16-2 shows the pit sections analysed. Table 16-5 presents the results of the kinematic analysis by failure type for each sector.

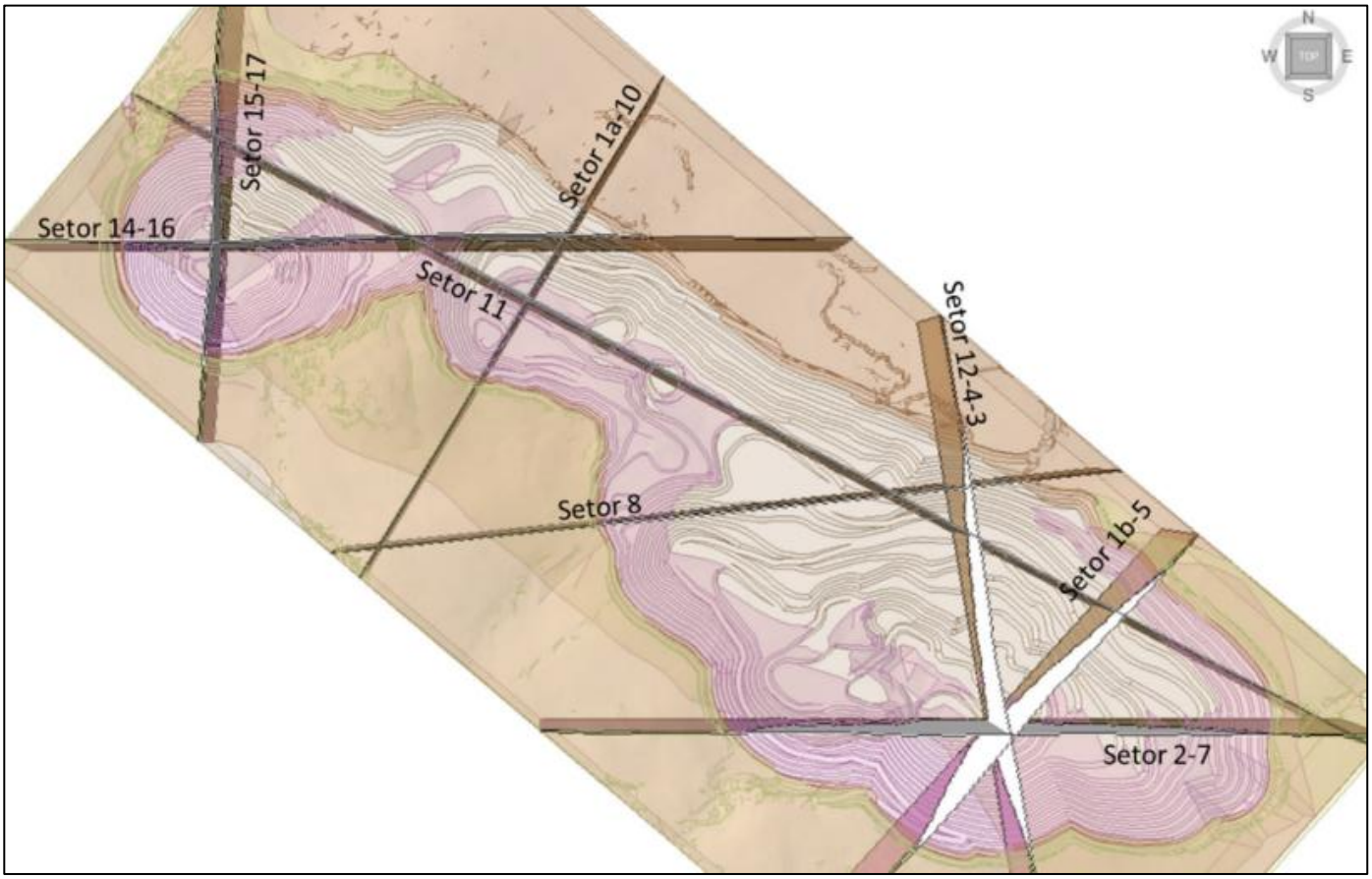
Table 16-5: Kinematic Analysis for Each Mine Sector

Movement/ Section	1a	1b	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Planar	(*)FR/Sn	(*)FR/Sn	-	-	-	-	-	-	-	-	-	-	-	-	CT(**)	(*)FR/Sn	-	-	-
Wedge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toppling	-	-	-	-	-	FR	-	FR	FR	CT	FR	CT	-	-	-	-	CT(**)	FR	CT(**)

Note: FR – Fracture, Sn – Foliation, CT – Geological contact. (*) High-angle fracture, (**) Closed contact.

The slope stability analysis incorporated the information presented in previous sections. The parameters considered include: (i) classification as a global slope or bench; (ii) slope geometry and orientation (dip/dip direction); (iii) discontinuity orientation (dip/dip direction); and (iv) mechanical properties of both discontinuities and rock mass. These parameters were applied to the stability analysis for both the global slope and mine benches.

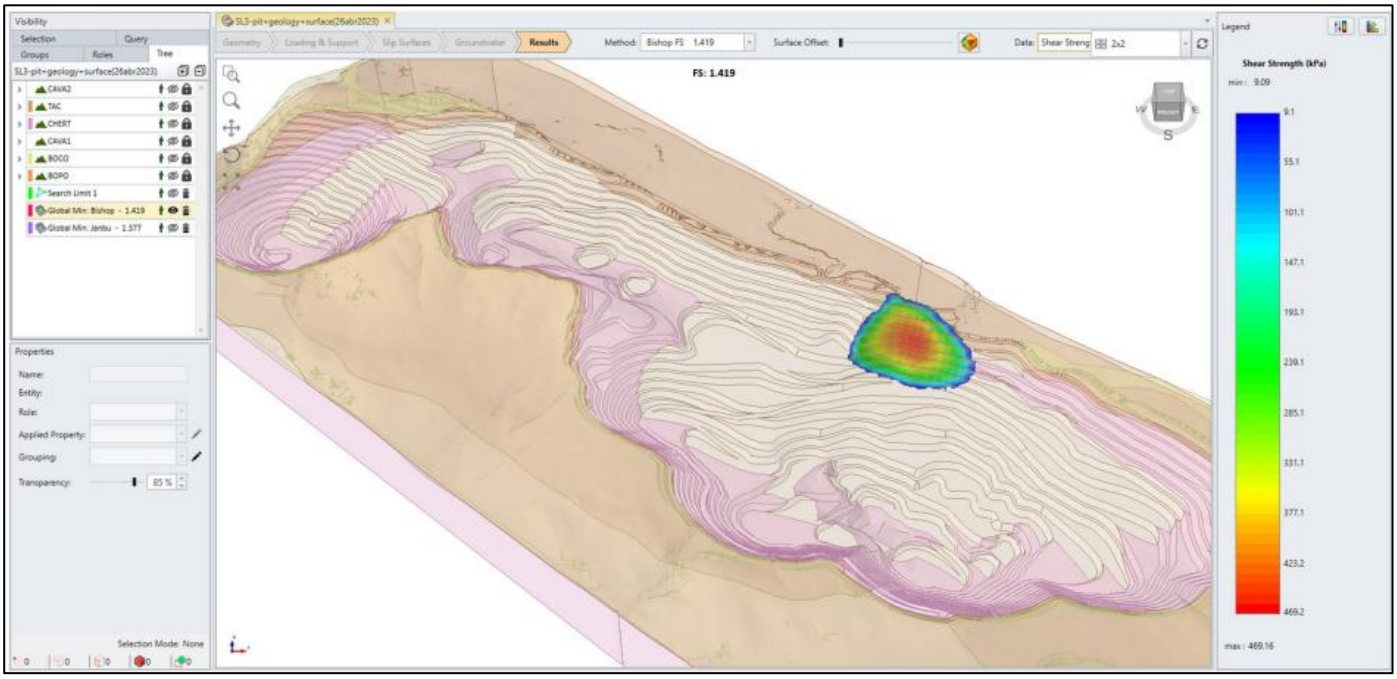
Figure 16-2: Sections Locations for Stability Analysis



Source: GE21, 2025.

A global pit stability analysis was constructed using a 3D model with the limit equilibrium method. The results indicated that the lowest factor of safety (FoS) was 1.41, located on the NE flank of the pit (Figure 16-3).

Figure 16-3: Global Pit Analysis in a 3D Model Using the Limit Equilibrium Method – Result for the Region with the Lowest FoS



Source: GE21, 2025.

Table 16-6: Factor of Safety for Each Sector in the Pit

Sector	Factor of Safety Limit Equilibrium	Factor of Safety Finite Element	Overall Angle (°)
1a	1.4	1.4	32
1b	1.4	1.4	24
2	1.3	1.4	35
3	2	>1.4	43
4	2	>1.4	43
5	2.4	>1.4	36-41
6	2.4	>1.4	36-41
7	2.4	>1.4	36-41
8	2.8	2.9	36-41
9	2.8	2.9	36-41
10	3.8	>1.4	30
11	1.7	1.9	33
12	1.4	1.4	25
13	1.3	1.3	42

Sector	Factor of Safety Limit Equilibrium	Factor of Safety Finite Element	Overall Angle (°)
14	1.3	1.3	42
15	1.9	1.4	38
16	2.4	1.3	28
17	2.4	1.4	41
18	1.3	1.3	25

Stability analyses for the final pit of the Cabaçal Project confirmed that the designed slopes have a FoS above the recommended minimum of 1.3. The models indicate that the FoS values across different sections of the final pit design confirm the stability of both global and bench slopes. In rock slopes, FoS values generally range between 2.0 and 3.0, exceeding the industry-recommended minimum value of 1.3.

The recommended overall slope angles for the hanging wall vary by pit sector and mine planning considerations, with a typical value of 48°, from fresh rock and saprolite/saprock. This angle accounts for a bench height of 10 m, a bench width of 4 m, and a face angle of 70° on fresh rock package.

16.3 Hydrogeological Considerations

Hydrogeological studies conducted in the Cabaçal area classified the mining area aquifer as a fractured, low-productivity system. Hydrogeological modelling estimates an average pumping rate of 60 m^3/h by Year 7 of mining operations, with peak demands reaching up to 90 m^3/h. These conditions consider a low-water environment, which is favourable for geotechnical stability in mining operations. Surface water diversions around the pit are considered to prevent run-on.

16.4 Open Pit

16.4.1 Pit Optimization

The pit will be mined in several phases, beginning with a pre-stripping stage. Table 16-7 summarises the content of each mining phase. The phased approach aims to improve the economics of the Cabaçal Project by feeding the highest-grade ore in the early years and/or deferring waste stripping to later years. The starter pit is designed to initiate mining above the historical underground workings.

Table 16-7: Pit Optimization Parameters for Cabaçal Pit

Year	Mining Schedule					
	RoM (Mt)	Au (g/t)	Ag (g/t)	Cu (%)	Waste (Mt)	Total Mov (Mt)
Pre-Stripping	1.89	0.31	0.89	0.34	8.41	10.30
1	4.93	1.16	1.61	0.46	7.57	12.50
2	4.61	0.53	2.21	0.53	8.29	12.90
3	3.57	0.85	1.99	0.53	8.67	12.24

Year	Mining Schedule					
	RoM (Mt)	Au (g/t)	Ag (g/t)	Cu (%)	Waste (Mt)	Total Mov (Mt)
4	3.51	1.15	2.01	0.54	8.45	11.96
5	3.82	0.56	1.76	0.50	9.17	13.00
6	2.93	0.51	1.46	0.43	8.71	11.64
7	3.49	0.38	1.70	0.42	8.80	12.29
8	4.42	0.38	1.67	0.40	8.26	12.68
9	4.50	0.54	1.20	0.37	10.16	14.66
10	4.02	0.39	1.13	0.28	10.75	14.77
11	-	-	-	-	-	-
	41.70	**0.63**	**1.64**	**0.44**	**97.24**	**138.94**

16.4.1.1 Key Assumptions/Basis of Estimate

The mine plan is based on parameters shown in Table 15-2.

16.4.1.2 Ore Loss and Dilution

Ore losses refer to the portion of the mineral reserve planned for extraction but not recovered due to factors such as truck loading spills, blasting limitations, and other unplanned losses, contributing to an overall mining loss of 3%.

A mining dilution assessment was conducted by evaluating the number of contacts for blocks above the economic cut-off grade. Due to the gradational nature of the mineralization near the ore/waste contacts, dilution and mining loss adjustments were applied using a mixing zone approach. This method ensures that dilution gains and ore losses offset each other, resulting in diluted grades lower than in-situ resource grades while maintaining the overall tonnage.

16.4.1.3 Pit Slopes

Slope stability analysis was conducted in accordance with industry best practices. The analysis was supported by core logging, as well as soil and rock testing, which were used as input for geotechnical software Rocscience (Dips, RocData, RocPlane, Swedge, RocTopple, Slide, RS2). The results were interpreted by UFRGS professor André Zingano.

The FoS defined by the models for different sections of the final pit indicate the stability of both the overall and bench slopes. For rock slopes, the FoS values generally range from 2.0 to 3.0, exceeding the minimum recommended value of 1.3, as established in literature and standards. This criterion was followed by pit designs.

16.4.1.4 Pit and Phase Selection

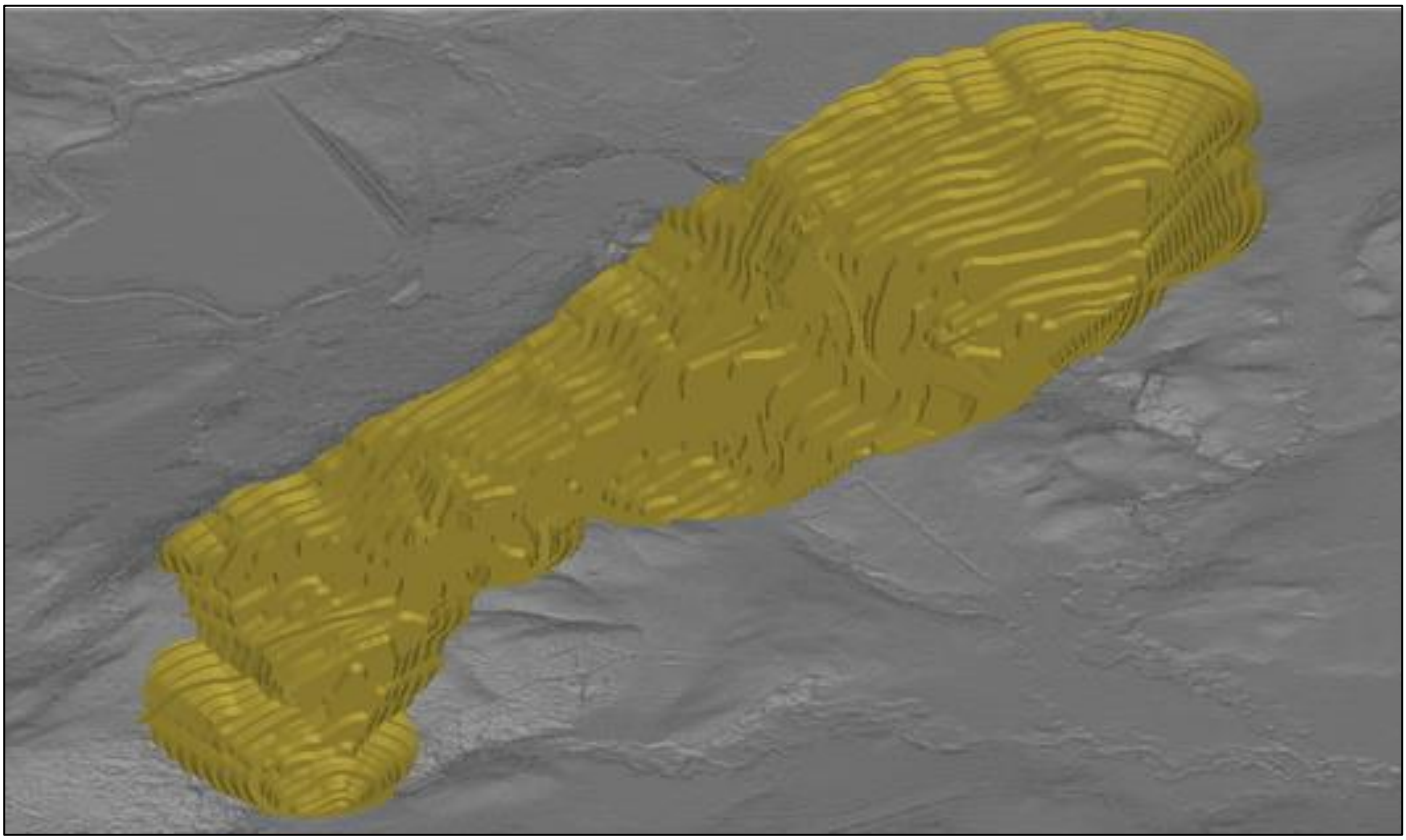
Mineral Reserves were estimated using the GEOVIA Whittle 4.3 software, based on Lerchs-Grossmann algorithm and aligned with the geometric and economic parameters. The only constraint applied to the block model and pit optimization was resource classification, considered only measured and indicated resources. The selected pit corresponds to a revenue factor of one.

16.4.2 Pit Design

16.4.2.1 Results of Design

The final pit design consists of a single final pit measuring 1,977 m along strike, 580 m in width, and reaching a depth of 173 m. It includes four exits to provide access to the pushbacks and minimize haul distances to the crusher and waste dumps (Figure 16-4).

Figure 16-4: Final Pit Design for Cabaçal Mine



Source: GE21Consultoria Mineral, 2025.

16.4.2.2 Comparison of In-pit Resources: PEA vs. PFS

Several key differences between the PEA in-pit resources and PFS mineral reserves are described in Table 16-8. The main differences lie in the selling price and mining and processing cost parameters, with the PFS having higher values compared to the PEA.

Table 16-8: Pit Optimization Parameters PEA vs. PFS

Pit Optimization First Pass Parameters					
	Item		Unit	Value (PEA)	Value (PFS)
Revenue	Economic	Selling Prices	USD/oz Au	1 650.00	2 119.00
			USD/oz Ag	21.35	26.89
			USD/lb Cu	3.59	4.16
	RoM	Density	t/m^3	Block Model	Block Model
		Grades	g/t	Block Model	Block Model
		Resource Classification	-	Indicated + Inferred	Measured + Indicated
	Mining	Mining Recovery	%	97	97
		Mining Dilution		3	3
	Block Model	X (sub-blocked)	m	10	10
		Y (sub-blocked)		10	10
		Z (sub-blocked)		5	5
	Global Pit Slope			48° hanging wall	54° (Freshrock)/35° (Saprolite+Saprock)
				mineralized body slope	
	Cut-Off	AuEq	g/t	0.30	0.25
	Process	Metallurgical Recovery	Au%	5.4368 x ln(Au_Grade_ppm)+88.856	5.402 x ln(Au_Grade_ppm)+88.66
			Ag%	13.342 x ln(Ag_Grade_ppm)+71.037	30.354 x ln(Ag_Grade_ppm)+43.691
			Cu%	2.0006 x ln(Cu_Grade_pct)+94.686	3.906 x ln(Cu_Grade_pct)+95.27
Costs	Mining	RoM	USD/t Moved	2.11	2.98
		Waste			
	Processing		USD/t RoM	8.20	9.83
	Logistics			1.64	2.77
	G&A			1.66	2.11

16.4.3 Operational Cut-off Grades

Porfírio Cabaleiro determined a reserve cut-off grade of 0.25 g/t AuEq, as defined in Section 14, to report mineral reserves within a constraining shell for material suitable for open-pit extraction. Table 16-9 shows the assumptions and parameters used to constrain the Mineral Resource Estimate.

Table 16-9: Pit Optimization Parameters for Cabaçal Pit

Parameter	Units	Value
Au Price	USD/oz	2 119.00
Ag Price	USD/oz	26.89
Cu Price	USD/lb	4.16
Mining Cost	USD/t Mined	2.98
Processing Cost	USD/t RoM	9.83
Logistic Cost	USD/t RoM	2.77
G&A Cost	USD/t RoM	2.11
Au Metallurgical Recovery	%	5.402 x ln(Au_Grade_ppm)+88.66
Ag Metallurgical Recovery	%	30.354 x ln(Ag_Grade_ppm)+43.691
Cu Metallurgical Recovery	%	3.906 x ln(Cu_Grade_pct)+95.27
Global Pit Slope Fresh Rock	º	54
Global Pit Slope Saprolite/Saprock	º	35

Metal prices were provided by Meridian, while mining costs were based on market quotations for similar mining operations. The processing, logistics, and G&A costs were sourced from the Cabaçal PEA. Metallurgical and geomechanical reports support the other parameters used.

16.4.4 Consideration of Marginal Cut-off Grades

The operational cut-off grade is highly sensitive to gold and copper selling prices. Therefore, a marginal cut-off grade was assessed by excluding mining costs from the total cost. Material with AuEq grades above 0.16 g/t will be stockpiled separately for potential economic viability if metal prices increase.

16.4.5 Grade Control and Production Monitoring

Grade control is a system that measures and monitors production grades, directing mined material to the appropriate destinations (processing, stockpiles and waste dumps). It is essential for efficient mine operation, with key performance indicators including the definition of ore and waste grades, minimal dilution, and optimal recovery.

According to Rose and Fahey (2014), a grade control system should include 11 key points. Among the most important are representative samples, regular geological data collection and interpretation, QA/QC protocols, and maintaining a reliable database.

Based on the characteristics of mineralization, mineralization geometry, planned mine production rates, and industry best practices, reverse circulation drilling was considered for sampling. Juliano Lima grade control assessment, through an SMU study, recommends a drill pattern of 6.25 x 12.5 m with a sample length of 2.5 m.

16.5 Mining Sequence

The main objectives of the Cabaçal mine sequence were: (i) maximize plant feed grades; (ii) reduce initial capex through pre-stripping; (iii) stabilize plant feed grades; and (iv) defer waste mining to the later years of the LoM. Porfírio Cabaleiro, GE21, conducted multiple mining production scenarios to optimize the mine sequence, the results of which are presented in Table 16-10.

Table 16-10: Pit Optimization Results

Year	Mining Schedule						Low-Grade Stockpile Balance				Plant Feed			
	RoM (Mt)	Au (g/t)	Ag (g/t)	Cu (%)	Waste (Mt)	Total Mov (Mt)	LG Stock (Mt)	Au (g/t)	Ag (g/t)	Cu (%)	Plant Feed (Mt)	Au (g/t)	Ag (g/t)	Cu (%)
Pre-Stripping	1.89	0.31	0.89	0.34	8.41	10.30	2.12	0.47	0.90	0.33				
1	4.93	1.16	1.61	0.46	7.57	12.50	4.33	0.62	1.14	0.36	2.50	1.45	1.89	0.54
2	4.61	0.53	2.21	0.53	8.29	12.90	6.43	0.41	1.07	0.32	2.50	0.99	3.29	0.78
3	3.57	0.85	1.99	0.53	8.67	12.24	7.50	0.38	1.06	0.32	2.50	1.12	2.41	0.63
4	3.51	1.15	2.01	0.54	8.45	11.96	6.52	0.20	0.87	0.27	4.50	1.25	2.07	0.57
5	3.82	0.56	1.76	0.50	9.17	13.00	5.84	0.16	0.76	0.23	4.50	0.56	1.77	0.52
6	2.93	0.51	1.46	0.43	8.71	11.64	4.27	0.15	0.71	0.22	4.50	0.39	1.26	0.37
7	3.49	0.38	1.70	0.42	8.80	12.29	3.26	0.16	0.72	0.22	4.50	0.33	1.47	0.37
8	4.42	0.38	1.67	0.40	8.26	12.68	3.18	0.19	0.83	0.25	4.50	0.35	1.58	0.38
9	4.50	0.54	1.20	0.37	10.16	14.66	3.18	0.35	1.03	0.31	4.50	0.43	1.06	0.32
10	4.02	0.39	1.13	0.28	10.75	14.77	2.70	0.28	0.92	0.28	4.50	0.43	1.19	0.30
11	-	-	-	-	-	-	-	-	-	-	2.70	0.28	0.92	0.28
	41.70	**0.63**	**1.64**	**0.44**	**97.24**	**138.94**					**41.70**	**0.63**	**1.64**	**0.44**

16.6 Blasting and Explosives

The Cabaçal mine will be developed in polymetallic narrow deposit, with two main concerns regarding drilling and blasting planning: ore dilution and mining above or around voids from old mining works.

The resource estimation produced two weathering surfaces: one for the contact between free-dig material and saprock, and another between saprock and fresh rock. These features were attributed to the block model.

The drill and blast plan for Cabaçal used this information to calculate burden, spacing, blast hole diameters, stemming, explosive types, and blast initiation sequencing. Ore will be blasted with emulsion, while waste will be blasted using ammonium nitrate fuel oil (ANFO). Blasting parameters are presented in Table 16-11.

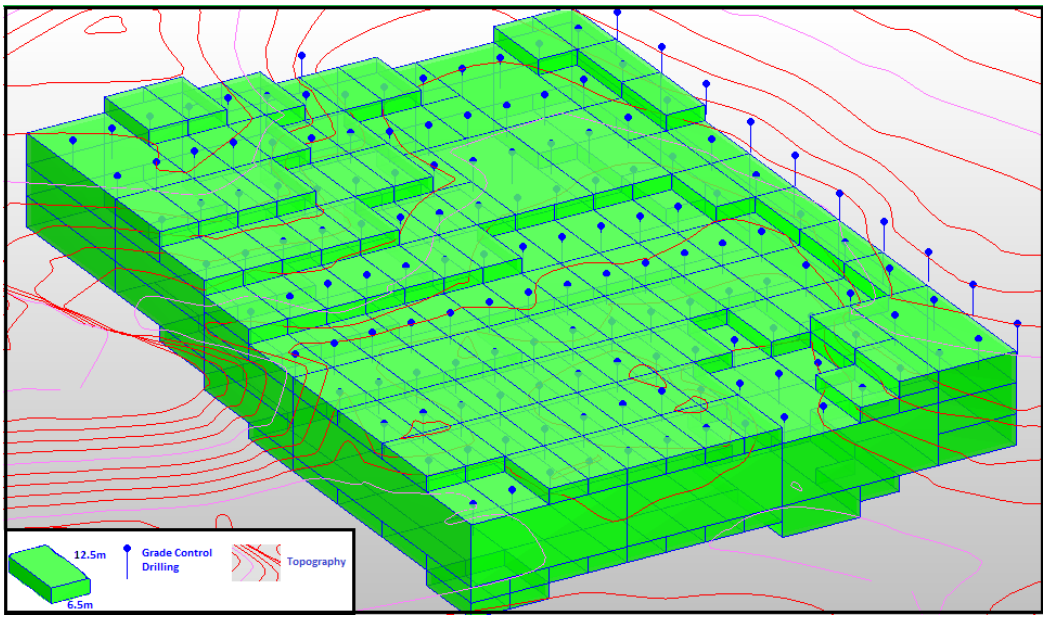
Table 16-11: Blasting Parameters

Type	Waste	Waste	Ore	Ore
Weathering	Saprock	Fresh	Saprock	Fresh
Diameter (pol)	3.5	4	3.5	4
Diameter (mm)	88.9	101.6	88.9	101.6
Burden (m)	3.6	3.5	2.7	3.1
Spacing (m)	4.1	4.0	4.0	4.1
Stemming	3.60	3.5	2.5	2.8975
Drill hole length	10	10	10	10
Sub-drilling	10%	10%	10%	10%
Drill hole inclination	0	0	15	15
Blast ration (g/ton)	125.6	161.9	207.6	200.8

16.7 Grade Control

A rectangular grid was planned for grade control drilling (Figure 16-5), with one RC hole positioned at the centre of each selective mining unit (SMU) block. Each hole represents a 568-tonne block (6.25 × 12.5 × 2.5 m³ × 2.80 t/m³).

Figure 16-5: Ore Control Rectangular Grid



Source: GE21, 2025.

Considering a production rate of 2.5 Mt/a, approximately 366 SMU ore blocks will be mined annually. For a plant production of 4.5 Mt/a, this number increases to 659 SMU ore blocks.

A 25% excess coverage requirement was factored in to delineate the orebodies. The total demand for assays is estimated at 458 gold/silver/copper assays per month to support the grade control program at 2.5 Mt/a, and 824 assays for the highest production rate. Additionally, a 5% QA/QC assay allowance was applied, bringing the total number of grade control samples to 480 and 865 per month, respectively.

The use of RC drilling, such as the Atlas Copco Explorac R50, or similar equipment, was considered. This equipment is capable of operating in restricted access areas with high safety standards, drilling holes in small mine fronts, and handling hole diameters ranging from 3.5" to 4". Alternatively, blast drill rigs equipped with a cyclone and dust collector can be used for sampling.

The RC drill rig will be paired with a Jones Riffle Splitter to collect approximately a 2 kg sample, which can then be sent directly to the preparation lab.

16.8 Mining Equipment

The mine equipment sizing was based on the operating mine plan and the operational conditions at Cabaçal. Before equipment selection, a trade-off was conducted to identify the best equipment size for loading and haulage, based on mine production schedule, bench heights, and operating conditions. Mine operations will be outsourced to a contractor and supervised by Meridian. However, Juliano Lima, GE21, evaluated the operational viability of the mine pit design as the basis for the bidding process. The results of this evaluation are shown in Table 16-12.

Table 16-12: List of Equipment per Year

Mined	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Excavator 70 ton	3	3	3	3	3	3	3	3	3	4	4
Truck 55 ton	10	10	10	9	9	9	8	8	10	10	11
Bulldozer - D6	-	1	1	1	1	1	-	1	1	1	1
Bulldozer - D8	1	1	2	2	2	2	2	2	2	2	2
Motograder - 16H	1	1	1	1	1	1	1	1	1	1	1
Motograder - 160H	1	1	1	1	1	1	1	1	1	1	1
Front-end loader - 980H	1	1	1	1	1	1	1	1	1	1	1
Fuel and Lubricant Truck	1	1	1	1	1	1	1	1	1	1	1
Water Truck	3	3	3	3	3	3	3	3	3	3	3
Drill rig	2	2	2	2	3	3	2	3	2	3	3
Backhoe	1	1	1	1	1	1	1	1	1	1	1
Infrastructure excavator with rock breaker	1	1	1	1	1	1	1	1	1	1	1
Explosive truck	1	1	1	1	1	1	1	1	1	1	1
Accessories truck	1	1	1	1	1	1	1	1	1	1	1
Light Tower	4	6	6	6	5	5	5	5	6	7	7
Light Vehicle	5	5	5	5	5	5	5	5	5	5	5
Compactor roller - Caterpillar CS56B	1	1	1	1	1	1	1	1	1	1	1
Truck mounted crane	1	1	1	1	1	1	1	1	1	1	1
Total	**38**	**41**	**42**	**41**	**41**	**41**	**38**	**40**	**42**	**45**	**46**

16.9 Comments on Mining Methods

The selected mining method is appropriate for the dimensions of the orebodies, reducing dilution while ensuring a sufficient ore supply to feed the plant. The chosen production equipment includes of 74-ton excavators with 4.6 m^3 buckets and 55-ton conventional trucks. The SMU was used in the mining equipment trade-off study.

Auxiliary equipment has also been assessed, and the fleet will include bulldozers, graders, drill rigs, water trucks, fuel trucks, compactors and front-end loaders. The equipment sizes are standard in many Brazilian mines, making it easier to source equipment, operators, and mechanics. The workforce can be sourced from the surrounding communities.

The open-pit operation will follow a conventional drill, blast, load, and dump process, with a small portion of the total material movement being free-digging material.

Mining will begin with nine months of pre-stripping, followed by ore and waste extraction in a pit located on the southeastern side. As mining progresses, the pit will expand both northwest and southeast, becoming deeper to prioritize higher-grade ore for processing. Mine production will start at a lower rate and increase in the later years of the operation.

17 RECOVERY METHODS

17.1 Overview

The site is a greenfield location consisting of an open-pit mine that utilizes direct tipping to feed the jaw crusher. The plant is designed to process 2.5 Mt/a of ore from Year 1 to Year 3, when an expansion to 4.5 Mt/a will take place in Year 4.

From Year 1 to Year 3, crushed ore feeds the single stage SAG mill grinding circuit, with classification performed by a cyclones. Cyclone overflow gravitates to the flotation circuit, where gold-copper concentrate is recovered in flotation. Cyclone underflow is split so that part of it returns to SAG mill feed and part feeds a gravity circuit for gold recovery. The gravity circuit is composed of a sizing screen, gravity concentrator and shaking tables. Gravity tailings are returned to the grinding circuit, while final concentrate is tabled and smelted to produce doré.

From Year 4 to the end of LoM, crushed ore will feed the existing SAG mill operated in open circuit, in conjunction with new ball mill. The cyclone cluster overflow will will gravitate to the flotation circuit, while the underflow will split between the ball mill and the gravity circuit.

Flotation concentrate is thickened and filtered before storage and transportation off site. Two different tailings are generated, one with high sulphide grade and another with low-sulphide grade, which are also thickened and filtered prior to final deposition.

Table 17-1 shows the main process design criteria for each phase of the Project.

Table 17-1: Key Plant Process Design Criteria

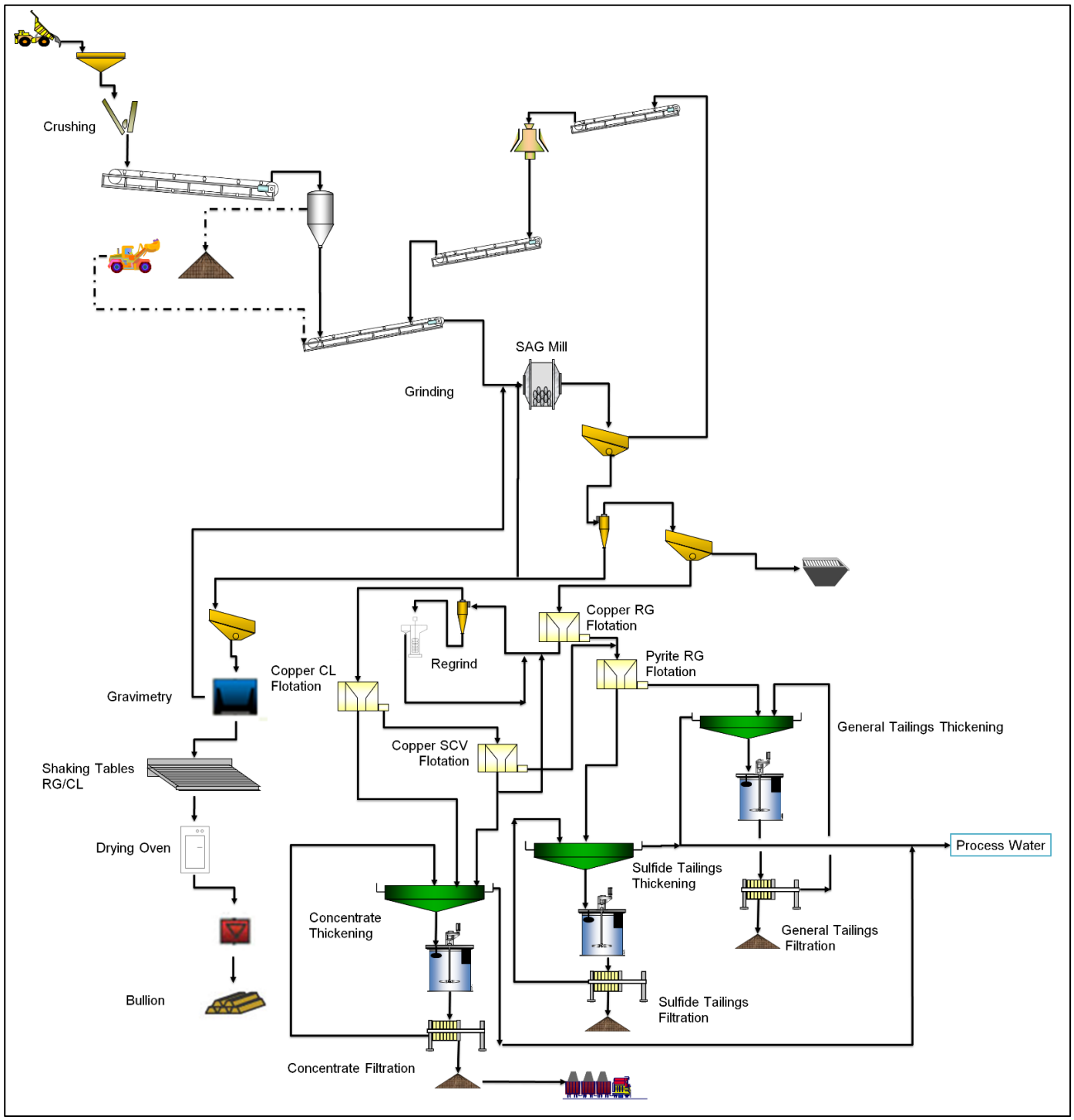
Design Parameter	Units	Value (2.5 Mt/a)	Value (4.5 Mt/a)
Plant Throughput	t/d	6,850	12,330
Head Grade – Design Copper Sulphur Gold Silver	 % % g/t g/t	 0.94 1.69 1.68 3.40	 0.94 1.69 1.68 3.40
Crushing Plant Operating Availability	%	65	65
Mill Operating Availability	%	92	92
Concentrate Filtration Operating Availability	%	85	85
Tailings Filtration Operating Availability	%	85	85
Bond Crusher Work Index (CWi)	(metric)	18.7	18.7
Bond Ball Mill Work Index (BWi) (75th Percentile)	(metric)	11.9	11.9
SMC Axb (25th Percentile)	-	37.4	37.4

Design Parameter	Units	Value (2.5 Mt/a)	Value (4.5 Mt/a)
Bond Abrasion Index (Ai)	g	0.281	0.281
Ore Specific Gravity	-	2.86	2.86
SAG Mill discharge density	% w/w	70	70
SAG Mill Ball Charge – Normal Operating	% v/v	7	13
Pebble Crusher Recycle Rate	% w/w	20-33	20-33
Ball Mill discharge density	% w/w	N/A	75
Ball Mill Ball Charge – Normal Operating	% v/v	N/A	28.2
Gravity Circuit Feed Rate	% of cyclone feed	30	30
Grind Size (k_{80})	µm	200	200
Classification Circulating Load (Max)	%	400	350
Rougher Stage Recovery (Cu)	%	95.4	95.4
Rougher Stage Recovery (Au)	%	85.4	85.4
Rougher Stage Mass Recovery	%	3.6	3.6
Pyrite Rougher Stage Recovery (S)	%	70.8	70.8
Pyrite Rougher Stage Mass Recovery	%	1.3	1.3
Cleaner Stage Recovery (Cu)	%	93.6	93.6
Cleaner Stage Recovery (Au)	%	81.1	81.1
Cleaner Stage Mass Recovery	%	37.5	37.5
Cleaner Scavenger Stage Recovery (Cu)	%	86.0	86.0
Cleaner Scavenger Stage Recovery (Au)	%	77.0	77.0
Cleaner Scavenger Stage Mass Recovery	%	56.9	56.9
Regrind Product Size, (k_{80})	µm	30	30
Concentrate Thickener – Unit Area Settling Rate – Design	$t/m^2/h$	0.25	0.25
Concentrate Thickener – Underflow Density	% w/w	60	60
Tailings Thickener – Unit Area Settling Rate - Design	$t/m^2/h$	0.52	0.52
Sulphide Tailings Thickener – Unit Area Settling Rate - Design	$t/m^2/h$	0.52	0.52
Tails Thickener Underflow Density	% w/w	60	60
Sulphide Tailings Thickener Underflow Density	% w/w	60	60
Concentrate Moisture Content	% w/w	7-8	7-8
Tailings Filter Cake Moisture Content	% w/w	15	15
Sulphide Tails Filter Cake Moisture Content	% w/w	15	15

17.2 Process Flowsheet

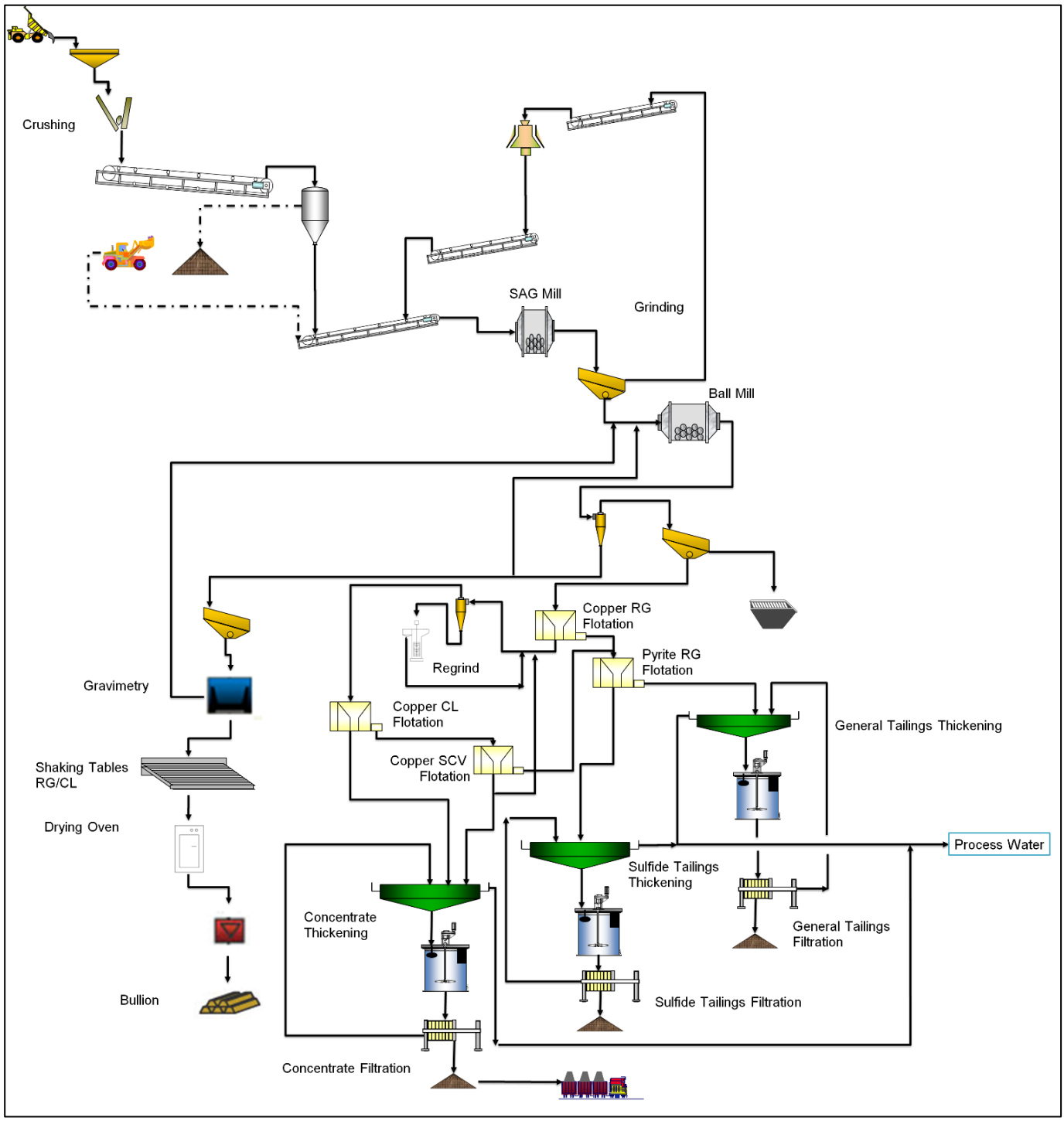
Overall process flow diagrams showing the unit operations for each phase of the project, 2.5 Mt/a and 4.5 Mt/a, are shown in Figure 17-1 and Figure 17-2, respectively.

Figure 17-1: Year 1 to Year 3 Process Flow Diagram (2.5 Mt/a)



Source: Ausenco, 2024.

Figure 17-2: Year 4 to LoM Process Flow Diagram (4.5 Mt/a)



Source: Ausenco, 2024.

17.3 Plant Design

17.3.1 Primary Crushing

Run-of-mine (RoM) ore will be transported by 55 t articulated trucks to surface and then transferred by loaders to the primary crusher feed hopper, equipped with a static screen and a mobile rock breaker. The hopper can be loaded on one side only. RoM ore will be directed by gravity to a chain feeder, which discharges to the vibrating grizzly feeder, which will pre-classify ore feeding the primary crusher.

Vibrating grizzly oversize will feed the primary jaw crusher. Vibrating grizzly undersize and primary crusher discharge onto a conveyor belt, equipped with a metal detector, a weight scale, and a scrap metal extractor with a scrap box. The crusher discharge conveyor will feed the crushed ore surge bin. The surge bin is equipped with belt feeders, which will transfer ore to the SAG mill feed conveyor. The silo will have an overflow outlet, which directs excess production to an emergency stockpile (with a live capacity of 6,700 t). When the crusher is not in operation, and the surge silo is emptied, the material from the stockpile will be reclaimed with front-end loaders, and fed to the emergency stockpile reclaim hopper, which will discharge onto the SAG mill feed conveyor.

17.3.2 Grinding

The grinding circuit will have two configurations: one for the start of the operation and one after the expansion. At the start of operations, until the end of Year 3, the grinding circuit will consist of a 6.5 MW, 8.7 m diameter by 4.4 m long, single stage SAG mill in a closed circuit with cyclones.

Flotation reagents Aerophine 3418A and Aero 208 are added to the SAG mill feed. SAG mill discharge passes through a trommel screen, where the oversize will be conveyed to the pebble crushing circuit. Crushed pebbles will return to the SAG mill feed conveyor. Trommel screen undersize will discharge into the cyclone feed pump box and then pumped to the cyclone cluster. Make-up water is added to the SAG mill and the cyclone feed pump box to maintain the required slurry densities. Cyclone overflow has a target grind size of 80% passing (k_{80}) of 200 µm, which gravitates to copper rougher flotation. Cyclone underflow will be split approximately 70% to the SAG mill feed and 30% to the gravity concentration circuit.

After the expansion, the SAG mill will operate in an open circuit, and a new 2 MW, 4.3 m diameter by 6.9 m long ball mill will be added to operate in closed circuit with the cyclone cluster. The cyclone cluster includes 12, 500 mm diameter cyclones with six operating at start-up and ten operating after the expansion.

A similar split between the ball mill and gravity concentration will be employed after the expansion. Make-up grinding media will be added to the mills using kibbles and cranes.

17.3.3 Pebble Crushing

Trommel screen oversize will be conveyed to the pebble crusher feed bin and feed the pebble crusher. The pebble crusher is a cone crusher.

Pebble crusher discharge is collected by pebble conveyor No. 2, which will send the crushed pebbles back to the SAG mill feed conveyor.

17.3.4 Gravity Circuit

A portion (30%) of the cyclone underflow feeds the gravity circuit via gravity scalping screens. Scalping screen oversize flows to grinding mill feed (SAG mill in phase one and Ball mill in phase two). Scalping screen undersize feeds the gravity concentrator, which will operate semi-continuously. The gravity concentrator is a centrifugal type with a riffled bowl and fluidizing water. Gravity concentrator tailings flow to the cyclone feed pump box. Upon completion of each batch, concentrate will discharge to a shaking table feed bin. Contents of the feed bin will feed the primary shaking tables. The concentrate from the primary shaking tables will be transferred to concentrate storage boxes and then upgraded on secondary shaking tables. The secondary shaker table upgrades the primary concentrate to direct smeltable grade. Secondary shaking table concentrate will be collected in the final concentrate box. Final concentrate is dried in a drying oven before mixing with fluxes and fed to the smelting furnace, to produce doré bullion bars.

The tailings from the primary shaking tables will return to the cyclone feed box, while the tailings from the secondary shaking tables will be recirculated to the primary shaking tables' feed.

There will be one gravity line (scalping screen, gravity concentrator, primary and secondary shaking tables) for initial operation with an identical second line added in the Year 4 expansion.

17.3.5 Copper Rougher Flotation

The cyclone overflow flows by gravity to the trash screen. Cyclone overflow will be sampled for grade and particle size analysis. Trash screen oversize will be collected in a bin for disposal, while the undersize will feed the copper rougher flotation.

The copper rougher flotation circuit will consist of an agitated conditioning tank followed by a line of five forced-air tank cells. Aero 208 and Aerophine 3418A (flotation collectors) are added to the rougher flotation conditioning tank, while the MIBC frother will be added directly into the flotation cells. Copper rougher tailings will be pumped to the pyrite rougher flotation. Copper rougher concentrate along with copper cleaner scavenger concentrate will be pumped to the regrind circuit.

17.3.6 Pyrite Flotation

Pyrite flotation, will remove most of the sulphur from the final tailings, generated a low mass, high sulphur content, sulphide tailings stream and a larger low-sulphide tailings stream.

Copper rougher flotation tailings and cleaner scavenger flotation tailings are pumped to the pyrite conditioning tank. The pyrite conditioning tank overflows to a line of three tank cells (a second conditioning tank and two additional cells included in the expansion). Copper sulphate and sulphuric acid will be added to the conditioning tank, while sodium isopropyl xanthate (SIBX, flotation collector) and MIBC will be added to the flotation cells. Pyrite rougher tailings will be pumped to the tailings thickener. The pyrite rougher concentrate will be pumped to the sulphide tailings thickener.

For the expansion, an additional conditioning tank and four flotation tank cells will be added.

17.3.7 Copper Rougher Concentrate Regrinding

Copper rougher flotation and cleaner scavenger concentrates will be pumped to the regrind circuit cyclone cluster, where the coarse underflow will be pumped to the regrind mill. The regrind mill is a stirred vertical mill type. The mill product will be pumped back to the regrind cyclone feed box. The regrind cyclone overflow, with a k_{80} of 30 µm, will be pumped to copper cleaner flotation.

Collectors Aero 208 and Aerophine 3418A will be added to the regrind cyclone feed box, along with water to adjust the slurry density.

For the expansion, a duplicate regrind mill and cyclone cluster will be added.

17.3.8 Copper Cleaner Flotation

The copper cleaner flotation circuit will consist of one Jameson flotation cell (with a second installed for the expansion). The Jameson cell includes tailings recirculation pumps. Frother will be added to the Jameson cell.

Jameson cleaner flotation tailings will be pumped to copper cleaner scavenger flotation. The concentrate from the Jameson cells will be pumped to the concentrate thickener.

17.3.9 Copper Cleaner Scavenger Flotation

Copper cleaner scavenger flotation consists of two flotation forced air tank cells (with two additional flotation cells installed for the expansion). Tailings from the cleaner scavenger flotation will be pumped to the pyrite rougher flotation conditioning tank.

Cleaner scavenger concentrate is pumped to the regrind mill or to the final concentrate thickener, depending on its copper grade.

17.3.10 Copper Concentrate Thickening and Filtration

Final copper concentrate will report to a high-rate thickener, where flocculant will be added to assist in the settling of the solids. The thickener overflows will be pumped to the process water tank, while the underflows will be fed to a filter feed tank. The thickener is sized for the expansion capacity.

Thickener overflow will flow to the process water tank. Thickener underflow will be sampled and pumped to the concentrate filter press feed tank, which provides 24 hours storage. Thickened concentrate slurry is pumped through the plate and frame concentrate filter press for dewatering. (an additional storage tank and filter press will be added for the expansion).

Copper concentrate filter cake will discharge into a bunker and will then be loaded into trucks and transported to smelters. Filtrate will be pumped back to the copper concentrate thickener.

17.3.11 Final Tailings Thickening and Filtration

Final tailings, (pyrite rougher tailings), will be pumped to the tailings thickener, where flocculant solution will be added to assist in the settling of solids.

The tailings thickener is sized to support the expansion capacity. Thickener overflow will be directed to the process water tank. The thickener underflow will be pumped and sampled to the tailings filter press feed tanks, which provides 3.5 hours storage. Thickened tailings will be pumped to the plate and frame tailings filter presses (three filters for the first phase of the project and three new filters for the expansion) for dewatering. The tailings filter cake will discharge into a bunker. Tailings filter cake will be loaded onto trucks for disposal in the tailings storage impoundment area. Filtrate will be pumped to the tailings thickener feed box.

17.3.12 Sulphide Tailings Thickening and Filtration

Sulphide tailings, pyrite rougher concentrate, will be pumped to sulphide tailings thickener box, where flocculant solution will be added to assist with the settling of solids. The thickener is sized for the expansion capacity. Thickener overflow will be directed to the process water tank. The thickener underflow will be pumped and sampled to the sulphide tailings filter feed tank, which provides 3.5-hour capacity. There is one filter press for initial operation plus an additional storage tank and filter press for the expansion

Sulphide tailings filter cake will discharge into a bunker. Sulphide tailings will be loaded and hauled to the sulphide tailings impoundment area for disposal. Filtrate will be pumped to the sulphide tailings thickener feed box.

17.4 Reagent and Consumables

Reagents will be prepared and stored in a separate, self-contained area within the process area and delivered by dosing pumps with individual control valves to the required addition points.

Reagents that will be used in the process include:

- Sulphuric Acid
  - pH adjustment in the pyrite flotation stage
- Flocculant
  - Concentrate and tailings thickeners
- Copper Sulphate
  - Activator for flotation, promoting the interaction between the collectors and the mineral surface
- SIBX
- Sulphide(pyrite) collector
- Aerophine 3418A

- Copper collector
- Aero 208
  - Copper and precious metals collector
- MIBC
  - Frother
- Borax, Silica, Sodium Nitrate, Sodium Carbonate
  - Fluxes for gold concentrate smelting.

Table 17-2 shows the annual reagent/consumables requirement expected for the plant for the two phases of the project.

Table 17-2: Annual Reagent/Consumables Requirements

Item	Annual Consumption (t) - 2.5 Mt/a	Annual Consumption (t) - 4.5 Mt/a	Packaging/Delivery Format
Grinding Media	1,135	2,115	Bulk bag/1,500 kg
Sulphuric Acid	36.54	65.76	1 m^3 IBC
Flocculant	51.29	92.31	Bulk bag/625 kg
Copper Sulphate	60.89	109.61	Bulk bag/500 kg
SIBX	60.89	109.61	Bulk bag/500 kg
Aerophine 3418A	43.36	75.96	1 m^3 IBC
Aero 208	14.22	24.12	1 m^3 IBC
MIBC	62.25	112.77	1 m^3 IBC
Borax	0.34	0.61	Bulk bag/25 kg
Silica	0.17	0.31	Bulk bag/25 kg
Sodium Nitrate	0.03	0.05	Bulk bag/25 kg
Sodium Carbonate	0.03	0.05	Bulk bag/25 kg

Main process consumables and consumption rates are listed below:

- Jaw crusher liner – 3 sets per year
- Pebble crusher liner – 6 sets per year
- SAG mill liner – 1 set per year
- Ball mill liner – 1 set per year
- Regrind mill liner – 1 set per year
- Concentrate filter cloth – 10 sets per year
- Final tailings filter cloth – 10 sets per year

- Sulphide tailings filter cloth – 10 sets per year
- Smelting Furnace Crucible – 12 crucibles per year.

17.5 Services & Utilities

17.5.1 Process/Instrument Air

High-pressure air at 700 kPa is produced by compressors to meet plant requirements. The high-pressure air supply is dried and used to satisfy instrument air demand. Dried air is distributed via the air receivers located throughout the plant.

17.5.2 Low Pressure Air

Low pressure air for flotation is supplied by air blowers.

17.5.3 Diesel Fuel

The diesel storage area is supplied and maintained by the fuel supplier but, in general, the diesel fuel area contains the following equipment:

- Diesel unloading pump
- Diesel storage tanks
- Diesel supply pumps
- Light vehicle bowsers
- Heavy vehicle bowsers
- A vertical spindle sump pump is provided to remove any rainwater from the diesel fuel bund area.

17.6 Water and Power Supply

17.6.1 Water and Power Supply

Raw water is supplied to a raw water storage tank. Raw water is used for all purposes requiring clean water with low dissolved solids and low salt content, as shown in Table 17-3.

Table 17-3: Raw Water Consumption

Purpose	Unit	Value
Gland water for pumps	m^3/h	93.6
Road wetting	m^3/h	96.0
Raw water to plant (filters, reagents)	m^3/h	63.1
Cooling water for mill motors and lubrication systems (make-up)	m^3/h	1.4
Potable water distribution	m^3/h	16.8
Other service water	m^3/h	55.2
Total	**m^3/h**	**326.1**

17.6.2 Process Water

Overflow water from the thickeners is reused as process water in the plant and constitute the majority of water requirements:

1) Concentrate Thickener Overflow = 61.9 m^3/h
2) Sulphide Tailings Thickener Overflow = 41.8 m^3/h
3) Final Tailings Thickener Overflow = 1,083.5 m^3/h
4) Total overflow recirculated in the plant = 1,187.2 m^3/h

17.6.3 Gland Water

One dedicated gland water pump is fed from the freshwater tank to supply gland water to all slurry pumps in the plant.

17.6.4 Power Requirements

The maximum power demand for the plant is approximately 12.0 MW and 17.0 MW for the 2.5 and 4.5 Mt/a scenarios, respectively, as shown in Table 17-4.

The required infrastructure to provide this power is included in this report in Section 18.

Table 17-4: Annual Power Demand and Consumption by Area and Project Phase

Sub-Stations	Power Demand (MW) - 2.5 Mt/a	Power Demand (MW) - 4.5 Mt/a	Power Consumption (MW) - 2.5 Mt/a	Power Consumption (MW) - 4.5 Mt/a
Primary Crusher	0.52	0.52	0.43	0.43
Mill, Flotation, Smelter	8.44	11.87	7.69	10.82
Flotation, Tailings, Reagents, Utilities	3.10	4.15	2.85	3.84
Total	**12.06**	**16.54**	**10.97**	**15.09**

17.7 Comments on Recovery Methods

The technology and process route considered for the project is proven in the market and used by many other operators around the world. High recovery values have been achieved in laboratory test work programs that support the use of the technology applied to this project.

Process design was based on metallurgical test work programs developed in established laboratories for representative samples of the deposit.

The plant was sized with a 20% design factor, following the standard engineering practices in the market.

18 PROJECT INFRASTRUCTURE

18.1 Introduction

18.1.1 Infrastructure Overview

Infrastructure to support the Cabaçal project will consist of site civil work, site facilities/buildings, on-site roads, a water management system, and site electrical power. Site facilities will include both mine facilities and process facilities, as follows:

- Mine facilities include the administration offices, truck shop, wash bay, and HME workshop, which have synergy with the process plant administrative facilities. Mine facilities also include gas station and explosive magazine.
- Process facilities include the process plant, crusher facilities, process plant workshop, and assay laboratory, dry stack tailings storage (DSTS) and waste rock facilities (WRF).
- Common facilities include a gatehouse, administration building, industrial restaurant, medical unit/fire brigade, locker room, drivers' room, intermediate waste storage and discarded material centre.
- Both mine facilities and process facilities will be serviced with potable water, fire water, compressed air, power, diesel, communication, and sanitary systems.

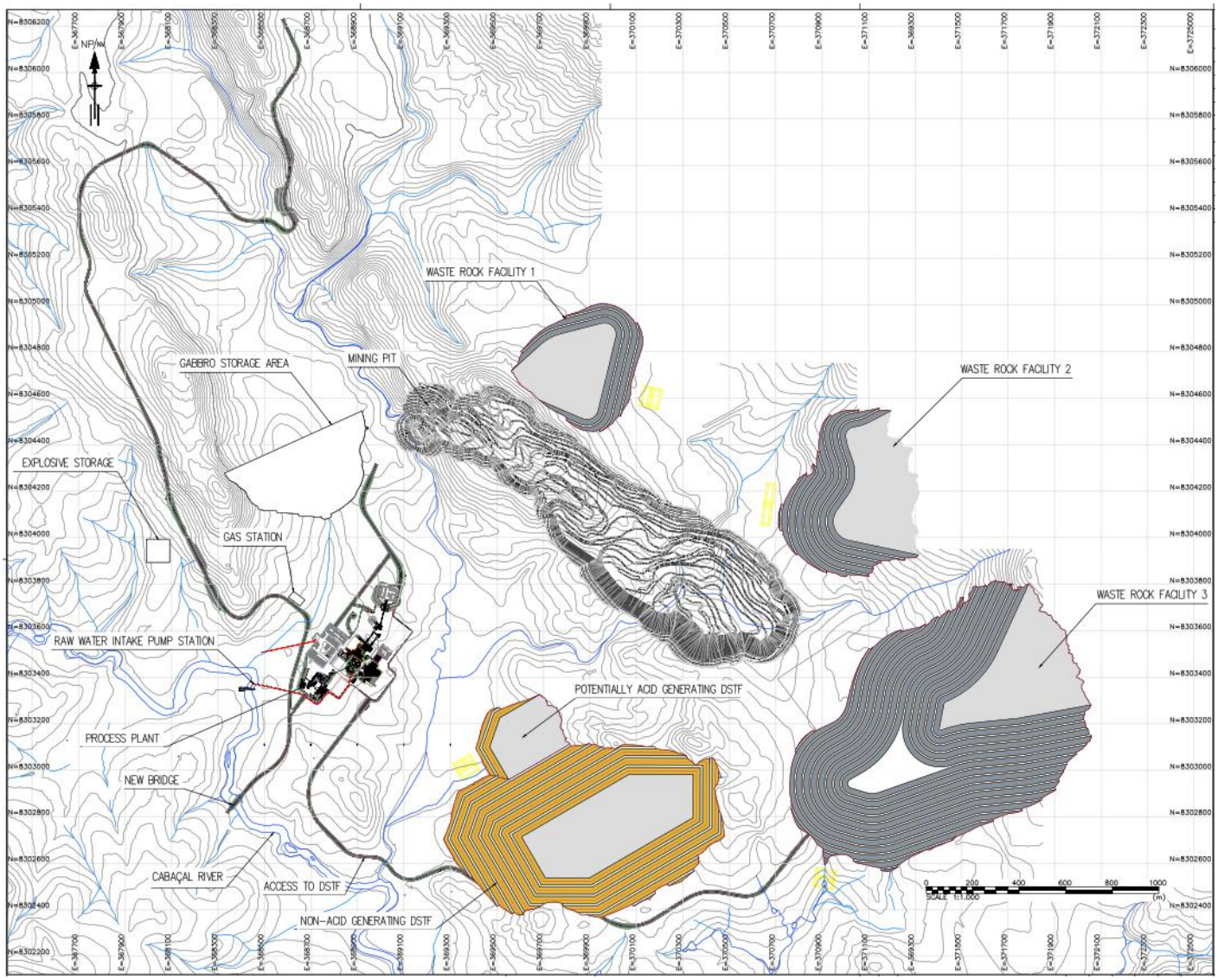
18.1.2 Overall Site Layout Development

Site selection was based on the following observations and factors:

- select a site within the claim boundary
- avoid building and stockpiling on wetlands to the extent possible
- locate the waste rock storage facility near the mine pits to reduce haul distance
- locate the primary crushing and RoM pad to reduce hauling from the pits over the life of mine
- locate the process plant in an area with reduced risk of flooding
- consider maximum synergy of process equipment between Phase 1 (2.5 Mt/a) and phase 2 (4.5 Mt/a).
- locate the DSTF near the process plant to reduce haul distance
- arrange the administration building, processing plant and offices in proximity

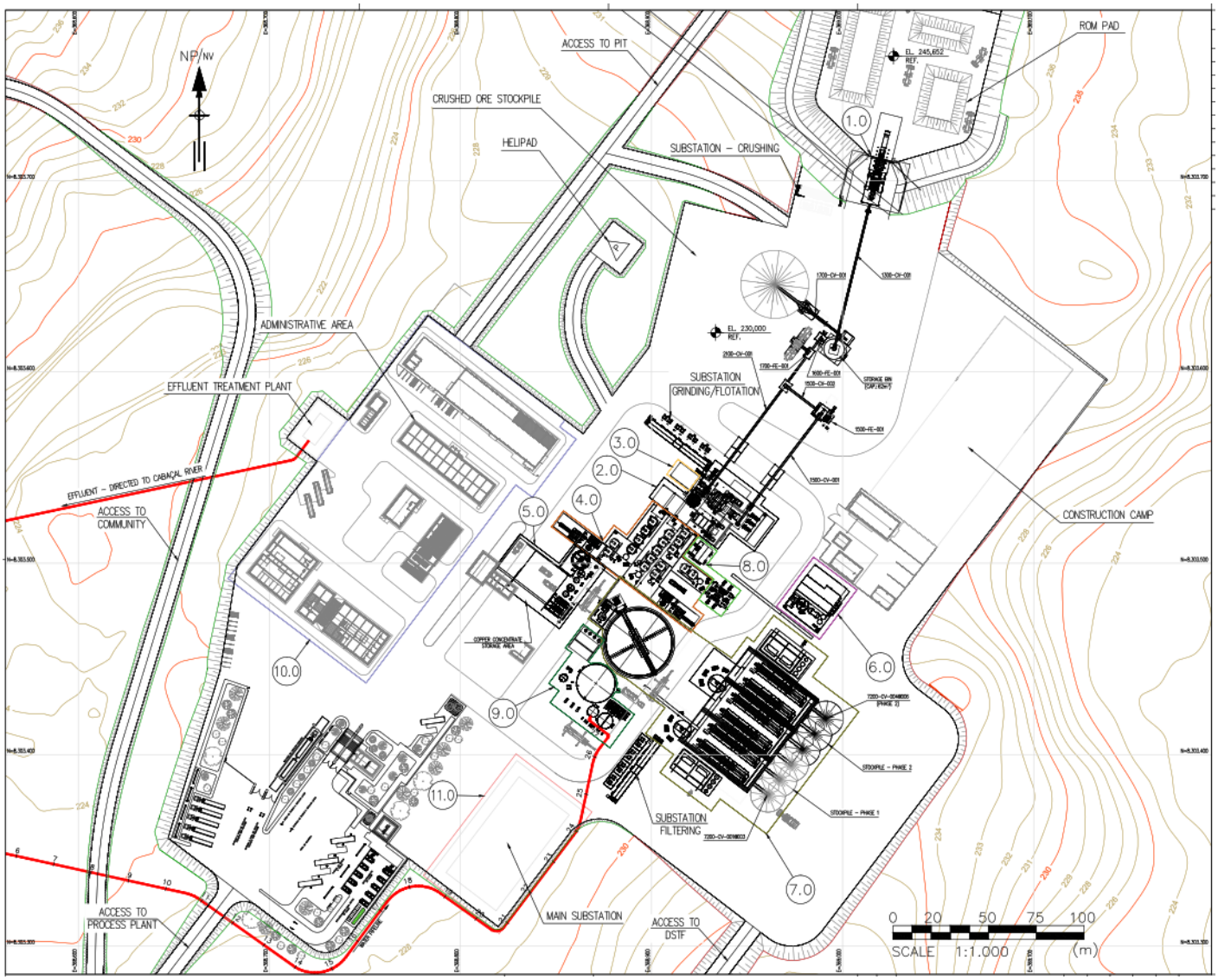
The Cabaçal site layout is shown in Figure 18-1 and the process plant layout is shown in Figure 18-2 and Table 18-1.

Figure 18-1: Overall Site Layout



Source: Ausenco, 2025.

Figure 18-2: Plant Layout



Source: Ausenco, 2025.

Table 18-1: Plant Layout Structures Identification

Item	Description
1.0	Crushing
2.0	Grinding and Gravity Concentration
3.0	Gold Room
4.0	Flotation
5.0	Copper Concentrate

Item	Description
6.0	Sulphidic Tailings
7.0	Tailings
8.0	Reagents
9.0	Utilities
10.0	Administrative Area
11.0	Power Supply

18.1.3 Site Preparation

The existing public road will be connected to the project for site access. Road construction will include topsoil removal, and excavation followed by the incorporation of drains, safety bunds and backfilling with granular material and aggregates for road structure.

Forest clearing and topsoil removal is expected to be required to allow construction of the processing plant and other buildings and facilities. Site civil work includes design for the following infrastructure:

- light vehicle and heavy equipment roads
- access roads
- topsoil and overburden stockpile area
- mine facility platforms and process facility platforms
- water management ponds and ditches and channels
- DSTF
- Waste rock facilities (WRF).

18.2 Site Access

18.2.1 Main Access Road

Access to the project from any part of Brazil can be made by air to the city of Várzea Grande/MT, where the Cuiabá International Airport - Marechal Rondon is located, where you can take the BR-070 road to Cáceres, which is 216 km away from the capital. From Cáceres, continue along the BR-070 for approximately 12 km until the roundabout where you reach the BR-174, where, continuing ahead for another 50 km, access the MT-175 on the right for more 32 Km, which will reach to the city of São José dos Quatro Marcos.

18.2.2 Access to Site

Construction of a new bridge will be necessary to facilitate access to the plant and permit the access of the farms located behind the future pit once the mine infrastructure occupies the area where the current road exists. The bridge

was located considering the existing crossing of the Cabaçal River near the project, with proposed span of 55 m. A secondary access 6 km northwest of the Cabaçal mine, has been created to the community to bypass the plant. Access to site is represented in Figure 18-1.

18.2.3 Plant Site Roads

The roads within the process plant area will be generally 6 m wide, integrated with process plant pad earthworks, and designed with adequate drainage. The roads will allow access between the administration building, warehouses, mill building, crushing buildings, stockpile, mining truck shop, and the top of the mill feed stockpile.

18.3 Built Infrastructure

18.3.1 On-Site Infrastructure

The plant site consists of the necessary infrastructure to support the processing operations. All infrastructure buildings and structures will be built and constructed to all applicable codes and regulations. The plant site layout showing facilities is provided in Figure 18-2.

18.3.2 Buildings

18.3.2.1 Process Plant

The process plant consists of the following buildings:

- Crushing Building
- Electrical Substations
- Intermediate Storage Bin
- Pebble Crushing Building
- Mill Building (Grinding + Gravity)
- Flotation Building
- Regrind Building
- Reagents Building
- Copper Concentrate Storage Building
- Tailings Filtration Building
- Sulphidic Tailings Filtration Building
- Tailings Thickener Building
- Concentrate Thickener Building

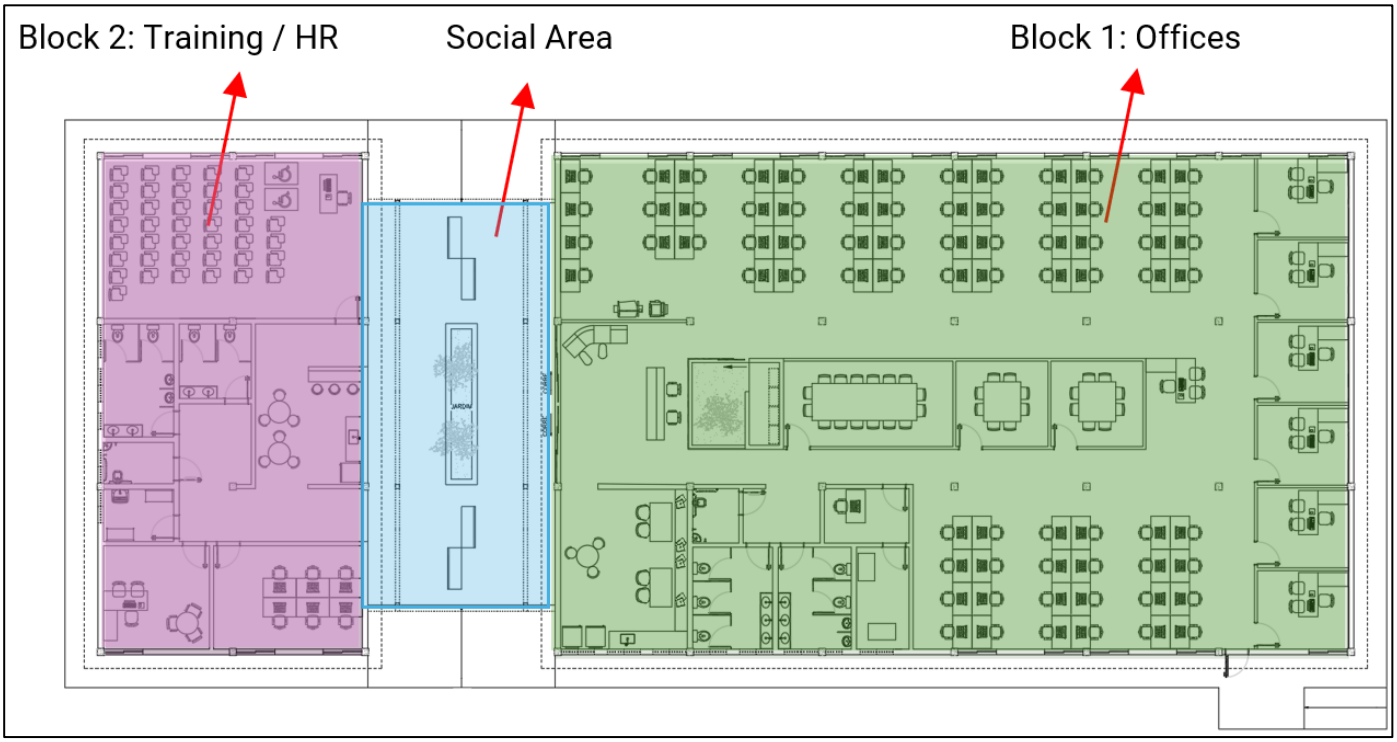
- Gold Room
- Compressor Room

The plant layout is shown in Figure 18-2. All process plant buildings and ancillary buildings, conveyors and other equipment will be equipped with fire suppression systems.

18.3.2.2 Administration Building

The administrative office will be a single-story building, divided into two blocks. The first block, with approximately 518.4 m², will comprise the office area. It will consist of a reception area, 74 workstations for administrative staff, three meeting rooms (one for 16 people and two for 8 people), individual offices for 6 managers, an IT room, server room, pantry, male and female restrooms, and a unisex restroom for people with disabilities. The second block, measuring 172.8 m², will house a training room for 40 people and two HR rooms, totaling 9 workstations, as well as a cafeteria area, a cleaning supplies storage, and male, female, and unisex restroom for people with disabilities. Between the two blocks, there will be a social area under a pergola with a polycarbonate sheet roof, approximately 126 m², consisting of benches and gardens. Figure 18-3and Figure 18-4 illustrate the layout of the Administrative Office.

Figure 18-3: Administrative Office Layout



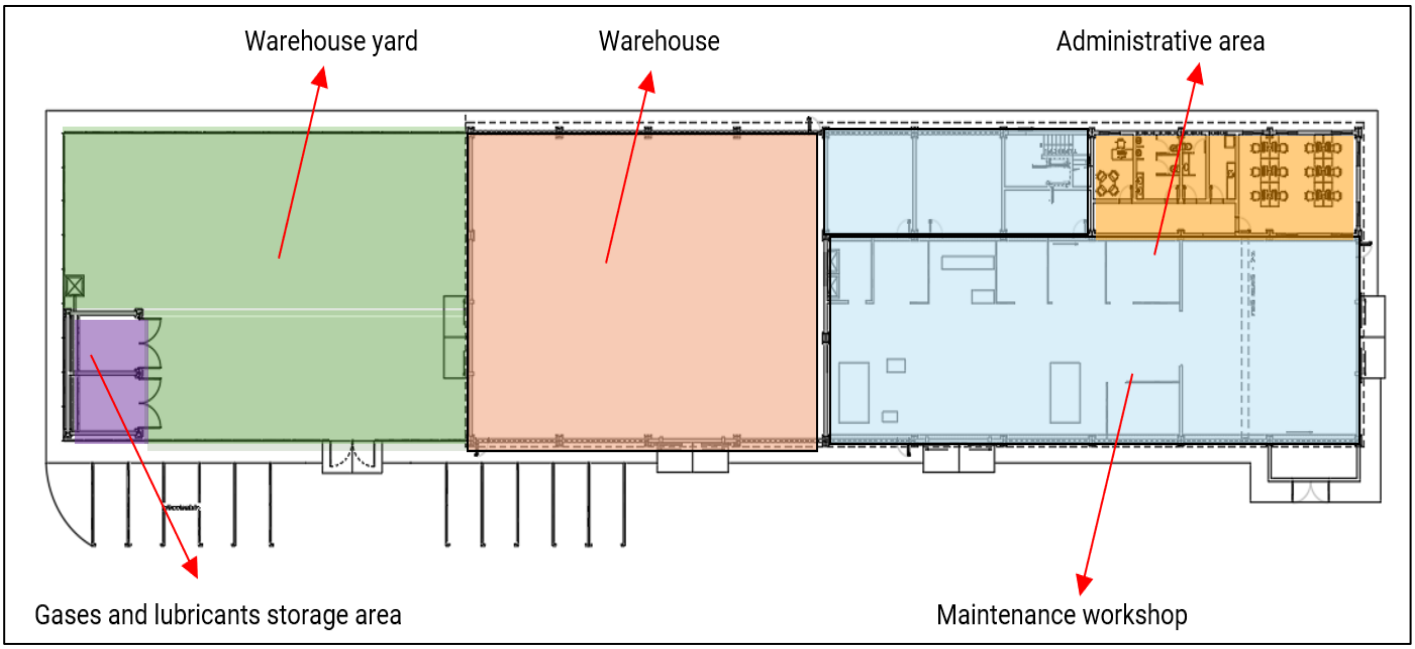
Source: Ausenco, 2025.

Figure 18-4: Administrative Office 3D Model



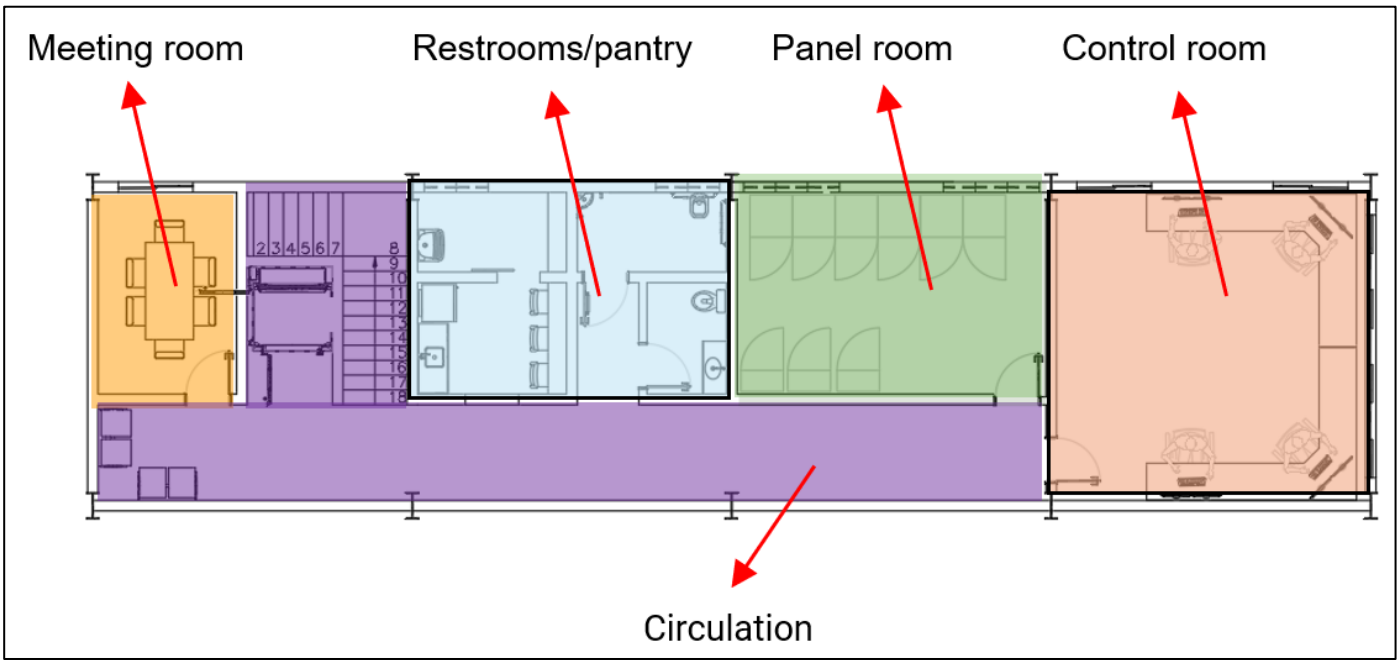
Source: Ausenco, 2025.

18.3.2.3 Cafeteria



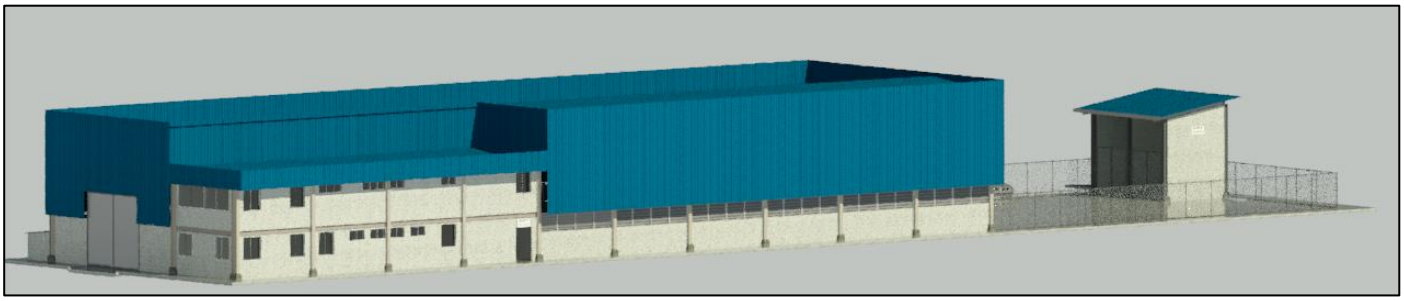
Source: Ausenco, 2025.

Figure 18-5: Control Room Layout



Source: Ausenco, 2025.

Figure 18-6: Maintenance Workshop/Warehouse/Control Room 3D Model



Source: Ausenco, 2025.

18.3.2.4 Materials of Construction

Administrative and support buildings will utilize cast-in-place concrete, left exposed construction. In the internal areas of the buildings, the structures will receive the same finishing as the adjacent masonry walls.

The steel structures of the warehouses will be coated with synthetic enamel paint over an anti-corrosive and antioxidant primer.

The external and internal walls will be constructed using concrete block masonry, with dimensions of (19 x 19 x39 cm) or (14 x 19 x 39 cm).

In office areas, internal partitions will be made of drywall.

18.3.2.5 Building Services

18.3.2.5.1 HVAC

HVAC, in the form of air conditioning units, shall be provided for all administrative areas and office spaces within the support buildings. The air conditioning system must estimate the thermal load, considering factors such as room location, solar exposure, thermo-electric dissipation, windows, door openings, and the fixed occupancy of the room.

18.3.2.5.2 Sewage

Rigid PVC pipes and fittings with spigots and sockets will be used. The effluent will pass through inspection boxes located at a maximum distance of 25 metres between them.

18.3.2.5.3 Fire Suppression System

For each building, fire suppression system devices should be provided, including fire extinguishers, emergency lighting and signage, escape routes, as well as indicating alarms and hydrants.

18.3.3 Accommodation

The company will encourage the maximum possible hiring of existing and available local labourers, who already have fixed local residences. Quick training courses are planned for the surrounding communities, which include the municipalities of Rio Branco (where the project is located), São José dos Quatro Marcos, Araputanga, and Mirassol do Oeste. However, part of the specialized labour, mainly during the project implementation phase, will need to come from other regions, and accommodation is considered for these personnel. This should be required from the construction company already in the price collection phase.

Additional housing will be necessary to complement the accommodation, such as houses for Engineers, Administrators, and Managers. It is estimated that around 20 houses will be needed during the construction phase and 50 during the production phase. These residences can be rented by the companies contracted for the construction activities of the project's structures and spread across the four surrounding municipalities, which are practically equidistant to the project area. During the production phase, these residences can be rented directly by the professionals hired for the operation of Cabaçal.

Camp services will include a kitchen, recreation and sports areas, fire protection system, sewage system, water treatment plant, bus shelter, parking, laundry, restrooms, and a welcome centre with an administration office. The camp facilities will be erected early during project construction to accommodate construction personnel.

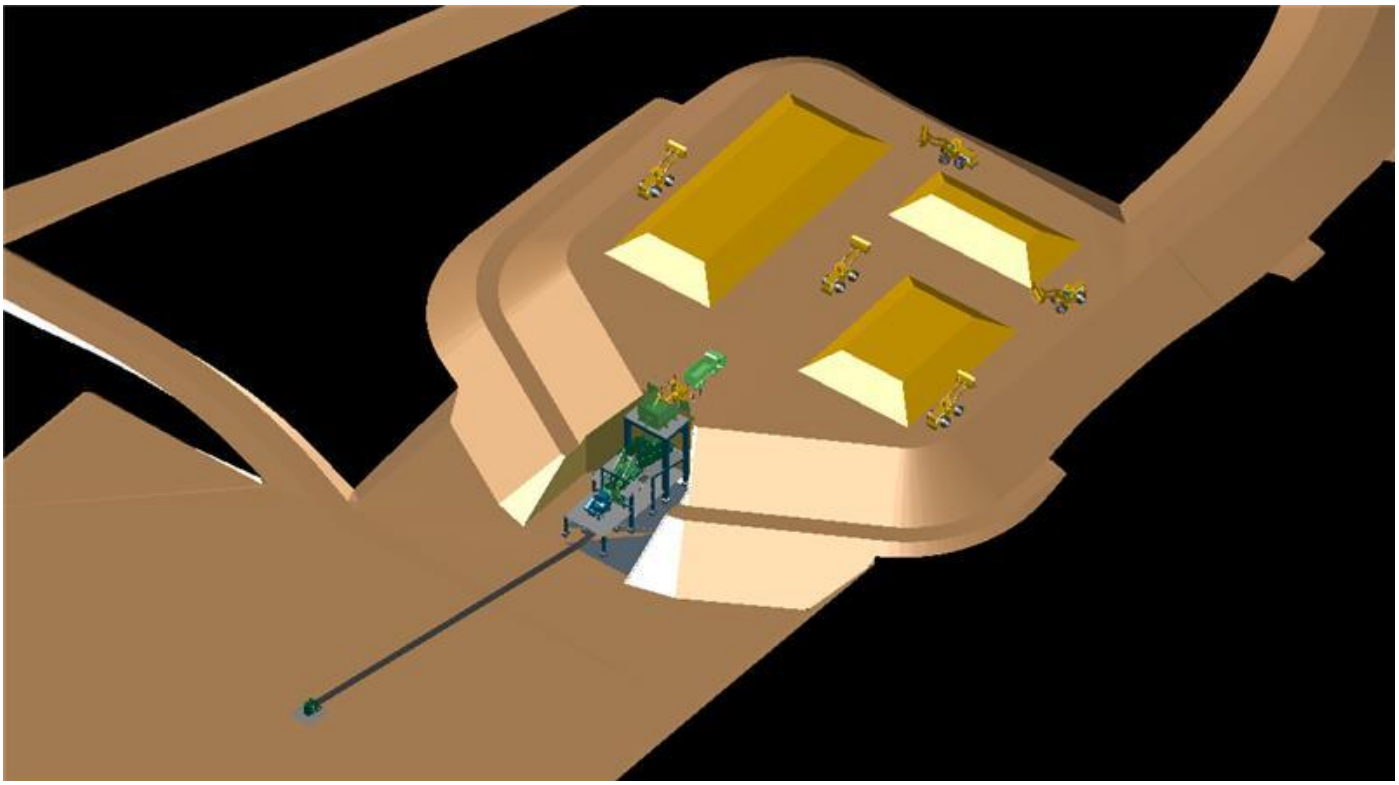
18.4 Stockpiles

18.4.1 RoM Pad

The RoM pad was placed near the edge of the pit (still respecting the safety distance requirement), optimizing ore transport distance from the pit to primary crushing at a higher elevation than the plant to avoid additional earthworks. Three RoM stockpiles are considered:

- One low-grade ore stockpile (0.1 to 0.3% Cu) with 3,500 t; one medium-grade stockpile (0.3 to 0.5% Cu) with 2,000 t and one high-grade stockpile (Cu content higher than 0.5%) with 1,000 t. The storage area is located with its geometric centre aligned with the RoM pad, which allows dumping of a single mine haul truck to the primary crusher.

Figure 18-7: RoM Pad 3D Model



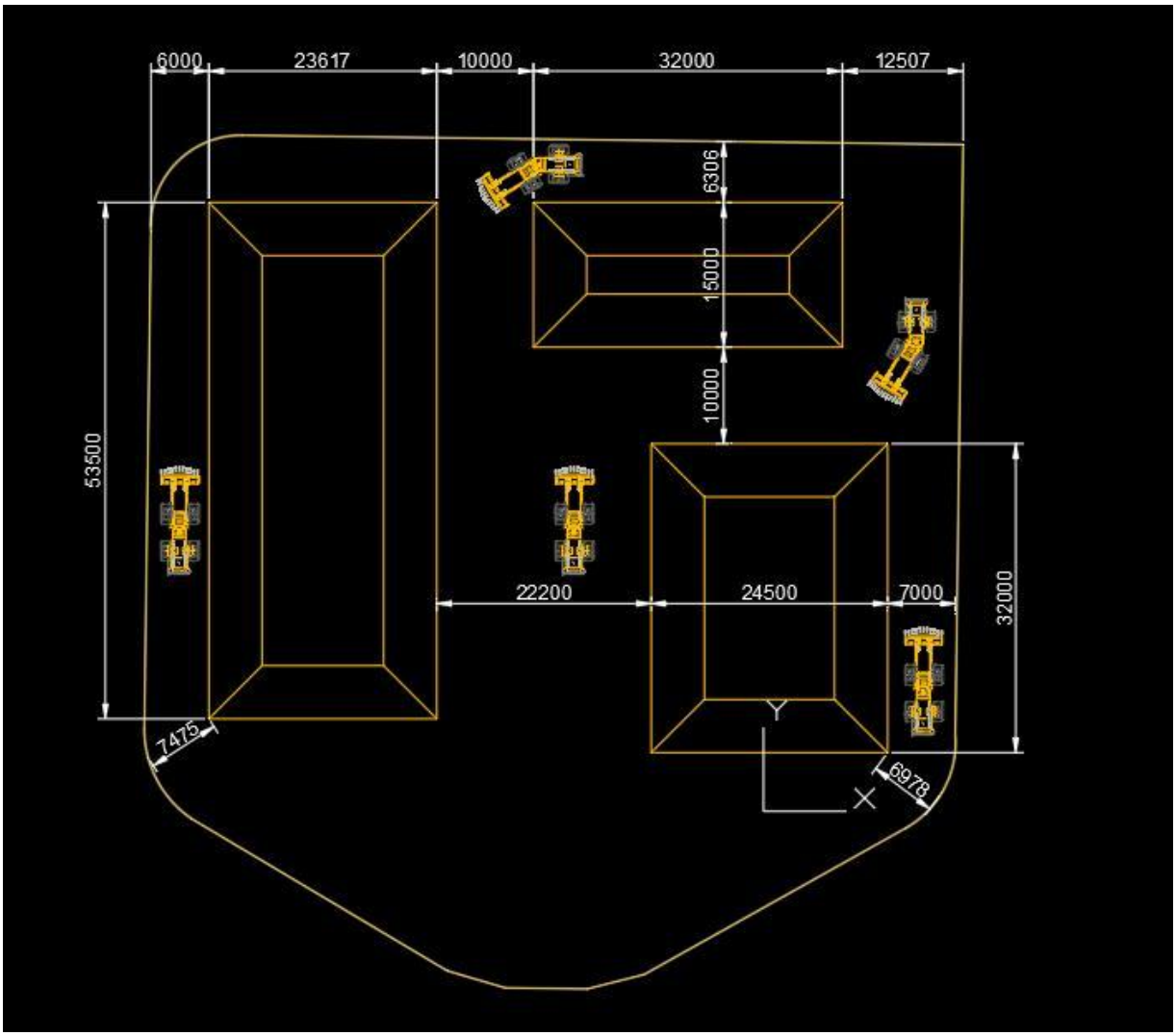
Source: Ausenco, 2025.

The three stockpiles (low, medium and high-grade) that will feed the plant will occupy a total area of approximately 2,532 m². Their implantation provides a total capacity of 6,617,442 m³ and the final height is 4 m. The design criteria includes 36° slopes. The characteristics of each RoM stockpile are described below:

- The low-grade ore stockpile (0.1 to 0.3% Cu) with 3,500 t will occupy an area of 1,263 m² and have a capacity of 3,517,416 m³.
- The medium grade ore stockpile (0.3 to 0.5% Cu) with 2,000 t will occupy an area of 784 m² and have a capacity of 2,053,408 m³.
- The high-grade stockpile (Cu content higher than 0.5%) with 1,000 t will occupy an area of 485 m² and have a capacity of 1,046,618 m³.

The study of access to the RoM pad stockpiles is shown in Figure 18-8.

Figure 18-8: Study of Access - RoM Pad



Source: Ausenco, 2025.

18.4.2 Crushed Ore Stockpile

The primary crusher discharge conveyor will feed the crushed ore surge bin. The surge bin is equipped with belt feeders, which will transfer ore to the SAG mill feed conveyor. The silo will have an overflow outlet, which directs excess production to an emergency stockpile (with a live capacity of 6,700 t). When the crusher is not in operation, and the surge silo is emptied, the material from the stockpile will be reclaimed with front-end loaders, and fed to the emergency stockpile reclaim hopper, which will discharge onto the SAG mill feed conveyor.

The crushed ore stockpile will occupy an area of 989 m^2. The stockpile has a total capacity of 4,256 m^3 and has a final height of 12.89 m.

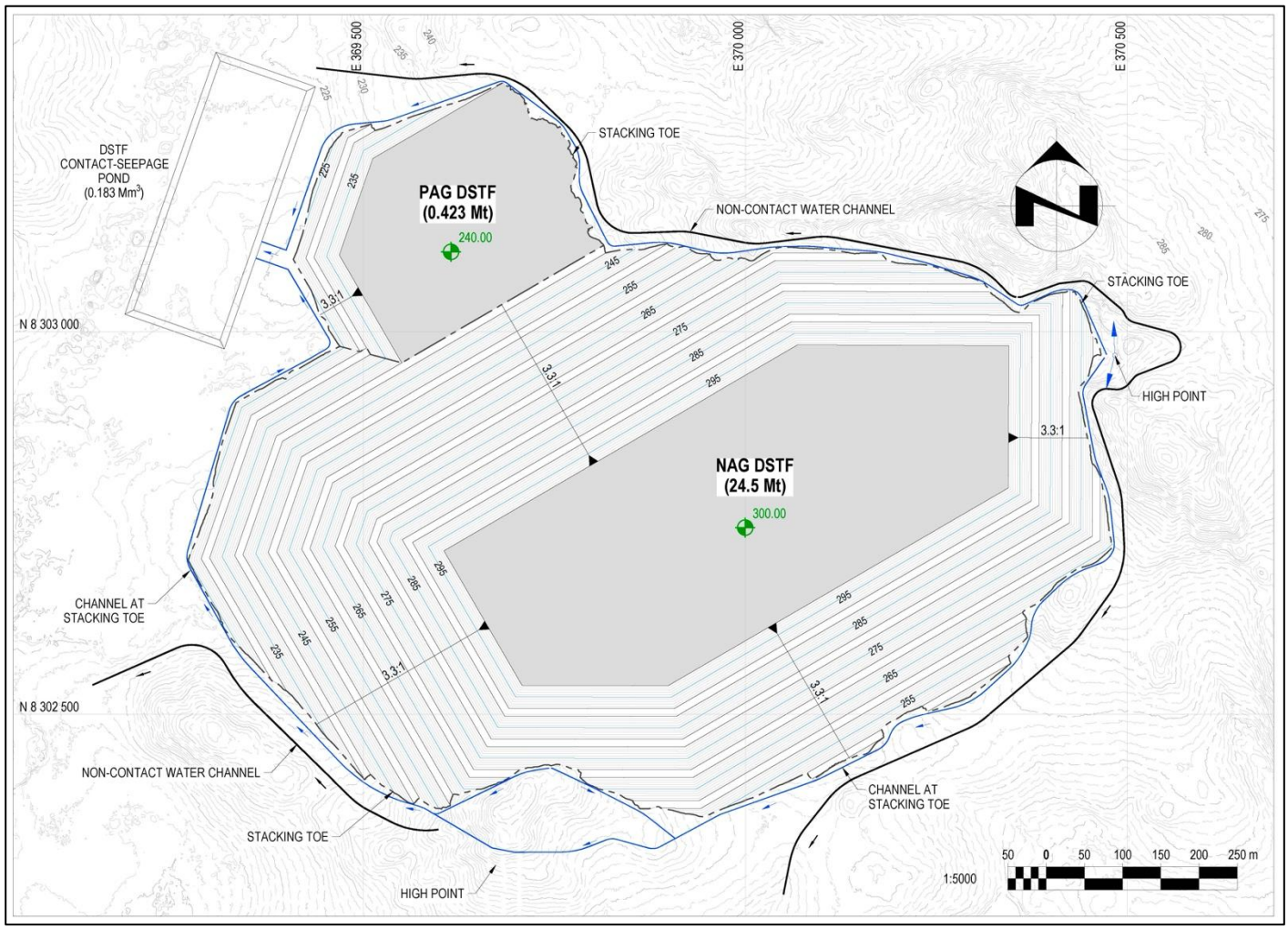
18.5 Dry Stack Tailings Facility (DSTF)

18.5.1 Introduction

During the development of the 2025 PFS Study, a siting study was conducted to determine the optimal location for a tailings storage facility. The siting study assessed several potential tailings storage facility sites within the concession and evaluated disposal methods ranging from slurry tailings to filtered tailings. Additionally, there are two types of tailings generated from processing ore through the process plant: sulphide tailings, which are potentially acid-generating (PAG), and low-sulphide tailings, which are non-acid-generating (NAG). These materials will be stored in two separate facilities since the contact water from the NAG tailings does not require treatment.

Based on an economic, social, and environmental trade-off study between the various disposal sites and technologies, Meridian Mining selected the concept of filtered and dry stacked tailings as the basis for the PFS. The filtered tailings concept has distinct advantages over other options. Water usage is significantly reduced, the development of DSTFs results in a much smaller environmental footprint, and for the PAG tailings, less water treatment. The new location for the DSTF is located in flatter terrain, improving the overall stability and stacking operations of these facilities (Refer to Figure 18-1). In addition, Ausenco updated the initial trade-off design of the DSTF for this PSF with the primary objectives of further reducing the project footprint and deferring initial capital costs where possible.

Figure 18-9: PAG and NAG Dry Stack Tailings Facilities



Source: Ausenco, 2025

The current design accommodates 0.74 Mt of PAG tailings and 44.21 Mt of NAG tailings.

18.5.2 Design Criteria

The key design criteria for the DSTFs are as follows:

- PAG DSTF
  - The DSTF will be designed according to the Guidelines for Mine Waste Dump and Stockpile Design (2017), providing a safe and environmentally acceptable facility for filtered tailings with a storage capacity of approximately 0.74 Mt.

- Production rate of 106 t/d for years 1 through 4 and 191 t/d for years 5 through 10.
- This facility has a conservative consequence classification of ‘Moderate’.
- The filtered tailings are potentially acid-generating.
- The DSTF involves stacking filtered tailings with a maximum moisture content of 15%.
- Minimum factors of safety (FoS) will be satisfied and designed for a maximum 1 in 475 seismic event per the Guidelines for Mine Waste Dump and Stockpile Design (2017).
- Temporary and permanent non-contact and contact surface water management structures are designed to withstand the 1 in 500 year storm event for operations.
- Contact-sediment pond is design to contain the 1 in 100 year 24-hour storm event and associated sediment yield.
- Each layer will have enough crest width to facilitate stacking, spreading, and compaction equipment traffic during operation.
- Water captured in the sediment ponds at the facility's toe will be sampled for water quality. If the water fails to meet discharge water quality standards, it will be treated in the ponds with flocculant before being released into the environment.

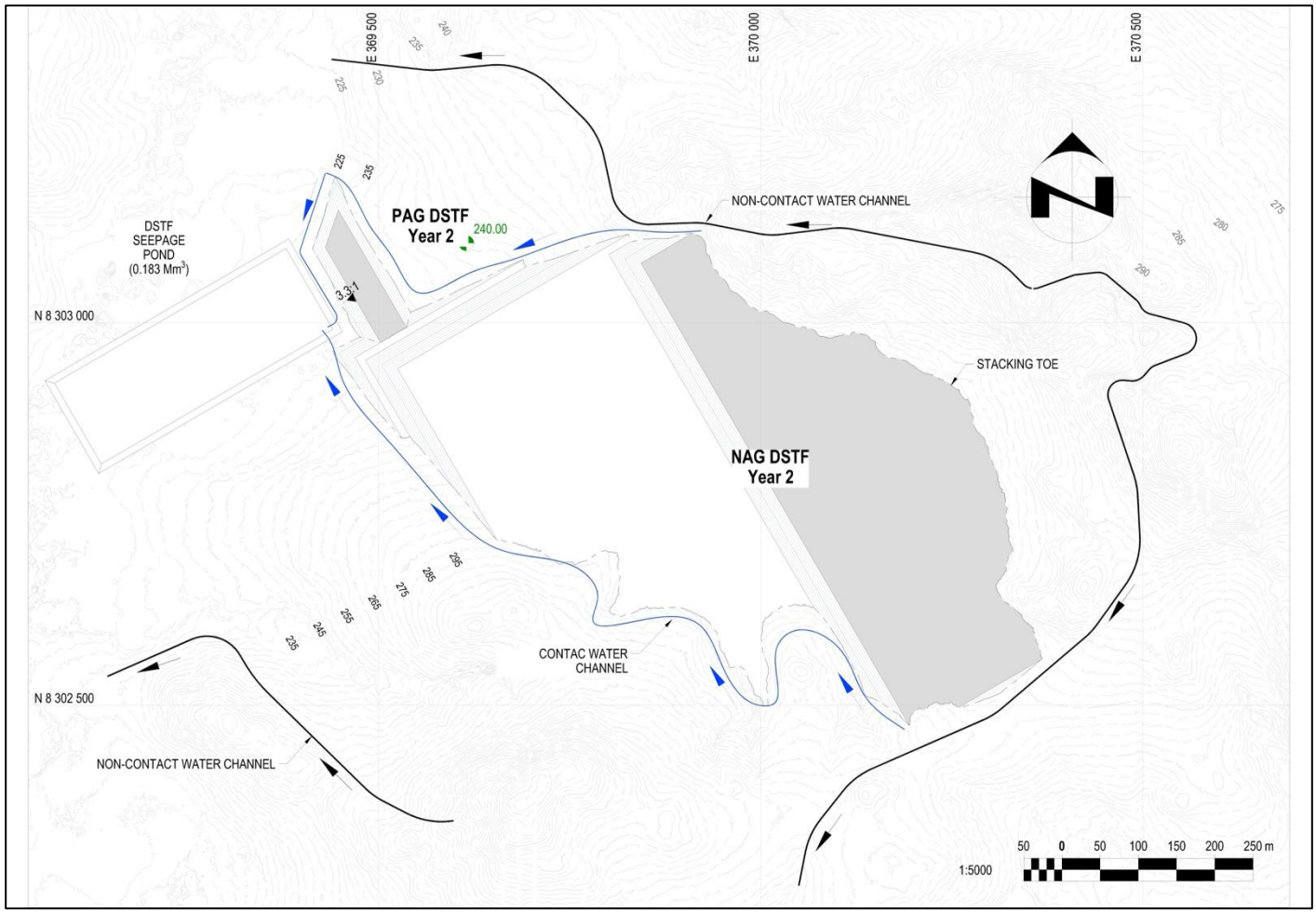
- NAG DSTF
  - The DSTF will be designed according to the Guidelines for Mine Waste Dump and Stockpile Design (2017), providing a safe and environmentally acceptable facility for filtered tailings with a storage capacity of approximately 44.21 Mt.
  - Production rate of 6,308 t/d for years 1 through 4 and 11,355 t/d for years 5 through 10.
  - This facility has a conservative consequence classification of ‘Moderate’.
  - The filtered tailings are non-acid-generating.
  - The DSTF involves stacking of filtered tailings with a maximum moisture content of 15%.
  - Minimum factors of safety (FoS) will be satisfied and designed for a maximum 1 in 475 seismic event per the Guidelines for Mine Waste Dump and Stockpile Design (2017).
  - Temporary and permanent non-contact and contact surface water management structures are designed to withstand the 1 in 500 year storm event for both operations and closure.
  - Contact-sediment pond is design to contain the 100-year 24-hour storm event and associated sediment.
  - Each layer will have enough crest width to facilitate stacking, spreading, and compaction equipment traffic during operation.

- Water captured in the sediment ponds at the facility's toe will be sampled for water quality. If the water does not meet water quality discharge standards, it will be treated within the ponds using flocculant and discharged to the environment.

18.5.3 Deposition Plan

The filter tailings will be transported to the filtered tailings facilities using haul trucks to a discharge point in the DSTFs (Refer to Figure 18-10). Dozers and compactors will be used to spread and compact the filtered tailings to provide trafficable surfaces and improve global stability. Based on the stability analysis, the permanent exterior slopes will be graded to a bench slope of 3:1 (H:V) and a global slope of 4:1 (H:V).

Figure 18-10: DSTF Stacking Plan at the End of Year 2



Source: Ausenco, 2025.

18.5.4 Water Management

For the details of the water management for the DSTF, refer to Section 18.9.3.1.

18.5.5 DSTF Design

The design of the DSTFs is developed through the construction of starter facilities at the ultimate toe of each facility, east of the process and filter plants. Associated surface and drainage water management structures will be constructed in phases corresponding to expansions. The DSTF will be constructed in phases over the life of the mine and will be progressively close.

Starter facilities can accommodate filtered materials for the first two years. The ultimate DSTF is designed to store approximately 0.65 Mt of PAG tailings and 37.97 Mt of NAG tailings. Below is a summary of the main design features of the DSTFs:

- PAG and NAG DSTF
  - Permanent bench slopes of 3:1 (H:V), and global slopes of 4:1 (H:V).
  - The PAG DSTF has a composite liner system consisting of compacted subgrade and HDPE geomembrane liner and The NAG DSTF only has a compacted subgrade.
  - The PAG DSTF has an underdrain and an overliner drain and the NAG DSTF only has an underdrain.
  - The flow from the NAG DSTF underdrain will discharge into the NAG contact water pond, while the PAG DSTF underdrain and overliner drain will discharge into the PAG contact water pond.
  - The DSTF involves extending non-contact diversion channels and contact water channels during operation, staying ahead of stacking operations.
  - Top surfaces will be compacted to reduce infiltration and provide a trafficable surface.
  - DSTFs will be compact in 1 m thin layers for a total height of each lift of 10 m.
  - Once a lift's permanent slopes are finished, they will be capped with saprolite, topsoil, and vegetation to reduce sediment production.

The foundation soils will be compacted to minimize the impact of water seepage from the DSTFs into the groundwater system and surrounding environment. For the PAG DSTF, an HDPE geomembrane liner will be installed over the subgrade to create an impermeable barrier that directs seepage and surface runoff from the PAG DSTF to the PAG contact water pond. It is essential that the filtered tailings in the DSTF are compacted to enhance effective strength under both static and seismic loading conditions to meet design criteria. The sealing of the tailings surface and the incorporation of underdrains beneath the NAG DSTF, along with an overliner drain, will promote drainage of the filtered tailings, reducing saturation and loss of effective strength. The proposed materials for the underdrains and overliner drain includes perforated HDPE dual-wall pipe and gravel wrapped in non-woven geotextile, using clean screened mine waste rock to meet drainage gravel specifications.

A limited geotechnical investigation for the DSTFs was performed that consisted of 4 geotechnical boreholes including standard penetration tests (SPT). Based on the geotechnical data, the ground conditions encountered at the DSTF consist of a 9 m thick layer of residual soil above bedrock. The overburden soil is primarily comprised of stiff to very stiff clay.

Groundwater levels were recorded at depths of 3 to 5 metres below the surface. Furthermore, the design earthquake, which has a return period of 1:475, was derived from the Brazilian regulation ABNT NBR 15421-2023. The site is situated in Zone 1, which has a peak ground acceleration (PGA) of 0.05 g.

Geochemical analysis of the tailings concluded that they are acidic and potentially acid-generating. The TCLP leach test showed no metal leaching above Brazilian water quality standards for the low-sulphide tailings. Therefore, a sulphide recovery system will be installed after the CU-Au flotation to create two streams of tailings: high sulphide tailings and low-sulphide tailings. The high sulphide tailings will be placed in the lined facility, while the low-sulphide tailings will be stored in the unlined facility.

18.5.6 Stability Analysis

Stability analyses were carried out on the northwest side of one section of the DSTF, analyzing both static and pseudo-static conditions. Based on a site response analysis, the PGA in the natural base of the DSTF at the foundation, considering Type D soil, is estimated to be 0.12 g. The seismic coefficient was estimated at 0.06. The Guidelines for Mine Waste Dump and Stockpile Design (2017) standards were used for the factors of safety for a 'Moderate' consequence facility, as shown in Table 18-2.

Table 18-2: Minimum Factor of Safety

Loading Conditions	Minimum Factor of Safety Required
End of Construction	1.3
Long Term	1.5
Pseudo-static	1.1

Source: GMWDSD, 2019.

Limit equilibrium analysis was performed using peak effective strength soil parameters obtained from the laboratory triaxial tests. The analysis results for the DSTFs at ultimate configuration indicate adequate factors of safety under static and pseudo-static conditions.

18.5.7 Stormwater and Sediment Assessment

For the DSTF stormwater and sediment assessment details refer to Section 18.9.3.1.

18.5.8 Instrumentation and Monitoring

The stability of the DSTFs will be monitored by vibrating wire piezometers strategically placed within the base of these facilities. In addition, inclinometers and prims will be placed in permanent exterior slopes during operation.

Additionally, water quality monitoring instrumentation will be implemented for monitoring of the surface contact-water flows at the contact water pond located around the facility collecting surface and underdrain flows.

18.5.9 Closure Concept

The DSTFs will provide long-term storage of filtered tailings and will remain in place beyond the closure of the mine. The DSTF will be progressively closed in stages following the completion of each lift to maintain slope stability, reduce dust, limit water infiltration, and prevent contaminant migration while remaining visually compatible with the surrounding area.

The cover system, depending on the availability of materials, will consist of saprolite and topsoil with local vegetation. It is designed to minimize future infiltration of surface water into the DSTF. This cover system will enable the DSTF collection channels to shift from collecting contact water during operation to collecting non-contact water after closure. After closure, the runoff will be directed to natural waterways. Enough topsoil will be stockpiled during construction to facilitate closure.

18.5.10 Construction and Operations

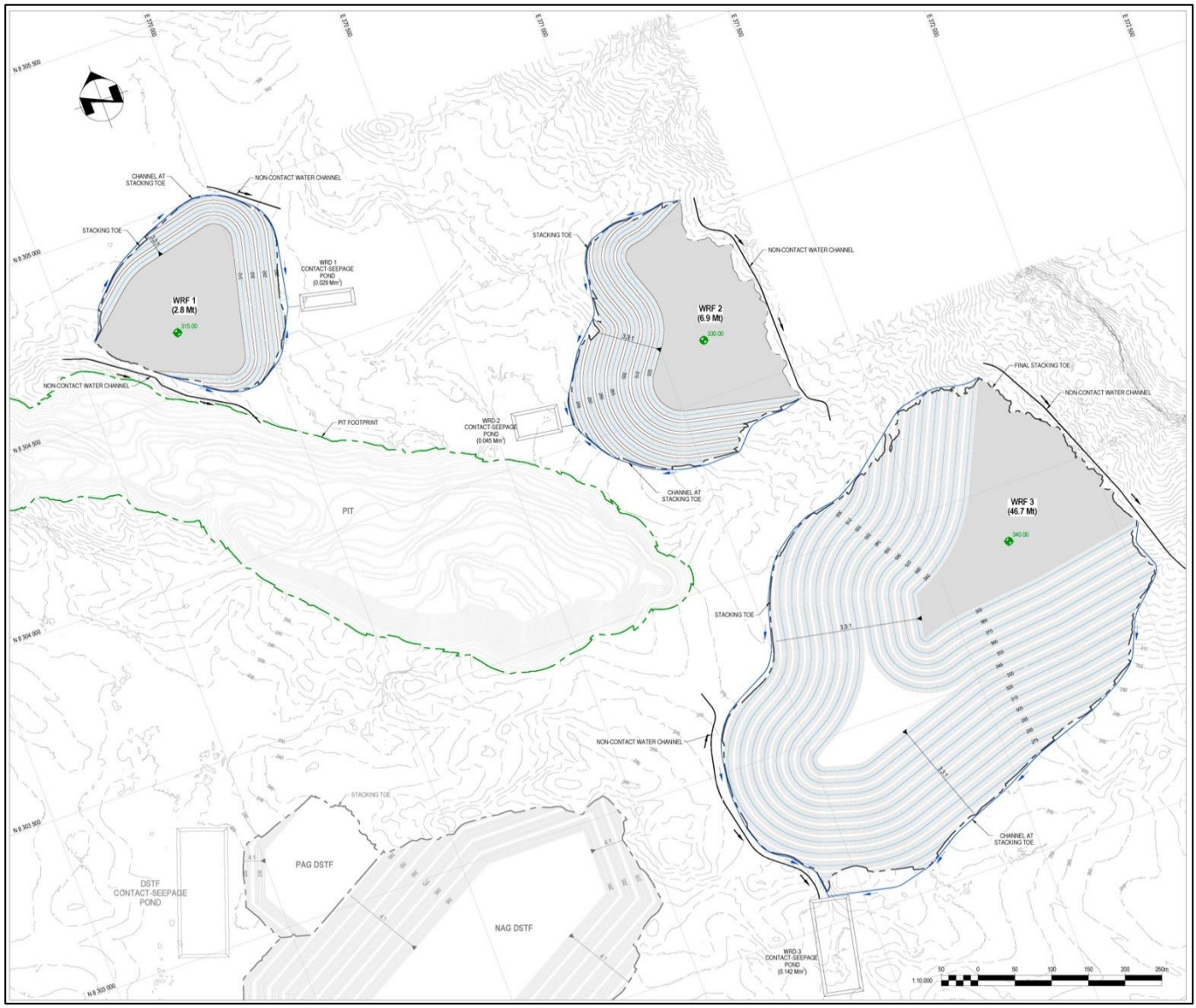
The construction of the DSTF is a complex multi-step process that includes progressive construction of temporary and permanent surface water management structures, foundation preparation, and starter facility construction. Based on the stacking schedule, correct planning and scheduling will be followed by careful installation and protection of the various infrastructure and monitoring equipment.

An “Operation, Maintenance, and Surveillance (OMS) Manual” will be prepared and available before operations commence. It will outline the requirements for inspection and maintenance, the planning and scheduling of construction activities, filtered tailings deposition plans, dust control measures, contact water management structure maintenance, and details regarding closure.

18.6 Waste Rock Facilities

Three waste rock facilities are located north and east of the open-pit. The facilities will accept overburden (saprolite and saprock) waste rock (Refer to Figure 18-11). The facilities are designed to provide secure and permanent storage of approximately 94.1 Mt of non-economic waste rock and overburden over the 10-year mine life. Non-economic waste rock and overburden produced by mining activities will be placed in the three facilities or used to construct site infrastructure, such as road base, construction, and maintenance materials.

Figure 18-11: Waste Rock Facilities



Source: Ausenco, 2025.

18.6.1 Design Criteria

The key design criteria for the WRFs are as follows:

- The waste storage facilities will be designed by the Guidelines for Mine Waste Dumps and Stockpiles (2017)
- The facilities are designed to ensure a safe and environmentally acceptable facility for storing 94.1 Mt of waste materials.

- This facility is classified as 'Moderate.'
- The waste materials are non-acid-generating.
- The WRSF entails stacking waste materials in one-metre layers.
- The minimum factors of safety (FoS) will comply with the design for the 1 in 475-year seismic event, following the guidelines mentioned above.
- Operations for non-contact and contact surface water management structures are designed for the 1 in 100-year storm event.
- Waste rock lifts are stacked from the bottom up.
- Contact water collected in the ponds will be treated if necessary and released into the environment.

18.6.2 Stacking Plan

Waste materials from the open-pit will be stored in three facilities. From preproduction through part of Year 2, saprolite, saprock, and waste rock will be kept in WRF 1 and 2. Starting in year 2 and continuing through Year 10, these materials will be placed in WRF3. The materials will be spread and compacted to minimize infiltration and enhance the stability of the facilities.

The WRFs will be stacked in 1-metre layers to achieve a 10-metre high lift with 2.5:1 (H:V) lift faces and 8-metre-wide benches, resulting in a global slope of 3.3:1 (H:V). Water Management The water management system for the WRFs consists of surface water management and non-surface water management. Surface water management includes three components: non-contact water for the WRF in open diversion channels around the perimeter of the facilities; contact water for the WRF in an open diversion channel on the surface of the facilities; and non-surface water at the foundation and waste material contact, captured by an underdrain system. The diversion channels collect non-contact surface runoff from natural areas surrounding the facilities and direct it to drainage areas outside the WRFs' footprints. The surface water collection system is designed to gather surface contact runoff and direct the water to the contact water ponds during operation. After closure, the WRF surface water collection channels will transition into non-contact water collection channels.

The contact water should solely contain sediment from these facilities, which will be directed to ponds, flocculated to remove sediment, and then discharged into the environment. Samples for water monitoring will be regularly taken to ensure that the discharged water meets quality standards. The operational channels are designed to handle runoff from a 1-in-100-year event.

Below each WRF, an underdrain consisting of perforated HDPE dual-wall pipes and drainage gravel wrapped in non-woven geotextile captures near-surface groundwater and any seepage from the piles. The WRFs are designed to be stacked from the bottom up and graded and compacted to improve the overall stability of these facilities.

Associated surface and drainage water management structures will be constructed in phases correlating to the expansion of the WRFs. The construction of the WRFs will involve deforestation, clearing and grubbing, removal of topsoil and unsuitable foundation soils, and stockpiling for progressive closure with the foundation consisting of saprolite compacted to reduce infiltration into the subgrade from potential seepage. The underdrains will be placed in

trenches keyed into the thalweg of drainages for protection against the significant loading stress from these facilities. The ultimate WSFs are designed to have a storage capacity of approximately 94.1 Mt of waste materials.

The main design features of the WRF are summarized below:

- The permanent exterior lift surfaces of the WRF have slopes of 2.5:1 (H:V) with 8 m wide benches and an overall slope of 3.3:1 (H:V). Flow from the underdrain's discharges into contact water ponds. The WRF includes extending underdrains, non-contact diversion channels, and contact water channels during the facilities' expansion. The top surfaces will be compacted to minimize infiltration. Permanent exterior slopes will be compacted to improve the stability of the permanent slope.
- Once the permanent slope of a lift is completed, it will be closed off with saprolite soils, topsoil, and vegetative cover to minimize sediment generation.

The foundation soils will be compacted to minimize the impacts of seepage water from the WRF on the groundwater system and surrounding environment. The proposed material for the underdrains is perforated HDPE dual-wall pipe and gravel wrapped in non-woven geotextile, with the gravel being clean screened mine waste rock that meets drainage gravel specifications.

The geotechnical investigation of the three WRFs as part of the PFS included 13 boreholes incorporating SPTs. According to the geotechnical data, the ground conditions at the WRFs comprised residual soils with depths ranging from 5 to 9 metres above bedrock. The overburden soil is primarily made up of hard to very stiff clays. Bedrock outcrops were observed within the WRF. During the PFS, a geochemical characterization program of waste material was conducted, which concluded that the waste was non-acid-generating (NAG).

Stability analyses were performed on each of the WRFs using both static and pseudo-static methods. Based on a site response analysis, the PGA in the natural base of the DSTF at the foundation, considering Type C soil, is estimated at 0.98 g. Similarly, the PGA for the natural base of the DSTF at the foundation, accounting for Type D soil, is estimated at 0.12 g. The seismic coefficient is estimated at 0.06. The Guidelines for Mine Waste Dump and Stockpile Design (2017) standards were used to determine the factors of safety for a 'Moderate' consequence facility, as shown in Table 18-2.

Table 18-3: Minimum Factor of Safety

Loading Conditions	Minimum Factor of Safety Required
Short Term	1.3
Long Term	1.5
Pseudo-static	1.1

The analysis results for the WRFs in their ultimate configuration indicate satisfactory safety factors under both static and pseudo-static conditions.

18.6.3 Stormwater and Sediment Assessment

For the details of the stormwater and sediment assessment for the WRFs, refer to Section 18.9.3.2.

18.6.4 Instrumentation and Monitoring

Vibrating wire piezometers strategically placed within the base of the WRFs will monitor their stability. In addition, inclinometers and prims will be placed in permanent exterior slopes during operation. Additionally, water quality monitoring instrumentation will be implemented to monitor the surface contact-water flows at the contact-water ponds located around the facility, which collect surface and underdrain flows.

18.6.5 Closure Concept

Vibrating wire piezometers strategically placed within the base of the WRFs will monitor their stability. In addition, inclinometers and prisms will be placed in permanent exterior slopes during operation. Additionally, water quality monitoring instrumentation will be implemented to monitor the surface contact-water flows at the contact-water ponds located around the facility, which collect surface and underdrain flows.

18.7 Power and Electrical

18.7.1 Power Supply

Power demand for the project is presented in Table 18-5 and Table 18-6. The power demand was calculated based on the mechanical equipment list. As design criteria a power correction factor of 0.92 was adopted. The power correction must be done in the electrical room. The demand and utilization factors adopted are presented in Table 18-4.

Table 18-4: Demand and Utilization Factors

Description	Value
Demand Factor – Phase 1	0.87
Utilization Factor – Phase 1	0.79
Demand Factor – Phase 2 (Expansion)	0.84
Utilization Factor – Phase 2 (Expansion)	0.77

Table 18-5: Power Demand – Phase 1

Transformer TAG	Nominal Power	Power Demanded	Loading
11100-TX-001	12 MW	11.815 MW	98.5%

Table 18-6: Power Demand – Phase 2 (Expansion)

Transformer TAG	Nominal Power	Power Demanded	Loading
11100-TX-001	12 MW	11.688 MW	97.4%
11100-TX-002	5 MW	4.654 MW	93.1%

It was not possible to evenly distribute the loads of the initial phase and expansion among the transformers, which had to be specified with different nominal power ratings. As a result, the transformers will not be able to operate with a bus tie section (transformer paralleling).

Emergency generators will be used to supply power to critical motors in case of power outages, for example to slurry agitators and thickeners, to avoid damage to equipment.

Loading analysis of the emergency generators for the initial and expansion phases is presented in the following tables.

Table 18-7: Emergency Generator – Phase 1

Emergency Generator TAG	Nominal Power (kVA)	Power Demanded (kVA)	Loading (%)
11200-GE-001	750	291.3	38.8

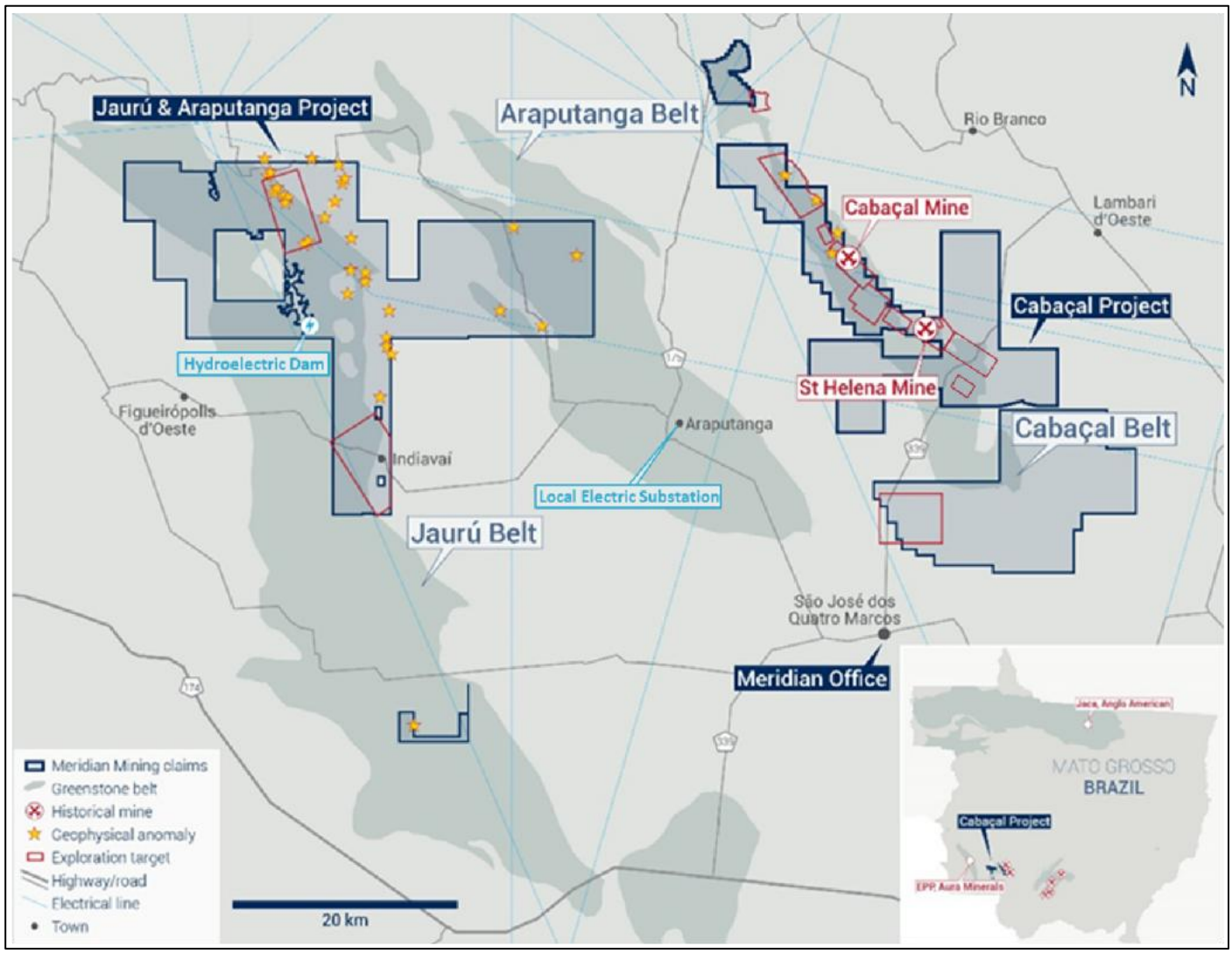
Table 18-8: Emergency Generator – Phase 2 (Expansion)

Transformer TAG	Nominal Power (kVA)	Power Demanded (kVA)	Loading (%)
11200-GE-001	750	429.6	57.3

18.7.2 High-Voltage Power Supply

The electrical system to supply the power demand of 11,688.7 kVA of the first phase and 4,701.1 from the second phase in the project region is composed of a transmission line of 138 kV originated in Jaurú 230/138 kV substation (SE) that reaches Araputanga city and continues to São José dos Quatro Marcos city. São José dos Quatro Marcos is interconnected in 138 kV with the Juba I and II hydroelectric power plants.

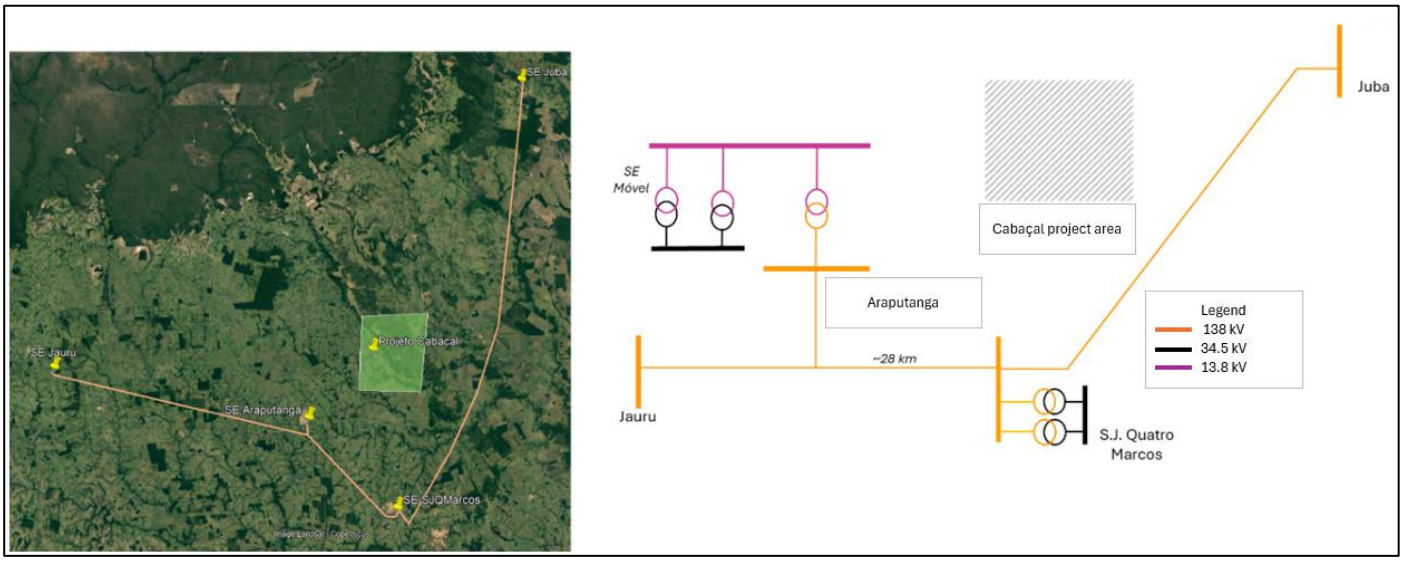
Figure 18-12: Location of Cabaçal Project and Araputanga's Substation



Source: Meridian, 2021

The region where the Cabaçal Project will be implemented is electrically supplied by Energisa Mato Grosso Distribuidora de Energia S.A. - Energisa MT (local power concessionary), at 138 kV, 13.8 kV, and 34.5 kV, as shown in the simplified diagram below.

Figure 18-13: Electrical Grid in the Cabaçal Project Area



Source: Ausenco, 2025

The Araputanga Substation which is the closest substation to the Cabaçal Project (about 23 km of distribution line to be constructed), is fed through a branch of the 138 kV Jaurú – São José dos Quatro Marcos transmission line (dry tap) about 28 km from the latter.

The main intervention is the construction of a 138 kV line entry span and its peripherals, such as: associated protection system, integration into the supervisory system, and integration into the auxiliary services system, to be established in the connection contract, including the sharing of facilities. With regard to the electrical performance of the local grid, the line and transformation loads are shown in Table 18-9 below.

Table 18-9: Electrical Performance - Araputanga's Substations

Analysed Asset	Nominal Capacity (MVA)	Load (%)
	2027	2030
Transformer 138 – 13.8 of Araputanga	**18.7**	**78**

In summary, before the connection of Cabaçal project and within the considered horizon, the system shows satisfactory performance, both in terms of voltage profile and the loading of the distribution network in the region.

From the perspective of load flow, it is concluded that:

- The alternative is viable for connecting the Cabaçal Project to the local distributor's network, and
- No need for reinforcements in the transmission and/or distribution networks was identified in the power flow analyses, as the pre-existing system is capable of accommodating the new access within the available capacity margins.

For the transmission line, considering the maximum expected load for Year 4 of the project, according to the demand calculated for the Cabaçal Project, the line should be built according to the standard stipulated by the Energisa MT concessionaire, as recommended by ANEEL (Agencia Nacional de Energia Eletrica) Normative Resolution No. 1,000/2021. Therefore, the following can be stipulated:

- Power: 72 MVAa
- Conductors: CAA 107.22 mm² "Penguin"
- Installation temperature: 60°C
- Lightning cable: Galvanized steel 3/8” HS
- Right-of-way width: 20 metres

Concrete structures with double T poles or monomast-type metal structures. Both options have the same order of magnitude in costs. The final choice of structure type will follow the criterion of lowest cost, which in turn depends on local variables such as crane access, terrain, and availability of ready-mix concrete in the region. All the above parameters must be compared with the standard of the Energisa MT distributor.

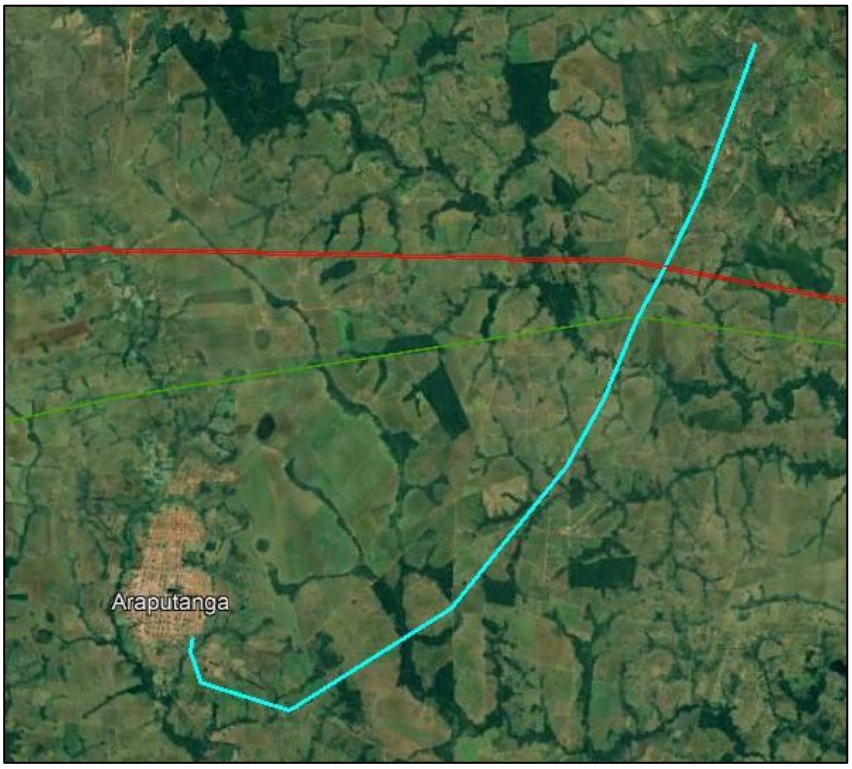
18.7.3 Transmission Line Route Analysis

The main constraints for the route of the interconnection line with the Cabaçal Project plant are:

- Interference with the aerodrome of the city of Araputangaa
- Proximity to existing accesses
- Areas of formal or potential legal reserves
- Areas of permanent preservation
- Crossings with Basic Network transmission lines: LT 230 kV Jaurú – Várzea Grande (circuits 1 and 2) and LT 500 kV Jaurú – Cuiabá (circuits 1 and 2).

The route presented below was obtained from satellite images dated 2023. It considers these constraints and leads to a total length of 23.2 km.

Figure 18-14: Route of Selected Alternative



Source: Ausenco, 2025.

18.7.4 Suggested Characteristics for SE Cabaçal

The following configuration is suggested for SE Cabaçal:

- Simple busbar line arrival arrangement
- Linear connection arrangement to the transformer, without circuit breaker bypass switch
- Protection scheme only with transformer protections acting on the circuit breaker
- Transformer power 20 MVA in ONAF mode, Dyn connection
- Secondary voltage arrangement in insulated cables, connected to shielded panels (SF6 or vacuum).

Notes:

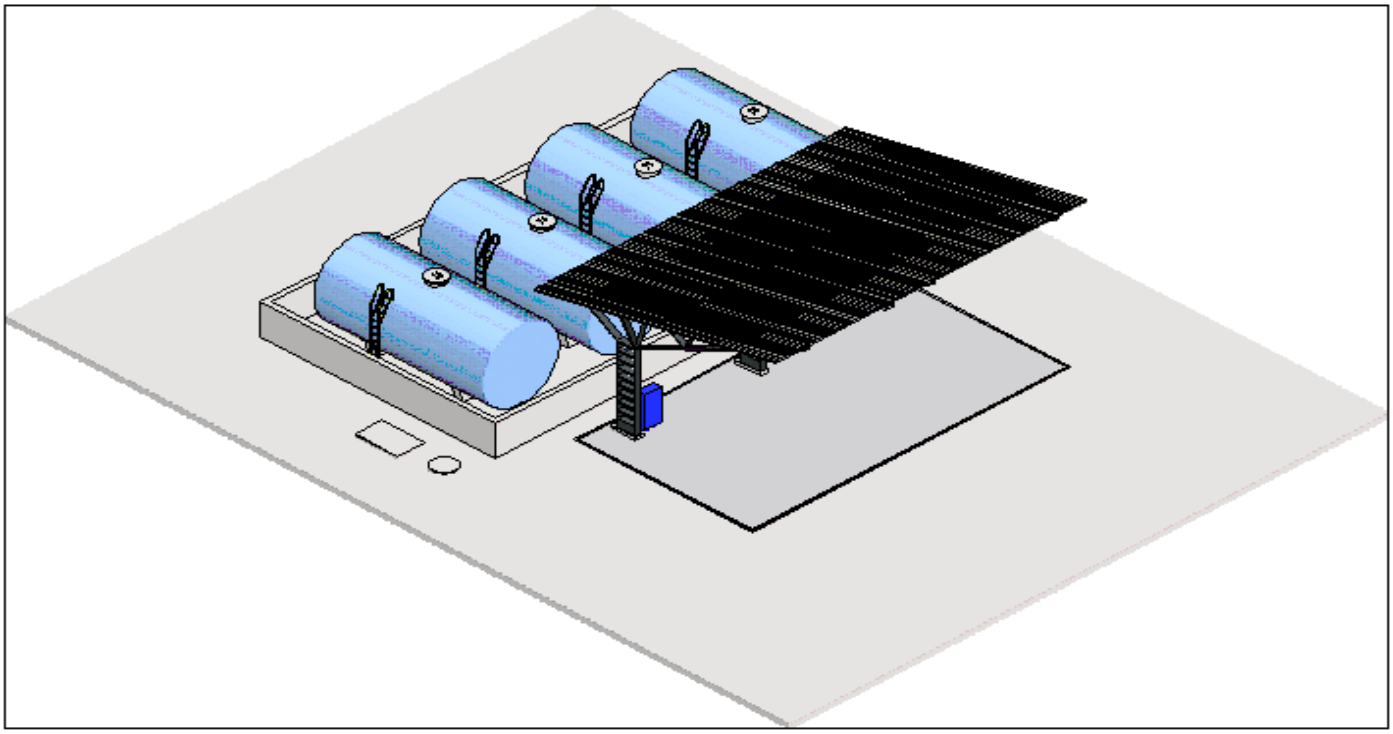
- This configuration is the most basic and will result in lower Capex costs
- The need for voltage regulation on the transformer will depend on the characteristics of the consumer's industrial process

- Estimated area: 1,800 m²
- Since there will be a circuit breaker at SE Tap for the protection of the 138 kV interconnection line with the plant, there is no need for a line protection system from SE Cabaçal.

18.8 Fuel

There will be a fuel storage tank and dispensing station for the mine fleet and other site equipment located on the truck shop pad. The facility will be complete with 150,000 L capacity to meet the fuel demands of the plant's energy supply and mining operations.

Figure 18-15: Gas Station 150,000 L



Source: Ausenco, 2025.

18.9 Water Supply and Management

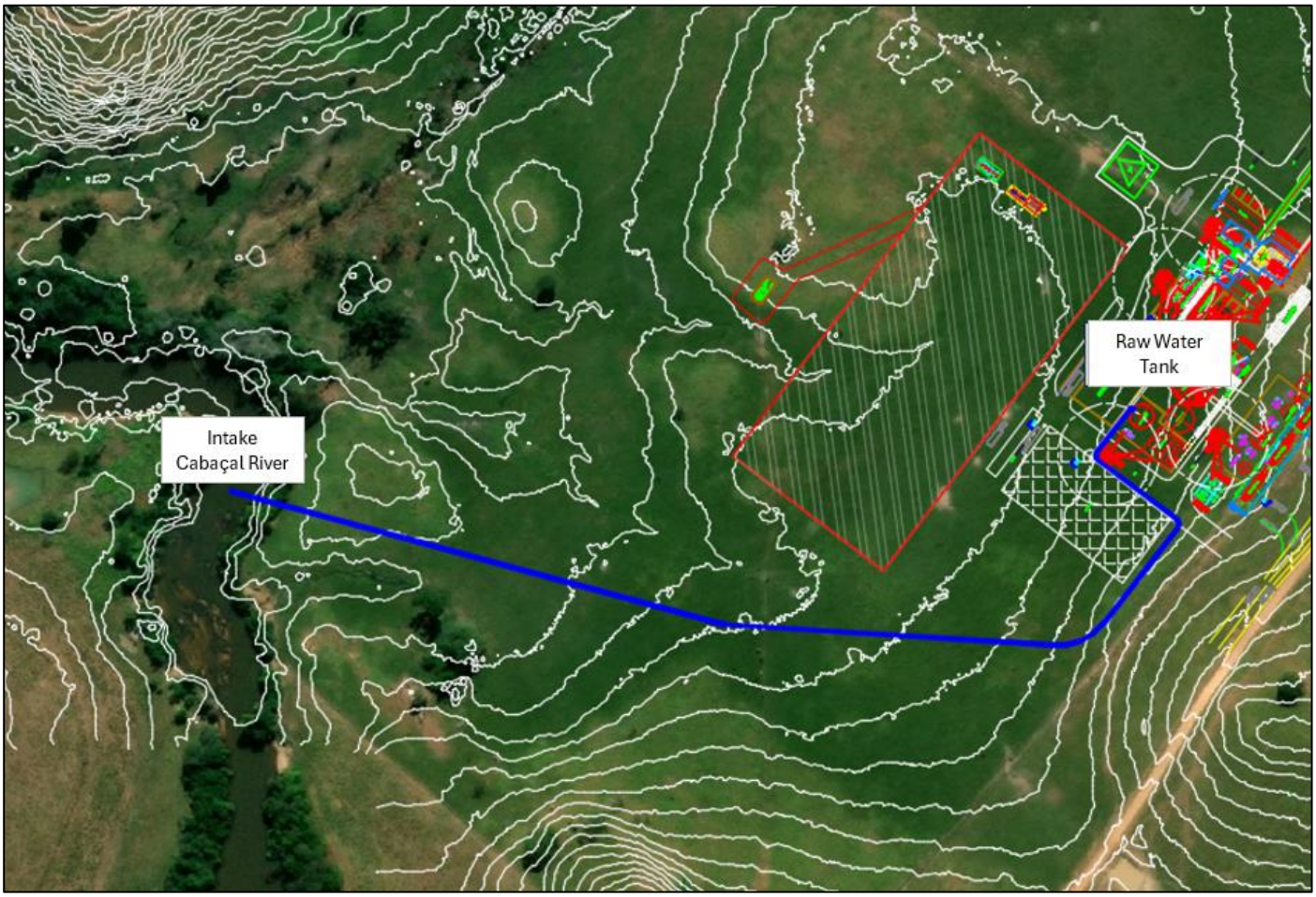
18.9.1 Water Supply

Raw water will be sourced from the nearby Cabaçal river for use in reagent mixing, gland water for slurry pumps and flushing water for the new concentrate filter. Raw water demand (see Section 17.6) is 326.1 m³/h over the life of mine (LoM) for the process plant.

18.9.2 Route and Profile

The length of the water intake system from the Cabaçal River to the raw water tank at the plant is approximately 622.0 m, which includes a 5% safety factor (590.0 m without the factor). The water from Cabaçal river is low in solids content, hence only a protection screen at the water intake will be necessary. The system route is presented in Figure 18-16.

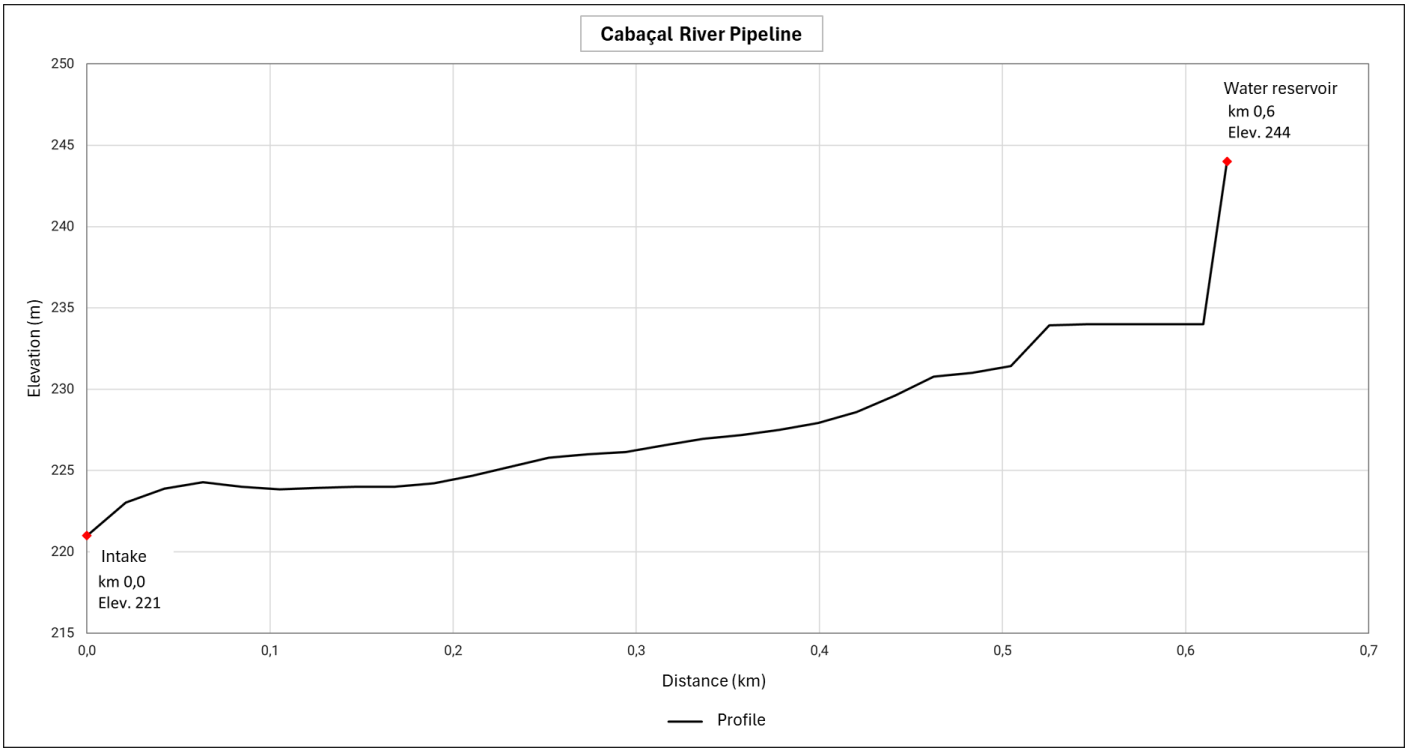
Figure 18-16: System Route



Source: Ausenco, 2024.

The profile of the pipeline can be viewed in Figure 18-17.

Figure 18-17: Water Pipeline Profile



Source: Ausenco, 2024.

Cabaçal river will also supply the plant with potable water, with a demand of approximately 1 m^3/h during LoM. Nevertheless, a future study aimed at defining the potable water supplier must be executed. For the potable water a treatment station will be dimensioned according to consumption needs in accordance with the Personnel Location Chart. The water treatment station location will have as a priority the closest proximity to the point of capture of water for its supply.

18.9.3 Water Management

The foundation of the contact water management is to collect the surface runoff in contact with the DSTF and Waste Rock Facilities (WRF) in an open diversion channel on the surface of the facilities and non-surface water at the foundation and material contact, captured by an underdrain system. The surface water collection system is designed to gather surface contact runoff, which should contain sediments, and diverted to the contact water ponds during operation and then discharged into the environment.

During construction the pre-stripping development phase of the Project will include measures to mitigate erosion and potential contamination.

During closure stage, the contact water collection water will transition into non-contact water collection channels.

The same philosophy will be applied to non-contact water. The diversion channels will collect surface runoff and sediments from natural drainage areas of the facilities perimeters and divert it to ponds which will temporarily store the water and sediments before releasing to the environment outside the facilities footprints.

The storm water management system is based on the application maximum precipitation events and applying a return period criteria dependent on the case.

The daily maximum precipitation for different return periods is shown in Table 18-10. This parameter was calculated based on the daily precipitation record of Colonia Rio Branco meteorological station, located about 14 km from the project site and operated by the Agência Nacional de Água (ANA), the length of the data record used for this analysis was 32 years.

Also, additional studies regarding environmental geochemistry and hydrology will be conducted in the FS stage of the project.

Table 18-10: Daily maximum Precipitation for Different Return Periods

Return Period	Daily Maximum Precipitation (mm)
5	117.0
10	135.1
20	153.0
50	177.2
100	196.3
200	216.2
500	244.0
1000	266.5
2000	290.0
10 000	353.7

Source: Ausenco, 2025.

18.9.3.1 DSTF Water Management

The DSTF's water management is based on the Brazilian ABNT NBR 13029 regulation (Mining – Elaboration and presentation of a mining waste disposal design), which includes specific measures to mitigate, control, and monitor the impacts on water resources within the area of influence in management programs. The DSTF's water management system encompasses surface water management and non-surface water management. Surface water management consists of three components:

- Non-contact water for the DSTFs is diverted around the facilities in open diversion channels.
- Contact water for the DSTFs is conveyed to the contact water pond in open diversion channel that run on the surface of these facilities.
- An underdrain system will capture non-surface water, seepage, and near-surface groundwater in the foundation and tailings.

The diversion channels capture non-contact surface runoff from the natural areas surrounding the facility and direct it to drainage areas outside the DSTF footprints. The DSTF surface water collection system was designed to collect surface contact runoff and channel the water to the contact water ponds during operation. After closure, the DSTF surface water collection channels will become non-contact water collection ditches. The contact water should only contain sediment from the NAG DSTF and will be directed to NAY contact water ponds, treated with flocculant, and then discharged into the environment. The contact water from PAG DSTF may contain acid and metals; it will be conveyed to the PAG DSTF contact water pond. Water monitoring will occur regularly to ensure that the water discharged meets water quality standards. If the water does not meet these standards, the water from the sediment ponds will be used for process water or treated before being discharged into the environment. The channels are designed to convey runoff per the 1 in 500-year, 24-hour storm event requirements for operations (minimum return period for definitive drainage peripheric channel).

The non-surface or drainage water management is perforated HDPE dual-wall pipes and drainage gravel wrapped in a non-woven geotextile capturing near-surface groundwater and any seepage from the tailings to reduce any phreatic surface in the base of the tailings facilities.

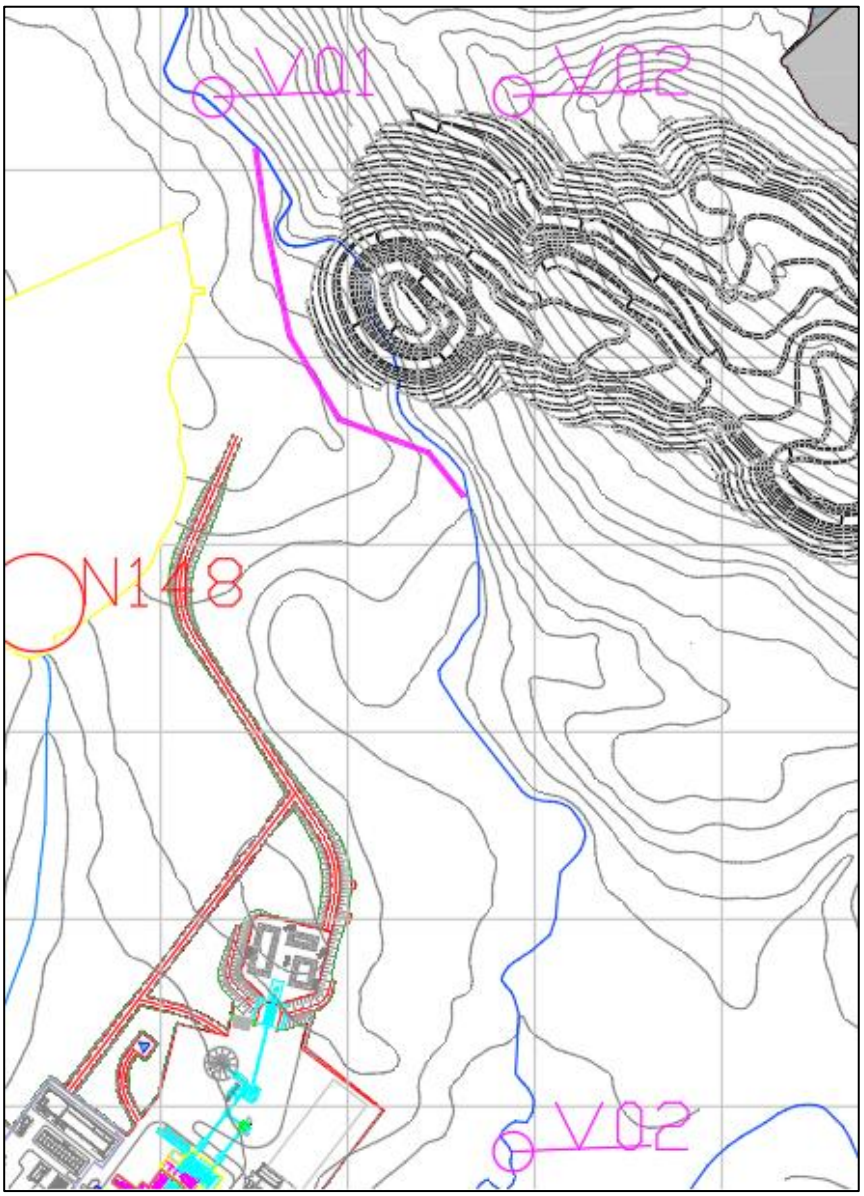
18.9.3.2 WRFs Water Management

The foundation of the contact water management is to collect the surface runoff in contact with the three WRFs and diverting it to ponds which will temporarily store the water and sediments before releasing to the environment. The water management structures for this facility consider the 1 in 100 year 24-hour storm event for the operations stage based on ABNT NBR 13029 (Mining – Elaboration and presentation of a mining waste disposal design) which mentioned the minimum return period for temporary drainage channels is the 1 in 100-year 24-hour storm event. Non-contact water management has the same design criteria for the three WRFs.

18.9.4 Water Courses Diversion

The following solutions for watercourse diversions were identified but will be further developed during the feasibility study. Therefore, no Capex estimation is included in the PFS. At the Manuel Lemos stream upstream, near point V01 (coordinates provided in Table 18-11), a river cut is proposed to maintain the natural course of the stream. Given the topography, this solution is considered the most viable to ensure the continuity of the stream's flow at point V02, as shown in Figure 18-18.

Figure 18-18: Manuel Lemos Diversion Channel



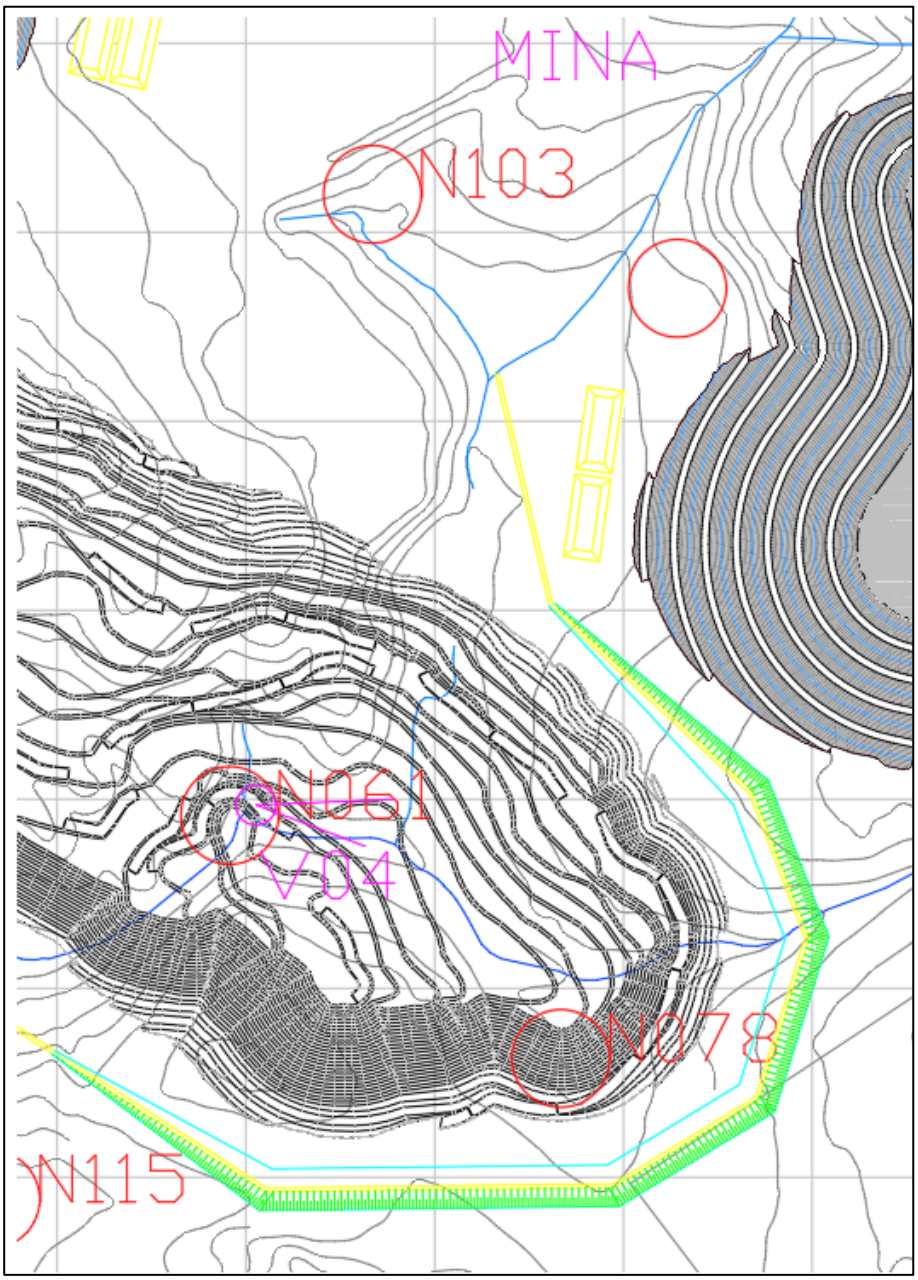
Source: Ausenco, 2025.

For the Mina Stream, upstream from the pit, we have two diversion options:

1. Execute a river cut near N103, heading southeast, connecting it to another branch of the stream near spring N078, bypassing the pit until a discharge point.

2. Build a reservoir and pump the water around the pit near point V03 as shown in Figure 18-19.

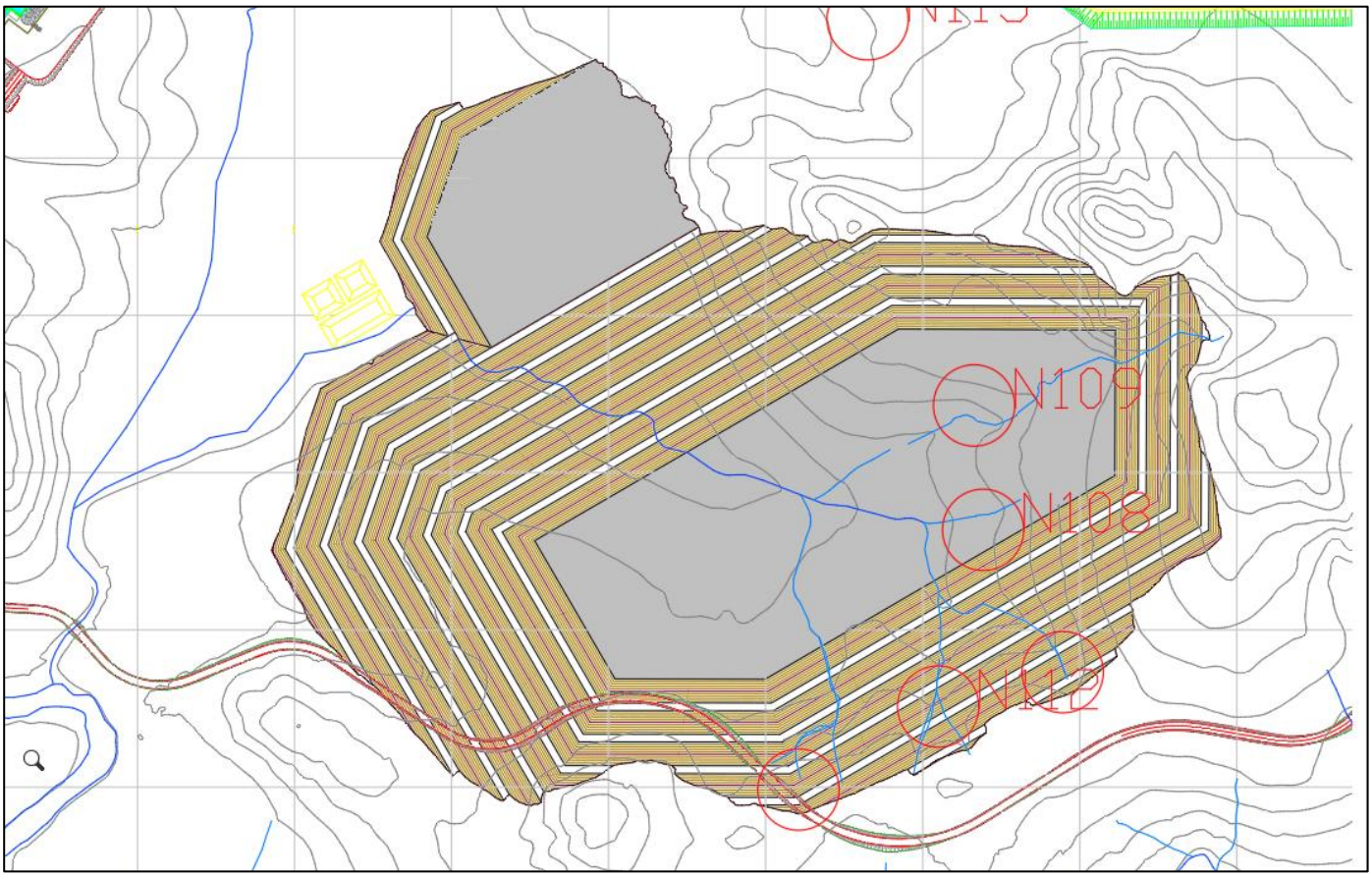
Figure 18-19: Mine Diversion Channel



Source: Ausenco, 2025.

For the N108, N109, and N112 springs located under the NAG DSTF, as an engineering solution, it is recommended to capture the springs in a spring box connected to the underdrain system (Refer to Figure 18-20).

Figure 18-20: DSTF Interference with Springs



Source: Ausenco, 2025.

Table 18-11: Water Course Flow - Measurement Points

Name	Water Course	Drainage basin area (km²)	Drainage basin area (km²) in the section between measurement points	UTM Coordinates			Rainy Season Flowrate (L/s)	Dry Season Flowrate (L/s)	Dry season flow rate (% compared to the rainy season)	Specific flow during the dry period (L/s·km²)	Specific flow during the dry period, by section (L/s·km²)
				X	Y	Elevation (masl)					
V01	Manoel Lemos Creek upstream	9.34	9.34	368956	8304678	232	169	20	12%	2.14	2.14
V02	Manoel Lemos Creek downstream	10.18	0.84	369277	8303552	218	169	22	13%	2.16	2.39
V03	Mine Creek downstream	5.58	0.64	369392	8303423	222	188	15	8%	2.69	7.81
V04	Mine Creek upstream	4.94	4.94	370311	8303794	244	101	10	10%	2.03	2.03
V05	Gold Creek upstream	1.28	1.28	371267	8302478	241	45	4	9%	3.12	3.12
V06	Gold Creek downstream	3.43	2.14	370709	8301703	219	115	18	16%	5.25	6.53
V07	Eldorado Creek	4.83	4.83	372101	8300847	215	113	13	12%	2.69	2.69

Note: Coordinates in UTM projection, Datum SIRGAS 2000, Zone 21S. Source: Hidrovias, 2025.

19 MARKET STUDIES AND CONTRACTS

19.1 Summary

No formal market studies or product valuations were completed as part of the 2025 PFS. Market price assumptions and payment terms were based on a review of public information, industry consensus, standard practices, and specific information from comparable global operations. Regular contact has been maintained with a select group of commodity traders and copper smelters with the objective of understanding future customer requirements and market conditions.

For this Technical Report, a gold price of USD2 119/oz, copper price of USD4.16/lb, and silver price of USD26.89/oz were assumed and exchange rate reported in Brazilian Reals (BRL) to United States dollars (USD): BRL5.99 = USD1.00 and United States dollars (USD) to Canadian dollars (CAD): USD1.00 = CAD1.453 was used.

The economic analysis applies refining charges and payment terms based on benchmarks for comparable operations located globally. Payable gold in doré is assumed to be 99.9%, with a refining charge of USD0.50 per oz of payable gold. For copper concentrate, road and port costs are assumed to be USD158.99/t of concentrate shipped. This cost considers truck transport from the site to Port Açu over an approximate distance of 2,560 km, including taxes. Port costs account for storage and loading operations.

19.2 Market Studies

No formal market studies or product valuations were completed as part of the 2025 PFS. Market price assumptions and payment terms were based on a review of public information, industry consensus, standard practice and specific information from comparable operations globally. Regular contact has been maintained with a select group of commodity traders and copper smelters with the objective of understanding future customer requirements and market conditions.

19.3 Commodity Price Projections

Project economics were estimated based on the long-term metal prices summarized in Table 19-1. These prices are consensus forecasts from numerous financial institutions compiled by CIBC in November 2024.

Table 19-1: Base Case Metal Prices

Metal Price	Unit	Value
Gold Price	USD/oz	2 119.00
Copper Price	USD/lb	4.16
Silver Price	USD/oz	26.89

The precious metal markets are highly liquid and benefit from terminal markets around the world (e.g., London, New York, Tokyo, and Hong Kong). The spot price for gold and Comex cash settlement price for copper on February 27, 2025, was USD2 919/oz and USD4.54/lb, respectively. Long-term consensus price forecasts for gold and silver ranged from USD1 750/oz to USD2 963/oz for gold and from USD21.50/oz to USD35.828/oz for silver.

19.4 Refining Charges, Payment Terms & Penalties

The economic analysis applies refining charges and payment terms based on benchmarks for comparable operations globally. Payable gold in doré is assumed to be 99.9%, with a refining charge of USD0.50/oz of payable gold. The copper concentrate treatment and refining terms used for the economic analysis are shown in Table 19-2.

Table 19-2: Treatment and Refining Terms

Treatment and Refining Terms	Unit	Value
Treatment of Cu Concentrate	USD/dmt	70.00
Refining of Cu Concentrate	USD/payable lb	0.07
Refining of Au in Cu Concentrate	USD/payable oz	5.00
Refining of Ag in Cu Concentrate	USD/payable oz	0.50

For copper concentrate, road and port costs are estimated at USD158.99/t of wet concentrate. This cost considers truck transport from the site to Port Açu over approximately 2,560 km, inclusive of taxes. Port costs account for storage and loading operations.

A 1% deduction from the copper grade in concentrate is taken as free metal. Payable gold in concentrate is assumed to be 98% for concentrate grades above 0.7 g/dmt Au, while payable silver in concentrate is assumed to be 97% for grades above 30 g/dmt Ag.

The Cabaçal copper concentrate is expected to contain levels of deleterious elements that are well below the limits that would normally incur penalties from smelters.

19.5 Contracts

No marketing contracts exist at this PFS stage of project development. Since the release of the Cabaçal PEA technical report including a detailed analysis of copper concentrate from locked cycle testing, feedback from smelters and traders suggests that if a future Cabaçal mining operation produces a concentrate of similar quality, it would be highly sought after by smelters worldwide. This is due to the high copper grade, payable precious metals content, and clean composition with low levels of impurities that impact smelter operations and environmental performance.

19.6 Comments on Market Studies and Contracts

The QP notes that the pricing and payment terms used in the cash flow analysis are reasonably aligned with consensus estimates and benchmarks from comparable operations.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Environmental Setting

The Project is located primarily in areas of pastureland and small corridors of forests, which are part of Areas of Permanent Protection (APP), along major streams and their headwaters. The site is drained by a network of small streams; apart from these streams, no significant surface water features are directly impacted by the Project. The natural environment in the area of the Project has been significantly altered by a wide range of intrusive human activities that span many decades. No primary forest remains in the project area. Current land usage in the Project is a mixture of cattle and sheep grazing, and limited light cropping, in cleared areas adjacent to secondary forest along stream corridors. The latter are usually situated in low-lying areas. Historical mining on the project site has been closed and rehabilitated.

The Project's environmental area of influence (AOI) does not include villages or significant groups of dwellings.

20.2 Environmental Permitting Requirements

The Project is being developed in accordance with the Brazilian National Environmental Policy established on August 31, 1981 (Federal Law ref. No. 6,938). All activities that cause pollution or have the potential to pollute are subject to environmental licensing. The National Council for the Environment (CONAMA) established applicable rules regarding licensing procedures under Resolution 237 of December 19, 1997.

It is under this licensing procedure that the issuing agency determines the conditions, limits and measures for the control and use of natural resources and allows the installation and implementation of a mining project. Depending on the nature of the operation and geographic localization, licences are required to be issued by federal, state, or municipal agencies.

- Federal entities are responsible for licensing activities that may cause national or regional environmental impacts (where more than one federal state is affected).
- State entities, including the federal districts, are responsible for the environmental licensing of potentially polluting activities not compatible with the criteria defined in licensing laws by the municipalities.
- Municipal entities are responsible for licensing activities that may cause local environmental impacts, as defined by the state environmental agency.

Other criteria are also considered, such as the administrative responsibility for the management of protected areas including sustainable forests, water resources, conservation, and other protected areas.

Environmental liabilities associated with the original Cabaçal mining licence 861925/1980 have been discharged. Old buildings from the historic mine have been partially adapted for Meridian’s exploration requirements. Rio Tinto Zinc (RTZ) sealed the entrance to the underground mine. The tailings dam was decommissioned and rehabilitated.

According to permitting regulations, Article 225 of the federal constitution (1998) states that “Those who exploit mineral resources shall be required to restore the degraded environment in accordance with technical solutions directed by the lead public agency. The reclamation project must outline, in chronological order, the objectives aimed at achieving short, medium, and long-term goals. Short-term goals include topographic restoration of the land, erosion control, vegetation replanting, and waste management, among others. In the medium term it seeks to improve the physical and chemical properties of the soil, recycle nutrients, and encourage the reappearance of fauna. Finally, for the long-term, the self-sustaining recovery process must be supported, along with the soil-plant-animal inter-relationship and the future use of the area. Based on prior experience with similar-scale projects in Brazil, it is estimated that permitting actions will take approximately 18 months from now.

Regarding exploration activities, the Project currently holds two licenses (LOPM #331501/2024, valid until 02/15/2027 and LOPM #330101/2024, valid until 05/21/2026) which are regularly being updated as agreements are signed with landowners. The company currently has signed 65 formal agreements signed with landholders for geological survey activities.

20.3 Environmental Baseline and Impact Studies

Environmental baseline studies have been conducted as part of the Environmental Impact Study (EIA/RIMA) since January 2022 to support the Preliminary Licence (PL) application for the Project which has already been submitted to the Secretary for the Environment of the State of Mato Grosso (SEMA/MT). Sete Soluções e Tecnologia Ambiental Ltda (Sete; based in Belo Horizonte, Minas Gerais, Brazil), was hired by Meridian to carry out an EIA for the Cabaçal Project. Baseline studies involved the collection of surface water, groundwater, biodiversity, climate, and geochemical data.

The details of the environmental actions were presented in the Environmental Impact Study (EIA) and, later, will later be included in the Installation Licence Phase (LI) and in the Environmental Control Plan (PCA).

The environmental studies EIA/RIMA for the Cabaçal Project, prepared by Sete, were completed and submitted to the Secretariat of the Environment of the State of Mato Grosso (SEMA) in December 2023. On September 19, 2024, the Public Hearing for the Cabaçal Project occurred in Cuiabá, the capital of the State of Mato Grosso, both in-person, and virtually in the cities of Rio Branco and São José dos Quatro Marcos. Before the Public Hearing, a promotional program was conducted to inform the public about the event, during which the company also organized meeting spaces for the community members to participate. SEMA deemed the Public Hearing participation to be satisfactory. Questions were posed and discussed live with the technical team of the Cabaçal Project.

Subsequently, between December 9 and 12, 2024, with the participation of a multidisciplinary team from SEMA composed of 11 technicians inspected the project area to certify evidence of the project's environmental studies, with SEMA also issued a technical report and inspection report on January 13, 2025.

20.3.1 Environmental Area of Influence

The EIA assessed the potential impacts of the Project on the physical environment and/or local communities compared to baseline conditions. It included an evaluation of both the positive and negative aspects of the Project, using a scale

of high, moderate, low, or insignificant. Based on the likelihood of identified adverse impacts, measures will be developed to mitigate potential impacts to an acceptable level.

20.3.2 Environmental Control

Based on the impacts identified and evaluated by the implementation and operation of the Cabaçal Project, the prevention, control, mitigation, monitoring, and environmental compensation actions that Meridian should implement are presented in Table 20-1, below. The objective is to monitor the evolution of the impacts, both positive and negative, caused by undertaking this project.

The details of the environmental actions were presented in the Environmental Impact Study (EIA) and, later, will be included in the Installation Licence Phase (LI) and in the Environmental Control Plan (PCA).

Table 20-1: Environmental control, mitigation, monitoring, and compensation actions

Actions	Categories
Recovery Plan for Degraded Areas – PRAD	Mitigation
Forest Exploitation Project	Mitigation
Compensation Program	Compensation
Water Effluent Quality Monitoring Program	Monitoring
Erosive and Silting Process Control Program	Mitigation
Environmental Control Program at the Construction Site and Construction Phase	Mitigation
Environmental Noise Monitoring Program	Monitoring
Solid Waste Management Program	Mitigation
Air Quality Monitoring Program	Monitoring
Vegetation Suppression Monitoring Program and Possible Fauna Rescue	Monitoring
Environmental Education Program	Mitigation
Fauna Monitoring Program	Monitoring
Social Communication Program	Mitigation
Vibration Level Monitoring Program	Monitoring

Sources: Ausenco, 2023.

20.3.3 Biodiversity Studies

Brazil is a highly biodiverse country. Like other nations, it has established various laws and regulations to protect its environmental resources. Simultaneously, the country is working to diversify and expand its economy, with mining becoming an increasingly vital component. In accordance with Brazilian law and international Best Management Practices (BMPs), proponents of mining projects must strive for a practical and appropriate balance between project economics and environmental protection, including preserving biodiversity.

20.3.3.1 Flora

The project is situated in the Amazon biome, within transition region that interfaces with the Cerrado and Pantanal biomes. This region does not intersect with any National or State Parks.

Human activities have significantly changed the landscape over the past 50 years (refer to Figure 20-1). Extensive development of pasture, savannah, grasslands formation has occurred over the decades. In the project area, the forested spaces make up approximately 20% of the forest cover, comprising seasonal semi-deciduous trees (Equatorial Forest Broadleaf). The remaining area consists of approximately 80% pastureland, which includes rural dwellings, bamboo stands, and water bodies such as steams and dams. Pasture areas are characterized by very low plant biodiversity, as their formation results from vegetation suppression and the activities of cattle and sheep.

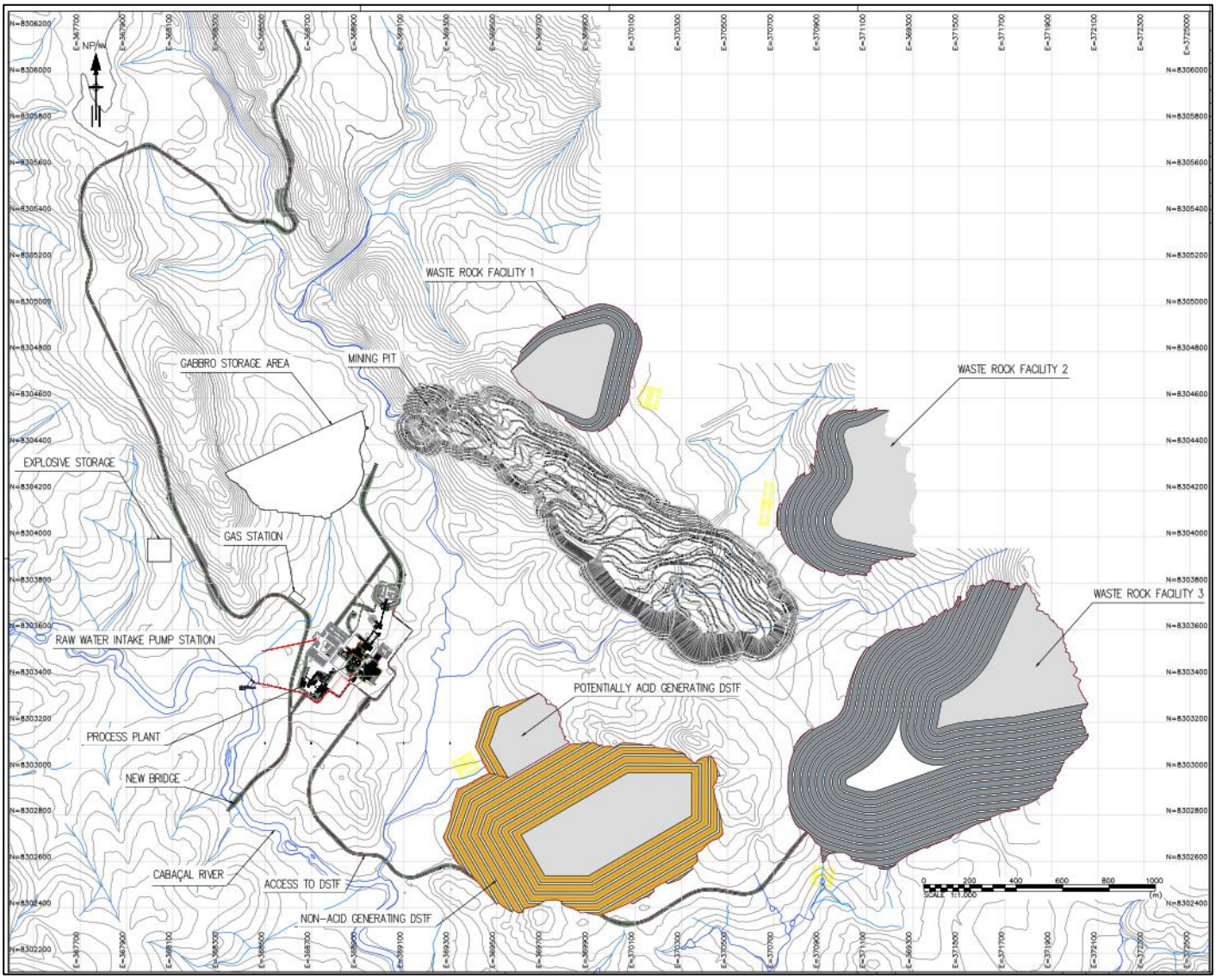
The presence of semi-deciduous seasonal forest is typically linked to areas of vegetation preservation (APP), which are distributed along the perennial or intermittent watercourses of the project area. Some seasonal watercourses will overlap infrastructure planned for the Cabaçal Project. The Cabaçal Project area lies within the priority area AMZ-793 for the conservation of biodiversity based on the Map of Priority Areas for the Conservation, Sustainable Use and Sharing of Benefits of Brazilian Biodiversity (Ministry of the Environment, 2018).

20.3.3.2 Fauna

The Project is located in an area heavily influenced by development and agriculture, which has already disturbed the original native forest ecosystem. Biodiversity losses, including the extirpation and extinction of several species within the broader region, have been linked to past anthropogenic activities and their associated impacts, driven by widespread grazing by livestock, as well as agricultural development.

Human activities directly influence fauna in the project area. Despite the anthropic alterations observed in the region, there are still remnants of native vegetation remaining, mainly on the tops of hills and close to watercourses. These remnants of natural vegetation shelter most of the diversity of fauna species, including endemic and endangered ones, and provide habitat for species. This emphasizes the importance of the study area for the conservation of local and regional fauna.

Figure 20-1: Cabaçal Layout



Source: Ausenco, 2025.

20.4 Geology and Geomorphology

The Cabaçal Project area is situated in the transition zone between the two geomorphological units: the Ronca–or - Salto do Céu Mountain Range (where the "Monte Cristo" or "Cabaçal" Mountain is found) and the Upper Paraguay Basin. The Cabaçal Project is positioned on the southwest slope of the Monte Cristo Mountain, which is noted for being a zone of headwaters for predominantly intermittent, ephemeral, and perennial streams.

The study area is in the southwest portion of the Amazonian Craton. Local geological units include the Alto Jaurú Group, which is represented by acid metavolcanic rocks, banded metacherts and banded chert-like tuffs (which host the Cabaçal mineralization), the Alvorada Intrusive Suite (granitic/granitoid bodies), the Alto Alegre Intrusive Suite (gabbro/diabase intrusions), and the Cabaçal Tonalite. A recent sedimentary cover is present over the site.

20.4.1 Soils

The soils in the study area primarily consists of Red-Yellow Latosols and Red-Yellow Argisols, which are deep and well-drained soils moderately suited for agriculture). Both soil types are associated with flat to gently rolling landforms. Furthermore, due to geological, geomorphological and pedogenesis processes, the area also includes other soil types: Litholic Neosols and Haplic Cambisols (underdeveloped soils), Fluvic Neosols (alluvial soils), and Gleissolos (hydromorphic soils).

20.5 Geochemistry

Meridian contracted SGS Lakefield Research in Canada to perform metallurgical testing for the Cabaçal deposit. In addition to metallurgical testing, SGS also carried out geochemical characterization of the mineralized material, overburden, and tailings. The geochemical tests were conducted to evaluate the generation of acid mine drainage and leaching, and the following tests were therefore performed: Acid Base Accounting (ABA), Net Acid Generation (NAG) and leaching by ABNT NBR 10006:2004 and TLCP.

The main findings from the geochemical characterization were:

- The Cabaçal VMS system features a low sulphur content with an S:Cu ratio of approximately 1.5.
- The sample assays did not indicate any potentially problematic elements such as As, Bi, Cd, Hg, Pb, Sb, and others.
- The primary sulphide minerals consists of chalcopyrite, pyrite and pyrrhotite with virtually no other Cu sulphide minerals present. The ratio of the three primary sulphides is 65:28:5, which aligns with the historical mineralogy of the deposit.
- Most of the Cu sulphide is basically released (average approx. 80%).
- A test was conducted to recovery of pyrite/pyrrhotite after Cu-Au flotation with the aim to desulphurize the tailings so that the combined tailings would not generate acid. Consequently, a fairly flat slope was observed, indicating that iron sulphide recovery is not critical for Cu or Au.
- All samples of mineralized materials were identified as acid generating, while only one overburden sample (Waste 12 TAC/VAP) was considered potentially acid-generating. One of the tailings samples was acid-generating (SCZ-1 Comb Tails), while another three are considered potentially acid-generating (CCZ-1 Comb Tailings, CNWE-a Comb Tailings and CNWE-2 Comb Tails). Most of the tailings contain low sulphides levels, therefore, they should not be acid-generating. However, further studies must be conducted to confirm that the tailings and waste rock are non-acid-generating or causing metal leaching.

- The Neutralization Potential (NP) as a function of %S, the tailings samples have a similar low NP of approximately 10 t CaCO3/1000 t. Some of the overburden samples have higher carbonate content and may provide increased NP.
- Samples with NP/AP <1 are considered acid-generating. Samples with NP/AP >3 are considered non-acid-generating. Samples between these two ratios are considered potentially acid-generating and will require additional testing. Samples with greater than 0.35% sulphur are likely to be acid-generating and, conversely, samples with less than 0.12% sulphur are likely to be considered non-acid-generating.
- Regarding the leaching test, no problematic elements were found leaching from any of the samples.

20.5.1 Archaeological Studies

In 2022, Meridian commissioned Totem Consultoria em Arqueologia Ltda (Totem) to carry out the initial archaeological survey of the Cabaçal Project. The Impact Assessment of the Archaeological Heritage of the Cabaçal Project (Archaeological Heritage Impact Assessment Project - PAIPA) was prepared and submitted for approval to the Institute of Historical and Artistic Heritage (IPHAN), the regulatory agency for archaeological finds in Brazil. Once the PAIPA was approved, Totem carried out surveys in the field, covering the area directly affected by the project. Bibliographical reviews of the physiographic and cultural contexts for the same area were also carried out, Excavations of 179 test pits were carried out across the project that were all negative for archaeological remains. However, two ceramic fragments were found on the surface of minor significance.

The data collected in the office and in the field were used to develop the Impact Assessment Report on the Archaeological Heritage of the Cabaçal Project (Archaeological Heritage Impact Assessment Report-RAIPA). After the archaeological surveys in the Cabaçal project area were conducted, two documents were filed with IPHAN: PAIPA and RAIPA (Archaeological Heritage Impact Assessment Report). Based on these documents, IPHAN evaluated the studies and granted the total licensing for Cabaçal project (preliminary, installation and operating licenses).

20.6 Socioeconomic Studies

The socioeconomic diagnosis conducted by Sete allowed to identify the locations that are most directly related to the Cabaçal project. Data were collected and interpreted on the population, infrastructure and municipal services available in the neighbouring cities of Rio Branco, the municipality in which the Cabaçal project is located, São José dos Quatro Marcos, where the project's administrative office is currently located, Araputanga and Mirassol D'Oeste. The aim was to evaluate the main economic activities developed there, the conditions and quality of life offered to the population. The data was researched in official agencies, such as the Brazilian Institute of Geography and Statistics (IBGE), and where data was not available, direct consultations were made, through in-person visits by Sete technicians, to the official sources of each municipality.

The municipalities in the area studied, as well as much of the state of Mato Grosso, have a tendency towards agricultural activities. Industry is not very developed in this region and when it does occur, it is focused on the processing of agricultural products, such as meat packing plants, dairy products and the production of ethanol from sugar cane. In the trade and services sector, the municipality of Mirassol d'Oeste stands out, as it is a prominent city in the region due to its good commercial centre.

All municipalities have health care and hospitals, with Mirassol d'Oeste and São José dos Quatro Marcos having two units each, but only São José dos Quatro Marcos offers emergency care services. More complex care is usually referred to the city of Cáceres or Cuiabá, both in the state of Mato Grosso. The former is approximately 100 km from São José dos Quatro Marcos and the latter approximately 320 km away.

The existence of educational infrastructure was also confirmed in all cities studied. Educational establishments for early childhood education (daycare and preschool), elementary school, high school and adult education were identified. For higher education, according to the Ministry of Education (2023), only Araputanga and São José dos Quatro Marcos had higher education institutions. In Rio Branco, there are only sporadic technical courses offered by the National Industry Service (SENAI); however, the city government provides free transportation to Cáceres, Araputanga and São José dos Quatro Marcos for those who wish to take a higher education course.

Regarding the quality of life of the territories, the main methodological reference used is the Municipal Human Development Index (IDH-M). The value of the IDH-M varies from 0 to 1, and the closer the indicator is to 1, the greater the development of the location. The Social Vulnerability Index (IVS) seeks to reflect the conditions of access to basic services. With a variation from 0 to 1, the closer to 1, the greater the social vulnerability of the population of a given location. The result of the survey indicated the following:

Municipality	IDH-M	IVS	
Rio Branco	0.707	0.320	*An IDH-M in the range 0.700 to 0.790 is considered high.
São José dos Quatro Marcos	0.719	0.238	*An IVS in the range of 0.200 to 0.300 is considered low and in the range of 0.300 to 0.400 is medium.
Araputanga	0.725	0.243	
Mirassol d'Oeste	0.704	0.257	

There has been an improvement in living conditions and quality of life in recent years (between 1991 and 2010). The HDI found follows the average pattern found in both the state of Mato Grosso (0.725) and Brazil (0.727). Regarding the indicated IVS, in the cases of São José dos Quatro Marcos, Araputanga and Mirassol d'Oeste they are similar to the result of the state of Mato Grosso (0.277) and in the case of Rio Branco the result is similar to the Brazilian standard (0.326).

Meridian also undertakes its own stakeholder engagement processes which commenced on acquiring the Cabaçal Project in 2021. The Cabaçal Project is located within farming land, with no artisanal mining activity. Aside from local farms, there are no settlements or population clusters within the Project's active area. The nearest indigenous land is located 80km distant from Cabaçal to the northwest (Terra Indígena Figueiras). The project is located more than 25 km away from areas classified as Quilombolas (settlements first established by escaped slaves in Brazil, whose descendants have recognized land rights). No areas classified as of special tourist importance are present. Since commencement of activities, the Company has established formal exploration access agreements with six landholders and continues to engage with others progressively as geological survey activities require.

20.7 Baseline Water Quality and Quantity

20.7.1 Water Quality

Campo Análises Agrícolas e Ambientais (CAMPO) was contracted to carry out the surface and groundwater field campaign. The work was carried out in March 2022, characterizing the rainy season, and August 2022, corresponding to the dry season. The programs consisted of nine surface water collection points and ten groundwater collection points in the project area. Eight of the surface water sample points are within the project and one located downstream on the Cabaçal river as a water quality control point. The ten groundwater collection points are all within the Project boundary.

The selection of parameters to be monitored were based on NBR 12,649/1992, which lists water quality parameters based on mining type. For the Cabaçal Project, parameters related to copper and gold mining were selected. The selection was also based on the parameters legislated in CONAMA Resolution No. 396/2008 and CONAMA Resolution No. 357/2005, in addition to parameters of hydrogeochemical interest.

In the first test campaign (rainy season), dissolved Iron had the highest concentration with respect to the legal limit, representing 50% of the nonconformities. The high concentrations of Iron and Manganese may be related to the local geochemistry, due to the presence of ferromagnesian metavolcanic rocks.

Dissolved Oxygen represented 25% of nonconformities in the first campaign (rain) and 63% in the second campaign (dry). The presence of E. Coli may be mainly related to animal excrement, since the largest portion of the study area corresponds pastureland activity in the region. The concentrations of Dissolved Oxygen remained below 5 mg/L, which could be due organic matter into water bodies that leads to the consumption of dissolved oxygen due to the oxidation of this organic matter (Von Sperling, 2014).

In the two sampling campaigns carried out, low values of electrical conductivity and total dissolved solids were recorded, indicating low salinity of the waters. In general, pH ranged between neutral and moderately acidic.

In view of the results and discussions presented, it can be concluded that the bodies of water located in the Cabaçal Project study area already contain substances in concentrations higher than the normative limit of CONAMA Resolution No. 357/2005 prior to the implementation and operation of the project.

Similarly, the ground water campaign was carried out in two sampling programs at the sample time of the surface water sampling. In eight of the ten wells, both Iron and Manganese were above legal limits for human consumption. Also, Aluminum in six of the 10 wells were above water quality standards. The groundwater sampling shows that in ten out of the ten wells sampled, concentration of certain constituents was above drinking water stands for Brazil.

The Iron and Manganese parameters registered the highest percentages of non-compliance, followed by Aluminum. However, it should be noted that the occurrence of these elements (Iron, Manganese and Aluminum) above the legal limit in the Cabaçal Project region, may reflect the local geological substrate, with the presence of metavolcanic rocks that contain these elements in their constitution, combined with the hydrochemical processes, which makes it possible for these metals to enter the environment in surface and groundwater.

20.7.2 Hydrology

The watersheds on the east side of the Cabaçal River in the project area were studied. The Cabaçal River is located approximately 0.25 km southwest of the process plant. The Project is intersected by a number of watercourses, some with names and others with no names. The Manoel Lemos and Mina Streams are the two largest streams that cross the Project. The Manoel Lemos stream exhibits rain season flow of 169 L/s and 22 L/s during the dry season. The Mina stream exhibits 188 L/s in the rainy season and 15 L/s in the dry season. The unnamed streams on the Project drain into these two streams. The Cabaçal River flows are 64 m^3/s during the rainy season and during the dry season 29 m^3/s (Refer to Figure 20-2).

Figure 20-2: Cabaçal River



Source: Sete, 2022.

20.7.3 Hydrogeology

Hydrogeological Studies of the Cabaçal Project show two local aquifer systems, one granular and the other fractured bedrock, feeding local springs (Refer to Figure 20-3).

The granular system is formed by unconsolidated sediments (residual soils, colluviums, and alluviums) whose porosity is of the granular type. The sediments form shallow, localized, discontinuities, free aquifers with high porosity and permeability in the sandy and gravel layers, and low in the clay layers.

Figure 20-3: Spring in Project Area



Source: Sete, 2022.

Although sediments can function as seasonal aquifers or remain unsaturated on the tops of slopes and hills, the presence of a granular system is very important for increasing the infiltration capacity of the substrate, allowing water to enter and percolation in the form of subsurface flows along with temporary water storage. This volume flows slowly throughout the year within the sedimentary layers to the valley floors, regulating the flow at the headwaters of watercourses embedded in these deposits. The aquifer potential of the granular layer is associated with the thickness,

type, and lateral continuity of the sediments. In the Project area sediments tend to be thin, clayey, and discontinuous and therefore have relatively low aquifer potential.

Non-volcanic igneous rocks and metamorphic rocks are commonly called crystalline rocks and, from a hydrogeological point of view, constitute the fractured aquifers. In these rocks, the primary porosity is practically non-existent and the voids with the potential to store and transmit water are mainly in fractures. Shale rocks, which represent most of the metavolcanic-sedimentary set of the Alto Jaurú Group, manifest even greater restriction for flow due to the higher percentage of clay minerals and the tendency to form closed fractures.

Studies carried out by Manati (1987) to obtain the average permeability coefficient in the horizon of altered rock through a series of tests at variable load in selected boreholes in the Project area were performed. The results indicated that the average permeability coefficient of the fractured aquifer in the central and northern portion of the mine are between 1.3 x 10-6 m/s and 2.2 x 10-5 m/s. No studies have been performed to determine the yield of these fractured zones. The depth to groundwater in boreholes in the Project area ranged for the dry season from 2 m to 35 m below the surface, with an average of 17 m. The average season variation is approximately 4 m.

Open-pit development scenarios will locally lower the underground water level (adopting a maximum depth of 200 m as the mine's final pit), causing a local cone of depression of water table surrounding the pit. The water table had been previously lowered during underground mining operations with no adverse impacts. At the end of the future open-pit mining operations, the water table would return to new equilibrium conditions. Meridian engaged Hidrovia Hidrogeologia e Meio Ambiente Ltda (Hidrovia), on April 15, 2024, to construct a mathematical model for simulating underground flows from the implantation phase to the final stages of mine closure for the Rio Cabaçal Project.

To support the studies for the construction of the hydrogeological mathematical model, an environmental monitoring grid was implemented in the Cabaçal project region, consisting of 7 water level indicators (INA), 4 Piezometers, as well as 8 points for monitoring surface water, with routine measurements of the flow and water level in streams and the Cabaçal River. This monitoring grid has been in full operation since November 2023, generating data routinely, which is systematically passed on to Hidrovia. This monitoring grid will have permanent continuity before, during and after the exploitation of minerals in Cabaçal.

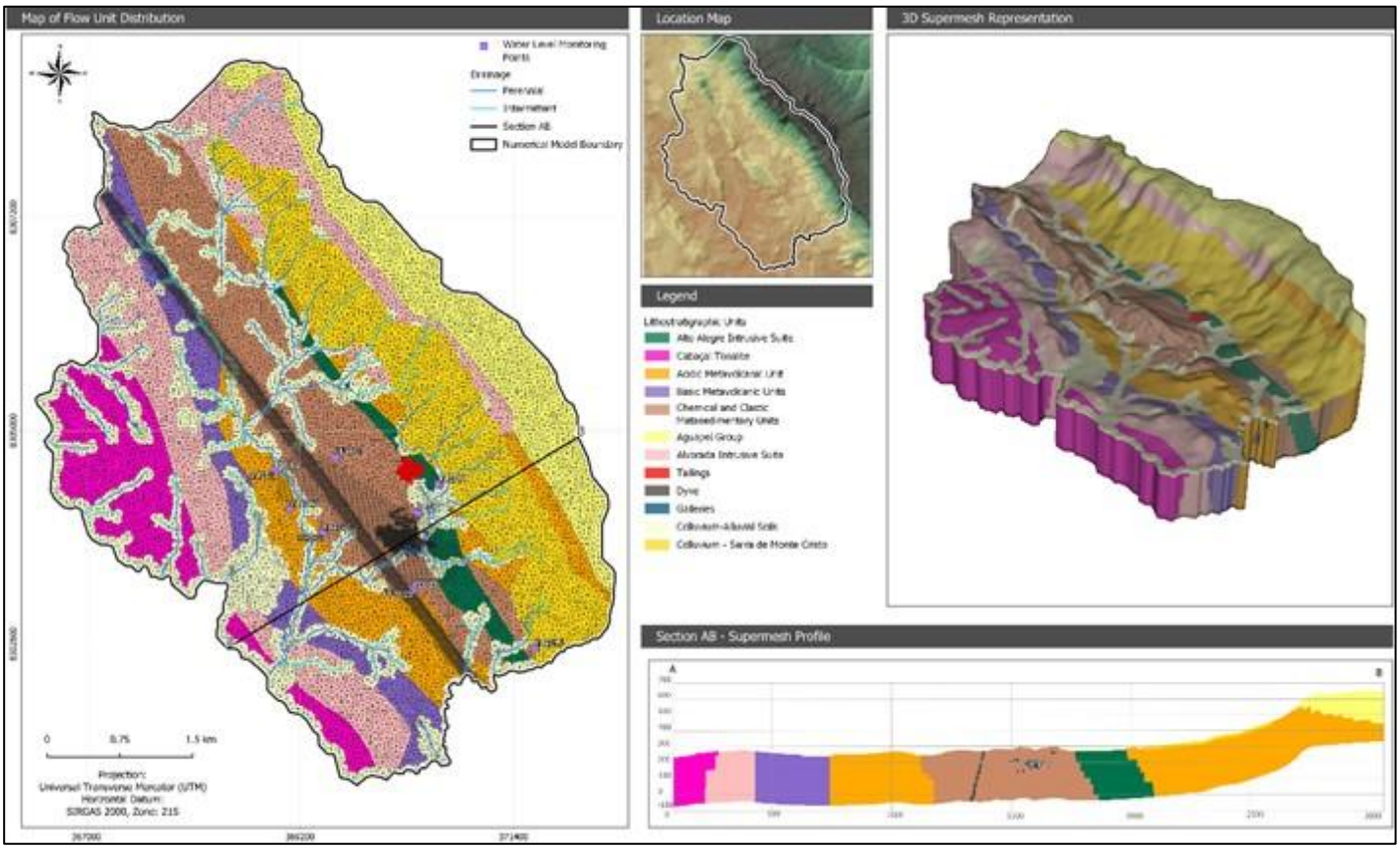
20.7.3.1 Hydrogeology – Numerical Model

The hydrogeological study of Cabaçal Project aimed to analyse the impacts on subsurface and surface water dynamics resulting from pumping for mine dewatering and subsequent aquifer recovery after operations cease.

The geologic framework comprises Poor Aquifer Zones (of the fractured type) and Non-Aquifer Zones, except for colluvium, alluvium, and sandy sediments associated with the saprolitic/transition horizon, which are considered Aquifer Zones (of granular and mixed types). The aquifer system supports low flow springs, maintains the flow of the main streams, and some wetlands that discharge into the Cabaçal River.

The groundwater numerical flow model was built in FEFLOW® software to represent an area of 26 km² and a thickness of 300 m (Figure 20-4). The hydrogeologic model calibration was performed in steady state regime, based on hydraulic head and groundwater flow data, and presented a normalized root mean square error (NRMS) of 6.38%.

Figure 20-4: Numerical Groundwater Flow Model



Source: Hidrovia, 2025

The main results of the dewatering simulations are (Figure 20-5):

Future dewatering simulations indicated that the maximum pumping rate to be maintained is 90 m³/h (2,160 m³/day), with an average rate of 60 m³/h for the 14 years of operation. Until the sixth year of operation, it is expected that the flows required for drawdown will be less than 60 m³/h and will exceed 60 m³/h from Year 7 onwards.

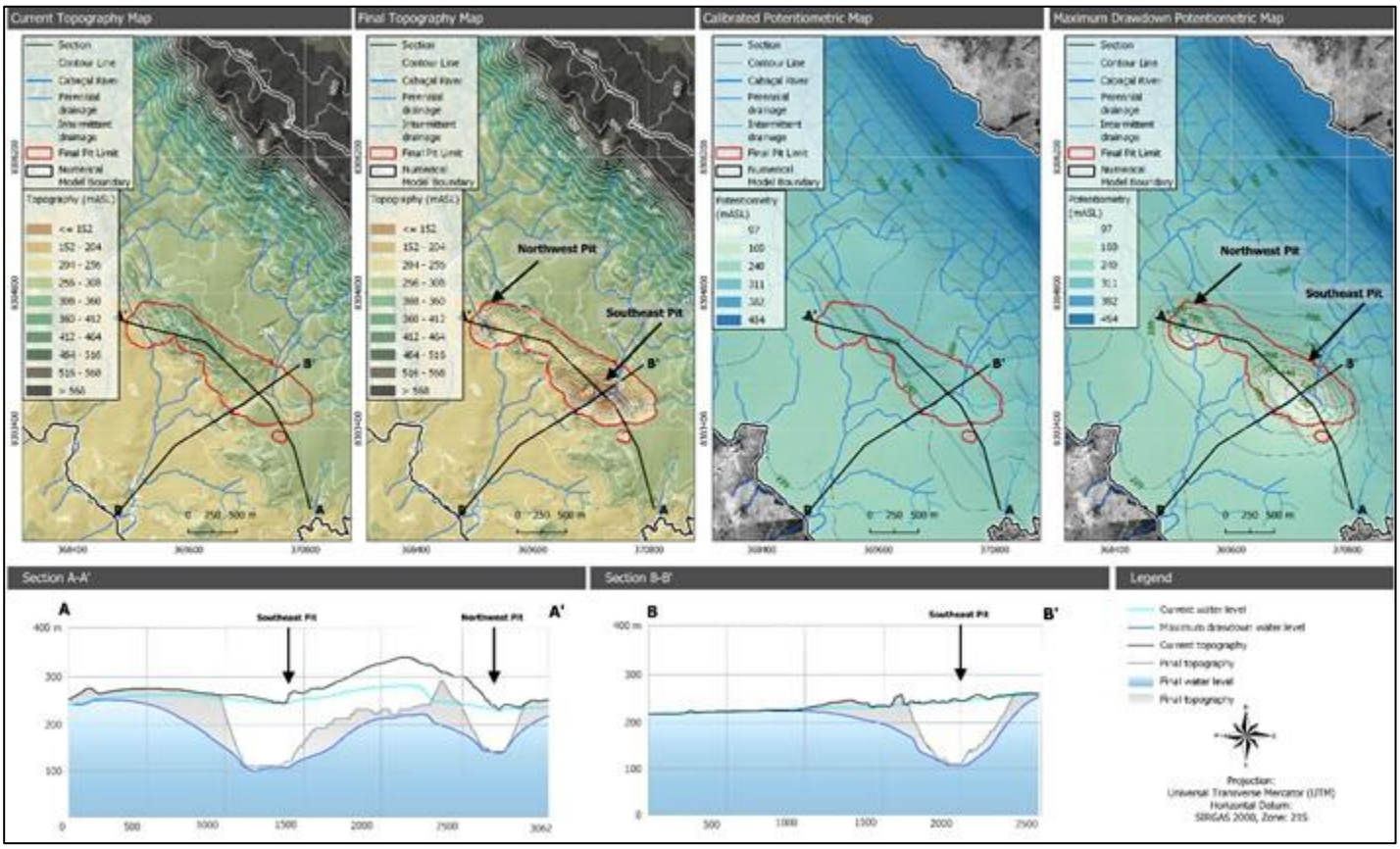
The drawdown capture zone expands laterally from the Southeast pit, towards the Ouro creek, but does not extend towards the Cabaçal River due to the presence of a dike and the rocks of the Mata Preta Formation.

The most impacted watercourses will be the Mina creek and the Manoel Lemos creek, with maximum reductions of 28.0% (-26.0 m³/h) and 7.0% (-9.0 m³/h), respectively. At the most downstream point of the Manoel Lemos creek, the maximum reduction would be 21.0% (-52.0 m³/h).

The Ouro creek may be impacted, but with a reduction of less than 9.0% (-3.0 m³/h).

Smaller watercourses that discharge into the Cabaçal River will have a reduction of less than 4.0 m³/h.

Figure 20-5: Dewatering Simulations Results

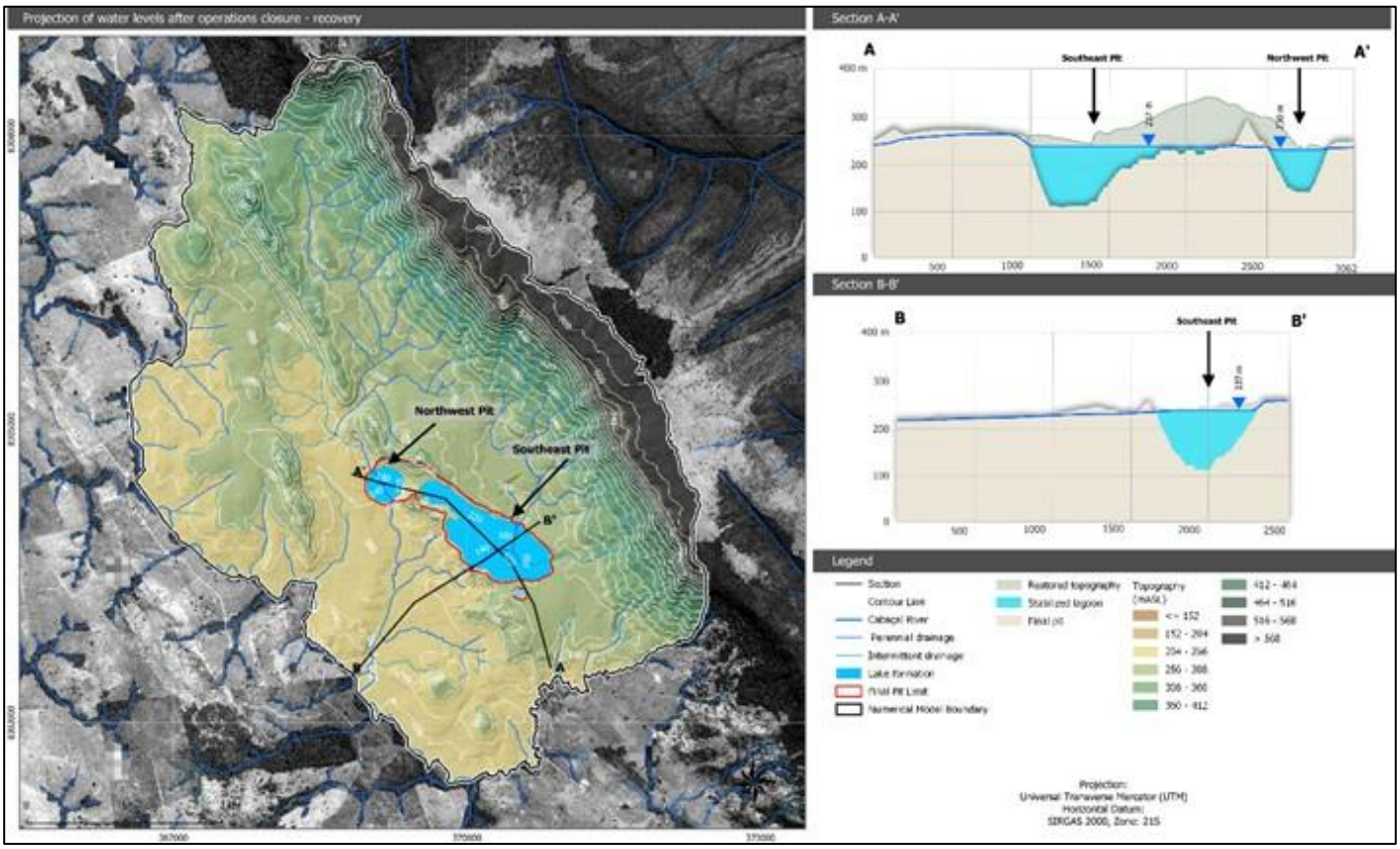


Source: Hidrovia, 2025

The main results of the recovery simulations (Figure 20-6) are:

- After the end of operations and completion of groundwater pumping, the trend is the elevation of hydraulic heads and the formation of two lakes within the pit, in the Northwest and Southeast pits.
- The Northwest Lake pit will reach the overflow level in approximately 6 years, with an accumulated volume of 1.2 Mm³ and a spill flow to the Manoel Lemos creek.
- The Southeast Lake pit should reach an elevation of 237 m in about 10 years, spilling approximately 168 m³/h into the Mina creek, with a final volume of 7.3 Mm³.
- These values show a significant increase in water availability in the associated sub-basins.

Figure 20-6: Recovery Simulations Results



Source: Hidrovia, 2025.

Hydrogeological numerical modelling of groundwater flow involves uncertainties inherent to natural conditions and the limitations of modelling. The simulation results should be seen as trends and the evaluations should be updated as knowledge advances.

The uncertainties were discussed in the report accompanying the modelling studies, leading to recommendations for the progression of those studies, with emphasis on improving the geological-structural understanding of the area, refining the hydraulic parameters and expanding the monitoring network.

The proposed water monitoring network provides for the continuity and adjustments in the monitoring in the existing devices, as well as the installation of new instruments to improve the observation of the dynamics of surface and underground waters. Strategic expansions were proposed to improve the representativeness of the data and the reliability of the simulation results. Additionally, the installation of a climatological station was recommended to reduce uncertainties regarding climatic parameters.

If there are changes in the understanding of the conceptual hydrogeological model considering new information, the numerical model should be updated to carry out new simulations. Calibration and simulations in transient regime may provide greater reliability to the estimates of dewatering and recovery.

This summary highlights the main conclusions of the hydrogeological study of Rio Cabaçal Project. The complete report with the methodological details and results is available for consultation.

20.7.4 Water Balance

Since raw water demand (see Section 17.6) is 326.1 m^3/h over the life of mine (LoM) for the process plant and will be supplied by Cabaçal river. A site water balance was completed to a pre-feasibility level to estimate the contact runoff produced over the facilities and non-contact water from surrounding drainage areas, at a monthly step.

Potable water will be supplied by wells and will be treated in a water treatment station (WTS) to serve the project and will be dimensioned according to consumption needs in accordance with the Personnel Lease Table (PLT).

In the next stage of study, a detailed water balance is required considering infiltration analysis, dry years, wet year, water quality model to determine water requirements and sources along with water treatment needs and managed through the life of mine. In addition, future studies need to look at water supply sources and permitting requirements.

20.7.5 Mining Closure and Reclamation

No formal Closure and Reclamation Plan has been prepared for the Cabaçal Project to date. One will be developed as the project advances through subsequent project stages. Closure costs have been included in the PEA financial model. Closure costs were based upon Ausenco's benchmark of PEA studies developed between 2021 and 2023 from copper, gold and silver projects

A conceptual closure plan will be developed in the next phase with a basis for estimating Project closure costs. The considerations in developing the closure strategy include:

- Physical and chemical stabilization of mine waste facilities, including land-forming
- Placement of topsoil over impacted ground surfaces, as required
- Revegetation
- Regrading of mine haul roads
- Runoff management
- Demolition of the processing facilities
- Post closure monitoring and management

20.8 Final Considerations

Based on the initial work to be presented in the Preliminary Licence EIA, it can be stated, in light of the additional information and studies being carried out, as well as the current environmental legislation, that the Cabaçal project can and should be seen as a viable undertaking from an environmental point of view. It is expected that the benefits arising from its implementation and operation are certainly greater than local impacts identified in the current studies, representing a positive change in the local social dynamics.

Finally, measures with a character of prevention, control, mitigation, compensation, and monitoring of negative impacts will have the capacity to generate adequate responses to the expected impacts, so that the interference of the enterprise in the environment occurs within limits considered acceptable by the current environmental legislation and by society.

The licensing process is now following the regulated pathway after passing to the Public Hearing and field inspection and is currently undergoing final analysis by SEMA technicians with the next step being the issue of the Technical Recommendation Opinion to support the Cabaçal Preliminary Licence (LP).

21 CAPITAL AND OPERATING COSTS

21.1 Introduction

The capital and operating cost estimates presented in this report provide substantiated costs that support the pre-feasibility study of the Cabaçal Gold-Copper Project. The estimates are based on an initial process plant capacity of 2.5 Mt/a (Phase 1), expanding in Year 3, to 4.5 Mt/a (Phase 2).

All capital and operating cost estimates are presented in US dollars (USD) and Brazilian Reais (BRL), with no allowance for escalation or exchange rate fluctuations. The exchange rate applied is Brazilian Reais (BRL) to US dollars (USD): BRL5.99 = USD1.00.

21.2 Capital Costs

21.2.1 Overview

The capital cost estimate aligns with Class 4 guidelines for a PFS-level estimate with an accuracy of -20% to +30% specified by the Association for the Advancement of Cost Engineering International (AACE International). The capital cost estimate, developed in Q1 2025, is based on the proposed Project design, Ausenco's budgetary quotations for main equipment and construction contracts, and an in-house database of comparable projects and studies, including insights from similar operations.

The total initial capital cost summary is presented in Table 21-1. The total initial capital cost for the Cabaçal Project is USD247.93M (Phase 1) and USD55.73M (Phase 2).

Table 21-1: Capital Cost Summary

Description	Phase 1 Initial Capital Costs		Phase 2 Expansion Capital Costs	
	(MBRL)	(MUSD)	(MBRL)	(MUSD)
Mine	180.15	30.08	-	-
Process Plant	592.40	98.90	208.75	34.85
On-Site Infrastructure (Earthworks, Ancillary Facilities, Tailings - Dry Stack, Waste Piles, Main Substation)	220.51	36.81	3.81	0.64
Off-Site Infrastructure (SE Araputanga, LT 138 kV)	15.72	2.62	-	-
Direct Cost	**1 008.78**	**168.41**	**212.56**	**35.49**
Project Indirect	**178.37**	**29.78**	**57.10**	**9.53**
Owner's Costs	**50.44**	**8.42**	**8.50**	**1.42**
Contingency	**247.52**	**41.32**	**55.63**	**9.29**
Total Capital Cost	**1 485.11**	**247.93**	**333.80**	**55.73**

Note: Values may not sum due to rounding.

The largest component of the project's capital costs is from mine pre-stripping. Contractor mining will be used for the project. Juliano Lima, GE21 QP, calculated the volume of activities for the mining operation's capital expenditure and provided a cost estimate based on recent quotations for similar operations.

Table 21-2: Mining Capital Cost Estimate

Description	Capital Cost (USDM)	Sustaining Cost (USDM)	Total Cost (USDM)
Mining	30.08	-	30.08
Total Capital Cost	**30.08**		**30.08**

Source: GE21, 2025.

21.2.2 Basis of Estimate

The capital cost estimate, developed by Ausenco in Q1 2025 US dollars, is based on budgetary quotations from equipment suppliers (for major equipment), construction contracts, an in-house database of projects and studies, and experience from similar operations. Due to the methodology employed and the pre-feasibility level of engineering definition, the estimate has an accuracy range of -20% to +30%, in line with the Class 4 guidelines of the Association for the Advancement of Cost Engineering International (AACE International).

The capital cost estimate was developed in Brazilian Reais (BRL), and the exchange rate used in the estimate are presented in Table 21-3.

Table 21-3: Exchange Rate

Currency	Currency Abbreviation	Exchange Rate
United States Dollar	USD	5.99

The data used for the estimates has been obtained from numerous sources, including the following:

- Conceptual engineering design developed by Ausenco
- Quotations for major packages, such as SAG Mill, crushers, flotation cells, filter press, conveyors etc.
- Engineering design at a pre-feasibility level
- A 20% contingency applied to the total capital costs
- Growth allowances were applied.

21.2.3 Mine Capital Costs

The capital cost estimate was developed by Juliano Lima, (GE21) based on Q4 2024 data, using budgetary quotations from similar operations to Cabaçal. All quantities that support capital expenditure were estimated from the mine plans, and no contingency was applied.

Major components of Mine capital costs include pre-stripping (89.5%), topsoil removal and grubbing (3.6%), contractors site construction (3.3%), contractors mobilization/demobilization (2.6%) and access road pioneering road

(1.0%). Costs were provided by Juliano Lima, GE21, from quotation for similar projects carried out in Q4 2024 (Table 21-4).

Table 21-4: Mining Capital Cost Per Discipline

Description	Capital Cost ($)
Mobilization	781,371
Construction site	987,756
Grubbing	9,607
Topsoil Removal	1,063,970
Access Road Pioneering	307,140
Pre-stripping of 1.892 Mt of RoM	5,588,143
Pre-stripping of 8.412 Mt of Waste	21,337,336
TOTAL	**30,075,323**

Source: GE21, 2025.

21.2.4 Direct Costs - Process Capital

Process equipment requirements were defined based on process flowsheets and process design criteria. All major equipment was sized according to the process design criteria and mass balance to create a mechanical equipment list. Mechanical scopes of work were developed and sent to equipment suppliers for budgetary pricing. For mechanical equipment costs, 96.3% of the value was sourced from budgetary quotes. The remaining costs were determined by Ausenco's recent database, adjusted to the Project's base date where applicable.

The major electrical equipment was sized according to the Project's equipment list. Scopes of work were developed to receive budgetary pricing from equipment suppliers. For the electrical equipment, 99% of the value was sourced from budgetary quotations. The remaining costs were determined using Ausenco's recent database, adjusted to the Project's base date where applicable.

All structural steel required for the process plant was sized to generate a material take-off. For structural steel the costs were sourced by Ausenco's recent database, adjusted to the Project's base date where applicable.

Main piping required for the process plant was sized to generate material take-offs. For piping, the costs were sourced by Ausenco's recent database, adjusted to the Project's base date where applicable.

Civil works were based on all-in concrete material take-off. The pricing was derived from Ausenco's recent database adjusted to the Project's base date where applicable. Architectural costs were defined using Ausenco's recent database, with adjustments factors, as relevant to the Project's base date.

The contractor's temporary construction facilities were defined by applying a factor to the total value of civil works and architecture services. This factor was based on similar projects from Ausenco's recent database.

Costs for piping valves and accessories, automation equipment, instruments and telecommunication systems were determined by applying a factor to the total value of the mechanical supply. For electrical materials, costs were

calculated by applying a percentage to the total value of the electrical equipment supply. These factors were derived from similar projects in Ausenco's recent database.

Electromechanical assembly costs cover the services required for the Project's implementation, including the assembly of electrical materials, steel structures, platework, piping, automation, instrumentation, and telecommunication systems. This cost includes all the direct and indirect expenses of the contractor performing the services. For electromechanical assembly, the total value was calculated by applying a factor to the supply costs. The contractor's temporary construction facilities were estimated by applying a factor to the total value of electromechanical assembly services. These factors were based on similar projects in Ausenco's recent database.

The process plant costs are presented in Table 21-5 and described in the following sections.

Table 21-5: Process Plant Capital Costs

WBS	WBS Description	Phase 1 – Initial Capital Costs		Phase 2 – Expansion Capital Costs	
		(MBRL)	(MUSD)	(MBRL)	(MUSD)
0000	General	88.87	14.84	22.53	3.76
1000	Crushing	15.94	2.66	0.43	0.07
1200	Static Grizzly	4.53	0.76	-	-
1300	Primary Jaw Crusher	14.69	2.45	-	-
1500	Secondary Cone Crusher	10.15	1.69	-	-
1600	Crushed Ore Storage	5.31	0.89	-	-
1700	Emergency Stockpile	3.46	0.58	-	-
2000	Grinding and Gravity Concentration	23.46	3.92	9.04	1.51
2100	SAG Mill	77.84	12.99	-	-
2200	Cyclone Cluster	8.70	1.45	3.06	0.51
2300	Screening	0.55	0.09	0.55	0.09
2400	Grinding Ball Feed System	0.35	0.06	0.21	0.03
2500	Gravity Concentrator	2.97	0.50	2.97	0.50
2600	Ball Mill	0.28	0.05	23.65	3.95
3200	Drying Oven	0.06	0.01	-	-
3300	Smelting	0.21	0.03	-	-
4000	Copper Flotation	12.24	2.04	13.00	2.17
4100	Rougher Flotation	15.46	2.58	12.17	2.03
4200	Cleaner 1 Flotation	7.58	1.27	9.68	1.62
4300	Cleaner Scavenger Flotation	2.54	0.42	2.54	0.42
4400	Regrinding	19.59	3.27	16.29	2.72
5000	Copper Concentrate	13.96	2.33	0.13	0.02
5100	Copper Concentrate Thickener	2.98	0.50	0.14	0.02
5200	Copper Concentrate Filtering	4.60	0.77	4.08	0.68
6000	Pyrite Concentrate	4.74	0.79	-	-
6200	Sulphide Tailings Thickener	2.23	0.37	0.12	0.02
6300	Pyrite Filtering	3.74	0.62	3.01	0.50
7000	Tailings	68.23	11.39	27.73	4.63
7100	Tailings Thickener	11.71	1.95	0.74	0.12
7200	Filtering	61.50	10.27	46.40	7.75

WBS	WBS Description	Phase 1 – Initial Capital Costs		Phase 2 – Expansion Capital Costs	
		(MBRL)	(MUSD)	(MBRL)	(MUSD)
8000	Reagents	6.14	1.03	0.36	0.06
9000	Utilities	58.57	9.78	2.99	0.50
11000	Power Supply	8.28	1.38	1.11	0.19
Total Process Plant		**592.40**	**98.90**	**208.75**	**34.85**

Note: Values may not sum due to rounding.

21.2.5 Direct Costs - On-Site Infrastructure

Material take-offs were developed for earthworks and geotechnical services to obtain pricing for capital cost estimation. For these services the total cost was estimated using Ausenco's recent database, adjusted to the Project's base date with escalated using cost indices, where applicable. For Main Substation Package, quotations were received.

The contractor's temporary construction facilities were defined by applying a factor to the total value of infrastructure and geotechnical services. This factor was based on similar projects from Ausenco's recent database.

On-site infrastructure includes:

- Earthworks/ Geotechnical services
- Ancillary Facilities
- Dry Stack Tailing Facilities
- Waste Piles
- Main Substation.

The on-site infrastructure costs are presented in Table 21-6.

Table 21-6: On-Site Infrastructure

WBS	WBS Description	Phase 1 Capital Costs		Phase 2 Capital Costs	
		(MBRL)	Cos (MUSD)	(MBRL)	(MUSD)
0000	Earthworks	35.08	5.86	-	-
9400/12000/13000	Ancillary Facilities	51.06	8.52	-	-
7300/10400	Dry Stack Tailings Facility	56.00	9.35	-	-
10400	Waste Piles	59.66	9.96	-	-
11100	Main Substation	18.70	3.12	3.81	0.64
Total On-Site Infrastructure		**220.51**	**36.81**	**3.81**	**.064**

Note: Values may not sum due to rounding.

21.2.6 Direct Costs - Off-Site Infrastructure

The off-site infrastructure costs were based on ANEEL database for similar projects. The off-site infrastructure costs are presented in Table 21-7.

Table 21-7: Off-Site Infrastructure Capital Cost

WBS	WBS Description	Phase 1 Capital Costs		Phase 2 Capital Costs	
		(MBRL)	(MUSD)	(MBRL)	(MUSD)
11100	Substation Araputanga	7.72	1.29	-	-
11100	LT 138 kV	7.99	1.33	-	-
Total Off-Site Infrastructure		**15.72**	**2.62**	**-**	**-**

Note: Values may not sum due to rounding.

21.2.7 Taxes

The tax rates provided in the supplier proposals were applied in accordance with the current legislation. For packages with prices sourced from the database, the highest applicable tax rates were used. The taxes included in the investment estimate are:

- ISS (Municipal Service Tax)
- ICMS (Tax on the Circulation of Goods and Transportation and Communication Services)
- DIFAL (ICMS Tax Difference, applied to interstate operations)
- PIS (Employees' Profit Participation Program)
- COFINS (Social Contribution for Social Security Financing)
- IPI (Tax on Industrialized Goods)
- II (Import Duty)
- IOF (Tax on Financial Operations).

21.2.8 Indirect Capital Costs

The indirect costs include project-related indirect costs, owner's costs, and provision costs, as presented in the items below. Indirect costs are summarized in Table 21-8 and are described in the following sections.

Table 21-8: Indirect Costs Estimate

Description	Phase 1 Capital Costs		Phase 2 Capital Costs	
	(MBRL)	(MUSD)	(MBRL)	(MUSD)
EPCM (Engineering, Procurement, Construction and Management)	95.00	15.86	29.23	4.88
Spare Parts and Special Tools	8.71	1.45	4.22	0.70
Vendor Representative	5.23	0.87	2.34	0.39
Freight	10.75	1.79	4.03	0.67
First Fills	10.09	1.68	2.13	0.35
Commissioning and Start-Up	22.27	3.72	11.64	1.94
Indirect Field Construction	20.18	3.37	2.13	0.35
Owner's Costs	50.44	8.42	8.50	1.42
Engineering, Construction and Civil Responsibility Risk Insurance	6.16	1.03	1.38	0.23
Total	**228.81**	**38.20**	**65.60**	**10.95**

Note: Values may not sum due to rounding.

21.2.8.1 EPCM

EPCM costs include costs for detailed engineering, project management, construction management, as well as procurement costs, inspection, expediting, office expenses, and other support services. For this item, a 14% index was applied to the total direct costs, except items classified as “Others” in Capex (Dry Stack Tailings Facility, Waste Piles, Substation Araputanga, Main Substation, Transmission Line 138 kV and Mine).

21.2.8.2 Spare Parts

This cost includes the equipment and materials needed to maintain a two-year supply for plant operations. Spare parts were quoted together with their reference equipment.

For this item, a 4% rate was applied to the total cost of mechanical equipment supply.

21.2.8.3 Assembly Supervision

Vendor representatives are required on-site during construction to verify that major equipment installation complies with technical documentation. Their presence will also be required during pre-commissioning. These costs will either be determined from vendor quotes or estimated using daily rates and durations, with professional judgment applied to consider both national and international personnel.

For this item, a 2% rate was applied to the overall cost of mechanical and electrical equipment supply.

21.2.8.4 First Fills

The costs for first fills include chemicals, fuels, lubricants, and consumables needed to establish the inventory levels necessary to begin operations. The costs for first fills were calculated at 1% of direct costs.

21.2.8.5 Freight Cost and Duties

All bulk materials, process equipment, and plant within the direct costs shall be based on delivery to the on-site storage. Freight costs are assumed to cover inland transportation to port of export, export packing, all forwarding costs, ocean and air freight when required, insurance, receiving port customs agent fees, and local inland freight to the project site.

Any freight costs for major equipment listed in vendor quotations were clearly separated from the equipment supply cost. All other freight costs were factored (5% for national freight and 12% for international freight) from the direct supply cost and included in the corresponding line items. These factors were derived from historical data.

21.2.8.6 Pre-commissioning, Commissioning and Start-up

Commissioning involves inspecting and verifying steps in the planned precedence networks to establish procedures for facility operations that fully align with the project design. The process also ensures traceability of all inspections completed during construction, pre-operation and operation phases, ultimately leading to plant start-up.

Professionals will be present at the plant to support decision-making and address operational and maintenance issues. Pre-operational tests, performed by the contractor, include tests on both unloaded and loaded equipment that start after electromechanical assembly and end when the system is ready for commissioning procedures.

Costs for Pre-Commissioning and Commissioning supervision were estimated at 3% of the electromechanical supply.

21.2.8.7 Field Indirect Costs

This item includes all indirect costs covered by the Owner, such as temporary access, fencing, installations, area demarcation, materials handling and storage (including surveying, security, medical assistance, etc.), consumables, and chemical (portable) toilets. For general construction, field indirect costs were calculated as 2% of the total direct cost for Phase 1 and 1% of the total direct cost for Phase 2.

21.2.8.8 Engineering Risk Insurance

The builder must ensure comprehensive coverage of the insurance, with the amount determined by the "Maximum Indemnity Limit," to cover indemnity payments for any losses incurred during construction, as well as for damages that may be caused to the third party. Basic coverage includes protection against fire, natural explosions, wind, floods, theft of goods and materials, total collapse, and other risks. The cost of Engineering Risk Insurance was calculated at 0.5% of total Project cost.

21.2.8.9 Owner's Costs

This item includes all the Owner's costs, such as:

- Provision for enterprise risks and opportunities related to health, safety, environment, business commercial risks, technical risks, management risks, external risks (legal, political, climate etc.), etc.

- Expenses with licences, use of software and computer equipment
- Training, start-up and labour costs for allocated operation before start-up
- Environmental studies to obtain the licenses required by law
- Environmental, social investments, local infrastructure, environmental compensatory measures
- Own personnel expenses during design and implementation
- Other non-explicit expenses in capital costs
- ERP (Enterprise Resource Planning - Enterprise Resource Planning)
- IT equipment.

Ausenco applied 5% for Phase 1 and 4% for Phase 2 on all direct costs to complement allowance for the Owner's Team, informed by RCM.

It was assumed that the operational team will manage the Expansion Implementation (Phase 2).

21.2.9 Contingency

Contingency is a reserve of funds set aside for unexpected costs within the defined project scope, accounting for the level of engineering effort and accuracy of estimates. It is intended to provide an overall level of confidence in both costs and schedule outcomes. The contingency is meant to cover events or incidents that arise during the Project that cannot be anticipated during the estimation phase and does not include allowances for Project Risk (Management Reserve). Contingency is expected to be used throughout the course of the Project.

The estimated contingency does not account for the following:

- Abnormal weather conditions
- Changes to market conditions affecting labour or material costs
- Scope changes within the general production and operating parameters
- Impacts from industrial disputes
- Socio-political factors (such as terrorism, war, unrest, etc.)
- Geotechnical faults or seismic events
- Force majeure
- Changes in government policies.

A contingency rate of 20% has been applied to the total investment cost (direct and indirect), in accordance with the guidelines of the Association for the Advancement of Cost Engineering International (AACE International).

21.2.10 Exclusions

The following costs and scope are excluded from the capital cost estimate:

- Taxes not included in the financial analysis
- Scope and project schedule changes, along with their associated costs
- Financing charges and interest during the construction period
- Land acquisitions (assumed that landowners would be paid statutory royalties in lieu of land acquisition)
- Sales taxes
- Any facilities/structures not mentioned in the project summary description
- Geotechnical unknowns/risks
- Any costs for demolition or decontamination for the current site
- Third-party costs (except Mining Cost from GE21).

21.2.11 Sustaining Capital

21.2.11.1 Mining Infrastructure Sustaining Capital

The mine will be operated by a third party; hence no mining sustaining capital costs were considered. Mine costs are shown in the operating cost.

21.2.11.2 Geotechnical Structures Sustaining Capital

Sustaining capital associated with expansion of waste rock facilities (WRF) and dry stack tailings facilities (DSTF). For the DSTF is estimated costs for the non-acid generator structure on Years 4, 7 and 8 to accommodate the production increase due to the expansion. The same concept applies to the WRF with sustaining costs associated on operational Years 1,2, 6 and 8.

21.2.11.3 Sustaining Capital

The total sustaining cost is USD54.28M, distributed as shown in Table 21-9.

Table 21-9: Process Plant Sustaining Cost Summary

Item	MUSD
Process Plant	17.98
DSTF	19.01
WRF	17.29
Total Sustaining Capital	**54.28**

21.3 Operating Costs

21.3.1 Overview

Operating costs include the ongoing cost of operations related to mining, processing, tailings disposal and general administrative (G&A) costs. Covers all direct costs necessary for the operation of the enterprise, scheduled for 11 years.

Costs are expressed in United States dollars (USD), using the exchange rate of BRL 5.99 = USD1.00. The estimate covers the following items:

- Mining costs
- Labour
- General and Administrative (G&A)
- Power
- Reagents and consumables
- Equipment maintenance
- Materials, fuels, and lubricants
- Laboratory
- Access Maintenance
- Water/Sewage
- Concentrate Logistic
- Dry Stack Tailing.

A summary of the operating costs is presented in Table 21-10.

Table 21-10: Operating Cost Summary (USD/t processed)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Labour	1.64	1.84	1.84	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.17
G&A	3.10	3.10	3.10	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.77
Power	2.31	2.31	2.31	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.33
Reagents and Consumables	2.75	2.75	2.75	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
Equipment Maintenance, Materials, Fuel and Lubricants	1.07	1.07	1.07	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.84
Water/Sewage	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Access Maintenance	0.06	0.06	0.06	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Laboratory	0.38	0.38	0.38	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Concentrate Logistic	2.72	4.02	3.20	2.88	2.61	1.83	1.87	1.90	1.59	1.50	1.38
Dry Stack Tailing	0.62	0.62	0.62	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.62
Mining Costs	14.67	16.17	15.35	11.64	11.37	10.60	10.63	10.67	10.36	10.26	9.97
Total Operating Costs	**28.73**	**30.07**	**27.71**	**19.22**	**18.49**	**17.04**	**17.35**	**19.02**	**20.14**	**20.08**	**11.24**

Note: Values may not sum due to rounding.

Table 21-11: Operating Cost Summary (MUSD)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	MUSD	MUSD	MUSD	MUSD	MUSD	MUSD	MUSD	MUSD	MUSD	MUSD	MUSD
Labour	4.10	4.60	4.60	5.43	5.43	5.43	5.43	5.43	5.43	5.43	3.17
G&A	7.76	7.76	7.76	8.19	8.19	8.19	8.19	8.19	8.19	8.19	4.78
Power	5.78	5.78	5.78	6.17	6.17	6.17	6.17	6.17	6.17	6.17	3.60
Reagents and Consumables	6.89	6.89	6.89	11.78	11.78	11.78	11.78	11.78	11.78	11.78	7.08
Equipment Maintenance, Materials, Fuel and Lubricants	2.68	2.68	2.68	3.88	3.88	3.88	3.88	3.88	3.88	3.88	2.27
Water/Sewage	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
Access Maintenance	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.09
Laboratory	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.56
Concentrate Logistic	6.80	10.04	7.99	12.96	11.72	8.25	8.39	8.56	7.18	6.74	3.73
Dry Stack Tailing	1.56	1.56	1.56	2.85	2.85	2.85	2.85	2.85	2.85	2.85	1.66
Mining Costs	35.13	34.76	30.88	34.08	32.07	29.01	30.23	37.61	44.04	44.18	3.44
Total Operating Costs	**71.82**	**75.19**	**69.26**	**86.47**	**83.22**	**76.69**	**78.06**	**85.61**	**90.64**	**90.35**	**30.38**

Note: Values may not sum due to rounding

Mining operational cost is based on similar project quotation from Q4 2024. GE21 calculated operational cost through mining sequence. Meridian relies entirely on contractor services which include drill and blast, ore mining and haulage, waste mining, haulage and dumping, crusher feeding, grade control and auxiliary works.

21.3.2 Basis of Estimate

The following assumptions are common to all operating cost estimates:

- Cost estimates are based on Q1 2025 pricing, without allowances for inflation
- Costs are expressed in USD, using the exchange rate of BRL5.99 = USD1.00
- The majority of labour requirements are assumed to be sourced from neighbouring municipalities
- Processing unit operations were benchmarked against similar or comparable processing plants
- Equipment and materials will be purchased as new during implementation
- Grinding media consumption rates have been estimated based on the material characteristics
- Reagent consumption rates are estimated based on metallurgical test results.

21.3.3 Mine Operating Costs

Mine and filtered tailings disposal cost estimates were provided by RCM, based on information from contractor Juliano Lima (GE21). to the following assumptions apply to all operating cost estimates:

- Cost estimates are based on Q4 2024 pricing without allowances for inflation
- Costs are expressed in United States dollars (USD), using the exchange rate of BRL5.99 = USD1.00
- All mining work will be outsourced.

For the LoM, operational costs are related to waste mining, haulage and dumping (46.4%), ore mining and haulage (15.2%), blast drilling (20.4%), explosives (10.6%), crusher feeding (3.8%) and site infrastructure (3.6%).

Table 21-12 and Table 21-13 summarize mining operating costs.

Table 21-12: Operating Cost Summary

Cost Area	Total (USDM)	Value
RoM Mining	**Unit**	**Value**
Drilling	USD/t mined	0.70
Blasting	USD/t mined	0.47
Load and Transportation	USD/t mined	1.80
Total	**USD/t mined**	**2.97**
Waste Mining	**Unit**	**Value**
Drilling	USD/t mined	0.52
Blasting	USD/t mined	0.22
Load and Transportation and Dump	USD/t mined	1.89
Total	**USD/t mined**	**2.63**

Source: GE21, 2025.

Table 21-13: Mining Unit Costs

Year	AHD[1] (km)		USD/t	
	RoM[2]	WASTE[2]	RoM	WASTE
0	1.58	1.96	2.95	2.54
1	1.92	2.24	2.69	2.89
2	1.84	2.37	2.67	2.71
3	1.95	2.01	2.72	2.44
4	1.96	2.02	3.15	2.72
5	1.84	1.96	3.49	2.04
6	1.63	1.95	3.66	2.10
7	1.60	1.98	3.29	2.13
8	1.98	2.18	2.69	3.11
9	1.38	2.28	2.75	3.11
10	1.53	2.61	3.01	2.98
Average	**1.92**	**2.21**	**2.97**	**2.62**

Note: (1) AHD – Average Haulage Distance (2) Wet basis (5% of moisture). Source: GE21, 2025.

Table 21-14: Mine Total Operational Cost

Mining Cost	Unit	Year												Total
		0	1	2	3	4	5	6	7	8	9	10	11	
Waste	MUSD		21.84	22.47	21.16	23.00	18.72	18.28	18.77	25.70	31.65	32.06	-	233.67
RoM	MUSD		13.29	12.28	9.71	11.07	13.35	10.73	11.47	11.91	12.39	12.11	3.35	121.67
Total	**MUSD**		**35.13**	**34.76**	**30.88**	**34.08**	**32.07**	**29.01**	**30.23**	**37.61**	**44.04**	**44.18**	**3.35**	**355.34**

Source: GE21, 2025.

21.3.4 Process Operating Costs

21.3.4.1 Labour

Staffing estimates were provided by RCM. The labour costs include the requirements for plant operations such as management, maintenance, site services, assay laboratory, operations, metallurgy and contractor allowances. The total operational labour force distributed over the LoM of the project is shown in Table 21-15 and Table 21-16 salaries and wages were based on information provided by RCM.

Table 21-15: Operational Labour Force

Item	Average Number of Employees - Phase 1	Average Number of Employees - Phase 2
Plant	64	89
Maintenance	62	78
Safety, Health and Environment, Human Resources, Management, Administration and Procurement	61	68
Mine	12	14
Total Labour Force	**199**	**249**

Table 21-16: Labour Summary

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Labour	1.64	1.84	1.84	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.17
Total Costs	**1.64**	**1.84**	**1.84**	**1.21**	**1.21**	**1.21**	**1.21**	**1.21**	**1.21**	**1.21**	**1.17**

Note: Values may not sum due to rounding. General and Administrative Expenses (G&A).

The G&A costs are expenses not directly related to production and exclude mining, processing, external refining, and transportation costs.

The Project's G&A operational costs were allocated to the following cost centres: general expenses, health, safety and environment, human resources, administration, and outsourced services, based on the projected number of personnel, infrastructure, and services required during the operational period. G&A costs were provided by RCM. A detailed breakdown of all G&A costs is presented in Table 21-17.

Table 21-17: G&A Summary

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
G&A	3.10	3.10	3.10	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.77
Total Costs	**3.10**	**3.10**	**3.10**	**1.82**	**1.82**	**1.82**	**1.82**	**1.82**	**1.82**	**1.82**	**1.77**

Note: Values may not sum due to rounding.

21.3.4.2 Power Costs

The power costs of the process plant were estimated from the installed power in the mechanical equipment list with factors applied for availability and utilization (power study). The power cost is divided into two parts, one for consumption and one for demand. RCM informed the unit power cost including consumption and demand, considering the free market cost. For Phase 1 the power cost of USD0.065/kWh, BRL0.392/kWh was used. For Phase 2 the power cost of USD0.051/kWh, BRL 0.304/kWh was used.

A summary of the power costs is provided in Table 21-18.

Table 21-18: Project Power

Description	Average Power Demand (kW) Phase 1	Average Power Demand (kW) Phase 2
Plant	10,967	15,087

Note: Values may not sum due to rounding.

Table 21-19: Summary of Power Costs

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Power	2.31	2.31	2.31	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.33
Total Costs	**2.31**	**2.31**	**2.31**	**1.37**	**1.37**	**1.37**	**1.37**	**1.37**	**1.37**	**1.37**	**1.33**

Note: Values may not sum due to rounding.

21.3.4.3 Reagents and Consumables

This item includes the costs of reagents and consumables for the plant. Quantities were defined by Ausenco, based on metallurgical test results, flowsheets and mass balance calculations. The prices for reagents and consumables were based on budgetary quotations and Ausenco's recent database. The costs for reagents and consumables are presented in Table 21-20.

Table 21-20: Reagents and Consumables Summary

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Reagents	0.83	0.83	0.83	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Consumables	1.93	1.93	1.93	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Total Costs	**2.75**	**2.75**	**2.75**	**2.62**	**2.62**	**2.62**	**2.62**	**2.62**	**2.62**	**2.62**	**2.62**

Note: Values may not sum due to rounding.

21.3.4.4 Equipment Maintenance

Equipment maintenance costs include annual expenses for spare parts and maintenance of process and handling equipment, as well as third-party services. Equipment maintenance costs were estimated at 4% of the total cost for process, mechanical, and electrical equipment from capital cost estimate (Capex), based on a percentage derived from similar projects.

Table 21-21: Equipment Maintenance Costs

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Maintenance Parts and Materials	0.66	0.66	0.66	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.52
Total Costs	**0.66**	**0.66**	**0.66**	**0.53**	**0.53**	**0.53**	**0.53**	**0.53**	**0.53**	**0.53**	**0.52**

Note: Values may not sum due to rounding.

21.3.4.5 Materials, Fuel and Lubricants

This item includes all expenses for materials, as well as the consumption of diesel, gasoline, and lubricants for processing plant equipment and industrial support vehicles. The factors used to calculate the costs for these items are shown in Table 21-22. These factors were derived from similar projects on Ausenco's recent database.

Table 21-22: Materials, Fuel and Lubricants Costs

Description	%	Source
Materials	1.5%	Index applied on the total costs of process, mechanical and electrical equipment (Capex).
Fuel and Lubricants	1.0%	

Costs for materials, fuel, and lubricants are presented in Table 21-23.

Table 21-23: Materials, Fuel and Lubricant Costs

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Materials	0.25	0.25	0.25	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.19
Fuel and Lubricants	0.17	0.17	0.17	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Total Costs	**0.42**	**0.42**	**0.42**	**0.33**	**0.33**	**0.33**	**0.33**	**0.33**	**0.33**	**0.33**	**0.32**

Note: Values may not sum due to rounding.

21.3.4.6 Maintenance of Internal Access

This item includes expenses for the maintenance of internal access. The costs were estimated by Ausenco, based on Ausenco's recent database. The maintenance costs for internal access are shown in Table 21-24.

Table 21-24: Maintenance of Access

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Access Maintenance	0.06	0.06	0.06	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Total Costs	**0.06**	**0.06**	**0.06**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**

Note: Values may not sum due to rounding.

21.3.4.7 Laboratory Services

The operating cost estimate for laboratory activity was benchmarked against similar projects and adjusted for throughput requirements. Laboratory costs are presented in Table 21-25.

Table 21-25: Laboratory Costs

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Laboratory	0.38	0.38	0.38	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Total Costs	**0.38**	**0.38**	**0.38**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**

Note: Values may not sum due to rounding.

21.3.4.8 Water and Sewage

The operating cost estimate for water and sewage was benchmarked against similar projects and adjusted for throughput requirements. Water and Sewage costs are presented in Table 21-26.

Table 21-26: Water and Sewage Costs

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Water and Sewage	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Total Costs	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**

Note: Values may not sum due to rounding.

21.3.4.9 Concentrate Logistics

Expenses associated with concentrate logistics were estimated by RCM at USD158.99/t and are presented in Table 21-7.

Table 21-27: Concentrate Logistics Costs

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Concentrate Logistics	2.72	4.02	3.20	2.88	2.61	1.83	1.87	1.90	1.59	1.50	1.38
Total Costs	**2.72**	**4.02**	**3.20**	**2.88**	**2.61**	**1.83**	**1.87**	**1.90**	**1.59**	**1.50**	**1.38**

Note: Values may not sum due to rounding.

21.3.4.10 Dry Stack Tailing

Expenses associated with dry stack tailing were estimated by Ausenco and are presented in Table 21-28.

Table 21-28: Dry Stack Tailing Cost

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t	USD/t
Dry Stack Tailing	0.62	0.62	0.62	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.62
Total Costs	**0.62**	**0.62**	**0.62**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.62**

Note: Values may not sum due to rounding. Source: Ausenco, 2025.

21.4 Comments on Capital and Operating Costs

The operating cost estimate was developed in Q1 2025, based on budgetary quotations and Ausenco's in-house database of projects and studies as well as experience from similar operations. The accuracy of the operating cost estimate is -20% to +30%. The estimate includes mining, processing, and G&A costs. For more details, refer to Section 21.3.

Mining capital and operating costs were estimated based on contracted mining services, using quotations obtained in Q4 2024 for a similar project. The costs align with Brazilian mining costs. A formal tender process is recommended for the feasibility study.

22 ECONOMIC ANALYSIS

22.1 Forward-Looking Information Cautionary Statements

The results of the economic analyses discussed in this section represent forward-looking information as the results depend on inputs that are subject to known and unknown risks, uncertainties and other factors that may cause actual results to differ materially from those presented here. Forward-looking information includes:

- Mineral Resource and reserve estimates
- Assumed gold, copper and silver prices and exchange rates
- The proposed mine production plan
- Projected mining and process recovery rates
- Assumptions as to mining dilution and ability to mine using open-pit mining methods as envisaged
- Sustaining costs and proposed operating costs
- Assumptions as to closure costs and requirements
- Assumptions as to environmental, permitting, and social risks.

Additional risks to the forward-looking information include:

- Changes to costs of production from what was assumed
- Unrecognized Environmental Risks
- Unanticipated reclamation expenses
- Unexpected variations in the quantity of mineralized material, grade, or recovery rates
- Geotechnical or hydrogeological considerations during mining are different from what was assumed
- Failure of mining methods to operate as anticipated
- Failure of plant, equipment, or processes to operate as anticipated
- Changes to assumptions in the availability of electrical power, and the power rates used in the operating cost estimates and financial analysis
- Ability to maintain the social licence to operate
- Accidents, labour disputes, and other mining industry risks
- Changes to interest rates
- Changes to tax rates.

22.2 Methodologies Used

An engineering economic model was developed to estimate annual pre-tax and post-tax cash flows and sensitivities of the Project based on a 5% discount rate. It must be noted, however, that tax estimates involve many complex variables that can only be accurately calculated during operations and, as such, the after-tax results are only approximations. A sensitivity analysis was performed to assess the impact on metal price, mill recovery, initial capital costs, and operating costs. The capital and operating cost estimates were developed specifically for this Project (presented in 2025 dollars). The economic analysis was run with no inflation (constant dollar basis).

22.3 Financial Model Parameters

The economic analysis was performed using the following assumptions:

- Project revenue is derived from the sale of Doré bars and copper concentrate with gold and silver.
- All cash flows are discounted back to the start of project execution.
- Construction period of two years.
- Full production is achieved by Q1 of the first year of operation.
- All products are assumed to be sold in the same year they are produced.
- The metal prices are based on consensus prices and assuming constant price of USD2 119/oz Au, USD4.16/lb Cu and USD26.9/oz Ag.
- A mine life of 10.6 years.
- No adjustments for price inflation or escalation were applied.
- Capital costs funded with 100% equity (i.e., unlevered with no project debt or associated financing costs assumed)
- No binding contractual arrangements are currently in place.
- A Royalty payment is considered to the government of Brazil (CFEM) and to the project landowner.

22.3.1 Taxes

The Project was evaluated on a post-tax basis to provide approximate value of the potential economics. A preliminary tax model was compiled by Ausenco. Detailed tax modelling must be completed by a specialized tax consultant retained by Meridian. The calculations are based on the tax regime in place as of the date of this study and considers application of the Superintendência do Desenvolvimento da Amazônia (SUDAM) tax benefit upon start of production. At the effective date of the cashflow, the Project was assumed to be subject to the following tax regime:

- Brazilian corporate income tax of 25.0%, which includes a SUDAM incentive that grants a 75.0% tax reduction for the first 10 years of mine operation due to project's location.
- Social Contribution of 9% on taxable income.
- Initial tax loss carry-forward of USD30.0M.

- Tax losses can be reduced to 30% of taxable profit.

The Company is entitled to the SUDAM tax incentive for a 10-year period commencing in the year of receipt of the Appraisal Certificate from SUDAM. To receive the full benefits of the exemption, the Company is required to make an application the SUDAM tax incentive for the implementation of the new operations. Such application is subject to approval by SUDAM. The Meridian has not filed its application yet with SUDAM.

Total tax payments are estimated to be approximately USD254M over the LoM.

22.3.2 Working Capital

A high-level estimate of working capital has been incorporated in the cash flow, based on accounts receivable (30 days), inventory (30 days), and accounts payable (30 days).

22.3.3 Closure Costs

Closure costs are estimated at 13% of the Initial Capital Expenditures, totaling USD47M. Closure costs are applied at the end of the LoM.

22.3.4 Royalties

Based on the Landowners Royalties assumed for the Project, total undiscounted royalty payments over the LoM are approximately USD75M.

22.4 Economic Analysis

The pre-tax NPV (5%) is USD1 168M, with an IRR of 69.0%, and payback period is 1.2 years. On a post-tax basis, the NPV (5%) is USD984M, with an IRR of 61.2% and payback period is 1.4 years.

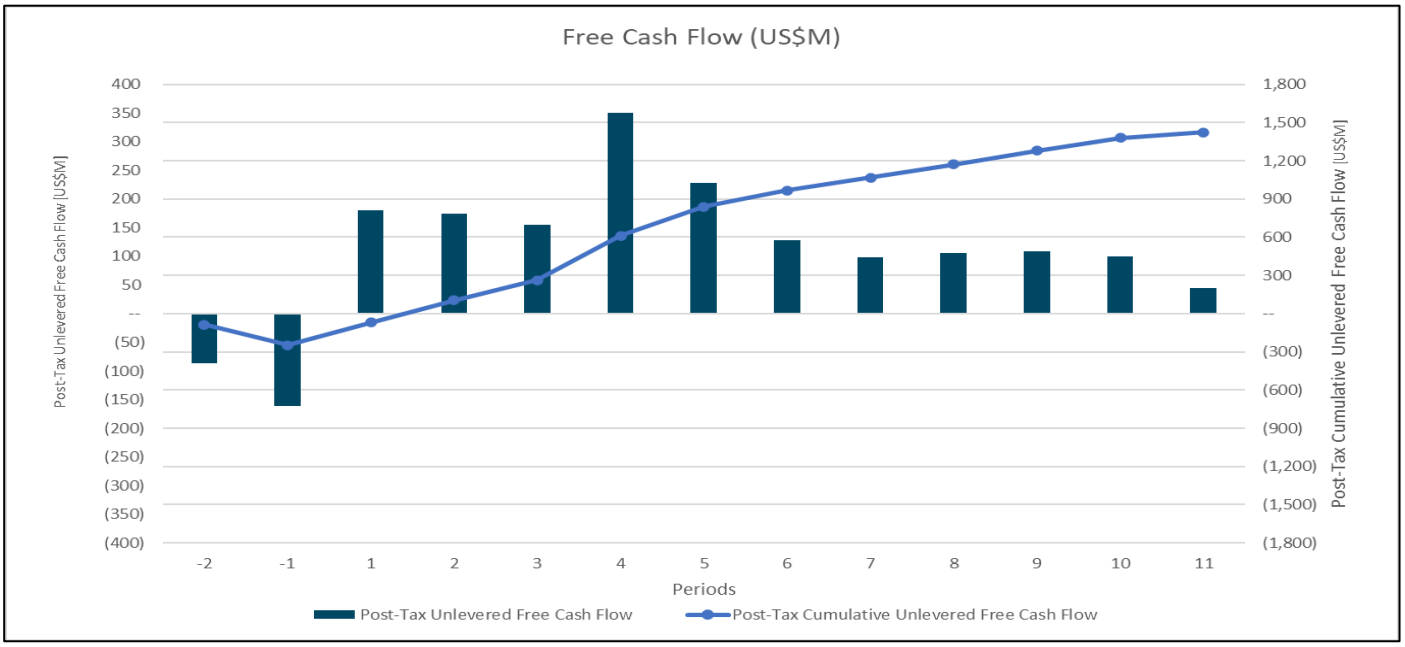
A summary of Project economics is shown in Table 22-1 and shown graphically in Figure 22-1. Table 22-2 shows a summary of the projects Cash Flow on an annual basis.

Table 22-1: Economic Analysis Summary Table

General	LoM Total/Avg.
Copper Price (USD/lb)	4.16
Gold Price (USD/oz)	2 119
Silver Price (USD/oz)	26.89
Mine Life (years)	10.6
Production	**LoM Total/Avg.**
Total Mill Feed Tonnes (kt)	41,703
Mill Head Cu Grade (%)	0.44
Mill Cu Recovery Rate (%)	92.3
Total Copper Recovered (M lb)	374
Mill Head Gold Grade (g/t)	0.63
Mill Gold Recovery Rate (%)	87.1
Net Gravity Gold Recovery Rate (%)	26.6
Total Gold Recovered (koz)	744
Mill Head Silver Grade (g/t)	1.64
Mill Gold Recovery Rate (%)	60.5
Total Silver Recovered (koz)	1,329
Operating Costs	**LoM Total/Avg.**
Mining Cost (USD/t Mined)	2.8
Processing Cost (USD/t Milled)	9.5
G&A Cost (USD/t Milled)	2.0
Refining & Transport Cost (USD/lb Cu)	0.2
Total Operating Costs (USD/t Milled)	20.1
Cash Costs (USD/oz AuEq)	684.7
AISC (USD/oz AuEq)	742.3
Capital Costs	**LoM Total/Avg.**
Initial Capital (USDM)	248
Expansion Capital (USDM)	56
Sustaining Capital (USDM)	54
Mine Closure Costs (USDM)	47
Salvage Costs (USDM)	(18)
Financials - Pre Tax	**LoM Total/Avg.**
NPV (5%) (USDM)	1 168
IRR (%)	69
Payback (year)	1.2
Financials - Post-Tax	**LoM Total/Avg.**
NPV (5%) (USDM)	984
IRR (%)	61.2
Payback (year)	1.4

* Cash costs consist of mining costs, processing costs, mine-level G&A and refining charges and royalties.
** AISC includes cash costs plus sustaining capital, closure cost and salvage value.

Figure 22-1: Projected LoM Post-Tax Unlevered Free Cash Flow



Source: Ausenco, 2025.

Table 22-2: Cashflow Statement on an Annual Basis

	Unit	LoM	-2	-1	1	2	3	4	5	6	7	8	Y9	10	11
Production Summary															
RoM	Mt	138.9	--	10.3	12.5	12.9	12.2	11.9	13.0	11.6	12.3	12.7	14.7	14.8	--
Waste Mined	Mt	97.2	--	8.4	7.5	8.3	8.7	8.5	9.2	8.7	8.8	8.3	10.2	10.8	--
Ore Sent to Mill	kt	41,703	--	--	2,500	2,500	2,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	2,703
Cu Head Grade - Total Ore to Mill	%	0.44%	--	--	0.54%	0.78%	0.63%	0.57%	0.52%	0.37%	0.37%	0.38%	0.32%	0.30%	0.28%
Au Head Grade - Total Ore to Mill	g/t	0.63	--	--	1.45	0.99	1.12	1.25	0.56	0.39	0.33	0.35	0.43	0.43	0.28
Ag Head Grade - Total Ore to Mill	g/t	1.64	--	--	1.89	3.29	2.41	2.07	1.77	1.26	1.47	1.58	1.06	1.19	0.92
Contained Cu	kt	184	--	--	13	20	16	26	23	17	17	17	15	14	8
Contained Au	koz	850	--	--	116	80	90	180	81	56	48	50	62	62	24
Contained Ag	koz	2,194	--	--	152	264	193	300	256	183	213	228	153	172	80
Net Gravity Recovery - Au	%	26.6%	--	--	26.6%	26.6%	26.6%	26.6%	26.6%	26.6%	26.6%	26.6%	26.6%	26.6%	26.6%
Mill Recovery - Cu	%	92.3%	--	--	92.9%	94.3%	93.5%	93.1%	92.7%	91.4%	91.4%	91.5%	90.8%	90.6%	90.3%
Mill Recovery - Au	%	87.1%	--	--	90.7%	88.6%	89.3%	89.9%	85.8%	83.6%	82.7%	83.0%	84.1%	84.1%	81.8%
Mill Recovery - Ag	%	60.5%	--	--	64.6%	79.9%	70.6%	65.9%	61.1%	50.8%	55.5%	57.5%	45.5%	48.9%	41.1%
Gold in Doré Bullion	koz	226	--	--	31	21	24	48	22	15	13	13	17	16	6
Concentrate Produced	kt	581	--	--	43	63	50	82	74	52	53	54	45	42	23
Total Recovered Copper	Mlb	374	--	--	28	41	32	52	47	33	34	35	29	27	15
Total Recovered Gold	koz	744	--	--	105	71	80	161	70	48	40	43	53	53	20
Total Recovered Silver	koz	1,329	--	--	98	211	137	197	156	93	118	131	70	84	33
Total Payable Copper	Mlb	361	--	--	27	39	31	51	46	32	33	33	28	26	15

	Unit	LoM	-2	-1	1	2	3	4	5	6	7	8	Y9	10	11
Total Payable Gold	koz	721	--	--	102	68	78	157	67	46	39	41	51	51	19
Total Payable Silver	koz	745	--	--	55	146	85	115	83	42	65	77	25	42	10
Revenue															
Copper Price	USD/lb	4.16	--	--	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16
Gold Price	USD/oz	2,119	--	--	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119
Silver Price	USD/oz	27	--	--	27	27	27	27	27	27	27	27	27	27	27
Gross Revenue	USDM	$3,050	--	--	329	312	298	547	336	233	220	228	226	219	102
Operating Costs															
Mine Operating Costs	USDM	($355)	--	--	(35)	(35)	(31)	(34)	(32)	(29)	(30)	(38)	(44)	(44)	(3)
Mill Processing Costs	USDM	($397)	--	--	(29)	(33)	(31)	(44)	(43)	(39)	(40)	(40)	(38)	(38)	(22)
G&A Costs	USDM	($85)	--	--	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(5)
Refining and Royalties															
TC/RC	USDM	($73)	--	--	(6)	(8)	(6)	(10)	(9)	(6)	(7)	(7)	(6)	(5)	(3)
Royalties	USDM	($75)	--	--	(8)	(8)	(7)	(13)	(8)	(6)	(6)	(6)	(6)	(5)	(3)
Capital Expenditures															
Initial Capital	USDM	($248)	(87)	(161)	--	--	--	--	--	--	--	--	--	--	--
Expansion Capital	USDM	($56)	--	--	--	(22)	(33)	--	--	--	--	--	--	--	--
Sustaining Capital	USDM	($54)	--	--	(10)	(3)	--	(7)	--	(3)	(17)	(8)	(1)	(4)	--
Mine Closure	USDM	($47)	--	--	--	--	--	--	--	--	--	--	--	--	(47)
Salvage Value	USDM	$18	--	--	--	--	--	--	--	--	--	--	--	--	18
Change in Working Capital															
Change in Working Capital	USDM	--	--	--	(27)	2	1	(22)	23	5	1	(1)	0	1	18
Pre-Tax Unlevered Free Cash Flow															
Pre-Tax Unlevered Free Cash Flow	USDM	$1,678	(87)	(161)	206	198	183	408	258	146	114	121	124	114	56
Pre-Tax Cumulative Unlevered Free Cash Flow	USDM		(87)	(248)	(42)	156	338	746	1,003	1,150	1,264	1,384	1,508	1,622	1,678
Taxes															
Unlevered Cash Taxes	USDM	($254)	--	--	(26)	(24)	(27)	(57)	(30)	(18)	(16)	(16)	(15)	(14)	(11)
Post-Tax Unlevered Free Cash Flow															
Post-Tax Unlevered Free Cash Flow	USDM	$1,424	(87)	(161)	180	174	155	351	228	128	98	105	109	100	44
Post-Tax Cumulative Unlevered Free Cash Flow	USDM		(87)	(248)	(68)	106	261	612	839	968	1,066	1,171	1,280	1,380	1,424

22.5 Sensitivity Analysis

A sensitivity analysis was conducted on the Project's pre-tax and post-tax NPV, IRR, and payback period, assessing the impact of changes in Capex, Opex, gold price and copper price.

The analysis indicated that the Project is most sensitive to fluctuations in gold price and copper price, with less sensitivity to changes in operating costs and capital costs, as shown in the Table 22-3 and Figure 22-2.

Table 22-3: Sensitivity Analysis

Post-Tax NPV Sensitivity to Discount Rate

Discount Rate \ Gold Price	$984	-30%	-15%	0%	15%	30%
2.0%	$893	$1,059	$1,224	$1,390	$1,556	
4.0%	$764	$911	$1,057	$1,203	$1,350	
5.0%	$708	$846	$984	$1,121	$1,259	
7.0%	$608	$731	$854	$977	$1,099	
10.0%	$486	$590	$694	$799	$903	

Post-Tax IRR Sensitivity to Discount Rate

Discount Rate \ Gold Price		-30%	-15%	0%	15%	30%
2.0%	47.6%	54.5%	61.2%	67.6%	73.8%	
4.0%	47.6%	54.5%	61.2%	67.6%	73.8%	
5.0%	47.6%	54.5%	61.2%	67.6%	73.8%	
7.0%	47.6%	54.5%	61.2%	67.6%	73.8%	
10.0%	47.6%	54.5%	61.2%	67.6%	73.8%	

Post-Tax Payback Sensitivity to Discount Rate

Discount Rate \ Gold Price		-30%	-15%	0%	15%	30%
2.0%	1.87	1.59	1.37	1.20	1.07	
4.0%	1.87	1.59	1.37	1.20	1.07	
5.0%	1.87	1.59	1.37	1.20	1.07	
7.0%	1.87	1.59	1.37	1.20	1.07	
10.0%	1.87	1.59	1.37	1.20	1.07	

Post-Tax NPV Sensitivity to Discount Rate

Discount Rate \ Copper Price	-30%	-15%	0%	15%	30%
2.0%	$907	$1,066	$1,224	$1,383	$1,541
4.0%	$781	$919	$1,057	$1,195	$1,333
5.0%	$725	$855	$984	$1,113	$1,242
7.0%	$627	$740	$854	$967	$1,080
10.0%	$506	$600	$694	$789	$883

Post-Tax IRR Sensitivity to Discount Rate

Discount Rate \ Copper Price	-30%	-15%	0%	15%	30%
2.0%	51.3%	56.4%	61.2%	65.8%	70.2%
4.0%	51.3%	56.4%	61.2%	65.8%	70.2%
5.0%	51.3%	56.4%	61.2%	65.8%	70.2%
7.0%	51.3%	56.4%	61.2%	65.8%	70.2%
10.0%	51.3%	56.4%	61.2%	65.8%	70.2%

Post-Tax Payback Sensitivity to Discount Rate

Discount Rate \ Copper Price	-30%	-15%	0%	15%	30%
2.0%	1.68	1.50	1.37	1.27	1.19
4.0%	1.68	1.50	1.37	1.27	1.19
5.0%	1.68	1.50	1.37	1.27	1.19
7.0%	1.68	1.50	1.37	1.27	1.19
10.0%	1.68	1.50	1.37	1.27	1.19

Post-Tax NPV Sensitivity to Opex

Opex \ Gold Price	-30%	-15%	0%	15%	30%
(20.0%)	$806	$944	$1,082	$1,219	$1,357
(10.0%)	$757	$895	$1,033	$1,170	$1,308
--	$708	$846	$984	$1,121	$1,259
10.0%	$659	$797	$935	$1,072	$1,210
20.0%	$610	$748	$886	$1,023	$1,161

Post-Tax IRR Sensitivity to Opex

Opex \ Gold Price	-30%	-15%	0%	15%	30%
(20.0%)	51.6%	58.3%	64.8%	71.0%	77.1%
(10.0%)	49.6%	56.4%	63.0%	69.3%	75.5%
--	47.6%	54.5%	61.2%	67.6%	73.8%
10.0%	45.6%	52.6%	59.4%	65.9%	72.1%
20.0%	43.6%	50.7%	57.5%	64.1%	70.4%

Post-Tax Payback Sensitivity to Opex

Opex \ Gold Price	-30%	-15%	0%	15%	30%
(20.0%)	1.70	1.47	1.28	1.14	1.02
(10.0%)	1.78	1.53	1.33	1.17	1.04
--	1.87	1.59	1.37	1.20	1.07
10.0%	1.97	1.66	1.43	1.24	1.10
20.0%	2.08	1.74	1.48	1.29	1.14

Post-Tax NPV Sensitivity to Capex

Total Capex \ Gold Price	-30%	-15%	0%	15%	30%
(20.0%)	$765	$903	$1,041	$1,179	$1,317
(10.0%)	$736	$874	$1,012	$1,150	$1,288
--	$708	$846	$984	$1,121	$1,259
10.0%	$679	$817	$955	$1,093	$1,231
20.0%	$650	$788	$926	$1,064	$1,202

Post-Tax IRR Sensitivity to Capex

Total Capex \ Gold Price	-30%	-15%	0%	15%	30%
(20.0%)	58.9%	66.9%	74.6%	82.1%	89.3%
(10.0%)	52.8%	60.2%	67.3%	74.2%	80.9%
--	47.6%	54.5%	61.2%	67.6%	73.8%
10.0%	43.2%	49.7%	56.0%	62.0%	67.8%
20.0%	39.4%	45.6%	51.5%	57.2%	62.7%

Post-Tax Payback Sensitivity to Capex

Total Capex \ Gold Price	-30%	-15%	0%	15%	30%
(20.0%)	1.48	1.26	1.09	0.96	0.86
(10.0%)	1.67	1.42	1.23	1.08	0.96
--	1.87	1.59	1.37	1.20	1.07
10.0%	2.09	1.77	1.53	1.34	1.19
20.0%	2.33	1.95	1.69	1.48	1.30

Post-Tax NPV Sensitivity to Recovery Mill

Recovery Mill \ Gold Price	-30%	-15%	0%	15%	30%
(2.0%)	$678	$813	$949	$1,084	$1,219
(1.0%)	$693	$830	$966	$1,103	$1,239
--	$708	$846	$984	$1,121	$1,259
1.0%	$722	$862	$1,001	$1,140	$1,280
2.0%	$737	$878	$1,019	$1,159	$1,300

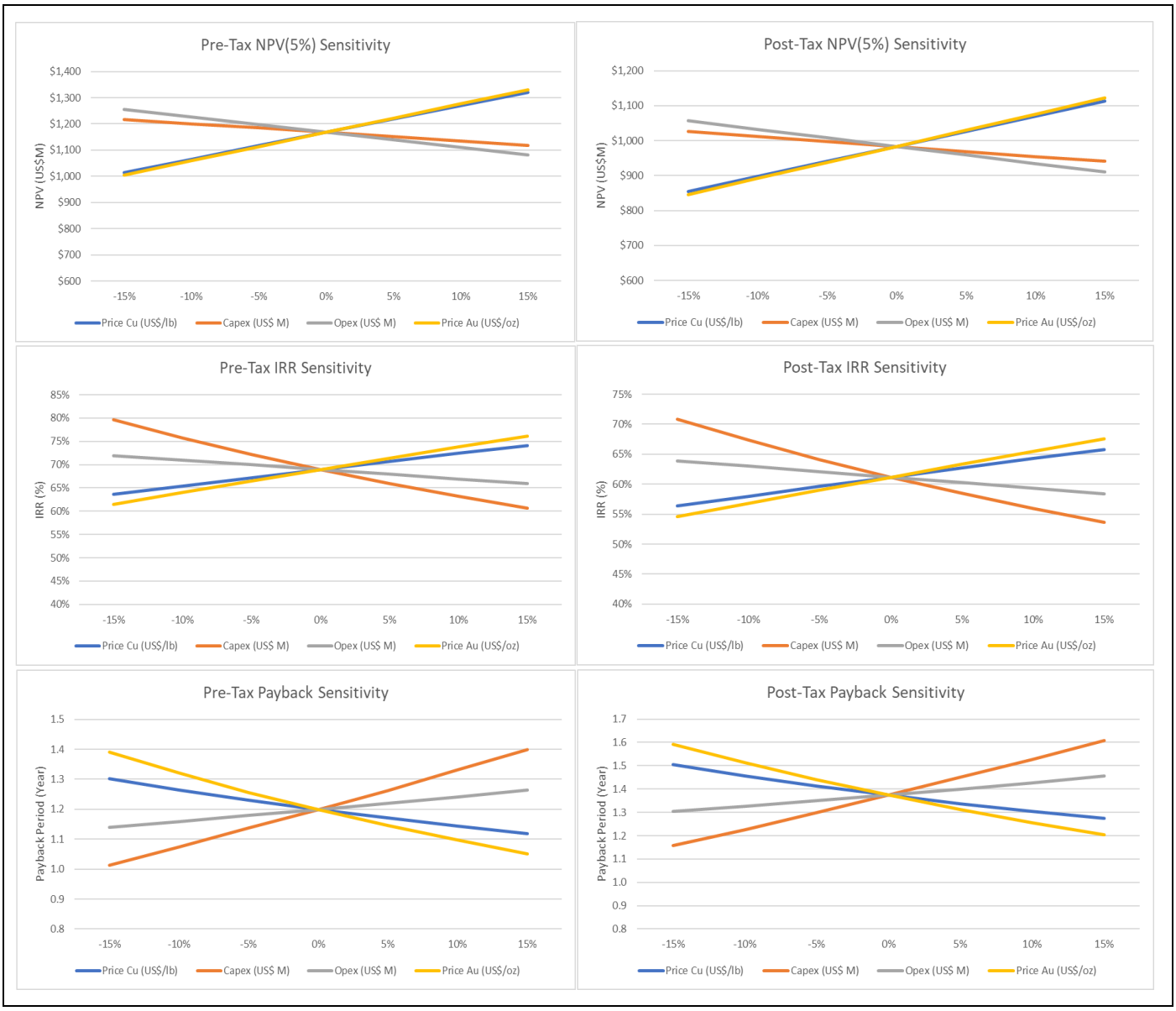
Post-Tax IRR Sensitivity to Recovery Mill

Recovery Mill \ Gold Price	-30%	-15%	0%	15%	30%
(2.0%)	46.3%	53.1%	59.7%	66.0%	72.2%
(1.0%)	47.0%	53.8%	60.4%	66.8%	73.0%
--	47.6%	54.5%	61.2%	67.6%	73.8%
1.0%	48.3%	55.2%	61.9%	68.4%	74.6%
2.0%	49.0%	55.9%	62.6%	69.1%	75.4%

Post-Tax Payback Sensitivity to Recovery Mill

Recovery Mill \ Gold Price	-30%	-15%	0%	15%	30%
(2.0%)	1.93	1.64	1.42	1.24	1.10
(1.0%)	1.90	1.62	1.39	1.22	1.09
--	1.87	1.59	1.37	1.20	1.07
1.0%	1.84	1.57	1.35	1.19	1.06
2.0%	1.81	1.54	1.34	1.17	1.05

Figure 22-2: Summary of Sensitivity Analysis



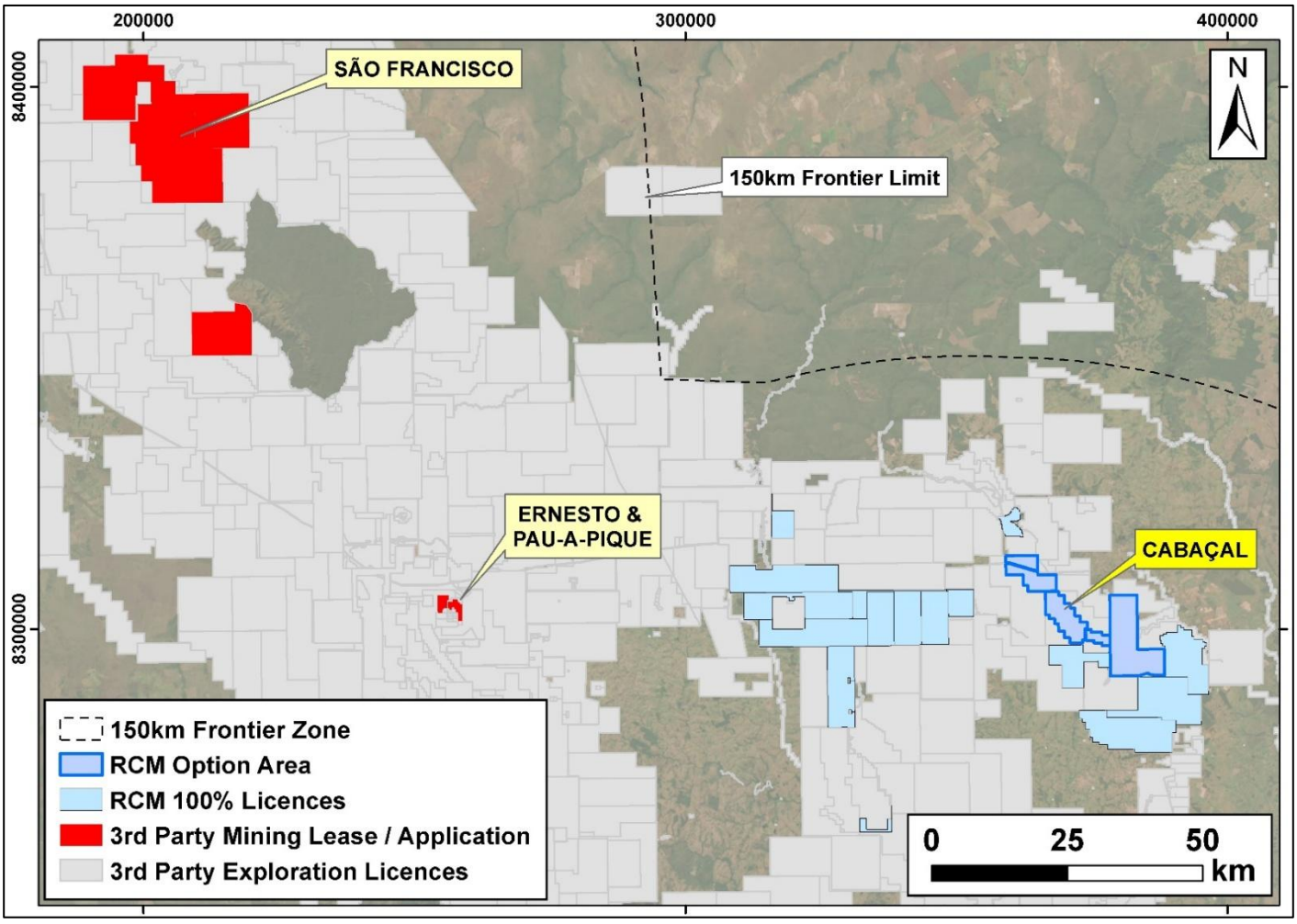
Source: Ausenco, 2025.

23 ADJACENT PROPERTIES

The closest operations to the Cabaçal Project are the São Francisco, São Vicente, and Ernesto Pau-a-Pique (EPP) gold projects – previously operated by Yamana and now by Aura Minerals (Figure 23-1). These are located to the west of the Alto Jaurú Greenstone Belt in a separate geological domain.

Licences in the immediate vicinity of the Cabaçal Project are held by a diversity of ownership, dominated by small Brazilian companies and private individuals. Their activities are not publicly reported.

Figure 23-1: Cabaçal Option Area and RCM Applications, with Closest Third-Party Mining



Source: RCM licences (Meridian subsidiary) and option area; licences from ANM SIGMINE GIS system. Meridian, 2024.

24 OTHER RELEVANT DATA AND INFORMATION

This section is not relevant to this report.

25 INTERPRETATION AND CONCLUSIONS

25.1 Introduction

The QPs note the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this Report.

25.2 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

The Cabaçal Project is located in the State of Mato Grosso, Brazil approximately 320 km west-north-west of the state capital Cuiabá. Sealed roads provide access between Cuiabá and São José dos Quatro Marcos followed by approximately 35km by unpaved all-weather gravel roads to the Cabaçal site.

There are several towns in the area, including Araputanga, São José dos Quatro Marcos and Mirasol D'Oeste, which have facilities such as hospitals, schools, shops, banks, post-offices, and petrol stations.

The Cabaçal project consists of five mining and exploration licences being acquired under an option agreement for a total of USD8 750 000 and 4,500,000 Meridian common shares as well as 16 satellite exploration licence applications in the name of Rio Cabaçal Mineração Ltda, Meridian's subsidiary, in the Cabaçal, Jaurú and Araputanga Belts. The applications have been accepted and registered. Approval of the licences for field activity is pending.

Licence 861956/1980 (the Santa Helena/Monte Cristo Mining Lease) is the only property that has a royalty payment equivalent to one-point-five per cent (1.5%) of the gross revenues other than government royalties which apply to all properties.

The Company has received the required permits in order to conduct its exploration programs. Landowner agreements are in place for the areas in which it operates.

The project area does not overlap indigenous lands or national parks.

All the necessary approvals and community support are in place in order for the Company to operate its Exploration activities on the Cabaçal project. If the Company wants to construct and operate a mining operation at Cabaçal then further approvals will be required.

25.3 Geology and Mineralization

The Cabaçal Gold-Copper deposit is related to a Paleoproterozoic volcanogenic massive stringer and disseminated sulphide system located within deformed metavolcanic-sedimentary rocks of the Alto Jaurú Greenstone Belt. The geology of the Cabaçal Mine has a strong structural and alteration overprint. Sulphide Zones contain all the disseminated (<40%) and semi-massive/massive (>40%) sulphide mineralization. Mineralization is closely related to the

chloritized and banded metachert units. The main sulphide minerals are chalcopyrite, pyrite, pyrrhotite, sphalerite and galena.

25.4 Exploration and Drilling

Meridian has diamond drilled a combination of twin holes, infill holes, and resource extension holes to validate the historical database of the Project and define the limits of mineralization.

A total of 519 diamond drill holes, amounting to 59,980.83 m, were included in the drilling database up to the effective date of the Mineral Resource Estimate (MRE), covering the Cabaçal deposit and near-mine sterilization areas. Additional data included 12 hydrogeological reverse circulation (RC) holes totaling 981 m, 37 geotechnical holes totaling 590 m, 25 auger holes for 85.87 m.

Meridian has also reviewed all sources of information from historical registers and cross sections to digitally compile the historical logging codes.

The diamond drilling methods used in the current drilling campaigns are in compliance with industry standards.

25.5 Metallurgical Test work

Metallurgical test work conducted since the development of the Cabaçal PEA process flowsheet in 2022 includes:

- Addressing metallurgical recommendations contained in the PEA NI 43-101 technical report.
- Conduct optimization studies on rougher concentrate regrind size.
- Perform optimization studies on copper collectors.
- Conduct additional variability studies.
- Perform sedimentation and filtration tests on flotation tailings.
- Perform further variability test work using the revised flowsheet (grind size, residence times, etc.).
- Review recovery curves based on new metallurgical test results.

The work performed to date shows that the inclusion of a gravity circuit on the grinding circuit product improves the overall gold recovery, and as such must be retained in the design. Further, the replacement of PAX as collector by Aerophine 3418A and Aero 208 collectors enhances the grades and recoveries of all payable metals.

The extension of retention time in the copper rougher float has added to the completeness of copper recovery fed to the regrind mill and copper cleaner circuit.

25.6 Mineral Resource Estimate

Density data: There is a substantial amount of density data, which appears to be of good quality and was estimated by IQD. The range in densities for the mineralization and surrounding host rock is relatively small, which increases the

confidence in the estimated density data. The density measuring technique, i.e., immersion in water weight in air/weight in water, is an industry standard technique. Sample selection for density measurement is appropriate with most of the core being competent. Such is the quantity of data that it is feasible to generate block grades for density by using IQD for fresh rock domains. It is also noted that the range in densities is relatively small which adds to the general high level of confidence in the tonnages of the MRE.

Drillhole spacing. The drill hole spacing is considered appropriate for MRE and Mineral Resources Classification as measured and indicated categories.

Reporting constraints. A 0.19 g/t gold equivalent cut-off was used to report the MRE and this is based on optimized open pit. The pit shell was also used as a constraint for open pit resource reporting. A cut-off grade of 0.948 g/t AuEq was applied in underground mining stope optimization process based on physical and economical parameters. Stopes were applied as a constraint for the underground resource reporting.

The Cabaçal Mineral Resource estimate consists of Measured plus Indicated resources of 51.43 Mt at 0.55 g/t Au, 0.40% Cu and 1.50 g/t Ag for open pit mining and Inferred resources of 0.96 Mt at 0.96 g/t Au, 0.49% Cu & 1.36 g/t Ag for underground mining.

25.7 Mineral Reserve Estimate

The mine design and Mineral Reserve Estimate have been completed at a cut-off grade of 0.25 g/t AuEq. This work was conducted by GE21 using GEOVIA Whittle 4.7 software. The pit with a revenue factor of 1 was selected, in accordance with the mining industry's best practices.

The Proven Mineral Reserves total 37.11 Mt at an average grade of 0.67 g/t Au, 1.64 g/t Ag, and 0.45% Cu. The Probable Mineral Reserves total 4.59 Mt at an average grade of 0.36 g/t Au, 1.61 g/t Ag, and 0.40% Cu. The total Proven and Probable Mineral Reserves is 41.7 Mt at an average grade of 0.63 g/t Au, 1.64 g/t Ag, and 0.44% Cu.

Mining activities are expected to continue for a period of 10.6 years, from the start of commercial production to end of in-pit mining activities, excluding the pre-stripping period.

The open pit will generate 97.24 Mt of overburden and waste rock, resulting in a strip ratio of 2.33:1.

The Mineral Reserve Estimate presented here is consistent with CIM definitions. The Mineral Reserves are based on Measured and Indicated Mineral Resources, and do not include any Inferred Mineral Resources.

25.8 Mining Methods

Conventional open-pit mining methods – drilling, blasting, loading, and hauling – will be used to extract ore and waste. The Project involves developing an open pit that will be mined through the historical underground workings. This information was used to drive geotechnical studies and operation procedures.

A qualified mining contractor will be selected for the mining operations. The primary objectives in development and production sequencing are to access higher-grade ore as early as practicable, while minimizing pit development costs as much as possible.

The reserve will be mined by hydraulic excavators and conventional haul trucks, supported by bulldozers, drill rigs, graders, and fuel and water trucks.

25.9 Recovery Methods

The process selected for recovery of copper and gold from the Cabaçal resources is a gravity and flotation circuit. Plant operation will start at a 2.5 Mt/a capacity until the end of Year 3, when an expansion will take place to increase plant throughput to 4.5 Mt/a in Year 4.

RoM will be fed to a primary crusher, which will feed directly the SAG mill. Until Year 3, the SAG will operate in closed circuit with the cyclones, where part of the cyclone underflow will feed the gravity circuit and the remaining part of it will refeed the SAG mill. Gravity tails will be fed back to the SAG mill. From Year 4, the SAG mill will operate in open circuit and the comminution circuit will have a new ball mill, which will operate in closed circuit with the cyclones.

Gravity concentrate will feed a series of gravity recovery shaking tables, which will have its final concentrate reporting to a smelting furnace, producing doré bars.

The overflow will feed the rougher flotation at a grind size of 80% passing 200 µm, where the tails will go directly to a pyrite flotation circuit, which will have the main goal to separate the final tails into two different streams (1 – low mass and high sulphur grade, 2- high mass and low sulphur grade), which will be thickened and filtered separately.

Rougher concentrate will be reground to 30 microns and floated in the cleaner circuit (Jameson Cell). Cleaner tails will feed a cleaner scavenger circuit. Concentrates from the cleaner and cleaner scavenger stages will report to the final concentrate thickener and filter (cleaner scavenger concentrate can also be refed to the cleaners instead based on its copper grade). Cleaner scavenger tails will report to the pyrite flotation circuit.

A 20% factor was applied to the nominal throughput.

25.10 Infrastructure

The dry stack tailings facility is located east of the process and filter plants. The tailings will be desulphurized creating two tailings stream; i.e. high sulphur tailings and low sulphur tailings. The filter plant will dewater the tailings to 15% moisture content and reuse the water in the process plant. Filtered tailings will be transported to the two DSTFs in haul trucks, i.e. the high sulphur tailings to the PAG DSTF and the low sulphur tailings to the NAG DSTF. The filtered will be spread and compacted in 1 m layers and is designed to store approximately 0.74 Mt of PAG tailings in the PAG DSTF and 44.21 Mt of NAG tailings in the NAG DSTF in accordance with both national and international standards.

The three waste rock facilities (WRFs) have been designed to store saprolite, saprock, and waste rock. The WRFs will be constructed from the bottom up. The facilities have a total storage capacity of 94.1 Mt. The facilities were designed in accordance with both national and international standards.

25.11 Water Management

Water management will convey contact and non-contact water of the facilities in channels. Contact water management for NAG DSTF and PAG DSTF will be conveyed separately its respective ponds, the management of the DSTF has been based on geochemical essays, additional potential treatment to manage sediment content and other deleterious components will be assessed in the FS stage of the project. The WRF´s contact and non-contact water will be conveyed to ponds, assessed for treatment need, before discharge to the environment.

Raw water will be supplied from the nearby Cabaçal river, so contact water will be discharged to the environment, before, water monitoring will occur regularly to ensure that the water discharged meets water quality standards.

25.12 Markets and Contracts

Metal prices, treatment and refining charges, currency exchange rates, and concentrate transportation cost assumptions used in this report are based on long-term global industry consensus forecasts.

25.13 Environmental, Permitting and Social Considerations

Cabaçal's environmental studies (EIA/RIMA) were conducted in accordance with Brazilian legislation and are based on the Terms of Reference issued by SEMA (State Secretariat for the Environment of the State of Mato Grosso). The EIA/RIMA reports were filed with SEMA on December 2, 2023. The licensing process is now following the regulated pathway and has already undergone the Public Hearing held on September 19, 2024, and the field inspection carried out by a multidisciplinary technical team from SEMA, which attested to the veracity of the information contained in the EIA/RIMA. The process is currently undergoing final analysis by SEMA technicians with the next step being the issue of the Technical Recommendation Opinion to support the Cabaçal Preliminary Licence (LP).

25.14 Capital Cost Estimate

The capital cost estimate aligns with Class 4 guidelines for a PFS-level estimate with an accuracy of -20% to +30% specified by the Association for the Advancement of Cost Engineering International (AACE International). The capital cost estimate, developed in Q1 2025, is based on the proposed Project design, Ausenco’s budgetary quotations for main equipment and an in-house database of comparable projects and studies, including insights from similar operations.

The total capital cost summary is presented in Table 21-1. The total initial capital cost for the Cabaçal Project is USD247.93M (Phase 1 – 2.5 Mt/a) and USD55.73M (Phase 2 – expansion to 4.5 Mt/a).

25.15 Operating Cost Estimate

The operating cost estimate was developed in Q1 2025 dollars from client input, budgetary quotations and Ausenco’s in-house database of projects and studies as well as experience from similar operations. Mine cost estimates were provided by RCM, based on information from contractors.

The accuracy of the operating cost estimate is -20% to +30%. The estimate includes mining, processing, and G&A costs. For more details, refer to Section 21.3.

25.16 Economic Analysis

Based on the assumptions in this report, the Project has a positive cash flow. The pre-tax net present value discounted at 5% (NPV5%) is USD1 168M, the IRR is 69.0%, and the payback period is 1.2 years. On an after-tax basis, the NPV5% is USD984M, the IRR is 61.2%, and the payback period is 1.4 years.

A sensitivity analysis was conducted on the base case pre-tax and after-tax NPV, IRR, and Payback of the Project, using the following variables: gold price, copper price, initial capital costs and operating costs. The analysis revealed that the Project is most sensitive to changes in metal prices followed by, to a lesser extent, operating costs and initial capital costs.

25.17 Risks and Opportunities

25.17.1 Risks

25.17.1.1 Exploration

The use of historical registers and cross sections carries a moderate risk due to potential errors in location, variations in the quality of chemical analyses, and result simplifications, which may decrease the confidence level of the exploration database.

Low precision in the location of historical information may introduce errors in mineralization interpretations.

Additionally, relying on historical assay results could reduce the confidence level of mineralization interpretations and modelling.

Mitigation steps have been made through twin drilling, resurveying and targeted infill drilling to progressively reduce these risks, with a final phase of targeted campaign of drilling recommended in the mine area.

25.17.1.2 Metallurgical Testing

Further testing of samples during the DFS stage, using the Milestone Rev C flowsheet as a frozen design, is strongly recommended. This testing should cover a range of samples representing the first 12 months of the mine plan to reduce risks to projected grades and recoveries. The tests must be performed using simulated process water, which can be produced using a published method (Le et al., 2020). Additionally, work index measurements must be performed to a limiting size of 150 microns to account for the extra power requirements.

25.17.1.3 Mineral Resource Estimate

There is a low to moderate risk of local inconsistencies in interpretations in 3D mineralization model. Some areas with local gaps on drilling grid information may be interpreted using mistaken connections between mineralized drillhole interceptions. The risk for the overall result of Mineral Resource estimate is considered low, because the density of samples in a regular drilling is very huge considering the entire deposit size.

25.17.1.4 Mineral Reserve Estimate

25.17.1.4.1 Pit Wall Failure

A sound comprehensive Pit Slope Management Program should be implemented by the geotechnical team to address risks associated with potential movement of the exposed pit faces. Rock mass failure is considered a low risk in hard rock due to the high overall strength of the rock mass. Design elements have included a temporary wall slope profile, which allows for wider catch benches to mitigate overbank hazards. The final pit design will evolve over the LoM, with adjustments made based on data collected during interim pit phases. Slope movement monitoring should be conducted as the pit depth increases.

Additionally, hydrogeological and hydrological studies are required to assess the potential impact of water on the stability of the mine wall.

25.17.1.5 Mining Methods

The slope design criteria assume fully depressurized conditions in the proposed open-pit slopes. Since no hydrogeological testing data were collected for this study, The recommended design criteria may require revision if groundwater is encountered in future studies.

25.17.1.6 Recovery Methods

A specific recovery has been estimated for the copper cleaner circuit using the Jameson cell, based on benchmarking with similar projects. However, no vendor testing has been completed for this specific technology to validate its recovery.

25.17.1.7 Infrastructure

There was only a limited geotechnical study conducted for the PFS. In the next phase, a more in-depth geotechnical and laboratory program must be completed. The results may indicate poorer foundation and tailings conditions than those assumed in the PFS. This would require design modifications that could increase capital, sustaining capital, and operating cost.

The filtered tailings after compaction are not trafficable for haul trucks during rainy season. The addition of a gravel base to support haul traffic may be required. This would be an increase in operating costs. Additionally, laboratory testing also needs to be performed in the next phase to validate the trafficability of the filtered tailings.

The water management structures for the DSTFs and WRFs are designed for the 1-in-200-year storm event for temporary structures and the 1 in 500-year storm event for permanent structures. If there is an event greater than these events the facility could see localized erosion, that would need to be repaired. There is a need to review the site hydrology and water management plan in the next phase to fully understand the risks.

25.17.1.8 Market Studies

No formal market studies have been conducted for this report. There is a risk that the market terms assumed in this report may not be realized.

Insufficient Cabaçal copper concentrate has been produced for market assessment. There is a risk that when market testing of the concentrate is undertaken that it will pose unforeseen issues for smelters that will either cause them to reject the product or impose price penalties for its use.

25.17.1.9 Environmental, Permitting and Social Considerations

The Preliminary Licence (LP) approval process may be delayed due to administrative demands in the agency. The expectation is to receive the licence in the coming months, but this is completely dependent on the licensing agency, SEMA, which can receive a fluctuating workload. The company has an excellent relationship with SEMA and so far, the process has been completely normal.

25.17.2 Opportunities

25.17.2.1 Exploration and Mineral Resources

The Cabaçal resource area has a number of areas where original historical data has been lost, but documents indicate that certain holes intersected zones with > 5g/t Au or >3% Cu, and/or zones with visible gold. Not all such holes have been twinned or crossed, and there may be opportunities to locally refine grade high-grade controls through targeted infill drilling if these zones can be replicated.

It is possible with future infill and extensional drilling, opportunities may be tested to definition of underground resources beyond the open-pit margins.

Compared to many greenstone belts that have been explored intensively for decades, the Cabaçal, Jaurú & Araputanga Belts have had limited sustained investment in drilling. Historical geochemical and geophysical surveys coupled with modern programs or Meridian have defined a number of gold and base anomalies. With ongoing work, these can be progressed to reconnaissance drilling to test for future discoveries.

25.17.2.2 Metallurgical Testing

As mentioned above, the further testing of a primary grinding circuit product at 150 microns is a future opportunity that must be included in the PFS stage of work.

A module of tests to confirm the finer 150 micron grinding product size must precede variability testing. Once this has been done, the layout of the flowsheet will be frozen, and the DFS work will test a series of drill core samples that represent the first 12 months of operation.

25.17.2.3 Mineral Reserve Estimate

Mineral Reserves were estimated based on conservative metal prices. A total of 8.65 Mt at a 0.22 g/t AuEq was classified for storage, with potential for future processing if gold prices become favourable.

25.17.2.4 Mining Methods

It is possible to dump waste internally within the pit, reducing waste haulage distances and minimizing the environmental footprint of the Project.

25.17.2.5 Recovery Methods

It has been identified an opportunity to increase metal recovery by reducing the P_{80} of the comminution circuit from 200 to 150 microns. This investigation will occur after the conclusion of the PFS and before the start date of the DFS.

25.17.2.6 Infrastructure

There is an opportunity in the next phase to optimize both the DSTFs and WRFs to reduce the size of the footprint, which would in turn potentially reduce sustaining capital of the project.

25.17.2.7 Market Studies

Copper markets are currently undersupplied for copper concentrates as is reflected by the negative spot treatment and refining charges. If these conditions remain in place when the Cabaçal project is put into operation then the possibility arises that the market terms assumed for this study may be exceeded.

25.17.2.8 Environmental, Permitting and Social Considerations

Optimize the process for granting the Installation Licence (LI), which is the next phase of the licensing process. The company has already started the process and, even before obtaining the LP, it has already engaged Sete Soluções e Tecnologia Ambiental Ltda to begin work on the PCA - Environmental Control Plan, which is one of the base documents for applying for the LI.

26 RECOMMENDATIONS

26.1 Overall

The results presented in this technical report demonstrate that the Cabaçal project is technically and economically viable. It is recommended to continue developing the project through additional studies, including a definitive feasibility study.

Table 26-1 summarizes the proposed budget to advance the project through the definitive feasibility study stage.

Table 26-1: Proposed Budget to Advance the Project to the Definitive Feasibility Study Stage

Program Component	Estimated Total Cost (USDM)
Drilling	1.20
Metallurgical Testing	1.40
Mining	0.33
Geotechnical Work	0.40
Market Studies	0.05
Environmental Studies	0.25
Engineering & Other	2.92
Total	**6.55**

26.2 Exploration

It is recommended that as geochemical and geophysical programs expand, that the regional geological maps be updated to improve understanding of deposit controls and exploration vectors in the Cabaçal Belt and adjacent belts, to assist with exploration targeting.

26.3 Drilling

A new drilling campaign is recommended in the following phases:

- Phase 1: An Infill drilling campaign in mine area to support DFS metallurgical test work requirements, and target select areas in and around the starter pit, to test projection of grade trends, including areas where historical data has lack of information (Table 26-2).
- Phase 2: Regional drilling campaign to explore the potential zones to promote project expansion (Table 26-3).

Phase 2 is not contingent on Phase 1.

Table 26-2: Phase 1 Recommended Work Program

Program Component	Unit Cost (USD/m)	Estimated Total Cost (USDM)
Mine Area Drilling	194	911,800.00
Total		**911,800.00**

Table 26-3: Phase 2 Recommended Work Program

Program Component	Unit Cost ($)	Estimated Total Cost (USDM)
Regional drilling campaign	194	291,000.00
Total		**291,000.00**

26.4 Metallurgical Testing

Additional metallurgical test work is recommended for the next phase of engineering:

- Comminution test work Bond rod mill work index (RWi)
- Flotation tests using the recirculated process water, with the design P_{80}
- Supporting test work:
  - Chemical analysis of concentrate quality
  - Concentrate dangerous goods assessment
  - Site water tests
  - Process water quality tests (tailings)
  - Blending tests based on the most recent version of the mine plan proposed.
- Engineering and vendor test work:
  - Thickener test work (concentrate, sulphide/pyrite, tailings)
  - Concentrate and sulphide/pyrite filter test work
  - Regrind mill specific energy to assist equipment sizing and selection
  - Bulk materials handling test work (plant feed)
  - Bulk concentrate handling test work (TML, bulk density, rheology, toxicity reports)
  - Physical and geochemical characterization of concentrate, sulphide tailings and general tailings (acid base accounting (ABA), net acid generation (NAG) and kinetic column cell tests).

All samples shall be obtained from existing exploration drill holes, provided the samples meet the necessary parameters for conducting all tests (mass, particle size). The drilling of dedicated 'metallurgical' drill holes for sample

recovery is not planned. Composite samples will not be tested. Instead, the focus will be on continuous areas of the core, allowing for a better understanding of the variability of the deposit, focusing on the areas corresponding to the first 5 years of production. Ausenco recommends using samples from available drill cores. The tests should be conducted following the process route established in the PFS phase.

The key elements of the test work plan include:

- Review PFS Mine Plan to determine the predicted mine grade for the metallurgical domains, including an assessment of the grade ranges for each domain.
- Review and selection of samples from available exploration drill holes. This includes selection and preparation of 'geometallurgical samples,' considering the first 5 years of production, for use in comminution test work; ore characterization; and variability test work.
- Comminution test work conducted on select geometallurgical samples including Rod Mill Work Index.
- Ore characterization and variability test work conducted on select geometallurgical samples to expand and improve the metallurgical predictive models and properly constrain metallurgical interpolation.
    - Ore characterization including specific gravity, bulk density, size distribution on selected ore characterization samples for the following streams: RoM, Mill Feed, Mill Product, Cyclone Underflow, Regrind Product, Tailings and Concentrate Cake.
    - Flotation tests using the recirculated process water, with the design P_{80}
    - Supporting test work conducted on products from the flow sheet development test work, including concentrate quality; site water and process water testing; and ore blending.
    - Dangerous goods testing, with Classification tests according to the applicable standards, Package tests to evaluate the ability of a package to withstand the stressors of transportation and storage, such as drops, vibrations, and extreme temperatures and substance tests to evaluate the properties of the substance itself, such as its flash point, boiling point, and burning rate.
    - Engineering and vendor test work conducted on the areas corresponding to the first 5 years of operation, including: thickener and filter test work; regrind test work; and concentrate, sulphide tailings and general tailings characterization test work.
- A mini pilot plant campaign is recommended in order to validate the bench scale test results obtained. This will reduce the risks of relying on large scale-up factors used in the project (2.5x for flotation time – lab vs industrial plant). A large amount of sample will be required and testing should last for 5 days, using samples representing the first years of operation. In total, 1.2 tonnes of sample will be needed for this campaign.

Table 26-4 summarizes the recommended test work program and a high-level estimation of total costs, in MUSD. Total costs must be validated with vendors and laboratories once the correct number of tests and test parameters have been defined.

Table 26-4: Phase 1 Recommended Work Program

Program Component	Estimated Total Cost (MUSD)
Comminution Tests	0.10
Flotation Tests	0.20
Dewatering Tests	0.20
Bulk Material/Concentrate Handling Tests	0.30
Mini Pilot Plant Campaign	0.50
Environmental Studies	0.10
Total	**1.40**

26.5 Mineral Reserve Estimate

A cost estimation process, involving a bid request, must be carried out to refine capex and opex assessments.

26.6 Mining Methods

The hydrogeological study is preliminary, and further testing is recommended. Installing vibrating wire piezometers is recommended to evaluate groundwater pore pressures throughout the proposed open pit. Additionally, establishing a protocol for mining operations within 10 metres of underground voids is recommended.

The estimated costs are summarized in Table 26-5.

Table 26-5: Recommended Work Program – Mining Methods

Program Component	Estimated Total Cost (MUSD)
Hydrogeological Study	0.28
Piezometer	0.05

26.7 Recovery Methods

Review and optimize the equipment required for the phase 2 expansion to balance initial capital costs and expansion capital costs. Conduct geotechnical studies for the proposed plant area to support foundation designs. Optimize the plant water balance to reduce freshwater consumption. Costs related to these activities are included in Sections 26.8.1 and 26.11.

26.8 Infrastructure

26.8.1 Geotechnical Field and Laboratory Program

A limited geotechnical field investigation was performed during the PFS. A gap analysis was performed for the FS geotechnical program and the following recommendations are made for site geotechnical and laboratory programs, excluding the open pit. Completion of 26 boreholes for a total length of 715 m, 25 cone penetration test for a total length of 565 m, 100 test pits, and 7,800 m of geophysics in the areas of the DSTFs, WRFs, and plant, and other infrastructure to investigate and confirm foundation conditions, specifically the extent of the saprolite and colluvium along with depth to groundwater and bedrock.

- Laboratory index testing, including compaction tests, mechanical strength tests, and permeability tests on foundation soils and potential borrow materials.
- Additional laboratory testing to confirm the physical characteristics of the filtered tailings, including cyclic strength, trafficability, and permeability tests at both low and high confining stresses to represent the height of the DSTF.
- Using the new data to recommend designs for foundations, borrow sources, construction materials for infrastructure, and DSTFs, WRFs, filter plant and process plant, along with supporting infrastructure.

The estimated cost is approximately USD300 000 including the drilling and excavator rental.

26.8.2 Design of WRFs and DSTFs

DSTF, WRF, associated infrastructure, surface water management design, and analysis included the following:

- Review and update meteorological and hydrology information, updating surface water.
- Sediment management for the DSTFs, and WRFs
- Update geochemical characterization of tailings, waste rock and construction materials
- Develop seepage predictions and seepage control measures for the DSTFs, WRFs
- Optimize the tailings and waste rock handling and deposition strategy, including trafficability of material handling equipment for the DSTFs and WRFs
- The stability model updated, as required, with consideration of the final stacking plan using updated data about the material properties of the waste using laboratory results along with foundations for both the DSTFs and WRFs.
- Perform a liquefaction assessment with consideration of updated information on material properties for the tailings along with foundation for both the DSTFs and WRFs
- Solicit additional budgetary quotes for earthworks and geosynthetics (i.e., geomembrane, geotextile, and piping) to get more accurate pricing for the next cost estimates
- Develop FS level design of DSTFs, WRFs

- Develop cost estimates (i.e, capital, sustaining capital, and operating costs) for site deforestation, earthworks, WRFs and DSTFs.

The estimated cost for the recommended work is approximately USD60 000.

26.8.3 Hydrology and hydrogeology

- Hydrology and hydrogeology studies to update design and cost estimate for open pit water management infrastructure.
- Hydrology and hydrogeology studies to update design and cost estimate for the site-wide water management infrastructure.
- Geochemical sampling and analysis to evaluate the need for supplemental water treatment of contact water and update designs and cost estimates of water management infrastructure.

The estimated cost for the recommended work is approximately USD42 000.

26.9 Market Studies

For future studies it is recommended that:

- Consideration be given to procuring an independent report on the marketability of potential future Cabaçal copper concentrate production. The estimated cost for this activity is approximately USD50 000.
- Conduct detailed concentrate analyses to confirm concentrate quality and all major impurities that may impact its marketability. The estimated costs for this activity are included in Section 26.5.
- Conduct a pilot plant scale test of the Cabaçal mineralization to generate sufficient copper concentrate for market assessment purposes. The estimated costs for this activity are included in Section 26.5.
- Prior to commencement of procuring financing for the construction of the Cabaçal Project, it may be beneficial to enter into offtake arrangements for some or all of the proposed Cabaçal concentrate output. No costs associated.

26.10 Environmental, Permitting and Social Considerations

- Complete the forest inventory of the area impacted by the project, which will be possible with the completion of the PFS, when the final layout of the Cabaçal project structures will exist.
- Review the need for complementary archaeological studies due to the layout of the structures in the PFS phase.
- Continue environmental monitoring of the project region, as already implemented, to generate information for continuous improvement of the environmental management process.
- Continue to pay attention to all project stakeholders, with the aim of always knowing their questions, which should be clarified whenever necessary. The relationship with the communities surrounding the project should continue as already implemented.

The estimated cost for the recommended work is approximately USD253 000.

26.11 Advanced Studies

It is recommended that Meridian undertake a FS or DFS to de-risk the project and enhance confidence. The FS or DFS will incorporate the additional studies recommended in this section. The cost of conducting a DFS is estimated at USD2.92M. (two million nine hundred and twenty thousand dollars).

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