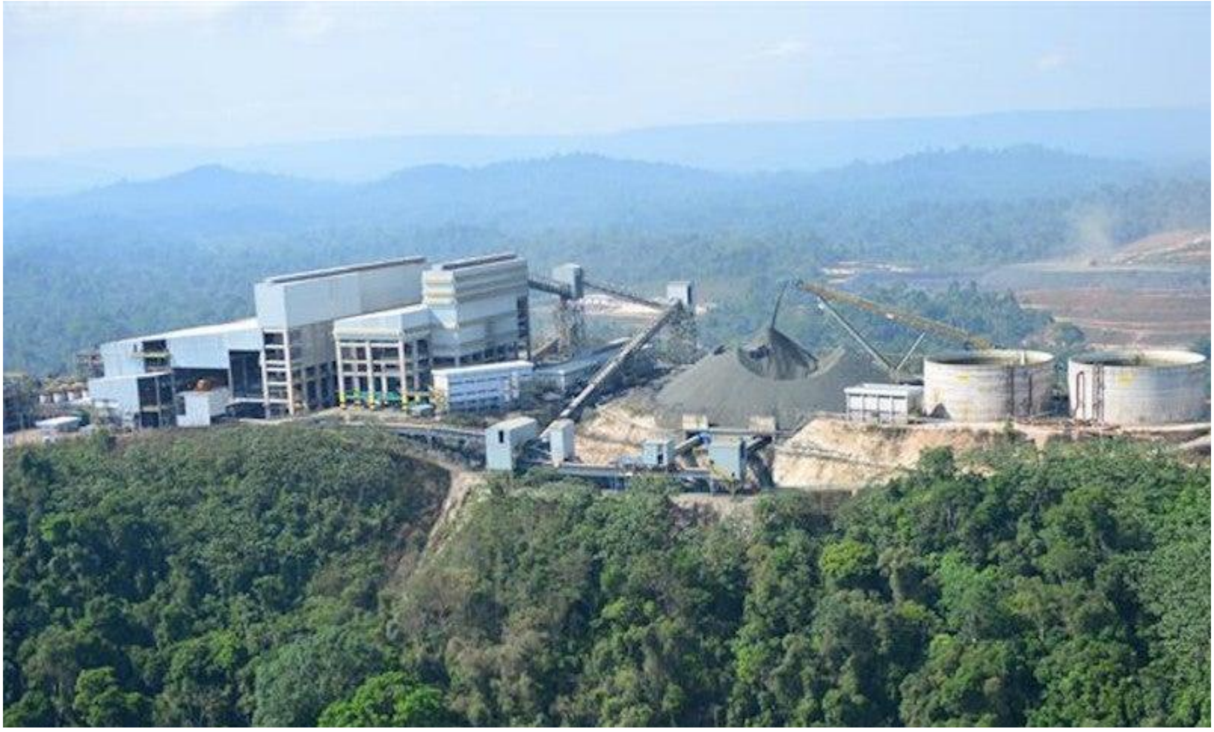

Technical Report Summary
Salobo Operations
Pará State, Brazil

Report current as at:

31 December 2025

Qualified Persons:

Qualified Person	Signature	Date
Henrique Vigario, MAusIMM	/s/ Henrique Vigario	March 27, 2026
Jody Todd, FAusIMM	/s/ Jody Todd	March 27, 2026
Adam MacMillan, P. Eng.	/s/ Adam MacMillan	March 27, 2026
Teófilo Costa, CBRR	/s/ Teófilo Costa	March 27, 2026

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1 EXECUTIVE SUMMARY

1.1 INTRODUCTION

This report (Report) was prepared as a Technical Report Summary (TRS) in accordance with the Securities and Exchange Commission (SEC) S-K regulations (Title 17, Part 229, Sections 601 and 1300 until 1305) for Vale S.A. (Vale) on Vale Base Metals[1] (Vale Base Metals or VBM) Salobo Operations in Pará State, Brazil (as defined in Section 1.3 below).

1.2 TERMS OF REFERENCE

The Report was prepared to be attached as an exhibit to support mineral property disclosure, including mineral resource and mineral reserve estimates, for the Salobo Operations in Vale's Form 20-F for the year ending 31 December 2025.

Mineral resources and mineral reserves are reported for the Salobo deposit and stockpiles.

Unless otherwise indicated, all financial values are reported in real, unescalated, United States (US) currency (US$) including all operating costs, capital costs, cash flows, taxes, revenues, expenses, and overhead distributions. The local currency is the Brazilian real (R$).

Unless otherwise indicated, the metric system is used in this Report.

Mineral resources and mineral reserves are reported using the definitions in Subpart 229.1300 – Disclosure by Registrants Engaged in Mining Operations in Regulation S–K 1300 (SK1300). The Report uses Canadian English.

1.3 PROPERTY DESCRIPTION

The Salobo Operations (as defined below) are located northwest to north–northwest of, and approximately 80 km from the city of Parauapebas, in the southeast of Pará State, in northern Brazil, within the Tapirapé–Aquiri National forest limits.

The Salobo Operations consists of one conventional copper open-pit mine (Salobo Pit) with a conventional copper sulphide processing plant composed of three grinding-flotation lines (Salobo I, II and III)(Salobo Operations). The mining complex also has significant associated infrastructure such as a tailing dam, operational and administrative buildings, etc. The Salobo Operations currently have all infrastructure in place to support mining and processing activities required for its life-of-mine.

1.4 OWNERSHIP

The Salobo operations are owned and operated by Salobo Metais S.A., which is part of the Vale Base Metals group. Salobo Metais S.A is a wholly owned subsidiary of Vale Base Metals Limited. Vale Base Metals Limited is 90% indirectly owned by Vale, and 10% indirectly owned by Manara Minerals Investment Company (Manara Minerals).

1.5 MINERAL TENURE, SURFACE RIGHTS, WATER RIGHTS, ROYALTIES AND AGREEMENTS

The Salobo Operations are located within one mining concession, ANM Mineral Right No 807.426/1974 which covers an area of 9,180.60 ha. An annual report (RAL in the Brazilian acronym) is required to be lodged with the ANM, detailing the production for the year. This reporting obligation has been met for each year since concession grant. Assuming all other conditions are met, mining concessions remain valid until the deposit is depleted.

Brazilian legislation distinguishes ownership of the surface estate from ownership of mineral resources. A mining company may legally conduct exploration and mining activities without owning the surface, provided it holds a valid mining concession. When mining occurs on privately owned land, the mining company is required to compensate the surface owner; this compensation is defined

[1] Vale Base Metals is defined as Vale Base Metals Limited and its majority-owned subsidiaries.

in Brazilian law as a payment equivalent to 50% of the CFEM royalty and is remitted to the government for distribution to the landowner.

In the case of Salobo, the operation is located entirely within the Tapirapé–Aquiri National Forest, a federally owned conservation unit where the surface estate belongs to the Union. Mining is an authorized land use in National Forests when conducted in accordance with the Forest Management Plan and the applicable environmental licences. As a result, Vale Base Metals does not require private land acquisition and no surface-rights payments apply.

Twelve water permits are current. The Salobo Operations also have water usage permits for surface and groundwater, granted in 2020, that are valid for a 10-year period. Water from the tailings storage facilities (TSFs) and Mamão Dam is permitted to be captured and re-used. These water sources provide all of the process water required by Salobo's Processing Plant. Renewal of all permits can be requested and renewed upon approval of the relevant regulatory authority.

Since 2013, Wheaton Precious Metals has entered into three different life-of-mine gold stream agreements on the Salobo Operations, each for 25%, for a total of 75%. In each of the agreements Wheaton Precious Metals agreed to ongoing payments of the lesser of US$400/oz Au (subject to a 1% annual inflation adjustment that commenced in 2019 on the entire 75% stream) and the prevailing market price for each ounce of gold delivered under the agreement.

1.6 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

An all-weather road network connects the mine site to the cities of Parauapebas (90 km), Marabá (240 km), and the commercial airport at Carajás. Railroads link Parauapebas with the port city of São Luis.

The Salobo Operations is located in the Carajás mountain range within the eastern Amazon humid tropical rainforest, where topography is steep and elevations range from approximately 190 m to 520 m. Climatic conditions are characterized by temperatures from roughly 22°C to 38°C, mean annual rainfall of about 1,900 mm, and high relative humidity of 80.5%. Winds are predominantly from the north and west. Mining and processing operations are conducted year-round.

Major infrastructure at Salobo includes the operating open pit, a three-line processing plant (Salobo I, II, and III), waste-rock storage facilities, ore stockpiles, and tailings storage facilities supported by reclaim-water pipelines and pumping systems. The site also contains administrative and support buildings, including offices, cafeteria, change rooms, training centre, medical clinic, maintenance workshops for heavy and light equipment, warehouses, and mine-operations offices. Fuel stations for heavy and light vehicles, a recycling centre, and a security and access-control gate are also present. Site access is provided by all-weather roads connecting to the Parauapebas rail terminal for outbound concentrate logistics.

1.7 HISTORY

Copper mineralization was originally discovered in the Igarapé Salobo region in 1974. Detailed exploration commenced in 1977 conducted by Vale SA or predecessor companies.

A scoping study was completed in 1981, and pilot studies ran from 1985 to 1987, culminating in the grant of a mining concession. A prefeasibility study was concluded in 1988, an initial feasibility study was conducted in 1998, updates to the feasibility study were undertaken in 2001 and 2002, and a final study was completed in 2004.

The Salobo Operations commenced pre-stripping in 2009, and the first concentrate was produced in 2012. In 2014 a new mill processing line was commissioned (Salobo II), expanding Salobo's total processing capacity to 24Mtpa. In 2023 a third line was commissioned (Salobo III), further expanding Salobo's total processing capacity to 36Mtpa (wet tonnes). In 2024, Vale announced the successful completion of its sale of 10% equity stake in Vale Base Metals to Manara Minerals.

1.8 GEOLOGY AND MINERALIZATION

The deposit is an iron oxide–copper–gold (IOCG) deposit. The deposit is hosted in the Carajás Mining District within Carajás region, a sigmoidal-shaped, late Archean basin.

The Archean basin contains a basement assemblage that is dominated by granite–tonalitic ortho-gneisses of the Pium Complex, and amphibolite, gneisses and migmatites of the Xingu Complex. The basement rocks are overlain by volcanic and sedimentary rocks of the Itacaiúnas Supergroup, which includes the Igarapé Salobo Group, the Igarapé Pojuca Group, Grão Pará Group and the Igarapé Bahia Group. The Itacaiúnas Supergroup hosts all the Carajás IOCG deposits, including Salobo.

The deposit mineralization is hosted by upper-greenschist-to-lower-amphibolite-metamorphosed rocks of the Igarapé Salobo Group. The major host units are biotite and magnetite schists. The Salobo hydrothermal system has a core of massive magnetite that is surrounded by less intensely altered rocks. Away from the massive magnetite, the magnetite content gradually diminishes, giving way to biotite–garnet schist and/or garnet–grunerite schist.

The Salobo deposit extends over an area of approximately 4 km along strike (west–northwest), is 100–600 m wide, and has been drill tested to 750 m depth. The deposit remains open at depth.

Sulphide mineralization typically consists of magnetite–chalcopyrite–bornite and magnetite–bornite–chalcocite. Accessory minerals include hematite, molybdenite, ilmenite, uraninite, graphite, digenite, covellite, and sulphosalts. Native gold occurs as grains in cobaltite, safflorite ($(Co,Fe)As_2$), magnetite and copper sulphides, or interstitial to magnetite and chalcopyrite grains.

1.9 EXPLORATION

Exploration activities have included geological mapping in areas of outcrop, geochemical sampling, and airborne and ground geophysical surveys. These data were used to vector into drill targets, and have primarily been superseded by drilling and operations data. Petrographic studies were commissioned during the early exploration phases to determine the main rock types.

Total drilling for the Salobo Operations includes 806 core drill holes for 265,967 m of drilling. Drilling used in mineral resource estimation totals 659 drill holes for 238,829 m of drilling.

Core drilling was used to test sulphide zones, whereas RC drilling was used to delineate oxide mineralization, and also for condemnation drilling. The surface drilling was initiated with HQ diameter core (63.5 mm) and usually continued with NQ diameter (47.6 mm). The minimum diameters were BX (42 mm) and BQ (36.4 mm). Underground drilling in exploration adits used BX rods. Drilling systems included conventional and wireline core methods.

Depending on the date of the drill program, drill hole collar locations were determined using theodolites, total station, or high-precision, differential GPS instruments. Instrumentation used for downhole surveying varied over time. Instruments used could include DDI-Fotobor, Tropari, Maxibor, Reflex, or gyroscopic instruments. Earlier drill holes were typically surveyed at 50 m intervals. During later down-hole campaigns, survey intervals varied from 3–30 m downhole; some survey readings were taken both downhole and up hole. The most recent surveys collected information continuously throughout the drill hole.

Grade control at Salobo relies on a systematic blast-hole sampling program that is critical for short-term ore control, shovel guidance, and minimizing dilution, with ore blast holes and selected waste blast holes drilled on 5–15 m grids depending on material type and pit phase, each producing approximately a 2 kg sample that is collected during drilling, bagged, labeled, and dispatched daily to the onsite accredited laboratory for preparation and assay. These blast-hole results are not used for mineral resource or mineral reserve estimation.

Hydrogeological data were collected in support of groundwater modelling and pit designs. The hydrogeological monitoring network at Salobo includes 24 piezometers, 15 monitoring wells, two pumping wells, and 78 drill holes with water-level monitoring. Surface water is monitored at designated points, with samples analyzed for major and trace elements.

Geotechnical data, combined with mining experience, are used to establish ground control strategies for different pit phases. Empirical data collected from previous and ongoing campaigns are incorporated into numerical stability models. Third-party consultants assist in interpreting results and validating recommendations.

1.10 SAMPLE PREPARATION, ANALYSES, AND SECURITY

Exploration drilling core samples lengths have varied over time, ranging from 1–2 m, depending on geological and lithological/structural criteria.

Density determinations were generally performed using the water immersion method. These measurements followed a formal, standard procedure. The density database is updated regularly and directly integrated into the block model.

Historically, several laboratories were used during the core drilling exploration and delineation phases. Those included internal or independent, accredited or non-accredited laboratories. From 2017 to the date of this Report, independent and accredited laboratories, ALS and SGS, are used for primary exploration drilling sample preparation, primary analytical and check assay laboratories. Salobo Operations also has an internal accredited laboratory with sample preparation and analytical capabilities, primarily for supporting grade control activities.

Core sample preparation varied by laboratory. From 2002 onwards, the sample preparation procedures remained consistent between exploration and delineation core drilling programs, and consisted of crushing to 95% <4 mm or 95% <3.35 mm, followed by pulverizing to 95% passing 0.105 mm or 95% passing 0.106 mm.

Copper assay methodology remained consistent across all historical campaigns, with copper determined on 0.5 g aliquots by multi-acid digestion followed by AAS. Gold methods evolved over time: from 1978–1987, gold was analyzed by aqua regia leaching with MIBK extraction and AAS; from 1993–1997, by fire assay with gravimetric finish on 100 g aliquots; and in the 2002–2003 campaigns, by fire assay with AAS finish on 20 g aliquots.

From 2017 to the Report date, the copper analysis was reported using a four-acid digestion and a AAS reading. Gold was assayed by FA on a 50 g aliquot, using a two-step digestion with nitric and hydrochloric acids and reading by atomic absorption.

Limited quality assurance and quality control (QA/QC) programs were conducted prior to 2002. A re-assay program was undertaken in 2002–2003 to validate the pre–2002 data. Since 2002, the QA/QC program has consisted of blanks, standards, pulp duplicates and external assay checks. The QA/QC results were reviewed by third-party consultants.

1.11 DATA VERIFICATION

Vale Base Metals has applied data collection procedures in place that included several verification steps designed to ensure database integrity. Vale Base Metals staff also conducted regular logging, sampling, laboratory, and database reviews. In addition to these internal checks Vale Base Metals contracted independent consultants to perform laboratory, database, and mine study reviews. The process of active database quality control and internal and external audits generally resulted in high-quality data.

Vale Base Metals currently uses a system of “layered responsibility” to ensure that only appropriately verified data are used for estimation purposes. The concept of a system of “layered responsibility” is that individuals at each level within the organization assume responsibility, through a sign-off or certification process, for the work relating to preparation of mineral resource and mineral reserve estimates that they are most actively involved in.

Vale Base Metals and its predecessor companies commissioned a number of audits and third-party reviews of block models, mineral resources and mineral reserves.

1.12 METALLURGICAL TESTWORK

Industry-standard studies were performed as part of process development and initial mill design. Subsequent production experience and focused investigations guided mill alterations and process changes. Test work programs, both internal and external, continue to be performed to support current operations and potential improvements.

Samples selected for testing were representative of the various types and styles of mineralization. Samples were selected from a range of depths within the deposits. Sufficient samples were taken so that tests were performed on sufficient sample mass.

Mill metallurgical recovery assumes projections average 86.2% for copper and 68.4% for gold over the Life-of-Mine Plan.

There are four deleterious elements of potential concern in the Salobo copper concentrate: fluorine, chlorine, uranium and carbon. Of these, fluorine is the most significant. The determinations of the deleterious and payable element concentrations in concentrates are undertaken at the Salobo Mine laboratory. Vale Base Metals secured contracts with smelters able to accept the copper concentrate with an average fluorine content of about 2,000 ppm, and a maximum content of 4,000 ppm. Penalties are charged above 300 ppm. These smelters placed the maximum acceptable chlorine content at 1,500 ppm, but with a penalty drawn at the 550–650 ppm level. Carbon is also an element of concern in the concentrate. The usual levels are between 3–5%. The specification limit is 4.5%. Uranium is present in the copper concentrate. Current annual averages of uranium levels are between 40–60 ppm. In 2024 and 2025, the specification limit ranged from 60–74 ppm depending on the end-user client. Since concentrate lots are segregated by grade at the Parauapebas transfer storage house and at the port of Itaqui, blending of out-of-specification concentrate can be undertaken.

1.13 MINERAL RESOURCE ESTIMATES

1.13.1 ESTIMATION METHODOLOGY

Mineral resources were estimated for the Salobo deposit. Vale Base Metals has a set of protocols, internal controls, and guidelines in place to support the estimation process, which the estimators must follow. Those guidelines are aligned with best practices of the industry.

The mineral resource estimate was prepared by Vale Base Metals. All mineralogical information, drilling and background information were provided to the estimators by the geological staff at the mines or by exploration staff. Commercially available software was used for modelling and estimation (examples are Leapfrog and Isatis).Two grade shells were constructed using cut-offs of 0.2% (low-grade) and 0.6% Cu (high-grade). For estimation purposes, domains were defined by combining grade shells with sector subdivisions and weathering profiles (oxide, transition, and sulphide).

The estimated variables were total copper, gold, silver, fluorine, carbon, molybdenum, sulphur, uranium and density. Grade capping was done before compositing by domain in two steps: top-cut of the original assay values; and high yield restriction on the composites during estimation.

Compositing was completed on 2 m intervals. Experimental grade correlograms were modelled from the composited drill hole data for copper, gold, and density for each domain.

The block grades and density values were estimated using ordinary kriging (OK). For copper, gold, silver, sulphur and density, estimation was completed by domain, while, for other elements no domain was used. Blocks were estimated with three passes. Validation included visual validation, bias checks, swath plots, grade–tonnage curves and compared to past year models.

Outside the grade shells (waste), blocks were assigned zero copper, gold and deleterious elements grades, and the mean bulk density of the corresponding lithology.

The mineral resource confidence categories were assigned based on a combination of factors, including geological understanding and confidence, drill hole support and spacing, grade estimation confidence relative to planned production rates, and identified risk factors such as metallurgy.

An initial assessment was undertaken for infrastructure, mining, and process plant requirements; mining methods; process recoveries and throughputs; environmental, permitting and social considerations relating to the mining and processing methods; waste disposal; and technical and economic considerations in support of an assessment of reasonable prospects of economic extraction. All material is assumed to be blended at the Salobo process plant, and milling throughput rates will depend on the blending strategy in place at the mill at the time the material is processed.

Commodity prices used in mineral resource estimation are based on long-term analyst and bank forecasts, supplemented with research by Vale Base Metals internal specialists. This approach is considered reasonable for support of mineral resource estimates.

The break-even cut-off grade calculation considers metal selling price, refining, market and/or sales cost, mining cost, processing cost, metal content or grade, plant (flotation when applicable) recovery and metallurgical recovery as inputs. Mineralization considered potentially amenable to open-pit mining methods was constrained using pseudo-flow algorithm within Deswik software and, benchmarked against the industry-standard Lerchs–Grossmann method, which generates a conceptual pit shell for assessing reasonable prospects of economic extraction under the long-term planning assumptions.

The mineral resource estimate is reported above a 0.248% copper equivalent (CuEq) cut-off.

1.13.2 MINERAL RESOURCE STATEMENT

Mineral resources current as at 31 December 2025, are reported using the mineral resource definitions set out in SK-1300, and are reported exclusive of those mineral resources converted to mineral reserves. The reference point for the estimate is in-situ.

Mineral resources are presented both on a 100% basis, based on Vale Base Metals' view, and on a 90% basis, considering only the ownership attributable to Vale, the registrant.

The measured and indicated mineral resource estimates for the Salobo Operations are provided in Table 1-1. The inferred mineral resource estimates are included in Table 1-2. The Qualified Person for the estimate is Mr. Henrique Vigario, MAusIMM, a Vale Base Metals employee.

Table 1-1: Salobo Operations - Measured and Indicated Mineral Resource Statement

Operations/Deposit	Category	Ownership	Tonnage (Mt)	Grade Cu (%)	Grade Au (g/t)	Metal Cu (kt)	Metal Au (koz)
Salobo Vale Base Metals	Measured		11.6	0.48	0.25	56	91
	Indicated		613.3	0.45	0.22	2,740	4,349
	Total Measured + Indicated	**100%**	**624.8**	**0.45**	**0.22**	**2,796**	**4,441**
Vale S.A. Equity Interest							
Salobo Vale S.A.[8]	Measured		10.4	0.48	0.25	50	82
	Indicated		551.9	0.45	0.22	2,466	3,914
	Total Measured + Indicated	**90%**	**562.3**	**0.45**	**0.22**	**2,516**	**3,997**

Table 1-2: Salobo Operations - Inferred Mineral Resource Statement

Operations/Deposit	Category	Ownership	Tonnage (Mt)	Grade Cu (%)	Grade Au (g/t)	Metal Cu (kt)	Metal Au (koz)
Salobo Vale Base Metals	Inferred	100%	197.7	0.6	0.3	1,080	1,970
Vale S.A. Equity Interest							
Salobo Vale S.A.[8]	Inferred	90%	177.9	0.6	0.3	972	1,774

Notes to accompany mineral resource table:

1. The mineral resource estimate has been prepared using industry accepted practice and complies to the disclosure requirements of S-K1300.
2. The reference point for the mineral resource estimate is in situ.
3. Mineral resources for Vale Base Metals (VBM) are reported on a 100% basis. Vale owns a 90% interest and Manara Minerals the remaining 10% interest. The estimate is current as at 31 December 2025. The Qualified Person for the estimate is Mr. Henrique Vigario, MAusIMM, a Vale Base Metals employee.
4. Mineral resources are reported exclusive of those mineral resources converted to mineral reserves. Mineral resources that are not mineral reserves have not demonstrated economic viability.
5. The estimate uses the following key input parameters: open pit mining methods; copper price of US$10,000/t; gold price of US$2,300/oz; exchange rate R$/$US of 5.30; mine operating costs of US$5.64/t mined; mine sustaining capital costs of US$0.96/t mined; process costs of US$12.34/t processed; site general and administrative costs of US$2.40/t processed; selling cost of US$0.534/lb Cu; variable metallurgical recoveries for copper based on the equation (-2.5362*(1/Cu))+90.674) and for gold based on the equation (1.0173*RecCu)-20.357) that result in average LOM metallurgical recoveries of 86.2% for copper and 68.4% for gold and pit slope angles that range from 27–61º.
6. Mineral resources are reported above a cut-off of 0.248% copper equivalent (CuEq). Copper-equivalent grade (CuEq) is calculated as: (CuEq)_%=(Cu)_%+(Au)_((g/t))*k, where k represents the economic equivalence between gold and copper, including flotation recoveries and smelter returns.
7. Numbers have been rounded.
8. Salobo mineral resource, reflecting Vale's 90% ownership interest, the registrant, as required by item 1303(B)(3)(iii) of Regulation S-K.

Factors that may affect the mineral resource estimate include: changes to long-term metal price and exchange rate assumptions; changes to geological and grade shape, and geological and grade continuity assumptions; changes to unfolding, variographical interpretations and search ellipse ranges; changes to metallurgical recovery assumptions; changes to the input assumptions used to derive the potentially-mineable shapes; changes to the forecast dilution and mining recovery assumptions; changes to the cut-off values applied to the estimates; variations in geotechnical, hydrogeological and mining method assumptions; and changes to environmental, permitting and social licence assumptions.

1.14 MINERAL RESERVE ESTIMATES

1.14.1 ESTIMATION METHODOLOGY

A subset of measured and indicated mineral resources were converted to mineral reserves. Inferred blocks were set to waste. Stockpiled material is also included in the mineral reserve estimates.

Mineral reserves are supported by a mine plan, engineering analysis and application of modifying factors. The mine plan assumes open pit mining using conventional mining methods and equipment, leveraging historical references as foundation for costs and productivity.

The pit optimization was completed using pseudo-flow algorithm within Deswik Software. For the optimization a series of nested shells were evaluated. A price of $9,150/t Copper and $1,925/oz Gold were used for reserve estimation, with a discount rate of 7%. The pit shell with highest NPV was selected for detailed engineering design. Deswik software has been used to develop operational designs and a realistic mine schedule. The scheduling inputs included operational constraints such as geotechnical constraints, minimum mining width and vertical rate of advance. The mine scheduling has been adjusted to incorporate 3% unplanned dilution.

Cut-off grades were calculated based on long-term metal price, applicable TC/RCs, mining costs, process operating costs, and metallurgical recoveries. The mineral reserve estimate was reported above a cut-off of 0.248% CuEq.

Stockpiles are estimated based on historical mine operations dispatch data, which incorporated grade control from operations blast hole samples and tonnage from truck factors. The stockpile volumes were based on field surveys. The average grade of the stockpiles was adjusted based on the material balance to and from the stockpile.

1.14.2 MINERAL RESERVE STATEMENT

Mineral reserves were classified and reported using the mineral reserve definitions set out in S–K1300. The reference point for the mineral reserve estimate is the point of delivery to the process plant.

Mineral reserves are presented both on a 100% basis, based on Vale Base Metals' view, and on a 90% basis, considering only the ownership attributable to Vale, the registrant.

Mineral reserves are summarized in Table 1-3 are current as 31 December 2025. The Qualified Person for the estimate is Mr. Jody Todd, FAusIMM, a Vale Base Metals employee.

Table 1-3: Salobo Operations - Proven and Probable Mineral Reserves Statement

Operations/Deposit	Category	Ownership	Tonnage (Mt)	Grade		Metal	
				Cu (%)	Au (g/t)	Cu (kt)	Au (koz)
Salobo Pit	Proven		349.6	0.59	0.34	2,067	3,794
	Probable		409.1	0.73	0.44	2,985	5,831
	Sub-total Proven + Probable		758.7	0.67	0.39	5,052	9,625
Stockpiles	Proven		—	—	—	—	—
	Probable		264.8	0.40	0.17	1,070	1,485
	Sub-total Proven + Probable		264.8	0.40	0.17	1,070	1,485
Total	**Proven**		**349.6**	**0.59**	**0.34**	**2,067**	**3,794**

Vale Base Metals	**Probable**		**674.0**	**0.60**	**0.34**	**4,055**	**7,316**
	Total Proven + Probable	**100%**	**1,023.6**	**0.60**	**0.34**	**6,122**	**11,110**
Vale S.A. Equity Interest							
Total Vale S.A.[7]	**Proven**		**314.7**	**0.59**	**0.34**	**1,860**	**3,414**
	Probable		**606.6**	**0.60**	**0.34**	**3,650**	**6,584**
	Total Proven + Probable	**90%**	**921.2**	**0.60**	**0.34**	**5,510**	**9,999**

Notes to accompany mineral reserves table:

1. Mineral reserves are reported using the mineral reserve definitions set out in S-K 1300. The reference point for the mineral reserve estimate is the point of delivery to the process plant.
2. Mineral reserves for Vale Base Metals (VBM) are reported on a 100% basis. Vale owns a 90% interest and Manara Minerals the remaining 10% interest
3. The estimate is current as at December 31, 2025. The Qualified Person for the estimate is Mr. Jody Todd, FAusIMM, a Vale Base Metals employee.
4. The estimates use the following key input parameters: open pit mining methods, a copper price of US$9,150/t, a gold price of US$1,925/oz, and an exchange rate of R$/US$ 5.30. Operating costs include an average mine operating cost of US$5.64/t mined, a processing cost of US$12.34/t processed (inclusive of sustaining capital), a copper selling cost of US$0.534/lb, corporate overhead of US$0.70/t processed, and general and administrative costs of US$2.40/t processed. Metallurgical recoveries are variable and calculated using the following formulae: copper recovery = (–2.5362 × (1 / Cu grade)) + 90.674, and gold recovery = (1.0173 × Cu recovery) – 20.357. The model assumes 100% mining recovery and a 3% dilution rate. Pit slope angles range from 27° to 61°, depending on the geotechnical sector. Concentrate is assumed to have a copper grade of 37.5%, 10.5% moisture, and a 0.5% loss in transportation. Payable metal factors are 96.7% for copper and 93.94% for gold. Freight costs are modeled at US$0.113/lb Cu or US$80.75/wet tonne concentrate.
5. Mineral reserves are reported above a cut-off of 0.248% copper equivalent (CuEq). Copper-equivalent grade (CuEq) is calculated as: $(CuEq)_{\%}=(Cu)_{\%}+(Au)_{(g/t)} * k$, where k represents the economic equivalence between gold and copper, including flotation recoveries and smelter returns.
6. Numbers have been rounded.
7. Salobo mineral reserves, reflecting Vale's 90% ownership interest, the registrant, as required by item 1303(B)(3)(iii) of Regulation S-K.

Factors that may affect the mineral reserves include: long-term commodity price assumptions; long-term exchange rate assumptions; and long-term consumables price assumptions. Other factors that can affect the estimates include changes to: mineral resources input parameters; constraining pit designs; cut-off assumptions; geotechnical (including seismicity) and hydrogeological factors; metallurgical and mining recovery assumptions; ability to continue to operate the Salobo Operations if significant changes or amendments are made to the current permitting regime, and changes to environmental, permitting and social licence assumptions. The long-term storage of the medium- and low-grade material in a tropical environment may lead to some oxidation of contained sulphide minerals, which may in turn impact recovery of metals during eventual processing of the stockpiles.

1.15 MINING METHODS

Conventional open-pit mining methods are used at Salobo with an owner-operator fleet. The ultimate pit is subdivided into nine phases; three have been mined out and the remaining six phases define the Life-of-Mine plan. Mining is conducted on 15 m benches in fresh rock and 8 m benches in saprolite, using large electric shovels for primary loading, hydraulic shovels in saprolite and transition zones, and a supporting fleet of haul trucks, dozers, loaders, graders, and water trucks.

The updated Life of Mine (LOM) plan delivers increasing plant feed from 34.6 Mt in 2026 to 38.3 Mt in 2028, reaching the nominal 41.7 Mtpa rate from 2029 onwards. To support the increased plant throughout, Salobo is advancing with a Coarse Particle Flotation (CPF) expansion project being considered for the Salobo III line. The CPF is currently in feasibility study and it is projected to result in higher throughput by enabling a coarser primary grind; mine scheduling has been aligned with this requirement to ensure adequate ore delivery, domain blending, and stockpile management for both the conventional and CPF-integrated circuits.

A structured stockpiling strategy is in place, with high-, medium-, and low-grade stockpiles used to manage feed sequencing. After completion of open-pit mining in 2046, plant feed is sourced primarily from stockpile reclaim, with processing continuing until approximately 2050.

Pit design follows geotechnical sector parameters, with ramp gradients up to 10%, ramp widths of 35–42 m depending on truck fleet, and minimum operating widths of 80 m. Slope stability is supported by real-time interferometric radar and scheduled inspections of the pit, WRSFs, stockpiles, and TSF. Dewatering is managed by a pit-bottom sump and pumping system tied into the TSF water-management network.

Approximately 1,500 employees and 900 contractors support mining operations.

1.16 PROCESSING AND RECOVERY METHODS

The Salobo concentrator treats copper-gold ore using conventional crushing, grinding, and flotation. The processing facility consists of three parallel lines (Salobo I, II, and III), each with nominal capacity of 12 Mtpa (wet). All three lines use primary gyratory crushing, secondary cone crushing, high-pressure grinding rolls (HPGR) for tertiary crushing, ball milling in closed circuit with hydrocyclones, and conventional rougher flotation followed by column-based cleaning to manage fluorine- and chlorine-bearing gangue. The design primary grind is approximately P80 106 µm. Process water is supplied primarily through reclaim from the TSF, and tailings are deposited in the Mirim TSF. Concentrate is filtered on site, stockpiled under cover, and transported ~94 km by truck to the Parauapebas rail terminal for shipment on the Carajás Railway to the Vale export terminal at Itaqui.

Vale Base Metals has completed a pre-feasibility study for the integration of CPF into the Salobo III flowsheet to enable operation at a coarser primary grind and support increased throughput. CPF uses HydroFloat® technology to recover coarse liberated particles not efficiently recovered by conventional mechanical flotation. Under the CPF configuration, primary grind product would undergo a secondary classification step to separate fine (<106 µm) and coarse fractions. The fine fraction would continue through the existing flotation circuit, while the coarse fraction would be treated in the CPF circuit. CPF concentrate would be reground in vertical stirred mills (VTM1500) and recombined with the fine fraction prior to rougher flotation.

To accommodate CPF, modifications are planned in secondary crushing, material handling, grinding classification, flotation, and supporting utilities. These include upgrades to screening capacity, repowering of conveyors and feeders, replacement of primary hydrocyclone clusters with larger-diameter units, installation of a new CPF classification cluster, new HydroFloat® cells, two additional vertical stirred mills, and upgrades to electrical distribution, automation, compressed air, and recovered-water systems. CPF integration does not modify the current mineral reserve; associated equipment and utilities are treated as growth capital.

Approximately 1,350 contract and Vale Base Metals personnel support the processing operations across all plant areas.

1.17 INFRASTRUCTURE

All major infrastructure to support the Salobo Operations envisaged in the LOM plan is in place.

Surface facilities includes several conventional operations support buildings such as: central administrative facilities (offices, restaurant, change rooms, training centre and a medical clinic), central maintenance facilities (a mine heavy equipment workshop, a light vehicle maintenance shop, a plant maintenance shop and warehouses), mine facilities (change rooms and offices), fuelling facilities; main substation, a recycling centre, emergency services building and equipment, and a security/access control gate.

There are no onsite accommodation facilities. Employees reside in Canaã dos Carajás and other nearby villages, the urban centre of Carajás, and in the city of Parauapebas.

Low-grade ore and waste rock from the mine are stored in three locations along the perimeter of the pit. The main WRSF is to the south-west of the pit and contains both oxidized and fresh rock. Some higher-grade ore stockpiles with limited capacity are situated close to the crusher, and serve as buffers in case of production disruption in the mine or the crusher.

The TSF ("Mirim Dam") consists of a main embankment, complemented by two smaller saddle dams in the northwest portion of the facility. These saddle dams were constructed to contain and define the boundaries of the expanded reservoir resulting from the downstream rises. The current crest elevation is 266.20 m and the final designed crest elevation is 285.00 m. The reservoir currently holds about 236 million m³ of water, covering an area of 6.9km². The final storage capacity is expected to reach 353 million m³. The TSF counts with a robust risk management governance aligned with Global Industry Standard on Tailings Management (GISTM), including regular inspections, instrumentation and radar, 24/7 dedicated real-time monitoring (center of geotechnical monitoring in Carajás), emergency response plans, etc.

Three sediment control ponds collect fine sediments from site runoff, stockpiles and the WRSFs prior to controlled discharge to downstream receiving watercourses.

Water collected from the pit and reclaim water from the tailings impoundment are used in the process plant. Water is collected from Mirim and Salobo Creeks and either treated for use as potable water, used as make-up water for the process plant, reserved for fire suppression, or for other uses around site.

Electrical energy is supplied from Tucuruí, an 8,370 MW hydroelectric generating station on the Tocantins River. An overhead transmission line (230 kV) from the Carajás iron mine supplies the Salobo Mine.

1.18 MARKET STUDIES

Vale Base Metals has established contracts and buyers for the products from the Salobo Operations. Vale Base Metals has an internal marketing group which monitors markets for its key products. Together with public documents and analyst forecasts, these data support that there is a reasonable basis to assume that for the LOM plan, that the key products will be saleable at the assumed commodity pricing.

Vale Base Metals uses a consensus-based approach to forecast metal price and exchange rate assumptions. This is based on long-term forecasts published by analysts and financial institutions. The company has agreements at typical copper concentrate industry benchmark terms for metal payables, treatment charges and refining charges for concentrates produced.

1.19 ENVIRONMENTAL, PERMITTING AND SOCIAL CONSIDERATIONS

1.19.1 ENVIRONMENTAL STUDIES AND MONITORING

Environmental and social baseline study areas were defined to characterize the valued ecosystem components in the areas potentially affected by mining activities. The social and environmental management plans Vale Base Metals has implemented represent best practice and comply with Brazilian legislation.

The mine site is within the Tapirapé–Aquiri National Forest, the access road crosses the Carajás National Forest, and lies adjacent to the Igarapé Gelado Protected Area. Although the Salobo Operations is located in the Tapirapé–Aquiri National Forest, the forest management plan allows for mining, provided that the mining operation meets the required environmental protection objectives. Ongoing monitoring is conducted for flora and fauna in the mine's area of influence. Special monitoring programs are implemented as required in areas where vegetation has to be cleared. Permanent wildlife monitoring sites are set up on the Salobo Operations access routes.

Static acid base accounting and acid-drainage test work concluded that there are no current acid mine drainage (AMD) processes on site.

1.19.2 CLOSURE AND RECLAMATION CONSIDERATIONS

There are no reclamation bonds required for the Salobo Mine.

The closure plan for Salobo Mine was last updated in October 2022 by ARCADIS, and is compliance with National Mining Agency Resolution 68/2021. Closure costs for the Salobo Operations are updated annually to account for escalation and for this Report it accounts for US$247.49 million.

Closure costs are included in the mine site financial model as cash costs on an annual basis.

1.19.3 PERMITTING

The Salobo Operations currently holds all required permits to operate, those include installation licences, operation licences, fauna and flora assessment and rescue licences, vegetation removal licences and water collection and disposal concessions. The Operating Licence was renewed on October 19, 2018, and was valid through 2024. Under Brazilian environmental legislation when a renewal request is submitted at least 120 days prior to the licence expiry date, the validity of the existing licence is automatically extended until the environmental authority issues a final decision. The renewal application for Salobo was submitted on May 25, 2024, within the legally required timeframe, ensuring uninterrupted operational compliance, and Salobo III operational permit was approved on May 20, 2025.

1.19.4 SOCIAL CONSIDERATIONS, PLANS, NEGOTIATIONS AND AGREEMENTS

The Salobo Operations are located within the Tapirapé–Aquiri National Forest in Pará. The nearest non-traditional Indigenous settlements are Paulo Fonteles and Sanção, with potential interaction limited to increased vehicle traffic on the Paulo Fonteles highway. The Xikrin do Cateté and Xikrin do Bacajá Indigenous Territories lie approximately 25 km and 60 km from the operation, respectively. The Xikrin do Cateté conduct seasonal Brazil-nut harvesting within the Tapirapé–Aquiri National Forest, and Vale maintains a formal communication protocol during this period, providing logistical support and health and safety coordination.

A public civil lawsuit concerning Indigenous impacts was initiated in 2018. In 2019, the court required preparation of an Indigenous Component Study but did not order suspension of operations. In December 2021, Vale and the Xikrin do Cateté entered into a court-ratified agreement resolving socioeconomic claims, which remains in effect. Claims brought by the Xikrin of Trincheira Bacajá were dismissed; an appeal is ongoing but does not affect current operations or licensing. In 2025, monthly payments under the Xikrin agreement were adjusted following community discussions. No outstanding social or legal matters materially affect operational continuity or mineral reserves.

1.20 CAPITAL COST ESTIMATES

All capital cost estimates are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%. All costs and prices are in unescalated “real” dollars.

The overall capital cost estimate for the LOM plan is US$3,918 million and includes US$213 million of growth capital for the CPF Project, as shown in Table 1-4, with the remainder allocated to sustaining capital for mining, processing, and site infrastructure. Sustaining capital requirements reflect planned mine development, equipment rebuild and replacement programs, TSF raises and maintenance, processing-plant component replacements, and general site and administrative infrastructure. Capital costs are based on recent price trends and historical operational data.

The capital cost estimates presented in this Report may differ from other capital cost estimates Vale Base Metals publishes on an annual detailed basis.

Table 1-4: LOM Plan Capital Cost Estimate (Real US$)

Area	Unit	2025–2050

CPF Project - Growth	US$ M	213
Mining sustaining	US$ M	2,211
Mill sustaining	US$ M	962
Other sustaining	US$ M	532
Total	***US$ M***	***3,918***

Note: All numbers have been rounded. “Other” costs include provisions for elements such as maintenance and raises of tailings dams, electrical power distribution and the central engineering department

1.21 OPERATING COST ESTIMATES

All operating cost estimates are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

Operating costs total US$27,056 million over the LOM plan (Table 1-5).

The mine operating-cost model incorporates adjustments to fixed and distributed costs as production declines in later years. Processing operating costs include both fixed and variable components.

Historical costs are used as the basis for operating cost forecasts for supplies and services unless there are current contract terms for these items. Labour and energy costs are based on budgeted rates applied to headcounts and energy consumption estimates.

This information may differ from other operating cost estimates Vale Base Metals publishes on an annual detailed basis.

Table 1-5: LOM Plan Operating Cost Estimate (Real US$)

Area	Unit	2025–2050
Mining costs	US$ M	8,266
Processing	US$ M	11,756
Logistics	US$ M	1,070
G&A	US$ M	1,471
Corporate overhead	US$ M	789
Ocean freight	US$ M	1,225
Royalty	US$ M	1,379
Other	US$ M	1,099
Total	***US$ M***	***27,056***

Note: All numbers have been rounded. G&A = general and administrative.

1.22 ECONOMIC ANALYSIS

The aim of the economic evaluation presented in this Report is to demonstrate the economic viability of the mineral reserve. Accordingly, the planned production, costs, taxes, and other financial parameters presented may differ from information published by the Company for other purposes. Planned mine production may vary over time as a result of continuous mineral exploration, technical studies, and the potential conversion of additional mineral resources to mineral reserves.

The financial model supporting the mineral reserve declaration is a standalone, after-tax cashflow model that calculates annual cash flows based on the scheduled mining production plan, processing recoveries, metal sale prices, the R$/US$ exchange rate, projected operating and capital costs, and estimated taxes. All costs and prices are expressed in unescalated “real” dollars, and the cashflow is documented in US$.

Revenue is calculated from recoverable payable metal using long-term metal price forecasts, treatment and refining charges (TC/RCs), and the long-term R$/US$ exchange rate.

The financial analysis applies an after-tax discount rate of 7.0%, using a mid-year discounting convention, and a long-term R$/US$ exchange rate of 5.56. All inputs to the economic analysis were developed at a minimum of pre-feasibility level of confidence.

Brazilian Federal corporate taxation applicable to the operation totals 34%, consisting of a 25% Corporate Income Tax (IRPJ) and a 9% Social Contribution on Net Profit (CSLL). The effective IRPJ structure applies a 15% base rate plus a 10% surcharge on taxable income exceeding US$48,000 per year. The CSLL applies to a taxable base closely aligned to that of IRPJ.

A Federal royalty, CFEM, is levied on the economic use of mined products. For “diamond and other mineral substances”—a category that includes copper ore—the applicable CFEM rate is 2%.

Social Contributions on Gross Revenue (PIS and COFINS) apply to gross revenue at a combined rate of 9.25% (1.65% PIS and 7.6% COFINS). These taxes are not applicable to export revenues.

A State-level value-added tax, the Tax on Circulation of Goods and Services (ICMS), applies at a rate of 19% in Pará State, although this tax does not apply to exports. In addition to Federal royalties (CFEM), the operation is also subject to the Pará State TFRM (Taxa de Fiscalização de Recursos Minerários).

The analysis assumes continued applicability of the SUDAM regional tax incentive, which provides a 75% reduction in Corporate Income Tax (from 25% to 6.25%) and is assumed to remain in effect through the end of operations in 2050.

The post-tax NPV at a discount rate of 7% is US$16,614 million (Table 1-6). Impacts of streaming agreements are not included.

Mining operations are planned to end in 2050, after which closure and reclamation activities are expected to continue until 2073.

As the cashflows reflect an established operation in which all historical capital expenditures are considered sunk to 1 January 2026, considerations of payback and internal rate of return are not relevant.

Table 1-6: Cashflow Summary Table (Real US$)

Cashflow Item	Sub-item	Unit	Average/ Total
Production	Waste mined	Mt (wet)	1,026
	Ore tonnes	Mt (wet)	1,089
	Annual throughput	Mt	35-42
	Ore processed	Mt (dry)	1,024
	Copper grade	%	0.60
	Gold grade	g/t	0.34
	Copper recovered	kt	5,340
	Gold recovered	koz	7,778
Market assumptions	Copper price (long-term)	US$/t	9,950
	Gold price (long-term)	US$/oz	2,650
	Exchange rate (long-term)	R$/US$	5.56
Economic results	Total revenue	US$ M	68,974
	Total operating costs, expenses, royalties and closure costs	US$ M	27,353

	Total capital costs	US$ M	3,918
	Total taxes and working capital change	US$ M	5,385
	Total cashflow post-tax	***US$ M***	***32,318***
	NPV @ 7.0%	***US$ M***	***16,614***

Note: Numbers have been rounded. The cashflow summary is reported on a 100% basis. The Salobo Operations are conducted by Salobo Metais SA, which holds the mineral rights. Salobo Metais SA is a wholly-owned company of Vale Base Metals Limited, which is a majority-owned subsidiary of Vale SA, with a 90% ownership, in addition to the 10% ownership of Manara Minerals. Figures shown do not deduct the stream amounts. For a description of the streaming arrangement with Wheaton Precious Metals, see Chapter 3.8.

A sensitivity analysis was performed on metal prices, metal recovered, capital costs and operating costs using a range of 25% above and below base case values. The Salobo Operations are most sensitive, in decreasing order to: copper grade; copper price; operating costs; gold grade; gold price; and capital costs.

1.23 CONCLUSIONS & RECOMMENDATIONS

Under the assumptions presented in this Report, the Qualified Persons conclude that the Salobo Operations have a positive cash flow, and mineral reserve estimates can be supported.

- Historical monthly, quarterly, and annual reconciliation evaluations indicate that tonnages and grades of the long-term model, and modifying factor assumptions including recovery and dilution, metallurgy and geotechnical are supported within acceptable limits.
- The permitting and environmental requirements to operate the Salobo Operations are well understood and can support mineral resource and mineral reserve estimation.
- The site developed mineral resource model follows industry practices and is a reasonable representation for the mineralization at Salobo.

Additional qualified person recommendations include:

- Core drilling to support potential conversion of inferred mineral resources to higher confidence classifications. The estimated cost to execute the drilling program is approximately US$ 15.5 million.
- The Salobo mineralization remains open at depth under the current open pit outline. Continued exploration evaluation is warranted. The estimated cost for the continued exploration is approximately US$ 30 million.
- The reserve estimates are currently constrained to available tailings storage in the TSF. The storage capacity will need to be increased to convert any mineral resources to future mineral reserves. Studies are underway to address and mitigate any future gaps and have estimated cost of approximately US$ 370.

2 INTRODUCTION

2.1 REGISTRANT

This report was prepared as a Technical Report Summary (TRS) in accordance with the Securities and Exchange Commission (SEC) S-K regulations (Title 17, Part 229, Sections 601 and 1300 until 1305) for Vale S.A. (Vale) on Vale Base Metals Limited (VBM) Salobo Operations in Pará State, Brazil.

The Salobo operations are owned and operated by Salobo Metais S.A., which is part of the Vale Base Metals group. Salobo Metais S.A is a wholly owned subsidiary of Vale Base Metals Limited. Vale Base Metals Limited is 90% indirectly owned by Vale, and 10% indirectly owned by Manara Minerals Investment Company (Manara Minerals).

2.2 TERMS OF REFERENCE

2.2.1 REPORT PURPOSE

The Report was prepared to be attached as an exhibit to support mineral property disclosure, including mineral resource and mineral reserve estimates, for the Salobo Operations in Vale's Form 20-F for the year ending 31 December 2025.

Mineral resources and mineral reserves are reported for the Salobo deposit and stockpiles.

Figure 2-1 illustrates the location of the Salobo Operations.

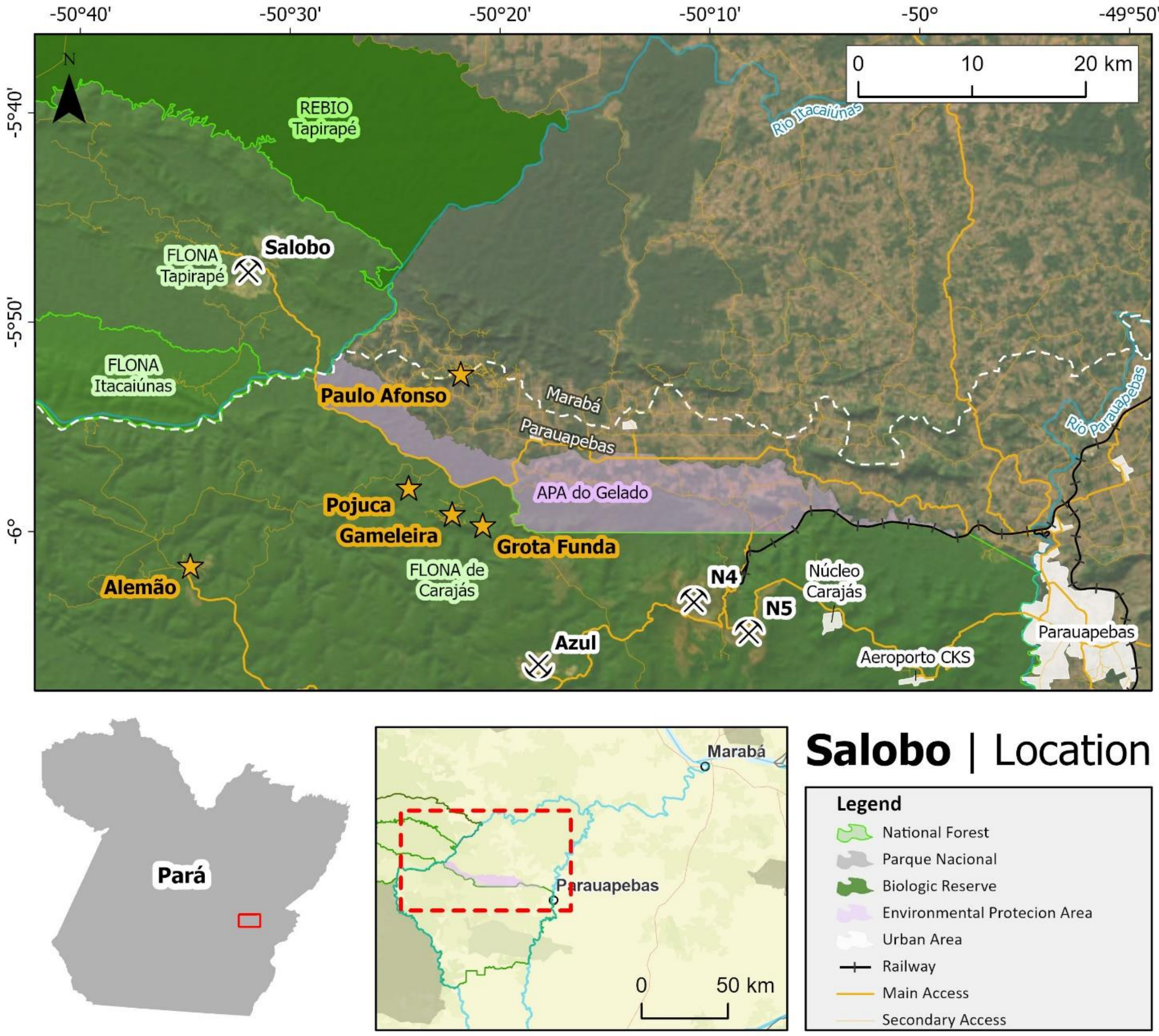
2.2.2 TERMS OF REFERENCE

Unless otherwise indicated, all financial values are reported in United States (US) currency (US$) including all operating costs, capital costs, cash flows, taxes, revenues, expenses, and overhead distributions. The local currency is the Brazilian real (R$).

Unless otherwise indicated, the metric system is used in this Report.

The Report uses Canadian English.

Figure 2-1: Salobo Operations Location Plan



Note: Figure prepared by Vale, 2025.

2.3 QUALIFIED PERSONS

The following Vale Base Metals employees serve as Qualified Persons:

- Mr. Jody Todd, FAusIMM, Head of Strategic Mine Planning, Vale Canada;
- Mr. Henrique Vigario, MAusIMM, Global Head Geology, Vale Canada;
- Mr. Teófilo Costa, CBRR, Practice Leader Geotech;
- Mr. Adam MacMillan, P.Eng, Director Processing, Research and Innovation.

Report chapter responsibilities are summarized in Table 2-1.

Table 2-1: Qualified Person Chapter Responsibilities

Qualified Person	Chapter Responsibilities
Mr. Jody Todd	1.1, 1.2, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23; 2; 12; 13; 14; 15; 16; 17; 18; 19; 21; 22.5, 22.6, 22.7, 22.8, 22.9, 22.10, 22.11, 22.12, 22.13; 23, 24, 25
Mr. Henrique Vigario	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.12, 1.22, 1.23; 2; 3; 4; 5; 6; 7; 8; 9.1, 9.2, 9.3.1, 9.4; 11; 20; 22.1, 22.2, 22.4, 22.12, 22.13; 23; 24; 25.
Mr. Adam MacMillan	1.1, 1.2, 1.11, 1.22, 10, 22.3, 22.13
Mr. Teófilo Costa	1.1, 1.2, 1.8, 1.14, 1.22, 7.4, 13.2, 22.1, 22.6, 22.13

2.4 SITE VISITS AND SCOPE OF PERSONAL INSPECTION

The qualified persons conducted site inspections to review operational practices, geological and geotechnical information, mine planning processes, drilling programs, reconciliation, and overall compliance with technical standards. The scope of personal inspections is summarized below.

Mr. Jody Todd:

- Salobo site inspection and field visit with Leadership team and operational/technical teams (Oct21-Nov1 24, Jan 27-Jan31, May 6-May18, Sep 14-Sep 20)

Mr. Henrique Vigario:

- Salobo site inspection and field visit with Leadership team and operational/technical teams (Sep 15-18, November 17-19)

Mr. Teofilo Costa:

- Site visits and inspections, risk assessments, training and periodic ground control evaluations (monthly in 2025)

Mr. Adam MacMillan:

- Site visits, planning and leadership reviews (May, September and October 2025)

2.5 REPORT DATE

Information in the Report is current as at 31 December 2025.

2.6 INFORMATION SOURCES

The reports and documents listed in Chapter 24 and Chapter 25 of this Report were used to support Report preparation.

2.7 PREVIOUS TECHNICAL REPORT SUMMARIES

Vale has previously filed the following technical report summary on the Salobo Operations:

- Gauld, C., Gardner, N.A., Hossack, A., Alvim, M. and Puro, G., 2021: Technical Report Summary, Salobo Operations, Pará State, Brazil: technical report summary current as at 31 December 2021.

This Report is an update to reports previously filed.

3 PROPERTY DESCRIPTION

3.1 PROPERTY LOCATION

The Salobo Operations are located northwest to north–northwest of, approximately 80 km by straight-line distance from the city of Parauapebas in the southeast of Pará State, in northern Brazil. The Salobo Operations are within the Tapirapé–Aquiri National Forest.

Co-ordinates for the Salobo Operations and key areas are provided in Table 3-1.

Table 3-1: Coordinates

Area	Latitude	Longitude
Salobo Operations centroid	-5° 46’ 51’’	-50° 32’ 20”
Salobo deposit and open pit	-5º 47’ 30”	-50º 32’ 4”
Salobo I and II plants	-5º 46’ 54”	-50º 30’ 57”
Salobo III plant	-5º 46’ 55”	-50º 29’ 52”

3.2 PROPERTY AND TITLE IN BRAZIL

3.2.1 OVERVIEW

Under Brazilian laws, the Federal Government owns all mineral resources. Under Article 176 of the Brazilian Constitution, all mineral deposits belong to the Federal Government, whether or not the deposits are in active production. Mineral rights are distinct from surface rights.

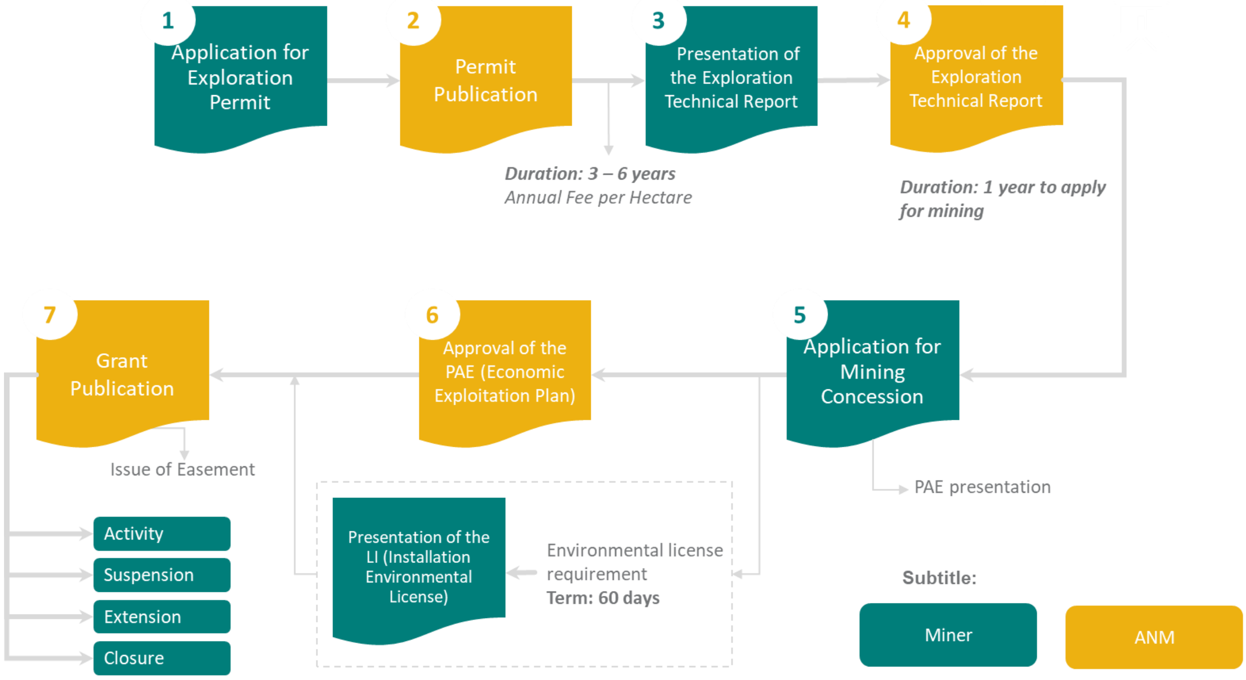
Mining is regulated by Decree-Law 227, 1967 (the Mining Code), Mining Regulations that came into force in June 2018 (Decree 9406/2018), and other regulations issued by the National Mining Agency (ANM), formerly known as National Department of Mining Production (DNPM).

Brazil also has legislation and legal guarantees related to the exploitation and use of water rights.

3.2.2 MINERAL TITLE

The application process for a mining concession is summarized in Figure 3-1.

Figure 3-1: Mining Concession Grant Schematic



Note: Figure prepared by Vale, 2021.

The mineral title acquisition process begins with an Application for Exploration Permit. When the exploration permit (*Alvará de Pesquisa*) is granted, the grant is published in the Federal Gazette.

The permit, which has a 3–6 year term, allows the licence holder to conduct exploration activities. At the end of the permit term, the licence holder must provide an Exploration Technical Report (*Relatório Final de Pequisa*) to the National Mining Agency. On 30 December, 2022, Law No. 14514/2022 was published, extending the term of the exploration permit to 4–8 years. At the Report date, there were no regulations published for this law.

The licence holder then has a year in which to apply for a mining concession over any discovered deposit. The application must include an Economic Exploitation Plan (*Plano de Aproveitamento Econômico*), which must be prepared by a legally qualified professional. Once the Economic Exploitation Plan is presented, the National Mining Agency requires an installation licence (*Licença de Instalação*) that is granted by an environmental licensing agency. If the licence has not been issued yet, the holder must update the National Mining Agency with the progress of the environmental licensing process by providing reports every 180 days. Once the installation licence is granted, it will be lodged with the National Mining Agency and, if the Economic Exploitation Plan is approved, a mining concession will be granted; the grant is published in the Federal Gazette. To start operations, an environmental operation licence (*Licença de Operação*) is also required.

Mining activities must start within six months of the mining concession grant and annual production reports must be provided to the National Mining Agency. Assuming all other conditions are met, a mining concession remains valid until the deposit is depleted. Mining operations must be in accordance with the Economic Exploitation Plan approved by the National Mining Agency. If additional minerals are discovered, the National Mining Agency must be notified of the discovery, and the mining concession licence must be amended to include the new list of minerals before those minerals can be commercially produced and sold.

3.2.3 SURFACE RIGHTS

In Brazil, surface rights are legally distinct from mineral rights, and a mining concession issued by the National Mining Agency (ANM) provides the holder the legal authority to access and use the land required to conduct exploration and mining activities; where necessary, rights-of-way and easements may be established under federal law.

At Salobo, this framework operates entirely within a public-land context, as the mine is located inside the Tapirapé–Aquiri National Forest, a federally owned conservation unit in which the surface estate belongs to the Union. Brazilian legislation allows mining in National Forests provided that activities comply with the forest management plan and the applicable environmental licensing regime. Accordingly, Vale Base Metals maintains land access through its ANM mining concession (Mineral Right No. 807.426/1974) and a comprehensive suite of environmental licences—covering installation, operation, vegetation removal, fauna and flora management, and water use—issued by federal and state regulatory bodies. Because the area is federally owned public land, no private surface land acquisition is required, and no surface-rights payments apply to Salobo's operations

3.2.4 WATER RIGHTS

In Brazil, all waters are considered part of the public domain and are classified as either federal or state jurisdictional resources. Federal waters include rivers, lakes, and watercourses located on federally administered lands, those that cross state boundaries, or those that form international boundaries. State waters include groundwater and surface water bodies entirely within a single state territory unless otherwise designated as federal.

Brazil's National Water Resources Policy (Law 9,433/1997) established river basins as the basic unit for water-resource management and created a multi-level governance structure involving the National Water Resources Council, State Water Resources Councils, River Basin Committees, State Water Agencies, and Water Resource Management Institutions. These entities coordinate water allocations under the principle of multiple uses, ensuring equal access among industrial, municipal, agricultural, and environmental users. For Salobo specifically, the operation benefits from a comprehensive suite of valid water-use and discharge authorizations issued by federal and state authorities, as required for mining within the Tapirapé–Aquiri National Forest. The Salobo Operations currently hold the following water permits:

- permits for water abstraction from the Mamão and Finos II dams (valid to 2052),
- authorizations for surface water abstraction and effluent discharge (valid to 2027 and 2030),
- multiple groundwater abstraction permits for industrial supply (valid to 2030 and 2034),
- specific licences authorizing the containment and disposal of mining tailings in the Mirim and Finos II dams (valid to 2057).

Additional effluent discharge permits, including those for the ETE-BR and Cooking effluents treatment systems (valid to 2030–2032).

In total, Salobo maintains more than a dozen active water-related authorizations supporting operations and compliance.

3.2.5 GOVERNMENT MINING TAXES, LEVIES OR ROYALTIES

The Salobo Operations is subject to the CFEM and TFRM; see Chapter 3.8.1.

3.3 OWNERSHIP

The Salobo operations are owned and operated by Salobo Metais S.A., which is part of the Vale Base Metals group. Salobo Metais S.A is a wholly owned subsidiary of Vale Base Metals Limited. Vale Base Metals Limited is 90% indirectly owned by Vale, and 10% indirectly owned by Manara Minerals Investment Company (Manara Minerals).

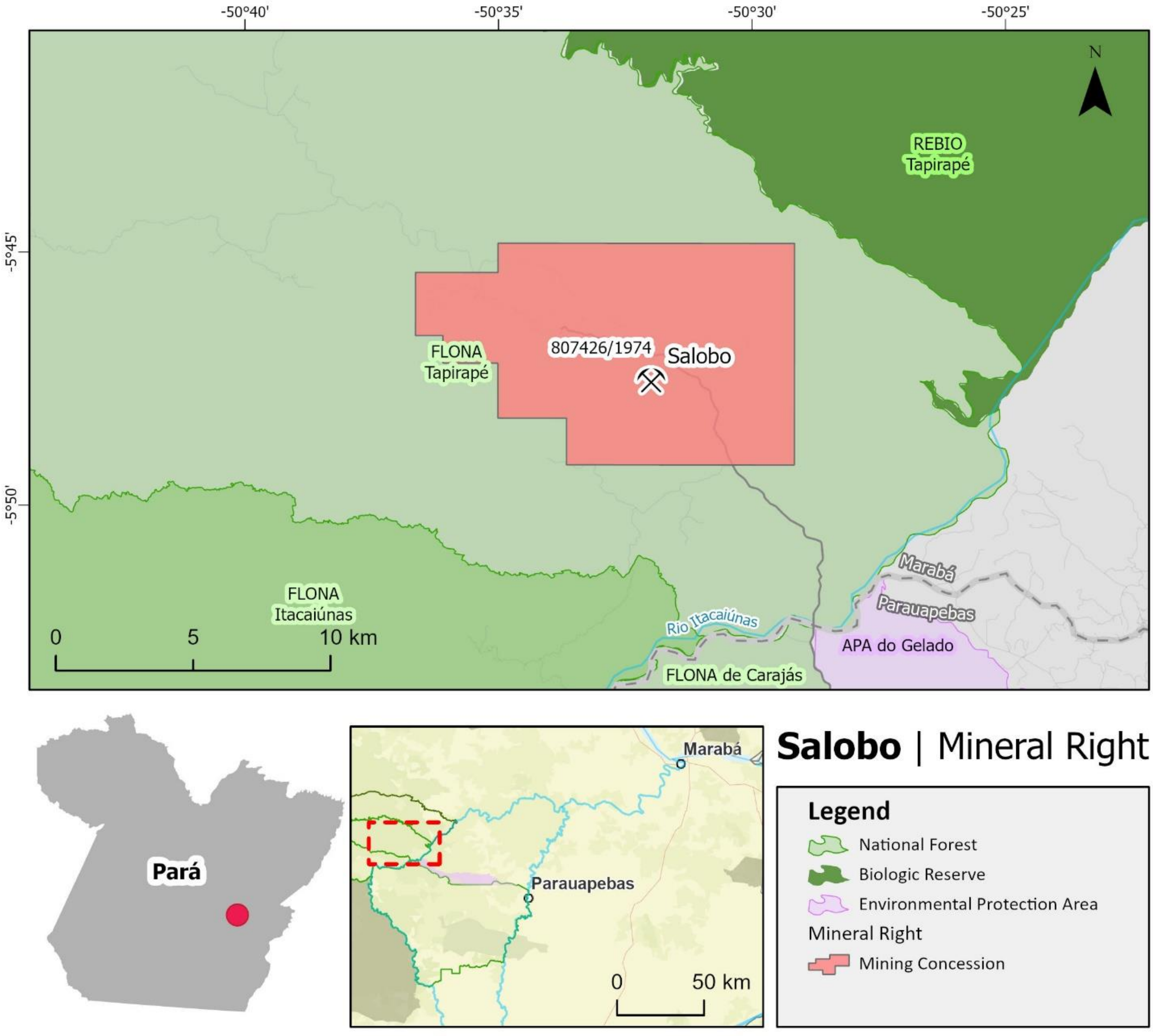
3.4 MINERAL TITLE

The Salobo Operations are located within a single mining concession (Figure 3-2), ANM Mineral Right No 807.426/1974 which covers an area of 9,180.60 ha.

An annual report (RAL, Brazilian acronym) is required to be lodged with the ANM, detailing annual production. This reporting obligation has been met for each year since the concession was granted.

Assuming all other conditions are met, mining concessions remain valid until the deposit is depleted.

Figure 3-2: Mineral Tenure Layout Plan



Note: Figure prepared by Vale, 2021.

3.5 SURFACE RIGHTS

Brazilian legislation distinguishes ownership of the surface estate from ownership of mineral resources. A mining company may legally conduct exploration and mining activities without owning the surface, provided it holds a valid mining concession. When mining occurs on privately owned land, the mining company is required to compensate the surface owner; this compensation is defined in Brazilian law as a payment equivalent to 50% of the CFEM royalty and is remitted to the government for distribution to the landowner.

In the case of Salobo, the operation is located entirely within the Tapirapé–Aquiri National Forest, a federally owned conservation unit in which the surface estate belongs to the Union. Mining is an authorized land use in National Forests when conducted in accordance with the Forest Management Plan and the applicable environmental licences. As a result, Vale Base Metals does not require private land acquisition and no surface-rights payments apply.

Negotiations may be required with surface rights holders in instances where Vale Base Metals intends to conduct exploration activities outside the active mining areas and the National Forest limits.

3.6 WATER RIGHTS

The Salobo Operations currently hold nine active water permits, as follows:

- 1895/2017: permits for the Mamão and Finos II Dams, valid until 2052;
- 1896/2017: authorization for surface water abstraction and effluent discharge, valid until 2027;
- 2024/2020: authorization to discharge effluents from the ETE-BR effluent treatment plant, valid until 2030;
- 4443/2020: authorization for groundwater abstraction for industrial use, valid until 2030;
- 2108/2021: authorization to discharge effluent into a watercourse, valid until 2031;
- 2341/2022: authorization to contain/dispose of mining tailings in the Mirim Dam, valid until 2057;
- 2342/2022: authorization for the containment/disposal of mining tailings at the Finos II Dam, valid until 2057;
- 2343/2022: authorization for the containment/disposal of mining tailings at the Finos II Dam, valid until 2057;
- 1975/2022: authorization to discharge effluents from the Cocção effluent treatment plant into the Mirim Dam, valid until 2032.

In addition, the Salobo Operations hold the following water-related authorizations:

- 639/2023: authorization for the discharge of treated effluents from the Effluent Treatment Plant (ETE) into the designated receiving waterbody, valid until 2032;
- 7298/2024: authorization for one groundwater extraction well for Salobo III, valid until 2034;
- 7402/2024: authorization for six groundwater extraction wells for Salobo III, valid until 2034.

The Salobo Operations also have water use permits for surface and groundwater, granted in 2020, that are valid for a 10-year period.

Water from the tailings storage facilities (TSFs) and Mamão Dam is permitted to be captured and re-used. These water sources provide all of the process water required by Salobo's Processing Plant.

Renewal of all permits can be requested and is subject to approval by the relevant regulatory authority.

There are sufficient water rights to support the Life-of-Mine (LOM) plan presented in this Report.

3.7 PROPERTY AGREEMENTS

There are no property agreements applicable to the Salobo Operations.

3.8 ROYALTIES AND STREAMING AGREEMENTS

3.8.1 STATE AND FEDERAL ROYALTIES

The Financial Compensation for Mineral Exploitation (CFEM) is a federal royalty applied to the commercialized value of mineral products. For the minerals relevant to the Salobo Operations, the applicable CFEM rate is 2% for copper, consistent with federal legislation. This rate is applied to the net revenue from concentrate sales after permitted deductions, in accordance with Brazilian mining law.

In addition to CFEM, the State of Pará imposes a state-level mining tax known as the Taxa de Fiscalização de Recursos Minerais (TFRM), which is assessed per tonne of mineral product produced or transferred within state boundaries. For Salobo, this tax is currently set at R$ 316.88 per wet tonne of copper concentrate.

3.8.2 WHEATON PRECIOUS METALS STREAMING AGREEMENTS

The Salobo Operations are subject to gold streaming agreements between Vale Base Metals and Wheaton Precious Metals Corp. (Wheaton Precious Metals). Since 2013, Wheaton Precious Metals has entered into three different LOM gold stream agreements on the Salobo Operations, each for 25%, for a total of 75%. In each of the agreements Wheaton Precious Metals agreed to ongoing payments of the lesser of US$400/oz Au (subject to a 1% annual inflation adjustment that commenced in 2019 on the entire 75% stream) and the prevailing market price for each ounce of gold delivered under the agreement.

3.9 ENCUMBRANCES

There are no current material violations or fines, as imposed in the mining regulatory context of the Mine Safety and Health Administration (MSHA) in the United States, that are applicable to the Salobo Operations.

There are no other material encumbrances to the Salobo Operations that are known to the Qualified Person.

3.10 ENVIRONMENTAL CONSIDERATIONS

Environmental considerations are discussed in Chapter 17.1 and Chapter 17.2 of this Report.

3.11 PERMITTING REQUIREMENTS

Permitting and permitting conditions are discussed in Chapter 17.4 of this Report for the Salobo Operations.

There are no relevant permitting timelines that apply to the Salobo Operations; the operations as envisaged in the LOM plan are fully permitted.

3.12 SOCIAL CONSIDERATIONS

Social considerations are discussed in Chapter 17.5 of this Report.

3.13 SIGNIFICANT FACTORS AND RISKS THAT MAY AFFECT ACCESS, TITLE OR WORK PROGRAMS

To the extent known to the Qualified Person, there are no significant factors and risks that may affect access, title, or the right or ability to perform work on the Salobo Operations that are not discussed in this Report.

4 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

4.1 ACCESSIBILITY

The Salobo Operations are accessible year-round by an all-weather road network connecting the site to Parauapebas (approximately 80 km), Marabá (approximately 240 km), and the commercial airport at Carajás (approximately 90 km). Within the mining concession, infrastructure and operational areas are accessed via internal gravel roads.

The Carajás Airport accommodates large aircraft and is served by regular commercial flights to Belém, the capital of Pará State, as well as other major Brazilian cities, supporting personnel movement to and from the site.

Copper concentrate produced at Salobo is trucked to the rail terminal in Parauapebas, where it is loaded onto trains of the Carajás Railway (Estrada de Ferro Carajás). From there, it is transported to the Ponta da Madeira Maritime Terminal in São Luís, Maranhão, and subsequently exported via the Itaqui Port. This road-rail-port logistics corridor provides reliable, continuous outbound transportation for concentrate shipments.

4.2 CLIMATE

The Salobo Operations are located in the Carajás mountain range. Rainfall averages approximately 1,600 mm to 1,900 mm annually while temperatures range from 22°C to 38°C with a mean of 27°C and average humidity of 76%.

The area is characterized by two distinct seasons, wet and dry. The dry season extends from May to October and the wet season from November to April. Rainfall occurs all year, but approximately 80% falls during the six-month wet season, and nearly 50% during January, February and March.

Mining and processing are conducted year-round at the Salobo Operations.

4.3 PHYSIOGRAPHY

The Salobo Operations are in the northwest of the Carajás Region, southeast of Pará State, within the Tapirapé–Aquiri National Forest limits. In the Salobo Operations area, the topography is steep, varying between 190–520 m in elevation.

The Salobo Operations area is heavily forested and dominated by vegetation of the lowland Amazon rainforest, consisting of relatively dense trees with substantial underbrush.

The two drainages on either side of the Salobo Ridge are the Cinzento and Salobo Rivers which flow into the Itacaiúnas River. The Itacaiúnas River flows into the Tocantins River, near Marabá City.

4.4 LOCAL RESOURCES AND INFRASTRUCTURE

Carajás is the nearest major regional centre.

The Salobo Operations currently have all infrastructure in place to support mining and processing activities (Chapters 13, 14, and 15). These chapters also discuss water sources, electricity, personnel, and supplies.

5 HISTORY

Exploration and development of the Salobo deposit have taken place over several decades, beginning with the initial discovery of copper mineralization in the 1970s and progressing through multiple phases of drilling, pilot-scale studies, and feasibility work. Over this period, ownership evolved from Docegeo and CVRD to Vale Base Metals control, and the Salobo Operations advanced through key technical and permitting milestones leading to the construction and staged commissioning of the Salobo I, II, and III processing lines. More recent developments include the expansion to 36 Mtpa with Salobo III and the 2023 agreement through which Manara Minerals acquired a minority interest in Vale Base Metals. The major milestones in the Salobo Operations history are summarized in Table 5-1.

Table 5-1: Salobo Operations History

Date	Company	Event
1974	Docegeo; the exploration division of Companhia Vale do Rio Doce (CVRD)	Discovers copper mineralization in the Igarapé Salobo region
1977	Docegeo/CVRD	Stream sediment sampling, reconnaissance exploration, and ground induced polarization (IP) and magnetometer geophysical surveys. Identified numerous gold–copper targets
1978	Docegeo/CVRD	Revisited Salobo prospect. Noted copper sulphides in an outcrop of magnetite schists at the Salobo 3 Alfa target (renamed to Salobo). Completed drilling and constructed two exploration adits
1985–1987	Docegeo/CVRD	Pilot-scale study to further define the mineralization style and geometry. Included additional drilling and an additional 1 km of exploration adits. Submitted an Exploitation Economical Plan for the Salobo deposit to the DNPM Mining rights granted in 1987 through Ordinance No. 1121.
1988	Docegeo/CVRD	Pre-feasibility study completed by Bechtel
1993	CVRD/Anglo American Brasil Ltda (AABL)	Salobo Metais S.A. was incorporated on 29 June 1993 as a joint-venture vehicle between CVRD and Morro Velho Mining (a subsidiary of Anglo American Brasil Ltda., AABL).
1998	CVRD/AABL	Feasibility study completed by Minorco
2001	CVRD/AABL	Feasibility study revised and updated by Kvaerner
2002	CVRD	Brazilian Council for Economic Defense approved the acquisition by CVRD of the 50% of Salobo Metais that was held by AABL, obtained 100% ownership of Salobo Metais
2007	CVRD/Vale	CVRD changed its name to Vale
2009–2012	Vale	Commenced pre-stripping, construction. Salobo I process line, nameplate capacity of 12 Mtpa, completed
2012	Vale	First concentrate shipment
2013	Vale/Wheaton Precious Metals	Vale entered into a long-term streaming agreement with Wheaton Precious Metals, granting Wheaton Precious Metals rights to purchase a portion of the gold by-product from Salobo
2014	Vale	Salobo II process line, which doubled the nameplate capacity to 24 Mtpa, was completed
2023	Vale	Salobo III process line, which increased the nameplate capacity to 36 Mtpa, was completed

Date	Company	Event
2023–2024	Vale / Vale Base Metals Limited / Manara Minerals	Completion of the corporate carve-out establishing Vale Base Metals Limited as the dedicated global base-metals business. In July 2023, Manara Minerals (a joint venture between Ma’aden and Saudi Arabia’s Public Investment Fund) signed a binding agreement to acquire a 10% equity interest in Vale Base Metals Limited, finalizing the transaction in 2024.

6 GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

6.1 DEPOSIT TYPE

The Salobo deposit is an example of an iron ore–copper–gold (IOCG) deposit.

IOCG deposits as a group generally have the following characteristics:

- copper ± gold, as the main elements of economic interest;
- hydrothermal mineralization styles; strong structural controls;
- abundant magnetite ± hematite; iron oxides with the iron:titanium ratio greater than those found in most igneous rocks or the bulk crust; and
- no obvious spatial association with igneous intrusions, whereas porphyry and skarn deposits do show such associations.

The subset of IOCG deposits found in the Carajás District display the following characteristics:

- intense iron metasomatism leading to the formation of fayalite, grunerite, and/or iron oxides (magnetite and/or hematite);
- extensive carbonate alteration (mainly siderite), at least in the lower temperature deposits; iron-rich sedimentary rocks associated with quartzite and gneisses;
- amphibolite facies metamorphism;
- massive, foliated and banded rocks with predominant magnetite, fayalite, grunerite, almandine and subordinate biotite;
- hydrothermal alteration with areas affected by intense iron and potash metasomatism hosting most of the iron oxide copper–gold ore;
- sulphur-deficient nature of the sulphides (chalcopyrite, bornite, and primary chalcocite);
- quartz-deficient nature of the gangue;
- extremely low rare earth element (REE) enrichment; and
- enrichment in uranium and cobalt.

The genesis of the Carajás District deposits has historically been controversial, with a number of differing origins suggested, from porphyry copper styles to IOCG; however, the current academic consensus is that these deposits are best classified as examples of the IOCG style.

The IOCG model is considered a valid exploration model for the Salobo Operations area.

6.2 REGIONAL GEOLOGY

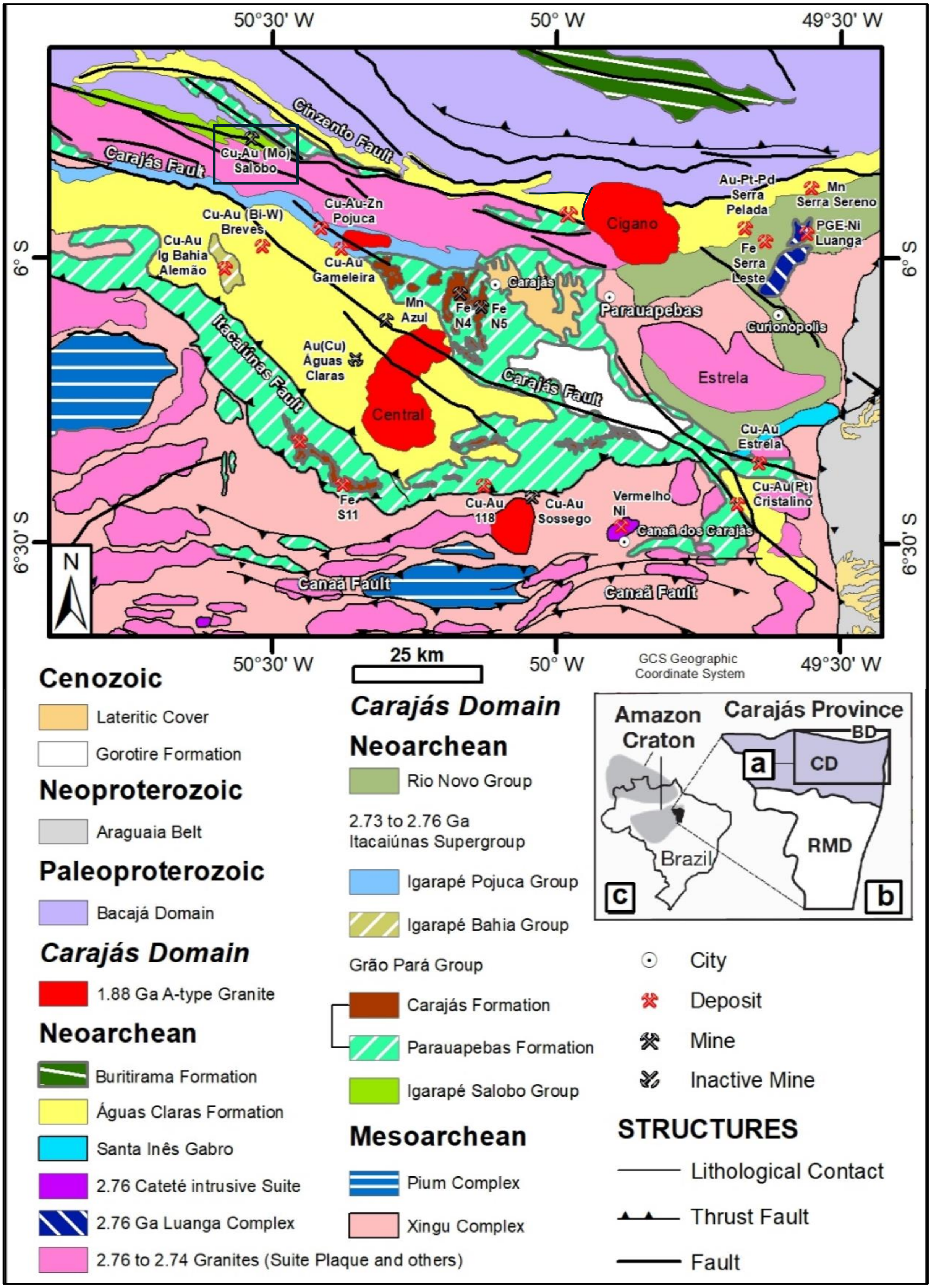
The Carajás Mining District, located in the southeast of Pará State, lies between the Xingu and Tocantins/Araguaia Rivers, and covers an area of approximately 300 km x 100 km. It is hosted in the Carajás Province, forming a sigmoidal-shaped, west–northwest–east–southeast-trending Late Archean basin. Figure 6-1 shows a regional geology overview, and Figure 6-2 is a regional stratigraphic column.

The Archean basin contains a basement assemblage that is dominated by granite–tonalitic ortho-gneisses of the Pium Complex, and amphibolite, gneisses and migmatites of the Xingu Complex. The metamorphic rocks are cut by Archean-age intrusions, including the calc-alkaline Plaquê Suite, and the alkaline Salobo and Estrela granites.

The basement rocks are overlain by volcanic and sedimentary rocks of the Itacaiúnas Supergroup, which in turn are overlain by an extensive succession of Archean marine to fluvial sandstones and siltstones known as the Rio Fresco Group or the Águas Claras Formation.

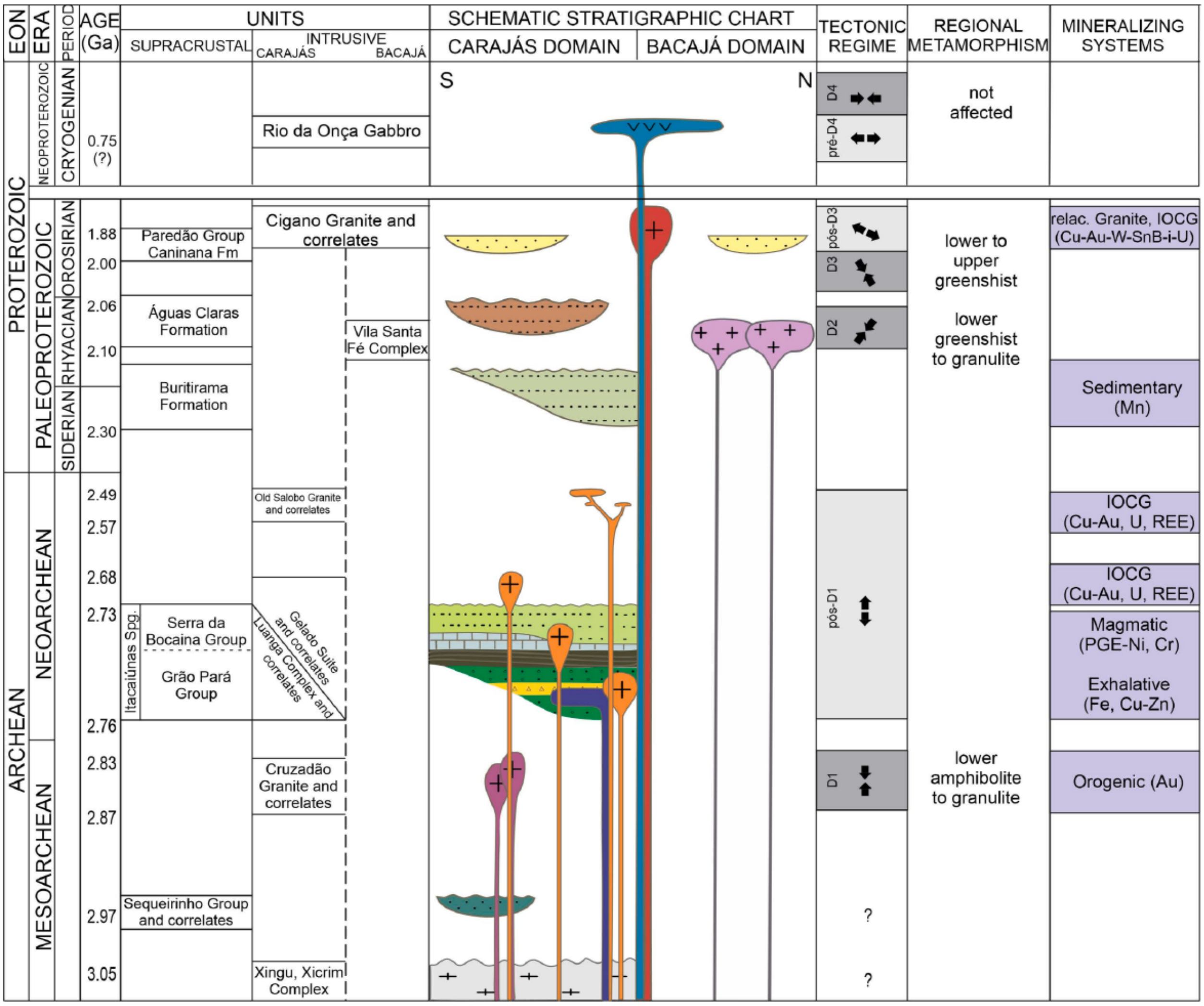
A Proterozoic suite (approximately 1.88 Ga) of anorogenic, alkaline granites - including the Serra dos Carajás, Cigano and Pojuca granites - as well as several generations of younger mafic dykes, cross-cut the entire sequence. Neoarchean granite magmatism is widespread in the Carajás domain and mainly corresponds to the syntectonic foliated alkaline and metaluminous Planalto, Plaquê, Estrela, Serra do Rabo, Igarapé Gelado, and Pedra Branca suites. Younger A-type alkaline to subalkaline magmatism extends throughout the Amazon craton and is represented in the Carajás domain by the Serra dos Carajás Intrusive Suite (Central de Carajás, Young Salobo, Cigano, Pojuca, Breves, and Rio Branco granites). The province was also affected by other magmatic events represented by late undeformed diabase, diorite, and gabbro dykes, whose ages are uncertain.

Figure 6-1: Regional Geology Plan



Note: Figure modified by Vale, 2025. Not all deposits shown are held by Vale.

Figure 6-2: Regional Stratigraphic Column



Note: Figure from Tavares et al. (2018).

6.3 LOCAL GEOLOGY

6.3.1 STRATIGRAPHY

In the Salobo Operations area, granite, granophyric granite, gabbro intrusions, and late dacite porphyry dykes cut Xingú Complex basement and Itacaiúnas metavolcanic rocks.

These intrusive rocks are elongated in a west–northwest–east–southeast direction, which is concordant with the regional shear zone. Late-stage northwest-oriented, unaltered diabase dykes crosscut shear zones, faults, and all other intrusive units.

Weakly-altered felsic metavolcanic rocks in the Salobo Operations area are dacitic in composition. They are dark gray in color, fine-grained, and contain feldspar phenocrysts in a fine-grained matrix of microcrystalline quartz and albite. The felsic metavolcanic sequence contains lenses of metamorphosed ultramafic rocks. These fine-grained rocks are green in color and are composed of serpentine with remnants of olivine and minor disseminated chromite partially rimmed and replaced by magnetite. Where mylonitized, the ultramafic rocks have been converted to talc.

Weakly-altered granite is typically gray and medium-grained. The rock contains quartz, potassium feldspar, plagioclase, and minor biotite. Weakly-altered granophyric granite is dark gray and contains blue quartz crystals up to 0.5 mm in diameter, as well as microcline and plagioclase phenocrysts in a fine-grained quartz–feldspar groundmass.

Gabbro intrudes both granite and granophyric granite. The gabbro is green and medium- to coarse-grained. These intrusive rocks are equigranular, display subophitic texture, and are composed of intensely saussuritized plagioclase, together with remnants of pyroxene and hornblende. The gabbro is commonly intensely altered to coarse-grained hydrothermal hastingsite and actinolite.

Gabbros are cut by dacitic and rhyolitic porphyry dykes. Though generally unaltered, these dykes locally contain both magnetite and fine-grained disseminated chalcopyrite, suggesting that they were present during hydrothermal alteration and mineralization.

6.3.2 STRUCTURE

The deposit occurs along a west–northwest–east–northeast-striking, 60 km long, belt of regional shearing that defines the southern contact between the Itacaiúnas Supergroup and the basement, represented by tonalitic to trondhjemitic gneisses and migmatites of the Xingú Complex.

6.3.3 METAMORPHISM

Regional upper greenschist to lower-amphibolite metamorphism, is widespread in the Salobo Operations area (Lee and Jenkins, 1999).

Accessory minerals, such as allanite, fluorapatite, epidote and sphene, were formed as a result of these metamorphic events.

6.3.4 MINERALIZATION

Sulphide minerals are typically associated with the calcium–iron alteration assemblage. The primary sulphide is chalcopyrite, with lesser pyrite and nickel sulphides (millerite and siegenite). More rarely, bornite, chalcocite, sphalerite, galena, parisite (a calcium cerium carbonate with fluorine) and nickel telluride minerals have been observed.

6.4 PROPERTY GEOLOGY

6.4.1 DEPOSIT DIMENSIONS

The Salobo deposit extends over an area of approximately 4 km along strike (west–northwest), is 100–600 m wide, and has been drill tested a depth of approximately 750 m. The deposit remains open at depth.

6.4.2 LITHOLOGIES

The Salobo deposit is hosted within the Igarapé Salobo Group, a volcano-sedimentary sequence of the Grão-Pará Group that underwent upper greenschist to amphibolite facies metamorphism. The local stratigraphy is dominated by:

- Magnetite-rich schists (XMT): main Cu-Au mineralization host;
- Biotite schists (BDX): potassic alteration zones, associated with low grade Cu-Au mineralization. Subordinate garnet–grunerite schists (DGRX) which are iron-rich assemblages with grunerite and almandine, associated with ore zones;
- Quartz mylonite (QML): quartz-rich highly deformed mylonite, acting as a structural marker;
- Mylonite (ML): sheared rocks marking ductile deformation zones;
- Hydrothermalite (HD): alteration zones with intense hydrothermal imprint.

Granitic intrusions, both syn- to post-tectonic (Old and Young Salobo Granites), occur along the northern and southern margins of the deposit. Younger diabase dykes crosscut the mineralized package, forming barren zones.

Weathering extends to depths of approximately 30–100 m.

Lithological descriptions of the major units are included inTable 6-1. A plan view of the geology is provided in Figure 6-3, a geological cross-section in Figure 6-4, and a mineralization cross-section in Figure 6-5, with a long section shown in Figure 6-6.

Table 6-1: Stratigraphic Table

Unit	Description
Magnetite schists (XMT)	Massive, foliated and banded rocks, with predominant magnetite, fayalite, grunerite, almandine and secondary biotite. Presence of fayalite is marked by the replacement of grunerite and greenalite and transformation into magnetite and other sulphides. Iron–potassic alteration is common, creating schistosity in biotite units. The southeast portion of the deposit hosts hastingsite, replaced partially by actinolite, grunerite and sulphide minerals. Fluorite, apatite, graphite and uranium oxides are associated with this assemblage.
Biotite schist (BDX)	The most common lithology at Salobo. Consists of medium to coarse-grained material with anastomosed foliation. The mineral assemblage is characterized by biotite (responsible for the foliation observed within the rocks), garnet, quartz, magnetite and chlorite. The assemblage with garnet, magnetite, grunerite and biotite is partially replaced by a second generation of biotite and magnetite with chlorite, K feldspar, quartz, hematite and sulphides. Tourmaline, apatite, allanite, graphite and fluorite generally occur throughout
Garnet–grunerite schist (DGRX)	Massive rocks with only local development of schistosity. The rocks with significant almandine and grunerite content have isotropic texture or display very limited schistosity. The predominant mineralogy is almandine and cummingtonite-grunerite, with magnetite, hematite, ilmenite, biotite, quartz, chlorite, tourmaline and subordinate allanite. Fluorite and uraninite generally occur in veinlets related to stilpnomelane, calcite and grunerite.
Feldspar–chlorite mylonite (ML)	Characterized by mylonitic foliation, produced by the orientation of rims of chloritized deformed biotite, hastingsite, elongated quartz and saussuritized plagioclase (K-feldspar, epidote and muscovite alteration). Garnet is partially to totally replaced by chlorite and epidote. Allanite and apatite generally occur throughout this lithology
Metavolcanic basic rock (MTB)	Massive coarse-grained rocks characterized by Fe-hastingsite and/or hornblende and plagioclase with chlorite alteration. This lithology occurs locally within the Project area, but is concordant with other lithotypes, forming abrupt contacts, and is interpreted to represent hydrothermally altered intrusive basic relicts within the package of volcanic rocks.
Quartz mylonites (QML)	Grey–white–green to red in colour. Where present, Fe-oxides are medium to fine grained, foliated and composed predominantly of quartz, muscovite, sericite, sillimanite and chlorite. Accessory minerals, such as biotite, feldspar, magnetite, almandine, tourmaline, zircon and allanite are common. Two mylonite types are differentiated. (a) red quartz–feldspathic rocks formed by K-feldspar and quartz, which may be a product of shearing between the gneissic basement and the supracrustal rocks; and (b) chlorite schist, mainly composed of chlorite and quartz, representing intense hydrothermal alteration. Chlorite schist occurs near the southern border of the deposits, close to major brittle shear zones that may have been conduits for hydrothermal fluids.
Old Salobo Granite (GR)	Colorless, pink to grey, coarse-grained and with mylonitization in some areas. Consists of K-feldspar (orthoclase-microcline), oligoclase, quartz, augite, hornblende, chlorite and, rarely, magnetite. The unit locally forms a stockwork.
Young Salobo Granite (GR)	Small northwest-trending sills. In some porphyritic portions, the matrix is aphanitic, containing a porphyry of red albite (Fe-oxide in microfractures) and chlorite pseudomorphed by biotite. Mineral assemblage comprises fine- to medium-grained, equigranular, grains of albite/oligoclase, orthoclase, quartz, chlorite, with minor epidote, zircon, fluorite, magnetite, chalcopyrite and pyrite.
Diabase (DB)	Set within shear/fault lateral geometries (N70°E) and frontal (N20°W) orientations. Consists of augite, plagioclase, magnetite, ilmenite and quartz.

Unit	Description
Rhyolite (RIO)	Grey–reddish in color, porphyritic in texture, within an aphanitic matrix. Consists of K-feldspars, plagioclase, quartz, amphibole in a matrix cut by quartz veinlets.

6.4.3 STRUCTURE

The Salobo deposit is located within the Cinzento strike-slip system, which reactivated older structures and formed a subparallel ductile–brittle shear zone in the northern part of the deposit and a predominantly brittle shear zone in the south. The ductile fabric that hosts the copper–gold mineralization is overprinted by brittle, strike-slip faults that disrupt and offset the main foliation

The brittle–ductile shear zone deformation resulted in lenticular-shaped mineralized shoots that show a close association between copper mineralization and magnetite content.

6.4.4 ALTERATION

The hydrothermal system has a core of massive magnetite that is surrounded by less intensely-altered rocks. Within the massive magnetite body there are small veins and irregular masses of secondary biotite. Garnet is completely replaced by magnetite, forming pseudomorphs. Away from the massive magnetite, the magnetite content gradually diminishes, giving way to biotite–garnet schist and/or garnet–grunerite schist. Alkali-metasomatism of the amphibolite facies rocks is expressed by weak sodium alteration with intense, superimposed potassium alteration (≤4.6 wt% of K_2O).

K-feldspar, biotite and oligoclase are the main alteration minerals. Potassium alteration in amphibolite was marked by replacement of calcium-amphibole and by the formation of biotite and magnetite.

The chemistry of the meta-greywackes at the deposit indicates that they also underwent significant iron and potassium alteration. Alteration assemblages are characterized by garnet, biotite and grunerite, with subordinate tourmaline and minor magnetite. The better-mineralized zones, located in the central part of the deposit, correspond to the most altered areas.

6.4.5 MINERALIZATION

Mineral assemblages occur in a number of styles: disseminations, stringers, stockworks, massive accumulations, fracture fillings, or veins associated with local concentrations of magnetite and/or garnet and locally remobilized along cleavage planes of amphiboles and platy minerals, and within the shear zones. Textural relationships indicate that mineralization was developed initially as an oxide stage, with a second, subsequent, sulphide stage.

Cross-sections through the mineralization are provided in Figure 6-5 and Figure 6-6.

There is a positive relationship between copper minerals and magnetite. Copper content is typically > 0.8% in XMT and BIF, but in gneisses and schists it is < 0.8%. A positive correlation between copper and uranium exists.

Sulphide mineralization typically consists of magnetite–chalcopyrite–bornite and magnetite–bornite–chalcocite. Accessory minerals include hematite, molybdenite, ilmenite, uraninite, graphite, digenite, covellite, and sulphosalts.

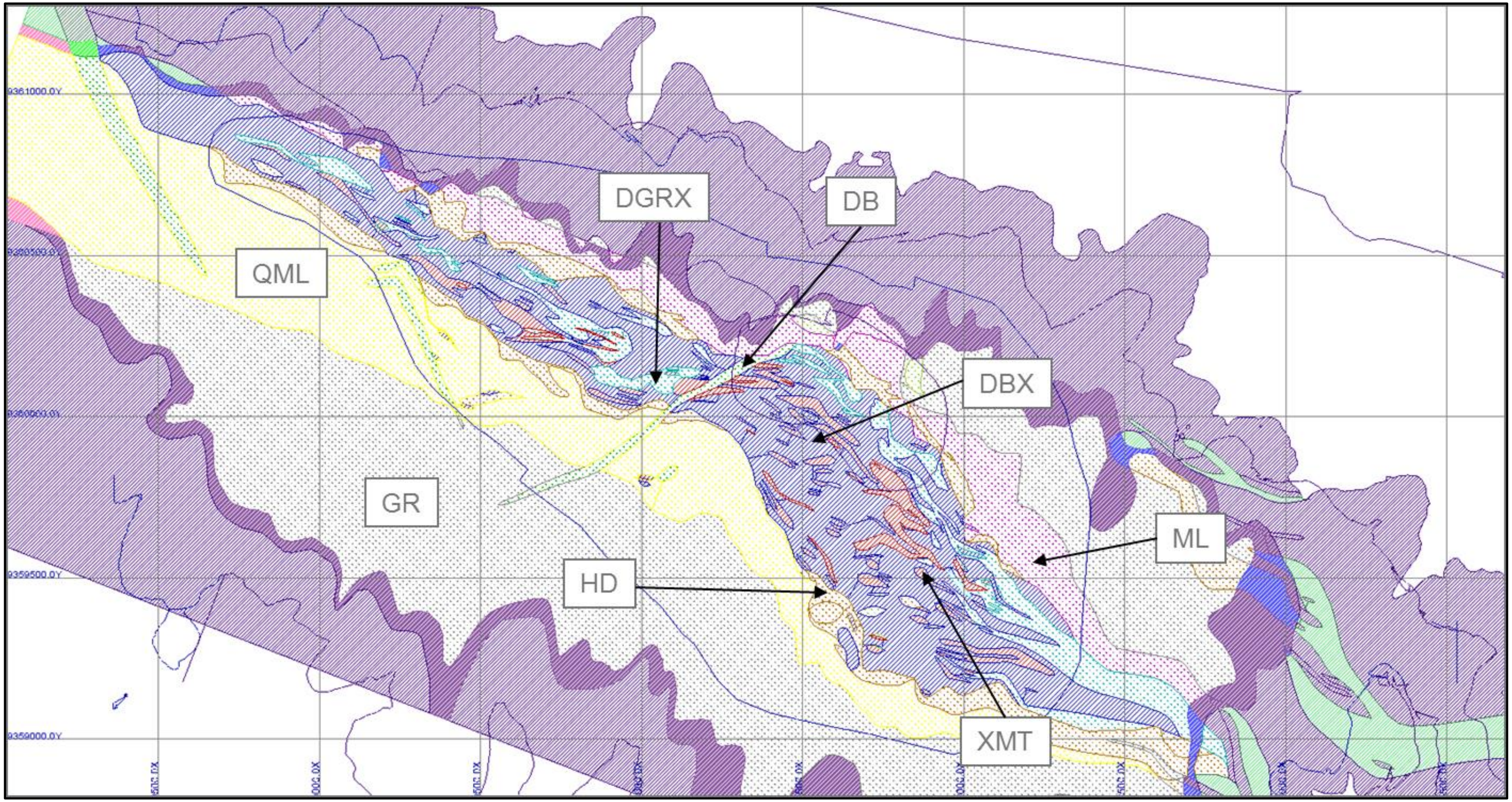
Chalcopyrite, bornite, and chalcocite occur interstitially to silicate minerals. These sulphide minerals are commonly found filling cleavage planes of biotite and the amphibole grunerite. Hematite is rare, but in places it can reach as much as approximately 4% by volume. It exhibits tabular textures (specularite), with bornite infill, and partial replacement by magnetite.

Native gold occurs as grains in cobaltite, safflorite ($(Co,Fe)As_2$), magnetite and copper sulphides, or interstitial to magnetite and chalcopyrite grains. The gangue minerals are garnet, grunerite, and tourmaline, reflecting the intense iron-metasomatism. Minor amounts of fayalite and hastingsite are pseudomorphed by grunerite and magnetite. Ilmenite, uraninite, allanite, fluorite and apatite occur as accessory minerals.

Kinked biotite crystals are associated with potassic alteration, and spatially related to the copper–gold mineralization. Uraninite and zircon inclusions may be locally abundant in biotite.

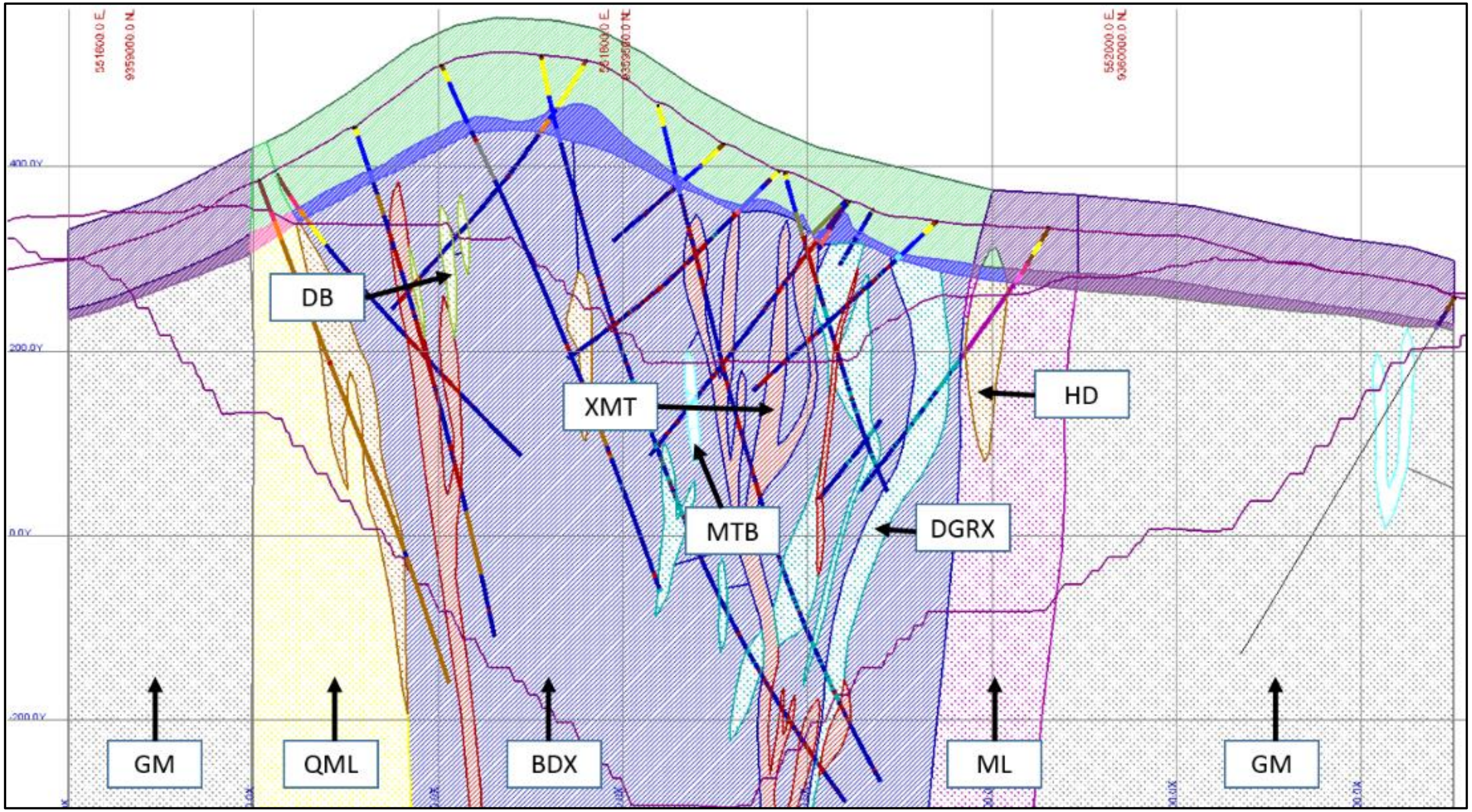
Quartz is associated with biotite in better-mineralized samples, and forms concordant veins within the host rocks.

Figure 6-3: Geology Plan



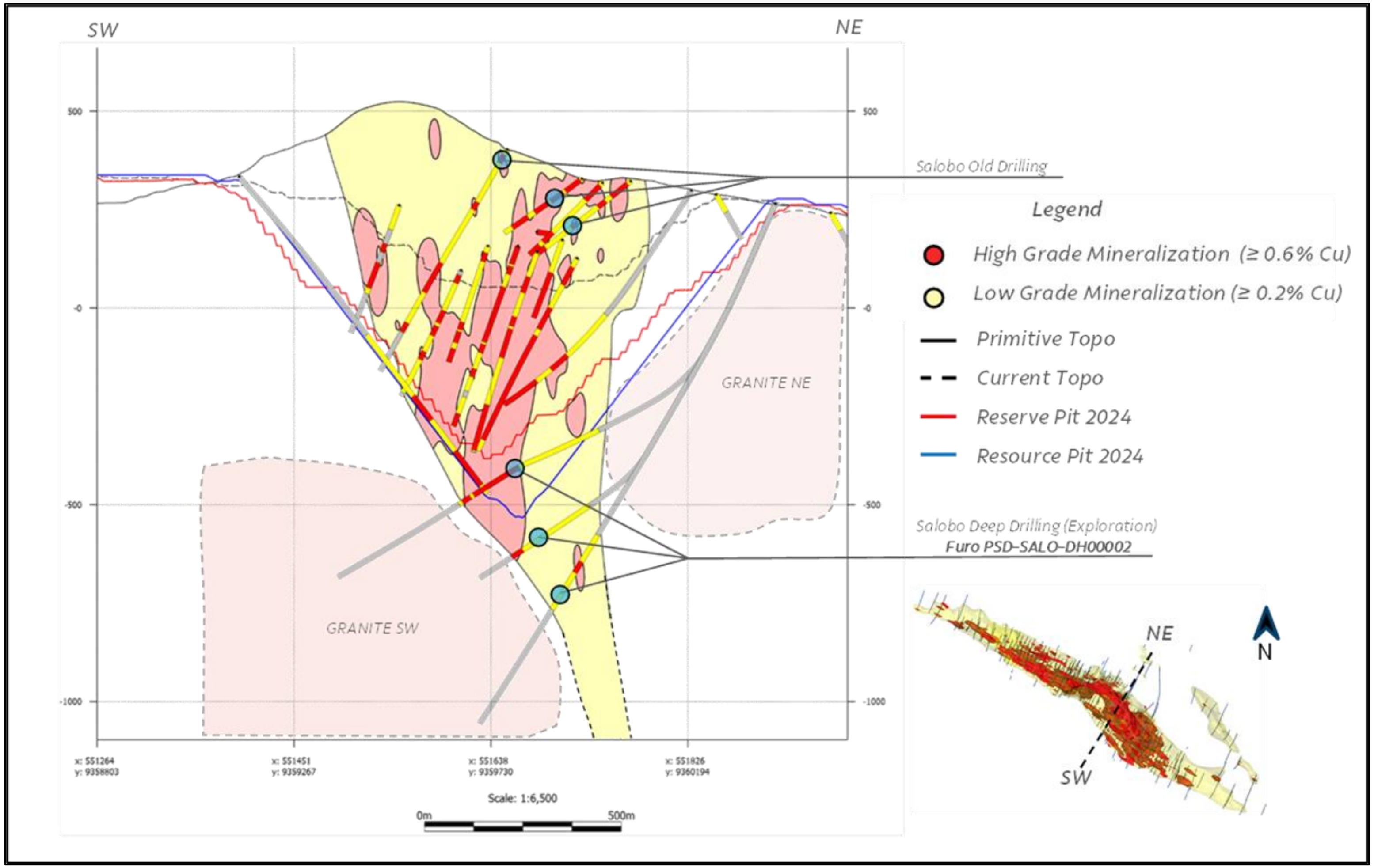
Note: Figure prepared by Vale, 2019. Refer to Table 6-1 for abbreviation key.

Figure 6-4: Geological Cross-Section



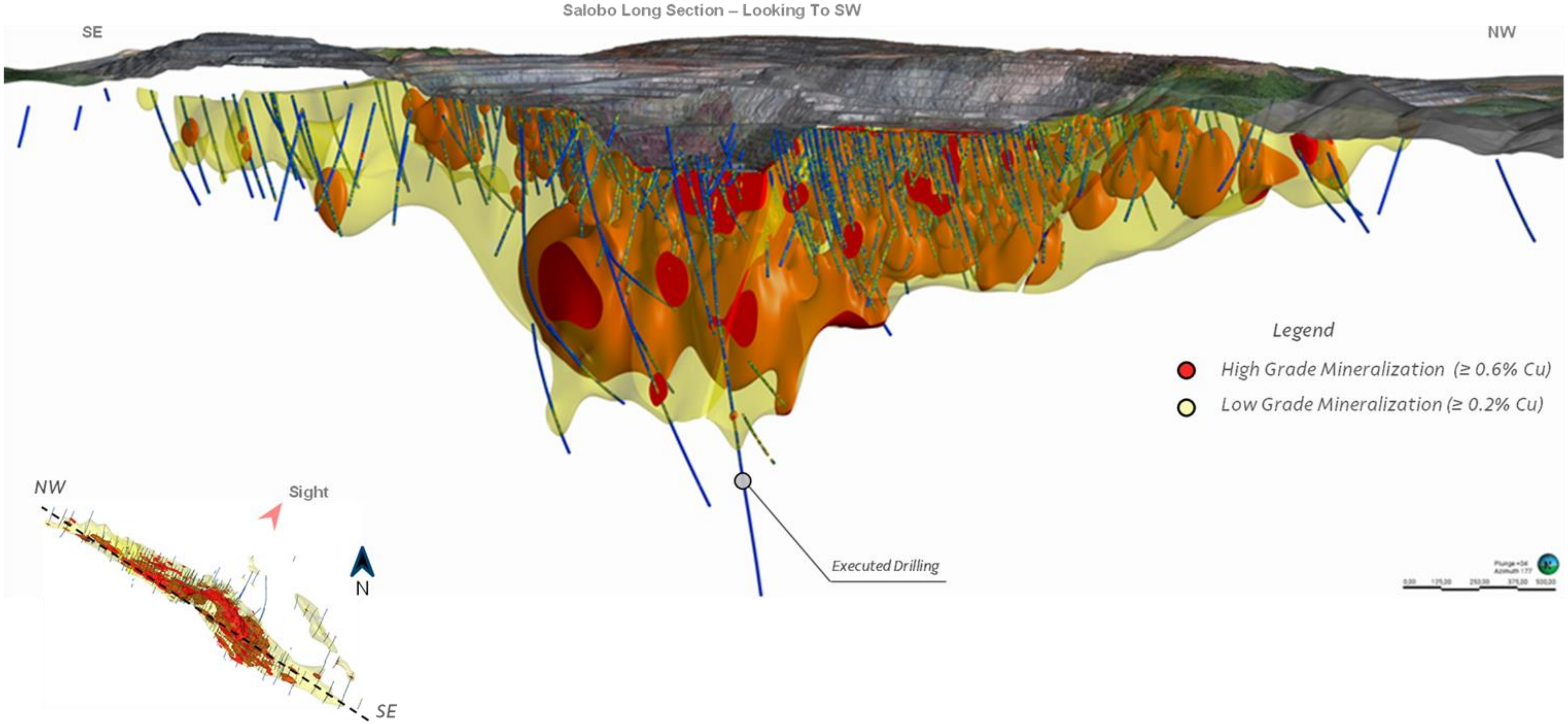
Note: Figure prepared by Vale, 2019. Refer to Table 6-1 for abbreviation key.

Figure 6-5: Mineralization Cross-Section



Note: Figure prepared by Vale, 2025.

Figure 6-6: Longitudinal Mineralization Section



Note: Figure prepared by Vale, 2025.

7 EXPLORATION

7.1 EXPLORATION

7.1.1 GRIDS AND SURVEYS

A topographic reference grid was originally established by ENGEVIX in 1978 and later corrected by ESTEIO in 2003. Surveyors at Salobo currently use a local datum, P3201, which has a known planimetric difference compared to the more widely-used PSAD56 datum. The differences are: N: -9.7153 m; E: +2.8821 m, while local elevations have a +0.6442 m difference relative to the official Datum of Imbituba. This adjustment has been consistently incorporated in all subsequent survey and mapping activities.

7.1.2 GEOLOGICAL MAPPING

Geological mapping at different scales was conducted over the concession area during the initial exploration campaigns, usually following survey traverses. However, because nearly 80% of the rocks in the Carajás district are poorly exposed, most direct observations were made along access roads for drill sites and were complemented with additional information such as interpretation of air-photo images, geophysical and geochemical maps, and correlation on surface of core logging data. These data were used to vector toward drill targets.

Pit mapping of the Salobo open pit is conducted twice monthly. A geologist loads the long-term geologic map over the updated topographic map on a global positioning system (GPS) instrument and establishes the actual position of the geological contacts where access is possible.

7.1.3 SURFACE SAMPLING

Geochemical sampling is superseded by drill data. Geochemical programs, primarily completed in the period 1997–2009 included stream sediment, soil, rock chip, and channel samples, which were used to vector toward areas of copper, gold, and nickel anomalism.

7.1.4 GEOPHYSICAL SURVEYS

Geophysical surveys are summarized in Table 7-1 (airborne) and Table 7-2 (ground). Survey data were used in support of geological mapping, structural interpretations, and vectoring toward areas of anomalism that could warrant drill follow-up.

Table 7-1: Airborne Geophysical Surveys

Area	Year	Details	Comment
Regional	2012	The survey flight was typically at an altitude of at least 80 m with line spacing dependent on the target of investigation. The 2012 survey was flown on 100–200 m spaced lines.	Regional airborne gravity gradiometer survey was completed in 2012 over a portion of the Carajás Region, including the Salobo Operations area. It was designed to explore for new shallow copper–gold targets. There are a number of viable interpretations of the gravity data, including the possibility that there could be a vertical extension of the Salobo mineralization below the current planned open pit, consistent with indications from the geological data. In 2017, a deep drilling campaign explored this potential orebody extension and encountered mineralization at depth below the current open pit operations.

Table 7-2: Ground Geophysical Surveys

Area	Year	Details	Comment
Regional	1995	Ground magnetometer and induced polarization (IP) surveys, using a 400 m x 40 m grid	Various anomalies were identified at the Salobo and Mirim Creeks and at the Planta Industrial sector.
		Gamma spectrometry and ground magnetometer surveys on a 200 m x 20 m grid	Confirmed the mineralized nature of the IP anomaly sources
Mineral concession area	2002	Fugro-Geomag S.A. (FugroG) conducted gamma spectrometry, ground magnetometer, IP and ground transient electromagnetic (TEM) surveys. The ground magnetometer survey measured the total component of the magnetic field using two GSM-19 Overhauser (from GEM Systems) instruments, with 0.2 nT precision, 0.01 nT resolution, 20,000–120,000 nT dynamic range and over 10,000 nT/m tolerance. One magnetometer was used as a mobile instrument, with readings spaced at 20 m intervals along traverses. The second magnetometer was used as a base station at a fixed location, and readings were made every five seconds. In both cases, sensors were placed 2 m above ground level. In total, 413 km of lines were surveyed during the 2002–2003 campaign with this method. The IP survey used a time-domain IP system built by Iris Ltd., consisting of a VIP 4000 transmitter and a 20-channel ELREC-6 receptor, on a dipole-dipole array with 80 m electrode spacing. The receptor measured six electrodes simultaneously on 20 programmable chargeability windows, as well as potential differences used for calculating the apparent resistivity. In total, 181 km of lines were surveyed during the 2002–2003 campaign with this method. The gamma spectrometry survey used a GR-320 Envispec instrument with a 21 cubic-inch NaI sensor. Readings were always made 50 cm above ground level and with a 60 second integration time. Distance between reading points was 20 m. In total, 214.5 line km were surveyed with this method during the 2002–2003 campaign. The ground TEM survey used a Geonics EM57 transmitter and a Geonics Protem receptor, with uniaxial coils for sequential readings of three components (X, Y and Z) on five frequencies: 0.3 Hz, 0.75 Hz, 3.0 Hz, 7.5 Hz and 30.0 Hz. In total, measurement on 750 loops were completed to cover the Salobo Operations area.	Overall, mineralized bodies were characterized by low apparent resistivity and high chargeability values.

7.1.5 PETROGRAPHIC STUDIES

Petrographic studies were commissioned during the early exploration phases to determine the main rock types, and their relationships with hydrothermal alteration and mineralization styles.

7.1.6 QUALIFIED PERSON'S INTERPRETATION - EXPLORATION INFORMATION

Exploration procedures are consistent with industry-standard practices at the time the work was performed. The Qualified Person is of the opinion that sufficient exploration information is available to support the mineral resource and mineral reserve estimates presented in this Report, and that additional exploration potential remains within the Project area. Information collected can be used for exploration vectoring.

7.1.7 EXPLORATION POTENTIAL

The potential for depth extensions of mineralization under the open pit has been the subject of exploration activity since 2017. The results have been geologically and geochemically consistent with the existing orebody, supporting the interpretation of a robust mineralized system that remains open down-dip.

7.2 DRILLING

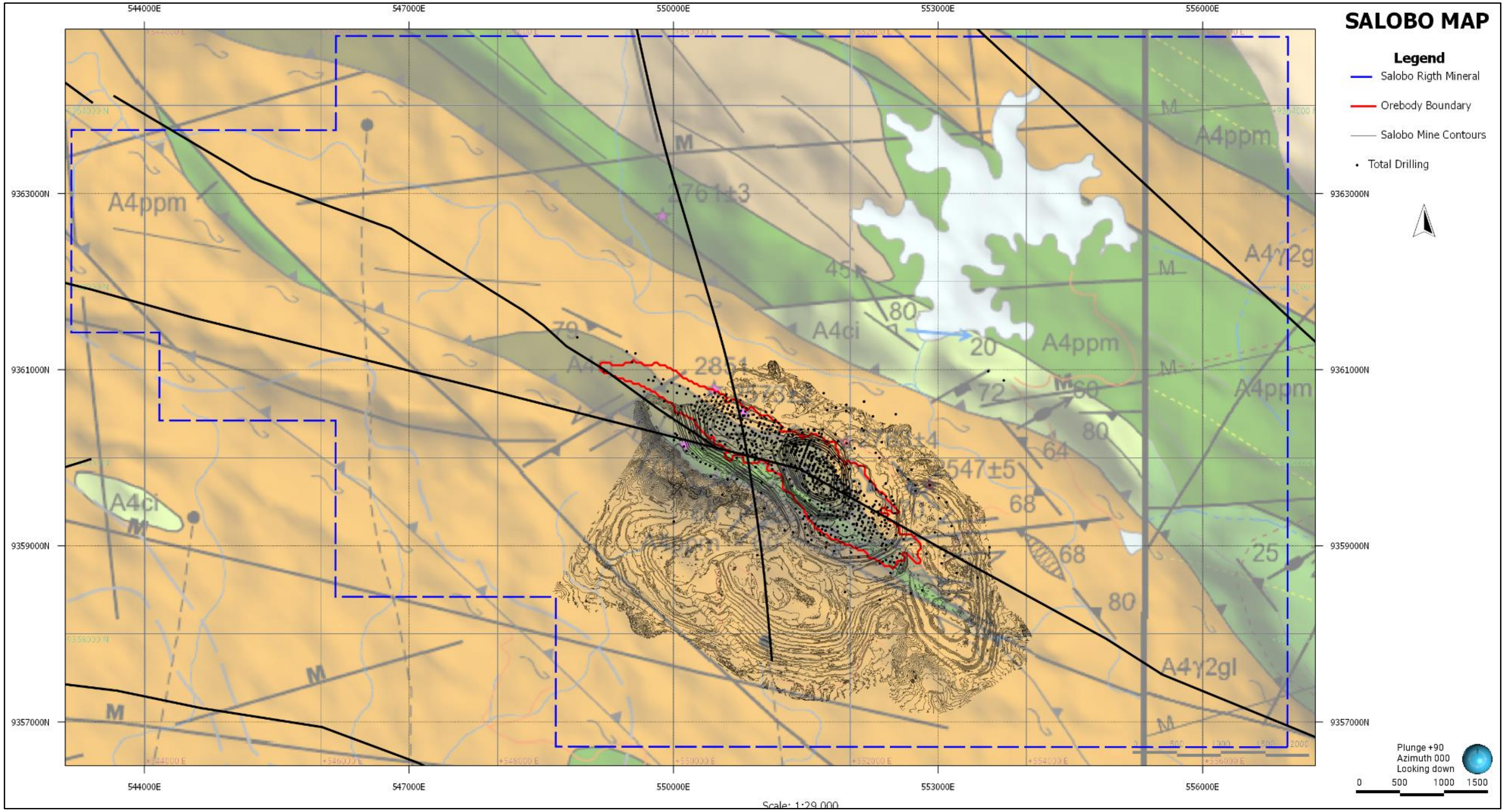
7.2.1 DRILLING ON PROPERTY

Total drilling for the Salobo Operations comprises 806 drill holes totalling 265,967 m (Table 7-3). These totals exclude blasthole drilling. Drill collar locations are shown on Figure 7-1. Drilling used in mineral resource estimation comprises 659 drill holes totalling 238,829 m (Table 7-4 and Figure 7-2).

Table 7-3: Drill Summary Table, Salobo Operations

Campaign/Period	Purpose	Number of Drill Holes	Total Meterage Drilled (m)
1978	Exploration	65	29,275
1986	Exploration	60	9,051
1993	Exploration	64	14,585
1997	Exploration	88	25,491
2002	Exploration	143	69,908
2010	Infill	2	361
2017	Infill	42	13,265
2017	Deep exploration	1	1,566
2018	Infill	40	12,322
2018	Deep exploration	3	4,300
2019	Infill	29	10,511
2019	Deep exploration	2	2,723
2020	Infill	25	7,433
2020	Deep exploration	1	1,269
2021	Infill + resource	29	11,785
2021	Deep exploration	2	2,016
2022	Infill + resource	37	14,942
2023	Infill + resource	34	13,149
2023	Piezometer	1	115
2024	Infill + resource	82	21,485
Total exploration		***750***	***252,416***
1997	Geotechnical	7	3,847
2003	Geotechnical	7	4,194
2023	Geotechnical	5	1,251
2025	Geotechnical	*9*	*1,504*
Total geotechnical		***28***	***10,796***
2025	geometallurgical	*28*	*2,755*
Total geometallurgical		***28***	***2,755***
Grand total		***806***	***265,967***

Figure 7-1: Drill Collar Location Plan

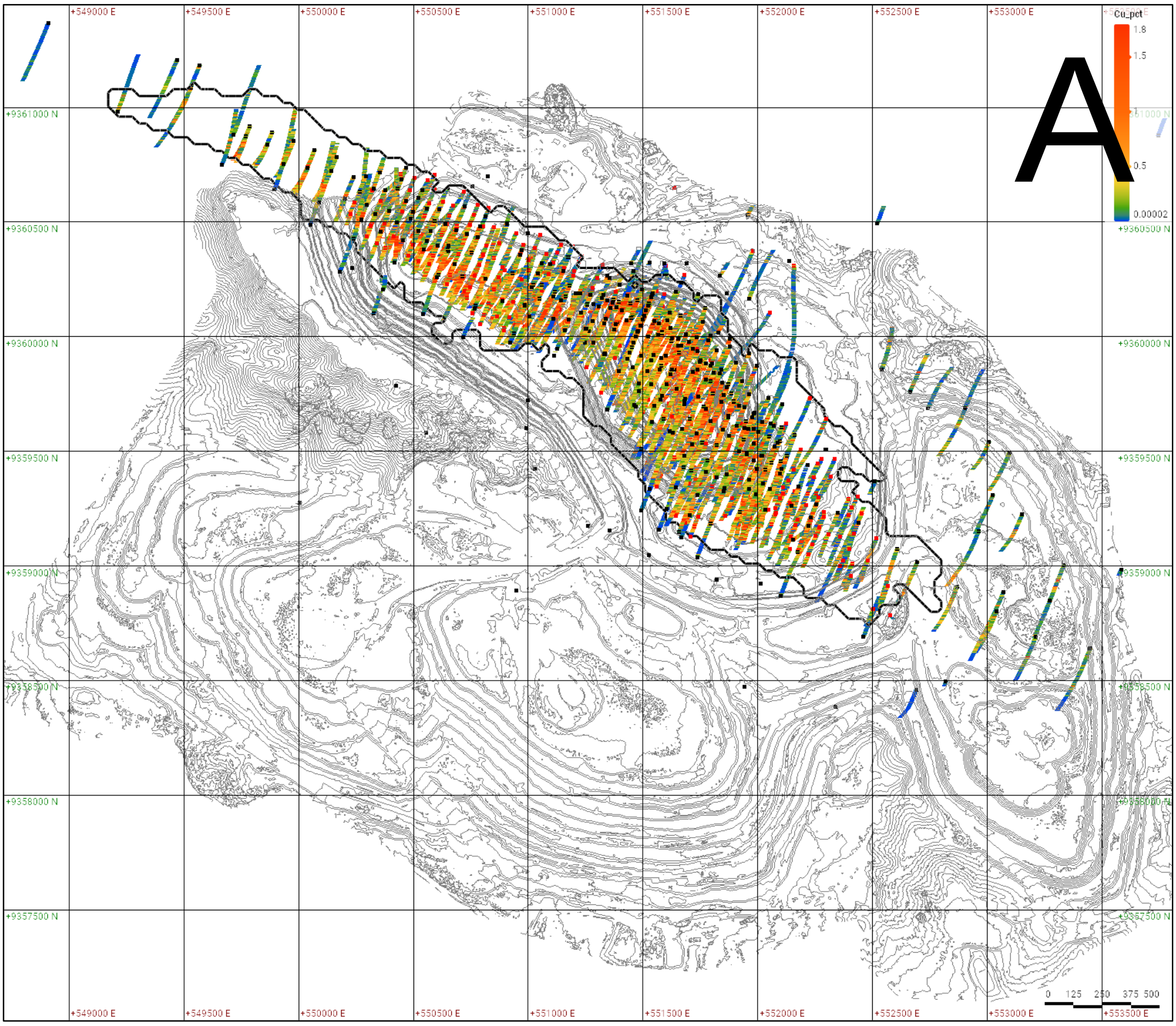


Note: Figure prepared by Vale, 2025.

Table 7-4: Drilling Supporting Mineral Resource Estimates

Campaign/Period	Purpose	Number of Drill Holes	Total Meterage Drilled (m)
1978	Exploration	65	29,275
1986	Exploration	60	9,051
1993	Exploration	64	14,585
1997	Exploration	88	25,491
2002	Exploration	143	69,908
2010	Infill	2	361
2017	Infill	42	13,265
2017	Deep exploration	1	1,566
2018	Infill	40	12,322
2018	Deep exploration	3	4,300
2019	Infill	29	10,510
2019	Deep exploration	2	2,723
2020	Infill	25	7,433
2020	Deep exploration	1	1,269
2021	Infill	29	11,785
2021	Deep exploration	2	2,016
2022	Infill + resource	37	14,942
2023	Infill + resource	24	7,379
2023	Piezometer	1	115
Total exploration		***658***	***238,296***
1997	Geotechnical	1	533
Total geotechnical		***1***	***533***
Grand Total		***659***	***238,829***

Figure 7-2: Drill Collar Location Plan, Drilling Supporting Mineral Resource Estimates



Note: Figure prepared by Vale, 2025.

All drill holes considered not relevant to the resource modeling were removed from the dataset, with the reasons recorded for exclusion. This included condemnation drilling (outside of the mineralization) and geotechnical drilling. Data are also excluded if the drill hole was not assayed, if the grade in the drill hole is <0.2% Cu and outside of the mineral wireframe, or if the purpose of the drill hole was condemnation or geotechnical drilling. All assays inside the mineral wireframe are included in estimation to account for waste.

7.2.2 DRILL METHODS

7.2.2.1 CORE

Core drilling was used to evaluate sulphide mineralization, whereas reverse-circulation (RC) drilling was applied mainly to delineate oxide zones and to complete condemnation drilling in areas designated for infrastructure and operational facilities. Surface drilling generally commenced with HQ (63.5 mm) core and continued with NQ (47.6 mm), with BX (42 mm) and BQ (36.4 mm) used as the minimum diameters. Underground drilling conducted from exploration adits used BX rods. Both conventional and wireline coring systems were employed throughout the drilling campaigns

7.2.2.2 BLAST HOLES

Blast-hole drilling and sampling have been carried out at the Salobo open pit since start-up and form a core component of the operation's grade-control program. The blast-hole assays are used by mine geologists to define ore and waste boundaries, generate short-term grade-control polygons, and support daily dispatching and production decisions. These data underpin short-term mine planning by providing high-density information that helps reduce dilution, limit ore loss, and optimize plant feed consistency. However, blast-hole samples are not used for mineral resource or mineral reserve estimation, which rely exclusively on exploration-drilling datasets that meet the sampling, QA/QC, and data-quality requirements for long-term geologic modelling.

7.2.3 LOGGING

Drill core was collected and placed in wooden boxes, and delivered by the drilling contractor to the core logging/storage area at the end of every shift.

Well-documented protocols for systematic drill-core reception, logging, handling, and core photography were followed during the exploration programs.

Core was initially photographed with a digital camera, and the digital photographs were downloaded and stored digitally filed on a computer workstation.

Geological logs were completed by the geology staff using standardized logging forms based on geological features. The geologist recorded the lithological type and a general description, including core recovery (per drilling run), color, weathering, texture, mineralogy, alteration type and alteration assemblage, and rock type.

Geologists also noted the mineralized intervals, and estimated the copper grade for later comparison and verification against assays, and marked the sample intervals.

Recording of geotechnical information, including rock quality designation (RQD), deformation features and degree of fracturing, was also included in the logging protocols.

7.2.4 RECOVERY

Since 2017, core recovery for infill and deep drilling has averaged 99%, reflecting the use of improved drilling practices and standardized core handling protocols. Overall, core recovery across campaigns has consistently exceeded 95%.

7.2.5 COLLAR SURVEYS

Depending on the date of the drill program, drill hole collar locations were determined using theodolites, total station, or high-precision, differential GPS instruments.

Collar verification was completed by plotting drill hole locations on plan and in cross section, and comparing them with the topographic surface, including regional topographic landmarks.

Grade control drill holes were surveyed using high-precision GPS equipment.

Collar positions were validated against the topographic surface and regional landmarks.

7.2.6 DOWNHOLE SURVEYS

Instrumentation used for downhole surveying varied over time. Instruments used could include DDI-Fotobor, Tropari, Maxibor, Reflex, or gyroscopic instruments.

Earlier drill holes were typically surveyed at 50 m intervals. During later down-hole campaigns, survey intervals varied from 3–30 m downhole; some survey readings were taken both downhole and up hole. The most recent surveys collected information continuously throughout the drill hole.

Downhole surveys were verified against the original survey data and on cross-section plots.

7.2.7 QUALIFIED PERSON'S INTERPRETATION – DRILLING RESULTS

The drilling programs adequately locate, outline and define the mineralization. Collar and down-hole survey methods used generally provide reliable sample locations. Good core recovery is common. Logging procedures used provide consistent descriptions.

The qualified person is not aware of any drilling, or core recovery factors that could materially impact the accuracy and reliability of the results.

7.3 HYDROGEOLOGY

7.3.1 OVERVIEW

Hydrogeological data were collected in support of groundwater modelling and pit designs.

The aquifer system in the Salobo region is characterized by the absence of primary porosity. Groundwater flow is typically through discontinuities such as faults, joints and fractures. Fissured aquifers are usually characterized by low infiltration and storage capacities, limited flow rates, and generally high salinity.

7.3.2 SAMPLING METHODS AND LABORATORY DETERMINATIONS

Surface water is monitored at designated points, with samples analyzed by SGS Geosol Laboratórios Ltda in Parauapebas for major and trace elements (e.g., lead, arsenic, cyanide), acidity, alkalinity, electrical conductivity, hardness, and pH. SGS is independent of Vale, and holds ISO17025 accreditations for selected analytical techniques.

7.3.3 GROUNDWATER MODELS

The Salobo hydrogeological monitoring network comprises 24 piezometers, 15 monitoring wells, two pumping wells, and water-level monitoring in 78 drill holes. The site hydrogeological model was updated in 2019 by MDGEO, replacing the original 2004 model and extending coverage to the open pit, stockpiles and the TSF. The primary water-bearing units identified were the alteration zone, contributing approximately 20% of annual recharge, and fractured granite–gneiss units, contributing approximately 15%.

A water-balance study completed by Walm in 2018 evaluated whether the TSF could supply process-water requirements for the remaining mine life. Assuming scheduled TSF raises in 2026 and 2042, the assessment concluded that TSF reclaim water would be sufficient and no additional external water sources would be required. Current TSF reclaim supply approximately 4,189 m^3/h to the process plant. Predicted flows for all mine phases are based on a water-balance model developed by VOGBR, which incorporates inflows from river contributions, runoff, precipitation, slurry water, and pit dewatering, and losses through reclaim pumping, evaporation, seepage, and water retention in tailings.

7.3.4 QUALIFIED PERSON'S INTERPRETATION – HYDROGEOLOGY EVALUATION RESULTS

The Qualified Person is of the opinion that hydrogeological data demonstrates that water resources are well understood, adequately managed, and sufficient to support long-term operations in compliance with environmental regulations.

7.4 GEOTECHNICAL

7.4.1 OVERVIEW

Geotechnical core logging and laboratory strength testing activities commence during early-stage exploration and feasibility studies. Data collection continues once mines are operating in conjunction with definition drilling and expansion projects. This information is used as the basis for empirical, analytical, and numerical analyses to support mine design activities.

The 3D geomechanical model was reviewed in June 2019 by third-party consultants, Walm, and in September 2020 by an internal Vale Base Metals team. Walm suggested that the operations perform additional bench cleaning due to rock spillage from blasting movements. Inspections and monitoring are performed routinely to support both short- and long-range mine plans, with results checked against the existing models.

A Ground Control Management Plan is in place, including periodic slope inspections for the open pit, waste storage facility and stockpiles. The objectives of these inspections are to verify stability conditions, drainage systems and ongoing workings. These inspections are reported on a periodic basis.

Four interferometric radar units were installed to monitor pit slopes in real time. This system delivers continuous monitoring of surface rock displacement and rock fall, allowing effective geotechnical risk management when coupled with a Trigger Action Response Plan that defines triggers and associated actions to be implemented with the intent of protecting lives and equipment.

Since 2017, the Salobo Pit has experienced occasional seismic events, including a small wedge failure in 2017 and a minor slope movement in October 2017. No injuries or significant operational impacts were reported, and the events were attributed to local geological features rather than operational deficiencies. Seismic activity of this scale is expected to continue but is not considered a material operational risk.

In 2025, Vale Base Metals contracted third-party consultants Walm to update the geotechnical model for the mine. Walm has updated structural surface mapping of the pit, resulting in re-interpreted structural domains. At the Report date, these domains were being used for bench scale kinematics and limit-equilibrium analyses (planar, wedge and toppling).

The Salobo Operations are currently monitored by three seismological stations integrated into the Carajás monitoring network (RCKS), which includes five additional regional stations. Seismic data are compiled monthly by third-party consultants from the University of São Paulo, and provided to Vale Base Metals' geotechnical team. Monitoring is part of the site's geotechnical risk management system, which also includes slope inspections, standpipe piezometers, and interferometric radar units for real-time displacement detection.

Vale Base Metals has constructed a structural model for the Salobo Pit to support future slope design, including deeper phases of mining.

7.4.2 SAMPLING METHODS AND LABORATORY DETERMINATIONS

Logging included simple descriptions of the weathered zones and the weathering and fracturing degrees of the mineralized schists, as well as visual determination of the rock-quality designation (RQD) and rock resistance, and descriptions of the fracture types. Point-load tests (PLT) were conducted every 20 m on geotechnical core. Geotechnical logging and testwork were typically performed by Vale Base Metals personnel.

7.4.3 QUALIFIED PERSON'S INTERPRETATION - GEOTECHNICAL EVALUATION RESULTS

The QP is of the opinion that geotechnical data collection, laboratory testing, and continuous seismic and slope monitoring indicate that slope stability at Salobo is well understood and effectively managed. No material geotechnical risks related to seismicity or pit wall stability were identified at the Report date, and monitoring systems provide ongoing support for the safe continuation of operations.

8 SAMPLE PREPARATION, ANALYSES, AND SECURITY

8.1 SAMPLING METHODS

Sample lengths have varied over time, ranging from 1–2 m, depending on geological and lithological/structural criteria (such as geological boundaries, lithological/mineralogical changes, and the presence of structures such as faults and shear zones). Core was cut in half using diamond saws. One half was bagged and submitted for analysis, and the remaining half core was retained as a permanent reference.

Due to equipment limitations in 2024, a temporary protocol was implemented under which some core samples were entirely crushed instead of sawn. One half of the core (or the crushed sample) was submitted for analysis, while the remaining half was retained as a backup.

Grade control drilling is carried out using blast-hole drilling rigs on a nominal grid spacing that typically ranges from 5–15 m, depending on the mining phase and local geological variability. The average sample weight is 2 kg. Samples are collected directly from the blast holes during drilling. Material is bagged, labeled, and dispatched for preparation and analysis following the same QA/QC protocols applied to exploration drilling, including insertion of certified reference materials (standards), blanks, and duplicates.

Blast-hole data are used exclusively for operational purposes, namely to support short-term grade control, refine local orebody geometry and reconcile the exploration-based block model at mining scale. They are not used in the estimation of mineral resources or mineral reserves, and therefore no further detail is provided in this Report. The mineral resources and mineral reserves rely solely on appropriately sampled and QA/QC-validated exploration drilling datasets.

Early-stage exploration samples (e.g. stream sediment, soil, rock chip, and channel samples) were collected and prepared by Vale Base Metals predecessor's companies.

8.2 SAMPLE SECURITY METHODS

All Salobo drill core was brought from the drill site at the end of shift, and stored in a purpose-built logging and storage facility. Mineralized sample boxes, once logged, were returned to the storage facility, which remains locked when unoccupied.

Site security is maintained by continuous patrols carried out by the Salobo site security team, supplemented in certain storage areas by guards who provide full-time monitoring of the warehouses. Although cameras are not installed at the main core logging facility, the Cegeo (Centro de Geologia Operacional) facility is equipped with camera surveillance in addition to on-site security.

Unshipped samples were also stored in a secure facility at the same location. Wooden and plastic core boxes are stored on well-organised racks. Coarse rejects and pulps are also stored at the core facility in properly identified boxes.

8.3 DENSITY DETERMINATIONS

Density determinations were generally performed using the water immersion method. These determinations followed a formal, standard procedure. Depending on the time period, saprolite core could be coated with paraffin or plastic wrapped.

Density samples were collected on a 1 m interval, with core pieces typically 15 cm in length, to maintain a sample correlation with the assay intervals. Sampling was completed to ensure a representative dataset of all lithology types.

Density data were validated against lithological units, alteration types, and mineralization styles. Outlier values are reviewed and discarded if identified as erroneous. The density database is updated regularly and directly integrated into the block model.

8.4 ANALYTICAL AND TEST LABORATORIES

The laboratories listed in Table 8-1 were used during the deposit delineation and infill and regional exploration programs.

8.5 SAMPLE PREPARATION

8.5.1 GEOCHEMICAL SAMPLES

Samples were dried, crushed to ¼ inch, and pulverized to either -120 or -150 mesh.

8.5.2 CORE

Core sample preparation varied by laboratory. From 2002 onwards, the sample preparation procedures remained consistent between exploration and delineation core programs, and consisted of crushing to 95% <4 mm or 95% <3.35 mm, followed by pulverizing to 95% passing 0.105 mm or 95% passing 0.106 mm.

8.5.3 BLAST HOLE

Blast hole samples are crushed to >95% passing 3 mm size, and pulverized to >95% passing 0.105 mm.

8.6 ANALYSIS

A range of laboratories has supported sample preparation, primary analytical work, and check assays throughout the history of the Salobo Operations. These laboratories have changed over time as the project progressed from early exploration through feasibility and into ongoing operations, with increasing adoption of accredited facilities and more rigorous QA/QC standards. Table 8-1 summarizes the laboratories used, their periods of service, analytical roles, and accreditation status, providing context for the evolution and reliability of the Salobo assay database.

Table 8-1: Core Sample Preparation and Analytical Laboratories

Laboratory Name	Period Used	Function	Note	Independent
Docegeo, Belém, Parauapebas	1978–1987	Sample preparation and primary analytical laboratory	Unknown accreditations	No
SUTEC, Santa Luzia	1978–1983	Primary analytical laboratory	Unknown accreditations	No
CVRD pilot plant laboratory, Parauapebas	1986–1987	Primary analytical laboratory	Unknown accreditations	No
Lakefield Geosol, Belo Horizonte	1986	Check assay laboratory (for copper and gold)	Unknown accreditations	Yes
Mineração Morro Velho laboratory, MG	1993–1994, 1997	Sample preparation and primary analytical laboratory	Unknown accreditations	No
Nomos laboratory, Rio de Janeiro, RJ	1993	Check assay laboratory (for gold)	Unknown accreditations	Yes
Fazenda Brasileiro, BA	1993	Check assay laboratory	Unknown accreditations	No

Laboratory Name	Period Used	Function	Note	Independent
Lakefield Geosol Belo Horizonte, MG	2002–2003	Primary analytical laboratory	Routine analysis of copper, gold, and silver ISO 17025:1999 accredited	Yes
Acme, Vancouver, BC, Canada	2002–2003	Primary analytical laboratory	Routine analysis of molybdenum, uranium, fluorine, sulphur, and carbon. Unknown accreditation	Yes
Vale's Gerência de Mineralogia e Química (Gamik). laboratory, Belo Horizonte, MG	2002–2003	Check assay laboratory	Not accredited	No
Salobo Operations laboratory, PA	2012 to date	Sample preparation (exploration core samples), sample preparation and analytical laboratory (blast hole samples)	ISO 9001:2015 certified; obtained ISO 17025:2017 accreditations in 2023	No
ALS Geochemistry, Lima, Peru	2017 to Report date	Primary analytical laboratory	ISO 17025:2017 accredited	Yes
ALS Geochemistry, Belo Horizonte, MG	December 2018 to August 2021	Sample preparation	ISO 17025:2017 accredited	Yes
ALS Geochemistry, Parauapebas, PA	September 2021 to Report date	Sample preparation	ISO 17025:2017 accredited	Yes
SGS Geosol, Vespasiano, MG	March 2018 to Report date	Check assay laboratory	ISO 17025:2017 accredited	Yes
SGS Geosol, Parauapebas, PA	2022 to Report date	Sample preparation	ISO 17025:2017 accredited	Yes
SGS Geosol, Vespasiano, MG	2022 to Report date	Primary analytical laboratory	ISO 17025:2017 accredited	Yes
ALS Geochemistry, Lima, Peru	2022 to Report date	Check assay laboratory	ISO 17025:2017 accredited	Yes

8.6.1 GEOCHEMICAL SAMPLES

Stream sediment samples were analysed using inductively coupled plasma (ICP) or atomic absorption (AA) methods. Elements could include gold, arsenic, barium, beryllium, bismuth, calcium, cadmium, cobalt, chromium, copper, iron, potassium, lanthanum, lithium, magnesium, manganese, molybdenum, nickel and phosphorus.

Soil samples were analysed following acid digest, and reported using AA or fire assay (gold only). Elements could include silver, arsenic, cobalt, chromium, copper, iron, manganese, molybdenum, nickel, lead and zinc.

8.6.2 EXPLORATION DRILL CORE

From 1978–1987, copper was assayed on 0.5 g aliquots by multi-acid digestion and atomic absorption spectrometry (AAS). Iron, molybdenum, and silver were also determined using this method. Gold was assayed by aqua regia leaching, with solvent extraction (MIBX) and AAS determination.

From 1993–1997, copper was assayed using multi-acid digestion and AAS reading on 0.5 g aliquots (0.002% detection limit), and gold was determined using the fire-assay (FA) method with gravimetric finish on 100 g aliquots (0.05 g/t detection limit). In addition, samples were assayed for sulphur and carbon by LECO, and fluorine by alkaline fusion with sodium carbonate and potassium nitrate, followed by ion-selective electrode determination.

In the 2002–2003 campaigns, chemical analysis was by AAS for copper and silver (on a 0.5 g aliquots and multi-acid digestion), while gold was assayed by FA with AAS finish on 20 g aliquots.

From 2017 to the Report date, the copper analysis was reported using a four-acid digestion and a AAS reading (ALS method Cu-AA62 and SGS method Cu-AAS41B). Gold was assayed by FA on a 50 g aliquot, using a two-step digestion with nitric and hydrochloric acids and reading by atomic absorption (ALS method Au-AA24 and SGS method Au-FAA505). A multi- element suite (including main elements and traces, in addition to copper, silver, uranium and thorium) was determined after four-acid digest using inductively-coupled plasma (ICP) mass spectroscopy (MS) or atomic emission spectroscopy (AES) methods (ALS method ME-MS61 and SGS method ICM40B). Chlorine was analyzed by lithium borate fusion and a wavelength dispersive X-ray fluorescence spectroscopy finish (ALS method XRF20 and SGS method XRF75V or XRF73V). Fluorine was assayed by potassium hydroxide fusion and specific ion electrode finish (ALS method F-ELE81a and SGS method ISE03A).

8.6.3 BLAST HOLE

Analytical methods for blasthole samples are provided in Table 8-2.

Table 8-2: Salobo Operations Laboratory Blast Hole Sample Analytical Methods

Element and Unit	Aliquot (g)	Method
Cu (%)	0.25	ARD-AAS
Au (g/t)	50	FA-AAS
Ag (g/t)	10	MAD-AAS
Fe (%)	0.25	ARD-AAS
C (%)	0.25	LECO
S (%)	0.25	LECO
U (ppm)	1.0 / 10.0	MAD-ICP-AES or ICP-MS
F (ppm)	0.3	AF-ISE
Cl (ppm)	1.0	SAL-SNT
CuSol (%)	1.0	AcAL-AAS

Note: ARD: aqua-regia digestion; AAS: atomic absorption spectrometry; FA: fire assay; MAD: multi-acid digestion; AcAL: acetic acid leach; ICP-AES: inductively-coupled plasma atomic emission spectroscopy; ICP-MS: inductively-coupled plasma mass spectrometry; AF-ISE: boric-acid/sodium-carbonate fusion and ion-selective electrode determination; SAL-SNT: sulphuric acid leach and silver-nitrate titration; CuSol – acid soluble copper.

8.7 QUALITY ASSURANCE AND QUALITY CONTROL

Limited quality assurance and quality control (QA/QC) programs were conducted prior to 2002. Where such measures were used, they consisted of external laboratory checks on sample assays and the occasional insertion of standard reference material (standard) samples and coarse duplicates in the analytical stream.

A comprehensive re-assay program was completed in 2002–2003 to validate the historical (pre-2002) drilling database. Of the 75,577 samples collected prior to 2002, a total of 51,768 were successfully re-assayed. Following evaluation of this program, the remaining early samples that could not be re-assayed due to insufficient material were reviewed and deemed acceptable for use in mineral resource and mineral reserve estimation.

In the 2002–2003 drilling campaign, the QA/QC program consisted of blanks, standards, pulp duplicates and external assay checks. The reliability of the 2002–2003 copper, gold, and silver assays was additionally verified by a re-assaying program that included two matrix-matched in-house standard samples.

The current QA/QC program, in place since 2017, includes blanks (2.5% frequency), standards (2.5%), core duplicate samples (1%), coarse reject duplicates (2.5%), pulp duplicates (both at 2.5% frequency) and external assay checks (5%).

QA/QC results were monitored regularly either by third-party consultants retained by Vale Base Metals, or by Vale Base Metals and predecessor company staff. No material issues from the QA/QC programs were noted, and the data were considered acceptable to support mineral resource estimates.

A QA/QC routine is in place at the Report date, is performed by the logging geologists, and is checked by senior Vale Base Metals personnel. An annual QA/QC report is prepared that summarizes the QA/QC for drill programs that will be used in support of mineral resource and mineral reserve estimates.

8.8 DATABASE

From August 2010, drilling and mine information were uploaded to a GEOVIA GEMS SQL database. Drilling information for long and short-term are being uploaded in GDMS Fusion since 2017. Historical data are stored in Seequent Central files. Several steps are employed to validate data and ensure the integrity of the database, the majority of which are performed by software data-checking routines.

Daily backups are conducted, and updated copies of the databases are kept in a secure network system. Vale Base Metals' IT department maintains the hardware and software through external consultants. The IT department is responsible for the network, software, equipment installation, passwords, permissions and backups, but require permission from Vale Base Metals managers to implement any changes.

8.9 QUALIFIED PERSON'S OPINION ON SAMPLE PREPARATION, SECURITY, AND ANALYTICAL PROCEDURES

The sample preparation, analysis, quality control, and security procedures used changed over time to meet evolving industry practices, ranging from no QA/QC in earlier programs to the development of such programs later in the drill programs.

Vale Base Metals currently uses a system of "layered responsibility" to ensure that only appropriately verified data are used for estimation purposes (see discussion in Chapter 9.1).

The qualified person considers that sample preparation, analysis, quality control, and security procedures used are sufficient to provide sample results that reliably support estimation of mineral resources, mineral reserves and mine planning.

9 DATA VERIFICATION

9.1 INTERNAL DATA VERIFICATION

9.1.1 DATA VALIDATION

The Salobo Operations used several steps of data validation. Automated routines systematically check for errors such as overlapping intervals, inconsistent collar coordinates, and missing assays. Validation procedures are aligned with industry best practices, ensuring consistency between collar locations, downhole surveys, assay results, and geological logs.

All new assay data added to the database were monitored daily and validated monthly for accuracy and consistency by comparing the data transferred to the database against the assay certificates received from the primary laboratories.

Vale Base Metals staff also conducted regular logging, sampling, laboratory and database reviews. In addition to these internal checks Vale Base Metals contracted independent consultants to perform laboratory, database and mine study reviews. The process of active database quality control and internal and external audits generally resulted in high-quality data.

Routine QA/QC reports are prepared on the drill hole database in support of the mineral resource estimation process. In addition, Vale Base Metals Corporate MRMR group conducts reviews of the available QC data and the reports, as well as carries out periodic sample preparation and analytical laboratory reviews and audits.

9.1.2 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

Mineral resource and mineral reserve estimates follow a structured governance process defined in Vale Base Metals' Mineral Resource and Mineral Reserve Guidelines, based on a system of layered responsibility and QP sign-offs.

This layered responsibility system ensures that each operational level—mine, operations, and corporate—assumes accountability for the parts of the estimation process relevant to the level's role, with appropriate documentation, review, and approval by QPs.

Mine and operations QPs are responsible for preparing mineral resource, mineral reserve, and exploration target estimates and ensuring they comply with Vale Base Metals' internal guidelines. These estimates are then submitted to corporate QPs, who review, consolidate, and confirm compliance with internal standards, governance requirements, and public-disclosure rules.

Vale Base Metals' guidelines and standards for mineral resource and mineral reserve estimation and reporting are maintained and updated corporately. QPs at all levels must ensure that estimation inputs, QA/QC, classification, and supporting technical information follow these requirements.

An annual technical review of each operation is conducted by the internal Vale Base Metals Resource Management Group which evaluates the estimates, identifies risks, and records required mitigation actions.

9.1.3 STUDIES

Vale Base Metals performs several internal studies and reports in support of mineral resource and mineral reserve estimation. These include reconciliation studies, mineability and dilution evaluations, investigations of grade discrepancies between model assumptions and probe data, drill hole density evaluations, long-range plan reviews, and mining studies to meet internal financing criteria for project advancement.

9.1.4 PEER REVIEW BY SUBJECT MATTER EXPERTS

The Qualified Persons requested that information, conclusions, and recommendations presented in the body of this report be reviewed by internal or external experts retained by Vale Base Metals in each discipline area as a further level of data verification.

Subject matter experts were requested to cross-check numerical data, flag any data omissions or errors they identify, review the manner in which the data were summarized and reported in the technical report summary, check the interpretations arising from the data as presented in the report, and confirm that the Qualified Persons' opinions stated as required in certain Report chapters were supported by the data and by the company's future intentions and Salobo Operations planning.

9.2 EXTERNAL DATA VERIFICATION

Vale Base Metals and its predecessor companies have commissioned several audits and third-party reviews of block models, mineral resources and mineral reserves. The external audits are conducted by internationally recognized firms in accordance with internal policies.

9.3 DATA VERIFICATION BY QUALIFIED PERSON

As part of data verification, the Qualified Person has performed reviews of diamond drill activities, core logging data collection and chain of custody reports, QAQC, grade control, geological mapping and production reconciliation processes during site visits. The Qualified Person has also evaluated the geological and resource estimation practices and peer reviews memos, QAQC verification memos, currency of geological and structural support, diamond drill planning and budgeting and requirements for drill spacing for mineral classification and audits mineral resource changes, and reviewed the results of internal and external MRMR audits.

9.4 QUALIFIED PERSON'S OPINION ON DATA ADEQUACY

Data verification was conducted to the extent considered reasonable and appropriate by the QP for the purposes of this Report. Certain historical datasets, particularly those generated during early exploration programs, were not re-verified directly by the QP due to the age of the data, the unavailability of original physical materials, and reliance on prior internal and external audits and validation programs completed at the time the data were generated. In these instances, the QP relied on documented quality assurance and quality control procedures, historical re-assay and reconciliation programs, and the results of third-party reviews and audits previously commissioned by VBM and its predecessor companies. No material limitations were identified that would reasonably be expected to affect the suitability of the verified data for mineral resource or mineral reserve estimation, and any datasets not directly verified by the QP are considered not material to the conclusions presented in this Report.

The Qualified Person is of the opinion that data that have been verified upon upload to the database, and checked using applicable Vale Base Metals protocols, are acceptable for use in mineral resource and mineral reserve estimation.

10 MINERAL PROCESSING AND METALLURGICAL TESTING

10.1 INTRODUCTION

This chapter summarizes the metallurgical testwork, laboratory support, and recovery models that inform the process design and operational performance of the Salobo concentrator. Metallurgical programs completed from 1978 through recent geometallurgical campaigns provide the basis for comminution and flotation design criteria, recovery prediction equations, and deleterious-element controls applied in mine planning and production forecasting.

The chapter presents (i) the test laboratories involved, (ii) historical and recent metallurgical programs, including variability, HPGR, mixed-ore and coarse-particle flotation studies, (iii) the geometallurgical models used for short- and long-term recovery estimation, and (iv) the data underpinning concentrate quality forecasts.

The combined testwork and production reconciliation data are considered adequate to support mineral resource and mineral reserve estimation.

10.2 TEST LABORATORIES

Metallurgical testing was primarily conducted at laboratories operated by, or affiliated with, Vale Base Metals and its predecessor companies, and therefore these laboratories were not independent at the time the testwork was conducted.

Laboratories other than those indicated as departments within Vale Base Metals are independent of Vale Base Metals. There is no international standard of accreditation provided for metallurgical testing laboratories or metallurgical testing techniques.

Chemical analyses for routine metallurgical testing are carried out at Vale Base Metals in-house laboratory, which is certified under the Integrated Management System (ISO 9001 and ISO 14001) and accredited in accordance with ISO/IEC 17025.

10.3 METALLURGICAL TESTWORK

Five distinct phases of metallurgical testwork were completed in support of the current operations:

- CVRD from 1978–1981;
- CVRD and Anglo American from 1986–1987;
- Salobo Metais (Vale) from 1993–1998, including a pilot-plant campaign completed at the CVRD Research Centre (CRC);
- Locked-cycle flotation tests, flotation variability and grinding studies from 2003–2004;
- Trade-off study using high-pressure grinding rolls (HPGR) for tertiary crushing as an alternative to conventional semi-autogenous grinding (SAG), from 2005–2006.

Since those programs were completed, additional tests have been completed on mineralization to be mined in five-year production plan increments.

10.3.1 VARIABILITY TESTWORK

U.I. Minerals (Uimin) reviewed the 2003 testwork and consolidated plant trial and variability study results. The work indicated an average copper recovery of 90.7%, and a mass recovery of 1.82%. A total of 177 samples were analyzed with grades above 0.4% Cu. Results showed 87.6% of the samples with a copper recovery >90%, 10.7% of samples had a recovery between 85–90%, and 1.7% of samples had recoveries < 85% which were considered anomolous.

Rougher flotation tests were conducted on 251 drill core samples during a major 2004 variability test program on XMT (47%) and BDX (41%) lithology types. There was a direct correlation between the copper recovery and mass recovery for each lithology. The average gold recovery for the deposit was 67.4% with a standard deviation of 14.4%. Approximately 64% of samples with initial gold grades >0.4 g/t had gold recoveries up to 70%. A total of 59 locked cycle tests used 30 BDX samples and 16 XMT samples. A two-reagent system (A350, potassium amyl xanthate; and A3477, sodium di-isobutyl dithiophosphate) was adopted, which resulted in improved metallurgical recoveries and more stable flotation conditions.

Based on the consolidated results, equations predicting copper and gold recoveries were developed by Uimin for use in mine planning and production forecasts:

- Equation 1: Cu (%) = -0.023 / [%Cu in feed] + 0.9023;
- Equation 2: Rec Au (%) = 0.0256 * [g/t Au in feed] + 0.6485.

Unimin noted that Equation 1 was applicable mostly in the 0.6–1.5% Cu range.

These were the equations used in the Salobo Operations justification studies. The Geology and Mine Operations departments are currently using new equations to predict plant recoveries, based on the most recent studies developed by the geometallurgy teams, as will be presented in Chapter10.3.

10.3.2 HIGH PRESSURE GRIND ROLL STUDIES

The 2004 feasibility study incorporated a conventional primary crushing circuit, a standard semi-autogenous grind (SAG) mill/ball mill grinding circuit and a conventional copper flotation circuit. However, the presence of magnetite and significant variations in hardness and density of the mineralized lithologies led to the evaluation of an alternative. An alternative comminution circuit was evaluated, including primary crushing, secondary cone crushing and tertiary high-pressure grind roll (HPGR) crushing followed by conventional ball milling.

Two HPGR evaluations were completed, in 2005 and 2006. General observations from this testwork program were that there was a decline in specific throughput as the roll speed and the feed moisture content were increased.

Abrasion testing and specific wear rates on all samples indicate that Salobo ore had low abrasion characteristics.

Grindability tests were conducted on samples of HPGR product at <6 mm and conventionally crushed material at <6 mm of the pilot ore sample from the 2005 program. The results indicated a very similar Bond ball mill work index for both samples (19.4 kWh/t and 19.2 kWh/t, respectively), indicating no micro-fracturing of the rock and therefore no grindability advantage for HPGR. Based on the results, Vale decided in 2006 to implement the HPGR option based on the technical and economic benefits compared to conventional SAG.

10.3.3 MIXED ORE ZONE COPPER RECOVERY TESTWORK

A copper recovery study for the mixed ore stockpiled at the mine was commissioned in 2014. Improved metallurgical response resulted from increased addition rates of the collectors used in the rougher flotation, together with the inclusion of sodium silicate used as a dispersant (e.g., viscosity modifier).

A second study evaluated transition ore, to determine the amount of this material that could be added to fresh bedrock material without impacting the overall copper recovery in the plant. Results showed that a mixed ore component of up to 30% could be tolerated with limited impact on the results expected with fresh material only.

The equation underlying the recovery projection model is expressed as shown in Equation 3:

- Equation 3: Rec Cu = 88.5 * (1 – exp(-3.5 * [Cu in feed])),

where [Cu in feed] is the copper feed grade and the resulting projected recovery is based on a standardized concentrate grade target of 37.5% Cu.

The testwork program completed included modified reagent schemes, relative to the plant operations (changing the xanthate used from potassium amyl xanthate (PAX) to sodium isopropyl xanthate

(SIPX), removing the sodium sulphide as modifier), as well as testing the addition of a desliming stage, with a cyclone, of the mixed stockpile material in an attempt to remove the most oxidized component and reduce reagent consumptions.

This mixed material was more representative of the material processed during the early stages of mine development; however, it no longer represents a significant contribution to the plant feed, and there are currently no initiatives involving the use of desliming or new reagents considering mixed material treatment.

10.3.4 COARSE PARTICLE FLOTATION STUDIES

A multi-phase metallurgical test program was completed to evaluate the application of CPF using Eriez HydroFloat® technology for Salobo ore. The program aimed to :

- confirm the technical viability and reproducibility of CPF,
- assess alternative circuit configurations, and
- reduce uncertainty associated with ore variability and mine-plan blends.

Two flowsheet concepts were examined: Tailings Scavenging (TS) and Coarse Gangue Rejection (CGR).

In Phase 1, Eriez conducted initial laboratory tests, followed by independent confirmation by Vale Base Metals at Sheridan Park using HydroFloat® units. Both TS and CGR concepts were evaluated. For CGR, classification of the mill product allowed the coarse fraction to be treated in the HydroFloat, producing a concentrate that, after regrinding and conventional flotation, achieved approximately 39–40% Cu at ~91% Cu recovery, with ~72% Au recovery. The CGR configuration rejected roughly 30–35% of the mass as coarse, low-grade silicate sand (~0.03–0.04% Cu), effectively upgrading the feed to the rougher circuit and demonstrating strong gangue rejection. The TS configuration recovered coarse liberated copper from rougher tailings and produced global recoveries of ~88–89% at coarse grind sizes, but did not reduce grinding load or coarsen the final tailings stream. Vale Base Metals's independent replication confirmed the reproducibility of both configurations.

Phase 2 consisted of a structured trade-off study comparing TS and CGR on the basis of metallurgical response, constructability, impacts on existing operations, project value, and implementation risk. CGR was selected as the preferred configuration due to its stronger overall balance of metallurgical benefit and project-execution feasibility, rather than metallurgical performance alone.

Phase 3 involved a variability test program to assess the robustness of the CGR configuration across key Salobo ore types and mine-plan blends. The sampling program included five representative lithological samples, two composite blends aligned with the 2029 and 2031 mine plans, and one additional sample representing partially oxidized material. Approximately 1.8 tonnes of lithological material and 0.2 tonnes of oxidized material were collected.

At the time of reporting, testwork is in the data-processing stage. Preliminary results indicate that the evaluated samples remain amenable to CPF within the CGR configuration; final conclusions will be established upon completion of the full data evaluation.

10.3.5 GEOMETALLURGICAL PROGRAM

The long-term geometallurgical model for the Salobo deposit was updated in 2024. For this update, all samples from productive phases that were included in the five years mine plan, were incorporated into the model. In addition, comminution tests performed on 18 samples and flotation tests conducted on 25 samples by the Vale laboratory of the Mineral Development Center (CDM), located in Santa Luzia, Minas Gerais were included in the update.

A total of 18 samples were subjected to a comprehensive comminution program including the following tests: Bond ball mill work index (Bwi), simplified work index (SWi), Bond abrasion index (Ai), simplified drop weight test (SDWT), and particle bed compression (PBC). Determinations of specific gravity, chemical assays and mineralogical characterizations were also performed to support interpretation and modeling.

The 2023 flotation program comprised 25 representative samples, covering a wide range of grades, from 0.28–1.41% Cu and from 0.04–0.98 ppm Au. Locked-cycle tests following the standard Salobo flowsheet, resulted in an average copper recovery of 89.7%, average copper concentrate grade of 41.0%, and average mass recovery of 1.5%. The final concentrates showed average values of 997 ppm Cl and 1,132 ppm F, both primarily associated with biotite. The average Thorium content in the concentrates was 21 ppm and U was 87 ppm, with enrichment ratios of 1.14 and 3.86, respectively. For the development of the predictive models, all samples from the 2023 variability campaign were included, together with samples from previous campaigns used in the 2023–2028 production plan.

Based on the 48 consolidated locked cycle flotation and 40 comminution test results, mathematical predictive models were developed to estimate key metallurgical parameters. These models were interpreted considering geometallurgical drivers such as lithology, spatial domain, mineralogy, and chemical composition recorded in the geological database. The final predictive models were integrated into the long-term block model, and provided improved consistency in metallurgical performance forecasting, and supported optimized planning and operational decision-making.

Two comminution domains were identified. The BDX, DGRX, and HD units showed a higher energy consumption, while the XMT unit showed lower consumption. These results are consistent with the trends observed in the 2021 testwork campaigns, and primarily reflect the ball mill energy demand.

Although mean copper recoveries did not differ significantly among lithotypes, a clear trend was observed. Higher recoveries were noted in the ML and HD units (>90%), in contrast with the schist units, which showed recoveries below 90%. The lower recoveries are mainly attributed to insufficient sulphide liberation. The BDX unit had the highest chlorine contents (mean 1,074 ppm and median 843 ppm) and carbon contents (mean and median ~2.7%). Fluorine levels were highest in the BDX (mean 1,339 ppm) and XMT units (mean 1,412 ppm), while the highest uranium contents were found in the ML and HD units.

10.4 RECOVERY ESTIMATES

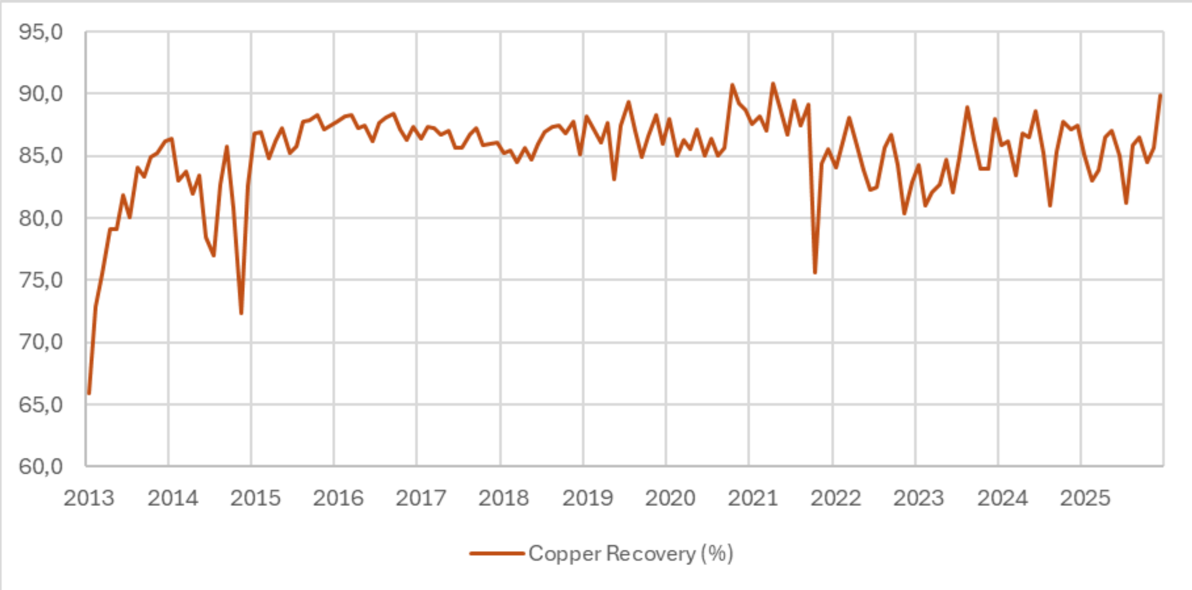
Figure 10-1 and Figure 10-2 show the recovery from the plant from 2013–December 2025 for copper and gold, respectively.

Pre-production testwork, especially the large variability testwork program of 2003–2004, provided indications that the copper metallurgical response was variable, not only in terms of feed grade but also by lithology. The adoption of a single equation to predict recovery, instead of developing lithology-specific equations aligned with the relative proportions of plant feed defined in the mine plan, represents a simplification.

Metallurgical recovery forecasts are separated into short-term (less than 3 years) and long-term (greater than 3 years) models because they are derived from different datasets and serve distinct planning objectives. The short-term recovery equations are based on continuous plant performance reconciliation, using recent operational data that capture current ore characteristics, operating conditions, and metallurgical responses. In contrast, the long-term recovery equations are developed from metallurgical variability testwork performed on representative samples across the deposit, supported by historical operating trends and geometallurgical domain averages. This approach ensures that short-range forecasting reflects actual plant behavior, while long-range planning relies on broader domain-level metallurgical responses that are appropriate for Life-of-Mine evaluation. The resulting short-term and long-term assumptions are presented in Table 10-1 and Table 10-2.

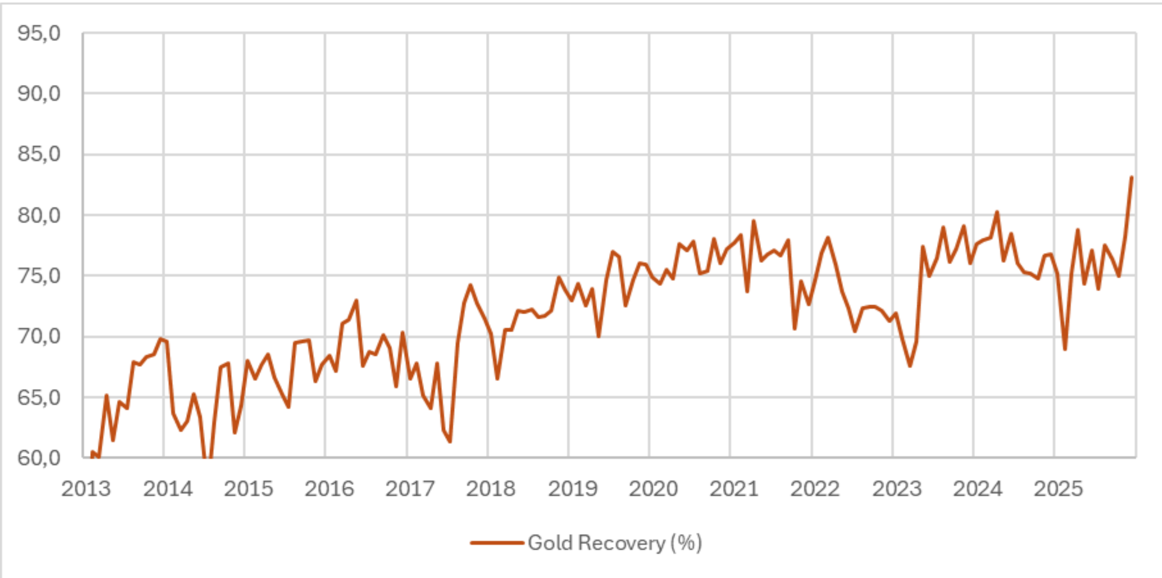
The average recoveries over the Life-of-Mine are 86.2% copper and 68.4% gold.

Figure 10-1: Actual Monthly Plant Copper Recovery



Note: Figure prepared by Vale, 2025. Data current as at 31 December 2025.

Figure 10-2: Actual Monthly Plant Gold Recovery



Note: Figure prepared by Vale, 2025. Data current as at 31 December 2025.

Table 10-1: Processing Recovery Assumptions (short-term)

Metal	Total Recovery to All Concentrates (%)
Copper	((-4.5679*(1/A) + 92.53)*(1-%F5)) + (%F5*85.1)
Gold	Salobo I + II: 17.568*LN(B+88.944) Salobo III: 17.568*LN(B)+90.965

Notes: Factors A = Feed Cu grade (%), %F5: Proportion of Phase 5 Ore expected to feed the plant during the period, and B = Feed Au grade (g/t).

Table 10-2: Processing Recovery Assumptions (long-term)

Metal	Total Recovery to All Concentrates (%)
Copper	(-2.5362*(1/%A)) + 90.674
Gold	(1.0173*%B) – 20.357

Notes: Factors A = Feed Cu grade (%), and B = Cu recovery (%). For phase 5 of the Salobo Mine the estimated recovery is 85.7%.

10.5 METALLURGICAL VARIABILITY

Tests were performed on samples considered to be representative of the mineralization that will be treated in the plant for the duration of the LOM plan.

Some variability in the metallurgical results can be expected as the mixture of lithologies found in the plant feed changes. Over monthly periods, the resulting blend is more likely to approach the mineral reserves profile and thus mitigate the variability that may be detected on a daily basis, relative to short-term projections.

10.6 DELETERIOUS ELEMENTS

There are four deleterious elements typical to Salobo copper concentrate, namely fluorine, chlorine, uranium and carbon. Of these, fluorine is deemed the most critical.

Treatment terms and deleterious elements limits vary by smelter and customer. However, for Vale Base Metals' major customers, contracts have been secured with smelters capable of processing copper concentrate from the Salobo Mine with an average fluorine content of approximately 2,000 ppm and a maximum allowable limit of 4,000 ppm, with penalty starting at 300 ppm. These smelters also specify a maximum acceptable chlorine content of 1,500 ppm, with penalties applied above 300 ppm.

Carbon is also an element of concern in the concentrate with specification limit of 4.5%.

Uranium specification limit ranged from 60–82 ppm depending on the end-user client. Operational procedures have been adopted to increase the accuracy forecast of the uranium grade in the long-term and short-term planning models to enable blending of plant feed at the mine.

Since concentrate lots can be segregated at the Parauapebas rail transfer storage house and at the port of Itaqui, blending of out-of-specification concentrate can be undertaken.

The determinations of the deleterious and payable element concentrations in concentrates are undertaken at the Salobo Operations mine laboratory.

10.7 QUALIFIED PERSON'S OPINION ON DATA ADEQUACY

Industry-standard studies were performed as part of process development and initial mill design. Subsequent production experience and focused investigations have guided mill alterations and process changes. There are 13 years of production data to support the recovery assumptions and provide reasonable data on the deleterious element concentrations.

Testwork programs continue to be performed to support current operations and potential improvements. From time to time, this may lead to requirements to adjust cut-off grades, modify the process flowsheet, or change reagent additions and plant parameters to meet concentrate quality, production, and economic targets.

The plant will produce variations in recovery due to day-to-day changes in ore type or combinations of ore type being processed. These variations are expected to trend to the forecast recovery value for monthly or longer reporting periods.

Based on these checks, the metallurgical test work and reconciliation and production data support the estimation of mineral resources and mineral reserves.

11 MINERAL RESOURCE ESTIMATES

11.1 INTRODUCTION

Mineral resources were estimated for the Salobo deposit.

Vale Base Metals has a set of protocols, internal controls, and guidelines aligned with industry best practices to support the estimation process. These include:

- comprehensive lithological and mineralization domain characterization;
- selection of all representative samples inside the domain(s);
- compositing of drill hole information on a consistent support size (length, density, recovery), validation through statistics on lengths and variables before and after compositing;
- comprehensive understanding of the statistical characters of the variables; in each estimation domain and at the contacts between domains;
- characterization of the spatial continuity of each variable to be modelled (variograms/correlograms);
- understanding of the influence of variables with highly skewed distributions and selection of an appropriate handling strategy (restricted neighborhood);
- selection of an appropriate selective mining unit (SMU) size for the geometry of mineralization, spatial distribution of drill hole and sample data, potential mining method and production rates under consideration;
- selection of an appropriate modelling technique and definition of proper parameters and options to be used (e.g., estimation technique, interpolation or kriging plan, search strategy, variogram models to be used, post-processing methods, in particular for indicator estimation);
- validation of the estimates (visual inspection, checks for global and local bias, confirmation of the kriging plan, and a check on the degree of grade smoothing resulting from the interpolation); and
- resource classification.

Estimation was performed by Vale Base Metals staff. All mineralogical information, exploration drill holes and background information were provided to the estimators by the geological staff at the mines or by exploration staff. Commercially-available software Leapfrog and Isatis were used for estimation.

The block size was based on the spacing of the core drill holes and the conceptual open pit mining method selected, and was 30 m x 30 m x 15 m. A sub-block model of 15 m x 15 m x 15 m was used in estimation.

11.2 EXPLORATORY DATA ANALYSIS

Exploratory data analysis was completed to assess data quality, distributional characteristics, and relationships among variables prior to resource estimation. Reviews included the original sample values, composite values, and declustered composite values.

For copper, the coefficients of variation (CVs) across the main ore domains (low- and high-grade domains) were generally below 1.5, indicating moderate variability and relatively stable grade distributions suitable for geostatistical modeling.

In contrast, gold exhibited higher variability, with CVs above 2 for the low-grade domain and approximately 1.4 for the high-grade domain. These values are typical of gold mineralization and confirm the need for appropriate capping strategies and restricted search neighborhoods to manage grade volatility.

Graphical methods, including histograms, probability plots, and log–log cumulative frequency plots, were used to confirm distributional characteristics and to support the definition of capping thresholds. Contact analyses were performed between lithological and mineralization domains to validate boundary conditions. Spatial continuity was preliminarily assessed through directional variogram and correlograms.

11.3 GEOLOGICAL MODELS

A review of the drill holes and captured samples within the wireframes was completed to identify any drill holes with questionable data such as poor selection of the drill hole orientation, inconsistent geological interpretations, poorly constrained drill trajectories, poor logging and analytical methodologies, and lost core intervals.

Wireframes were verified to ensure there were no modelling construct issues such as merge, boundary or crossover strings.

The lithological and mineralization models were produced by Vale Base Metals geologists using information on the deposit geological features, including structure, hydrothermal alteration minerals, lithologies and mineralization.

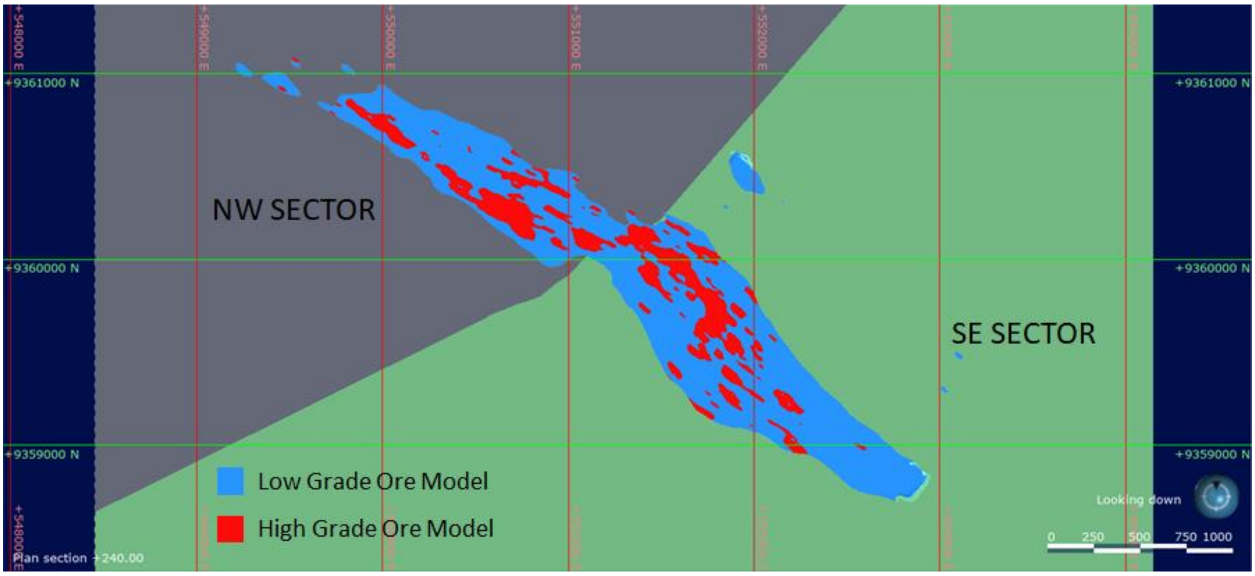
Two grade shells were constructed using cut-offs of 0.2% (low-grade) and 0.6% Cu (high-grade), respectively, based on 2 m composites (Figure 11-1). The deposit was divided in a northwest and a southeast sector for spatial analysis evaluation (Figure 11-1). This subdivision reflects changes in deformation style, hydrothermal alteration intensity, and dip orientation. A diabase dyke striking approximately N70°E served as the geological boundary between the sectors. Polygonal solids were created from level-plan views to delineate the mineralized zones.

For estimation purposes, domains were defined by combining grade shells with sector subdivisions and weathering profiles (oxide, transition, and sulphide; Table 11-1).

Triangulated solid models were created for each of the waste rock types by implicit modelling using generalized geological sections and level plans as the interpretation basis. These waste lithological wireframes were used to estimate density values across the whole block-model. A partial (percent) block model was created in Leapfrog Geo/Edge, with blocks assigned percent volumes derived from the domain wireframes.

Soft boundaries were used between the weathering domains for low-grade and high-grade during the estimation of all variables. Hard boundaries were imposed between low-grade and high-grade domains for copper, gold, silver, sulphur, and density, where sharp grade contrasts were observed. For uranium, fluorine, chlorine, and carbon, soft boundaries were maintained between low- and high-grade domains due to weak correlation across contacts. At the waste–ore contacts, hard boundaries were applied for all variables to preserve geological realism and prevent grade smearing into barren rock.

Figure 11-1: Schematic Showing Estimation Sectors



Note: Figure prepared by Vale, 2021. The blue wireframe is the low grade domain (>0.2% Cu), the red is the high grade domain (>0.6% Cu).

Table 11-1: Domain Codes

Sector	Oxide		Sulphide	
	Description	Code	Description	Domain
Southeast	Low-grade saprolite	1101	Low-grade fresh rock	1103
	Low-grade semi-weathered	1102		
	High-grade saprolite	1201	High-grade fresh rock	1203
	High-grade semi-weathered	1202		
Northwest	Low-grade saprolite	2101	Low-grade fresh rock	2103
	Low-grade semi-weathered	2102		
	High-grade saprolite	2201	High-grade fresh rock	2203
	High-grade semi-weathered	2202		

11.4 DENSITY ASSIGNMENT

Specific gravity (SG) values were assigned according to lithology for the blocks outside of the low- and high-grade domains. The average value for each lithology was based on the mean of the specific gravity measurements for each corresponding lithology.

Since density is positively correlated with copper grade at Salobo, particularly in the high-grade domain, where mineralized magnetic schists yield higher average SG, the compositing process is weighted by density.

Triangulated waste rock wireframes were also used to assign average density values to barren units.

11.5 GRADE CAPPING/OUTLIER RESTRICTIONS

Outlier analysis of the original assays included a statistical review of the grade populations and a visual review of the location of outlier high-grade assays. A two-phase approach to restrictions was used. Grades were capped prior to compositing, with copper grades capped at 11.5% Cu, and gold grades at 15 g/t Au, for both the low-grade and high-grade domains. Restrictions on the area of influence of an outlier assay were also imposed during estimation, with a 10 m window used for the three kriging passes, based on 1.6% Cu and 1.6 g/t Au capping values.

11.6 COMPOSITES

Historically, sample intervals were close to 2.0 m and honored geological contacts, faults, and visible changes in mineralization. Since 2017, Vale Base Metals has standardized the compositing process by breaking intervals at the boundaries of low-grade and high-grade domains. The selected composite length of 2 m reflects both the natural sampling strategy and the significant proportion of 2 m assays in the database. Samples < 0.5 m in length were discarded for resource estimation purposes.

11.7 VARIOGRAPHY

Experimental grade correlograms were modelled from the composited drill hole data for copper, gold, and specific gravity for the low- and high-grade domains and by sector. Base variograms were subsequently applied with dynamic anisotropy, allowing the rotation of search orientations to vary according to the local strike defined by the structural trend.

The nugget effect was obtained using “down hole” correlograms. Following this, experimental directional correlograms were constructed and modeled for copper, gold, and densityand for other supporting variables (sulphur, silver, uranium, carbon, chlorine, and fluorine).

11.8 ESTIMATION METHODS

Block grades and density were estimated using ordinary kriging.

Estimation was conducted for all blocks containing mineralization percentages greater than zero, as defined by the geological and grade shell domains. For copper, gold, silver, sulphur, and density, estimation was completed in separate low-grade and high-grade domains, which were later combined into final variables based on the proportion of low-grade and high-grade within each block. For other variables estimated directly in the combined low-grade and high-grade domains, no merging was required.

Blocks were estimated during three successive passes (Table 11-2). Blocks were assigned estimates from the earliest pass in which they were estimated, ensuring a hierarchical priority in kriging results. Block estimation was completed on a 15 m x 15 m x 15 m block model with discretization set to 5 x 5 x 5 discretization points. The resulting block estimates were re-blocked to 30 m x 30 m x 15 m blocks.

Density was estimated within mineralized domains, while values for waste rock were extended throughout the model below topography based on average values by lithology and weathering. This hybrid approach (estimated inside ore; calculated outside ore) ensured accurate representation of both mineralized and barren rock.

Contact blocks between ore and waste were handled with a dilution procedure. For copper and gold specifically, grades in these boundary blocks were weighted using the proportion of waste within the block, applying average grades of 0.06% Cu and 0.03 g/t Au for the waste component. Density in contact blocks was similarly weighted by the ore/waste proportions, ensuring consistency in metal balance.

After estimation, classification variables were constructed to support mine planning and resource reporting, as follows:

- Saprolite: saprolite (SAP) > 0% or partially weathered rock (RSI) > 30%;
- Mixed ore: partially weathered rock (RSI) ≤ 30%;
- Fresh rock ore: fresh rock (RFR) = 100%.

For operational sequencing, both fresh rock ore and mixed ore are considered, although mixed ore is restricted to a maximum of 10% of the monthly plant feed, more conservative than limit obtained on test work.

Table 11-2: Estimation Search Parameters

Search Pass	U (x) (m)	V (y) (m)	W (z) (m)	Minimum Number Of Samples	Optimum Samples	Octant Search	Maximum Consecutive Empty Sector
1	50	60	30	12	16	Yes	2
2	110	140	55	8	16	Yes	3
3	800	1000	400	6	12	Yes	—

11.9 VALIDATION

Validation steps included:

- Visual validation: consisted of inspection of composite grades and block grades on vertical sections and plan views. The block model grades generally honoured the composite data well and grade extrapolation was controlled where sufficient data existed;
- Global bias checks: comparing the average grades (with no cutoff) with those obtained from cell declustered composites and nearest-neighbour (NN) model estimates. Results were considered acceptable;
- Swath plots: grade profiles were generally consistent with the global bias check results with reasonable agreement between the OK and declustered composite profiles where there were data, and with the OK profiles generally lower than the NN profiles. The swath plots indicated that no unexpected local bias was introduced in the block grade estimate;
- Grade–tonnage curves: theoretical grade-tonnage curves and QQ-plots were generated to evaluate smoothing and the impact of change-of-support models. Comparisons of OK estimates against NN models and discrete Gaussian models demonstrated that the degree of smoothing in the estimated model was consistent with expectations and did not materially affect metal reporting.

Validation also included reconciliation between the 2024 and 2025 models.

The mineral resource estimate was subject to peer review by a review committee consisting of Salobo staff and corporate technical teams.

11.10 CONFIDENCE CLASSIFICATION OF MINERAL RESOURCE ESTIMATES

11.10.1 MINERAL RESOURCE CONFIDENCE CLASSIFICATION

The mineral resource confidence categories were initially assigned based on a combination of factors, including geological understanding and confidence, drill hole support/drill hole spacing, grade estimation confidence relative to planned production rates, and identified risk factors such as metallurgy.

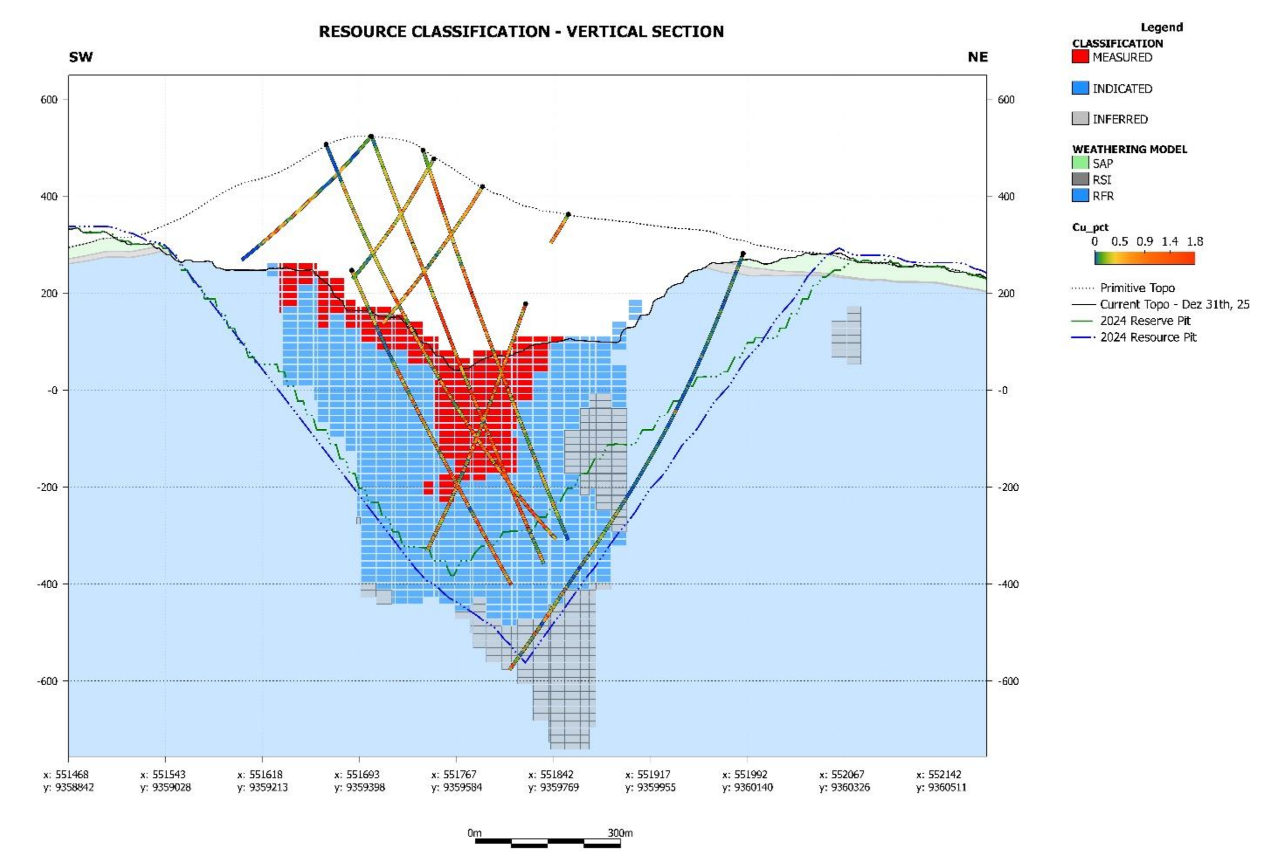
The initial assignments were reviewed to assess the impacts of factors such as metallurgical recoveries, geomechanical studies, mine design work, and representative mineability and recovery analysis.

An example of the resulting confidence classifications is provided in Figure 11-2.

11.10.2 UNCERTAINTIES CONSIDERED DURING CONFIDENCE CLASSIFICATION

Uncertainties regarding sampling and drilling methods, data processing and handling, geological modelling, and estimation were incorporated into the classifications assigned. The areas with the most uncertainty were classified as inferred, and the areas with fewest uncertainties were classified as measured.

Figure 11-2: Example Cross-Section Showing Confidence Classification



Note: Figure prepared by Vale, 2025.

11.11 REASONABLE PROSPECTS OF ECONOMIC EXTRACTION

11.11.1 INPUT ASSUMPTIONS

An initial assessment was undertaken to assess likely infrastructure, mining, and process plant requirements; mining methods; process recoveries and throughputs; environmental, permitting and social considerations relating to the mining and processing methods; waste disposal; and technical and economic considerations in support of an assessment of reasonable prospects of economic extraction. All material is assumed to be blended at the Salobo process plant, and milling throughput rates will depend on the blending strategy in place at the mill at the time the material is processed.

A conceptual pit shell was generated to demonstrate reasonable prospects for economic extraction and to constrain the mineral resource estimate. This pit shell represents the optimized three-dimensional envelope within which the value of the mineralized blocks exceeds the cost of mining and processing them, considering geotechnical wall constraints and economic planning parameters. The shell was produced using the pseudoflow optimization algorithm in Deswik.GO under the long-term assumptions for metal prices, recoveries, operating costs, and pit slopes.

The pseudoflow algorithm used in Deswik.GO is benchmarked against the industry-standard Lerchs–Grossmann method and provides an equivalent optimization of the open-pit limit, producing pit shells consistent with LG solutions while offering improved computational efficiency.

The key assumptions used to derive the constraining pit shell are provided in Table 11-3.

Table 11-3: Pit Shell Input Parameters

Parameter	Unit	Value
Copper sale price	$US/tonne	10,000
Gold sale price	$US/oz	2,300
Exchange rate	R$/$US	5.30
Mining method	—	Open pit
Cut-off	%CuEq.	0.248
Mineability	%	100
Mine production rate – ore	M tonnes/year	55
Mine production rate – waste	M tonnes/year	70
Mine full operating cost	$/tonnes mined	5.64
Mine sustaining capital cost	$/tonne mined	0.96
Overall processing cost	$/tonne ore	12.34
Site G&A	US$/t feed	2.40
Overall processing Cu recovery	%	(-2.5362*(1/Cu)) + 90.674
Overall processing Au recovery	%	(1.0173*RecCu) - 20.357
Selling cost	US$/lb	0.534

Notes: Royalties and TC/RC are included in the selling costs. Pit optimizations were prepared in the beginning of 2025 and is based on certain foreign exchange and commodity price assumptions. As at 31 December 2025, the assumptions used for pit optimization continue to provide a reasonable basis for establishing the reasonable prospects of economic extraction for mineral resources.

11.11.2 COMMODITY PRICE

Commodity pricing forecasts used for determination of RPEE are based on the assumptions from the year the evaluation was completed using a consensus approach based on long-term analyst and bank forecasts, supplemented with research by Vale Base Metals internal specialists. These prices provide a reasonable basis for establishing the prospects of economic extraction for mineral resources.

11.11.3 CUT-OFF

The break-even cut-off grade calculation takes into account metal selling price, refining, market and/or sales cost, mining cost, processing cost, metal content or grade, plant (flotation when applicable) recovery and metallurgical recovery as inputs. Once the pit limit is defined, a mining block that is capable of covering the processing and refining, marketing, and/or sales costs is assumed to be sent to the processing streams; otherwise, it is classified as waste and sent to the WRSFs.

The copper equivalent (CuEq) grade is calculated using the formula:

$$CuEq\% = Cu\% + \left(\frac{Au\ (g/t) \times k}{100}\right)$$

where "k" represents the equivalence between gold and copper net values, including flotation recoveries percentage and smelter returns percentage.

The mineral resource estimate is reported above a 0.248% CuEq cut-off.

11.11.4 QUALIFIED PERSON STATEMENT

The mineral resource estimates are performed for deposits that are in a well-documented geological setting; the mine has 13 years of active open pit mining operations; Vale Base Metals is very familiar with the economic parameters required for successful operations in the area; and Vale has a long history of being able to obtain and maintain permits, social licence and meet environmental standards. There is sufficient time in the 28-year timeframe considered for the commodity price forecast for Vale Base Metals to address any issues that may arise, or perform appropriate additional drilling, testwork and engineering studies to mitigate identified issues with the estimates.

11.12 MINERAL RESOURCE ESTIMATE

11.12.1 MINERAL RESOURCE STATEMENT

Mineral resources are reported as at 31 December 2025, using the mineral resource definitions set out in S-K 1300, and are reported exclusive of those mineral resources converted to mineral reserves. The reference point for the estimate is in situ.

Mineral resources are presented both on a 100% basis, based on Vale Base Metals' view, and on a 90% basis, considering only the ownership attributable to Vale, the registrant.

The measured and indicated mineral resource estimates are provided in Table 11-4. The inferred mineral resource estimates are included in Table 11-5.

The Qualified Person for the estimate is Mr. Henrique Vigario, MAusIMM, CBRR, a Vale Base Metals employee.

Table 11-4: Salobo Operations - Measured and Indicated Mineral Resource Statement

Operations/Deposit	Category	Ownership	Tonnage (Mt)	Grade		Metal	
				Cu (%)	Au (g/t)	Cu (kt)	Au (koz)
Salobo Vale Base Metals	Measured		11.6	0.48	0.25	56	91
	Indicated		613.3	0.45	0.22	2,740	4,349
	Total Measured + Indicated	**100%**	**624.8**	**0.45**	**0.22**	**2,796**	**4,441**
Vale S.A. Equity Interest							
Salobo Vale S.A.[7]	Measured		10.4	0.48	0.25	50	82
	Indicated		551.9	0.45	0.22	2,466	3,914
	Total Measured + Indicated	**90%**	**562.3**	**0.45**	**0.22**	**2,516**	**3,997**

Table 11-5: Salobo Operations - Inferred Mineral Resource Statement

Operations/Deposit	Category	Ownership	Tonnage (Mt)	Grade		Metal	
				Cu (%)	Au (g/t)	Cu (kt)	Au (koz)
Salobo Vale Base Metals	Inferred	100%	197.7	0.6	0.3	1,080	1,970
Vale S.A. Equity Interest							
Salobo Vale S.A[7].	Inferred	90%	177.9	0.6	0.3	972	1,774

Notes to accompany mineral resources tables:

1. Mineral resources are reported using the mineral resource definitions set out in S-K 1300. The reference point for the mineral resource estimate is in situ. The estimate is current as at 31 December 2025. The Qualified Person for the estimate is Henrique Vigario, MAusIMM, CBRR, a Vale Base Metals employee.

2. Mineral resources are reported exclusive of those mineral resources converted to mineral reserves. Mineral resources that are not mineral reserves do not have demonstrated economic viability.
3. Mineral resources are reported on a 100% basis. The Salobo Operations are conducted by Salobo Metais SA, which holds the mineral rights. Salobo Metais SA is a wholly-owned company of Vale Base Metals Limited, which is a majority-owned subsidiary of Vale SA, with a 90% ownership, in addition to the 10% ownership of Manara Minerals Jersey Limited.
4. The estimate uses the following key input parameters: open pit mining methods; copper price of US$10,000/t; gold price of US$2,300/oz; exchange rate R$/$US of 5.30; mine operating costs of US$5.64/t mined; mine sustaining capital costs of US$0.96/t mined; process costs of US$12.34/t processed; site general and administrative costs of US$2.40/t processed; selling cost of US$0.534/lb Cu; variable metallurgical recoveries for copper based on the equation (-2.5362*(1/Cu))+90.674) and for gold based on the equation (1.0173*RecCu)-20.357) that result in average LOM metallurgical recoveries of 86.2% for copper and 68.4% for gold and pit slope angles that range from 27–61º.
5. Mineral resources are reported above a cut-off of 0.248% copper equivalent (CuEq). Copper-equivalent grade (CuEq) is calculated as: (CuEq)_%=(Cu)_%+(Au)_((g/t))*k, where k represents the economic equivalence between gold and copper, including flotation recoveries and smelter returns.
6. Numbers have been rounded.
7. Salobo mineral resource, reflecting Vale's 90% ownership interest, the registrant, as required by item 1303(B)(3)(iii) of Regulation S-K.

11.12.2 UNCERTAINTIES (FACTORS) THAT MAY AFFECT THE MINERAL RESOURCE ESTIMATE

Areas of uncertainty that may materially impact the mineral resource estimates include:

- Changes to long-term metal price and exchange rate assumptions;
- Changes in local interpretations of mineralization geometry such as pinch and swell morphology, extent of brecciation, presence of unrecognized mineralization off-shoots; faults, dykes and other structures; and continuity of mineralized zones;
- Changes to geological and grade shape, and geological and grade continuity assumptions;
- Changes variography and search ellipse ranges that were interpreted based on limited drill data, when closer-spaced drilling becomes available;
- Changes to metallurgical recovery assumptions;
- Changes to the input assumptions used to derive the potentially-mineable shapes used to constrain the estimates;
- Changes to the forecast dilution and mining recovery assumptions;
- Changes to the cut-off values applied to the estimates;
- Variations in geotechnical (including seismicity), hydrogeological and mining method assumptions;
- Changes to environmental, permitting and social licence assumptions.

11.12.3 QUALIFIED PERSON STATEMENT

The mineral resource estimation process for Salobo Operations is well established, and models demonstrate good reconciliation with operational history. Vale Base Metals has demonstrated consistency with economic parameters and has been successful in obtaining and maintaining permits, social licence and meeting environmental standards.

To the extent known to the qualified person, there are no other known environmental, permitting, legal, title related, taxation, socio-political or marketing issues that could materially affect the mineral resource estimate that are not discussed in this Report.

The QP is of the opinion that any issues that arise in relation to relevant technical and economic factors likely to influence the prospect of economic extraction can reasonably be addressed with further work. The MRE are based on deposits in a well-documented geological setting and on operating experience at the mine. Further drilling, testwork and engineering studies may be undertaken, as required, to address uncertainties identified in the MRE.

12 MINERAL RESERVE ESTIMATES

12.1 INTRODUCTION

Mineral reserves were converted from measured and indicated mineral resources. Inferred mineral resources were treated as waste. The mine plan assumes open pit mining using conventional mining methods and equipment.

The LOM planning process leverages historical availabilities, utilizations and cost as a reference to initially develop a five-year plan. This plan is subsequently updated and used as the basis for pit optimization and the overall LOM plan.

The generation of the mineral reserve pit shell follows the same optimization methodology applied to the mineral resource—using the pseudoflow algorithm in Deswik to produce an optimized three-dimensional envelope that satisfies geotechnical, mining, and processing constraints. However, the Reserve-constraining shell is based on more conservative long-term commodity price assumptions than those used for the mineral resource, reflecting the higher level of confidence required for Reserve classification. Using lower price assumptions reduces the economic pit limit relative to the Resource shell and ensures that only material demonstrating robust economic viability under conservative conditions is converted to mineral reserves.

Commodity prices used in mineral reserve estimation are based on long-term analyst and bank forecasts, supplemented with research by Vale Base Metals internal specialists. This approach is considered reasonable to support of mineral reserves estimation.

A discount rate of 7.2% and an assumed mining decent rate of five benches per year were applied during the optimization process. Pit slope inter-ramp angles were variable, ranging from 27–61º, depending on the geotechnical sectorization.

Pit optimization uses base mining costs of US$5.64/t for fresh rock and US$5.37/t for saprolite at the 250 m reference bench. Vertical cost adjustments of US$0.0102/t per 15 m above, and US$0.0541/t per 15 m below the reference bench, increase the weighted average mining cost across the pit to US$6.27/t.

The processing cost applied in pit optimization was a constant US$12.34/t processed, including the processing sustaining costs. General and administrative operating costs were modeled at a constant rate of US$2.40/t processed.

Sustaining capital was allocated directly to the relevant cost areas:

- US$0.96/t mined applied to mining;
- US$1.90/t processed applied to processing; and
- US$0.27/t processed applied to G&A.

These sustaining capital amounts were incorporated into the corresponding mining, processing, and G&A operating cost estimates used in the pit optimization process. Metallurgical recoveries were variable, and based on the following equations:

- Copper recovery: (-2.5362 * (1 / copper grade)) + 90.674;
- Gold recovery: (1.0173 x copper recovery) – 20.357.

To calculate payable metal, average payable factors of 96.7% for copper and 93.94% for gold were applied to the recovered metal. Concentrate was modeled with a copper grade of 38%, 10.5% moisture, and a 0.5% loss in transportation. Refining costs inclusive of any penalties were modeled as costs of US$0.534/lb Cu and US$2.66/oz Au. The total freight cost allocation was US$0.172/lb Cu or US$122.3/wet tonne of concentrate.

The reserve estimate was reported above a cut-off of 0.248% CuEq.

The key assumptions used to derive the Reserve-constraining shell are provided in Table 12-1.

Table 12-1: Key Parameters, Pit Optimization and Mine Design

Parameter	Unit	Salobo Mine
Copper sale price	US$/tonne	9,150
Gold sale price	US$/oz.	1,925
Exchange rate	R$/US$	5.30
Mining method		Open Pit
Cutoff	%CuEq.	0.248
Mineability	%	100
Dilution	%	3
Average mine production rate – ore	M tonnes/year	55
Average mine production rate – waste	M tonnes/year	70
Mine full operating cost	US$/tonne mined	5.64
Overall processing cost	US$/tonne ore	12.34
Selling cost (Cu)	US$/lb	0.534
Corporate overhead	US$ M/year	25.2
Site G&A	US$ M/year	86.0
Overall processing copper recovery	%	(-2.5362*(1/Cu)) + 90.674
Overall processing gold recovery	%	(1.0173*RecCu) – 20.357

12.2 MINERAL RESERVE STATEMENT

Mineral reserves are reported using the mineral reserve definitions set out in S-K 1300. The reference point for the mineral reserve estimate is the point of delivery to the process plant. Mineral reserves are current as at 31 December 2025.

Mineral reserves are presented both on a 100% basis, based on Vale Base Metals' view, and on a 90% basis, considering only the ownership attributable to Vale, the registrant.

Mineral reserves are reported in Table 12-2. The Qualified Person for the estimate is Mr. Jody Todd FAusIMM, a Vale Base Metals employee.

Table 12-2: Salobo Operations – Proven and Probable Mineral Reserve Statement

Operations/Deposit	Category	Ownership	Tonnage (Mt)	Grade		Metal	
				Cu (%)	Au (g/t)	Cu (kt)	Au (koz)
Salobo Pit	Proven		349.6	0.59	0.34	2,067	3,794
	Probable		409.1	0.73	0.44	2,985	5,831
	Sub-total Proven + Probable		758.7	0.67	0.39	5,052	9,625
Stockpiles	Proven		—	—	—	—	—
	Probable		264.8	0.40	0.17	1,070	1,485
	Sub-total Proven + Probable		264.8	0.40	0.17	1,070	1,485
Total	**Proven**		**349.6**	**0.59**	**0.34**	**2,067**	**3,794**

Vale Base Metals	**Probable**		**674.0**	**0.60**	**0.34**	**4,055**	**7,316**
	Total Proven + Probable	**100%**	**1,023.6**	**0.60**	**0.34**	**6,122**	**11,110**
Vale S.A. Equity Interest							
Total Vale S.A.[6]	**Proven**		**314.7**	**0.59**	**0.34**	**1,860**	**3,414**
	Probable		**606.6**	**0.60**	**0.34**	**3,650**	**6,584**
	Total Proven + Probable	**90%**	**921.2**	**0.60**	**0.34**	**5,510**	**9,999**

Notes to accompany mineral reserves table:

1. Mineral reserves are reported using the mineral reserve definitions set out in Subpart 1300 of Regulation S-K. The reference point for the mineral reserve estimate is the point of delivery to the process plant. The estimate is current as at 31 December 2025. The Qualified Person for the estimate is Mr. Jody Todd FAusIMM, a Vale Base Metals employee.
2. Mineral reserves are reported on a 100% basis. The Salobo Operations are conducted by Salobo Metais SA, which holds the mineral rights. Salobo Metais SA is a wholly-owned company of Vale Base Metals Limited, which is a majority-owned subsidiary of Vale SA, with a 90% ownership, in addition to the 10% ownership of Manara Minerals.
3. The estimates are based on key input parameters including open pit mining methods, a copper price of US$9,150/t, a gold price of US$1,925/oz, and an exchange rate of R$/US$ 5.30. Operating costs include an average mine operating cost of US$5.64/t mined, a processing cost of US$12.34/t processed (inclusive of sustaining capital), a copper selling cost of US$0.534/lb, corporate overhead of US$0.70/t processed, and general and administrative costs of US$2.40/t processed. Metallurgical recoveries are variable and calculated using the following formulae: copper recovery = (–2.5362 × (1 / Cu grade)) + 90.674, and gold recovery = (1.0173 × Cu recovery) – 20.357. The model assumes 100% mining recovery and a 3% dilution rate. Pit slope angles range from 27° to 61°, depending on the geotechnical sector. Concentrate is assumed to have a copper grade of 37.5%, 10.5% moisture, and a 0.5% loss in transportation. Payable metal factors are 96.7% for copper and 93.94% for gold. Freight costs are modeled at US$0.113/lb Cu or US$80.75/wet tonne concentrate.
4. Mineral reserves are reported above a cut-off of 0.248% copper equivalent (CuEq). Copper-equivalent grade (CuEq) is calculated as: (CuEq)_%=(Cu)_%+(Au)_((g/t))*k, where k represents the economic equivalence between gold and copper, including flotation recoveries and smelter returns.
5. Numbers have been rounded.
6. Salobo mineral reserves, reflecting Vale's 90% ownership interest, the registrant, as required by item 1303(B)(3)(iii) of Regulation S-K.

12.3 UNCERTAINTIES THAT MAY AFFECT THE MINERAL RESERVE ESTIMATE

Factors that may affect the mineral reserve estimates include:

- Long-term commodity price assumptions;
- Long-term exchange rate assumptions;
- Long-term consumables price assumptions.
- Mineral resource input parameters for those mineral resources converted to mineral reserves;
- Constraining stope designs;
- Cut-off grade and NPR assumptions;
- Geotechnical (including seismicity) and hydrogeological factors;
- Metallurgical and mining recovery assumptions;
- Ability to control unplanned dilution;
- Ability to access the site, retain mineral, surface rights and water rights titles;

- Ability to maintain environmental and other regulatory permits, and maintain the social licence to operate.

12.4 QUALIFIED PERSON STATEMENT

To the extent known to the qualified person, there are no other known environmental, permitting, legal, title related, taxation, socio-political or marketing issues that could materially affect the mineral reserve estimates that are not discussed in this Report.

13 MINING METHODS

13.1 INTRODUCTION

Conventional open-pit mining methods are employed at Salobo using an owner-operator fleet. The ultimate pit is subdivided into nine phases; three phases have been mined out and the remaining six phases define the Life-of-Mine (LOM) plan that supports the mineral reserve. Mining is carried out on 15 m benches in fresh rock and 8 m benches in saprolite, using large electric shovels for primary production, hydraulic shovels in saprolite and transition zones, and a supporting fleet of haul trucks and auxiliary equipment.

The Salobo I, II, and III expansions were commissioned in 2012, 2014, and 2023, respectively, establishing the current 36 Mtpa processing plant configuration. The updated LOM mine plan delivers increasing plant feed from 34.6 Mt in 2026 to 38.3 Mt in 2028, reaching 41.7 Mtpa from 2029 onward. Mine scheduling has been aligned to supply this feed rate and to support the ongoing evaluation of the CPF expansion, which would enable operation at a coarser primary grind and potentially higher throughput.

Total material movement averages approximately 145 Mtpa over the main production years. A structured stockpiling strategy is maintained, with high-, medium-, and low-grade ore stockpiles used to manage feed quality and sequencing. Open-pit mining is planned to conclude in 2046, with processing continuing on stockpile reclaim until approximately 2050.

Mining plans and supporting engineering studies used for the mineral reserve meet a minimum prefeasibility-level standard of engineering.

13.2 GEOTECHNICAL CONSIDERATIONS

The overall wall slopes used in the pit optimization are provided in Table 13-1, based on the pit slope sectors in Figure 13-1. Figure 13-1 also identifies the major failure mechanisms that may occur in each sector and that are the object of ongoing monitoring and mitigation.

An interferometric radar unit was installed to monitor pit slopes in real time. This system delivers constant monitoring of surface rock displacement and rock fall, supporting effective geotechnical risk management when coupled with a Trigger Action Response Plan that defines monitoring triggers and associated response actions intended to protect personnel and equipment.

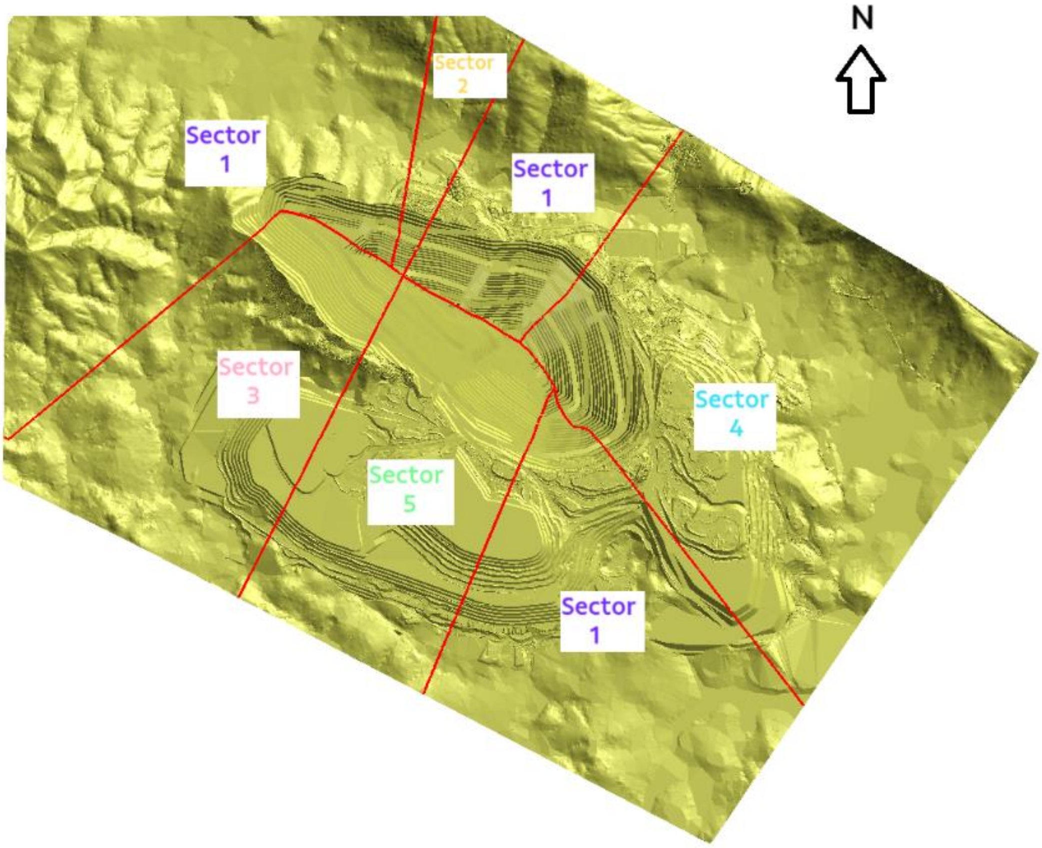
A procedure is in place that includes periodic slope inspections for the open pit, waste rock storage facilities (WRSFs), stockpiles, and the tailings storage facility (TSF). The objectives of these inspections are to verify stability conditions, drainage systems and ongoing mining or deposition activities. To minimize instability, a pit monitoring program is implemented whereby geotechnical staff evaluate the results of smooth blasting; and assess stability to prevent slope damage. The results of inspections are documented and reported on a periodic basis.

Table 13-1: Pit Slope Considerations

Sectors	Lithology	Class	Bench			Between Ramps "toe to toe"		Catch Berms (m)
			Height (m)	Berm Min. (m)	Batter Angle Max. (°)	Maximum Stacking Height (m)	Maximum Angle (º)	
1	Schist	I, II and III	30	11	70	150	54	20
	Mylonite							
	Gneiss							
	Saprolite (gneiss)	V	15	12	40	45 (2)	27	—
	Transition zone (gneiss)	IV						
2	Biotite–garnet schist	I, II and III	15	8	70	150	48	20
	Mylonite							
	Gneiss							
	Saprolite (Gneiss)	V		12	40	45 (2)	27	—
	Transition zone (Gneiss)	IV						
3	Schist (1)	I, II and III	30	16	65	150	45	20
	Mylonite							
	Gneiss							
	Saprolite (gneiss/schist/quartz)	V	15	12	40	45 (2)	27	—
	Transition zone (Gneiss/Schist/Quartzite)	IV						
4	Schist (1)	I, II and III	30	11	65	150	50	20
	Mylonite							
	Gneiss							
	Saprolite (gneiss/schist/quartz)	V	15	12	45	45 (2)	27	—
	Transition zone (gneiss/schist/quartzite)	IV						
5	Schist (1)	I, II and III	30	11	75	150	61	20
	Quartzite							
	Gneiss							
	Saprolite (gneiss/schist)	V	15	12	40	45 (2)	27	—

Notes: (1) Lithologies that have the same schist geotechnical characteristics are classified with the schist lithology supergroup. (2) For triple and quadruples benches a 15 m berm size is used. (3) The berm width was designed to contain any material falling from sector 3, assuming a 65º bench angle.

Figure 13-1: Schematic, Pit Geotechnical Sectors



Note: Figure prepared by Vale, 2025

13.3 HYDROGEOLOGICAL CONSIDERATIONS

Hydrogeological data collected at Salobo support groundwater modelling, pit design, and mine dewatering planning. The monitoring network comprises a total of 24 piezometers, 15 monitoring wells, two pumping wells, and 78 drill holes equipped for water-level measurement, together with designated surface-water monitoring points that are analyzed for major and trace elements. Water inflows to the open pit are controlled by a sump located at the pit bottom, from which water is continuously pumped via pipelines to the TSF. This allows mining to proceed year-round under the site's humid tropical conditions.

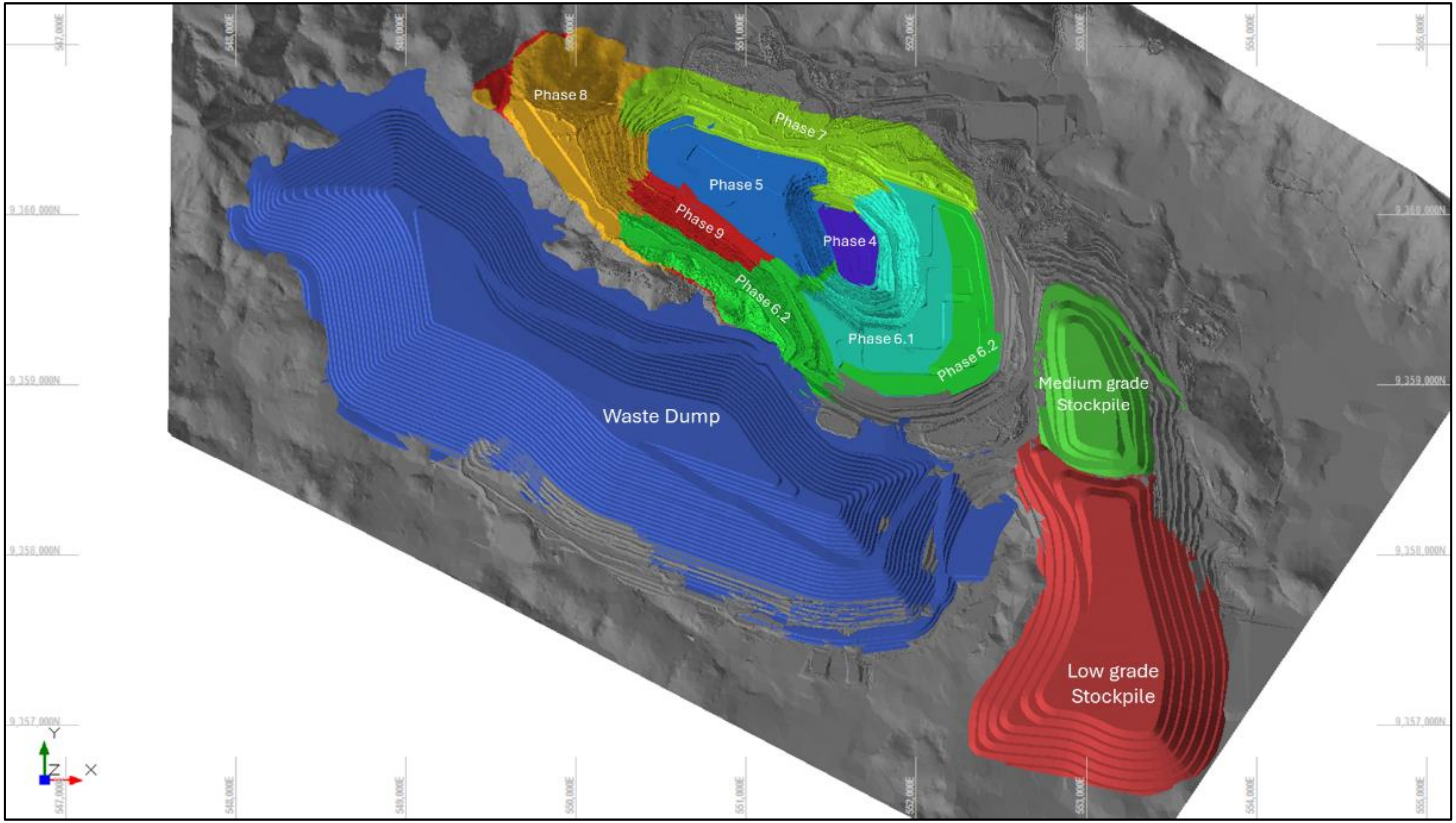
13.4 OPERATIONS

13.4.1 PIT PHASING AND STOCKPILING

The open pit is developed in nine phases, as shown inFigure 13-2. Phases 1, 2, and 3 have been mined out. Current ore production is sourced primarily from Phases 4, 5, and 6 (including sub-phases 6.1 and 6.2). The remaining pushbacks, Phases 7 to 9, are scheduled to be mined during the later years of open-pit operations.

A structured stockpiling strategy is applied to support grade management and long-term plant feed. High-grade material (>0.85% CuEq), medium-grade material (0.60–0.85% CuEq), and low-grade material (0.248–0.60% CuEq) are placed on separate stockpiles, consistent with the stockpile locations shown inFigure 13-2. This strategy allows higher-grade material to be prioritized in the early years of the mine plan, with increasing reliance on medium- and low-grade stockpiles as the pit deepens. From approximately 2045 onward, the majority of the plant feed is expected to be reclaimed from low-grade stockpiles.

Figure 13-2: LOM Pit Phase Schematic



Note: Figure prepared by Vale, 2025. Waste dump = WRSF.

13.4.2 PIT DESIGN

The open pit design follows the geotechnical parameters established for each sector and applies standard geometric criteria used for large-scale open pit operations. Bench heights are 15 m in fresh rock and 8 m in saprolite material. Berm and batter configurations follow the geotechnical recommendations for each domain, and overall slope angles reflect the stability analyses completed for the pit sectors.

Access to the pit is provided by internal ramps designed at a maximum gradient of 10%. Ramp widths vary according to the truck fleet: 35 m for areas operated exclusively by 240-t trucks and 42 m where mixed fleets operate or where 360-t trucks are in use. Cutback widths range from 100 m to 450 m, as determined through pit optimization analysis. A minimum operating width of 80 m is maintained on all benches, except at the ultimate pit floor, where a reduced width of 40 m is applied. The deepest phases are designed with single-ramp access to maintain geotechnical stability while ensuring efficient haulage.

13.4.3 STOCKPILE AND WASTE ROCK STORAGE FACILITY DESIGN CRITERIA

Low- and medium-grade ore and waste rock from the mine are stored in three locations along the perimeter of the pit (Figure 13-2). Some higher-grade ore stockpiles with limited capacities are located close to the crusher, and serve as buffers in the event of production disruptions at the mine or the crusher. These stockpiles also provide a blending function.

Material is end-dumped in 15 m high lifts with 10 m berms between lifts. The bench face angles range from 32–35º. Storage capacity in the ore stockpiles is approximately 514 Mt, and is approximately 1,095 Mt for the WRSF. This capacity is sufficient to support LOM plan requirements.

13.5 BLASTING AND EXPLOSIVES

Blasting supports the conventional open-pit mining method at Salobo. A fleet of 13 production drill rigs drills 12¼-inch and 13¾-inch blast holes on the 15 m benches in fresh rock and 8 m benches in saprolite, generating approximately 5,000–6,000 holes per month. Commercial bulk explosives are loaded according to rock hardness and bench configuration. Electronic initiation systems are used to ensure precise timing and consistent fragmentation.

13.6 GRADE CONTROL

Drilling is accomplished by a fleet of electric- and diesel-powered rotary blast-hole drills.

Grade control grids are dependent on the material type being evaluated (ore/waste), the drill hole diameter, and the pit phase. Grid spacings range from 5–15m.

All ore blastholes are sampled.The grade control geologist determines which waste blastholes are sampled to ensure mineralization is consistent with the geological model interpretation. Surveyors measure the drill hole collar locations using high-precision GPS equipment. Ore polygons are defined based on assay results. This information is uploaded to the GPS units of the operating shovels and loaders to guide the mucking operations.

13.7 PRODUCTION SCHEDULE

The LOM production schedule delivers increasing plant feed from 34.6 Mt in 2026 to 38.3 Mt in 2028, reaching the nominal 41.7 Mtpa rate from 2029 onward to support the process plant configuration. As part of the CPF expansion, the plant is being evaluated for operation at higher throughput by enabling a coarser primary grind; mine scheduling has been aligned with this requirement to ensure adequate ore delivery, domain blending, and stockpile management for both the conventional and CPF-integrated circuits.

A structured stockpiling strategy is in place, with high-, medium-, and low-grade stockpiles used to manage feed sequencing. After completion of open-pit mining in 2046, plant feed is sourced primarily from stockpile reclaim, with processing continuing until approximately 2050.

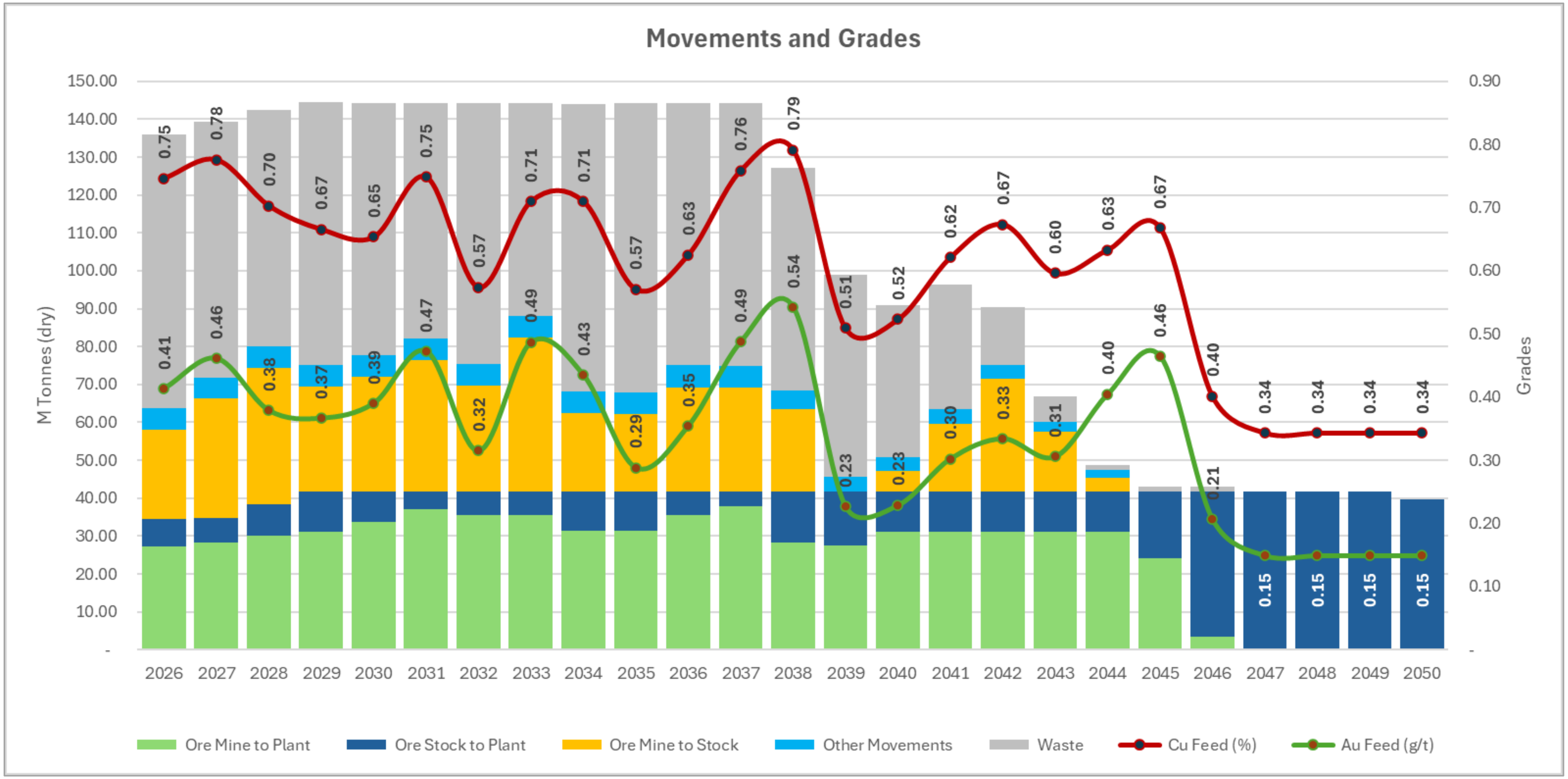
The production plan is provided on an annual basis in Table 13-2 and shown graphically in Figure 13-3.

The average equipment fleet requirements for the LOM are provided in Table 13-3.

Table 13-2: Forecast Production Schedule

Year	Plant Feed			Other Movement (Mt Dry)	Waste (Mt Dry)	Mine to Plant (Mt Dry)	Mine to Stockpile (Mt Dry)	Stockpile Reclaim (Mt Dry)
	Tonnage (Mt Dry)	Cu (%)	Au (g/t)					
2026	34.60	0.75	0.41	5.50	72.40	27.30	23.50	7.30
2027	34.70	0.78	0.46	5.60	67.60	28.20	31.50	6.50
2028	38.30	0.70	0.38	5.70	62.20	30.20	36.10	8.10
2029	41.70	0.67	0.37	5.80	69.20	31.10	27.60	10.60
2030	41.70	0.65	0.39	5.80	66.50	33.80	30.30	7.90
2031	41.70	0.75	0.47	5.80	62.10	37.10	34.60	4.60
2032	41.70	0.57	0.32	5.80	68.80	35.40	27.90	6.30
2033	41.70	0.71	0.49	5.80	56.20	35.40	40.50	6.30
2034	41.70	0.71	0.43	5.80	75.90	31.30	20.70	10.50
2035	41.70	0.57	0.29	5.80	76.30	31.30	20.40	10.50
2036	41.70	0.63	0.35	5.80	69.10	35.40	27.60	6.30
2037	41.70	0.76	0.49	5.80	69.30	37.80	27.40	3.90
2038	41.70	0.79	0.54	5.10	58.60	28.40	21.70	13.40
2039	41.70	0.51	0.23	4.00	53.20	27.50	—	14.20
2040	41.70	0.52	0.23	3.70	40.20	31.20	5.30	10.50
2041	41.70	0.62	0.30	3.90	32.70	31.20	18.00	10.50
2042	41.70	0.67	0.33	3.60	15.20	31.20	29.80	10.50
2043	41.70	0.60	0.31	2.70	6.60	31.20	15.80	10.50
2044	41.70	0.63	0.40	2.00	1.30	31.20	3.70	10.50
2045	41.70	0.67	0.46	—	1.40	24.10	—	17.60
2046	41.70	0.40	0.21	—	1.20	3.30	—	38.40
2047	41.70	0.34	0.15	—	—	—	—	41.70
2048	41.70	0.34	0.15	—	—	—	—	41.70
2049	41.70	0.34	0.15	—	—	—	—	41.70
2050	39.60	0.34	0.15	—	—	—	—	39.60
Total	***1,023.6***	***0.60***	***0.34***	***94.00***	***1,026.20***	***633.90***	***442.30***	***389.60***

Figure 13-3: LOM Production Plan



Note: Figure prepared by Vale, 2025.

13.8 EQUIPMENT

The Salobo Operations primarily use large electric (rope) shovels for ore and waste production. Hydraulic shovels are used for the oxide saprolite and transition material where a lower ground pressure is required. Wheel loaders are used for miscellaneous clean up jobs and for backup of the shovels when needed. A fleet of off-road haul trucks are used to transport material to the WRSF, the stockpiles, or the primary crusher stockpiles. Track dozers are assigned to maintain production areas, WRSFs and bench clean-up. Wheeled dozers, road graders and water trucks complete the remainder of the auxiliary equipment fleet.

Table 13-3: Average Equipment Requirements, LOM Plan

Purpose	Fleet	Number
Loading	BE 495 HD (42 yd^3)	4
	BE 495 HR (63 yd^3)	1
	PC 5500 (38 yd^3)	4
	L 1850 (33 yd^3)	2
Hauling	Kom 830 (240 t)	10
	Kom 930 (320 t)	19
	CAT 797 (360 t)	17
	CAT 794 (320 t)	4
Drilling	Pit viper 351 (12 1/4")	2
	Komatsu 320XPC (12 1/4")	1
	ROC-L8 (6 3/4")	7
	DR416i (5 1/2")	11
Support/auxiliary	Bulldozer, CAT D6	1
	Bulldozer, CAT D10	5
	Bulldozer, CAT D11	5
	Bulldozer, KOM 375A-5	1
	Bulldozer, KOM 475A-5	1
	Crawlerdozer- KOM D65EX	1
	Motor grader, CAT 150	1
	Motor grader, CAT 16M	1
	Motor grader, CAT 24M	5
	Wheeldozer, CAT 854	4
	Wheeldozer, Komatsu WD900	1
	CAT 336	2
	CAT 374D backhoe and retro tyre	1
	PC450-8 Backhoe	4
	Water truck Kom 785HD-7 and CAT 785D	4
	Tyre handler, CAT 988H, 988K and 966	3
	Scania P420 truck and surfboard	2
	Scania G440 truck	8
	CAT 349D, 390F and 320D backhoe	5

13.9 PERSONNEL

A total of approximately 1,500 direct employees and 900 contractors currently support the mining operations.

14 PROCESSING AND RECOVERY METHODS

14.1 PROCESS METHOD SELECTION

The process plant design was based on a combination of metallurgical testwork, previous study designs and previous operating experience

The existing processing plants, Line 1, 2 and 3 (Salobo I, Salobo II and Salobo III), each have a nominal capacity of 12 Mtpa.

The concentrate process plant is designed to operate at 87% of operating availability, considering utilization and physical availability, with an average ore feed rate of 1,522 dmt/hr

Salobo copper concentrates are sold to third parties, and shipped through the Itaqui Port in São Luís city, Maranhão State.

14.2 FLOWSHEET

The Salobo simplified flowsheet is shown in Figure 14-1.

Run-of-mine ore is hauled to the ROM stockpile, and crushed in primary gyratory crushers (one per plant) to a product size distribution with 80% passing 152 mm. Primary crushed ore is conveyed to a common crushed ore stockpile.

Coarse ore stockpile reclaim feeders (four per pile) feed onto the primary screen feed conveyor that in turn feeds five operating double-deck vibrating screens (three in Salobo I and II; two at Salobo III).

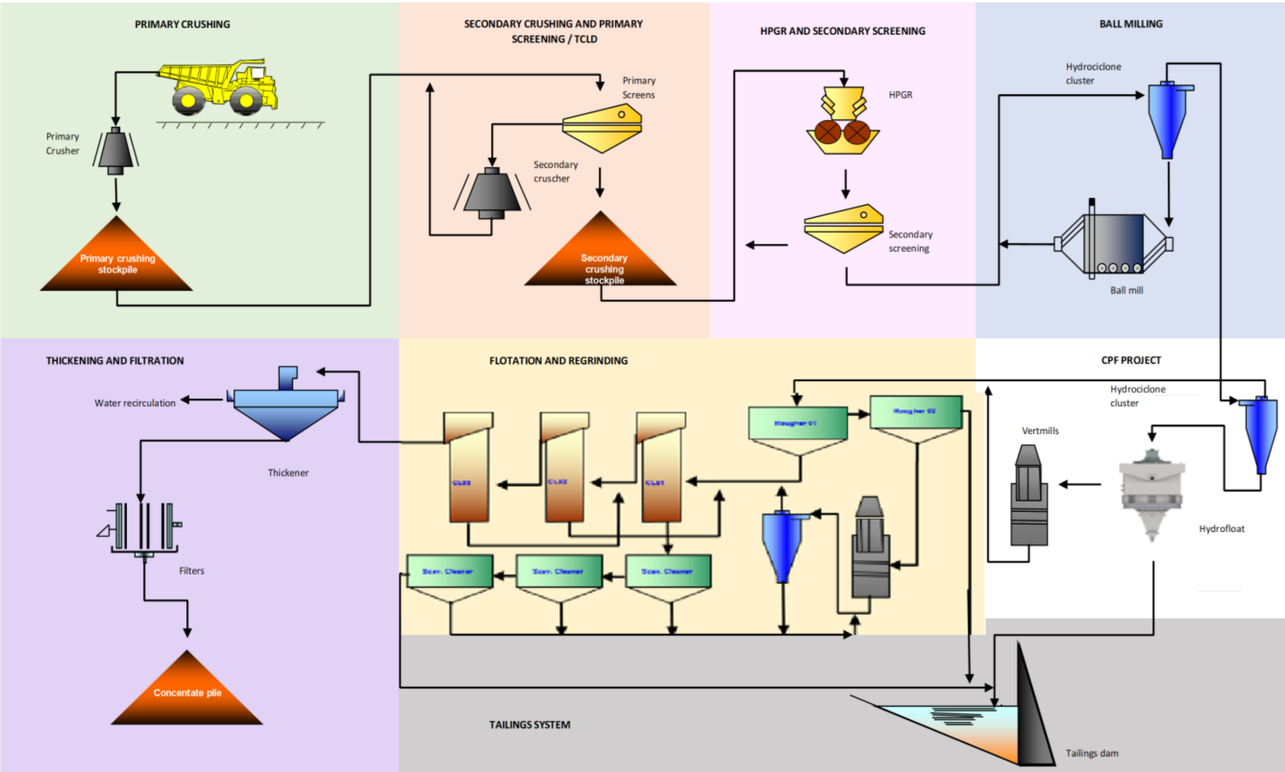
The secondary crushing system contains five cone crushers, (three at Salobo I and II; two at Salobo III). The Salobo I and II secondary-crushed product is conveyed by a pipe conveyor running to a secondary crushed ore stockpile. At Salobo III, the secondary-crushed product is conveyed by a conventional conveyor belt.

At Salobo I and II, two parallel lines of four operating reclaim feeders feed crushed ore to the high-pressure grinding roll (HPGR) circuit. Salobo III has a single system with four operating reclaim feeders.

There are four HPGR at Salobo I and II, and three at Salobo III. The crushed HPGR product is discharged via the product collection conveyor and is then screened at 8 mm on the bottom deck of banana screens, with the top deck aperture set at 15 mm. There are four operating screens, at each Salobo plant. The screen undersize, at 80% passing 6 mm, discharges directly into one dedicated ball mill discharge sump. The screen oversize is recirculated back via conveyor to the HPGR silos for further crushing. The circulating load around this circuit is typically 100%.

Slurry in the ball mill discharge sump is pumped to a battery of ten 660 mm hydrocyclones, of which seven are typically operating. Hydrocyclone underflow is fed by gravity to an overflow ball mill of 7.9 m diameter by 13.4 m long, equipped with a 17 MW gearless motor. There are six ball mills operating in locked circuit, each with a dedicated hydrocyclone cluster. The design grinding circuit product is set at 80% passing 106 µm. Hydrocyclone overflow advances to the Rougher 1 flotation circuit at up to 45% solids by weight, but with an average of 38%. The ball mills were designed to operate at a 30–35% ball charge using 63,5 mm diameter high chrome balls and with a circulating load of approximately 308%. Operating conditions have since been adjusted, with a current ball charge of approximately 33%. Under these conditions, the mill motors draw approximately 16.5 MW. The circulating load under current operating conditions is approximately 350%.

Figure 14-1: Simplified Process Flowsheet



Note: Figure prepared by Vale, 2025.

The flotation circuit is of conventional design, while the cleaning circuit uses of column flotation to improve rejection of gangue contaminant minerals carrying fluorine, chlorine and uranium. Lime is added at the front end of the circuit to raise the pH to approximately 11. The addition of thionocarbamate is done before the rougher line to collect gold particles and thus increase the recovery of this by- product. Xanthate (PAX) and dithiophosphate are used as the primary and secondary collectors for copper, respectively. Frothing is provided using mixed propylene glycols.

Rougher flotation is carried out in parallel lines (one for each ball mill) with fourteen cells per plant. The cells are mechanically agitated tank cells of 200 m^3 capacity. The rougher concentrate advances to the regrinding and subsequent cleaning circuit.

The combined flotation circuit tailings (Rougher 2 and cleaner–scavenger tailings) flow by gravity to the TSF. Tailings are disposed from a single-point discharge and forming a beach on the south side of the TSF. Over the mine life, several phases of TSF heightening with plant tailings will be required to provide the required storage volume. Vertical pumps installed at catchment points on the TSF pump recycled water back to the process plant, accounting for about 80–85% of total process water requirements.

The flotation cleaning circuit consists of three upgrading stages with flotation columns and is closed by a cleaner–scavenger bank of conventional agitated cells. In each upgrading stage, concentrate advances to the subsequent stage, while tailings are recirculated to the preceding stage. Cleaner 1 tailings report to the cleaner-scavenger circuit, and the Cleaner 3 concentrate constitutes the final copper concentrate.

The cleaner 1 circuit consists of eight columns for each line per Salobo plant, each measuring 6 m in diameter and 14 m high. At Salobo I and II, the cleaner 1 columns are fitted with a cavitation system, introducing flotation air to recirculated slurry pumped through static mixers. All of the other columns use more standard air spargers. At Salobo III, all columns use standard air spargers.

The concentrate from the cleaner 1 circuit advances to the cleaner 2 circuit, consisting of four columns per plant (4.3 m diameter x 14 m high). Concentrate from the cleaner 2 circuit advances to the cleaner 3 circuit, consisting of two columns per plant (4.3 m diameter x 14 m high). Tailings from the cleaner 2 circuit are returned to cleaner 1. The Salobo I circuit has a direct flotation reactor circuit is installed to process this tailings stream, resulting in an approximately 0.3% increase in overall recovery.

Tailings from cleaner 1 are fed into the cleaner–scavenger section, made of ten 200 m^3 agitated cells each plant. Tailings from this stage combine with rougher tailings to form the final plant tailings stream, which is directed by gravity to the TSF. The cleaner–scavenger concentrate is combined with the Rougher concentrate and undergoes regrinding in one of three vertical mills fitted with 1.1 MW motors per plant. These mills, filled with 20 mm diameter steel grinding media, are operated in locked-circuit with one dedicated cyclone cluster per mill, ensuring a regrinding circuit product at 80% passing 25 µm.

The final concentrate exiting cleaner 3 is pumped by gravity to one of two 15 m diameter high-capacity thickeners per plant, producing an underflow slurry at 65% solids. This slurry is transferred to a surge tank ahead of the filter presses.

The concentrate is further dewatered using five filter presses, each with a horizontal frame holding 50 plates of 1,500 mm x 1,500 mm and two horizontal filters holding 36 plates of 2,000 mm x 2,000 mm. A typical filtration cycle lasts 20 minutes. The filtered concentrate has a residual moisture content of about 11%. It is stockpiled below the filter presses in a covered concentrate storage area holding 6,000 t.

The concentrate stockpile is reclaimed by a front-end loader and loaded into trucks at a nominal rate of 1,500 wmt/d. Trucks with about 27 wmt are weighed using a static scale and dispatched to a railroad terminal in Parauapebas city, about 94 km from the mine. The rail warehouse can hold 16 kt of concentrate, allowing for blending when required. The concentrate is reclaimed by a front-end loader and loaded into 80–90 wmt wagons for rail transport by trains with 100 wagons using the 892 km-long Carajás railroad (Estrada de Ferro Carajás/EFC) that links Carajás to the Vale port terminal at the Port of Itaqui. Concentrate is stored inside a 50 kt capacity warehouse at the port terminal. Concentrate can be ship-loaded at a rate of 1,100 wmt/hr. There is one ship-loading system at the port that is shared by Vale's Salobo and Sossego Operations.

14.3 COARSE PARTICLE FLOTATION EXPANSION

Vale Base Metals is evaluating the application of CPF for the Salobo III operation. CPF is a flotation technology designed to enable the processing of significantly coarser particle size distributions compared to conventional mechanical flotation, with the potential to reduce specific grinding energy consumption and support increased plant throughput.

Preliminary assessments indicate that operation at a coarser primary grind size could allow a substantial increase in processing capacity, potentially of up to approximately 50%, while largely utilizing the existing grinding circuit configuration. By repowering the plant without the addition of new ball mills, the CPF project could deliver a material increase in capacity with comparatively lower capital intensity, while also reducing specific grinding energy consumption. Metallurgical testwork supporting the CPF configuration and operating parameters is discussed in Chapter 10.

The CPF configuration allows for the early removal of coarse material from the processing circuit, generating a coarse tailings stream creating potential opportunities for future optimization of coarse tailings management. Overall, the adoption of CPF represents a potential strategic advancement to improving process efficiency, energy performance, and the sustainability profile of the Salobo Operations.

The Salobo processing plant currently operates with a conventional comminution and flotation flowsheet designed for a primary grind size of approximately P80 106 µm. As part of the proposed process configuration to support increased throughput and coarse particle recovery, modifications to the grinding, classification, flotation, and selected utility systems have been assessed to enable the integration of CPF into the existing Salobo plant. The following chapters describe the CPF process configuration and its integration with the existing facilities.

14.3.1 CRUSHING

In the crushing area, the planned modifications are primarily focused on the removal of capacity constraints associated with increased plant throughput. Changes include upgrades to the secondary crushing and screening circuits, with the replacement and expansion of screening equipment and the repowering of conveyors, feeders, and drive systems. These modifications are intended to ensure stable and continuous operation under the revised operating conditions, preventing throughput limitations upstream of the concentration plant.

14.3.2 CONCENTRATOR STOCKPILE AND MATERIAL HANDLING

The concentrator stockpile associated material handling systems will be upgraded to accommodate the higher operating throughput. Modifications include mechanical upgrades to conveyors and feeders, as well as structural adjustments where required. These changes are designed to ensure reliable and consistent ore delivery to the grinding circuit and to minimise the risk of operational interruptions or instability.

14.3.3 BALL MILLING (GRINDING CIRCUIT MODIFICATIONS)

To support implementation of the CPF Project, modifications to the existing ball milling and classification system are planned. These modifications include replacement of the existing hydrocyclone clusters, relocation of associated structural steel and piping, and upgrades to the electrical room to accommodate the revised equipment configuration and operating duty.

The current grinding circuit comprises two clusters of ten 26-inch hydrocyclones, which classify the milled product that feeds the conventional rougher flotation circuit. Under the CPF project basis, the hydrocyclone classification duty will be adjusted to coarsen the grinding product, increasing the average particle size reporting to the HydroFloat® CPF circuit, which is designed to recover value from coarser particle size fractions than those typically treated by conventional mechanical flotation. To accommodate this operating regime, the existing cyclone clusters will be replaced by two clusters of larger diameter hydrocyclones.

14.3.4 COARSE PARTICLE FLOTATION – COARSE FLOTATION CIRCUIT INTEGRATION

Under the CPF project basis, the primary grind P80 is planned to increase to approximately 250 µm, enabling increased mass throughput through the grinding circuit; however, this product size is considered coarse for conventional mechanical flotation.

To enable integration of coarse flotation with the existing plant, a secondary classification stage will be introduced. A new hydrocyclone cluster will receive overflow from the primary grinding cyclone cluster and split the slurry into two size fractions:

- Fine fraction (predominantly <106 µm), directed to the existing conventional mechanical flotation circuit; and
- Coarse fraction, directed to the CPF circuit employing HydroFloat® cells.

The CPF circuit is based on HydroFloat® technology, which combines flotation and fluidized-bed separation principles to recover value from coarse particle size fractions.

The HydroFloat® concentrate will be processed through an additional grinding stage to reduce particle size to a target P80 of approximately 106 µm, suitable for subsequent treatment in the conventional flotation circuit. This duty will be provided by two additional vertical stirred mills (VTM1500), consistent with the existing Salobo configuration, operated in closed circuit with the new hydrocyclones.

The product from this additional grinding stage will then be combined with the overflow (fine fraction) from the first CPF cyclone cluster to form a combined feed to the conventional flotation circuit. This integrated configuration is intended to:

- improve overall recovery, particularly for value contained in coarse fractions;
- improve energy utilization by limiting regrinding of already liberated material; and
- provide an integrated grinding–classification–flotation arrangement with operational flexibility.

14.3.5 CONVENTIONAL FLOTATION

The conventional flotation circuit will be adapted to operate in an integrated configuration with the CPF circuit. The fine fraction generated by the revised classification system will continue to be processed through the existing mechanical flotation cells and columns. Additional streams originating from CPF concentrate regrinding will be incorporated into the circuit. These modifications are intended to maintain conventional flotation performance while accommodating the integrated flowsheet.

14.3.6 ELECTRICAL, AUTOMATION, AND TELECOMMUNICATIONS SYSTEMS

The CPF implementation and associated capacity increase will require upgrades to the electrical distribution system, including new electrical loads, electrical rooms, panels, and substations. In parallel, automation, control, and telecommunications systems will be expanded and integrated to ensure that all new equipment and process areas are fully incorporated into the existing plant control and monitoring infrastructure.

14.3.7 INFRASTRUCTURE, CIVIL WORKS, AND SUPPORT FACILITIES

The project includes the construction and modification of civil and structural infrastructure required to support the new process equipment and utilities. This includes foundations, steel structures, pipe racks, and industrial buildings, as well as upgrades to selected support facilities. The scope has been developed to maximize the use of existing infrastructure, minimize additional footprint and ensure the safe and efficient integration of the CPF circuit into the operating plant.

14.3.8 COMPRESSED AIR SYSTEM – COMPRESSOR HOUSE

The existing compressed air system includes six dedicated compressors, with five units operating and one standby, supplying air to the flotation columns. In addition, three compressors supply the main Service Air and Instrument Air distribution networks for the concentrator. The system includes associated pressure vessels and dryers to maintain air quality suitable for instrumentation and process equipment.

To meet the additional air demand associated with the CPF project, three new oil-injected rotary screw compressors will be installed. These units will supply compressed air for the coarse flotation circuit and instrument air for the new systems and will be integrated into the existing pressure vessels to maintain reliability and provide redundancy.

14.3.9 RECOVERED WATER RESERVOIR AND DISTRIBUTION SYSTEM

To support the additional water demand associated with the CPF circuit, upgrades to the recovered water reservoir pumping system are planned. A total of eight new water pumps will be installed at the recovered water reservoir, comprising four operating units and four standby units, to supply process water to the new demand points within the coarse flotation circuit.

The recovered water will be distributed to the CPF circuit for process dilution, utility water supply, and pump sealing services.

14.3.10 RECOVERED WATER PIPELINE AND WATER SUPPLY SYSTEM

Considering the full scope of the Salobo III Project, including the CPF circuit and changes to flow rates of existing equipment, the total water demand for infrastructure sizing increases to 6,800 m^3/h. To accommodate this increased demand, expansion of the water reclaim and pumping system at the TSF will be required. The scope of work includes modification of the existing pumps and procurement of additional pumping capacity.

14.3.11 QUALIFIED PERSON STATEMENT – CPF

The Qualified Person notes that CPF technology has been applied at commercial scale in base-metal concentrators treating similar sulphide mineralization. Metallurgical testwork completed for Salobo demonstrates that the mineralization responds favourably to coarse particle recovery using HydroFloat® technology. Based on this testwork, prior operating experience with the existing flowsheet, and the proposed staged integration with conventional flotation, the Qualified Person considers the CPF configuration to be technically viable for the Salobo operation.

mineral resources and mineral reserves reported in this Technical Report Summary are based on the currently operating conventional comminution and flotation flowsheet, and do not rely on the proposed CPF configuration, which remains under evaluation.

14.4 EQUIPMENT LIST

The key equipment list is provided in Table 14-1 and CPF equipment is provided in Table 14-2.

Table 14-1: Major Process Equipment

Salobo I	Salobo II	Salobo III
1 gyratory crusher: 60 x 89 in.	1 gyratory crusher: 60 x 89 in.	1 gyratory crusher: 60 x 89 in.
2 cone crushers	1 cone crusher	2 cone crushers
2 vibrating screens: 12 x 24 ft	1 vibrating screen: 12 x 24 ft	2 vibrating screens: 12 x 24 ft
1 overland pipe conveyor (78.7 in.); 6,000 hp; 1,700 m length; 4,600 t/hr capacity	Equipment shared with Salobo I	5 conventional conveyors, 2,286 t/hr capacity
2 high pressure grinding rolls: Ø 2.0 x 1.5 m	2 high pressure grinding rolls Ø 2.0 x 1.5 m	3 high pressure grinding rolls: Ø 2.0 x 1.5 m
1 grinding battery per plant of ten 26 inch cyclones	1 grinding battery per plant of ten 26 inch cyclones	1 grinding battery per plant of ten 26 inch cyclones
Re-grinding consisting of 4 batteries per plant of fifty-six 10 in cyclones	Re-grinding consisting of 4 batteries per plant of fifty-six 10 in cyclones	Re-grinding consisting of 2 batteries per plant of twenty-eight 15 in cyclones
2 ball mills: Ø 26 ft x 40 ft	2 ball mills: Ø 26 ft x 40 ft	2 ball mills: Ø 26 ft x 40 ft
24 flotation tank cells: 200 m^3	24 flotation tank cells: 200 m^3	24 flotation tank cells: 200 m^3
14 flotation columns: 14 m	14 flotation columns: 14 m	14 flotation columns: 14 m
2 flotation SFR: 60 m^3	2 Flotation SFR: 60 m^3	2 flotation SFR: 60 m^3
3 Vertimills: 1,500 hp	3 Vertimills: 1,500 hp	3 Vertimills: 1,500 hp
1 concentrate thickener: Ø 15 m	1 concentrate thickener: Ø 15 m	1 concentrate thickener: Ø 15 m
2 pressure filters: 2,000 x 2,000 / 36 chambers	2 pressure filters: 1,500 x 1,500 / 50 chambers	1 pressure filter: 1,500 x 1,500 / 50 chambers

Note: * One cone crusher and one vibrating screen are common for both Salobo I and II plants, as stand-by equipment; Ø = diameter

Table 14-2: CPF Equipment

CPF Circuit Area	Major Equipment
Secondary Classification	2 hydrocyclone cluster for coarse/fine split (1)
Coarse Particle Flotation (CPF Module)	HydroFloat® CPF cells (coarse flotation units) (3)
CPF Concentrate Regrinding	2 Vertical Stirred Mills (VTM1500)
Regrind Classification	1 hydrocyclone cluster in closed circuit with VTMs
Material Handling (Internal)	Slurry pumps and pipelines for coarse/fine stream routing
Compressed Air System	3 oil-injected rotary screw compressors
Recovered Water System	8 recovered water pumps (4 operating + 4 standby) (2)
Electrical & Control Systems	New MCCs, electrical rooms, automation/telecom expansions
Structural & Civil Works	Steel structures, platforms, foundations, pipe racks for CPF area(4)

Notes:

1. The secondary classification hydrocyclone cluster is sized to remove the fines, reporting them directly to conventional flotation
2. Recovered-water pumping upgrades include four duty and four standby pumps, sized to meet the additional water demand of the CPF module and associated classification duties.
3. HydroFloat® is a registered technology of Eriez, combining flotation and fluidized-bed principles to recover coarse particles at a primary grind coarser than the current Salobo design.
4. CPF concentrate regrinding in VTM1500 stirred mills is integrated with the existing regrind and flotation circuits and returns material to the conventional flotation feed after size reduction (~P80 106 µm)

14.5 POWER AND CONSUMABLES

14.5.1 POWER

The mill power from the plant substation (Chapter 15.9). Step-down transformers provide the various voltages used by the equipment.

14.5.2 WATER

The bulk of the process water needs are covered by the recirculation from the TSF. The consumption of fresh water is limited to systems requiring better water quality, and is pumped from Mirim and Mamão Creeks.

14.5.3 CONSUMABLES

Reagents include potassium amyl xanthate (PAX), dithiophosphate, mixed propylene, thionocarbamate, flocculant and lime Mill consumables include grinding media for the ball mills and vertical stirred mills, as well as mill liners.

14.6 PERSONNEL

A total of approximately 1,350 people are currently employed in the process area.

15 INFRASTRUCTURE

15.1 INTRODUCTION

Major infrastructure currently in place at the Salobo Operation includes:

- Operating open pit;
- Process plant with three process lines (Salobo I, II, and III);
- Waste rock storage facilities;
- Stockpiles;
- Tailings storage facilities;
- Pipelines and associated pumping facilities;
- Central administrative facilities: administrative offices, restaurant, change rooms, training centre and a medical clinic;
- Central maintenance facilities: a mine heavy equipment workshop including tyre-changing facility, a light vehicle maintenance shop, a plant maintenance shop for component overhaul and repair, a warehouse, and maintenance offices;
- Mine facilities: mine operations change rooms and mine operations offices;
- Mine heavy equipment fueling facilities, located next to the primary crushers;
- Main substation;
- Small vehicle fueling station;
- Recycle centre;
- Security/ access control gate;
- Access roads to site and the Parauapebas Rail Terminal.

An infrastructure layout plan is provided inFigure 15-1.

15.2 ROADS AND LOGISTICS

Road access is described in Chapter 4.4.

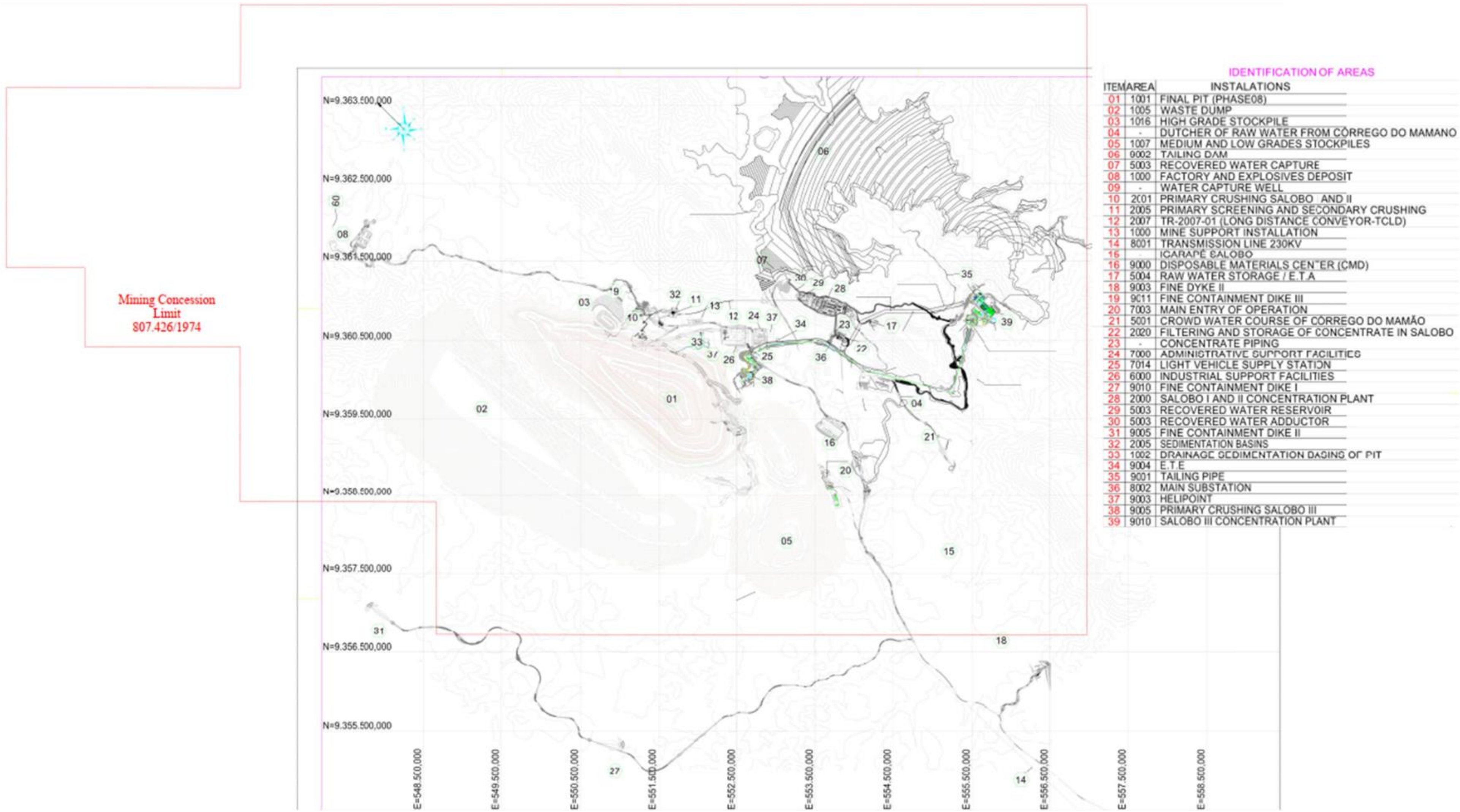
15.3 STOCKPILES

Stockpiles are described in Chapter 13.4.3.

15.4 WASTE ROCK STORAGE FACILITIES

WRSFS are described in Chapter 13.4.3. All major infrastructure to support the Salobo Operations mining activities envisaged in the LOM plan is in place.

Figure 15-1: Infrastructure Layout Plan



Note: Figure prepared by Vale, 2021

15.5 TAILINGS STORAGE FACILITIES

The TSF, known as the Mirim Dam, is a cross-valley impoundment located on Mirim Creek near the confluence with the Salobo River, approximately 650 m from the plant site. The facility consists of a main embankment and two smaller saddle dams that contain the expanded reservoir created by successive downstream raises. The current crest elevation is 266.20 m following the 2023 raise, and the final design elevation of 285 m will provide total storage capacity for approximately 353 Mm^3 of tailings, sufficient for the Life-of-Mine plan presented in this Report. If additional material from Indicated mineral resources were incorporated into future mine plans, additionnal TSF capacity or the construction of a second TSF would be required.

The TSF was designed for Vale by BVP Engineering and incorporates compacted earth- and rock-fill embankments with internal drainage and transition zones, along with a concrete-lined spillway. The reservoir currently holds approximately 236 million m^3 of water over an area of about 6.9 km^2.

The facility operates under a comprehensive risk-management framework aligned with the Global Industry Standard on Tailings Management (GISTM). This includes regular geotechnical inspections, compliance with applicable Brazilian regulations (DNPM Act 70.389/17), and implementation of the Mining Dam Emergency Action Plan (PABM), the Periodic Safety Review (RPSB), and routine safety inspections (ISR). Automated instrumentation—including radar monitoring—is installed, and 24/7 real-time monitoring is coordinated through Vale’s geotechnical monitoring center in Carajás. Three sediment-control ponds collect and manage fine sediments from site runoff, stockpiles, and waste-rock storage facilities prior to controlled downstream discharge.

15.6 WATER MANAGEMENT

Under its granted water licences, Vale Base Metals can capture water in the following water courses:

- Mamão Creek water dam: raw water captured and treated for human consumption;
- Tailings dam (Mirim Creek): water returned to the process plant;
- Salobo Creek: water used for dust suppression.

Non-contact water is diverted around the mine, TSF, stockpiles, and WRSF where possible. Diversion channels, a 2.6 km tunnel, and dykes were constructed to transfer water from Salobo Creek to Mirim Creek, and then back to its original watercourse to prevent this water from being affected by the mine.

Three sediment control ponds collect fine sediments from site runoff, stockpiles and the WRSFs prior to discharge to downstream waters.

Process make-up water consists of runoff and direct precipitation within the tailings storage basin. This raw water is pumped to the plant together with return water from the TSF. If the plant requires additional makeup water, this can be extracted from Mamão Creek.

15.7 BUILT INFRASTRUCTURE

All major infrastructure to support the Salobo Operations mining activities envisaged in the LOM plan is in place.

15.8 CAMPS AND ACCOMMODATION

There are no onsite accommodation facilities. Employees reside in Canaã dos Carajás and other nearby villages, the urban centre of Carajás, and in the city of Parauapebas.

15.9 POWER AND ELECTRICAL

The Salobo Operations are supplied by the Eletronorte division of Eletrobras, responsible for the northern region of Brazil, which operates and maintains the system on behalf of the National Operator of the Electrical System (NOS).

Electrical energy is supplied from Tucuruí, an 8,370 MW hydroelectric-generating station on the Tocantins River, 200 km north of Marabá, and 250 km due north of Parauapebas. The 180 MW of power required by the Salobo Operations (including Line III) is transmitted by an 87 km-long overhead 230 kV transmission line.

16 MARKET STUDIES

16.1 PRODUCTS

Salobo produces copper concentrate that is sold to third-party smelters, with a portion of gold sales included as a by-product in those copper concentrate sales. The majority of Salobo gold production is sold under a multi-year streaming agreement with Wheaton Precious Metals.

16.2 MARKETS

16.2.1 COPPER

16.2.1.1 DEMAND

Copper consumption can be divided into first use product groups, such as copper wire rod, copper billet and copper cake or slab (Wood Mackenzie, 2025). In general, these products are consumed in broad sectors of the global economy, such as construction, electrical network, industrial machinery, transport and consumer and general products. These copper products are vital to the rapidly growing green economy, such as renewable energy generation and storage, electric vehicles, and upgrades to the energy grid that support the trends of electrification and digitization of the economy.

Electrical network and construction are the largest copper consuming sectors, accounting for approximately 30% and 24% of total copper consumption in 2025, respectively (Wood Mackenzie, 2025). Among the main wire and cable and copper products consumed in the construction industry are building wires, power cables, air conditioning tube, copper sheet and alloy products. Consumer & general and the Transport sector rank third and fourth, with both sectors combined accounting for just about 35% of copper demand.

Copper demand is diverse, which is why it is often describes as an “economic bellwether” for the global economy. Stable demand growth from traditional segments is expected and novel uses of copper for energy transition will unlock even more growth. The long-term growth forecast is supported by global policy with decarbonization targets, increasing adoption of renewable energy and investments in the green economy. This acceleration will lead to a pivot towards more copper-intensive uses in renewable energy and transportation projects related to electric vehicles as well as the required infrastructure to support the grid in a world with more electrification and digitization.

Copper demand, net of direct scrap material, was 28 Mt in 2025 (Wood Mackenzie, 2025).

16.2.1.2 SUPPLY

According to Wood Mackenzie, global copper supply is projected to grow reflecting ongoing efforts to expand mining capacity and improve production efficiency. However, in the longer term, growth in supply will have rely on supply additions to keep up with demand, which is driven by the accelerating energy transition, including the expansion of electric vehicles, renewable energy infrastructure, and grid modernization.

16.2.2 GOLD

16.2.2.1 DEMAND

Gold is used in jewellery, as an investment instrument, in technology for industrial demand, and to manage central banks’ reserves.

Gold jewelry is the largest demand sector, accounting for over 39% of total demand in 2025 (Metals Focus, 2025). In 2025, net official sector buying, which includes central bank purchases, accounted for approximately 19% of total demand, and other physical investments, including hedging demand, in gold accounted for approximately 34% of total market demand. Volatile markets sustain demand for gold in investment portfolios to protect purchasing power and minimize losses during market shocks. The unique properties of gold drive technological uses, with an industrial demand market share of approximately 8%.

The demand for gold has moved in the past decade to the emerging economies of China and India. India is one of the largest consumers of gold and that metal plays a central role in the country's culture as a status symbol.

16.2.2.2 SUPPLY

The geographical diversity of mined gold, mined on every continent except Antarctica, allows for stability in the market. Mine production of gold accounts for roughly 72% of total market supply in 2025 with recycled material making up the balance.

16.2.3 COMMENTS ON MARKET STUDIES

There are no agency relationships relevant to the marketing strategies used by Vale Base Metals Operations.

Product valuation is included in the economic analysis in Chapter 19 and is based on a combination of the metallurgical recovery, commodity pricing, consideration of processing charges, and allocations, where applicable for premiums paid on the products from the operations.

Since gold is a by-product of the Vale Base Metals operations, there is no technical specification for end-users to be saleable.

Based on the demand forecast figures, there is a reasonable expectation that there will be a demand for the copper and gold product discussed in Chapter 16.

16.3 COMMODITY PRICING

At the beginning of each annual cycle, Vale Base Metals sets long-term price and exchange rate assumptions used to estimate mineral resources and mineral reserves.

The company uses a consensus-based approach to forecast metal price and exchange rate assumptions. This is based on long-term forecasts published by analysts and financial institutions.

The metal price applied to demonstrate the mineral reserve economic viability in based on the average forecast from analysts and financial institutions, considering annual estimates for the period 2026–2031, followed by a long-term constant price from 2031 onward for the remaining life mine.

The metal price used to assess reasonable prospects for economic extraction is based on the 80th percentile (P80) of long-term price forecasts from analysts and financial institutions.

The long-term commodity price and foreign-exchange forecast curves used for the economic analysis supporting mineral reserves are presented in Table 16-1.

Table 16-1: Commodity Price Forecasts (Mineral Reserves)

Item	Units	2026	2027	2028	2029	2030	2031	Long-term
Copper price	US$/t	9,600	10,075	10,225	10,025	10,000	9,950	9,950
Gold price	US$/oz	3,675	3,200	3,025	2,750	2,650	2,650	2,650
Foreign exchange rate	R$/US$	5.58	5.56	5.56	5.56	5.56	5.56	5.56

Source: Average analyst bank forecast – Sep 2025

16.4 EXCHANGE RATE

The LOM plan exchange rate forecast uses a consensus approach based on long-term analyst and bank forecasts. The forecast uses annual predictions for the period 2026–2031, reverting to a long-term fixed forecast from 2031 for the remaining mine life.

16.5 CONTRACTS

16.5.1 COPPER

Vale Base Metals has agreements at typical copper concentrate industry benchmark terms for metal payables, treatment charges and refining charges for concentrates produced. Treatment costs and refining costs vary depending on the concentrate type and the destination smelter. The terms contained within the copper concentrate sales contracts are typical and consistent with standard industry practice and are similar to contracts for the supply of copper concentrate throughout the world.

Depending on the specific contract, the terms for the copper concentrate sale are either annually negotiated, benchmark-based treatment and refining charges, or in the case of spot agreements are based on fixed treatment and refining charges based on market terms negotiated at the time of sale.

16.5.2 GOLD

As a metal contained in the copper concentrate, the terms for gold are determined through a payable mechanism on metal content based on typical market terms. As typical for concentrates, the product is generally contracted under a medium-term contract.

16.5.3 VALE AFFILIATES

Intercompany agreements between Vale affiliates are negotiated under the arm’s length principle based on market terms and rates that would be achieved had the contract been negotiated with an unaffiliated third party.

16.5.4 GOODS AND SERVICES

Contracts may be entered into for goods and services. On occasions, mining contractors may be employed for specific mine development projects. In-place contracts include transportation, purchase of fuel, reagents and other process consumables, and mining equipment leases. The terms contained within the contracts are typical of, and consistent with, standard industry practices.

17 ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

17.1 BASELINE AND SUPPORTING STUDIES

Environmental and social baseline study areas were defined to characterize the valued ecosystem components in the areas potentially affected by mining activities.

The social and environmental management plans that Vale Base Metals implemented comply with Brazilian legislation and industry practices. Vale Base Metals aims to prevent or mitigate potential impacts related to the Salobo Operations and ensure compliance with all relevant Brazilian legislation and international benchmark standards. The operations run environmental programs framed by the mitigation hierarchy of avoiding, minimizing, and when necessary, mitigating, remediating and compensating previously identified residual impacts on biodiversity and the physical and social environments.

17.2 ENVIRONMENTAL CONSIDERATIONS/MONITORING PROGRAMS

The site runs monitoring programs for several different components, including air quality, surface-water monitoring of the Salobo Stream and Itacaiunas River (e.g. turbidity and chemicals of interest, and suspended particulates). Changes in particulate matter emissions were identified, and after corrective actions were taken, the parameters were brought into compliance.

The site also develops and monitors rehabilitation and reforestation of degraded and disturbed lands.

Vale Base Metals is aware of environmental issues related to contractor fleet vehicular accidents causing minor diesel spills. An environmental assessment developed by Vale Base Metals indicated exceedances of a few elements above CONAMA legal limits, but still within the background levels. A second phase of the environmental assessments are underway, with the awareness of the regulatory authorities in relation to the environmental exceedances.

Static acid base accounting and acid-drainage test work concluded that there are no current acid mine drainage (AMD) processes on site. Nonetheless, potentially acid generating (PAG) low-grade oxide waste-rocks are blended with non-acid generating (NAG) waste rocks in the centre of the WRSF as a preventive neutralization measure.

17.3 CLOSURE AND RECLAMATION CONSIDERATIONS

There are no reclamation bonds required for the Salobo Mine. Rehabilitation and re-vegetation work is ongoing during operations.

The closure plan for Salobo Mine was last updated in October 2022 by ARCADIS, in compliance with National Mining Agency Resolution 68/2021.

In 2025, closure costs for the Salobo Operations were updated based on an adjustment to the unit price of the activities included in the closure plan. The estimated mine closure cost is US$247.49 million (R$1.35 billion).

Closure costs are included in the mine site financial model as cash costs on an annual basis. The largest closure costs are associated with the TSF, stockpiles, and process plant.

17.4 PERMITTING

The Salobo Operations hold all required permits to support the current mining and processing activities. The Operating Licence was renewed on October 19, 2018, and was valid through 2024. Under Brazilian environmental legislation when a renewal request is submitted at least 120 days prior to the licence expiry date, the validity of the existing licence is automatically extended until the environmental authority issues a final decision. The renewal application for Salobo was submitted on May 25, 2024, within the legally required timeframe, ensuring uninterrupted operational compliance. The renewal, includingthe Salobo III operational permit was approved on May 20, 2025.

The operations develop control and monitoring systems to ensure that permits remain current, and to ensure compliance to requirements and regulatory conditions imposed by each permit.

In addition to the Salobo Operating Licence, 33 environmental permits were issued for Salobo Operations Line 3, including:

- Six installation licences (No 1046/2015, No 1249/2018, No 1209/2018, No 1383/2021, 1395/2021 and 1471/2023);
- Five vegetation removal licences (No 10539202020631, No 1053.9.2021.38386, No 10539201917636, No 10539202020632 and No 10539202020631);
- Five authorizations for fauna and flora assessments and rescue (No 797/2017, No 1017/2018. No 1330/2020, No 085/2021, and No 1504/2023);
- Four operation licences (No 1035/2011, No 1081/2012, No 1096/2012, No 1585/2020);
- 13 water collection and disposal concessions (No 1895/2017, No 3188/2018, No 4443/2020, No 1896/2017, No 2024/2020, No 2108/2021. No 2341/2022, No 2342/2022, No 2343/2022, No 639/2023, No 7298/2024, No 7402/2024 and No 7578/2025.

Under Brazilian legislation, these permits have finite terms and are renewed periodically as part of the standard regulatory process. Salobo has a long-established track record of obtaining timely renewals, with no indications of restrictions that would limit future renewals.

These licences are sufficient to maintain the mining and processing operations throughout the operation planning of the Salobo I, II, and III facilities and there is a reasonable expectation that all necessary permits will continue to be renewed throughout the Life of Mine.

17.5 SOCIAL CONSIDERATIONS, PLANS, NEGOTIATIONS AND AGREEMENTS

The closest non-traditional Indigenous villages to the Salobo operations are Paulo Fonteles and Sanção. The expected Salobo Operations impact on these settlements is increased vehicle traffic using the Paulo Fonteles highway.

The Salobo Operations is located in the Tapirapé Aquiri National Forest, Pará, whose Indigenous lands Xikrin do Bacajá and Xikrin do Cateté, are 60 km and 25 km away, respectively, from the Salobo Operations area.

The Indigenous peoples from Xikrin do Cateté land traditionally move once a year to the Tapirapé Aquiri National Forest to collect Brazil nuts, which are in season from January–April. This activity is not shared by any other indigenous group, and no other group uses the Tapirapé Aquiri National Forest for any traditional practices.

As a result, Vale Base Metals maintains a communication plan with the Xikrin do Cateté Indigenous community that includes a continued dialogue about health and safety during their stay. Vale Base Metals also supports their camp with clean water, electricity, a specialist that speaks to the community on a daily basis, and provides first aid to any emergencies that may occur during the harvesting period. In addition, Vale Base Metals’s operational workers are fully trained in regard to the annual collecting practices, to avoid any ethnic or cultural conflicts.

Vale Base Metals’s Social Inclusion Plan is intended to support sustainable development by capitalizing the positive effects and minimizing any potential negative Salobo Operations effects. This plan is supported by a social communications program that facilitates information exchange and works to improve relations between the Salobo Operations and surrounding communities through an active community consultation program and a grievance registration process.

In July 2018, Indigenous associations representing the Xikrin do Cateté and Xikrin do Bacajá communities filed a public civil lawsuit against Vale, Salobo Metais, IBAMA and FUNAI, seeking to suspend the Salobo mining operations. They claimed that required studies on Indigenous impacts had not been completed and alleged potential effects on the Itacaiúnas River, also requesting monthly payments until the studies were finalized.

In July 2019, the federal court partially granted their request by ordering Vale and Salobo to prepare an Indigenous Component Study but denied the request to suspend operations and all other claims.

In December 2021, Vale and the Xikrin of the Cateté Indigenous Territory signed the Xikrin Global Agreement, later ratified by the court in June 2022. This agreement closed the case and resolved all socioeconomic claims, establishing monthly payments that Vale has been providing since then.

In the same ruling, the court also dismissed the claims brought by the Xikrin of the Trincheira Bacajá Indigenous Territory, who did not join the agreement. That community appealed the decision to the Federal Regional Court of the First Region, where the case remains pending. No order affects current licensing or operations. The matter does not pose a material risk to operational continuity or mineral reserves.

In September 2025, following discussions with the Xikrin do Cateté community, Vale Base Metals agreed to increase the monthly payments by anticipating the 2025 inflation adjustment (5.46%) for a 12-month period starting in September 2025.

17.6 QUALIFIED PERSON'S OPINION ON ADEQUACY OF CURRENT PLANS TO ADDRESS ISSUES

The permitting and environmental requirements to operate the Salobo Operations are well understood and can support mineral resource and mineral reserve estimation.

No material issues with completed environmental studies, permitting, or closure assumptions were identified that would require significant mitigation plans to be developed.

18 CAPITAL AND OPERATING COSTS

18.1 INTRODUCTION

All capital and operating cost estimates are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

Growth capital includes the CPF Project, while sustaining capital covers ongoing requirements for mining, processing, and site infrastructure. Sustaining capital is allocated directly to the area in which it is incurred and is developed from forecast mine development needs, equipment replacement schedules, and fixed-asset refurbishment plans.

The overall capital cost estimate, including CPF growth capital and sustaining capital for mining, processing, and other site functions for the LOM PLAN is US$3,918M as shown inTable 18-1.

The numbers presented in this Chapter are to demonstrate the economic viability of the mineral reserve. Information in this Chapter may differ from other information Vale Base Metals publishes on an annual detailed basis.

18.2 CAPITAL COST ESTIMATES

18.2.1 BASIS OF ESTIMATE

Capital costs are based on recent prices or operating data. Unit costs for in-house mine development are based on historical actual costs. Mobile equipment that is leased is included in operating costs. Lease periods typically range from two to five years. Lease costs are charged to capital while the equipment is doing capital work. Purchased equipment is allocated for in the capital plan. Mobile equipment and fixed asset costs are based on supplier quotations and/or current examples. Sustaining capital cost forecasts are based on forecast mine development and construction needs, mobile equipment re-build/replacement schedules and fixed asset replacement and refurbishment schedules.

Sustaining capital includes the following:

Mine sustaining:

- Mine mobile equipment acquisition, replacement, and rebuild;
- Pre-stripping activities;
- Mine infrastructure (e.g. electrical, dewatering, explosive storages, fuel storages, mobile garages);
- Construction of waste disposal, dykes, haulage roads, and mine stockpile infrastructure;

Processing sustaining:

- Raising and maintenance of the TSF infrastructure;
- Upgrades and automation of dam and processing plant monitoring technology;
- Maintenance of plant infrastructure;
- Purchase of plant components;

Other sustaining:

- G&A: Maintenance and construction of administrative buildings (offices, canteens, dry facilities);
- IT/communications infrastructure;
- Plant security;
- Workforce logistics/transportation,

- Training;
- Legal and environmental projects.

18.2.2 CAPITAL COST ESTIMATE SUMMARY

All capital cost estimates are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%. All costs and prices are in unescalated “real” dollars.

The overall capital cost estimate for the LOM Plan is US$3,918 million and includes US$213 million of growth capital for the CPF Project, as shown in Table 18-1, with the remainder allocated to sustaining capital for mining, processing, and site infrastructure. Sustaining capital requirements reflect planned mine development, equipment rebuild and replacement programs, TSF raises and maintenance, processing-plant component replacements, and general site and administrative infrastructure. Capital costs are based on recent price trends and historical operational data.

The capital cost estimates presented in this Report demonstrate the economic viability of the mineral reserves and may differ from other capital cost estimates Vale Base Metals publishes on an annual detailed basis.

Table 18-1: LOM Plan Capital Cost Estimate (Real US$)

Area	Unit	2025–2050
CPF Project - Growth	US$ M	213
Mining sustaining	US$ M	2,211
Mill sustaining	US$ M	962
Other sustaining	US$ M	532
Total	***US$ M***	***3,918***

Note: All numbers have been rounded. “Other” costs include provisions for elements such as maintenance and raises of tailings dams, electrical power distribution and the central engineering department

18.3 OPERATING COST ESTIMATES

18.3.1 BASIS OF ESTIMATE

Operating costs are based on actual costs from operations, and are projected through the LOM plan.

Historical costs are used as the basis for operating cost forecasts for supplies and services unless there are current contract terms for these items.

Labour and energy costs are based on budgeted rates applied to headcounts and energy consumption estimates.

The long-term mine operating cost model accounts for the impact of varying production rates on the direct and indirect variable cost items as per Vale Base Metals definitions. As a mine approaches the end of mine life, some fixed (e.g., labour) and distributed costs are reduced in line with the projected lower production rates.

The processing operating cost estimates are the budget year cash costs applied to the mineral reserves mined throughout the LOM plan. These processing costs include both variable and fixed plant components. Incremental operating costs associated with CPF integration are reflected in the processing cost assumptions used in the economic analysis.

18.3.2 OPERATING COST ESTIMATE SUMMARY

All operating cost estimates are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

The LOM plan estimated operating costs are provided in Table 18-2, and total US$27,056 M.

The operating cost estimates presented in this Report demonstrate the economic viability of the mineral reserve. This information may differ from other operating cost estimates Vale Base Metals publishes on an annual detailed basis.

Table 18-2: LOM Plan Operating Cost Estimate (Real US$)

Area	Unit	2025–2050
Mining costs	US$ M	8,266
Processing	US$ M	11,756
Logistics	US$ M	1,070
G&A	US$ M	1,471
Corporate overhead	US$ M	789
Ocean freight	US$ M	1,225
Royalty	US$ M	1,379
Other	US$ M	1,099
Total	***US$ M***	***27,056***

Note: All numbers have been rounded. G&A = general and administrative.

19 ECONOMIC ANALYSIS

19.1 INTRODUCTION

The aim of the economic evaluation presented in this Report chapter is to demonstrate the economic viability of the mineral reserve. The production rates, costs and expenditures, taxes and other information presented can differ from other information Vale Base Metals publishes. The planned production extraction may vary due to continuous mineral exploration and technical studies to add new mineral reserves.

19.2 METHODOLOGY

The financial model that supports the mineral reserve declaration is a standalone model that calculates annual cash flows based on scheduled ore production, processing recoveries, metal sale prices, a R$/US$ exchange rate, projected operating and capital costs and estimated taxes.

The financial analysis is based on an after-tax discount rate of 7.0% following a mid-year convention and a long-term R$/US$ exchange rate of 5.56. All costs and prices are in unescalated "real" dollars. The currency used to document the cash flow is the US$.

Operating cost estimates are based on fixed and variable expense definitions that are driven by planned activities and volumes. Capital cost estimates are derived from the budget rates and project studies and applied to planned development, construction, asset purchase and refurbishment requirements.

Revenue is calculated from the recoverable metal and the long-term forecast of metal prices and exchange rates. Revenue from the sale of a copper concentrate is included, based on the contained metal, accountability factors and the long-term forecast for metals prices and exchange rates.

All inputs to the economic analysis are derived at a minimum of a pre-feasibility level of confidence. Several of those inputs have been discussed in earlier chapters.

19.3 INPUT PARAMETERS

The economic analysis uses the technical and economic assumptions defined in the preceding chapters of this Report:

- The mineral reserves estimate was summarized in Chapter 12.2. The projected mine life was provided in Chapter 13.7.
- The metallurgical recovery forecast was provided in Chapter 10.3.
- Commodity prices were discussed in Chapter 16.3.
- Capital costs were summarized in Chapter 18.2. Operating costs were summarized in Chapter 18.3.
- Royalties were summarized in Chapter 3.8.
- Closure and reclamation costs were discussed in Chapter 17.3.

The economic analysis is based on 100% equity financing and is reported on a 100% project ownership basis.

19.4 TAXATION CONSIDERATIONS

The statutory Federal corporate income tax rate is 34%, consisting of a 25% corporate income tax (IRPJ) and a 9% tax known as the for Social Contribution on Net Profit (CSLL). The actual corporate income tax rate is 15%, plus a surcharge of 10% on taxable income exceeding US $48,000 a year. The social contribution is levied on a taxable base similar to the corporate income tax.

A Federal tax, CFEM, is levied on economic use of the produced good. Under this tax, 2% is for “diamond and other mineral substances”, which includes copper ore.

In addition to CFEM, the State of Pará imposes a state-level mining tax known as the Taxa de Fiscalização de Recursos Minerais (TFRM).

The Social Contributions on Gross Revenues taxes (PIS and COFINS) are Federal social contribution taxes that must be paid by all entities in Brazil (i.e., not restricted to mining companies) and are calculated based on gross revenues. The applicable tax rate is 9.25% (1.65% PIS and 7.6% COFINS), and neither tax is applicable to revenues from exports.

A Provincial tax, the Tax on Circulation of Goods and Services (ICMS), is an indirect tax similar to VAT. It is a State VAT tax, and the rates vary according to where the product/good/mine is being sold, depending on the specific state legislation. In Pará State, the tax is 19% and is not applicable to exports.

The tax assessment assumes that the SUDAM benefit, an incentive designed to encourage investment in the Amazon area, which represents a 75% reduction in income tax rate (from 25% to 6.25%), and it is assumed to remain in effect though the end of operations in 2050.

19.5 RESULTS OF ECONOMIC ANALYSIS

The post-tax NPV at a discount rate of 7.0% is US$16,614 million. A cashflow summary is provided in Table 19-1. Impacts of streaming agreements are not included.

Table 19-2 present the average cashflows per period 2026–2050.

A graphic showing the annual LOM plan cashflow is provided in Figure 19-1.

The economic analysis groups periods according to the operating profile of the mine. We believe presenting the grouped cash flows over these periods accounts for the uncertainty in the actual timing and amounts of the cash flows and better represent the material information about the economic viability of mining the reserves which has a long mine life. The years 2026–2027 are reported separately because they correspond to the ramp-up phase. Once nominal plant feed stabilizes at 42 Mtpa, results are grouped into five-year intervals (2028–2032, 2033–2037, 2038–2042, 2042–2046), reflecting steady-state mining and processing conditions. The final period, 2047–2050, is shown when open-pit mining ends and production is derived solely from stockpile processing.

As the cashflows are based on existing operations where all costs are considered sunk to 1 January 2026, considerations of payback and internal rate of return are not relevant.

Table 19-1: Cashflow Summary Table (Real US$)

Cashflow Item	Sub-item	Unit	Average/ Total
Production	Waste mined	Mt (wet)	1,026
	Ore tonnes	Mt (wet)	1,089
	Annual throughput	Mt	35-42
	Ore processed	Mt (dry)	1,024
	Copper grade	%	0.60
	Gold grade	g/t	0.34
	Copper recovered	kt	5,340
	Gold recovered	koz	7,778
Market assumptions	Copper price (long-term)	US$/t	9,950
	Gold price (long-term)	US$/oz	2,650
	Exchange rate (long-term)	R$/US$	5.56
Economic results	Total revenue	US$ M	68,974
	Total operating costs, expenses, R&D, royalties and closure costs	US$ M	27,353
	Total capital costs	US$ M	3,918
	Total taxes and working capital change	US$ M	5,385
	Total cashflow post-tax	***US$ M***	***32,318***
	NPV @ 7.0%	***US$ M***	***16,614***

Note: Numbers have been rounded. The cashflow summary is reported on a 100% basis. The Salobo Operations are conducted by Salobo Metais SA, which holds the mineral rights. Salobo Metais SA is a wholly owned company of Vale Base Metals Limited, which is a majority-owned subsidiary of Vale SA, with a 90% ownership, in addition to the 10% ownership of Manara Minerals. Figures shown do not deduct the stream amounts. For a description of the streaming arrangement with Wheaton Precious Metals, see Chapter 3.8.

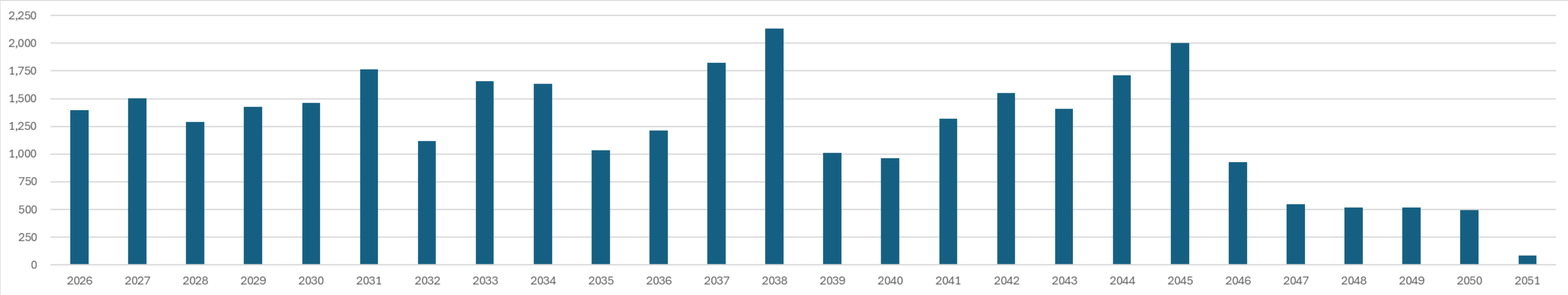
Table 19-2: Salobo Grouped Annual Cashflows per period 2026–2050

Cashflow	Units	Grouped Periods					
		2026-2027	2028-2032	2033-2037	2038-2042	2043-2046	2047-2050
Annual average waste mined	Mt (wet)	70	66	69	40	3	-
Annual average ore mined	Mt (wet)	56	66	62	45	28	-
Annual average ore processed	Mt (dry)	0.44	0.38	0.41	0.33	0.35	0.15
Annual average copper grade	%	228	239	247	228	209	119
Annual average gold grade	g/t	374	368	380	302	317	129
Annual average copper recovered	kt	6,623	15,843	15,992	14,125	10,771	5,620
Annual average gold recovered	koz	(2,193)	(6,495)	(6,194)	(5,671)	(3,586)	(2,916)
Total revenue	US$ million	(664)	(1,146)	(1,357)	(1,071)	(910)	(320)
Total operating costs, expenses, R&D, royalties, and closure costs	US$ million	(853)	(1,131)	(1,070)	(400)	(227)	(237)
Total tax and working capital change	US$ million	2,899	7,059	7,370	6,983	6,047	2,077
Total capital cost estimate	US$ million	70	66	69	40	3	-
Cashflow	***US$ million***	***56***	***66***	***62***	***45***	***28***	***-***

Notes:

1. All numbers have been rounded. The cashflow is reported on a 100% basis. The Salobo Operations are conducted by Salobo Metais SA, which holds the mineral rights. Salobo Metais SA is a wholly owned company of Vale Base Metals Limited, which is a majority-owned subsidiary of Vale SA, with 90% ownership, in addition to the 10% ownership of Manara Minerals.
2. Metal sale prices can be found in Chapter 16.3.
3. Figures shown do not deduct the stream amounts. For a description of the streaming arrangement with Wheaton Precious Metals, see Chapter 3.8.
4. After operations end in 2050, closure activities will continue until 2073, with a closure expense cost of US$200 million over that period (total US$247 million over LOM). A total of US$9 million represents the average cost of closure over that period.
5. The sole purpose of the presented numbers is to demonstrate the economic viability of the mineral reserve; therefore, these numbers can differ from other information Vale Base Metals publishes and should not be considered as a guidance.

Figure 19-1: LOM Plan Annual Cashflow – US$ million



Notes: All numbers have been rounded. The cashflow is reported on a 100% basis. The Salobo Operations are conducted by Salobo Metais SA, which holds the mineral rights. Salobo Metais SA is a wholly owned company of Vale Base Metals Limited, which is a majority-owned subsidiary of Vale SA, with a 90% ownership, in addition to the 10% ownership of Manara Minerals Jersey Limited. (1) Metal sale prices can be found in Chapter 16.3. (2) Figures shown do not deduct the stream amounts. For a description of the streaming arrangement with Wheaton Precious Metals, see Chapter 3.8. (3) After operations end in 2050, closure activities will continue until 2073, with a total closure expense cost of US$200 million over that period. A total of US$9 million represents the average cost of closure over that period. (4) The sole purpose of the presented numbers is to demonstrate the economic viability of the mineral reserve; therefore, these numbers can differ from other information Vale Base Metals publishes and should not be considered as a guidance.

19.6 SENSITIVITY ANALYSIS

A sensitivity analysis was performed on metal prices, metal recovered, capital costs and operating costs using a ±25% range:

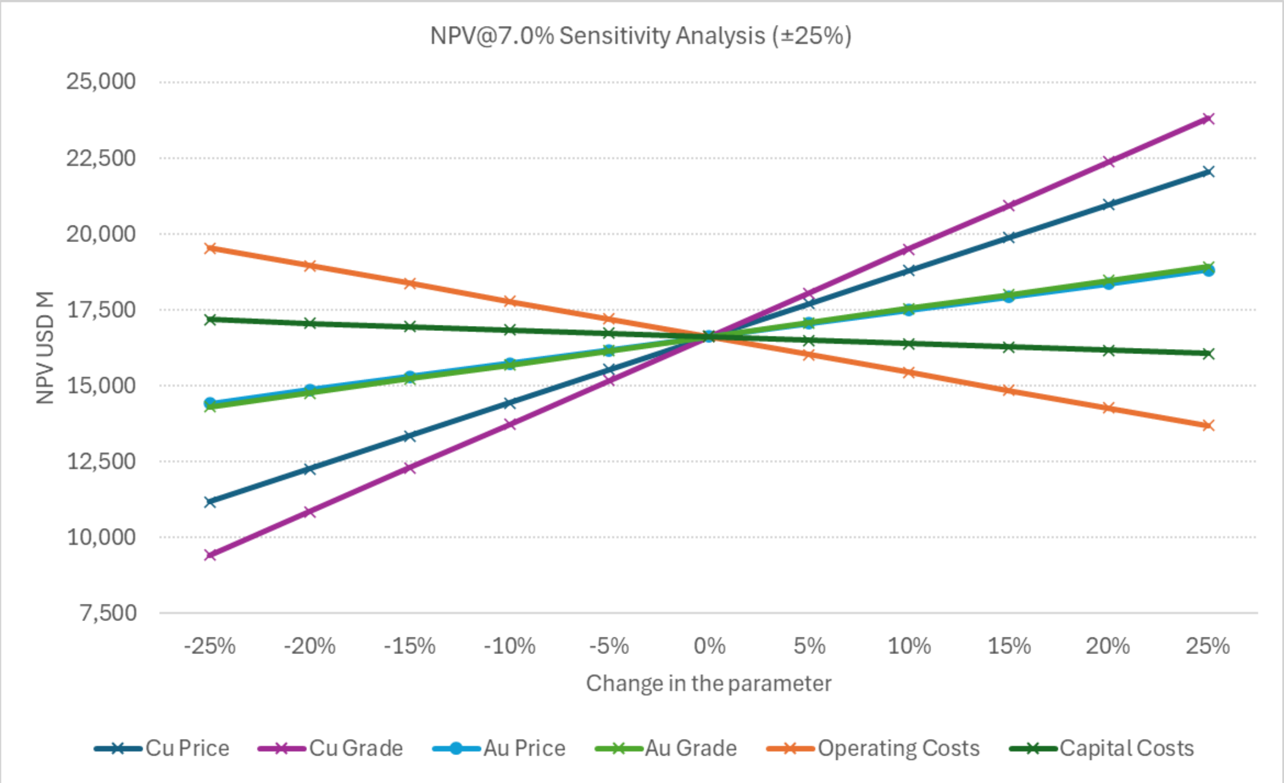
- Copper price;
- Copper grade;
- Gold price;
- Gold grade;
- Capital costs;
- Operating costs.

These sensitivities are presented in Figure 19-2 at a ±25% range to illustrate the impact of the changes on the parameters shown in the economic analysis presented in this Report.

The Salobo Operations are most sensitive, in decreasing order to:

- Copper grade;
- Copper price;
- Operating costs;
- Gold grade;
- Gold price;
- Capital costs.

Figure 19-2: Sensitivity Analysis



Note: Figure prepared by Vale, 2025. Values in the sensitivity graph do not include the impact of the gold streaming agreement.

20 ADJACENT PROPERTIES

This Chapter is not relevant to this Report.

21 OTHER RELEVANT DATA AND INFORMATION

This Chapter is not relevant to this Report.

22 INTERPRETATION AND CONCLUSIONS

The qualified persons note the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this Report.

22.1 EXPLORATION, DRILLING, AND SAMPLING

The exploration programs completed to date are appropriate for the deposit style.

The exploration programs include a variety of methods, with the primary method of exploration being drilling. The drilling programs were based on industry best-practice methods to define and delineate the orebody.

Sampling methods, sample preparation, analysis and security conducted prior to Vale Base Metals involvement in the operations were in accordance with exploration practices and industry standards at the time the information was collected. Current Vale Base Metals exploration programs are also performed in accordance with exploration best practices and industry standards.

The QA/QC programs adequately address issues of precision, accuracy, and contamination. Modern drilling programs typically included blanks, duplicates, and standard samples. QA/QC submission rates meet current industry-accepted standards.

22.2 DATA VERIFICATION

Vale Base Metals had data collection procedures in place that included several verification steps designed to ensure database integrity. Vale Base Metals staff also conducted regular logging, sampling, laboratory, and database reviews. In addition to these internal checks Vale Base Metals contracted independent consultants to perform laboratory, database, and mine study reviews. The process of active database quality control and internal and external audits generally resulted in high-quality data.

The data verification programs concluded that the data collected from the Salobo Operations area adequately support the geological interpretations and constitute a database of sufficient quality to support the use of the data in mineral resource and mineral reserve estimation.

Data that have been verified on upload to the database, and checked using the layered responsibility protocols, are acceptable for use in mineral resource and mineral reserve estimation.

22.3 METALLURGICAL TESTWORK

Industry-standard studies were performed as part of process development and initial mill design. Testwork programs, both internal and external, continue to be performed to support current operations and potential improvements.

Samples selected for testing were representative of the various types and styles of mineralization. Samples were selected from a range of depths within the deposits. Sufficient samples were taken to ensure that tests were performed on sufficient sample mass.

Recovery factors estimated are based on appropriate metallurgical testwork, and are appropriate to the mineralization types and the selected process route. Plant recoveries may vary due to data to day changes in ore type or combinations of ore types being processed.

There are four deleterious elements of potential concern in the Salobo copper concentrate, namely fluorine, chlorine, uranium and carbon. Salobo Operations has contracts with Smelters with specific limits and penalties. Salobo Operations has demonstrated the ability to manage production and blending of concentrate within the acceptable limits, and potential penalties are appropriately modelled and incorporated in financials.

22.4 MINERAL RESOURCE ESTIMATES

Vale Base Metals has a set of protocols, internal controls, and guidelines in place to support the estimation process, which the estimators must follow.

Mineral resources are reported using the mineral resource definitions set out in S-K 1300, and are reported exclusive of those mineral resources converted to mineral reserves. The reference point for the estimate is insitu.

Areas of uncertainty that may materially impact the mineral resource estimates include: changes to long-term metal price and exchange rate assumptions; changes in local interpretations of mineralization geometry such as pinch and swell morphology, extent of brecciation, presence of unrecognized mineralization off-shoots; faults, dykes and other structures; and continuity of mineralized zones; changes to geological and grade shape and geological and grade continuity assumptions; changes to variography and search ellipse ranges that were interpreted based on limited drill data, when closer-spaced drilling becomes available; changes to metallurgical recovery assumptions; changes to the tonnage factors assigned to estimated blocks; changes to the input assumptions used to derive the potentially-mineable shapes used to constrain the estimates; changes to the forecast dilution and mineability assumptions; changes to the cut-off grades applied to the estimates; variations in geotechnical (including seismicity), hydrogeological and mining assumptions; and changes to environmental, permitting and social licence assumptions.

22.5 MINERAL RESERVE ESTIMATES

Mineral reserves were converted from measured and indicated mineral resources. Inferred mineral resources were treated as waste. The mine plan assumes open pit mining using conventional mining methods and equipment.

The LOM planning process uses previous actual availabilities, utilizations and costs as a reference to initially develop a five-year plan that is subsequently updated and used as the basis for the pit optimization and overall LOM plan.

Mineral reserves are reported using the mineral reserve definitions set out in S-K 1300. The reference point for the mineral reserve estimate is the point of delivery to the process plant.

Factors that may affect the mineral reserves estimates include: long-term commodity price assumptions; long-term exchange rate assumptions; and long-term consumables price assumptions. Other factors that can affect the estimates include changes to: mineral resources input parameters; constraining pit designs; cut-off assumptions; geotechnical (including seismicity) and hydrogeological factors; metallurgical and mining recovery assumptions; ability to continue to operate the Salobo Operations if significant changes or amendments are made to the current permitting regime, and changes to environmental, permitting and social licence assumptions. The long-term storage of the medium- and low-grade material in a tropical environment may lead to some oxidation of contained sulphide minerals, which may in turn impact recovery of metals during eventual processing of the stockpiles. The mineral reserve estimates are currently constrained to available tailings storage in the TSF. The storage capacity will need to be increased to convert additional mineral resources to mineral reserves.

22.6 MINING METHODS

The Salobo Operations consists of large-scale conventional open-pit mining with drilling, blasting, loading and hauling. The operating practices employed at the Salobo Operations are comparable to other large-scale open pit operations worldwide.

The open pit mine life is approximately 21 years, ending in 2046. The process plant will continue to operate by reclaiming stockpiled material until 2050. The last year of operations is a partial year.

22.7 RECOVERY METHODS

The Salobo processing plant is composed of three main lines (Salobo I, II, III) and has a total capacity of 36 Mtpa, supporting the LOM plan assumptions. Plant throughput and metallurgical assumptions have been validated by recent historical operational data.

Salobo copper concentrates are sold to third parties, and shipped through the Itaqui Port in São Luís city, Maranhão State.

22.8 INFRASTRUCTURE

All key infrastructure supporting mining and processing operations is built and operational, and is suitable for LOM plan purposes.

22.9 MARKET STUDIES

Vale Base Metals has established contracts and buyers for the products from the Salobo Operations. Vale Base Metals has an internal marketing group which monitors markets for its key products. Together with public documents and analyst forecasts, these data support that there is a reasonable basis to assume that for the LOM plan, that the key products will be saleable at the assumed commodity pricing, metal payables, treatment charges and refining charges for concentrates produced.

22.10 ENVIRONMENTAL, PERMITTING AND SOCIAL CONSIDERATIONS

Environmental and social baseline study areas were defined to characterize the conditions in the areas that would potentially be affected by mine components or activities, and the site maintains a monitoring program for a number of different elements.

In 2025, closure costs for the Salobo Operations were updated based on an adjustment to the unit price of the activities included in the closure plan. The estimated mine closure cost for the site is US$247.49 million (R$1.35 billion). Closure costs are included in the mine site financial model as cash costs on an annual basis.

All known and anticipated permits and approvals are in place to support operations. Where permits have specific terms, renewal applications are made of the relevant regulatory authority as required, prior to the end of the permit term.

The Salobo Operations maintains an open communication with Indigenous Communities and have a social program that facilitates information exchange and works to improve relations between the Salobo Operations and surrounding communities through an active community consultation program and a grievance registration process.

22.11 CAPITAL COST ESTIMATES

All capital cost estimates are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

The overall capital cost estimate for the LOM plan is US$3,918 M.

Capital costs were estimated in alignment with current price trends and historical operations contracts, therefore, in alignment with industry best practices.

The capital cost estimates presented in this Report demonstrate the economic viability of the mineral reserve. This information may differ from other capital cost estimates Vale Base Metals publishes on an annual detailed basis.

22.12 OPERATING COST ESTIMATES

All operating cost estimates are at a minimum at a pre-feasibility level of confidence, having an accuracy level of ±25% and a contingency range not exceeding 15%.

Operating costs total US$27,056M over the LOM plan.

Operating costs were estimated in alignment with current price trends and historical operations contracts, therefore, in alignment with industry best practices.

The operating cost estimates presented in this Report demonstrate the economic viability of the mineral reserve. This information may differ from other operating cost estimates Vale Base Metals publishes on an annual detailed basis.

22.13 ECONOMIC ANALYSIS

The financial model that supports the mineral reserve declaration is a standalone model that calculates annual cash flows based on scheduled ore production, processing recoveries, metal sale prices, a R$/US$ exchange rate, projected operating and capital costs and estimated taxes. The financial analysis is based on an after-tax discount rate of 7.0% following a mid-year convention and a long-term R$/US$ exchange rate of 5.56. All costs and prices are in unescalated “real” dollars. The currency used to document the cash flow is the US$.

The financial model has consistent commodity pricing, metal payables and smelter penalties, treatment costs and refining charges, as per indicated by Vale Base Metals market studies. Mine plans, capital and operating cost assumptions were leveraged from studies at minimum of pre-feasibility level. Taxes, royalties and other deductions were appropriately accounted for accordingly to Brazilian legislation. The model also accounts for up-to-date closure costs.

The post-tax NPV at a discount rate of 7% is US$16,614 million.

A sensitivity analysis was performed on metal prices, metal recovered, capital costs and operating costs using a ±25% range. The Salobo Operations are most sensitive, in decreasing order to: copper grade; copper price; operating costs; gold grade; gold price; and capital costs.

22.14 RISKS AND OPPORTUNITIES

22.14.1 RISKS

Factors that may affect the mineral resource and mineral reserve estimates were identified in Chapter 11.13.2 and Chapter 12.6.2 respectively.

Risks to the Salobo Operations as a whole include:

- Geotechnical pit slope design parameters are not being met in operational practice. This is particularly apparent in crest loss and hard toes. Additional slope design assessment is required. Improved drill and blast operational practices are also required. While an action plan is in place to address these issues, the mismatch in design versus operations is a risk to the mineral reserves, operating costs, and the economic analysis.
- In 2022, the ANM issued Resolution No. 95/2022, consolidating the content of various previously created standards related to mining dam safety, and introducing new features under the National Dam Safety Policy. After, in 2025, the ANM issued Resolutions No. 220/25, replacing the prior framework. Regarding dam safety Res. 220/25 ANM updated its regulations to meet the new parameters and implemented additional changes. The new ANM resolution further tightened restrictions on the presence of workers in the Self-Rescue Zone (ZAS) of dams, excluding from the permitted activities those related to mining operations, ore processing, and the disposal of tailings and waste rock. The risk is that the interpretation of the new resolution could lead to the relocation of some infrastructure to areas outside the ZAS.

22.14.2 OPPORTUNITIES

Opportunities include:

- Potential conversion of those measured and indicated mineral resources reported exclusive of mineral reserves, with supporting studies, to mineral reserves;

- Potential conversion of inferred mineral resources, with supporting studies, to higher confidence mineral resource classifications;
- The Salobo deposit remains open at depth and there is potential for additional mineralization to be outlined under, and to the northeast of, the current open pit;
- Pit slope angles in some areas of the pit are based on less detailed information than in other areas. Review of the operational pit slope angles through geotechnical examination of the pit wall operation, design of pushbacks, and further geotechnical studies may provide support for the optimization of some of the pit walls and provide a minimum upside as less waste material would need to be mined and sent to the WRSFs. This would have a positive effect on the operating cost estimates, and on the economic analysis that supports the mineral reserves estimates.

22.15 CONCLUSIONS

The qualified person states that under the assumptions presented in this Report, the Salobo Operations have a positive cash flow, and mineral reserve estimates can be supported.

23 RECOMMENDATIONS

The qualified persons make the following recommendations to de-risk, improve confidence in and add to the mineral resources and reserves include:

- Core drilling to support potential conversion of inferred mineral resources to higher confidence classifications. The estimated cost to execute the drilling program is approximately US$ 15.5 million.
- The Salobo mineralization remains open at depth under the current open pit outline. Continued exploration evaluation is warranted. The estimated cost for the continued exploration program is approximately US$ 30 million.The reserve estimates are currently constrained to available tailings storage in the TSF. The storage capacity will need to be increased to convert any mineral resources to future mineral reserves. Studies are underway to address and mitigate any future gaps and have an estimated cost of approximately US$ 370 million..

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24.2 ABBREVIATIONS AND SYMBOLS

Abbreviation/Symbol	Term
“	inch
<	less than
>	greater than
AABL	Anglo American Brasil Ltda.
AAS	atomic absorption spectrometry
AcAL	acetic acid leach (Salobo)
AF-ISE	boric-acid/sodium-carbonate fusion and ion-selective electrode determination
ANM	National Mining Agency
APA	Environmental Protection Area (Área de Proteção Ambiental)
ARD	aqua regia digestion (Salobo)
BDX	biotite schist
BIF	banded iron formation
R$	Brazilian real (currency)
CBRR	Comissão Brasileira de Recursos e Reservas. A Brazilian professional organisation responsible for establishing reporting guidelines for exploration results, mineral resources and mineral reserves in Brazil, and for administering the registration of Qualified Professionals, with published admission requirements and a formal code of ethics and disciplinary process
CFEM	The Financial Compensation for Mineral Exploitation (a royalty)
COFINS	Contribution for the Financing of Social Security (Brazil)
CRC	CVRD Research Ce
CSLL	social contribution on net profit
CuEq	copper equivalent
CuSol	acid soluble copper
CV	coefficient of variation
CVRD	Companhia Vale do Rio Doce
DB	diabase
DGRX	garnet–grunerite schist
dmt/hr	dry metric tonnes per hour
DNPM	National Department of Mining Production
DOCEGEO	exploration arm of CVRD
ECI	Indigenous Component Study (Estudo de Componente Indígena)
FA	fire assay
FUNAI	Brazilian National Indian Foundation
g	gram
G&A	general and administrative
g/t	grams per tonne
Ga	giga annum (billion years)
GM	ground magnetometer
GPS	global positioning system
GR	Old Salobo Granite

Abbreviation/Symbol	Term
GR	Young Salobo Granite
GS	gamma spectrometry
hp	horsepower (US customary)
HPGR	high pressure grinding roll
IBAMA	Brazilian Institute of Environment and Renewable Natural Resources
ICMS	tax on circulation of goods and services - a provincial tax
ICP	inductively coupled plasma
ICP-AES	Inductively coupled plasma- atomic emission spectroscopy
ICP-MS	inductively coupled plasma-mass spectrometry
IOCG	iron ore-copper-gold deposit
IP	induced polarization
IRPJ	25% corporate income tax
ISO/IEC	The International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), two non-governmental bodies that create global benchmarks for quality, safety, and consistency across various industries.
ISR	regular safety inspection
IT	information technology
JV	joint venture
kg	kilogram
km	kilometre
koz	thousand troy ounces
kt	kiloton (thousand metric tonnes)
kV	kilovolt
kWh/t	kilowatt hour per tonne
lb	pound
LCT	locked-cycle flotation test
LECO	A group of techniques (like combustion and inert gas fusion) to determine the elemental composition (carbon, hydrogen, nitrogen, oxygen, sulphur) named for the company that manufactured the instrument
LOM	life-of-mine
M	million
m	metre
m^3	cubic metres
MAD	multi-acid digestion (Salobo)
MDGEO	MDGEO Hidrogeologia e Meio Ambiente - third-party hydrogeology consultants
MIBK	methyl isobutyl ketone
MLA	feldspar–chlorite mylonite (Salobo)
mm	millimetre(s)
MSHA	United States Mining Safety and Health Administration
Mt	million tonnes
Mtpa	million tonnes per annum (year)
MTB	metavolcanic basic rock

Abbreviation/Symbol	Term
MW	megawatt(s)
NAG	non-acid generating
NN	nearest neighbour
NOS	National Operator of the Electrical System
NPV	net present value
OK	ordinary kriging
oz	troy ounce
P3201	A local survey datum used specifically at the Salobo mining operations in Pará State, Brazil
PABM	Mining Dam Emergency Action Plan
PAG	potentially acid-generating
PAX	potassium amyl xanthate
pH	Logarithmic scale used to specify the acidity or basicity of aqueous solutions
PIS	Programa de Integração Social tax in Brazil is a federal social contribution levied on a company's gross revenue
PLT	point load test
ppm	parts per million
PSAD56	A historical geodetic reference system for South America, using the International 1924 Ellipsoid and Greenwich prime meridian for topographic mapping, particularly in countries like Brazil, Peru, Ecuador, and Venezuela
QA/QC	quality assurance and quality control
QML	quartz mylonite
QP	Qualified Person
RAL	annual production report to the National Mining Agency
RC	reverse circulation
RCKS	Carajás seismic monitoring network
Rebio	Biological reserve
REE	rare earth element(s)
RIO	rhyolite
RPSB	periodic safety review of dams
RQD	rock quality description
SAG	semi-autogenous grind
SAL-SNT	sulphuric acid leach and silver-nitrate titration (Salobo)
SG	specific gravity
SIPX	sodium isopropyl xanthate
SME	Society for Mining, Metallurgy and Exploration
SMU	selective mining unit
SUDAM	Superintendency for the Development of the Amazon offers major tax benefits in Brazil's Amazon region, primarily a significant reduction (often 75%) on Corporate Income Tax (IRPJ) for approved projects
t	tonne
t/hr	tonnes per hour
TEM	transient electromagnetic geophysical survey

Abbreviation/Symbol	Term
TSF	tailing storage facility
TSP	total suspended particulates
Uimin	U.I. Minerals
US	United States
US$	United States dollar
US$ M	million United States dollars
US$/lb	United States dollars per pound
US$/oz	United States dollars per troy ounce
US$/t	United States dollars per tonne
VAT	value added tax
VOGBR	third party hydrogeology consultants
wmt/d	wet metric tonne(s) per day
wmt/hr	wet metric tonne(s) per hour
WRSF	waste rock storage facility
XMT	magnetite schist
XRF	X-ray fluorescence
yd^3	cubic yard

24.3 GLOSSARY OF TERMS

Term	Definition
amphibolite facies	One of the major divisions of the mineral-facies classification of metamorphic rocks, the rocks of which formed under conditions of moderate to high temperatures (500° C, or about 950° F, maximum) and pressures. Amphibole, diopside, epidote, plagioclase, almandine and grossular garnet, and wollastonite are minerals typically found in rocks of the amphibolite facies
aquifer	A geologic formation capable of transmitting significant quantities of groundwater under normal hydraulic gradients.
azimuth	The direction of one object from another, usually expressed as an angle in degrees relative to true north. Azimuths are usually measured in the clockwise direction, thus an azimuth of 90 degrees indicates that the second object is due east of the first.
ball mill	A piece of milling equipment used to grind ore into small particles. It is a cylindrical shaped steel container filled with steel balls into which crushed ore is fed. The ball mill is rotated causing the balls themselves to cascade, which in turn grinds the ore.
batter–berm configuration	A batter-berm configuration is a slope design, common in mining and civil engineering, that breaks a large, steep slope (the batter) into smaller, manageable sections using level or slightly sloped platforms called berms, creating a stepped appearance for stability, safety, and erosion control. The batter is the sloping face between berms, while the berm is the horizontal or gently sloped ledge, controlling water flow and catching falling debris, with the overall angle and dimensions defined by the batter's slope and berm's width.
beneficiation	Physical treatment of crude ore to improve its quality for some specific purpose. Also called mineral processing.

Term	Definition
Bond work index (BWi); Bond ball mill work index	A measure of the energy required to break an ore to a nominal product size, determined in laboratory testing, and used to calculate the required power in a grinding circuit design.
comminution/crushing/grinding	Crushing and/or grinding of ore by impact and abrasion. Usually, the word "crushing" is used for dry methods and "grinding" for wet methods. Also, "crushing" usually denotes reducing the size of coarse rock while "grinding" usually refers to the reduction of the fine sizes.
composite	A fixed-length, averaged sample created by combining shorter, irregularly sized drill core samples to ensure consistent "support" (length) for geostatistical analysis, preventing bias from varying sample lengths and creating uniform data for block modeling and grade estimation (like kriging). This process standardizes data, simplifies calculations, and accurately represents the deposit's spatial grade distribution, with optimal composite length often being 50% to 100% of the block size.
concentrate	The concentrate is the valuable product from mineral processing, as opposed to the tailing, which contains the waste minerals. The concentrate represents a smaller volume than the original ore
copper equivalent (CuEq)	The value of combined Cu and Au in the ore = CuEq% = Cu% + (Au g/t * k/100) where k represents the equivalence between gold and copper net values, including flotation recoveries percentage and smelter returns percentage.
correlogram	A plot showing how the correlation between data values changes with distance (lag), revealing spatial patterns where nearby points are more similar than distant ones, typically decreasing to zero correlation, and serves to visualize spatial dependence, check for randomness,
cut-off grade	A grade level below which the material is not “ore” and considered to be uneconomical to mine and process. The minimum grade of ore used to establish reserves. In estimation, cut-off grades are the grades used for grade shells.
Datum of Imbituba	Refers to the Brazilian Vertical Datum (BVD), a national reference point for elevations in Brazil, established using the average sea level at the Imbituba Port in Santa Catarina between 1949 and 1957, serving as the zero-level for most of the country's geodetic network
data verification	The process of confirming that data has been generated with proper procedures, has been accurately transcribed from the original source and is suitable to be used for mineral resource and mineral reserve estimation
deleterious elements	Impurities like arsenic (As), mercury (Hg), lead (Pb), bismuth (Bi), antimony (Sb), cadmium (Cd), fluorine (F), and zinc (Zn) that increase smelting/refining costs, cause environmental issues, affect worker health, and can lead to penalties or rejection by smelters.
density	The mass per unit volume of a substance, commonly expressed in grams/ cubic centimeter.
diabase	US terminology for an intrusive rock whose main components are labradorite and pyroxene, and characterized by an ophiolitic texture. Corresponds to a diorite.
dilution	Waste of low-grade rock which is unavoidably removed along with the ore in the mining process.
discount rate	converts future cash flows to present value, reflecting the time value of money and project-specific risks like commodity volatility, country stability, and project stage
discounted cash flow (DCF)	Concept of relating future cash inflows and outflows over the life of a project or operation to a common base value thereby allowing more validity to comparison of projects with different durations and rates of cash flow.
domain	A distinct geological zone with unique characteristics (grade, rock type, structure, geotechnical parameters) used to model and estimate resources or aid with mine design

Term	Definition
easement	Areas of land owned by the property owner, but in which other parties, such as utility companies, may have limited rights granted for a specific purpose.
encumbrance	An interest or partial right in real property which diminished the value of ownership, but does not prevent the transfer of ownership. Mortgages, taxes and judgements are encumbrances known as liens. Restrictions, easements, and reservations are also encumbrances, although not liens.
feasibility study	A feasibility study is a comprehensive technical and economic study of the selected development option for a mineral project, which includes detailed assessments of all applicable modifying factors, as defined by this section, together with any other relevant operational factors, and detailed financial analysis that are necessary to demonstrate, at the time of reporting, that extraction is economically viable. The results of the study may serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. A feasibility study is more comprehensive, and with a higher degree of accuracy, than a pre-feasibility study. It must contain mining, infrastructure, and process designs completed with sufficient rigor to serve as the basis for an investment decision or to support project financing.
flocculant	Chemicals (usually long-chain polymers) that clump tiny suspended mineral particles (like clay) into larger, heavier "flocs," enabling fast settling in thickeners, improving water recovery, dewatering concentrates, clarifying tailings, and making wastewater treatment efficient for reuse or discharge.
flona	National Forest (Brazil)
flotation	Separation of minerals based on the interfacial chemistry of the mineral particles in solution. Reagents are added to the ore slurry to render the surface of selected minerals hydrophobic. Air bubbles are introduced to which the hydrophobic minerals attach. The selected minerals are levitated to the top of the flotation machine by their attachment to the bubbles and into a froth product, called the "flotation concentrate." If this froth carries more than one mineral as a designated main constituent, it is called a "bulk float". If it is selective to one constituent of the ore, where more than one will be floated, it is a "differential" float.
flowsheet	The sequence of operations, step by step, by which ore is treated in a milling, concentration, or smelting process.
gangue	The fraction of ore rejected as tailing in a separating process. It is usually the valueless portion, but may have some secondary commercial use
geotechnical	Relating to the engineering properties of earth materials
Grade capping	The process of limiting the influence of high-grade samples by limiting the maximum grade off at a certain level.
grade shell	3D surfaces or volumes representing areas with specific mineral concentrations (grades) within a block model. Used to help visualize ore bodies and limit estimation.
greenschist facies	One of the major divisions of the mineral facies classification of metamorphic rocks, the rocks of which formed under the lowest temperature and pressure conditions usually produced by regional metamorphism. Temperatures between 300 and 450°C (570 and 840 °F) and pressures of 1 to 4 kilobars are typical. The more common minerals found in such rocks include quartz, orthoclase, muscovite, chlorite, serpentine, talc, and epidote
Hard boundary	Said of the boundary between two domains that allows no sharing of data across the boundary during mineral resource estimation
High pressure grinding rolls (HPGR)	A type of crushing machine consisting of two large studded rolls that rotate inwards and apply a high pressure compressive force to break rocks.
hydrocyclone	A static device with no moving parts that uses fluid pressure and centrifugal force to separate particle in a slurry based on their size and density.

Term	Definition
hydrology/hydrogeology	The scientific study of Earth's water, focusing on its movement, distribution, and properties
hydrothermalite	A general term for rocks and minerals formed by hydrothermal fluids interacting with existing rocks
indicated mineral resource	An indicated mineral resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of adequate geological evidence and sampling. The term adequate geological evidence means evidence that is sufficient to establish geological and grade or quality continuity with reasonable certainty. The level of geological certainty associated with an indicated mineral resource is sufficient to allow a qualified person to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.
inferred mineral resource	An inferred mineral resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. The term limited geological evidence means evidence that is only sufficient to establish that geological and grade or quality continuity is more likely than not. The level of geological uncertainty associated with an inferred mineral resource is too high to apply relevant technical and economic factors likely to influence the prospects of economic extraction in a manner useful for evaluation of economic viability. A qualified person must have a reasonable expectation that the majority of inferred mineral resources could be upgraded to indicated or measured mineral resources with continued exploration; and should be able to defend the basis of this expectation before his or her peers.
initial assessment	An initial assessment is a preliminary technical and economic study of the economic potential of all or parts of mineralization to support the disclosure of mineral resources. The initial assessment must be prepared by a qualified person and must include appropriate assessments of reasonably assumed technical and economic factors, together with any other relevant operational factors, that are necessary to demonstrate at the time of reporting that there are reasonable prospects for economic extraction. An initial assessment is required for disclosure of mineral resources but cannot be used as the basis for disclosure of mineral reserves
interferometric radar	Radar interferometry (InSAR) is a remote sensing technique that uses two or more radar images of the same area, taken from slightly different positions or times, to create interference patterns (fringes) that reveal tiny changes on the Earth's surface, like ground deformation (uplift/subsidence) or topography, with millimeter precision.
internal rate of return (IRR)	The rate of return at which the Net Present Value of a project is zero; the rate at which the present value of cash inflows is equal to the present value of the cash outflows.
interpolate	The process of estimating unknown data values that fall between known data points, assuming a continuous trend or pattern connects them.
ion-selective electrode	The Ion-Selective Electrode (ISE) method is an electroanalytical technique that measures the activity (and thus concentration) of specific ions in a solution by developing a potential difference across a selective membrane, proportional to the ion's activity
jazida	Mineral deposit
joint venture	A legal contract where two or more entities collaborate on a specific project
kriging	A geostatistical method for spatial interpolation, estimating unknown values at locations based on known sampled data points by considering their spatial relationships and continuity.
LECO	Named after Laboratory Equipment Corporation (LECO), a group of techniques (like combustion and inert gas fusion) to determine the elemental composition

Term	Definition
	(Carbon, Hydrogen, Nitrogen, Oxygen, Sulfur) and thermal properties of organic and inorganic materials
life of mine (LOM)	Number of years that the operation is planning to mine and treat ore, and is taken from the current mine plan based on the current evaluation of ore reserves.
locked cycle flotation test	A standard laboratory flotation test where certain intermediate streams are recycled into previous separation stages and the test is repeated across a number of cycles. This test provides a more realistic prediction of the overall recovery and concentrate grade that would be achieved in an actual flotation circuit, compared with a more simple batch flotation test.
measured mineral resource	A measured mineral resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of conclusive geological evidence and sampling. The term conclusive geological evidence means evidence that is sufficient to test and confirm geological and grade or quality continuity. The level of geological certainty associated with a measured mineral resource is sufficient to allow a qualified person to apply modifying factors, as defined in this section, in sufficient detail to support detailed mine planning and final evaluation of the economic viability of the deposit.
metallurgical recovery	The percentage of valuable metal extracted from an ore during the metallurgical processing.
metasomatism	A geological process where a rock's chemical composition fundamentally changes due to hot, chemically active fluids (like water or magma-derived fluids) circulating through it, dissolving some minerals and depositing new ones
mill	Includes any ore mill, sampling works, concentration, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.
mineral reserve	A mineral reserve is an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated mineral resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted. The determination that part of a measured or indicated mineral resource is economically mineable must be based on a preliminary feasibility (pre-feasibility) or feasibility study, as defined by this section, conducted by a qualified person applying the modifying factors to indicated or measured mineral resources. Such study must demonstrate that, at the time of reporting, extraction of the mineral reserve is economically viable under reasonable investment and market assumptions. The study must establish a life of mine plan that is technically achievable and economically viable, which will be the basis of determining the mineral reserve. The term economically viable means that the qualified person has determined, using a discounted cash flow analysis, or has otherwise analytically determined, that extraction of the mineral reserve is economically viable under reasonable investment and market assumptions. The term investment and market assumptions includes all assumptions made about the prices, exchange rates, interest and discount rates, sales volumes, and costs that are necessary to determine the economic viability of the mineral reserves. The qualified person must use a price for each commodity that provides a reasonable basis for establishing that the project is economically viable.
mineral resource	A mineral resource is a concentration or occurrence of 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 economic extraction. The term material of economic interest includes mineralization, including dumps and tailings, mineral brines, and other resources extracted on or within the earth's crust. It does not include oil and gas resources, gases (e.g., helium and carbon dioxide), geothermal fields, and water.

Term	Definition
	When determining the existence of a mineral resource, a qualified person, as defined by this section, must be able to estimate or interpret the location, quantity, grade or quality continuity, and other geological characteristics of the mineral resource from specific geological evidence and knowledge, including sampling; and conclude that there are reasonable prospects for economic extraction of the mineral resource based on an initial assessment, as defined in this section, that he or she conducts by qualitatively applying relevant technical and economic factors likely to influence the prospect of economic extraction.
mining recovery	The percentage of ore removed from an orebody during mining relative to the planned tonnage
mylonite	Mylonite is a fine-grained, hard metamorphic rock with a streaky, banded texture (foliation) formed by intense shearing and ductile deformation
Nearest neighbor (NN)	The nearest neighbor (NN) model is a fundamental and simple method for mineral resource estimation where the grade of an unsampled block is assigned based entirely on the value of the single closest sample point.
Neo-Archean	Time period from 2,800 to 2,500 Ga
net present value (NPV)	The present value of the difference between the future cash flows associated with a project and the investment required for acquiring the project. Aggregate of future net cash flows discounted back to a common base date, usually the present. NPV is an indicator of how much value an investment or project adds to a company.
open pit	A mine that is entirely on the surface. Also referred to as open-cut or open-cast mine.
ordinary kriging (OK)	A geostatistical interpolation method used to estimate unknown values at unsampled locations based on known values from surrounding sample points, while minimizing estimation error and assuming a constant but unknown mean in the local neighborhood.
ore polygon	refers to a defined geometric area (often irregular) used to delineate valuable ore from waste rock for efficient extraction, calculated using drill-hole data to create boundaries for excavation
outlier restriction	The practice of identifying and managing data points that significantly deviate from the majority of a dataset by restricting their influence to small areas.
payback period	The time it takes for an investment's cumulative income or cash flow to equal its initial cost.
piezometer	A geotechnical instrument used to measure pore water pressure (subsurface water level) in soil, rock, or concrete structures, helping engineers monitor groundwater levels, soil stability, and foundation performance by indicating changes in hydraulic head (water pressure/elevation).
pilot plant	A small-scale industrial system used to test and optimize mining or metallurgical processes before full-scale commercial operation.
plant	A group of buildings, and especially to their contained equipment, in which a process or function is carried out; on a mine it will include warehouses, hoisting equipment, compressors, repair shops, offices, mill or concentrator.
potassic alteration	A relatively high temperature type of alteration which results from potassium enrichment. Characterized by biotite, K-feldspar, adularia.
preliminary feasibility study, pre- feasibility study	A preliminary feasibility study (prefeasibility study) is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a qualified person has determined (in the case of underground mining) a preferred mining method, or (in the case of surface mining) a pit configuration, and in all cases has determined an effective method of mineral processing and an effective plan to sell the product. A pre-feasibility study includes a financial analysis based on reasonable assumptions, based on appropriate testing, about the modifying factors and the evaluation of any other relevant factors that are sufficient for a qualified person to determine if all or part of the indicated and measured mineral resources may be

Term	Definition
	converted to mineral reserves at the time of reporting. The financial analysis must have the level of detail necessary to demonstrate, at the time of reporting, that extraction is economically viable
probable mineral reserve	A probable mineral reserve is the economically mineable part of an indicated and, in some cases, a measured mineral resource. For a probable mineral reserve, the qualified person's confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality is lower than what is sufficient for a classification as a proven mineral reserve, but is still sufficient to demonstrate that, at the time of reporting, extraction of the mineral reserve is economically viable under reasonable investment and market assumptions. The lower level of confidence is due to higher geologic uncertainty when the qualified person converts an indicated mineral resource to a probable reserve or higher risk in the results of the application of modifying factors at the time when the qualified person converts a measured mineral resource to a probable mineral reserve. A qualified person must classify a measured mineral resource as a probable mineral reserve when his or her confidence in the results obtained from the application of the modifying factors to the measured mineral resource is lower than what is sufficient for a proven mineral reserve.
proven mineral reserve	A proven mineral reserve is the economically mineable part of a measured mineral resource. For a proven mineral reserve, the qualified person has a high degree of confidence in the results obtained from the application of the modifying factors and in the estimates of tonnage and grade or quality. A proven mineral reserve can only result from conversion of a measured mineral resource.
pseudomorph	A crystal consisting of one mineral but having the form of another which it has replaced
qualified person	A qualified person is an individual who is a mineral industry professional with at least five years of relevant experience in the type of mineralization and type of deposit under consideration and in the specific type of activity that person is undertaking on behalf of the registrant; and an eligible member or licencee in good standing of a recognized professional organization at the time the technical report is prepared. For an organization to be a recognized professional organization, it must: (A) Be either: An organization recognized within the mining industry as a reputable professional association, or A board authorized by U.S. federal, state or foreign statute to regulate professionals in the mining, geoscience or related field; Admit eligible members primarily on the basis of their academic qualifications and experience. Establish and require compliance with professional standards of competence and ethics; Require or encourage continuing professional development; Have and apply disciplinary powers, including the power to suspend or expel a member regardless of where the member practices or resides; and; Provide a public list of members in good standing
reclamation	The restoration of a site after mining or exploration activity is completed.
refining	A high temperature process in which impure metal is reacted with flux to reduce the impurities. The metal is collected in a molten layer and the impurities in a slag layer. Refining results in the production of a marketable material.
restricted neighborhood	A geostatistical method to limit the effect of outlier (generally high-grade) in the estimate
rock quality designation (RQD)	A measure of the competency of a rock, determined by the number of fractures in a given length of drill core. For example, a friable ore will have many fractures and a low RQD.

Term	Definition
royalty	An amount of money paid at regular intervals by the lessee or operator of an exploration or mining property to the owner of the ground. Generally based on a specific amount per tonne or a percentage of the total production or profits. Also, the fee paid for the right to use a patented process.
run-of-mine	A term used to describe ore of average grade for the deposit.
saprolite	Saprolite is soft, intensely weathered rock that remains in its original place, formed by intense chemical weathering and leaching of bedrock (like granite, schist) into a clay-rich, earthy material that still shows the original rock's structure but can often be cut with a knife or broken by hand.
saussuritized	Saussuritization is a geological process where calcium-rich plagioclase feldspar alters into a fine-grained aggregate of new minerals called saussurite, typically including zoisite, chlorite, amphibole, and carbonates, often with albite and quartz, occurring during hydrothermal activity or low-grade metamorphism, especially in mafic rocks like gabbro and basalt, replacing the original plagioclase crystal structure.
seismicity	The occurrence or frequency of earthquakes/seismic events, especially in mining contexts
selective mining unit (SMU)	The smallest practical block size that can be economically extracted by the available equipment
semi-autogenous grinding (SAG)	A method of grinding rock into fine powder whereby the grinding media consists of larger chunks of rocks and steel balls.
soft boundary	Said of the boundary between two domains that allows unlimited sharing of data across the boundary during mineral resource estimation
specific gravity	The mass of a substance compared with the mass of an equal volume of pure water at 4°C.
strike length	The horizontal distance along the long axis of a structural surface, rock unit, mineral deposit or geochemical anomaly.
subophitic	A texture where large plagioclase crystals enclose ferromagnesian minerals
tailings	Material rejected from a mill after the recoverable valuable minerals have been extracted.
variability test	Variability testing in metallurgy assesses how an ore's characteristics (grade, hardness, mineralogy) change across a deposit, using techniques like composite sampling and specific tests (Bond, SMC, JK Drop-Weight) to understand variations in processing performance (recovery, energy, consumption) for better mine planning, process design, and risk reduction, ensuring plant design handles the full range of expected ore types.
Variogram / variography	A core geostatistical tool that visually and mathematically describes how data similarity changes with distance and direction, showing that closer points are generally more alike (lower variance) while distant points are less related (higher variance), forming a key component for spatial modeling.
Whittle	Mine planning software produced by Geovia
wireframe	3D digital models (wireframes) of geological features, like ore bodies, built from points and lines, can be open (surfaces) or closed (solids with volume) and are used to visualize, calculate volumes, grade resources, and design excavation layouts for both surface and underground mines.

25 RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

25.1 INTRODUCTION

The qualified persons fully relied on the registrant for the information used in the areas noted in the following sub-chapters. The qualified persons consider it reasonable to rely on the registrant for the information identified in those sub-chapters, for the following reasons:

- The registrant has been the owner and operator of the mining operations for more than 13 years;
- The registrant has employed industry professionals with expertise in the areas listed in the following sub- chapters;
- The registrant has a formal system of oversight and governance over these activities, including a layered responsibility for review and approval;
- The registrant has considerable experience in each of these areas.

25.2 MACROECONOMIC TRENDS

Information relating to inflation, interest rates, discount rates, and taxes was obtained from the registrant.

This information is used in the economic analysis in Chapter 19. It supports the assessment of reasonable prospects for economic extraction of the mineral resource estimates in Chapter 11, and inputs to the determination of economic viability of the mineral reserve estimates in Chapter 12.

25.3 MARKETS

Information relating to market studies/markets for product, market entry strategies, marketing and sales contracts, product valuation, product specifications, refining and treatment charges, transportation costs, agency relationships, material contracts (e.g., mining, concentrating, smelting, refining, transportation, handling, hedging arrangements, and forward sales contracts), and contract status (in place, renewals), was obtained from the registrant.

This information is used in the marketing in Chapter 16, and the economic analysis in Chapter 19. It supports the assessment of reasonable prospects for economic extraction of the mineral resource estimates in Chapter 11, and inputs to the determination of economic viability of the mineral reserve estimates in Chapter 12.

25.4 LEGAL MATTERS

Information relating to the corporate ownership interest, the mineral tenure (concessions, payments to retain property rights, obligations to meet expenditure/reporting of work conducted), surface rights, water rights (water take allowances), royalties, encumbrances, easements and rights-of-way, violations, and fines, permitting requirements, and the ability to maintain and renew permits was obtained from the registrant.

This information is used in support of the property description and ownership information in Chapter 3, the permitting and mine closure descriptions in Chapter 17, and the economic analysis in Chapter 19. It supports the reasonable prospects of economic extraction for the mineral resource estimates in Chapter 11, and the assumptions used in demonstrating economic viability of the mineral reserve estimates in Chapter 12.

25.5 ENVIRONMENTAL MATTERS

Information relating to baseline and supporting studies for environmental permitting and monitoring requirements, ability to maintain and renew permits, emissions controls, closure planning, closure and reclamation bonding requirements, sustainability accommodations, and monitoring for and compliance with requirements relating to protected areas and protected species was obtained from the registrant.

This information is used when discussing property ownership information in Chapter 3, the permitting and closure discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the reasonable prospects of economic extraction for the mineral resource estimates in Chapter 11, and the assumptions used in demonstrating economic viability of the mineral reserve estimates in Chapter 12.

25.6 STAKEHOLDER ACCOMMODATIONS

Information relating to social and stakeholder baseline and supporting studies, hiring and training policies for workforce from local communities, partnerships with stakeholders (including national, regional, and state mining associations; trade organizations; fishing organizations; state and local chambers of commerce; economic development organizations; non-government organizations; and state and federal governments), and the community relations plan was obtained from the registrant.

This information is used in the social and community discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the reasonable prospects of economic extraction for the mineral resource estimates in Chapter 11, and the assumptions used in demonstrating economic viability of the mineral reserve estimates in Chapter 12.

25.7 GOVERNMENTAL FACTORS

Information relating to taxation and royalty considerations at the Project level, monitoring requirements and monitoring frequency, bonding requirements, and violations and fines was obtained from the registrant.

This information is used in the discussion on royalties and property encumbrances in Chapter 3, the monitoring, permitting and closure discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the reasonable prospects of economic extraction for the mineral resource estimates in Chapter 11, and the assumptions used in demonstrating economic viability of the mineral reserve estimates in Chapter 12.