Technical Report on the Loulo-Gounkoto Gold Mine Complex, Mali

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FORWARD-LOOKING INFORMATION

This report contains forward-looking statements. All statements, other than statements of historical fact regarding Société des Mines de Loulo SA, Société des Mines de Gounkoto SA, Barrick Gold Corporation, or the Loulo-Gounkoto Gold Mine Complex, are forward-looking statements. The words "believe", "expect", "anticipate", "contemplate", "target", "plan", "intend", "project", "continue", "budget", "estimate", "potential", "may", "will", "can", "could" and similar expressions identify forward-looking statements. In particular, this report contains forward looking statements with respect to cash flow forecasts, projected capital, operating and exploration expenditure, targeted cost reductions, mine life and production rates, potential mineralisation and metal or mineral recoveries and information pertaining to potential improvements to financial and operating performance and mine life at the Loulo-Gounkoto Gold Mine Complex. All forward-looking statements in this report are necessarily based on opinions and estimates made as of the date such statements are made and are subject to important risk factors and uncertainties, many of which cannot be controlled or predicted. Material assumptions regarding forward-looking statements are discussed in this report, where applicable. In addition to such assumptions, the forward-looking statements are inherently subject to significant business, economic and competitive uncertainties, and contingencies. Known and unknown factors could cause actual results to differ materially from those projected in the forward-looking statements. Such factors include, but are not limited to: fluctuations in the spot and forward price of commodities (including gold, diesel fuel, natural gas and electricity); the speculative nature of mineral exploration and development; changes in mineral production performance, exploitation and exploration successes; diminishing quantities or grades of reserves; increased costs, delays, suspensions, and technical challenges associated with the construction of capital projects; operating or technical difficulties in connection with mining or development activities, including disruptions in the maintenance or provision of required infrastructure and information technology systems; damage to Société des Mines de Loulo SA, Société des Mines de Gounkoto SA, Barrick Gold Corporation, or the Loulo-Gounkoto Gold Mine Complex's reputation due to the actual or perceived occurrence of any number of events, including negative publicity with respect to the handling of environmental matters or dealings with community groups, whether true or not; risk of loss due to acts of war, terrorism, sabotage and civil disturbances; fluctuations in the currency markets; changes in interest rates; changes in national and local government legislation, taxation, controls or regulations and/or changes in the administration of laws, policies and practices including the rules applicable to the repatriation of Loulo-Gounkoto Gold Mine Complex's cash held in Mali, expropriation or nationalisation of property and political or economic developments in Mali; uncertainty whether the Loulo-Gounkoto Gold Mine Complex will meet Barrick Gold Corporation's capital allocation objectives; the impact of inflation; failure to comply with environmental and health and safety laws and regulations; timing of receipt of, or failure to comply with, necessary permits and approvals; non-renewal of key licences by governmental authorities; litigation; contests over title to properties or over access to water, power and other required infrastructure; risks associated with artisanal and small-scale mining; increased costs and physical risks including extreme weather events and resource shortages, related to climate change; availability and increased costs associated with mining inputs and labour, and risks associated with diseases, epidemics and pandemics, including the effects and potential effects of the global COVID-19 pandemic. In addition, there are risks and hazards associated with the business of mineral exploration, development, and mining, including environmental hazards, industrial accidents, unusual or unexpected formations, pressures, cave-ins, flooding, and gold ore losses (and the risk of inadequate insurance, or inability to obtain insurance, to cover these risks).

Many of these uncertainties and contingencies can affect Société des Mines de Loulo SA's or Société des Mines de Gounkoto SA's actual results and could cause actual results to differ materially from those expressed or implied in any forward-looking statements made by, or on behalf of, Société des Mines de Loulo SA, Société des Mines de Gounkoto SA, Barrick Gold Corporation. All of the forward-looking statements made in this report are qualified by these cautionary statements. Société des Mines de Loulo SA, Société des Mines de Gounkoto SA, Barrick Gold Corporation, and the Qualified Persons who authored this report undertake no obligation to update publicly or otherwise revise any forward-looking statements whether as a result of new information or future events or otherwise, except as may be required by law.

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1 Executive Summary

This Technical Report on the Loulo-Gounkoto Gold Mine Complex (Loulo-Gounkoto or the Complex), located in the Republic of Mali (Mali), has been prepared by Barrick Gold Corporation (Barrick).

The purpose of this Technical Report is to support the public disclosure of the Mineral Resource and Mineral Reserve estimates at the Complex, consisting of the Loulo Gold Mine (Loulo or Loulo Mine) and the Gounkoto Gold Mine (Gounkoto or Gounkoto Mine) located in western Mali, as of 31 December 2022. This Technical Report conforms to National Instrument 43-101 - Standards of Disclosure for Mineral Projects (NI 43-101). All currency in this report is US dollars ($) unless otherwise noted.

Société des Mines de Loulo SA (SOMILO) is an exploration and mining company and the owner of the Loulo Mine. SOMILO is held 80% by Barrick and 20% by the state of Mali.

Société des Mines de Gounkoto SA (Gounkoto SA) is an exploration and mining company and the owner of the Gounkoto Mine. Gounkoto SA is held 80% by Barrick and 20% by the state of Mali.

Barrick is the operator of both Loulo and Gounkoto.

The Complex is an operating mine site comprising two underground mines (Yalea and Gara) and a processing plant (5 million tonnes per annum (Mtpa) capacity) producing gold doré bars at Loulo, with a third underground mine and open pit operation at Gounkoto, in addition to a number of satellite deposits, together with other associated mine operation and regional exploration infrastructure.

On a 100% basis, total mine production from underground and open pits in 2022 was 5.1 Mt at a head grade of 4.59 g/t Au for a total of 684 koz of gold (91.2% recovery).

1.1 Location

Loulo-Gounkoto is situated in western Mali adjacent to the Falémé River which forms the international boundary with Senegal. Mali is a landlocked country and is bordered by Guinea, Senegal, Mauritania, Algeria, Niger, Burkina Faso, and the Côte d'Ivoire.

The Complex area is located 350 km west of the capital city of Bamako, 220 km south of Kayes and to the NW of the nearest town Kenieba. It falls within the Central Arrondissement of the Kenieba District which is one of the 10 districts of the Kayes Region.

The Dakar to Bamako Millennium Highway crosses the Loulo-Gounkoto haul road, approximately 6 km north of the Gounkoto pit. This highway serves as the primary access point for the mine and provides excellent road transport links with the rest of the country as well as Senegal, of which the border is within 3 km of the Complex.

A 1.5 km laterite airstrip is present within the Loulo Exploitation Permit (Loulo Permit) which can accommodate small to medium sized aircraft and has been awarded full certification by the transport authorities in Mali. Charter flights are arranged from the site to the capital Bamako, which is served daily by commercial flights from European cities.

1.2 Ownership

The Loulo Mine is located within the Loulo Exploitation Permit (Loulo Permit). The original Loulo Permit was granted by Decree No. 96-048/PM-RM 9 on 14 February 1996 and covered an area of 48 km^2. This Loulo Permit was amended by Decree No. 99-193/PM-RM, dated 15 July 1999, which extended the size of the permit to 372 km^2. The Loulo Permit was further amended by Decree No. 2012-311 /P-RM on 21 June 2012, reducing the size of the Loulo Permit as the portion surrounding the Gounkoto Mine was transferred to a new Exploitation Permit. The Loulo Permit remains in force for a period of 30 years after which is renewable if production is still taking place.

In 2010, Randgold Resources Limited (Randgold) applied and was granted the formation of the new Gounkoto Exploitation Permit (Gounkoto Permit), which was split from the Loulo Permit, to form a separate entity, Société des Mines de Gounkoto SA (Gounkoto) under Decree No.2012-431/PM-RM DU dated 3 August 2012. The Gounkoto Permit incorporates the Gounkoto and Faraba Reserves and is valid for 30 years.

In 2017, the Baboto North deposit was purchased by Endeavour Mining Corporation (Endeavour). This resulted in a minor change to the Loulo Permit. An updated Decree number, Decree No. 2018-0895/PM-RM DU dated 14 December 2018, has been generated by the Malian government.

On 22 January 2019, Randgold changed its name to Barrick Gold (Holdings) Limited, following the merger with Barrick Gold Corporation (Barrick) on 1 January 2019 (the Merger).

The Establishment Convention for each of Loulo and Gounkoto regulate the fiscal conditions under which the Complex operates and is based on the 1991 Mining Code. A 6% royalty is payable to the Malian government based upon production together with a corporate tax rate on profits at 30% and a minimum of 0.75% on gross revenues if a loss is made. The conventions include exoneration on fuel duties for their respective duration.

1.3 History

Gold potential was first recognised by the Syndicat Or joint venture between the Malian Direction Nationale de la Géologie et des Mines (DNGM) and the French Bureau de Recherches Géologiques et Minières (BRGM). The Gara gold deposit was discovered in 1981 by Syndicat

Or. In 1992, BHP Minerals Mali entered into an agreement with SOMILO for a joint venture that developed the Gara deposit into a Mineral Resource that was deemed sub-economic at the time.

During 1996, Randgold acquired BHP Minerals Mali and undertook additional regional exploration which resulted in the discovery of Yalea, the second of the two deposits that make up the Loulo Mine, in 1997. In 2003, a feasibility study was completed, which led to the construction of an open pit mine in 2004 and first gold being produced in 2005. The Loulo underground mine passed through the feasibility study stage in 2005, with development beginning in 2006. The first gold from Gara Underground was produced in 2011.

Gounkoto was discovered through regional exploration in 2009, with first gold being produced from the Gounkoto open pit in 2011. As a result of the discovery of Gounkoto, Randgold applied for and was granted a new exploitation licence in 2010 that covered the southern half of the former Loulo Permit and included the Gounkoto and Faraba deposits. During 2016, an independent underground pre-feasibility study was completed as well as a new open pit design for the Gounkoto Super Pit which incorporated significant pushbacks and deepening that converted some underground resources and reserves into open pit resources and reserves.

The Gounkoto underground mine passed through the feasibility study stage in December 2019, with development beginning in October 2020 and first gold being produced in May 2021.

1.4 Geology and Mineralisation

Loulo-Gounkoto is located within the Kedougou-Kenieba erosional inlier (KKI). The inlier is unconformably overlain by Upper Proterozoic sandstones towards the east and further south. The KKI contains several significant gold deposits including the Sadiola, Yalea, Segala, Tabakoto, and Gounkoto deposits in Mali, and Sabodala in Senegal. The Senegal-Mali shear marks a major break in the geology from shelf carbonates with the Falémé ironstone unit in the west to the sedimentary sequences of the Kofi Formation in the east. Loulo-Gounkoto is predominately underlain by the Kofi Formation consisting of greywacke, sandstone, argillaceous sandstone, calcareous sandstone, tourmalinised sandstone, and sheared greenstone units. This geological setting is the primary host of mines in Burkina Faso, Ghana, Mali, Niger, and Senegal. These deposits tend to have significant strike and depth potential, with exploration concentrating on delineating strike and depth extent, followed by infill drilling within the zones of better continuity and grade.

At Yalea, the main mineralised body is hosted by the Yalea Shear, where it is intercepted by the Yalea Structure. The Yalea Shear is a brittle-ductile, north-south striking, mineralised fault that transects the Yalea Structure, which is a complex, north to NNE striking shear zone. The Yalea mineralisation is predominantly hosted in hydrothermally brecciated argillaceous pink quartzites. A higher-grade ‘Purple Patch’ zone is observed in a dilatational strain transfer zone formed as the western dip of the upper mineralised system steepens, forming hydraulic breccias. Economic levels of gold mineralisation are almost exclusively associated with paragenetically late sulphide veins, breccias, and zones of massive sulphides. Higher-grade material commonly contains sulphide veins which cut the various generations of albite and carbonate alteration. There is a strong correlation between sulphide intensity and gold mineralisation with the dominant sulphide phases consisting of pyrite (abundant), arsenopyrite, and minor chalcopyrite. The sulphides can be disseminated or massive along fabric.

Yalea mineralisation remains open at depth and to the south with potential for significant high-grade extensions. To the south of the 'Purple Patch' zone, the Yalea Shear forms a sub-horizontally plunging transfer zone where the competency contrast of the footwall argillaceous quartzites (SQR) contact causes a transfer of strain associated with normal movement. Consequently, this transfer creates dilatational hydraulic breccias with the potential to host significant high-grade extensions.

Gara (previously known as Loulo 0) is hosted within an intensely tourmaline altered greywacke unit which outcrops on surface due to its high resistance to weathering. The geometry of the mineralisation is subjugated by the strike slip shearing on the Senegal-Mali Shear. This shearing has resulted in folding, fracturing, brecciation, and subsequent development of a quartz-carbonate vein stockworks within the brittle-ductile tourmaline altered greywacke forming what has been termed a quartz-tourmaline (QT) unit. On a regional scale, the Gara deposit spans the hinge of a broad open fold with a gently plunging north-south trending axis. On the deposit scale the upper limb of this fold dips has a westerly dip, whereas the lower limb dips east.

The distribution of gold grade in longitudinal section reflects the varying degrees of fracturing, brecciation, and subsequent development of a quartz-carbonate vein stockworks from multiple generations of folding. Gold mineralisation is stratabound and hosted predominantly within the QT stockwork veins, which are enveloped within footwall greywackes and hanging wall sandstone. Higher-gold grades values typically occur where the intensity of tourmalinisation and stockwork veining are strongest. The sulphide assemblages predominantly consist of disseminated auriferous pyrite with minor chalcopyrite, scheelite, and nickeliferous sulphides.

In the open pit area, the high-grade mineralisation is concentrated along the sub-horizontal fold hinge axes, whereas within the underground area, high-grade mineralisation plunges shallowly southward, parallel to the large-scale open warp fold axis. These differential orientations of mineralisation are a result of the earlier, deposit scale warping locally influencing the geometry of the superimposed "S folds" during their formation.

Baboto is a shear hosted deposit situated along a north-south striking shear structure located approximately 14 km NNE from the Yalea deposit. Baboto is dominated by a thick sequence of metasediments and structural breccias. The main shear zones are vertical to steeply west dipping at Baboto South and sub vertical in Baboto Centre. Gold mineralisation is mainly associated with the finely disseminated pyrite occurring in the brittle-ductile shear breccias, which generally have a lensoidal shape defined by a series of sub-parallel north-south shears that follow key lithological contacts.

Loulo 3 is located 4 km NNE of the Yalea mine. Loulo 3 consists of three mineralised zones: an NNW trending main zone (MZ1), which is situated on the Loulo 3 Structure and is transected by the NNE striking main zone (MZ2), which is situated on the Yalea Structure, and the third small sub-parallel NW striking footwall zone. Mineralisation consists of a mixture of quartz and hematite veinlets hosted in a zone of silica-carbonate alteration within local tourmaline alteration in the south. The distribution of high-grade zones is controlled by the narrowing of the host stratigraphy package, which focusses strain and fluid flow, causing the hematite rich Yalea Structure to interact with the silica-carbonate Loulo 3 Structure particularly within MZ2. Gold bearing sulphides predominantly consist of pyrite and arsenopyrite, with chalcopyrite occurring as a late non-gold bearing phase. Gara West is located 200 m west of the pit at Gara and is characterised by predominantly shear and breccia hosted mineralisation within a medium to coarse grained sandstone unit that is variably altered with tourmaline, chlorite, and silica-carbonate. The sandstone hosts four mineralised lodes striking NNE and dipping moderately westward. The gold mineralisation is stratabound as it has been preferentially altered with tourmaline (and silica-albite), due to the increased porosity of the protolith, relative to the bounding limestone in both the hanging wall and footwall.

Other minor satellite deposits are present within the Loulo Permit; these exhibit similar geological characteristics to the other major deposits outlined above.

Gounkoto is a large NNW trending shear zone, with a complex assemblage of ductile shear breccias, shears, and faults characterised by a stepped geometry, with wider zones of mineralisation generally seen on the NW trending structures and narrower zones on the north-south trending structures. This is believed to be related to dilation across these structures in a strong sinistral strain environment. The mineralisation is generally hosted in a siliceous 'Rose Quartzite' (QR) unit. The mineralisation is sub-divided based on the structural and lithological characteristics.

The Faraba deposit strikes NNW and is comprised of several zones of gold mineralisation hosted within and along the contacts of north-south striking, coarse grained, gritty sandstone units (lithic wackes) in a package of sheared argillaceous sediments. Lithologic layering (transposed bedding) dips steeply westward; however, the mineralised zones dip steeply to the east. The mineralisation terminates where the Faraba Structure meets the argillite units on either side of the sandstones. The resulting mineralisation occurs as numerous silica-carbonate and secondary iron oxide altered sub-vertical panels with narrow east-west dimension, each containing sub-horizontal to shallow plunging zones of higher grade. Gold mineralisation is dominantly hosted by pyrite, with local magnetite, chalcopyrite, arsenopyrite, and pyrrhotite.

1.5 Status of Exploration

The Complex was initially explored by Syndicat Or and the BRGM and subsequently by BHP Minerals Mali. Since Randgold's acquisition of the Loulo Permit in 1996, significant exploration has been undertaken by Randgold and Barrick to develop both brownfield and greenfield targets. Sampling has primarily been undertaken through reverse circulation (RC) drilling, diamond drilling, and trenching. Rotary air blast (RAB) drilling has also been undertaken on some early-stage exploration targets, although RAB drilling is not included in the Mineral Resource estimate.

Since 1993, the following sampling has been undertaken:

Loulo

- Diamond Drilling – 6,249 drill holes for 1,321,993 m
- RC – 12,381 drill holes for 551,449 m
- RAB/Auger/Air core – 11,032 drill holes for 192,289 m
- Trenches – 939 cuts for 50,124 m
- Underground Channels – 10,425 channels for 70,488 m
- Total Drilling Metres – 2,186,344 m

Gounkoto

- Diamond Drilling – 1,067 drill holes for 325,536 m
- RC – 9,723 drill holes for 741,619 m
- RAB/Auger/Air core – 2,880 drill holes for 46,285 m
- Trenches – 367 cuts for 26,934 m
- Underground Channels – 550 channels for 3,002.20 m
- Total Drilling Metres – 1,143,375 m

Exploration at Loulo-Gounkoto is structured to simultaneously advance brownfields targets to rapidly feed into the mine plan, and to develop greenfield targets to replenish the target pipeline and sustain the long term growth of the mine. Brownfields exploration efforts at Loulo-Gounkoto test for extensions of open pit and underground deposits, testing lode extensions using aggressive step out exploration, and for gap opportunities within the mine area.

Satellite deposits and gaps between existing Mineral Resources are periodically re-evaluated to define Mineral Resource extensions based on conceptual targets.

The current exploration concept has been proven to be effective, with both the discovery of Gounkoto and the successful and consistent replenishment of depleted Mineral Resources and Mineral Reserves within the Complex.

1.6 Mineral Resource Estimate

The Mineral Resource estimates have been prepared according to Canadian Institute of Mining, Metallurgy and Petroleum (CIM) 2014 Definition Standards for Mineral Resources and Mineral Reserves dated 10 May 2014 (CIM (2014) Standards) as incorporated into NI 43-101. Mineral Resource estimates were also prepared using the guidance outlined in CIM Estimation of Mineral Resources and Mineral Reserves (MRMR) Best Practice Guidelines 2019 (CIM (2019) MRMR Best Practice Guidelines).

Quality assurance and quality control (QA/QC) has been undertaken across the life of exploration to ensure that the data supporting the Mineral Resources and Mineral Reserves is free of any material error or bias. The results from the 2022 QA/QC programme show that the performance of the SGS Loulo laboratory is meeting industry standards and the resulting data is suitable for use within a Mineral Resource estimate.

The cut-off grade selected for constraining each of the Mineral Resource estimates corresponds to the in-situ marginal cut-off grade using a gold price of $1,700/oz.

For the open pit Mineral Resources, the pit shell selected for limiting of each of the Mineral Resource estimates corresponds to a gold price of $1,700/oz. As a result of the optimisation process, this pit shell selection will result in the highest undiscounted Net Present Value (NPV) of the deposit, at $1,700/oz.

Underground mineable stope shapes were reviewed and those that were deemed as having a reasonable prospect for eventual economic extraction were included in the reported Mineral Resource.

Table 1-1 summarises Mineral Resources at the Complex with an effective date of 31 December 2022.

Table 1-1 Loulo-Gounkoto Mineral Resource Estimate Summary – 31 December 2022

Type	Category	Tonnes (Mt)	Grade (g/t Au)	Contained Gold[1] (Moz Au)	Attributable Gold[1] (Moz Au)
Stockpiles	Measured	8.1	1.77	0.46	0.37
Open Pit	Measured	7.1	3.30	0.76	0.61
	Indicated	20	2.90	1.8	1.5
	Inferred	8.1	1.9	0.48	0.38
Underground	Measured	22	4.39	3.1	2.5
	Indicated	35	4.63	5.3	4.2
	Inferred	20	2.9	1.8	1.5
Total Mineral Resources	**Measured**	**37**	**3.61**	**4.3**	**3.4**
	Indicated	**55**	**4.02**	**7.1**	**5.7**
	Measured and Indicated	**92**	**3.85**	**11.4**	**9.1**
	Inferred	**28**	**2.6**	**2.3**	**1.9**

Notes:

1. Mineral Resources are reported on a 100% and attributable basis. Attributable refers to the quantity attributable to Barrick based on Barrick's 80% interest in each of SOMILO and Gounkoto SA.
2. The Mineral Resource estimate has been prepared according to CIM (2014) Standards and using CIM (2019) MRMR Best Practice Guidelines.
3. All Mineral Resource tabulations are reported inclusive of that material which is then modified to form Mineral Reserves.
4. Open pit Mineral Resources are reported at a $1,700/oz gold price at an average cut-off grade of 0.79 g/t Au (minimum 0.5 g/t Au and maximum 0.87 g/t Au).
5. Underground resources are reported in situ within a minimum mineable stope shape at an average cut-off grade of 1.43 g/t Au (minimum 1.33 g/t Au and maximum 1.8 g/t) at a $1,700/oz gold price.
6. Mineral Resources for Loulo were estimated under the supervision of Simon Bottoms, CGeol, MGeol, FGS, FAusIMM, an officer of Barrick and Qualified Person.
7. Numbers may not add due to rounding. Tonnes and contained gold are rounded to 2 significant figures. All Measured and Indicated grades are reported to 2 decimal places whilst Inferred Mineral Resource grades are reported to 1 decimal place.

The Qualified Person (QP) is not aware of any environmental, permitting, legal, title, socioeconomic, marketing, fiscal, metallurgical, or other relevant factors that could materially affect the Mineral Resource estimate.

1.7 Mineral Reserve Estimate

The Mineral Reserve estimates have been prepared according to CIM (2014) Standards as incorporated into NI 43-101 and using the guidance outlined in CIM (2019) MRMR Best Practice Guidelines).

The Complex consists of several operations across the two locations. The Loulo Mine comprises two main deposits, Gara and Yalea, and multiple satellites deposits. The remaining satellite deposits are all planned open pits. The Gounkoto Mine comprises three primary sources of ore, namely the Gounkoto open pit, underground, and the Faraba open pit. All the ore from these operations is processed through the same processing plant. The Gounkoto operation is 30 km from the processing plant that is based at Loulo.

All three underground operations are similar in nature and share equipment, as with the open pit mining operations. Underground mining represents approximately 70% of the Complex's annual gold production.

Economic and technical parameters were applied through various optimisation software, followed by a design phase, and a scheduling phase, to prepare the Mineral Reserve estimate. The parameters applied were largely based on historical data, with small adjustments for any expected future changes.

Block models for the operations have been progressively updated throughout the year, while the mined out volumes have been updated with a year-end survey.

Operating costs for the optimisation work are based on the 2022 actuals, with some adjustments for the increasing cost of depth and other factors. A 6% royalty is paid to the government of Mali.

Geotechnical parameters were based on various geotechnical studies and ongoing geotechnical work. There is an extensive geotechnical drilling and data evaluation programme across both mines. Current and future geotechnical scenarios are continuously evaluated, and future mining is adjusted to take this into account. Various geotechnical domains have been outlined and are used to inform geotechnical parameters. A large body of historical data is available, increasing the confidence in the slope angles of the larger pits and the stope dimensions underground. Similarly, the Gounkoto underground mine has not entered full production so historical data is not available, but study work, development work, and the pit directly above increase the confidence in its geotechnical evaluation. Pit slope angles are generally in the low 40s for weathered material and low 50s for competent rock. Stopes are generally planned with a strike length of 20 m to 30 m, and the mining sequence is more strongly dictated by geotechnical requirements as the operations deepen.

Groundwater is not an issue in any of the operations.

Dilution and mining losses were estimated based on historical values. For the underground, historical dilution ranged from 2% to 9%, and planned dilution ranges from 4% to 13%. For the open pits, historical dilution has been 2% to 10%, and the planned amount is 10%. Mining losses underground have been in the order of 4% to 13% and the planned amount is 4% to 13%, while for the open pits these are 2% and 3% respectively. Dilution underground is checked through a cavity monitoring system, and the paste backfill that is used is constantly adjusted depending on the stope and its requirement, with the purpose of reducing paste dilution, which is a notable portion of the total dilution.

Open pit optimisation was performed in Whittle. The gold price used for the optimisation work was not always that of the Mineral Reserve declaration. While the Mineral Reserve is declared at $1,300/oz, pit optimisation prices were varied depending on how soon the Mineral Reserves were to be mined. A higher gold price of up to $1,500/oz was used for pits with short mine lives or in current production. However, the economic viability of the material contained within these pits was still evaluated at a $1,300/oz gold price, with any material below the cut-off grade at that price reported as waste. In all instances, the Loulo-Gounkoto pit optimisations resulted in a positive NPV at the $1,300/oz Mineral Reserve gold price and as such, all 2022 Mineral Reserves are declared using $1,300/oz gold price. Marginal cut-off grades range from 0.75 g/t Au to 0.98 g/t Au.

No optimisation was carried out on the Gounkoto open pit as the pit design is constrained by both waste dump and underground infrastructure, making it insensitive to changes in the gold price. Other open pit shells were selected that produce the most value. These shells were used for more detailed designs that were the basis of the production schedule.

Underground optimisation used Datamine Mineable Shape Optimiser (MSO). This was initially done using a full cut-off grade, followed by a marginal cut-off grade iteration to identify viable marginal stopes. The full cut-off grade is 2.39 g/t Au to 2.78 g/t Au, while the marginal cut-off grades range from 1.12 g/t Au to 1.70 g/t Au, depending on the underground mine.

Optimisation shapes were then manually adjusted with dilution and losses included in the scheduling process, using geotechnical zones to allocate the appropriate amounts of each. Unpayable stopes were removed, and a schedule was developed using current mining rates.

Designs based on the optimisation results were completed for all the open pits and underground areas in the Mineral Reserve production schedule. These were completed using suitable mining software packages. Design elements were largely determined by geotechnical parameters, existing equipment, and practical elements of production.

While Loulo and Gounkoto are separate properties, as their ore is processed in the same plant, and the combined Mineral Reserves are summarised in Table 1-2.

Table 1-2 Loulo-Gounkoto Mineral Reserves as of 31 December 2022

Type	Category	Tonnes (Mt)	Grade (g/t Au)	Contained Gold[1] (Moz Au)	Attributable Gold[1] (Moz Au)
Stockpiles	Proven	8.1	1.77	0.46	0.37
Open Pits	Proven	5.9	3.46	0.65	0.52
	Probable	18	2.78	1.6	1.3
Underground	Proven	11	4.86	1.7	1.4
	Probable	24	5.04	3.9	3.1
Total Mineral Reserves	**Proven**	**25**	**3.54**	**2.8**	**2.3**
	Probable	**42**	**4.08**	**5.5**	**4.4**
	Proven and Probable	**67**	**3.87**	**8.3**	**6.7**

Notes

1. Mineral Reserves are reported on a 100% and attributable basis. Attributable refers to the quantity attributable to Barrick based on Barrick's 80% interest in each of SOMILO and Gounkoto SA.
2. The Mineral Reserve estimate has been prepared according to CIM (2014) Standards and using CIM (2019) MRMR Best Practice Guidelines.
3. All Mineral Reserves are reported at a gold price of $1,300/oz Au.
4. Open pit Mineral Reserves are reported at a weighted average cut-off grade of 0.96 g/t Au, including dilution and ore loss factors. Underground Mineral Reserves are reported at an average cut-off grade of 2.60 g/t Au for Yalea Underground, 2.39 g/t Au for Gara Underground, and 2.78 g/t Au for Gounkoto Underground.
5. Open pit Mineral Reserves were estimated by Derek Holm, FSAIMM, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP. Underground Mineral Reserves were estimated by Ismail Traore, MSc, FAusIMM, M.B. Law, DES, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP.
6. Numbers may not add due to rounding. Tonnes and contained gold are rounded to 2 significant figures. All Proven and Probable grades are reported to 2 decimal places.

The QPs are not aware of any environmental, legal, title, socioeconomic, marketing, mining, metallurgical, infrastructure, permitting, fiscal, or other relevant factors that could materially affect the Mineral Reserve estimate.

1.8 Mining Method

The Complex comprises both open pit and underground mining operations.

Open pit mining is carried out using conventional drill, blast, load, and haul surface mining methods. Mining of the main pits is carried out by a mining contractor, Gounkoto Mining Services (GMS). Mining operations are carried out seven days per week, three shifts per day, utilising four shift crews.

From 2022 onwards, open pit production will be from Gounkoto, Yalea South, Gara West, Loulo 3, Faraba, and Baboto. The Gara main pit and northern portion of the Yalea pit are completely mined out. A pushback on the southern portion of Yalea is planned for 2023 in the life of mine (LOM) and is reported as Yalea South. The average LOM strip ratio is 15.0. Approximately 23.7 Mt of ore and 356.6 Mt of waste will be mined over the LOM from the combined open pit operations. Enough capacity is available for planned waste, and some in-pit dumping is planned where possible.

The upper levels of the open pits are weathered material that can be free dug. The bulk of the material is fresh rock requiring drilling and blasting using emulsion. Ten-metre benches are used, with ore excavated in three flitches. Benches are drilled in a 6 m by 6 m pattern and charged and blasted with an electronic system.

Mining is done with Liebherr 9350 excavators equipped with 14 m^3 buckets loading 90 t capacity Caterpillar 777 or Komatsu 785HD trucks. Mining operations are monitored and controlled using an office-based modular dispatch system.

The Loulo operation consists of two established underground mines, namely Yalea and Gara. A third underground mine, Gounkoto, recently commenced production and is currently in a ramp up phase. All three mines employ long hole open stoping with paste fill at a similar scale and all feed the same processing plant. The underground mines are accessed with twin declines at each site, after which stopes are accessed by multiple ramps developed at approximately 500 m intervals along strike. The sub-level spacing varies between 25 m and 20 m. Generally, newer areas are 25 m apart while older areas, crown pillar areas, and geotechnically complex areas are 20 m apart.

On a 100% basis, Yalea produces approximately 1.4 Mtpa of ore for six years before dropping to approximately 1 Mtpa and production from Gara is 1.3 Mtpa of ore for six years before dropping to just below 1 Mtpa. In both mines, ore is produced from long hole stopes and sent to an underground crusher, from where it is conveyed to a surface stockpile. Gounkoto has just begun stope production and is in the process of ramping up. Longitudinal long hole mining method with paste fill will be used, except in the wider zone where a primary-secondary method with fill will be used. A 60 m thick crown pillar below the base of the pit will be mined first and then backfilled.

At all the sites, production follows the same routine. Development is undertaken using two twin boom jumbos. The stoping cycle consists of cable bolting (where required), drilling, charging, firing, and mucking of the stope to the stockpile or to the truck. Holes are charged up with emulsion, using a dedicated crew and loader. All production areas are routinely meshed and bolted with split sets.

Broken rock is loaded by load haul dumpers (LHD). Rock is loaded into trucks that haul it either to a crusher tip or to the portal. From the crusher, material is conveyed to the surface or to the run of mine (ROM) pad. At Gounkoto, material is hauled and dumped just beyond the portal, from where it is hauled by a separate fleet to a surface crusher and then transported to the Loulo processing plant by a contractor truck.

Backfilling with a cemented paste fill is planned to support a top down, retreat mining sequence. Paste is mixed at a plant located on the surface and delivered underground through a series of cased boreholes and steel pipes to the stope voids requiring filling. For a particular stope, a required unconfined compressive strength (UCS) and curing time is determined, which then determines the percentage binder.

Over the Loulo-Gounkoto LOM, a total of 58.9 Mt of ore at 4.16 g/t Au is planned to be mined over 15 years up to 2037. Ore supplied to the plant during this period, including stockpiles, is estimated to be 66.9 Mt at an average grade of 3.87 g/t Au resulting in 7.5 Moz recovered gold at an average processing recovery of 89.5% on a 100% basis. From 2030 onwards, the higher-grade Gounkoto Underground will be exhausted based on current Mineral Reserves and the operation intends to increase the ore mined and delivered to the plant from ~5 Mtpa to ~6.2 Mtpa to compensate, retaining the target profile of +500 koz per year up to 2032 on a 100% basis.

Based only on current Mineral Reserves and on a 100% basis, Yalea, Gara, and Gounkoto Underground are planned to sustain a production rate of 2.6 Mtpa to 3.3 Mtpa of ore for 10 years, tapering off to 2.2 Mtpa in year 11 and 0.6 Mtpa for the last two years. The open pit production is more flexible and is modified to take the expected underground production into account.

The production schedule based on current Mineral Reserves is summarized in Table 1-3.

In the QPs' opinion, the parameters used in the Mineral Resource to Mineral Reserve conversion process are reasonable and well supported by historical production.

Table 1-3 LOM Production Schedule Based on Current Mineral Reserves (on a 100% basis)

		LOM	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Waste Mined	Mt	372.5	25.2	30.6	37.2	38.9	51.8	36.4	36.3	53.7	20.8	17.8	12.3	9.1	1.4	1.0	0.0
Ore Mined	Mt	58.9	4.6	5.2	4.6	4.9	5.3	7.8	2.8	6.1	4.4	4.5	2.4	3.1	1.6	1.1	0.4
Total Mined	Mt	431.4	29.8	35.7	41.8	43.8	57.2	44.2	39.1	59.8	25.2	22.3	14.8	12.2	3.0	2.2	0.4
Head Grade	g/t	4.2	5.0	4.9	5.2	4.2	4.2	4.4	4.4	3.5	3.3	3.9	3.9	2.5	4.1	4.3	4.0
Tonnes from Stockpile	Mt	8.1	0.4	-	0.4	0.1	-	-	3.5	0.1	1.9	1.7	0.0	-	-	-	-
Grade from Stockpile	g/t	1.8	1.2	-	1.7	1.8	-	-	1.9	1.8	1.8	1.7	1.7	-	-	-	-
Processed Tonnes	Mt	67.0	5.0	5.0	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	1.0
Processed Grade	g/t	3.9	4.7	4.7	4.7	3.9	3.9	3.9	4.1	4.0	3.9	3.9	2.5	2.5	3.5	3.7	4.0
Gold to Plant	koz	8,343	755	761	752	634	634	625	589	574	565	561	356	363	504	540	132
Gold Recovered	koz	7,463	680	680	666	570	559	551	518	515	510	508	323	330	453	482	118

Most of the infrastructure required for mining and processing is already in place. The LOM plan includes provision of additional infrastructure for mine ventilation, refrigeration, backfill, and dewatering.

A groundwater monitoring programme has been implemented at Loulo and Gounkoto. The primary risk is due to flooding should the pits above the underground workings capture a lot of water during a flood event. A section of Yalea is more weathered than usual so this requires a drainage programme that has been started. At Gounkoto, there is the potential for significant inflow from the open pit, especially once the pit reaches its ultimate depth and breaks through into the underground workings. Pumping was planned for a potential one in 50 year storm event of forecast inflows through the open pits and aquifers.

At Yalea, Gara, and Gounkoto Underground, fresh air is delivered through the declines and intake raises. Air is exhausted up an exhaust raise. Large 14 MWr of refrigeration plants have been constructed at both Yalea and Gara. Due to the mine extension to the south side on both Yalea and Gara, a new refrigeration plant of 8 MWr will be built at both Yalea and Gara in 2023. At Gounkoto, a 7 MWr fridge plant will be built as the mine expands.

Loulo underground mines are powered through 11 kV rated feeders. Different voltages are used across the mine (400 V, 525 V and 1,000 V); substations are used to step down the voltage from 11,000 V to the required voltage.

1.9 Mineral Processing

The Loulo processing plant uses a carbon in leach (CIL) gold extraction process with a throughput capacity of 4.8 Mtpa, which has progressively increased to a peak of 5.1 Mtpa. A pre-feasibility study has been completed with an order of magnitude capital budget estimate to increase plant throughput to 6.2 Mtpa. The definitive feasibility studies and construction is scheduled to be completed prior to commissioning and full production in 2029. The expansion works will add independent secondary and tertiary crushing circuits feeding a single staged ball mill in closed circuit with hydrocyclones at 4,200 tonnes per day (tpd). A new high-rate thickener capable of handling the total tonnage of the new and old milling streams will be constructed and three 2,500 m^3 CIL tanks will be added. The Loulo processing plant processes ore from both the Loulo and Gounkoto operations. A simplified flow sheet is presented in Figure 1-1, which depicts a standard processing circuit for free milling ores including conventional circuits for comminution, milling, gravity, classification, and CIL.

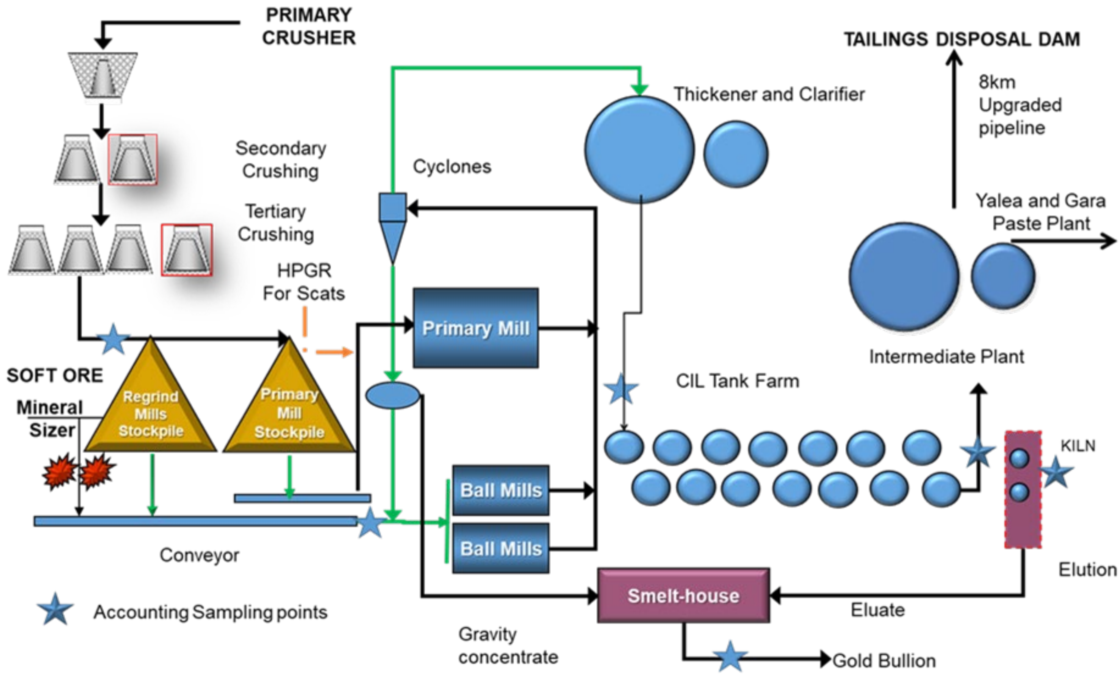


Figure 1-1 Simplified Flow Sheet

Forecasted gold processing recovery is based on both test work and operational history. The Yalea and Gara metallurgical recoveries for the remaining LOM have been estimated at 86.63% and 92.83% respectively. The Gounkoto Super Pit test work and historical operations data has indicated an estimated recovery of 93.10%. Yalea recovery is impacted by the presence of arsenic and copper which reduce recovery by impacting the process of adsorption of the gold onto the CIL tanks. Arsenic and copper impurities also increase cyanide and oxygen consumption. Consequently, arsenic and copper estimations are completed as part of the Mineral Resource update in order to identify potentially low recovery areas. Gold recovery is maintained above 89% by blending the various ore sources (Yalea/Gara/Gounkoto) to control copper and arsenic grades in the mill feed.

The current LOM has an average recovery for the Complex of 89.47%. The average gold recovery in 2022 was 91.2% (Figure 1-2).

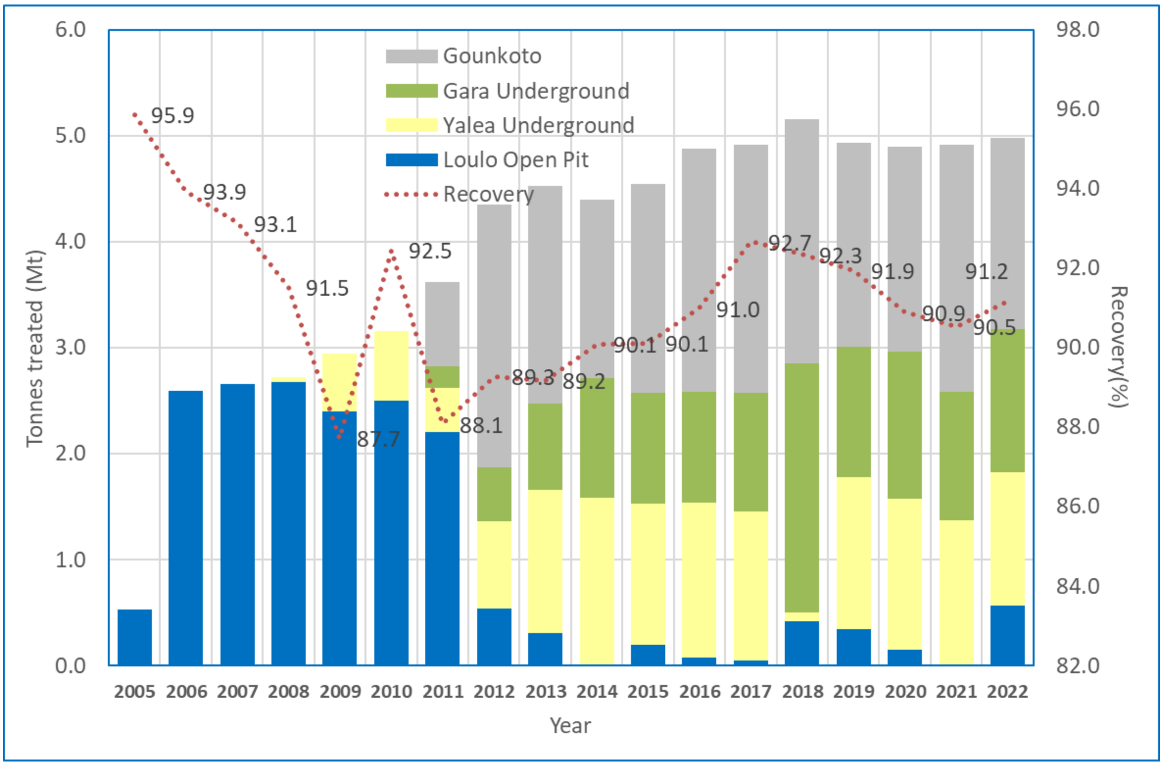


Figure 1-2 Loulo-Gounkoto Processing Milled Tonnes by Ore Source

In the QP's opinion, Loulo-Gounkoto has demonstrated successful operation of the processing facility in achieving gold recovery.

1.10 Project Infrastructure

Primary access for staff and plant to Loulo-Gounkoto is via the recently constructed (2011) Millennium Highway that runs from Dakar, Senegal to Bamako, Mali, and acts as the primary supply chain route. The Millennium Highway crosses the Loulo to Gounkoto haul road approximately 6 km north of Gounkoto and provides excellent road connections in comparison to much of the country.

Daily flights with international air carriers are available from Dakar and Bamako. Charter flights between Bamako and the (unsealed) airstrip at the Loulo Mine are available, when required. The landing strip at Loulo is approximately 1.5 km long and built from laterite material. It can accommodate moderate sized aircraft and has been awarded full certification by the transport authorities in Mali.

The climate at Loulo-Gounkoto is strongly influenced by the north and southward movement of the Inter Tropical Convergence Zone (ITCZ), which creates distinctive wet and dry seasons. Although the annual evaporation thereby exceeds the annual rainfall, an excess of water is available during the peak of the wet season (July to September) to generate surface water run-off. Water is sourced for the Complex from the Gara and Falémé rivers which run through the

Complex site. Climatic conditions do not materially affect exploration, development, or mining operations.

Loulo-Gounkoto is an operating mine site comprising open pit and underground mines, a processing plant, satellite deposits, and associated infrastructure. Previously mined open pits remain open and are used to access the underground mine. Waste dumps are situated adjacent to the open pits. The plant and offices and accommodation village are located east of the Gara pit.

The tailings storage facility (TSF) is located 8 km to the east of the plant in an area with several natural ridges. It has been designed to maintain a minimum freeboard of 1.5 m to provide sufficient storage to contain a 1 in 50 year rainfall event over a 72-hour period.

Power is derived from a hybrid thermal-photovoltaic (PV) source. Thermal generation fuel is imported from Senegal by road. Substantial infrastructure already exists at Loulo-Gounkoto as a result of the long-established open pit mining operation. This includes ore processing and tailings facilities, workshops offices, and camps. Mobile telephone services are available across the mine.

1.11 Market Studies

Financial evaluations of all Mineral Reserves uses a gold price of $1,300/oz and all open pit Mineral Reserves are estimated using a gold price of $1,300/oz. This is consistent with Barrick's corporate guidelines. Gold price sensitivities were run for all the pits.

Financial evaluation and cut-off grade calculation for the Loulo and Gounkoto underground Mineral Reserves has also been based on a gold price of $1,300/oz.

A total royalty payable to the Malian government of 6% of gold was used for the open pit and underground Mineral Reserve estimates.

Loulo-Gounkoto pays income tax at a rate of 30% to the Malian government.

Gold doré produced at the Complex is shipped from site under secured conditions and sold under agreement to a refinery. Under the agreement, Barrick receives the ruling gold price on the day after dispatch, less refining and freight costs, for the gold content of the doré gold. Barrick has an agreement to sell all gold production to only one customer. The 'customer' is chosen periodically on a tender basis from a selected pool of accredited refineries and international banks to ensure competitive refining and freight costs. Gold mines do not compete to sell their product given that the price is not controlled by the producers.

1.12 Environmental, Permitting and Social Considerations

The baseline studies and Environmental and Social Impact Assessments (ESIAs) for the open pit and underground mining operations at Loulo and Gounkoto have been undertaken for the current operations and are being updated for the new planned expansions. There are significant impacts on the physical, biological, or social environment but none which cannot be adequately managed using environmental and social measures common to the mining industry. The operations contribute significantly to the local and national economy, particularly by the use of local businesses, a number of which supply the mine.

The introduction of solar (PV) power, and plans to increase its use and add battery storage, have had a significant positive impact through greenhouse gas (GHG) emissions reductions, (less road transport of required fuel), and the potential for a sustainable power supply legacy to be left at closure.

An environmental management and social plan (ESMP) is in place and the Loulo operations are ISO 14001 certified and independently audited to ensure compliance and continuous improvement in environmental management. All environmental permits are in place for the Complex. The site is also certified and audited against the requirements of the International Cyanide Management Code (ICMC).

Waste rock is generated from the various open pit and underground operations. The waste rock dump at Gounkoto is close to the Falémé River which forms the border with Senegal. The waste dump has been carefully designed to minimise seepage and a collection system is in place to prevent impacts on the river. Waste rock is also being disposed of into the southern portion of the Gounkoto Pit to minimise additional surface disposal.

Waste rock geochemistry has been analysed and this revealed that potential acid rock drainage (ARD) generation and metals leaching from specific lithologies could occur. Generally, the geochemical overprint is neutral and almost all seepages and drainage on the site are neutral. Some arsenic is found in neutral mine drainage, and treatment systems are being installed for the tailings being pumped to the TSF and water returned from the TSF is treated for arsenic prior to discharge.

Tailings are generated from the Loulo plant and disposed of in the TSF approximately 8 km east of the plant. Tailings are also used for paste backfill underground at Gara and Yalea and is planned to be used at Gounkoto. The relevant ESIA and Management Plan for permitting requirements are underway for the second expansion of the current TSF.

Environmental monitoring takes place across the site, including dust deposition, noise, water quality, TSF seepage water and return streams, as well as sample collection of drinking water, groundwater and surface water.

Environmental incidents are noted in a register which forms part of the Environmental Management System (EMS). Causes of and responses to any incidents are identified, and once dealt with, the incident is closed out.

A water balance model has been developed for Loulo-Gounkoto which models flows, inputs and losses, including the open pits and underground workings, plant, TSF, water management structures, offices, camp, and treatment facilities.

Mine closure costs are updated each year, with increases or decreases in disturbed areas noted and costed using up to date rates. The Provisional Environmental Rehabilitation (PER) cost for Loulo amounts to $33.3 M and the LOM closure cost is $29.0 M as of 31 December 2022. The PER costs are $8.8 M, for Gounkoto as of 31 December 2022. Liability costs are decreasing at Gounkoto as Waste Rock Dumps (WRD) are shaped and rehabilitated.

The Complex is a significant employer in the local communities, but secondary economic opportunities have been significant in this rural area leading to significant economic growth in the area around the mine. Loulo-Gounkoto's policy is to promote nationals to manage the Complex. Unskilled labour is typically sourced from the local area while more skilled posts are filled by staff from elsewhere in Mali, including Bamako.

Local procurement is also promoted and where possible, goods and services are procured locally and nationally. Numerous significantly sized businesses have been started including fuel transporters and suppliers, drilling companies, catering companies, and mining and earthworks contractors. A number of these suppliers are now working nationally and regionally due to the boost they received by starting their businesses at Loulo-Gounkoto.

Stakeholder engagement activities, community development projects and local economic development initiatives contribute to the maintenance and strengthening of the Loulo-Gounkoto Social Licence to Operate (SLTO). Through the stakeholder engagement process, concerns are raised by the community and dealt with by the Complex.

There is a significant ongoing presence of artisanal miners (orpailleurs) operating within the Loulo-Gounkoto Permit area, and in surrounding areas. Artisanal miners or small-scale miners (ASM) represent a significant portion of local households' livelihoods. Barrick is reinforcing its relationship with the community to manage the issue and continues to invest in alternative livelihood opportunities, where possible. The mining industry in Mali has also established a committee to manage ASM in liaison with the government.

The QP considers the extent of all environmental liabilities to which the property is subject to have been appropriately met.

1.13 Capital and Operating Costs

Capital Costs

Loulo-Gounkoto is an ongoing combined open pit and underground mining operation with the necessary facilities, equipment, and manpower in place to produce gold.

The open pit and underground LOM and capital and operating cost estimates have been completed in sufficient detail to demonstrate the economic extraction of Proven and Probable Reserves.

The majority of the capital cost estimates contained in this report are based on quantities generated from the open pit and underground development requirements and data provided by Barrick.

Capital expenditure from 2023 over the remaining LOM is estimated to be $1,636 M. A breakdown of the expenditure is detailed in Table 1-4.

Table 1-4 LOM Capital Expenditure

Description	Value ($M)
Grade Control Drilling	50
Capitalised Deferred Stripping	404
Underground Capital Development and Drilling	371
TSF Extension Capital	143
Plant Expansion Capital	150
Capitalised Drilling	15
Power Capital	43
Other Sustaining Capital	460
Total LOM Capital Expenditure	**1,636**

Operating Costs

Loulo-Gounkoto maintains detailed operating cost records that provide a foundation for estimating future operating costs. Costs used for the open pit optimisations were derived from the mining contractor's (GMS) pricing of the open pit LOM schedule.

Labour costs for national employees were based on actual costs. Local labour laws regarding hours of work and employment conditions were also considered, and overtime costs included.

The costs for mining, processing, and general and administration (G&A) are based on actuals, adjusted with the latest forward estimates, production profiles, and workforce levels.

Customs duties, taxes, charges, and logistical costs have been included.

The LOM combined open pit and underground operating cost for the Complex is estimated to be $75.99/t. Unit costs used to estimate LOM operating costs are summarised in Table 1-5.

Table 1-5 LOM Operating Costs for Loulo and Gounkoto

Activity	Units	Value
Open Pit Mining – Loulo-Gounkoto Complex	$/t mined	2.84
Open Pit Mining – Loulo-Gounkoto Complex	$/t ore mined	38.42
Underground Mining	$/t mined	50.73
Underground Mining	$/t ore mined	52.86
Processing	$/t milled	19.63
G&A	$/t milled	7.81
Mining Total (including Over the Road Ore Transport)	$/t milled	48.55
Total LOM Net Operating Cost	**$/t milled**	**75.99**

Notes:

1. Total LOM Net Operating Cost in this table, represents the total amount, before capitalised cost and royalty costs of 6.0% based on the total revenue

1.14 Economic Analysis

This section is not required as Barrick, the producing issuer and operator of Loulo-Gounkoto for both exploration and mining, the property is currently in production, and there is no material expansion of the current annual production planned.

The QP has verified the economic viability of the Mineral Reserves via cash flow modelling, using the inputs discussed in this report.

1.15 Interpretation and Conclusions

Geology and Mineral Resources

QA/QC

Loulo and Gounkoto have documented standard operating procedures (SOP) for the drilling, logging, and sampling processes, which meet industry standards. The geological and mineralisation modelling are based on visibly identifiable geological contacts, which support a geologically robust interpretation.

Loulo and Gounkoto have a QA/QC programme in place to ensure the accuracy and precision of the assay results from the analytical laboratory. Checks conducted on the quality control database indicated that the results are of acceptable precision and accuracy for use in Mineral Resource estimation.

Mineral Resources

Geological models and subsequent Mineral Resource estimates have evolved with successive model updates incorporating additional data within both the open pit and underground. Significant grade control drill programmes and mapping of exposures in mine developments have been completed to increase the confidence in the resulting Mineral Resources and Mineral Reserves.

In the QP's opinion, the Loulo and Gounkoto Mineral Resources top cutting, domaining, and estimation approach are appropriate, and reflect industry best practice. Furthermore, the constraint of underground Mineral Resources within mineable stope optimised shapes has been deemed to reflect best practice by external audits. The QP considers the Mineral Resources at Loulo and Gounkoto to be appropriately estimated and classified.

The QP is not aware of any environmental, permitting, legal, title, taxation socioeconomic, marketing, political, metallurgical, fiscal, or other relevant factors, that could materially affect the Mineral Resource estimate.

The strategic focus of Loulo and Gounkoto exploration is to prioritise higher-grade underground resource definition targets, particularly with down plunge extension drilling at depth, thereby continuing to replace annual depletion and adding successive years of production to the LOM with complimentary underground and open pit sources.

Mining and Mineral Reserves

Loulo-Gounkoto is a mature operation consisting of underground mines and open pits. Mining methods for both the open pits and the underground areas have been consistently applied for several years. As such, familiarity with the orebody and mining methods reduces uncertainty in the mining plan.

The underground mines have consistently produced a higher-grade ore that is blended with the ore from the open pits. The underground mines produce within their constraints while the open pit production varies as required to supplement any changes in the plan, with stockpiles used to blend different types of ore material into the plant, which eliminates any major risk to achieving planned production.

The current LOM is based on underground and open pit Mineral Reserves only and is scheduled to process 67 Mt of ore at 3.87 g/t Au.

The targeted production is based on the total LOM ounces, rather than a tonnage, so while the plant is expected to operate at full capacity, grade selection is a key component of the mine plan to ensure that production remains above 500 koz per annum for at least 10 years. Accordingly, a processing plant expansion is scheduled to commence in 2027, which will expand the annual processing plant capacity to 6.2 Mtpa from 2029 onwards.

The risk of water ingress is higher when mining below an open pit, however, this risk has been considered and planned for, with significant pump capacity installed in open pit and underground mines.

Barrick, as the owner operator of the Project, has significant experience in other mining operations within Africa and these production rates, modifying factors, and costs are benchmarked against other African operations to ensure they are suitable.

The QPs consider the parameters used in the Mineral Resource to Mineral Reserve conversion process to be appropriate.

The QPs are not aware of any environmental, legal, title, socioeconomic, marketing, mining, metallurgical, fiscal, infrastructure, permitting, that could materially affect the Mineral Reserve estimate.

Mineral Processing

Based upon both extensive metallurgical test work data and actual operational evidence, the QP is satisfied that Loulo-Gounkoto is able to maintain production, gold recovery, and reagent consumptions as forecasted.

Loulo-Gounkoto has demonstrated successful operation both in terms of processing throughput and gold recovery.

Gold recovery from Yalea ore is impacted by the presence of arsenic and copper. Consequently, arsenic and copper estimation is completed as part of the Mineral Resource update, in order to identify potentially low recovery areas. The current LOM has an average recovery of 89.5%. Gold recovery is maintained at these levels by blending ore from the various sources (Yalea/Gara/Gounkoto) to control copper and arsenic grades in the mill feed.

The planned processing plant expansion is scheduled to be completed in 2029, with the aim of increasing the capacity from 5 Mtpa to 6.2 Mtpa and maintaining the current levels of annual gold production. As at the time of publication of this report, pre-feasibility and an order of magnitude capital budget estimate have been completed in support of the expansion.

The QP considers the modelled recoveries for all ore sources and the processing plant and engineering unit costs applied to the Mineral Resource and Mineral Reserve estimation process to be acceptable.

Infrastructure

As a result of the long-established open pit mining operation at Loulo-Gounkoto, substantial infrastructure exists to support the ongoing mining and processing operations.

In comparison to much of the country, road access for staff and materials is excellent via the recently constructed Millennium Highway that crosses the Loulo to Gounkoto haul road approximately 6 km north of Gounkoto.

There is sufficient power supply capacity available from the on-site light and heavy fuel oil generators, as well as solar farm, to meet the power demands of the operations.

An adequate water supply is available for the operation, sourced from the Gara and Falémé rivers which run through the Complex site.

Environment and Social Aspects

Loulo-Gounkoto has a mature ESMP and an accredited ISO14001 Environmental Management System in place which addresses current operational needs and can readily be adapted to meet future activities. Mine closure costs are reviewed and revised annually in line with good industry practice.

All permits are in place, and an annual Environmental and Social Report compiled in a format aligned with Global Reporting Initiative (GRI) requirements is submitted to the Malian authorities.

Stakeholder engagement is ongoing, and senior management are involved in regular meetings with the community. The Complex prioritises local employment and regularly achieves in excess of 95% Malian employment across the Barrick and contractor workforces.

Barrick continues to invest in community development initiatives, focussing on potable water supplies, primary school education, health care education, investment in medical clinics and local economic development projects, and livelihood projects, such as the programme to improve the agricultural yield of the area. The Complex is a significant employer for members of the local communities and Malian's and a key economic engine within the Malian economy. Barrick's policy is to promote nationals to manage the Complex.

The ongoing presence of ASM operations within the Loulo Permit poses a risk of incursion into exploration or operations areas remains because of the increasing number of people participating in the ASM. In response to this, dedicated corridors for ASM in specific areas away from active industrial mining have been proposed by SOMILO as a mitigation strategy, but are yet to be implemented. In the meantime, Barrick is reinforcing its relationship with the community to manage the issue and continues to invest in alternative livelihood opportunities, where possible.

The QP considers the extent of all environmental liabilities, including the need for rehabilitation and reclamation, to which the property is subject to, have been appropriately met.

Risks

Barrick has undertaken an analysis of the Project risks. Table 1-6 summarises the Project risks and the QPs' assessment of the risk degrees and consequences, as well as ongoing/required mitigation measures. The QPs, however, note that the degree of risk refers to our subjective assessment as to how the identified risk could affect the achievement of the Project objectives.

In the QPs' opinion, there are no significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information, Mineral Resource or Mineral Reserve estimates.

Risk Analysis Definitions

The following definitions have been employed by the QPs in assigning risk factors to the various aspects and components of the Complex:

- **Low** – Risks that are considered to be average or typical for a deposit of this nature and could have a relatively insignificant impact on the economics. These generally can be mitigated by normal management processes combined with minor cost adjustments or schedule allowances.
- **Minor** – Risks that have a measurable impact on the quality of the estimate but not sufficient to have a significant impact on the economics. These generally can be mitigated by normal management processes combined with minor cost adjustments or schedule allowances.
- **Moderate** – Risks that are considered to be average or typical for a deposit of this nature but could have a more significant impact on the economics. These risks are generally recognisable and, through good planning and technical practices, can be minimised so that the impact on the deposit or its economics is manageable.
- **Major** – Risks that have a definite, significant, and measurable impact on the economics. This may include basic errors or substandard quality in the basis of estimate studies or project definition. These risks can be mitigated through further study and expenditure that may be significant. Included in this category may be environmental/social non-compliance, particularly regarding Equator Principles and International Financial Corporation (IFC) Performance Standards.
- **High** – Risks that are largely uncontrollable, unpredictable, unusual, or are considered not to be typical for a deposit of a particular type. Good technical practices and quality planning are no guarantee of successful exploitation. These risks can have a major impact on the economics of the deposit including significant disruption of schedule, significant cost increases, and degradation of physical performance. These risks cannot likely be mitigated through further study or expenditure.

In addition to assigning risk factors, the QPs provided an opinion on the probability of the risk occurring during the LOM. The following definitions have been employed by the QPs in assigning probability of the risk occurring:

- **Rare** – The risk is very unlikely to occur during the Complex life.
- **Unlikely** – The risk is more likely not to occur than occur during the Complex life.

- **Possible** – There is an increased probability that the risk will occur during the Complex life.
- **Likely** – The risk is likely to occur during the Complex life.
- **Almost Certain** – The risk is expected to occur during the Complex life.

Risk Analysis Table

Table 1-6 details the Loulo-Gounkoto Risk Analysis as determined by the QPs.

Table 1-6 Loulo-Gounkoto Risk Analysis

Issue	Likelihood	Consequence Rating	Risk Rating	Mitigation
Geology and Mineral Resources – Confidence in Mineral Resource Models	Unlikely	Moderate	Low	Additional scheduled infill drilling maintaining two years of full grade control coverage ahead of mining. Resource model updated on a regular basis using production reconciliation results.
Mining and Mineral Reserves – Open Pit Slope Stability	Unlikely	Moderate	Low	Continued 24 hour in-pit monitoring with radar, geotechnical drilling well ahead in advance, instrumentation, and continued updating of geotechnical and hydrology models.
Mining and Mineral Reserves – Underground Recovery and Dilution	Possible	Moderate	Low	Change in drilling and blasting practices and paste filling binder to reduce dilution and increase recovery.
Mining and Mineral Reserves – Underground Flooding	Possible	Moderate	Moderate	Water inflow physical controls, hydrological models and sufficient pumping
Processing - Salts build-up in the process water - leading to carbon fouling in the CIL and elution circuits	Possible	Moderate	Moderate	A full salt and water balance has been completed and tracked in the plant to ensure that correct water dilution into the critical streams of elution is managed with minimum impact on carbon fouling and gold recovery.
Environmental – Tailings failure	Unlikely	Major	Moderate	Proper water management at the TSF. TSF buttressing.
Environmental – Hydrocarbon spillage	Possible	Moderate	Moderate	Hydrocarbon management on site.
Environmental – Commercial and Reputational Issues due to GHG Emissions	Possible	Moderate	Moderate	Continue transition to renewable energy sources. Continue identifying opportunities through the climate committee.

Issue	Likelihood	Consequence Rating	Risk Rating	Mitigation
Social – Community unrest	Possible	Moderate	Moderate	Dedicated community engagement by SOMILO company social and sustainability department. Accessible Grievance Mechanism. Community development project.
Country & Political – Security – Governmental	Possible	Major	Moderate	Dedicated government liaison team in Bamako/Engagement with local authorities. Government participation/ownership.
Financial - increase in Capital and Operating Costs	Possible	Moderate	Moderate	Continue to track actual costs and LOM forecast costs, including considerations for inflation and foreign exchange.
Fiscal Stability	Possible	Moderate	Moderate	Re-enforce the application of the tax, customs and stability provisions of the Complex's conventions in all government engagements. Continue to work closely with the tax authorities in this regard.

1.16 Recommendations

The QPs make the following recommendations:

Geology and Mineral Resources

- Address all outstanding recommendations from the RSC Ltd (RSC) 2022 independent audit.
- Investigate the potential to transfer from explicit wireframing of lithological models to implicit modelling.
- Continue the current exploration strategy of targeting extensions of existing brownfields targets and evaluating new greenfield targets to extend the Loulo-Gounkoto LOM and replace depleted reserves.

Mining and Mineral Reserves

- The open pit dilution and mining losses should be reviewed with a view to establishing a more accurate record of these across the various open pits.

Processing

- Continuous process improvement and geometallurgical work on new satellite orebodies must remain in place to ensure that the plant performance remains optimal for both sulphide and free milling ores.

Infrastructure

- Further decrease the Complex's reliance on thermal power; increase grid stability, and potentially reduce operating costs in the dry season, by increasing current battery storage capacity integration with the current power model; and commence a feasibility study on the expansion of the existing solar power capacity.

Environment and Social Aspects

- Continued stakeholder engagement and re-enforcement of the accessibility of the grievance mechanism.
- An ASM strategy should be sought with the Malian government, and dedicated ASM corridors implemented and managed.

2 Introduction

This Technical Report on the Loulo-Gounkoto Gold Mine Complex, located in western Mali, has been prepared by Barrick. The purpose of this Technical Report is to support the public disclosure of the Mineral Resource and Mineral Reserve estimates at the Complex as of 31 December 2022. This Technical Report conforms to NI 43-101.

The Complex consists of two mines, Loulo and Gounkoto. Loulo is owned by SOMILO and Gounkoto is owned by Gounkoto SA, both Malian-based exploration and mining companies held 80% by Barrick and 20% by the state of Mali. Barrick is the operator of the Complex.

The operation comprises two underground mines (Yalea and Gara) at Loulo and an underground and open pit mine at Gounkoto, satellite deposits, and a processing plant (5 Mtpa capacity), together with other associated mine operation and regional exploration infrastructure. The plant produces gold doré bars.

On a 100% basis, total mine production from underground and open pits in 2022 was 5.1 Mt at a head grade of 4.59 g/t Au for a total of 684 koz of gold (91.2% recovery). On a 100% basis, total mine production since mining commenced in 2005 to the end of 2022 is 70.9 Mt at a head grade of 4.40g/t Au for 9.1 Moz of gold (91.1% recovery).

The Mineral Resource and Mineral Reserve estimates have been prepared according to the Canadian Institute of Mining, Metallurgy and Petroleum CIM (2014) Definition Standards for Mineral Resources and Mineral Reserves (CIM (2014) Standards) as incorporated by reference in NI 43-101. Mineral Resource and Mineral Reserve estimates were also prepared using the guidance outlined in CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines 2019 (CIM (2019) MRMR Best Practice Guidelines).

2.1 Effective Date

The effective date of this Technical Report is 31 December 2022.

2.2 Qualified Persons

This Technical Report was prepared by Barrick and incorporates the work of Digby Wells and Associates Pty Ltd. (Digby Wells).

The QPs and their responsibilities for this Technical Report are listed in Section 29 Certificates of Qualified Persons and summarised in Table 2-1.

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

Table 2-1 QP Responsibilities

Qualified Person	Company	Title/Position	Sections
Simon P. Bottoms, CGeol, MGeol, FGS, FAusIMM	Barrick Gold Corporation	Mineral Resource Management and Evaluation Executive	Sections 6, 11, 12, 14, 19, 21, 22 and relevant information for Sections 1, 2, 3, 25 to 27
Richard Peattie, M.Phil, FAusIMM	Barrick Gold Corporation	Africa and Middle East Mineral Resource Manager	Sections 4, 5, 7 to 10, 23, 24 and relevant information for Sections 1, 2, 3, 25 to 27
Graham E. Trusler, MSc, Pr Eng, MIChE, MSAIChE	Digby Wells and Associates Pty Ltd.	CEO	Sections 20 and relevant information for Sections 1, 2, 3, 25 to 27
Thamsanqa Mahlangu, Pr. Eng, PhD	Barrick Gold Corporation	Head of Metallurgy, Africa and Middle East	Sections 13, 17, 18 and relevant information for Sections 1, 2, 3, 25 to 27
Derek Holm, FSAIMM	Barrick Gold Corporation	AME Planning Lead	The open pit portions of Sections 15, 16 and relevant information for Sections 1, 2, 3, 25 to 27
Ismail Traore, MSc, FAusIMM, M.B. Law, DES	Barrick Gold Corporation	Group Underground Planning Manager, Africa and Middle East	The underground portions of Sections 15, 16 and relevant information for Sections 1, 2, 3, 25 to 27

2.3 Site Visit of Qualified Persons

Below are the most recent site visit dates for the QPs:

- Mr. Simon Bottoms – 28 to 29 October 2022. Mr Bottoms made five separate visits in 2022 upon which he reviewed the exploration programme results, Mineral Resource and grade control model updates, mine plans, mining performance results, mine strategy, results of external audits, and board meeting reviews. The last visit was on 28 and 29 October 2022.
- Mr. Richard Peattie – 28 to 29 October 2022. Mr Peattie made two visits in 2022 upon which he reviewed the geology, exploration programme results, Mineral Resource and grade control model updates, mine plans, mining performance results, mine strategy, results of external audits, and board meeting reviews.
- Mr. Graham E. Trusler - 18 to 23 November 2022. Mr Trusler made a visit to Loulo-Gounkoto from 18 to 23 November 2022 where he visited all major establishments within the mining area including the mining pits, tailings dams, water dams, some community projects, and the resettlement sites near to the mine. Reviews were held with management teams from the social, safety, and environmental departments.
- Dr. Thamsanqa Mahlangu – 12 to 16 December 2022. Dr Mahlangu made four separate visits in 2022 upon which he reviewed the processing plant operations performance, and geometallurgical test work on new and current deposits. Also covered were reviews on the process improvement projects and board meeting reviews.
- Mr. Derek Holm - 28 and 29 October 2023. Mr. Holm made one visit in 2022 upon which he reviewed mine plans, production schedules, and board data.
- Mr. Ismail Traore - 27 June to 4 July 2022. Mr Traore made three separate visits in 2022 upon which he reviewed mining performance results, Mineral Reserve and grade control model updates, mine strategy, results of external audits, and board meeting reviews. The last visit was from 27 June to 4 July 2022.

2.4 List of Abbreviations

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

µ	micron	lb	pound
µg	microgram	L/s	litres per second
a	annum	m	metre
A	ampere	M	mega (million); molar
bbl	barrels	m^2	square metre
Btu	British thermal units	m^3	cubic metre
°C	degree Celsius	Ma	million years
cal	calorie	MASL	metres above sea level
cm	centimetre	m^3/h	cubic metres per hour
cm^2	square centimetre	mi	mile
d	day	min	minute
dia	diameter	µm	micrometre
dmt	dry metric tonne	Mm	millimetre
g	gram	mph	miles per hour
G	giga (billion)	Mt	million tonnes
Ga	billion years	Mtpa	million tonnes per annum
g/L	gram per litre	MVA	megavolt-amperes
g/t	gram per tonne	MW	megawatt
gr/m^3	grain per cubic metre	MWh	megawatt-hour
ha	hectare	MWr	megawatt refrigeration
HP	horsepower	oz	Troy ounce (31.1035g)
Hr	hour	oz/st, opt	ounce per short ton
Hz	hertz	ppb	part per billion
J	joule	ppm	part per million
k	kilo (thousand)	RL	relative elevation
kcal	kilocalorie	s	second
kg	kilogram	t	metric tonne
km	kilometre	tpa	metric tonne per year
km^2	square kilometre	tpd	metric tonne per day
km/h	kilometre per hour	US$	United States dollar
kPa	kilopascal	V	volt
kVA	kilovolt-amperes	W	watt
kW	kilowatt	wmt	wet metric tonne
kWh	kilowatt-hour	wt%	weight percent
L	litre	yr	year

2.5 List of Acronyms

3DIP	three-dimensional distributed array IP
AARL	Anglo American Research Laboratories
AAS	atomic absorption spectroscopy
ABA	acid base accounting
AC	aircore
ADC	grade confidence
AGC	Advanced Grade Control
Ai	abrasion index
AME	Africa and Middle East
AMTEL	Advanced Mineral Technology Laboratory Ltd.
ARD	acid rock drainage
ASM	Artisanal or small-scale miners
BAP	Biodiversity Action Plan
BBWi	Bond ball mill work index
BMP	Biodiversity Management Plan
BRGM	Bureau de Recherches Géologiques et Minières
BUP	budget unit plan
CDC	community development committee
CH	channel
CIL	carbon in leach
CL	cutting line
CMS	Cavity Monitoring System
COG	cut-off grade
COS	change of support
CRM	certified reference material
CRP	Cyanide Recovery Plant
CSR	Corporate Social Responsibility
CV	coefficient of variation
DA	dynamic anisotropy
DD	diamond drilling
DDB	Dip Domain Boundary
DDH	diamond drill hole
DGPS	Differential Global Positioning System
DL	detection limit
DNACPN	Direction National de Control de Pollutions et Nuisances
DNGM	Direction Nationale de la Géologie et des Mines
DRS	dilution rating system
DTM	digital terrain model
EDA	exploratory data analysis
EGL	effective grinding length
ELOS	equivalent linear over-break/slough
EM	electromagnetic
EMP	environmental management plan
EMS	Environmental Management System
EOM	end of month
EOY	end of year
EPS	Enhanced Production Scheduler
ERT	Electrical Resistivity Tomography

ESE	east-southeast
ESIA	Environmental and Social Impact Assessment
ESMP	environmental and social management plan
EV	Economic Value
EXP	exploration drilling
FL	failure limit
FW	footwall
FP	Fully Protected
G&A	general and administration
GC	grade control
GHG	greenhouse gas
GISTM	Global International Standards for Tailings Management
GM	General Manager
GRG	gravity recoverable gold
GRI	Global Reporting Initiative
GTT	granitoid terrane
HARD	Half Absolute Relative Difference
HFO	heavy fuel oil
HPGR	High Pressure Grinding Roll
HW	hanging wall
ICMC	International Cyanide Management Code
ICMM	International Council of Mining and Minerals
ID	inverse distance
IFC	International Financial Corporation
IP	induced polarisation
IRA	inter-ramp angle
ITC	Inter-ministerial Technical Committee
ITCZ	Inter Tropical Convergence Zone
IUCN	International Union for Conservation of Nature
KE	kriging efficiency
KKI	Kedougou-Kenieba Inlier
LC	Least Concern
LDL	lower detection limit
LFO	light fuel oil
LHD	load haul dumpers
LOM	life of mine
LTR	long-term review
MCAF	Mining Cost Adjustment Factor
MCC	Motor Control Centre
MCF	mine call factor
MRM	Mine Resource Management
MRMM	Mining Rock Mass Model
MSO	Mineable Shape Optimiser
MTZ	Main Transcurrent Zone
MZ	main zone
NAF	non-acid forming
NE	northeast
NGO	non-government organisation
NNE	north-northeast
NNW	north-northwest

NPV	Net Present Value
NW	northwest
ODBC	Open Database Connectivity
OEM	Original Equipment Manufacturer
OK	ordinary kriging
OL	orientation line
OMVS	Organisation for Senegal River Development
OP	open pit
OREAS	Ore Research & Exploration Pty Ltd
PER	Provisional Environmental Rehabilitation
PP	Partially Protected
PPE	personal protective equipment
PSA	Pressure Swing Adsorption
PV	thermal-photovoltaic
QA/QC	quality assurance and quality control
QKNA	quantitative kriging neighbourhood analysis
QP	Qualified Person
QQ	quantile-quantile
QT	quartz-tourmaline
RAB	rotary air blast
RAP	Resettlement Action Plan
RC	reverse circulation
RCF	Resource Call Factor
RF	Revenue Factor
ROM	run of mine
RWD	raw water dam
SANAS	South African National Accreditation System
SCADA	Supervisory Control and Data Acquisition
SD	standard deviation
SE	southeast
SEP	Stakeholder Engagement Plan
SLIMS	SGS laboratory information management system
SLTO	Social Licence to Operate
SMU	Selective Mining Unit
SOMILO	Société des Mines de Loulo SA
SOP	standard operating procedure
SOX	Sarbanes-Oxley Act of 2002
SQR	argillaceous quartzites
SR	slope of regression
SSE	south-southeast
SSW	south-southwest
SW	southwest
TARP	Trigger Action Response Plan
TR	trench
TSF	tailings storage facility
UG	underground
UCS	unconfined compressive strength
USP&E	United State Power & Environment
VSAT	very small aperture terminal
VTEM	versatile time-domain electromagnetics

WAD	weak acid dissociable
WAP&E	West Africa Power & Environment
WMP	Waste Management Plan
WRD	Waste Rock Dump
XRF	X-ray fluorescence

3 Reliance on Other Experts

This report has been prepared by Barrick. The information, conclusions, opinions, and estimates contained herein are based on:

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

For the purpose of this report, the QPs have relied upon information provided by Barrick's legal counsel regarding the validity of exploitation permits. This opinion has been relied upon in Section 4 (Property Description and Location) and in the summary of this report.

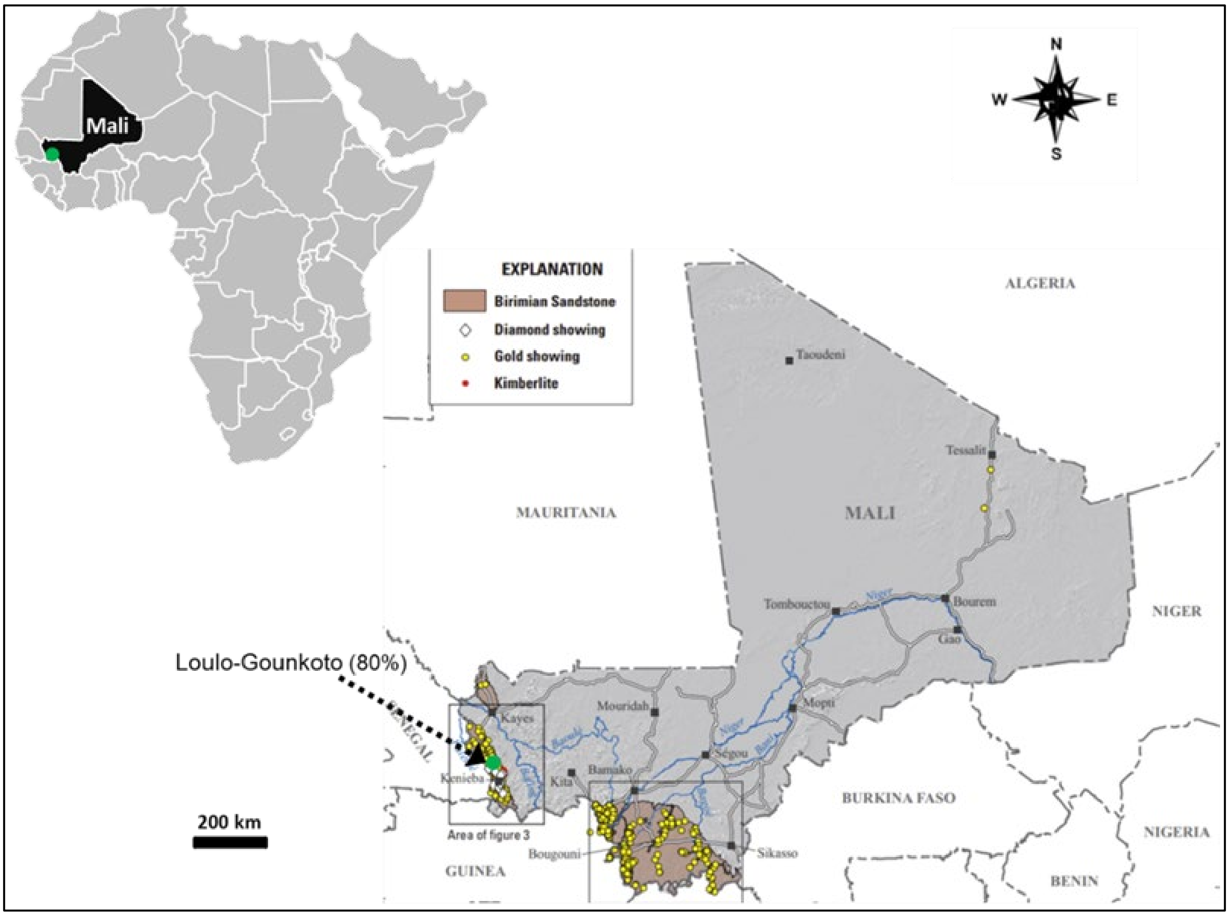
Except for the purposes legislated under provincial securities laws, any use of this Technical Report by any third party is at that party's sole risk.

4 Property Description and Location

4.1 Complex Location

The Loulo-Gounkoto Complex is situated in western Mali adjacent to the Falémé River, which forms the international boundary with Senegal. The Republic of Mali is a landlocked country and is bordered by Guinea, Senegal, Mauritania, Algeria, Niger, Burkina Faso, Western Sahara, and the Côte d'Ivoire.

The Complex area is located 350 km west of the capital city of Bamako, 220 km south of the town of Kayes, and NW of the nearest town Kenieba (Figure 4-1). It falls within the Central Arrondissement of the Kenieba District, which is one of the ten districts of the Kayes Region. The Complex is entirely within the 361 km^2 of the Loulo and Gounkoto permits. Table 4-1 gives the co-ordinates of the entire permitted area.



Source: Barrick, 2022 (modified after USGS, 2010)

Figure 4-1 Loulo-Gounkoto Locations

4.2 Mineral Rights and Land Ownership

The Loulo Mine is located within the Loulo Exploitation Permit (Loulo Permit). The original Loulo Permit was granted by Decree No. 96-048/PM-RM 9 on 14 February 1996 and covered an area of 48 km^2. This Loulo Permit was amended by Decree No. 99-193/PM-RM, dated 15 July 1999, which extended the size of the permit to 372 km^2. The Loulo Permit was further amended by Decree No. 2012-311 /P-RM on 21 June 2012, reducing the size of the Loulo Permit as the portion surrounding the Gounkoto Mine was transferred to a new Exploitation Permit. The Loulo Permit remains in force for a period of 30 years after which is renewable if production is still taking place.

In 2010, Randgold Resources Limited (Randgold) applied and was granted the formation of the new Gounkoto Exploitation Permit (Gounkoto Permit), which was split from the Loulo Permit, to form a separate entity, Société des Mines de Gounkoto SA (Gounkoto) under Decree No.2012-431/PM-RM DU dated 3 August 2012. The Gounkoto Permit incorporates the Gounkoto and Faraba Reserves and is valid for 30 years.

In 2017, the Baboto North deposit was purchased by Endeavour Mining Corporation (Endeavour). This resulted in a minor change to the Loulo Permit. An updated Decree number, Decree No. 2018-0895/PM-RM DU dated 14 December 2018, has been generated by the Malian government.

On 22 January 2019, Randgold changed its name to Barrick Gold (Holdings) Limited, following the merger with Barrick Gold Corporation (Barrick) on 1 January 2019 (the Merger).

Figure 4-2 illustrates the current Loulo and Gounkoto Permit boundaries. Table 4-1 details the coordinates of the current Loulo and Gounkoto Permits. The Loulo and Gounkoto Permits areas are currently 261.225 km^2 and 99.944 km^2, respectively, for a total area of 361.169 km^2.

Table 4-1 Loulo and Gounkoto Permit Coordinates

Permit	Point	Longitude	Latitude	Permit	Point	Longitude	Latitude
Loulo	A	11° 19' 00"	13° 10' 00"	Loulo	AF	11° 26' 00"	13° 10' 00"
	B	11° 19' 00"	12° 56' 33"		AG	11° 22' 57"	13° 10' 00"
	C	11° 20' 50"	12° 56' 33"		AH	11° 22' 57"	13° 09' 51"
	D	11° 20' 50"	12° 57' 24"		AI	11° 21' 59"	13° 09' 51"
	E	11° 21' 25"	12° 57' 24"		AJ	11° 21' 59"	13° 09' 41"
	F	11° 21' 25"	12° 59' 37"		AK	11° 21' 00"	13° 09' 41"
	G	11° 22' 59"	12° 59' 37"		AL	11° 21' 00"	13° 10' 00"
	H	11° 22' 59"	12° 58' 06"	Gounkoto	A	11° 19' 00"	12° 56' 33"
	I	11° 23' 37"	12° 58' 06"		B	11° 19' 00"	12° 50' 00"
	J	11° 23' 37"	12° 58' 28"		C	11° 23' 38"	12° 50' 00"
	K	11° 24' 26"	12° 58' 28"		D	11° 23' 38"	12° 49' 39"
	L	11° 24' 26"	12° 59' 26"		E	11° 24' 11"	12° 49' 39"
	M	11° 24' 49"	12° 59' 26"		F	11° 24' 11"	12° 50' 39"
	N	11° 24' 49"	13° 00' 08"		G	11° 24' 32"	12° 50' 39"
	O	11° 23' 44"	13° 00' 08"		H	11° 24' 32"	12° 51' 00"
	P	11° 23' 44"	13° 01' 07"		I	11° 23' 45"	12° 51' 00"
	Q	11° 24' 35"	13° 01' 07"		J	11° 23' 45"	12° 52' 09"
	R	11° 24' 35"	13° 02' 25"		K	11° 24' 03"	12° 52' 09"
	S	11° 25' 11"	13° 02' 25"		L	11° 24' 03"	12° 53' 30"
	T	11° 25' 11"	13° 03' 14"		M	11° 23' 43"	12° 53' 30"
	U	11° 25' 54"	13° 03' 14"		N	11° 23' 43"	12° 53' 50"
	V	11° 25' 54"	13° 04' 00"		O	11° 23' 14"	12° 53' 50"
	W	11° 25' 29"	13° 04' 00"		P	11° 23' 14"	12° 54' 42"
	X	11° 25' 29"	13° 05' 23"		Q	11° 23' 59"	12° 54' 42"
	Y	11° 26' 08"	13° 05' 23"		R	11° 23' 59"	12° 55' 43"
	Z	11° 26' 08"	13° 05' 52"		S	11° 23' 33"	12° 55' 43"
	AA	11° 28' 28"	13° 05' 52"		T	11° 23' 33"	12° 55' 27"
	AB	11° 28' 28"	13° 06' 13"		U	11° 22' 26"	12° 55' 27"
	AC	11° 28' 42"	13° 06' 13"		V	11° 22' 26"	12° 55' 45"
	AD	11° 28' 42"	13° 07' 00"		W	11° 20' 50"	12° 55' 45"
	AE	11° 26' 00"	13° 07' 00"		X	11° 20' 50"	12° 56' 33"

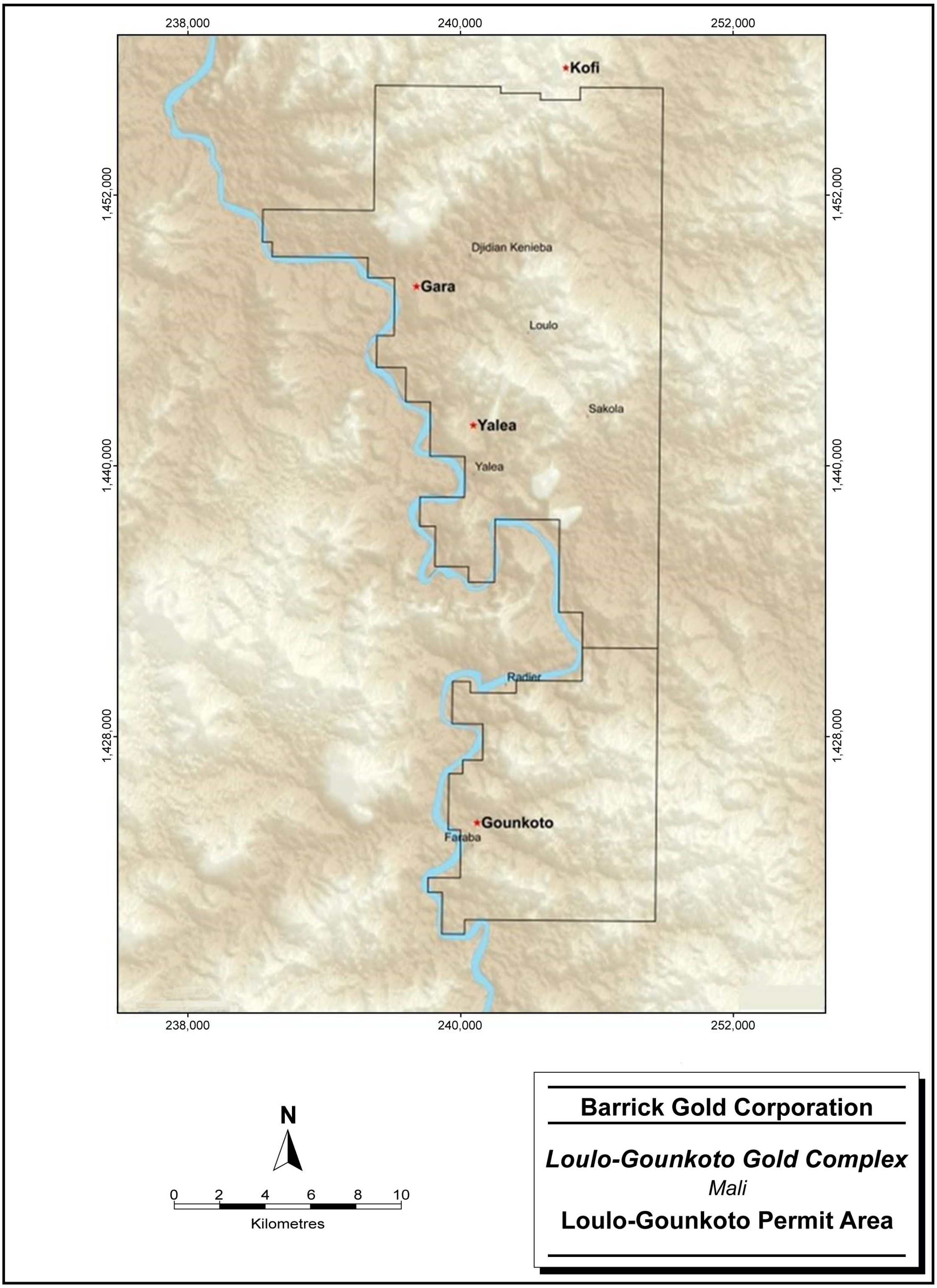


Figure 4-2 Loulo and Gounkoto Permit Areas

4.3 Surface Rights

In Mali, exploitation permits allow the holder of the permit to freely carry out exploration and mining activities within the permit area provided that there is compliance with government regulations including those of safety and the environment. The permit allows the holder to fully utilise the surface for the implementation of such infrastructure as required for the mining operations.

All the taxes relating to Loulo and Gounkoto Mining Rights have been paid to date and the concessions are in good standing. There are no exclusion zones on the Loulo and Gounkoto Permits.

The QP is not aware of any other significant factors and risks that may affect access, title, or the right of ability to perform work on the property. The surface rights are sufficient for the planned life of the mine.

4.4 Ownership, Royalties and Lease Obligations

The Loulo Permit is owned by SOMILO, which is held 80% by Barrick and 20% by the state of Mali.

The Gounkoto Permit is owned by Gounkoto SA, which is held 80% by Barrick and 20% by the state of Mali.

The Establishment Convention for each of Loulo and Gounkoto regulate the fiscal conditions under which the Complex operates and is based on the 1991 Mining Code. A 6% royalty is payable to the Malian government based upon production, together with a corporate tax rate on profits at 30% and a minimum of 0.75% on gross revenues if a loss is made. The conventions also include exoneration on fuel duties for their respective duration.

Other than the ownership status, which includes the royalty on the revenues from mineral production that is payable to the Malian government, there are no other royalties, back-in rights, payments, or other agreements and encumbrances to which the Complex is subject.

The QP is not aware of any risks that could result in the loss of ownership of the deposits or loss of the permits, in part or in whole.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Accessibility

The Complex area is located 350 km west of the capital city of Bamako, 220 km south of the town of Kayes, and NW of the nearest town Kenieba. The border between Mali and Senegal is within three kilometres of Loulo.

Primary access for staff and consumables to Loulo-Gounkoto is via the Millennium Highway, constructed in 2011, that extends from Dakar in Senegal to Bamako in Mali. The Millennium Highway crosses the Loulo to Gounkoto haul road approximately six kilometres north of Gounkoto and provides excellent road connections in comparison to much of the country (Figure 5-1). From the Millennium Highway, access to the Complex is via tarred roads, approximately 40 km to Loulo and 10 km to Gounkoto.

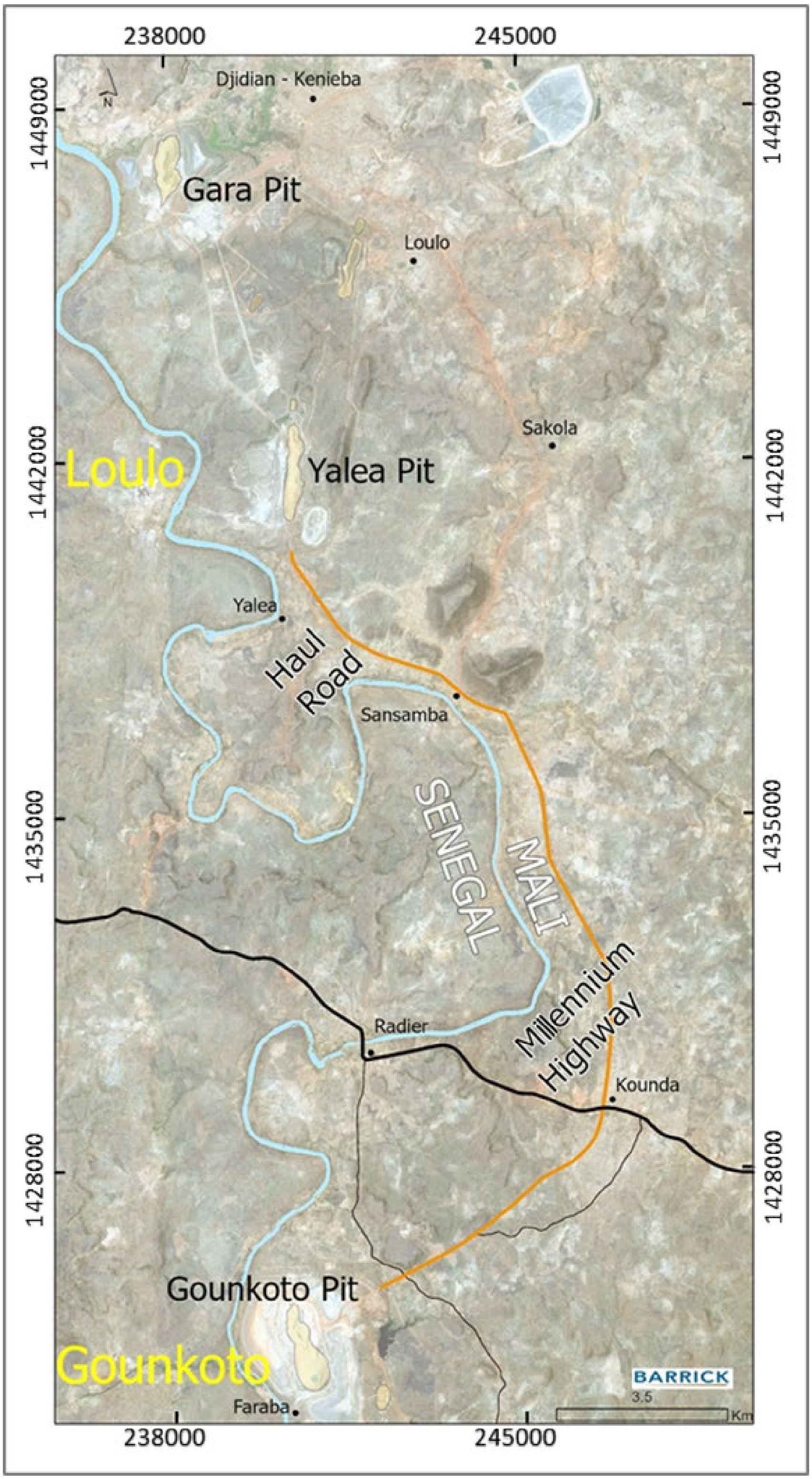


Figure 5-1 Loulo and Gounkoto Location with Main Roads

Daily flights with international air carriers are available from Dakar and Bamako. Charter flights between Bamako and the (unsealed) airstrip at the Complex are regularly used. The landing strip is located at Loulo, approximately 1.5 km long, and built from laterite material. It can accommodate moderate sized aircraft and has been awarded full certification by the transport authorities in Mali.

5.2 Climate and Physiography

The climate at the Complex is strongly influenced by the north and southward movement of the ITCZ which creates distinctive wet and dry seasons. The site is in the Sahelian Transition Zone between the Sahara Desert in the north and the tropical climate in the south. The main vegetation type is Sudanian woodland. The low altitude of the site (90 m to 120 m above mean sea level (asl)) and the absence of any intervening mountains mean that the humidity is directly conveyed to the site when the wind blows in that direction.

Weather stations summarise the monthly rainfall as measured at the Gounkoto and the Loulo stations. Using the average values for all the years on record, it shows a strongly unimodal rainfall distribution, with 87% of rain falling between the months of June and September. The mean annual precipitation amounts to 1,091 mm.

Table 5-1 summarises the monthly rainfall as measured at the Gounkoto and the Loulo stations.

Based on regional data (Kenieba), the potential evaporation is estimated to range between 105 mm and 200 mm per month. In total, this amounts to an annual potential evaporation of 1,749 mm. Although the annual evaporation thereby exceeds the annual rainfall, an excess of water is available during the peak of the wet season (July to September).

The site is situated within close proximity of the Sahelian Transition Zone between the Sahara Desert in the north and the tropical climate in the south. Temperatures range between approximately 13°C and 43°C (average 28°C) with the hottest average conditions occurring between March and June.

Climatic conditions do not materially affect exploration, development, or mining operations.

Table 5-1 Monthly Records of Precipitation and Potential Evaporation

Month Statistic	Jan (mm)	Feb (mm)	Mar (mm)	Apr (mm)	May (mm)	Jun (mm)	Jul (mm)	Aug (mm)	Sep (mm)	Oct (mm)	Nov (mm)	Dec (mm)	Total (mm)
Average Rainfall	2	3	6	4	42	142	217	325	263	69	14	6	1,093
Kenieba - Average Potential Evaporation	167	174	200	188	83	142	119	105	111	120	110	130	1,649

Topography of the Gounkoto area is generally flat with elevations ranging from 100 MASL to a maximum of 200 MASL. Laterite or iron cap development is a common feature throughout the area. The Complex lies in a low seismic rated area. Within the Complex area the landscape is characterised by scrubland and brush vegetation.

5.3 Infrastructure

The key supply route for the Complex is the Millennium Highway, which runs from the port of Dakar in Senegal (the Port) to Bamako, Mali, crossing the Loulo-Gounkoto haul road approximately six kilometres north of Gounkoto. Local infrastructure is limited to small rural settlements connected by gravel roads and paths.

Loulo is an operating mine site comprising open pit and underground mines, a processing plant, satellite deposits, and associated infrastructure, such as the TSF, workshops, offices, and accommodation villages. Mobile telephone services are available across the Complex. Previously mined open pits remain open and are used to access the underground mine. Waste dumps are situated adjacent to the open pits. The plant, offices and accommodation villages are located east of the Gara pit. The TSF is located eight kilometres to the east of the plant. The Gounkoto mine site has some accommodation, offices, workshops and further minor infrastructure in support of the underground and open pit mine. The Loulo and Gounkoto mine site layouts are shown in Section 18.

Water is sourced for the Complex from the Gara and Falémé rivers, which run through the Complex site, and from underground dewatering activities. A monthly report is generated to monitor this water consumption. The plant recycles water with a reuse target of 80%.

The main power plant is located at Loulo and has an installed capacity of 72 MW, with an additional 16 MW of thermal and 20 MW of solar power.

5.4 Local Resources

Local infrastructure around Loulo-Gounkoto is limited to small rural settlements connected by gravel roads and paths. Social and economic baseline studies identified that the inhabitants within the villages are mostly Malinké but include other ethnic groups who have arrived later such as Peul, Bambara, and Bozo. The main economic activities are agriculture and artisanal mining. Other activities include livestock, fishing, and trade. All the houses are traditional round huts covered with thatch.

Bread and small quantities of vegetables may be sourced locally but most supplies are obtained from Kayes or Bamako, Mali. Local food chains have been improved through the donation and the building of infrastructure, such as dams and roads, along with the launch and support of an Agribusiness hub in the region. Several local entrepreneurs have utilised these opportunities and increased economic activity in the region.

Health facilities have been improved with a health centre being built in various villages around Loulo-Gounkoto (Kounda Dabaro, Mahinamine, Baboto, Sakola) and two other centres being rehabilitated. A partnership between SOMILO and a non-government organisation (NGO) aims to limit the spread of human immunodeficiency virus (HIV). SOMILO has also participated in programs aimed at reducing malaria infections in local communities.

6 History

6.1 Ownership

The Loulo (Gara) gold deposit was discovered in 1981 by the Syndicat Or joint venture between the Malian Direction Nationale de la Géologie et des Mines (DNGM) and the French Bureau de Recherches Géologiques et Minières (BRGM) and a joint venture was subsequently formed between SEREM (a 100% subsidiary of BRGM) and the Republic of Mali.

In 1992, BHP Minerals Mali entered into an Option Share purchase and work commitment agreement with SOMILO to purchase a 20% share of the joint venture, with an option to increase its share to 51% as a result of the completion of a feasibility study (reference not available).

Randgold acquired BHP Minerals Mali in October 1996 and changed its name to Randgold Resources Mali. Randgold increased its share of SOMILO to 51% in October 1997 through share purchase. At this stage, as a result of a corporate agreement, La Source (a joint venture between BRGM and Normandy Limited) replaced BRGM as a holder in SOMILO. Randgold then acquired La Source's 29% holding in SOMILO in April 2001, bringing its interest in SOMILO to 80% with the Republic of Mali retaining a 20% interest. In August 2012, Gounkoto SA was created by splitting the original Loulo permit into two; the northern portion retained by SOMILO SA, and the southern portion held by Gounkoto SA. On 01 January 2019, Barrick acquired 100% of the issued and outstanding shares of Randgold as a result of the Merger, and from there on owned 80% of SOMILO and Gounkoto SA in continued partnership with the Republic of Mali (retaining a 20% interest).

6.2 Exploration and Development History

Gold potential in the Loulo area was recognised by the Syndicat Or. As a result of exploration work undertaken by the Syndicat Or joint venture, the Loulo 0 gold deposit (now known as Gara) was discovered in 1981. Syndicat Or continued with exploration until 1989, concluding with a pre-feasibility study indicating that the Loulo 0 deposit (Gara) on its own was sub-economic.

BHP Minerals Mali

Following BHP Minerals Mali's share purchase in 1992, it completed the following work:

- 20,158 m of core drilling, including 16,085 m at Loulo 0 (Gara)
- Two regional soil sampling programmes covering the mining and exploration concessions
- Metallurgical test work on the Loulo 0 core and additional bulk samples
- Geotechnical studies

- Preliminary open pit and underground mine designs

Work focused on Loulo 0 (Gara) and BHP produced separate resource estimates for mineralisation that is potentially mineable from surface, mineralisation that must be mined underground, and mineralisation from satellite deposits.

The conclusion from the feasibility work carried out by BHP was that the Loulo 0 (Gara) deposit by itself was too small to be economic and that an additional satellite deposit of at least 500 koz of gold was required for an economically viable project. By spending $4.62 M on this work, BHP increased its share in SOMILO to 20%.

Following the discovery of the Yalea deposit, a series of feasibility studies were undertaken.

Randgold

Following Randgold's acquisition of BHP Minerals Mali, the Yalea deposit at Loulo was discovered in 1997. An updated Loulo feasibility study was completed and construction of the Loulo Mine began in 2004, with mining of the Yalea and Gara open pits commencing in 2005. An underground feasibility study for Loulo was approved in 2005, and the development of the Yalea Underground began in 2006. In 2008, the Yalea Underground produced first gold. The Gara underground mine commenced in 2010 with first gold produced in 2011.

In 2009, the Gounkoto deposit was discovered. First gold was produced from the Gounkoto open pit in 2011.

In 2012, the Loulo processing plant ramped up production to over 4 Mtpa, ISO 14001 certification was achieved at Gounkoto, and OHSAS 18001 safety accreditation was achieved at Loulo.

Gounkoto Underground Mineral Reserves were defined in 2014. At Loulo, a paste backfill plant and primary vent shafts were installed. The secondary crushing plant was upgraded.

In 2015, mining at Loulo underground transitioned to owner-operator mining. A carbon regeneration kiln was installed.

By 2016, annual gold production had increased to over 700 koz on a 100% basis. Studies at Gounkoto focussed on the slope designs for the Super Pit, an underground-open pit trade-off, and an underground pre-feasibility study. The underground refrigeration project was completed and the elution circuit was upgraded.

Plant recoveries and throughput increased in 2017 to 92% and 4.9 Mtpa, respectively. The Yalea Underground crusher was commissioned, stripping for the Gounkoto Super Pit commenced, and the Baboto North deposit was sold to Endeavour.

In 2019, Barrick acquired 100% of the issued and outstanding shares of Randgold through the Merger, and from there on, owned 80% of SOMILO and Gounkoto SA in continued partnership with the Republic of Mali (retaining a 20% interest).

6.3 Previous Resource and Reserve Estimates

These estimates are considered to be historical in nature and should not be relied upon. A QP has not completed sufficient work to classify the historical estimate as a current Mineral Resource or Mineral Reserve and Barrick is not treating the historical estimates as current Mineral Resources or Mineral Reserves. These have been superseded by the Mineral Resource estimates reported and described in this report.

BHP delineated a Mineral Resource on the Loulo 0 (Gara) deposit prior to Randgold's acquisition. Yalea and Gounkoto were greenfields discoveries by Randgold and therefore there are no historical Mineral Resource estimates available.

In the QP's opinion, there are no significant historical Mineral Resource and Mineral Reserve estimates requiring additional disclosure.

6.4 Past Production

Since commencing mining operations in 2005 and to the end of 2022, a total of 71 Mt has been processed from the various orebodies at Loulo-Gounkoto.

Table 6-1 details the past production from Loulo-Gounkoto since 2005.

Table 6-1 Past Production Records for Loulo-Gounkoto

Year	Tonnes Milled (kt)	Head Grade (g/t)	Gold Produced (koz)	Recovery (%)
2005	527	3.72	68	95.9
2006	2,595	3.15	242	93.9
2007	2,654	3.30	265	93.1
2008	2,721	3.22	258	91.5
2009	2,947	4.22	352	87.7
2010	3,158	3.36	317	92.5
2011	3,619	3.38	346	88.1
2012	4,354	4.02	503	89.2
2013	4,463	4.60	580	88.4
2014	4,396	4.99	639	90.2
2015	4,543	4.78	630	90.1
2016	4,875	4.96	707	91.0
2017	4,918	4.96	730	92.7
2018	5,154	4.30	670	92.3
2019	4,931	4.90	715	91.9
2020	4,895	4.76	680	90.9
2021	5,019	4.79	700	90.5
2022	5,087	4.59	684	91.2
Total	**70,856**	**4.40**	**9,085**	**90.7**

7 Geological Setting and Mineralisation

7.1 Regional Geology

The Loulo district in western Mali is located in the eastern part of the Kedougou-Kenieba Inlier (KKI), an erosional window bounded on its western margin by the Hercynian Mauritanide Belt and unconformably overlain by flat lying Neoproterozoic sediments of the Taoudeni Basin on all other sides. Previous studies and recent exploration work separated the KKI into four lithostratigraphic successions: the Mako Series, Dialé Series, Daléma Series, and Kofi Series. The Mako Series consists of a NE trending volcano-plutonic belt, while the Dialé-Daléma sedimentary basin consists of a western Dialé Series, which is separated from rocks of the Daléma Series to the east by the large basin-type Saraya batholith. The Falémé Belt, recently recognised as a north-south trending volcano-sedimentary and granitoid terrane (GTT), is located to the east of the Dialé-Daléma Basin. Sediments located to the east of the Falémé Belt are referred to as the Kofi Series and are composed of metasedimentary rock, basin type granite, and minor intrusive rocks. A geological map of the KKI is shown in Figure 7-1.

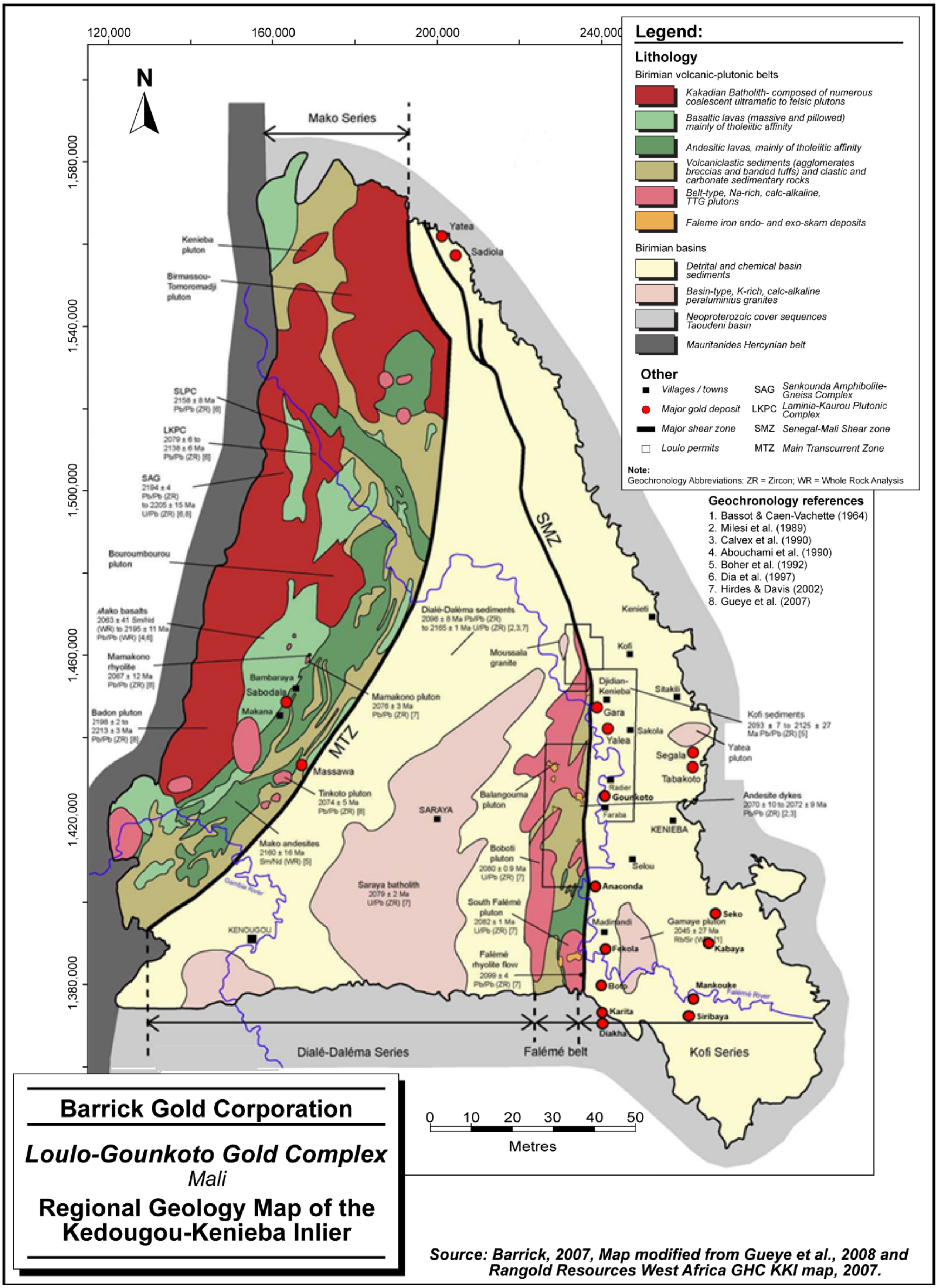


Figure 7-1 Regional Geology Map of the Kedougou-Kenieba Inlier (scale- 1:250,000)

Mako Series

The Mako Series is a volcano-plutonic belt mainly composed of carbonate altered basaltic lavas and andesites of tholeiitic affinity, and widespread intercalated volcaniclastic rocks and sediments. The Mako Belt has a complex structural history due to the intense deformation associated with the Hercynian Mauritanide orogenic belt (Gueye et al., 2008) that bounds its western margin. The Mako Belt is centrally intruded by smaller sub-circular granitoids with similar characteristics to other Birimian belt-type volcanic plutons. The large Kakadian batholith is located along the western margin of the belt and is composed of numerous coalescent ultramafic and felsic plutons. The boundary between the Mako Belt and the Dialé-Daléma sedimentary basin is tectonic and marked by a major terrane-bounding shear zone, known as the Main Transcurrent Zone (MTZ). This important regional structure trends NE and curves northward as it crosses the Falémé River into Mali (Milési et al., 1989).

Dialé-Daléma Series

The Dialé and Daléma Series are considered to be part of the same sedimentary basin and consist of detrital (quartz and feldspar bearing wackes and argillites) and chemical sediments (carbonates), interbedded with calc-alkaline volcaniclastic sediments, some of which contain lapilli sized fragments (Bassot, 1987; Hirdes and Davis, 2002). The basin is centrally intruded by the large (approximately 2,000 km^2), potassium (K) rich, Saraya batholith. This batholith is interpreted to be syn-tectonic to late-kinematic in origin and is composed of several coalescent, biotite bearing, quartz-monzonite and granitic plutons (Pons et al., 1992).

The Falémé Belt

The Falémé Belt has only recently been identified as an entity because of poor exposure and extensive lateritisation of the terrane. Based on ongoing exploration work, the Falémé Belt is composed predominantly of GTT (associated with iron (Fe) skarn deposits) with intercalated volcaniclastic, clastic, and carbonate sediments, plus minor andesite (occasionally pillowed) and felsic volcanic rocks. The Boboti and South Falémé plutons in the southern parts of the belt are composed of biotite + hornblende + clinopyroxene bearing, sodium (Na) rich tonalites and granodiorites (Ndiaye et al., 1997 and Hirdes & Davis, 2002). The recent works do not confirm the presence of a major shear zone previously identified as the Senegal-Mali Shear Zone (SMS) at the contact with the Kofi Series to the east in Mali. All rock types have experienced greenschist facies metamorphism associated with the Eburnean orogeny.

The Kofi Series

The Kofi Series occupies the eastern side of KKI, and is composed largely of alternating meta-sandstones, meta-carbonates, hydrothermal-tectonic breccias and conglomerate, as well as pink granites (basin-type) and minor intrusive rocks. The Kofi sedimentary sequence is composed of a variety of arenaceous sediments including sandstone/greywackes, argillaceous sandstone, argillite, and minor conglomerate. The Kofi sedimentary sequence is intruded by several basin-type granitoids including the large Yatea granite and Gamaye pluton. It is also intruded by numerous generations of dykes, with the most prominent being an east-west trending dolerite dyke (approximately 200 m thick) near Djidian Kenieba village, transecting all rock types in the eastern half of the KKI. The Western Kofi Series is mostly distinguished from the Eastern Kofi Series by the presence of more limestones and evaporitic rocks.

7.2 Structural Geology

Previously, two regional scale shear zones were suggested to have impacted the KKI, the first being the MTZ, which separates the Mako Series from the Dialé-Daléma Series. The second, and more significant for mineralisation in Mali and Senegal, is the SMS, which is interpreted as a regionally continuous north striking shear structure, bordering the western contact of the Kofi Series (Lawrence et al., 2013a). More recently, detailed mapping by Barrick and university collaborations largely dismissed the idea of a major terrane bounding upper crustal shear zone continuing up to the Sadiola district. Alternatively, the structural control at the camp scale is proximal to a deep trans-lithospheric tear/fault, represented by the axis of the Falémé batholith and associated plutons. These high-K intrusive rocks and associated iron (Fe)-skarns elevated in gold were likely emplaced along an older structure that extended down to the base of the lithosphere.

Two broadly accepted deformation events have impacted the eastern portion of the KKI (Harris, 1998; Masurel et al., 2017a, b, Allibone et al., 2020):

- **D1:** Contraction, resulting in reverse faulting and folding. Inversion of the Dialé-Daléma and Kofi Series sequences into their steeply dipping orientations.
- **D2:** Transcurrent deformation, resulting in additional folding and subsequent sinistral displacement on earlier developed north-south shear zones.

Both D1 and D2 deformation events were associated with regional greenschist facies metamorphism while regional granitoid plutonism from approximately 2090 Ma to 2060 Ma corresponds to D2 deformation. Metamorphic fluids generated during D2 deformation account for the majority of gold mineralisation, however, alternative sources for gold mineralised fluid have also been linked to the granitoid plutonism. Deposits such as Gara show a link between both metamorphic and magmatic fluids and mineralisation (Lawrence et al., 2013a, 2013b, Masurel et al., 2017a, 2017b, Allibone et al., 2020). The D2 deformation also supported the development of several second and third order structures within the favourable host clastic sediments, for trapping and precipitation of gold and development of gold deposits. The proximity of deposits, such as Sadiola, Yalea, Gounkoto, Gara, Fekola, and others mentioned above, to the regional deformation and related plutonism makes the region highly prospective for the discovery of additional mineralisation.

Multiple mineralised second and/or third order shears and structures have been identified within the Loulo-Gounkoto district and form the focus point for exploration:

- Gara Structure
- Yalea Structure
- Yalea Shear
- Farandi Structure
- Gounkoto Structure
- Faraba Structure

7.3 Property Geology

The Loulo-Gounkoto deposits are located within the ca. 2110 Ma, greenschist facies Western Kofi Series, consisting of siliciclastics, limestones, and minor evaporitic rocks deposited among sediments, which were folded and inverted between ca. 2100 and 2070 Ma, prior to gold mineralisation. The Eastern Kofi Series sedimentary rocks consist of multiple parallel sequences of argillites, siltstones (and argillaceous sandstone), sandstones (including immature pebbles and gritty sandstones), and less common units of limestone (mostly in the Western Kofi Series), polymictic breccia/conglomerate, intermediate intrusive rocks, and late dolerite dykes. The closer proximity of the Western Kofi Series to the Falémé batholith and associated plutons (ca. 2090 to 2060 Ma), relative to the Eastern Kofi Series (Figure 7-2), and its more favourable coarser host units and related limestones and evaporitic rocks, makes the Western Kofi Series more prospective for gold.

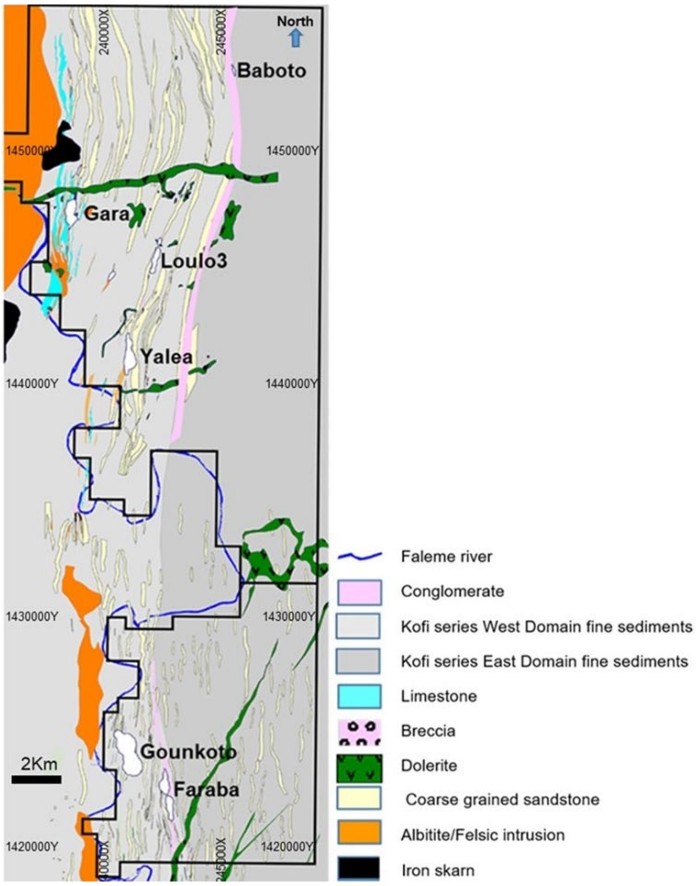


Figure 7-2 Loulo-Gounkoto Complex Geology Map Showing Major Deposits and Key Lithological Units

7.4 Mineralisation

Gara

Gara is located six kilometres NNW of the Yalea deposit and extends for 2.5 km within a tourmaline sandstone/greywacke unit, which outcrops over 800 m as QT forming low (10 m scale) topographic highs. Mineralisation averages 9 m width and 1.1 km depth. The mineralisation is hosted by a stockwork of quartz-carbonate-pyrite-tourmaline veinlets and associated disseminated pyrite, both of which are confined to a single bed of QT generally less than 30 m thick. The deposit lithologies from west to east are: limestone and argillaceous quartzite (SQR) in the hanging wall (HW), mineralised QT ranging from 5 m to 20 m thick (on average 15 m), and a coarse to medium grained greywacke unit in the footwall (FW). The sedimentary package is also crosscut by three un-mineralised late east-west trending dolerite sub-horizontal dykes that dip shallowly from north to south. In the open pit, the high-grade mineralisation is concentrated along the sub-horizontal fold axes, whereas in the underground development, high-grade mineralisation plunges shallowly southward, parallel to the large-scale open warp fold axis. These differential orientations of mineralisation are a result of the earlier, deposit scale warping locally influencing the geometry of the superimposed “S folds” during their formation.

Figure 7-3 shows a geological map of the Gara deposit prior to mining, illustrating the scale and form of folding which deformed the mineralised sandstone unit hosting the deposit.

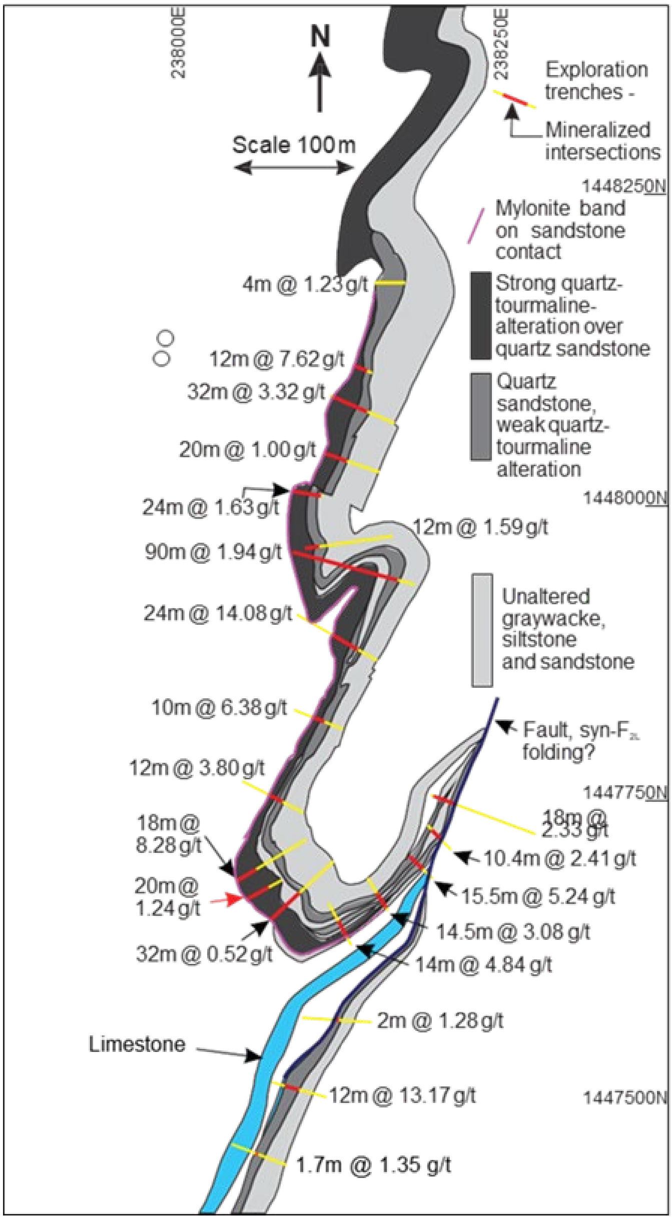
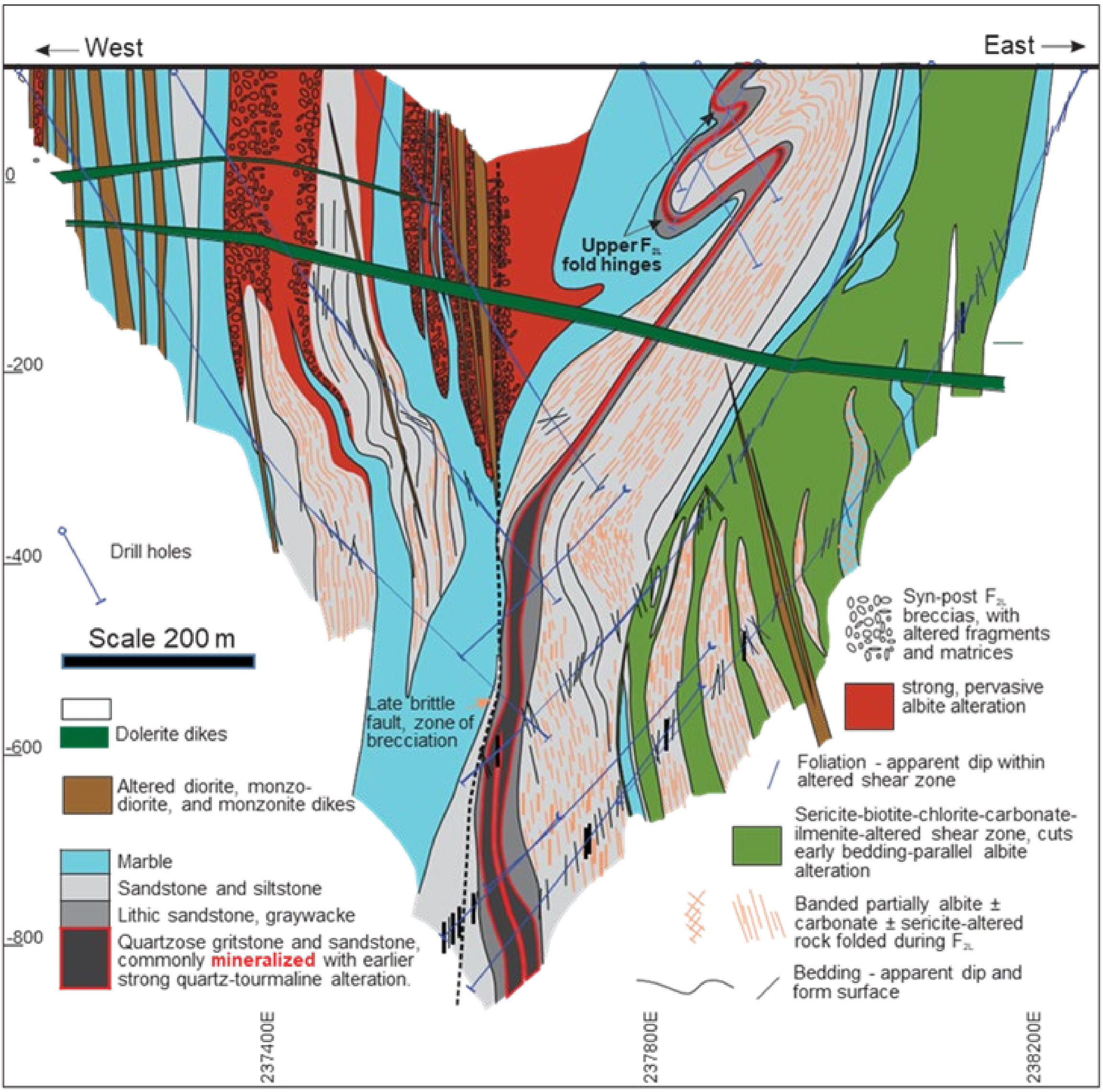


Figure 7-3 Geological Map of the Gara Deposit Prior to Mining

The geometry of the deposit is dominated by the strike slip shearing and the development of associated conjugate sets of antithetic structures. This shearing has resulted in folding, fracturing, brecciation, and development of a quartz vein stockwork within the QT which behaved in a more brittle manner during deformation. The deposit spans the hinge of a broad open fold with a gently plunging north-south trending axis. The upper limb of this fold dips moderately to steeply west, whereas the lower limb dips moderately to steeply east. A second generation of younger, smaller scale, SW plunging, and distinctly non-cylindrical folds are developed in the upper part of the deposit. Vein orientations within the limbs and hinges of the folds are similar, and poles to the veins do not appear to scatter around a great circle centred on the fold axis at Gara (30° towards 213°). This implies that veining occurred late, after the folding of the sandstone host. However, the overall gentle SSW plunge of the higher-grade mineralisation shoots in the deposit is close to coaxial with the fold, implying the fold geometries had some influence on the distribution of the mineralised veins.

Gara is characterised by intense tourmaline alteration. This tourmalinisation appears gradational from the hanging wall contact to the footwall, varying from strong to weak. It is also associated with carbonate and silica veining. Chloritisation is mainly observed in the hanging wall. There is also a correlation between the intensity of tourmalinisation, sulphide intensity, silica-carbonate veins, brecciation, and gold mineralisation.

Figure 7-4 shows the geological setting of the altered and mineralised sandstone unit, which hosts the Gara deposit.



Source: Allibone et al., 2020 (simplified)

Figure 7-4 North-Facing Cross Section Showing the Geological Setting of the Altered and Mineralised Sandstone Unit at Gara

Gold mineralisation is stratabound and hosted predominantly within the QT sandstone unit, which is enveloped within FW greywackes and HW schistose sandstone. Higher gold grades typically occur in areas where the veining is most intense and the range of vein orientation, more complex and are mostly in association with carbonate-pyrite. The sulphide assemblage predominantly consists of disseminated auriferous pyrite with minor chalcopyrite, scheelite, and nickeliferous sulphides.

Figure 7-5 presents a longitudinal section of the Gara deposit, showing the distribution of higher-grade mineralisation and the axes of wrap and minor folds interpreted from diamond drilling. The plunges of the higher-grade mineralised shoots are controlled by both generations of folds to varying degrees. Mineralisation may continue beyond the limits of the current drilling in the southern part of the deposit, but the grade may not be sufficiently high to support deep underground operation costs.

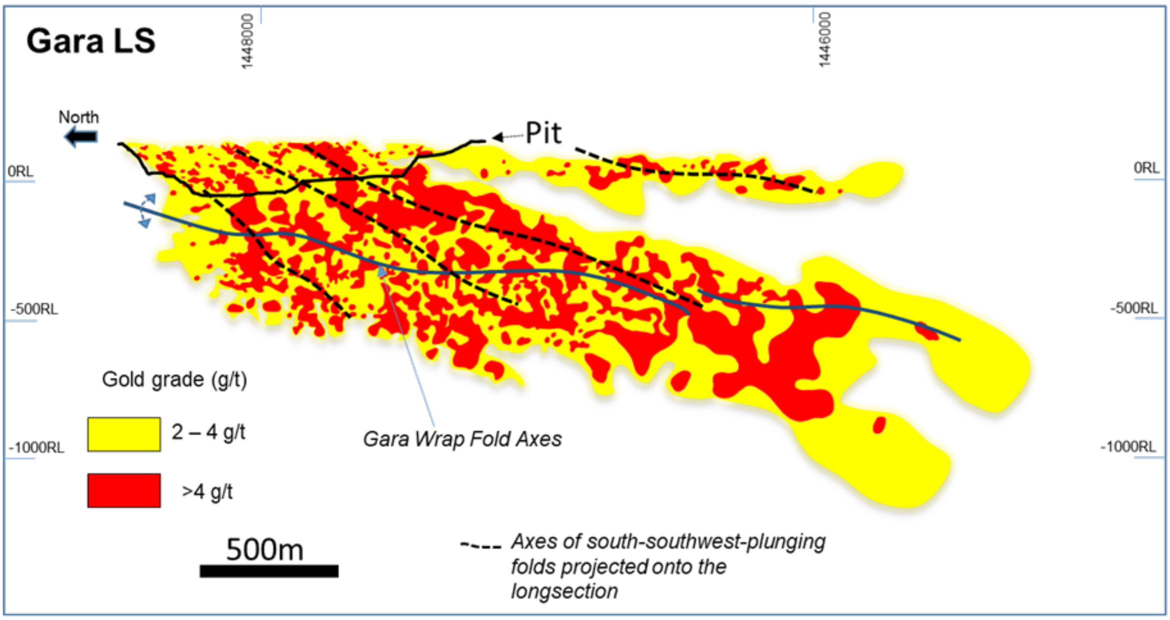


Figure 7-5 Gara Deposit Longitudinal Section Looking East

Figure 7-6 shows typical mineralised specimens from the Gara deposit. Mineralisation is hosted by numerous quartz +/- carbonate +/- pyrite veinlets that are concentrated within a zone of earlier QT alteration. In Figure 7-6A, the QT alteration has destroyed most primary sedimentary texture in the host greywacke, whereas in Figure 7-6C, QT alteration is weaker and detrital grains are still visible.

Source: Allibone, 2004

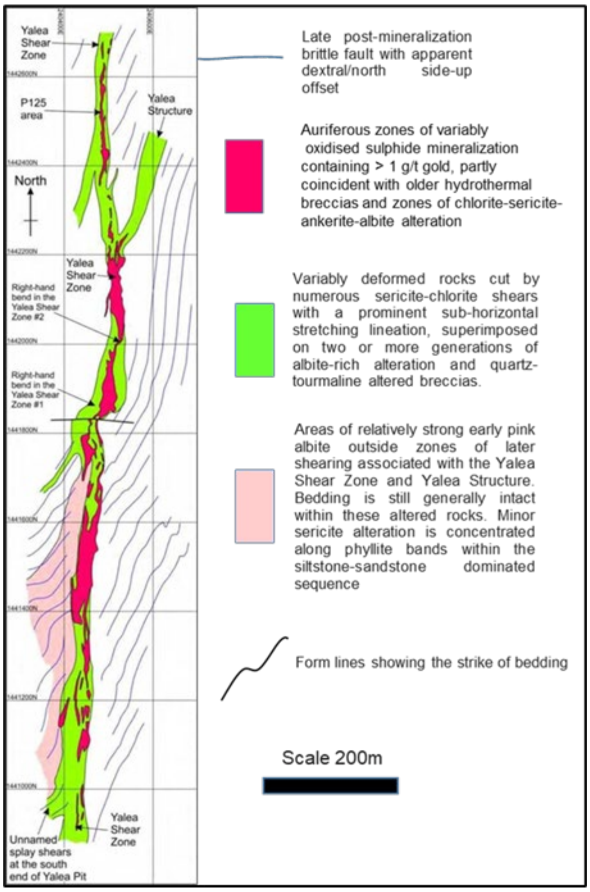
Figure 7-6 Gara Deposit Typical Mineralised Specimens: A. LOCP39, (276 - 26.13 m), B. LOCP39, (278.5 - 278.64 m), C. LPCP61, (626 - 626.18 m)

Yalea

Yalea is located 5.7 km SE of Gara, in a 2.5 km long, north-south striking, steeply dipping shear zone with pervasive albite altered sandstone and breccias that are partly overprinted by zones of carbonate alteration. Mineralisation averages 11 m width over 1.3 km depth. Host lithologies at Yalea (from west to east) consist of grey quartzite (black sandstone) in the hanging wall, with tectonic breccias in the north. Immediately above the main body of mineralisation is a thin (0 m to 5 m) sequence of banded schistose greyish limestone, with alternating white and grey calcitic layers and dark grey to black phyllite units. The main mineralised body is a hydrothermally brecciated argillaceous pink quartzite that becomes more argillaceous (and less altered) towards the footwall. A higher grade 'Purple Patch' zone is observed in a dilatational strain transfer zone formed as the dip of the mineralised package steepens, forming hydraulic breccias. The footwall package is a thick sequence of argillaceous quartzite and black sandstone. This sedimentary package is intruded locally by thin (0.1 m to 2 m) acidic intrusives of mostly granitic composition. The country rocks are also crosscut by a late E-W trending dolerite dyke that is generally sub-horizontal, with a gentle southward plunge.

Alteration in the Yalea deposit is characterised by intense carbonate alteration, albitisation, silicification, sericitisation, and chloritisation. Alteration is invariably associated with sulphide but also forms a halo within the FW and the HW units. The alteration can be identified by the localisation of coarse-grained aggregates of carbonate, quartz, and albite, whereas the mineralisation is associated with chloritisation, sericitisation, and ferrous carbonate.

Figure 7-7 shows the extent of mineralisation, shearing, and alteration in the Yalea open pit based on mapping. Gold is predominantly concentrated south of the intersection between the Yalea Shear Zone and Yalea Structure.



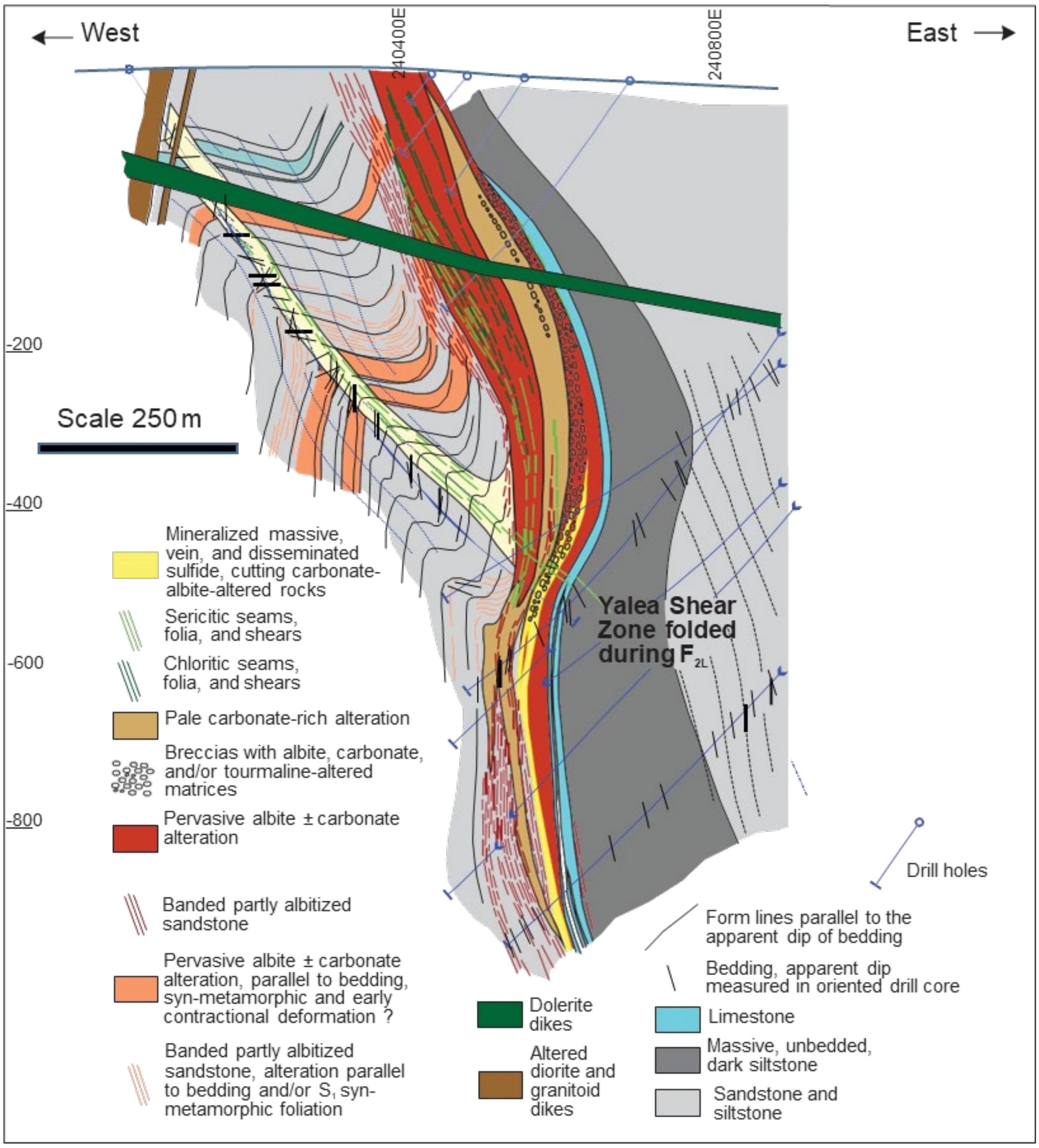
Source: Allibone, 2012

Figure 7-7 Summary Geological Map Showing the Extent of Mineralisation, Shearing, and Alteration in the Yalea Open Pit

Weathering at Yalea extends up to 300 m below the surface due to the strong carbonate alteration associated with the mineralised structure. Four main weathering types have been characterised in the rock: saprolite, transition, fresh, and high-grade fresh.

At Yalea, the main mineralised body is hosted by a north-south striking brittle-ductile shear, the ‘Yalea Shear’, that transects the Yalea Structure, which is a NNE striking shear zone that links Yalea with the Loulo 3 deposit. The majority of high-grade (exceeding 8 g/t Au) mineralisation is located south of the intersection between the above-mentioned structures. The main higher-grade shoots, ‘Purple Patch’ and ‘Transfer Zone’, are observed in a dilatational strain transfer zone between a major change in the dip of the Yalea Shear Zone (Upper and Lower inflexion). The plunge of this mineralised shoot is sub-horizontal to gently southward and locally coincides with the thickest sheared limestone unit along its eastern side. The steeply south plunging subsidiary mineralisation shoot between the ‘Purple Patch’ to the north and the ‘transfer zone’ to the south is parallel to the intersection of the Yalea Shear Zone and minor SSW striking, steeply ESE dipping altered shears on its western side.

Figure 7-8 shows a section through the southern part of the Yalea deposit, illustrating the bending of the Yalea Shear Zone during the folding event and heavily folded footwall stratigraphy.



Source: Allibone et al., 2020

Figure 7-8 North Facing Cross Section 1440980N through the Southern part of the Yalea Deposit

Economic levels of gold mineralisation are almost exclusively associated with paragenetic late sulphide veins, breccias, and zones of massive sulphides. The auriferous sulphides occur as disseminations, stringers, and networks of fracture fill pyrite and arsenopyrite along the margins of the mineralisation shoots, while the high-grade mineralisation (exceeding 8 g/t Au) consists of zones of massive pyrite and arsenopyrite associated with areas of high strain. Late gold at Yalea is associated with tennantite and chalcopyrite. Yalea mineralisation remains open at depth and to the south with potential for significant high-grade extensions.

Figure 7-9 presents a longitudinal section through the Yalea deposit, showing the distribution of higher-grade mineralisation, the intersection between the Yalea Structure (NNE) and Yalea

Shear Zone (north-south), and the major inflexion in dip of Yalea shears from gently east to near vertical below. The higher-grade mineralised shoots are located below the major inflexion of dip from flat to gently dipping to the south. Exploration is focused on possible replication of the high-grade shoot below the existing ‘Purple Patch’ and ‘Transfer Zone’ shoot trend.

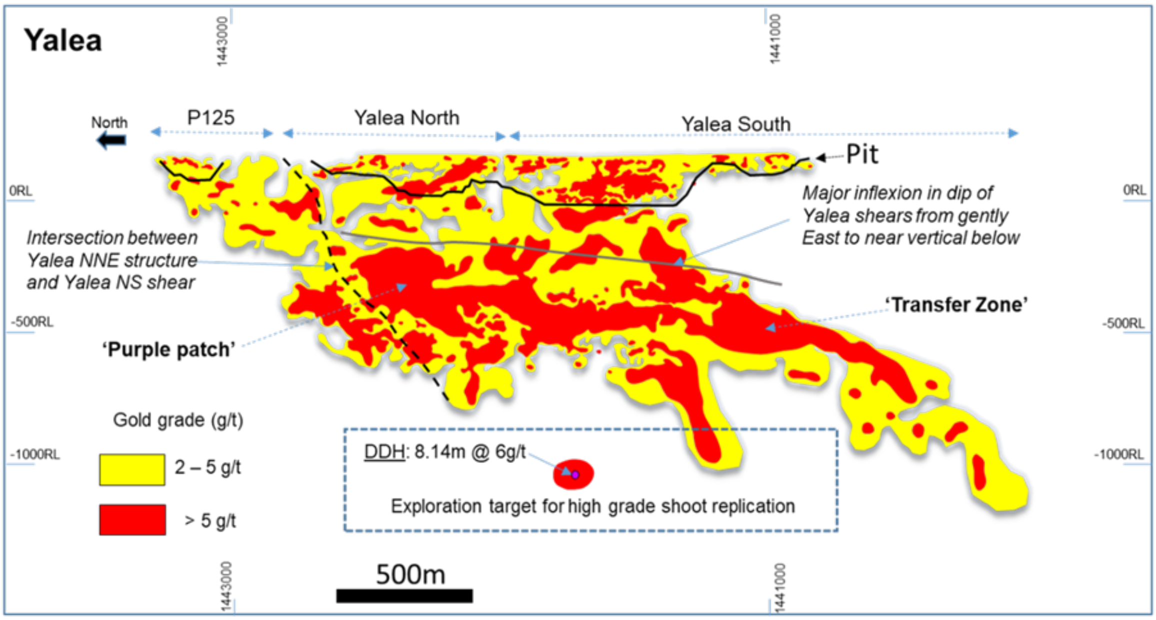
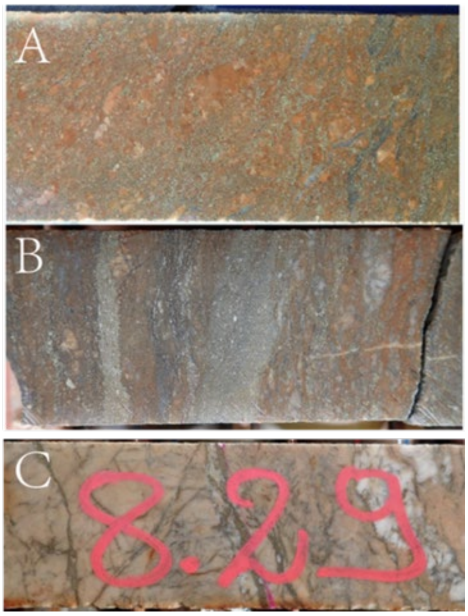


Figure 7-9 Yalea Deposit Longitudinal Section, Looking East

Figure 7-10 shows typical mineralised specimens from the Yalea deposit. Mineralisation is hosted by a brittle ductile shear and hydrothermal breccia associated with disseminated, foliation parallel and fracture fill pyrite.



Source: Stenhouse, 2019

Figure 7-10 Typical Mineralised Specimens from the Yalea Deposit: A. YaDH84, (814.8 - 814.91 m), B. YaDH92, (787.8 - 787.91 m), C. YDH279, (1277.5 - 1277.65 m)

Loulo 3

Loulo 3, located four kilometres NNE of the Yalea deposit, consists of three mineralised zones: a NNW trending main zone (MZ1), which is situated on the Loulo 3 Structure, the NNE striking main zone (MZ2), which is situated on the Yalea Structure and transects MZ1, and the third sub-parallel NE striking main zone (MZ3). The MZ2 mineralisation has an overall strike length of 1.8 km and ranges in thickness from 6 m to 12 m, down to 500 m depth. Both MZ1 and the FW zone have smaller dimensions, being 580 m in strike, 5 m to 7 m thick and 200 m in strike, 5 m thick, respectively. Mineralisation consists of a mixture of quartz and hematite veinlets hosted in a zone of silica-carbonate alteration within local tourmaline alteration in the south.

The host stratigraphy comprises an eastwardly younging meta-sedimentary sequence of quartzite, argillaceous quartzite, and greywacke. In the hanging wall, a two metre thick, dark green, fine-grained quartzite, associated with the mineralisation, is consistently exposed in exploration trenches and is used as a marker unit within the open pit. Footwall rocks are comparatively less competent, with a 10 m thick argillite in contact with a tourmaline greywacke towards the west.

The host sequence and mineralisation are intruded and crosscut by two sets of sub-vertical mafic dykes, striking north and NNE. The NNE trending mafic intrusive has exploited a sub-vertical late fault, which has displaced the mineralisation by uplifting the eastern block by between five and ten metres, suggesting a component of shortening. Sub-parallel NW trending pods of mineralisation are found on a left-hand jog, which has dilated due to sinistral movement. Local, weak to moderate tourmaline alteration generally decreases in intensity southward, along strike.

Strong iron oxide alteration and hematite veinlets are seen within the mineralised zone, which increase in intensity proximal to boxwork veins and fractures.

Paragenetic studies show that Loulo 3 mineralisation contains numerous sulphide phases, with chalcopyrite occurring late in the mineralisation history. Mineralisation consists of a mixture of quartz and hematite veinlets hosted in a zone of silica-carbonate alteration within local tourmaline alteration in the south.

Distribution of high-grade zones is controlled by the narrowing of the host stratigraphy package, which focuses strain and fluid flow, causing the hematite rich Yalea Structure to interact with the silica-carbonate Loulo 3 Structure particularly within MZ2. Gold bearing sulphides predominantly consist of pyrite and arsenopyrite, with chalcopyrite occurring as a late non-gold bearing phase.

Gara West

Gara West is located in the hanging wall sequence approximately 400 m west of the Gara deposit and is characterised by predominantly shear and breccia hosted mineralisation within a medium- to coarse-grained sandstone unit that is variably altered with tourmaline, chlorite, and silica-carbonate. The sandstone hosts four sub-parallel mineralised lodes striking NNE and dipping moderately westward. Mineralisation is 7 m wide, strikes over 700 m and continues over 200 m depth.

The host sequence at Gara West forms part of the same folded stratigraphy in which the Gara deposit is developed, and largely consists of sandstones, limestones, argillaceous quartzites, pink quartzite, and a distinctive heterolithic breccia. Bedding is generally oriented north-south and dips 50° west, however, sinistral shearing can produce changes in strike and dips that are locally sub-vertical.

The medium- to coarse-grained sandstone has been preferentially altered with tourmaline (and silica-albite) due to the increased porosity of the protolith, relative to the bounding limestone in both the hanging wall and footwall.

Mineralisation is stratabound and hosted in strongly developed quartz-carbonate vein arrays as well as associated disseminations and hydrothermal breccias within the pink quartzite. The mineralisation exhibits a pinch and swell geometry at the scale of the deposit and have greater continuity along strike than at depth. Higher grades are associated with increasing intensity of quartz-carbonate vein development, carbonate-hematite-goethite alteration, and intensity of brecciation.

Gounkoto

The Gounkoto deposit is located 17 km and 24 km south of the Yalea and Gara deposits, respectively. Various stacked mineralised zones within the Gounkoto deposit (four principal lodes referred to as Main Zones) are localised along or adjacent to a NNW striking angular unconformity called the ‘Domain Boundary’ structure consisting of early pervasive pink albite-ankerite alteration and brecciated rocks (Figure 7-11). On average, mineralisation is 25 m wide, strikes over 2.2 km, and continues to over 700 m depth. The hanging wall of the deposit is composed of a thick sequence of fine-grained argillaceous sandstones and a thin unit of limestone, whereas the footwall consists of argillites, polymictic breccias, and coarse-grained sandstone with microdiorite intrusive rocks and narrower mafic equivalents.

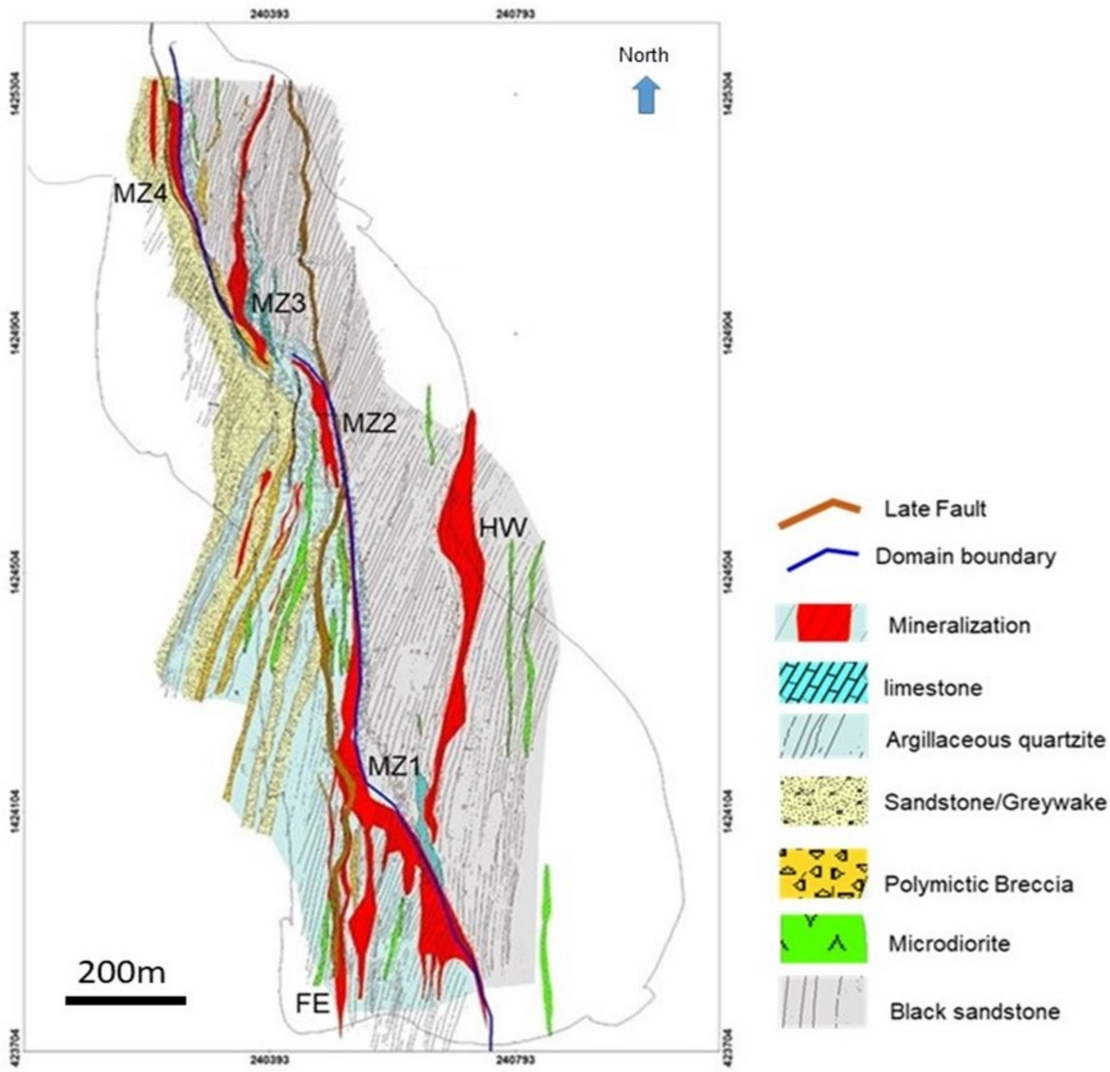


Figure 7-11 Geological Map of the Gounkoto Deposit (Fitch RL65 m) Showing Key Stratigraphic Units and Mineralised Lodes

Two main high-grade mineralised shoots have been identified in the Gounkoto system. The first high-grade (exceeding 3.15 g/t Au) mineralised shoot is located in the south and corresponds to a left step jog along the Domain Boundary. It is associated with intense silica-albite-hematite and chlorite alteration known as the ‘Wrench Zone’ in the MZ1 lode. The second high-grade mineralised shoot is located to the north and corresponds to the junction between MZ2-MZ3 with stacking of the two main lodes, possibly due to transpression and faulting. The zone is referred to as the ‘Jog Zone’. Smaller mineralised lodes are also located along the ‘Iron Structure’, a hematite altered fault overprinting an older zone of altered and locally mineralised rocks, as well as the hanging wall zone, structurally above MZ3 along Domain Boundary toward NNW. Foliation in the hanging wall is parallel to bedding and strikes approximately 020° and dips 50° to 60° to the east. However, the foliation and bedding dip to the west in the footwall. This unconformity adds complexity and favours an economic mineralisation shape with main lodes dipping to the east, concordant in dip with HW stratigraphy and multiple small scale adjacent lodes dipping to the west parallel to FW stratigraphy called ‘finger mineralisation’. This type of finger mineralisation is more developed in MZ1 and MZ2.

Gold mineralisation at Gounkoto is hosted in silica-albite-sericite altered wall rocks with high grade mineralisation associated with overprinting chlorite-hematite within hydrothermal breccias and high strain chlorite-sericite shears and subordinate limestone. Several phases of alteration are evident at Gounkoto. An earlier generation of barren albite alteration, peripheral to the deposit, is deformed by a system wide shear zone, while the albite associated with mineralisation is superimposed on this shear zone. Several phases of oxidation occurring at various stages relative to gold mineralisation deposition resulted in iron mineralisation, producing characteristic zones of red oxidised hematite alteration. Figure 7-12 shows a north facing section through the southern part of the Gounkoto deposit, illustrating the Wrench Zone high-grade mineralisation shoot in the MZ1 lode.

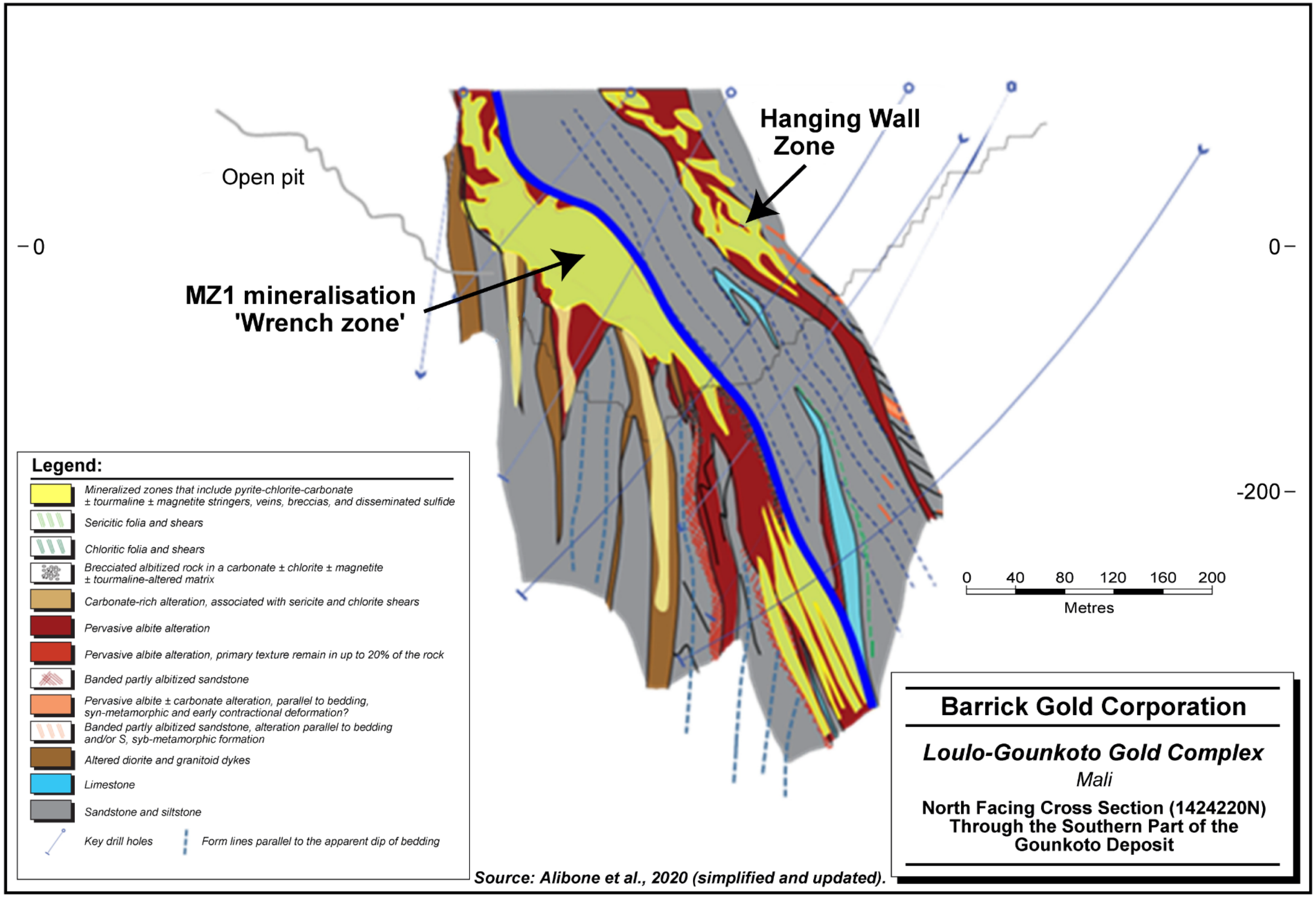


Figure 7-12 North Facing Cross Section (1424220N) Through the Southern Part of the Gounkoto Deposit

Gold is strongly associated with sulphide mineralisation, dominantly pyrite. Magnetite, chalcopyrite, arsenopyrite, and pyrrhotite are also present locally and have a strong association with gold. Gold is also commonly found in gangue in zones of strong silica-carbonate alteration, suggesting that remobilisation played a role in gold (re)distribution at Gounkoto. Initial stages of mineralisation involved the deposition of euhedral and equant grains of magnetite in stringer networks, veinlets, and aggregates, and accompanied by chlorite mineralisation. The magnetite mineralisation was subsequently subjected to a strong oxidation and hydration event resulting in almost total replacement of magnetite by hematite and annealing of the stringer network to form aggregate, almost massive, bodies of hematite, leaving magnetite as small relict grains within hematite.

The onset of the second stage of mineralisation at Gounkoto was synchronous with the oxidation of magnetite and growth of hematite, occurring initially as pyrite (with minor gold and chalcopyrite) which are locally included within the aggregate bodies of hematite. The pyrite mineralisation event was pervasive in nature and was accompanied by strong silica-carbonate alteration, creating the dominant silica-carbonate-pyrite mineral assemblage at Gounkoto. This early pyrite is typically surrounded and enveloped by later stage pyrite with a more cellular and filamentous habit with which gold is commonly associated.

Figure 7-13 shows a longitudinal section of the Gounkoto deposit. It illustrates the distribution of higher-grade mineralisation. The geological controls on the trend of the two main shoots are not well understood and exploration will focus on identifying the structural architecture.

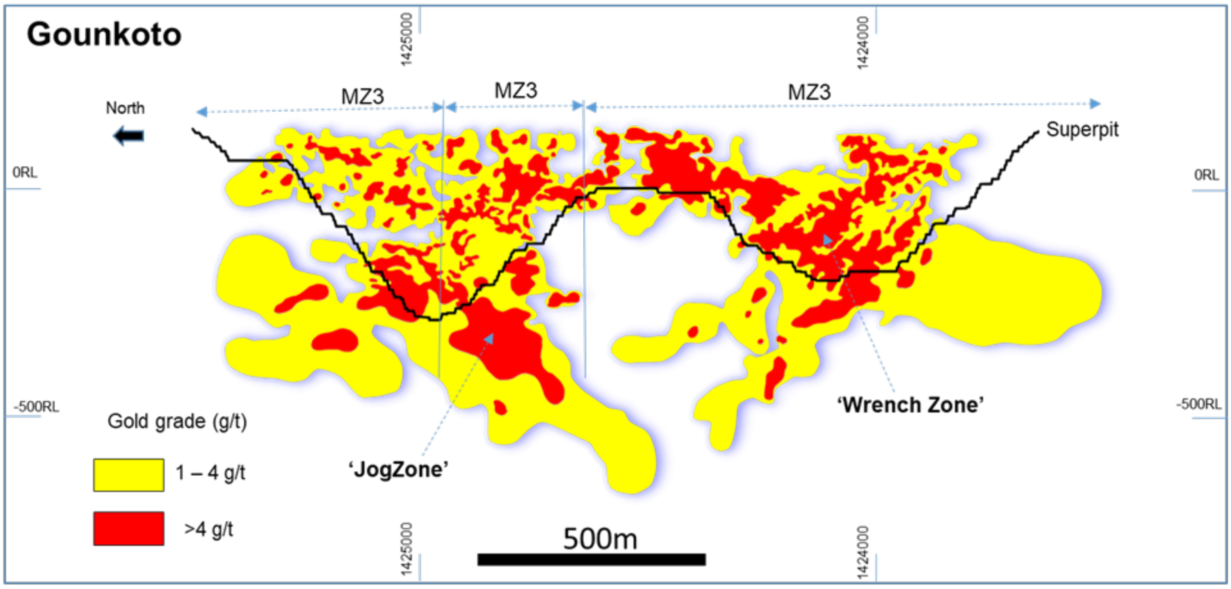
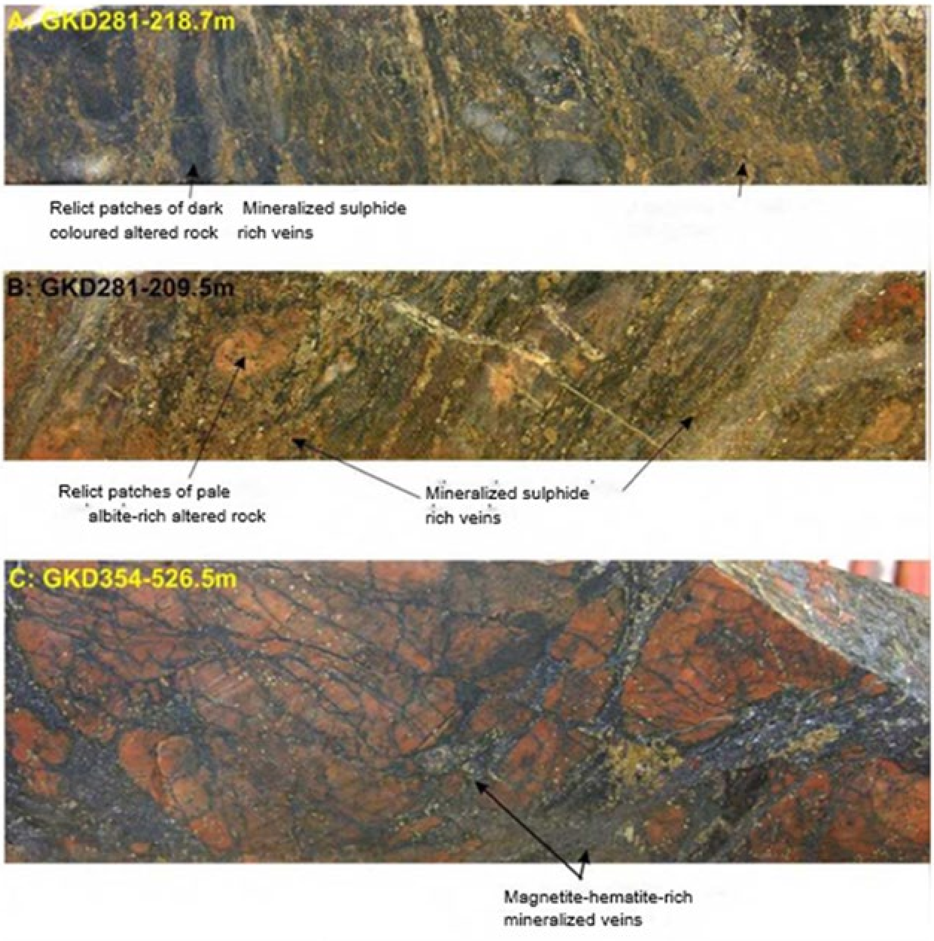


Figure 7-13 Gounkoto Deposit Longitudinal Section Looking East

Figure 7-14 shows typical mineralised specimens from the Gounkoto deposit. Mineralisation is hosted by brittle ductile shearing and hydrothermal brecciation associated with disseminated, foliation parallel and fracture fill pyrite.



Source: Allibone, 2012

Figure 7-14 Typical Mineralised Specimens from the Gounkoto Deposit: A. GKDH281, (218.7 - 218.94 m), B. GKDH281, (209.5 - 209.72 m), C. GKDH2354, (526.5 - 526.64 m)

Faraba

The Faraba deposit is located 19 km south of Yalea and 2.5 km SE of Gounkoto and consists of a series of discrete shears and hydrothermal breccias developed generally at rheological contrasts between competent coarse-grained sandstone units and relatively ductile polymictic breccias, associated with silica-albite alteration, overprinted by hematite and chlorite. Mineralisation consists of quartz-carbonate veins with pyrite and arsenopyrite in both fracture fill and dissemination styles. Mineralisation averages 10 m width over 2.4 km strike and 320 m depth. At Faraba North, the mineralisation is sub-parallel to stratigraphy with dips varying from 50° to 60° to the east. At Faraba Main, the east dipping mineralised shears and veins crosscut the primary bedding/foliation which is now more west dipping. As such, a change in bedding and foliation dip direction from an easterly dip at Faraba North to a westerly dip at Faraba Main is observed. The mineralisation system of the Faraba deposit has been truncated by a deposit-scale gold bearing structure known as the 'Faraba Structure' and corresponds to the geological and geochemical contrast between the Eastern Kofi and Western Kofi domains. The Faraba Structure is a brittle-ductile fault zone striking over 10 km along a NNW trend, separating fine-grained, laminated sediments to the east and a package of coarse-grained sandstone conglomerate/breccia and intensely deformed shales that host the mineralisation system in the Western Kofi stratigraphic domain. The mineralised lodes of Faraba Main and Faraba North have been constrained to the west by the bounding Faraba Structure, which is located to the east. Recent mapping and auguring shows the continuity of mineralisation between Faraba Main and Faraba North, which consists of stacked east dipping lodes in coarse-grained and brecciated units in the west domain, all truncated by the Faraba Structure.

The Faraba Structure has been recognised in geophysical data, and several exploration targets are located on or adjacent to this structure (Faraba Main, Faraba North, and Toronto and Namila). The Faraba Structure has been interpreted in the Faraba deposit area over 2.3 km strike length and consists of a west dipping (67° to 73°) ductile-brittle fault with associated sub-parallel splays in both HW and FW domains.

Early silica-albite alteration associated with gold mineralisation in the Faraba deposit forms rims around quartz-carbonate veins and fractures bleaching the surrounding rock. These silica-albite alterations are diffused from foliation vein sets that crosscut the bedding, suggesting related axial planar fabric. The late alteration consists of hematite and chlorite forming rims around veins and fractures which overprint the early silica-albite alterations. Pervasive hematite and silica-carbonate alterations are associated with brittle-ductile deformation, possibly related to the Faraba Structure late phases reactivation. Mineralisation in the Faraba System is generally related to veins associated with a variety of alterations (silica-albite, hematite, and chlorite), localised exclusively to the west domain stratigraphy of the Faraba Structure. Three mineralised vein styles have been identified:

- **Style1:** Centimetric shears/foliation veins of silica-carbonate with semi-massive to stringer pyrite, locally associated with hematite and chlorite. Style 1 is associated with the highest grades in the system.
- **Style2:** Fracture fill network veins of quartz-carbonate-chlorite associated with patchy and stringer pyrite + arsenopyrite. Style 2 is commonly associated with hydrothermal breccia, related to high- and low-grade mineralisation in the system.
- **Style3:** Spaced foliation veins of quartz-carbonate-chlorite, associated with stringer pyrite, and subordinate hematite. These veins are distributed system wide and delineate the mineralisation envelope. Style 3 is related to medium- (between 1.0 g/t and 3.0 g/t Au) and low-grade mineralisation (below 1.0 g/t Au) in the system.

8 Deposit Types

Research over the last decade has shown a genetic link between the major gold mineralisation within the Loulo district and the Falémé plutonism to the west. In addition, detailed mapping by Barrick and university collaborations have largely dismissed the idea of a major terrane bounding upper crustal shear zone, the SMS, extending up to the Sadiola district. The main camp scale structural control is proximal to a deep trans-lithospheric break represented by the axis of the Falémé batholith and associated plutons. These high-K intrusive rocks and associated Fe-skarns elevated in gold were likely emplaced along an older structure that extended down to the base of the lithosphere. Highest camp scale prospectivity is interpreted to be focused within the thermal/alteration aureole associated with the Falémé batholith. Understanding the extent of this aureole and alteration is key to focusing exploration in the most prospective areas. Local scale lithological/chemical/structural complexity forms the key controls for the location of individual mineralised zones. Empirical observations indicate that the Falémé domain may be more prospective for low strain style mineralisation. Whereas further from the batholith, Gara style (structurally controlled, mix of magmatic and hydrothermal fluids) and then Yalea/Gounkoto style deposits (structurally controlled, dominantly hydrothermal fluids) may be expected.

Deposits are mainly clastic sediment hosted within the Kofi Formation, which has been subjected to various intrusive and structural preparation events, favouring gold precipitation. The D1 and D2 deformation events, described in Section 7.2, developed major structural corridors associated with complex structural interplay and the development of localised shears, structural intersections/splays, and structural jogs led to the development of physical trap sites for pooling of hydrothermal fluids and precipitation of potentially ore-forming minerals. Felsic intrusives, spatially related to large scale deposits, have also been the scope of study, with their contacts with sediments localising both ductile and brittle deformation depending on the respective rheological contrasts. D2 folding and structural interplay has exerted a strong structural control on Birimian gold deposits, allowing significant strike and depth potential with high potential for local high-grade patches and mineralisation shoots as discussed by Lambert-Smith et al., 2016a, 2016b, 2020; Lawrence et al., 2013a, 2013b, 2016; Masurel et al., 2017a, 2017b, 2017c; Treloar et al., 2015; Thebaud et al., 2020.

During the Eburnian orogeny, 2.1 Ga and 2.0 Ga, multiple gold mineralisation events, led to various styles of mineralisation including disseminated sulphides, sulphide and quartz-carbonate veins, and massive sulphides. Alteration associated with mineralisation is mainly silica, carbonate, and albite alteration while tourmalinised sandstones and greywackes are also potential hosts for mineralisation, as observed at Gara (Lambert-Smith et al., 2020; Lawrence et al., 2013b; Masurel et al., 2017c.).

9 Exploration

This section summarises some of the concepts and techniques implemented and integrated by Randgold and Barrick over the years to assist with extending the LOM as well as discovering new deposits in and around Loulo-Gounkoto. Proposed greenfield and brownfield targets have been highlighted, which present further opportunity to define additional resources.

9.1 Exploration Concept

The Loulo-Gounkoto district is extremely prospective for gold mineralisation, with a relatively low exploration maturity when compared to mature districts such as in Canada, USA, or Australia. The full potential of the district remains undefined with mineralised rocks intersected at depth along the major prospective trends and structural corridors. Much of this deep potential remains untested with most exploration drilling away from the main deposits only testing less than 100m vertical depth. These high impact potential targets and concepts will form a core part of future exploration programs in the next 5 years.

Exploration at Loulo-Gounkoto is structured to simultaneously advance brownfields targets to rapidly feed into the mine plan, and to develop greenfield targets to replenish the target pipeline and sustain the long term growth of the mine.

A fundamental exploration approach in the Loulo-Gounkoto district involves the mapping deep crustal, long lived gold bearing structures (using geophysical, geochemical, isotope data and regional geological mapping) that have the potential to supply volumes of fertile hydrothermal fluids sufficient to host world-class gold deposits. Second order structures are delineated to target prospective gold depositional sites within prospective host lithologies or structural dilation zones, which have the potential to concentrate gold in sufficient concentrations to form an economic deposit. Existing and identified targets are ranked using Barrick's Area Selection Criteria, based on each target's geological potential and confidence scores, the results form a framework for target prioritisation and budget allocation.

Geophysical surveys have been integrated with updated geological maps to develop a tectonostratigraphy of the Kofi Series rocks at Loulo-Gounkoto and to improve the understanding of the controls of gold mineralisation and the regional geological architecture. Continuous re-assessment of exploration work to date, based on rejuvenated Complex-scale geological framework and concepts, is an integral part of greenfields target generation. New exploration targets are identified through the compilation of geophysical, geochemical, and remote sensing data in conjunction with mapping and historic drilling datasets. Future fieldwork to test Geophysical surveys have been integrated with updated geological maps to develop a tectonostratigraphy of the Kofi Series rocks at Loulo-Gounkoto and to improve the understanding of the controls of gold mineralisation and the regional geological architecture. Continuous re-assessment of exploration work to date, based on rejuvenated Complex-scale geological framework and concepts, is an integral part of greenfields target generation. Targets are identified through the compilation of geophysical, geochemical, and remote sensing data in conjunction with mapping and historic drilling datasets. Future fieldwork to test newly generated exploration targets will continue to include but not be limited to mapping, lithological sampling, and sub-surface blanket screening by means of auger drilling in areas where suppressive regolith is dominant, to develop and test geological models for these targets. Subsequently, to advance any of the identified targets further, testing by means of aircore (AC), reverse circulation (RC), and diamond drilling (DD) is undertaken.

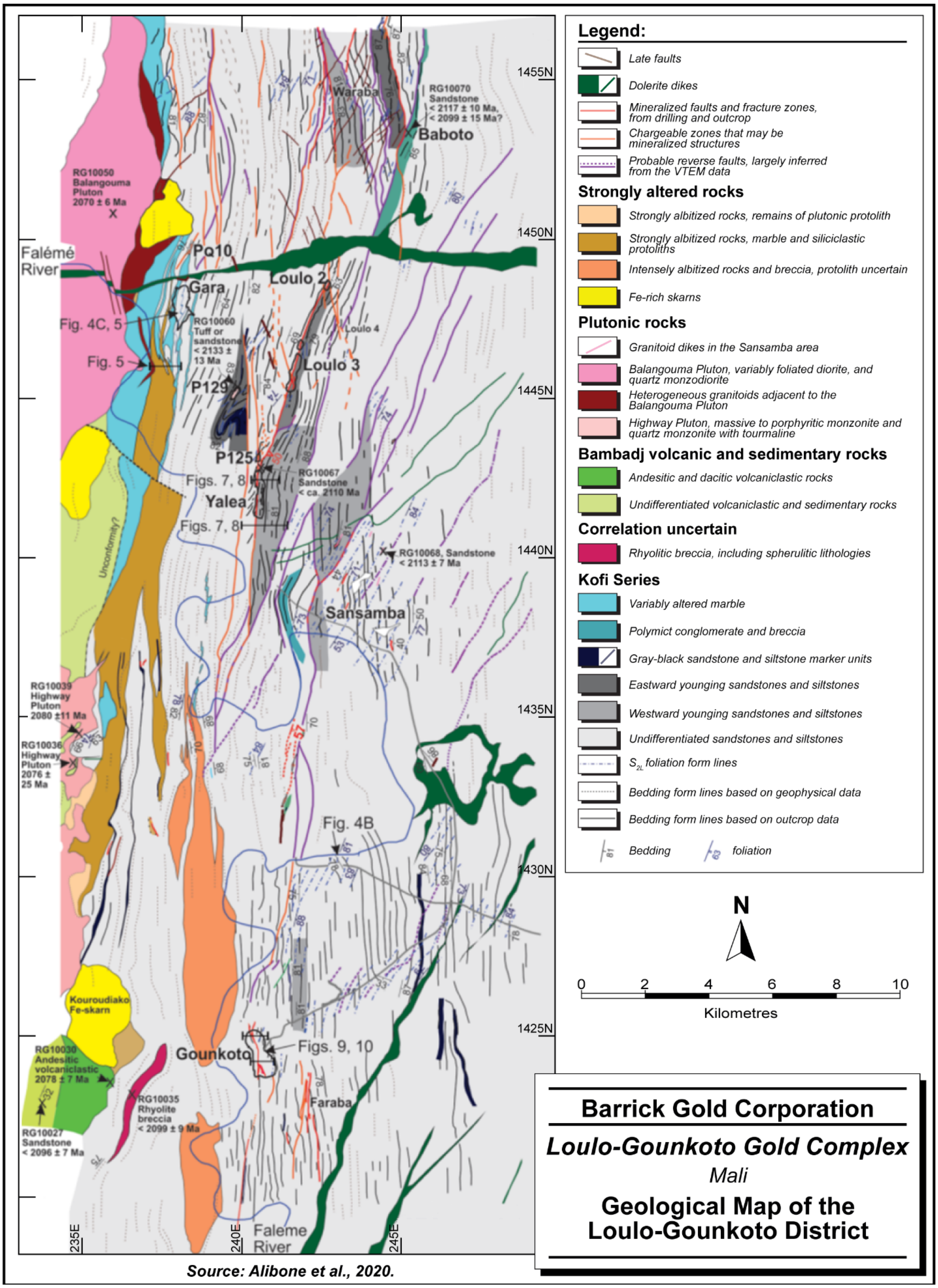
Brownfields exploration efforts at Loulo-Gounkoto test for extensions of open pit and underground deposits, testing lode extensions using aggressive step out exploration, and for gap opportunities within the mine area. Once a geological model is defined and tested by exploration and the target demonstrates potential, the target is shared with the Mineral Resource Management department for follow-up drill testing and resource evaluation.

Satellite deposits and gaps between existing Mineral Resources are periodically re-evaluated to define Mineral Resource extensions based on conceptual targets. During the next 5 years, key exploration programmes will target extensions and gaps to Yalea Ridge South and Hippo, Goldfinger, Waraba, Gara North, Falémé, Farandi structure, Gara West Trend, Gounkoto DB structure, Faraba structure corridor, Mina Iron-structure corridor, Yalea Structure, Baboto Trend, Gounkoto North Area, Eastern Kofi Series.

The current exploration concept has been proven to be effective, with both the discovery of Gounkoto and the successful and consistent replenishment of depleted Mineral Resources and Mineral Reserves within the Complex.

9.2 Geology and Geochronology

Multiple regional and local scale geological investigations have been conducted since the early 2000s, with geochronological investigations taking place since 2015. A detailed regional scale map spanning Loulo and Gounkoto has been compiled delineating major geological units, intrusives, and structural trends (Figure 9-1).



Source: Alibone et al., 2020.

Figure 9-1 Geological Map of the Loulo-Gounkoto District

9.3 Geophysics and Remote Sensing

The use of geophysical and remote sensing surveys and resulting data has always been a critical starting point and forms the basis for initial geological and structural interpretations which ultimately guide fieldwork. Surveys were completed by contractors on behalf of Randgold and Barrick. Geophysical data utilised at Loulo–Gounkoto includes induced polarisation (IP), magnetics, versatile time-domain electromagnetics (VTEM), radiometrics, and digital terrain model (DTM). The use of geophysical data has significantly assisted structural trend interpretations, which, as mentioned previously, is critical to understanding the strong structural controls influencing mineralisation in West Africa. Delineation of regional geological domains has also been simplified by the use of remote sensing information. Detailed regolith maps constructed by means of integrating radiometrics, topographic, and field datasets have significantly supported soil geochemical interpretations to define and prioritise exploration areas with near surface potential. The detailed regolith interpretation has further supported the use of alternative exploration methods such as auger or AC drilling over suppressed regolith areas, with the aim of discovering blind targets.

More recently, the use of three-dimensional (3D) distributed array IP (3DIP), conducted by DIAS Geophysical during the first quarter of 2021, has been very successful with targeting sub-surface chargeability and resistivity anomalies. Although survey penetration depth may be constrained in some areas due to fluctuations in saprolite and laterite thickness, penetration depths have remained acceptable. 3DIP will continue to play an integral part in exploration at Loulo–Gounkoto, especially over favourable structures where surface anomalism and outcrop are limited. A recent pilot survey was completed in 2021 and successfully mapped a sulphide zone located more than 100 m below surface, which would not have been identified otherwise.

Implementation of on-site drone surveying has become an integral part for generating fast topographic surveys and imagery over targeted areas. It also provides the ability to track any changes resulting from artisanal activity.

Table 9-1 tabulates completed geophysical surveys since 2003.

Table 9-1 Geophysical Surveys

Year	Survey Type	Contractor	Comment
2003	Ground Geophysical Surveys (IP, EM, Ground Mag)	SAGAX	The surveys were conducted over Gara, Yalea, and Baboto.
2006	Downhole Wireline Logging	Terratec	The surveys were conducted on six boreholes on the Loulo-Gounkoto permits (Gara, Yalea, and P64).
2008	Helicopter Borne VTEM	Geotech Airborne Limited	The surveys were conducted over Loulo-Gounkoto mines and adjacent concessions located along the western border of Mali and Senegal.

Year	Survey Type	Contractor	Comment
2009	Ground IP	SAGAX	Over Gounkoto.
2013	Ground IP	SAGAX	Over Loulo-Gounkoto permit and adjacent concessions.
2015	Electrical Resistivity Tomography (ERT)	Terratec Geoservices	The survey was conducted at Gounkoto to test the possibility of mapping the overburden of Falémé paleo-channels by measuring variations in electrical resistivity.
2021	Ground 3DIP	DIAS Geophysical	The surveys were conducted over key structural corridor at Loulo.

9.4 Geochemical Sampling

During the early years of exploration on the Loulo and Gounkoto Permits, soil sampling was generally used as a first pass, blanket surface exploration method. Prior to conducting a soil sampling program, a regolith map is produced by interpreting remote datasets (including DTM, satellite imagery, and radiometrics) and field validation. Test pits may be excavated to further understand the regolith profile, profile thickness, validate regolith mapping, and ultimately to identify any regolith characteristics that may impact soil results. Once a grid is designed, each sampling station is cleared of surface vegetation prior to sampling. A hole is excavated to an approximately 30 cm depth to sample the B horizon and a one kilogram sample is collected. If quartz fragments are abundant, the sample is sieved to less than five millimetres. Samples are collected at 50 m centres along lines spaced 200 m and 400 m apart. Anomalous lines are infilled with samples at 50 m centres along lines spaced 100 m and 200 m apart. Soil samples are analysed by aqua regia atomic absorption spectroscopy (AAS) for gold and X-ray fluorescence (XRF) for multi-elements.

More recently, the focus has shifted from a shallow, near-surface soil geochemical sampling to a deeper/below cover (transported cover/laterite) geochemical sampling to allow for exploration below suppressive regolith. The result is the implementation of auger drilling as a new first pass means of collecting a deep geochemical sample firstly by sampling the final metre of the pedolith (base of pedolith sample) and secondly by sampling the first metre of saprolite (top of saprolite sample). Multiple such surveys have been conducted throughout 2020 and 2021 on targets including Gara North, Falémé, Yalea Ridge South & North East, Goldfinger, Waraba, Toronto – Namila, and Gounkoto South (Table 9-2). Contouring of auger results allows for source line interpretation, which is integrated with mapped structural and geophysical trends. These mapped, geophysical, and geochemical targets become the focus of subsequent, more targeted drilling utilising AC, RC and, where supported by sufficient data, diamond drilling.

Table 9-2 Annual Loulo–Gounkoto Trenches, Auger, and Pit Samples Collected Since 2010

Year	Company	Trenches		Auger		Pits		Total	
		Metres	No.	Metres	No.	Metres	No.	Metres	No.
2010	Randgold	1,974.95	33	-	-	32.93	5	2,007.88	38
2011	Randgold	8,581.12	100	-	-	2.7	1	8,583.82	101
2012	Randgold	450.4	7	-	-	61	22	511.4	29
2013	Randgold	3,389.26	50	-	-	73.95	12	3,463.21	62
2014	Randgold	10,341.1	115	-	-	14	1	10,355.1	116
2015	Randgold	4,873.31	66	-	-	707	90	5,580.31	156
2016	Randgold	2,805	52	-	-	47.1	14	2,852.1	66
2017	Randgold	5,256.2	60	-	-	8	2	5,264.2	62
2018	Randgold	1,527.45	14	-	-	-	-	1,527.45	14
2019	Barrick	-	-	7,449	943	-	-	7,449	943
2020	Barrick	-	-	20,517	2,934	-	-	20,517	2,934
2021	Barrick	-	-	28,184	3,523	-	-	28,184	3,523
Total		**39,198.79**	**497**	**56,150**	**7,400**	**946.68**	**147**	**96,295.47**	**8,044**

9.5 Discussion

Loulo and Gounkoto have a detailed SOP Manual for Exploration and Drilling Practices that provides standardisation and consistency for all field technical personnel to ensure the collection of quality data. The Exploration Manager and Mineral Resource Manager are very experienced in the deposit style of the region. The 2023 planned exploration targets both potential extensions of mineralisation and will provide crucial information to further geological knowledge across the complex. The integrated target map update and re-ranking of targets within the Loulo and Gounkoto Permits that is frequently undertaken is a crucial exercise that provides an effective plan for long term regeneration of depleted Mineral Resources.

In the QP’s opinion, this work is appropriate for the style of mineralisation as demonstrated by historical Mineral Reserve replacement rates.

10 Drilling

Reverse circulation (RC) and diamond drilling (DD) are used to support Mineral Resource estimation. Rotary air blast (RAB) drilling has previously been used in regional first pass exploration and for sterilisation purposes. Sample data from RAB drilling trenches (TR), open pit rip-lines, and underground channels are not used for Mineral Resource estimation.

Table 10-1 and Table 10-2 present the known drilling by year, company, and type at Loulo and Gounkoto, respectively. The cut-off dates for the drilling are detailed in Section 14.

From 1993 to 2022, 2,946,155 m of drilling from 29,456 DD and RC holes have been drilled. This data has been used for the estimation of Mineral Resources.

Prior to 1997, a total of 28,578 m of historical drilling was conducted by previous operators in different drilling campaigns. This historical drill hole data now constitutes a minority (1%) of the total database used in the geological framework and for the estimation of Loulo-Gounkoto Mineral Resources and Mineral Reserves (see Sections 14 and 15). This data is used for exploration targeting but has been effectively superseded by current drill holes within the declared Mineral Resources.

10.1 Drilling Definitions

The Loulo-Gounkoto Complex is an advanced operation with producing open pits and an underground mine. Drilling is completed regularly as part of ongoing operations. All drilling falls into three categories, each with specific objectives and outcomes as follows:

- **Exploration (EXP) Drilling** - Wide spaced exploration drilling intended to grow the Mineral Resource base.
- **Advanced Grade Control (AGC) Drilling** – Consists of first pass wide spaced grade control drilling to increase confidence in open pit and underground Mineral Resources to a sufficient level of confidence to support Probable Mineral Reserves.
- **Infill Grade Control (GC) Drilling** – Consists of close spaced grade control drilling for final production definition to inform Measured Mineral Resources/Proven Mineral Reserves. Generally, the Loulo-Gounkoto Complex database of infill GC drilling is approximately six to 12 months of production coverage for open pits and between 18 and 24 months for underground.

DD is used for exploration, resource evaluation work, hydrogeological work, geotechnical work, collecting metallurgical samples, and for checking/twinning previous RC intercepts.

RC holes are used for exploration, AGC, and GC drilling. If penetration rates of the RC drilling decrease significantly or if groundwater inflows prevented the collection of a dry sample, then the drill hole is continued with a DD tail.

Table 10-1 Loulo Drilling Summary

Year	Company	Diamond		RC		RAB/AUGER/AIRCORE		Trench		Channel		Total	
		Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres
1993	BRGM	125	15,057	-	-	-	-	-	-	-	-	125	15,057
1994	BRGM	30	1,790	-	-	-	-	4	86	-	-	34	1,876
1994	BHP	50	6,634	-	-	-	-	-	-	-	-	50	6,634
1996	BHP	5	620	-	-	-	-	-	-	-	-	5	620
1997	BHP	15	2,335	-	-	-	-	-	-	-	-	15	2,335
1997	Randgold	95	15,358	-	-	915	17,916	-	-	-	-	1,010	33,274
1998	Randgold	37	4,803	-	-	267	4,929	-	-	-	-	304	9,732
2000	Randgold	21	3,640	-	-	-	-	-	-	-	-	21	3,640
2001	Randgold	16	1,270	-	-	255	6,855	16	667	-	-	287	8,792
2002	Randgold	-	-	-	-	-	-	49	988	-	-	49	988
2003	Randgold	84	18,244	-	-	-	-	317	14,101	-	-	401	32,345
2004	Randgold	84	31,962	77	6,131	719	22,409	25	1,342	-	-	905	61,844
2005	Randgold	124	63,565	135	7,752	145	5,332	83	3,753	-	-	487	80,402
2006	Randgold	35	17,606	884	31,456	371	7,442	1	182	-	-	1,291	56,686
2007	Randgold	52	26,677	1,283	44,395	1,652	38,751	27	1,205	-	-	3,014	111,028
2008	Randgold	88	8,092	763	25,548	-	-	104	4,950	127	1,745	1,082	40,335
2009	Randgold	97	11,677	3,474	131,213	-	-	-	-	167	1,618	3,738	144,508
2010	Randgold	138	13,255	834	33,203	4	86	62	3,287	165	1,601	1,203	51,432
2011	Randgold	245	35,748	346	19,882	-	-	-	-	431	3,279	1,022	58,909
2012	Randgold	206	29,772	733	31,301	-	-	1	22	519	3,278	1,459	64,373
2013	Randgold	145	26,718	42	3,838	-	-	33	2,028	757	5,093	977	37,677
2014	Randgold	319	65,644	2	228	-	-	77	6,566	526	4,090	924	76,528
2015	Randgold	209	58,185	81	5,061	-	-	63	4,635	790	5,352	1,143	73,233
2016	Randgold	365	90,219	1,644	64,511	-	-	28	2,113	752	4,547	2,789	161,390
2017	Randgold	450	98,792	163	9,493	-	-	41	3,316	833	5,222	1,487	116,823
2018	Randgold	406	100,603	10	1,264	-	-	8	883	867	4,923	1,291	107,673
2019	Barrick	1145	194,704	48	8,279	-	-	-	-	1313	6,884	2506	209,867
2020	Barrick	699	148,546	4	1,320	2284	15212	-	-	1288	7,106	4275	172,184
2021	Barrick	532	131,250	1,095	60,568	3,994	56,324	-	-	994	5,514	6,615	253,656
2022	Barrick	432	99,227.36	763	66,006.19	426	17,033	-	-	896	10,236	2,517	192,502.55
Total		**6,249**	**1,321,993**	**12,381**	**551,449**	**11,032**	**192,289**	**939**	**50,124**	**10,425**	**70,488**	**41,026**	**2,186,344**

Table 10-2 Gounkoto Drilling Summary

Year	Company	Diamond		RC		RAB/AUGER/AIRCORE		Trench		Channel		Total	
		Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres
1993	BRGM	15	1,290	15	852	-	-	-	-	-	-	30	2,142
2000	Randgold	-	-	2	200	-	-	-	-	-	-	2	200
2005	Randgold	-	-	31	3,943	165	6,813	26	1,836	-	-	222	12,592
2006	Randgold	8	2,000	36	3,092	2	60	54	3,499	-	-	100	8,651
2007	Randgold	15	3,694	-	-	346	10,152	2	65	-	-	363	13,911
2008	Randgold	11	2,992	-	-	398	10,432	-	-	-	-	409	13,424
2009	Randgold	79	16,733	32	2,921	175	4,953	12	594	-	-	298	25,201
2010	Randgold	140	46,941	627	53,380	-	-	17	816	-	-	784	101,137
2011	Randgold	70	34,925	222	18,097	-	-	105	8,721	-	-	397	61,743
2012	Randgold	12	6,990	1,345	39,775	-	-	7	458	-	-	1,364	47,223
2013	Randgold	62	22,999	930	57,366	-	-	22	1,682	-	-	1,014	82,047
2014	Randgold	34	14,884	448	35,064	-	-	47	3,097	-	-	529	53,045
2015	Randgold	17	6,108	1,061	58,300	-	-	4	238	-	-	1,082	64,646

Year	Company	Diamond		RC		RAB/AUGER/AIRCORE		Trench		Channel		Total	
		Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres	Hole Count	Metres
2016	Randgold	45	14,993	1,050	59,079	-	-	15	1,012	-	-	1,110	75,084
2017	Randgold	17	4,364	965	52,210	-	-	48	4,148	-	-	1,030	60,722
2018	Randgold	28	6418	747	68,317	-	-	8	768	-	-	783	75,503
2019	Barrick	40	19,597	764	82,482	943	7449	-	-	-	-	1,747	109,527
2020	Barrick	64	39,702	723	88,155	651	5306	-	-	-	-	1,438	133,163
2021	Barrick	126	31,505	374	56,396	324	1,737	0	0	-	-	824	89,638
2022	Barrick	312	55,239	359	61,710	-	-	-	-	550	3,002.20	1,221	119,951
Total		**1,095**	**331,374**	**9,731**	**741,339**	**3,004**	**46,902**	**367**	**26,934**	**550**	**3,002.20**	**14,747**	**1,149,550**

10.2 Drill Planning and Site Preparation

Drill holes are planned in Vulcan, Leapfrog, and Micromine software. Consideration is given to the orientation of the drilling in relation to the geological structures, to support unbiased sampling. Drilling directions are optimised on an individual deposit basis to ensure that the preferred drilling direction is on a cross plunge basis, cutting the geological trend perpendicularly, or at high angle close to true thickness. Efforts to avoid low angle intercepts that may introduce bias are ongoing during drill programme design and budgeting.

The senior geologist, drill contractor, mine planner, mine surveyor, and mineral resource manager all sign off on the drill hole plan prior to initiating drilling.

Open pit drill collars, as well as back sights and foresights are surveyed using a Differential Global Positioning System (DGPS) and are then staked by the Loulo-Gounkoto Complex mine surveyors or geologists. Underground drill collars, as well as back sights and foresights, are surveyed using total station underground survey instruments, and marked on the drift walls by the Loulo-Gounkoto Complex mine surveyors.

10.3 Downhole Surveying

Reflex EZ-Trac tools were used prior to mid-2016 but were replaced by Reflex EZ-Gyro. When both EZ-Trac and conventional Gyro surveys were being completed, the results of the Gyro survey took higher priority than those of Reflex EZ-TRAC surveys.

Orientation surveys are completed on all holes using either a Reflex EZ-Gyro or a Reflex Sprint-Gyro (new gyro tool introduced in 2020). Reflex EZ-Gyro surveys were undertaken in both up hole and down hole directions every five metres and Reflex Sprint-Gyro surveys are undertaken in an up-hole direction every three metres.

Down hole survey equipment is calibrated yearly and checked every week by on-site Reflex technicians.

10.4 Collar Surveys

All drill collar locations are surveyed using differential GPS to 10 mm accuracy.

The Complex uses the UTM Zone 29N datum WGS84 grid for drill hole coordinates.

10.5 Diamond Drilling

DD is primarily used to establish a robust geological understanding of the controls on mineralisation, for Mineral Resource extension work, for geotechnical, hydrogeological, or metallurgical investigation.

From surface, 85.0 mm diameter core (PQ) is generally drilled up to the fresh rock, with 63.3 mm diameter core (HQ) or 47.6 mm diameter core (NQ) used from fresh rock to 500 m depending on the drilling depth requirement. All underground GC DD is completed in NQ.

Recent DD has generally been completed by Boart Longyear and Orezone Drilling, though some has been carried out by DCS, a local contractor.

The average drill core recovery is 97.4% in unweathered rock, 84.6% in the transitional zone, and 76.0% in the saprolite zone. The average recovery in the mineralisation is 97.6% with a range of between 80% and 100%.

Drilling Procedure

A geologist must be on site prior to drilling commencing, to ensure that the drill rig is lined up as per the drill plan and supervising drilling, core orientation, and down hole surveying. Once each drilling run is complete, the drill core is removed from the drill rod and placed in an angled iron rack so an orientation line (OL) can be marked with red chinagraph pencil or crayon, as indicated by a Reflex ACT II Core Orientation Tool. The apex of the structure is also marked on the core in a chinagraph pencil or crayon by the core technician. If the orientation and apex lines are overlapping, then the apex line is offset by 5 mm.

DD core is transferred into metal core trays and a plastic down hole depth marker is placed at the end of each core run with the depth marked on it. All areas of core loss are identified, and the run markers are updated with the core recovery. Each drill core box is marked with the hole ID, top and bottom depth of the core, and the box number. The core is then transferred to the core yard facility for logging and sampling.

Core Logging

DD core is geologically logged using digital tablets with standardised log sheets that include weathering, grain size, mineralisation, alteration style, lithology, structural measurements, and redox data. This is manually transcribed into Microsoft (MS) Excel before being transcribed into a central database, after the responsible geologist has validated their inputs.

Geologists create a sampling plan using sampling plan sheets and label the boxes and core with sample codes. The core (both wet and dry) is then digitally photographed using a purpose-built imaging station, high resolution camera, and IMAGO software. These photos are stored on IMAGO software for ease of sharing.

All DD core is oriented and, where orientation is not possible, the core is assembled with previous runs, where possible, to extend the OL.

A dedicated geotechnical logging team digitally captures detailed geotechnical logging using tablets for all open pit and underground drill core, not just for holes drilled specifically for geotechnical assessment.

Sampling

DD core samples selected are usually between 0.8 m and 1.2 m long. The drill core is split in half along a cutting line (CL), 10° clockwise from the OL, using diamond saws utilising fresh water. When looking down hole, the right-hand side half core is submitted for primary assay.

All remaining core is stored for future reference.

10.6 Reverse Circulation Drilling

RC is only used at surface, primarily to infill gaps and improve grade confidence (ADC) and ultimately provide infill GC ahead of open pit mining.

RC chip samples are logged with the same lithological, mineralogical, and alteration information recorded as DD core but on regular one metre RC sample intervals split through a riffle splitter or cone splitter.

Recent RC drilling has generally been completed by contractors DCS, Orezone Drilling, and GEODRILL. RC holes typically use 131 mm diameter rods with a 5.5-inch face-sampling bit.

Drilling Procedure

A geologist and sampling technicians must be on site prior to drilling. They ensure that the drill rig is lined up as per the drill plan, supervise the drilling contractor, and carry out manual sampling outside the cyclone and quality check for all down hole surveying.

RC samples are collected in pre-numbered plastic bags, arranged in numerical order away from the cyclone area. After homogenisation and splitting, chips are sieved from the reject material and collected in chip-trays labelled with the hole ID, depth interval, and the sample number. The samples and chip trays are then transferred to the core yard facility by Loulo-Gounkoto staff for logging and sampling.

Reverse Circulation Logging

RC chips are logged by the site geologist. Geological logging is completed digitally using Maxwell LogChief installed on tablets that capture weathering, grain size, mineralisation, alteration style, lithology, and redox data, for each one metre run interval.

Sampling

RC samples are collected from the rig in fixed one metre intervals using a splitter. The total mass is collected from the cyclone in one metre run intervals. This mass is split three times to a final mass that provides a three to four kilogram sample. Auxiliary booster units are used to ensure that most of the samples collected are already dry. On the rare occasion a wet sample is obtained, it is dried before being manually split.

10.7 Twin Drilling Studies

Twin drilling studies have been undertaken at Yalea and Gara as part of the original feasibility studies prior to construction of underground mine development. These comparisons have shown that although there can be variations in grade, as expected, the broad intercepts and relative grade of the intersections are comparable across the twin holes.

Twin drilling has also been undertaken at the Gounkoto MZ and HW. The results have shown that, although there are local significant grade variations, the broad intercepts and relative grades are generally relatively comparable across the twin intercepts. The FW finger zone, however, has shown dramatic variations in grade on very closely spaced (less than 5 m) drill holes.

The variation in the drill twinning studies has been used to support the classification criteria for the Mineral Resources. The FW finger zone at Gounkoto, which has the dramatic short scale variations in grade, has a much tighter drill spacing for Measured Resources (6.0 m by 6.0 m) when compared to the remainder of Gounkoto (12.5 m by 12.5 m).

10.8 Drill Spacing Optimisation

Drilling directions for all open pit Mineral Resources are optimised on an individual deposit basis to ensure that the preferred drilling direction for AGC and GC drilling is on a cross plunge basis.

The data distribution or ‘drill campaign’ is one of several classification specifications for the resource estimate.

Measured classification infill GC drill spacing has been independently optimised using closely spaced variance drilling grids, supported by change of support analysis. In general, the infill drill spacings range from 10 m to 12.5 m along the principal direction and 5.0 m to 6.25 m across strike within the mineralised zones and are sampled at one metre down hole intervals.

Indicated classification AGC drill spacing has been optimised using change of support analysis. In general, AGC is spaced approximately 25 m by 40 m with geological continuity of 100 m or more along strike. All open pit Mineral Resources that also form Mineral Reserves, namely Gounkoto open pit, Faraba, Gara West, Loulo 3, Yalea South open pit, and Baboto have been drilled to an AGC spacing.

Inferred classification Mineral Resource drill holes are generally on an 80 m to 100 m by 100 m or less drill spacing.

All drilled holes are composited between one metre and two metres down hole during resource estimation; this is supported by a sample interval optimisation study that showed two metres to be optimal for sampling within the Loulo-Gounkoto Exploitation Permits.

10.9 Independent Audits

Independent audits are completed on a regular basis.

An external audit on the drilling procedures was previously completed in August 2018 by Optiro, which identified good performance for data collection and a high performance for data quality (Glacken & Barron, 2018).

In September 2022, RSC completed an independent audit of the Mineral Resource in the Loulo-Gounkoto Complex (Roux & Sterk, 2022). This included the drilling procedures used to collect the data informing Mineral Resource estimates. The audit demonstrated that Mineral Resource processes conform to good industry practices. RSC made several recommendations to the Loulo-Gounkoto Complex for continual improvement including ongoing review of RC drilling and sampling practices.

10.10 Discussion

In the QP's opinion, the drilling and sampling procedures at Loulo-Gounkoto are robust, suitable for the style of mineralisation, and are at, or above, industry standard practices. There are no drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results.

11 Sample Preparation, Analyses, and Security

11.1 Sample Preparation

All samples submitted for analysis are prepared and analysed at the independent SGS Loulo Laboratory (SGS Loulo), which is managed and self-certified by SGS, accredited by the South African National Accreditation System (SANAS) under the number T0836 and located on the Loulo mine site.

Grade control and exploration drill samples are prepared in the same manner. Once the samples are received by SGS Loulo, they are weighed and entered into a SGS laboratory information management system (SLIMS). Samples are dried in an oven at 105°C. Channel and trench samples are disaggregated to remove dry lumps. Dried samples are crushed to ensure that 75% of the sample is below 2 mm.

The crushed sample is then passed through a Rocklab BOYD crusher with auto rotary splitter The 1.5 kg split sample is pulverised in an LM2 pulveriser until 85% passes through a 75-micron (200 mesh) screen and a 200 g split is removed and placed in a packet. Blank material is milled into LM2 every six samples for cleaning purposes with a systematic air pressure use for each sample. SGS Loulo undertakes regular screen sieve tests on the crushing and pulverising. The coarse (6 mm) reject and the pulp (75 micron) reject material are returned to Barrick for storage at the Complex and future re-analysis if required.

Figure 11-1 outlines the preparation and analysis flow chart for DD core samples.

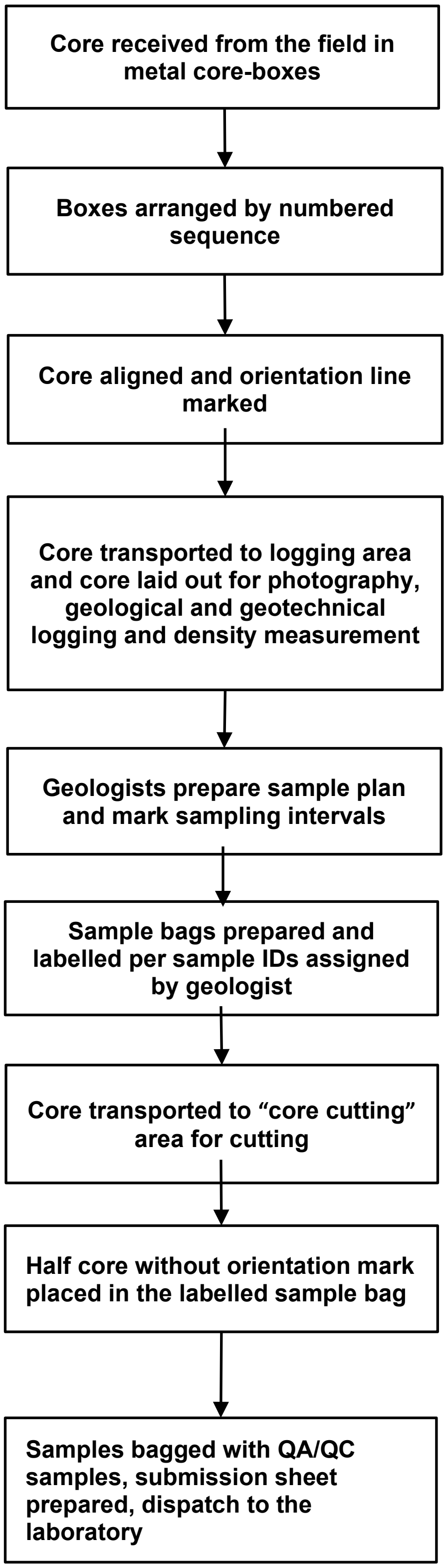


Figure 11-1 Diamond Drill Core Sample Flow Chart

Figure 11-2 outlines the preparation and analysis flow chart for RC samples.

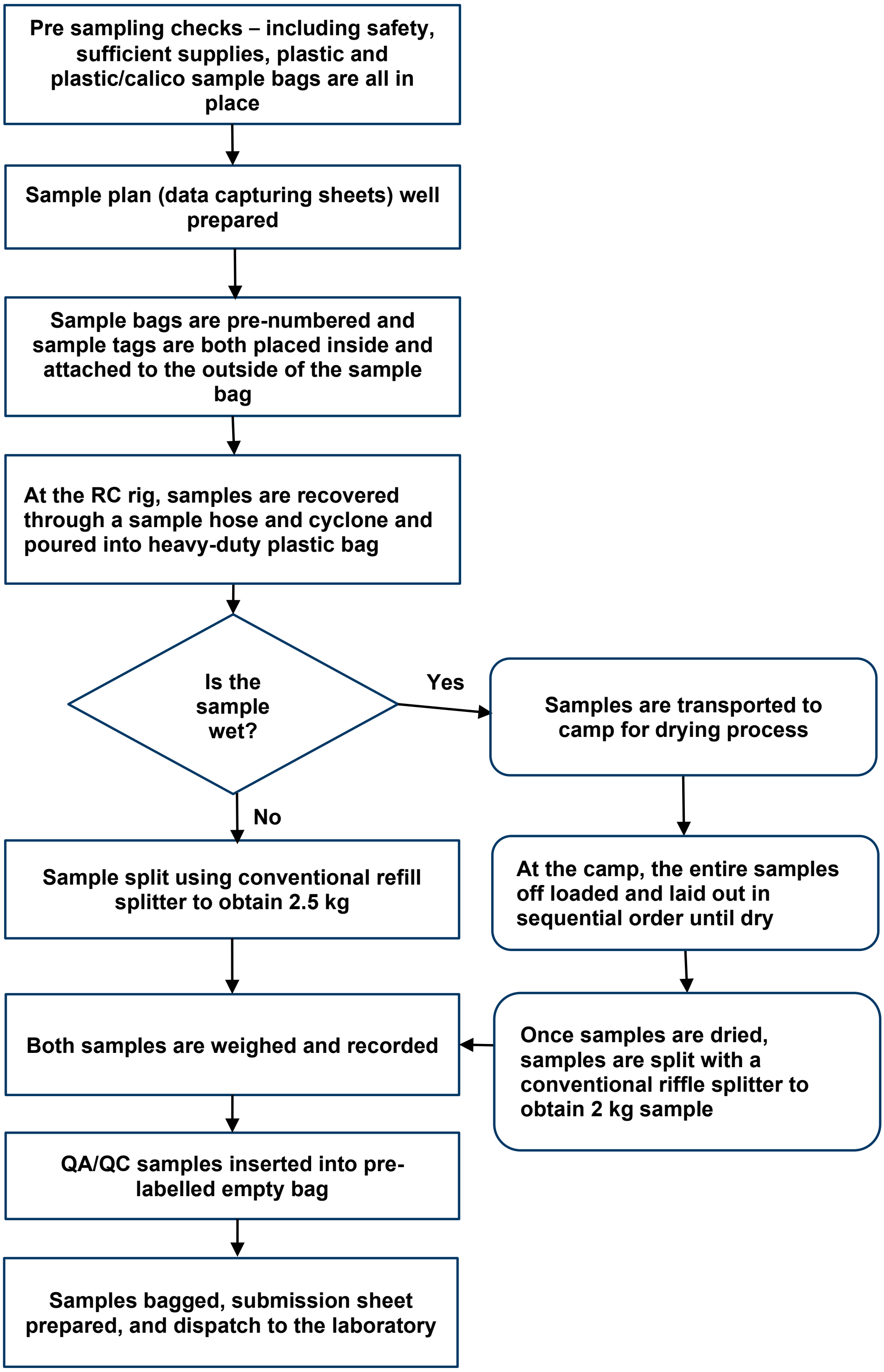


Figure 11-2 Summary of RC, Channel, and Trench Sample Preparation Flow Chart - Exploration and Grade Control

Figure 11-3 outlines the flow sheet for sample preparation at SGS Loulo.

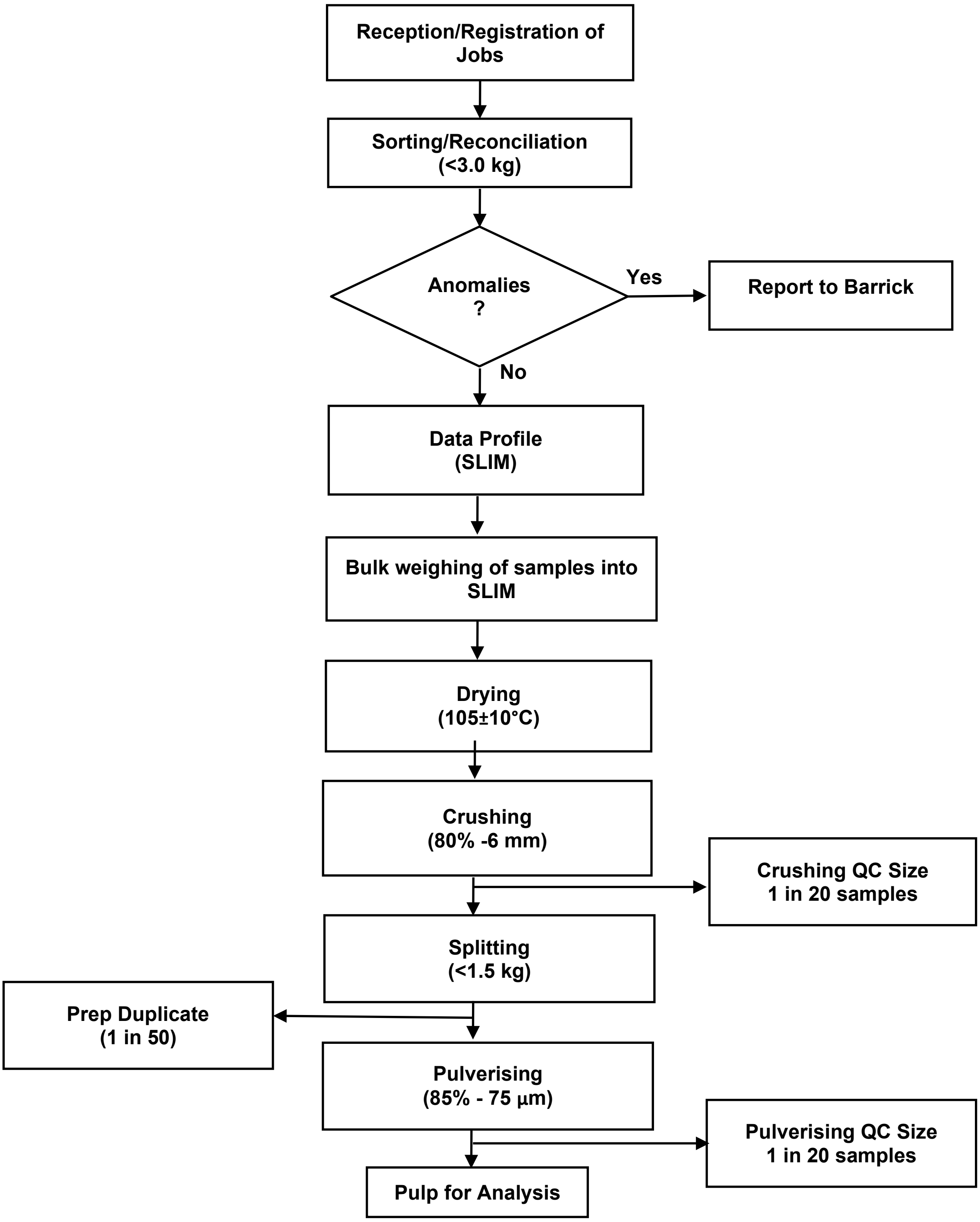


Figure 11-3 SGS Loulo – Summary of Sample Preparation Procedure

11.2 Sample Analysis

All Loulo-Gounkoto samples are analysed at the SGS Loulo laboratory located on the mine site. SGS Bamako, located in Bamako Mali, is accredited by SANAS under the number T0652 (March 2021) and is used for sample overflow and analysis that could not be completed at SGS Loulo. Both laboratories are operated independently of Barrick and self-certified by SGS.

All samples are analysed by fire assay (FAA550) with AAS finish, which has a detection range of 0.01 g/t Au to 100 g/t Au. All samples above 15 g/t go for gravimetric finish. A 50 g sample is split from the pulp and fire assayed. Table 11-1 and Table 11-12 list samples submitted for analysis for Loulo and Gounkoto, respectively, and Figure 11-4 outlines the fire assay procedure at SGS Loulo.

Table 11-1 Submitted Samples for Loulo

Loulo		
Sample Type	**Number of Samples**	**Percentage**
DDH	13,667	16%
RC	48,172	56%
Sludge/Channel	2,800	3%
Subtotal	**64,639**	**76%**
Standards	5,874	7%
Blanks	5,556	38%
Spiked Blanks	233	1%
Field Duplicates	1,845	2%
Coarse Reject Duplicates	1,282	1%
Pulp Reject Duplicates	3,692	4%
Umpire	2,472	3%
Subtotal	**20,954**	24%
Total	**85,593**	**100%**

Table 11-2 Submitted Samples for Gounkoto

Gounkoto		
Sample Type	**Number of Samples**	**Percentage**
DDH	14,686	18%
RC	40,987	51%
Channel	1,974	2%
Subtotal	**57,647**	**72%**
Standards	6,228	8%
Blanks	5,973	7%
Spiked Blanks	494	1%
Field Duplicates	3,628	5%
Coarse Reject Duplicates	1,053	1%
Pulp Reject Duplicates	1,942	2%
Umpire	2,746	3%
Subtotal	**22,064**	**28%**
Total	**79,711**	**100%**

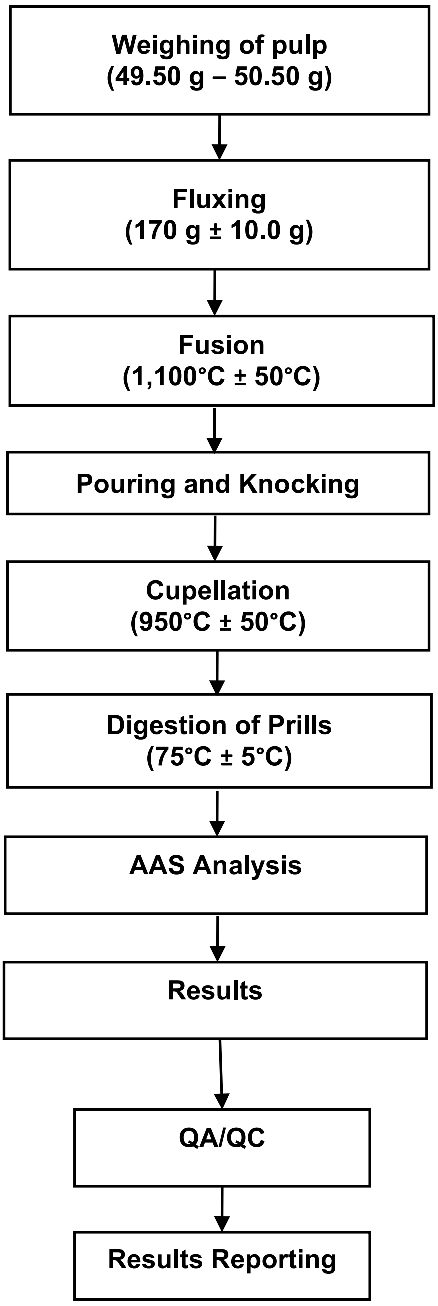


Figure 11-4 SGS Loulo – Summary of Fire Assay (FAA505) Procedure

11.3 Quality Assurance and Quality Control

To ensure that the assay results are reliable, Loulo-Gounkoto has a robust quality assurance and quality control (QA/QC) system in place to minimise errors at each stage and procedures to be followed when errors are identified.

Quality Assurance (QA) is used to demonstrate that the sampling and analytical protocols are appropriate and optimal for the deposit in question. It should entail orientation sampling studies and statistical analysis so that appropriate systems and standards can be tailored to achieve quality results throughout all the stages of collecting and analysing data. Ideally, orientation studies are performed at the beginning, or early stages, of Complex evaluation. Setting up systems and standards to ensure quality throughout all stages used to collect, analyse, and report data.

Quality Control (QC) is a real-time monitoring and analysis to ensure the protocols developed in QA are being adhered to and are returning precise and accurate results. Entails additional sampling and analysis and statistical examination (such as scatter plots, quantile-quantile (QQ) plots, etc.).

SGS Loulo undertakes its own internal QA/QC, which includes blanks, duplicates, and certified reference materials (CRM), which are reported to Barrick in addition to the field sample results. The laboratory internal QA/QC is reviewed separately by Barrick, however, results are not included in the statistics reported below.

This section covers QA/QC results from 11 June 2021 to 6 June 2022 for Gara, 15 July 2021 to 6 July 2022 for Yalea, and 20 December 2021 to 27 July 2022 for Gara West, including all new data used within the Gara, Yalea, and Gara West 2022 resource model updates. Screen tests for Gara, Yalea, and Gara West samples indicate that over 90% of all samples analysed during the period attain 75 microns.

This section covers the QA/QC programme from 1 July 2021 to 27 June 2022 for Gounkoto and 15 July 2021 to 1 August 2022 for Faraba, including all new data used within the Gounkoto and Faraba 2022 resource model updates. All sampling and analysis at Gounkoto follow the same parameters. Previous QA/QC reporting periods have not been observed to contain any significant sources of error or bias which would have a material effect on the Mineral Resource.

Quality control checks are inserted into the sample stream prior to dispatch to the laboratory, except for coarse and pulp duplicates, which are taken as a split by Loulo Gounkoto staff in the laboratory using a rotary splitter after crushing, or from the pulp reject after mat rolling. Overall, the QA/QC sampling includes duplicates, blanks, and CRM. Independent umpire laboratories are also used on a quarterly basis to verify the primary laboratory, as well as to check the consistency in sampling protocols.

All laboratories undertake their own internal QA/QC which includes blanks, duplicates, and CRMs, which are reported alongside Loulo-Gounkoto's results. The results of the laboratory internal QA/QC are reviewed monthly with the Loulo-Gounkoto team but are not included below.

Certified Reference Materials

CRMs are inserted into batches at a frequency of 1 in 19, representing 5.26% of samples, to validate results reported by the laboratory and monitor the control and calibration of the instruments used by the laboratory.

A total of 6,011 samples of 40 different types of CRMs were used within the reporting period.

All CRMs used in the review period are sourced from Ore Research & Exploration Pty Ltd (OREAS), Australia, and are oxide or sulphide type with a matrix of feldspar minerals, basalt, and iron pyrites. CRMs are purchased in pre-packaged 50 g samples that require no preparation before being submitted to the laboratory. A sub-set of the total CRMs available are used and are rotated on a quarterly basis to prevent laboratory identification.

CRM results are monitored and classified as a failure if one sample point falls outside of three standard deviations (3SD) from the certified mean, or three consecutive samples fall outside of two standard deviations (on the same side) of the mean.

CRM results that have a failure outside of 3SD are checked for possible CRM swaps. This is investigated by comparing the returned assay grade to the list of known CRM grades values. The CRM samples are supplied by OREAS with CRM ID printed on the bag. This printed ID is photographed during CRM insertion and then removed prior to submission of the CRM to the laboratory. This CRM photograph is used to help identify CRM swaps. A normal sample swap is also investigated to check if a normal drill sample has been labelled as CRM.

In addition to the CRM photographs, swaps can be investigated using the technician's sampling plan document, verifying the sample numbers, reviewing the sample booklet, and comparing against the other CRMs in the batch.

When all the above investigations are complete, and it has been established that a failure has occurred, the following actions are initiated:

- When two or more CRMs failed in a batch and the failure is a result of sample swap, the entire batch is re-assayed.
- When one or more CRM failed in a batch and the failure is not a result of sample swap, the entire batch is re-assayed.

Based on the above controls when a batch is re-assayed and fails again, the samples are flagged but committed into the database whilst new samples are prepared for re-analysis. If a CRM is observed to repeatedly fail, then it is removed from storage and is no longer inserted into the sample stream.

Loulo

Table 11-3 outlines the CRMs analysed for Gara, Yalea, and Gara West during the QA/QC reporting period.

Table 11-3 Summary of CRMs Used at Gara, Yalea, and Gara West – 2021 and 2022

CRM ID	Certified Au Value (g/t)	+3SD (g/t)	-3SD (g/t)	Gara			Yalea			Gara_West		
				Min Assay (g/t)	Max Assay (g/t)	Quantity	Min Assay (g/t)	Max Assay (g/t)	Quantity	Min Assay (g/t)	Max Assay (g/t)	Quantity
OREAS 217	0.338	0.308	0.368	0.32	0.36	66	0.33	0.34	12	-	-	-
OREAS 505	0.555	0.513	0.597	0.52	0.56	12	0.52	0.56	12	0.52	0.57	194
OREAS 219	0.76	0.688	0.832	0.72	0.83	142	0.72	0.8	48	0.75	0.79	8
OREAS 220	0.866	0.806	0.926	0.83	0.89	31	-	-	-	-	-	-
OREAS 232	0.902	0.833	0.971	0.86	0.94	12	0.86	0.95	51	0.86	0.91	14
OREAS 221	1.06	0.952	1.168	1	1.14	54	-	-	-	1	1.16	345
OREAS 222	1.22	1.121	1.319	1.14	1.26	52	1.15	1.27	98	1.16	1.28	169
OREAS 205	1.244	1.085	1.403	1.24	1.21	2	1.27	1.27	1	-	-	-
OREAS 235	1.59	1.476	1.704	1.52	1.63	29	1.52	1.65	44	1.5	1.66	344
OREAS 223	1.78	1.645	1.915	1.7	1.88	89	1.79	1.86	2	-	-	-
OREAS 224	2.15	1.991	2.309	2.01	2.26	106	2	2.26	62	-	-	-
OREAS 237	2.21	2.048	2.372	2.1	2.31	20	2.23	2.25	5	-	-	-
OREAS 238	3.03	2.79	3.27	2.89	3.21	233	2.92	3.2	118	2.89	3.21	242
OREAS 226	5.45	5.072	5.828	5.27	5.76	108	5.2	5.72	173	5.3	5.71	462
OREAS 216b	6.66	6.186	7.134	6.38	6.85	51	6.46	6.87	17	6.37	6.9	450
OREAS 216	6.66	6.195	7.125	6.87	6.87	1	6.47	6.88	18	-	-	-
OREAS 228b	8.57	7.973	9.567	8.27	8.9	58	8.37	9.09	96	8.44	9.05	15
OREAS 228	8.73	7.893	9.567	8.38	8.8	17	8.48	8.8	2	-	-	-
OREAS 229b	11.95	11.086	12.814	11.4	12.7	83	11.4	12.5	53	11.8	12.04	10
OREAS 229	12.11	11.492	12.728	11.7	12.2	10	11.5	12.6	87	12.2	12.2	1
OREAS 297	17.83	16.642	19.018	16.9	18.7	33	17.8	18.2	13	18	18	1
OREAS 298	34.99	32.494	37.486	33.2	36.9	61	34.9	36.4	5	35	35	2
OREAS 202	0.752	0.674	0.83	-	-	-	0.73	0.79	52	0.74	0.78	10
OREAS 209	1.58	1.448	1.712	-	-	-	1.52	1.64	34	-	-	-
OREAS 210	5.49	5.034	5.946	-	-	-	5.6	5.6	1	-	-	-
OREAS 214	3.03	2.784	3.276	-	-	-	3.04	3.04	1	-	-	-
OREAS 215	3.54	3.249	3.831	-	-	-	3.7	3.71	29	-	-	-
OREAS 230	0.337	0.298	0.376	-	-	-	0.33	0.35	16	0.32	0.35	34
OREAS 233	1.05	0.963	1.137	-	-	-	1	1	1	-	-	-
OREAS 236	1.85	1.673	2.027	-	-	-	1.77	1.77	1	-	-	-
OREAS 239	3.55	3.292	3.808	-	-	-	3.36	3.71	156	-	-	-
OREAS 240	5.51	5.093	5.927	-	-	-	5.23	5.69	23	5.28	5.78	761
OREAS 251	0.504	0.459	0.549	-	-	-	0.5	0.54	18	-	-	-
OREAS 252	0.674	0.608	0.74	-	-	-	0.65	0.71	29	0.64	0.7	217
OREAS 254	2.55	2.322	2.778	-	-	-	2.48	2.5	5	-	-	-
OREAS 254b	2.53	2.347	2.713	-	-	-	2.48	2.61	9	-	-	-
OREAS 234	1.2	1.11	1.29	-	-	-	-	-	-	1.15	1.26	160
OREAS 242	8.67	8.025	9.315	-	-	-	-	-	-	8.7	8.7	2
OREAS 252b	0.837	0.753	0.921	-	-	-	-	-	-	0.8	0.84	4
OREAS 253	1.22	1.088	1.352	-	-	-	-	-	-	1.19	1.21	4
Total						**1,270**			**1,292**			**3,449**

Figure 11-5 to Figure 11-10 present tramline plots for Gara, Yalea, and Gara West which demonstrate that 99% CRMs returned values within 3SD of the mean during the reporting period, with only eight CRMs failing QA/QC. Table 11-4, Table 11-5, and Table 11-6 summarise the performance of the CRMs relative to their upper and lower limits.

Table 11-4 Summary Statistics of Gara CRMs (Certified Value vs Assayed)

Discrete Statistics					Percentile Statistics				
	CRM	Assayed	% Diff	Units	Distribution	CRM	Assayed	% Diff	Units
Population	1,133	1,133			25.0%	1.58	1.56	-1.27%	ppm
Minimum	0.016	0.014	-12.50%	ppm	50.0%	3.55	3.58	0.85%	ppm
Maximum	34.99	36.90	5.46%	ppm	75.0%	8.57	8.54	-0.35%	ppm
Mean	6.48	6.51	0.55%	ppm	80.0%	8.57	8.70	1.52%	ppm
Std Dev	8.43	8.48	0.57%	ppm	90.0%	12.11	12.10	-0.08%	ppm
CV*	1.30	1.30	0.47%		97.5%	34.99	35.50	1.46%	ppm
Correlation	100%				99.9%	34.99	36.79	5.14%	ppm

Note. *CV – coefficient of variation

A total of 1,133 CRMs were assayed by SGS Loulo for Gara during the period under review. All 1,133 were evaluated against 3SD, with 1,129 passing QA/QC and four failing. CRMs assayed by SGS Loulo show 99% correlation. The QP considers this performance to be good and indicates that SGS Loulo meets industry standards.

Table 11-5 Summary Statistics of Yalea CRMs (Certified Value vs Assayed)

Discrete Statistics					Percentile Statistics				
	CRM	Assayed	% Diff	Units	Distribution	CRM	Assayed	% Diff	Units
Population	1,292	1,292			25.0%	1.22	1.25	2.46%	ppm
Minimum	0.337	0.220	-34.72%	ppm	50.0%	3.54	3.44	-2.82%	ppm
Maximum	34.99	36.40	4.03%	ppm	75.0%	5.45	5.62	3.12%	ppm
Mean	4.53	4.57	0.75%	ppm	80.0%	6.66	6.88	3.27%	ppm
Std Dev	4.22	4.25	0.74%	ppm	90.0%	11.95	11.80	-1.26%	ppm
CV*	0.93	0.93	0.70%		97.5%	12.11	12.30	1.57%	ppm
Correlation	100%				99.9%	34.99	35.64	1.86%	ppm

Note. *CV – coefficient of variation

A total of 1,292 CRMs were assayed by SGS Loulo for Yalea during the period under review. All 1,292 were evaluated against 3SD, with 1,288 passing QA/QC and four failing. CRMs assayed by SGS Loulo show 99% correlation. The QP considers this performance to be good and indicates that SGS Loulo meets industry standards.

Table 11-6 Summary Statistics of Gara West CRMs (Certified Value vs Assayed)

Discrete Statistics					Percentile Statistics				
	CRM	Assayed	% Diff	Units	Distribution	CRM	Assayed	% Diff	Units
Population	3,449	3,449			25.0%	1.20	1.18	-1.67%	ppm
Minimum	0.337	0.320	-5.04%	ppm	50.0%	3.03	3.16	4.29%	ppm
Maximum	34.99	35.00	0.03%	ppm	75.0%	5.51	5.57	1.09%	ppm
Mean	3.60	3.61	0.36%	ppm	80.0%	5.51	5.61	1.81%	ppm
Std Dev	2.52	2.53	0.59%	ppm	90.0%	6.66	6.64	-0.30%	ppm
CV*	0.70	0.70	0.09%		97.5%	6.66	6.83	2.55%	ppm
Correlation	100%				99.9%	12.04	12.40	3.00%	ppm

Note. *CV – coefficient of variation

A total of 3,449 CRMs were assayed by SGS Loulo for Gara West during the period under review. All 3,449 were evaluated against 3SD and passed QA/QC. CRMs assayed by SGS Loulo show 99% correlation. Overall, the QP considered the performance of the CRM quality control checks to be very good.

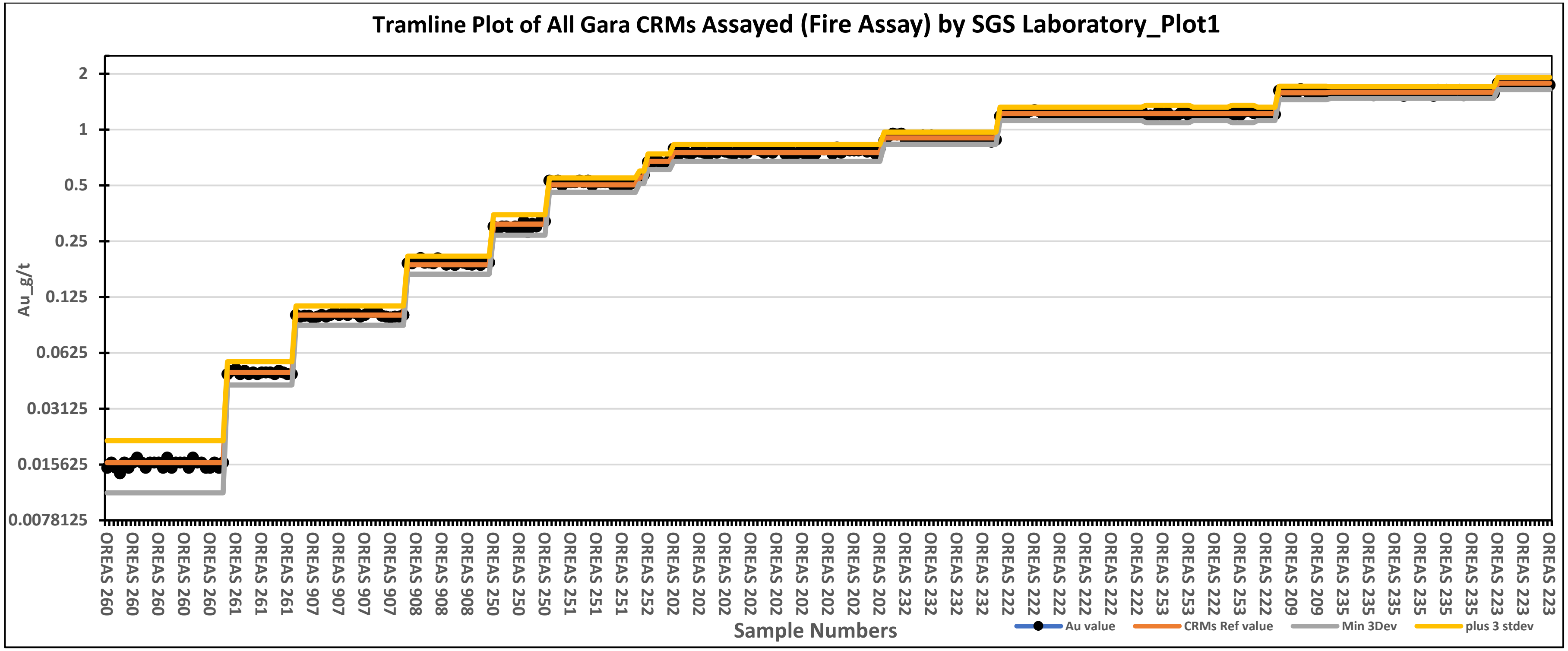


Figure 11-5 Performance Graph of Gara CRMs Assayed by SGS Loulo (11 June 2021 to 06 June 2022) – Plot 1

A total of 1,133 CRMs of 33 different types were reported during the period. For legibility, Gara CRMs reported have been split into two plots. The above plot (Figure 11-5) shows performance of 338 CRMs. These 338 CRMs were evaluated against 3SD as the acceptable limit. 337 of these CRM passed QA/QC and one with ID LU288627 reported by SGS Loulo failed. Ten samples above and below the failed CRM were re-assayed. The failure, which occurred during the reporting period, was linked to unstable AAS at the on-site laboratory. Alliance Scientific of South Africa was engaged to rectify the issue. Both original and re-assayed batches have been stored in the database with priority given to the re-assay data. The failed CRM has been excluded from the above plot for the purposes of scaling. Overall, the QP considered the performance of the CRM quality control checks to be very good.

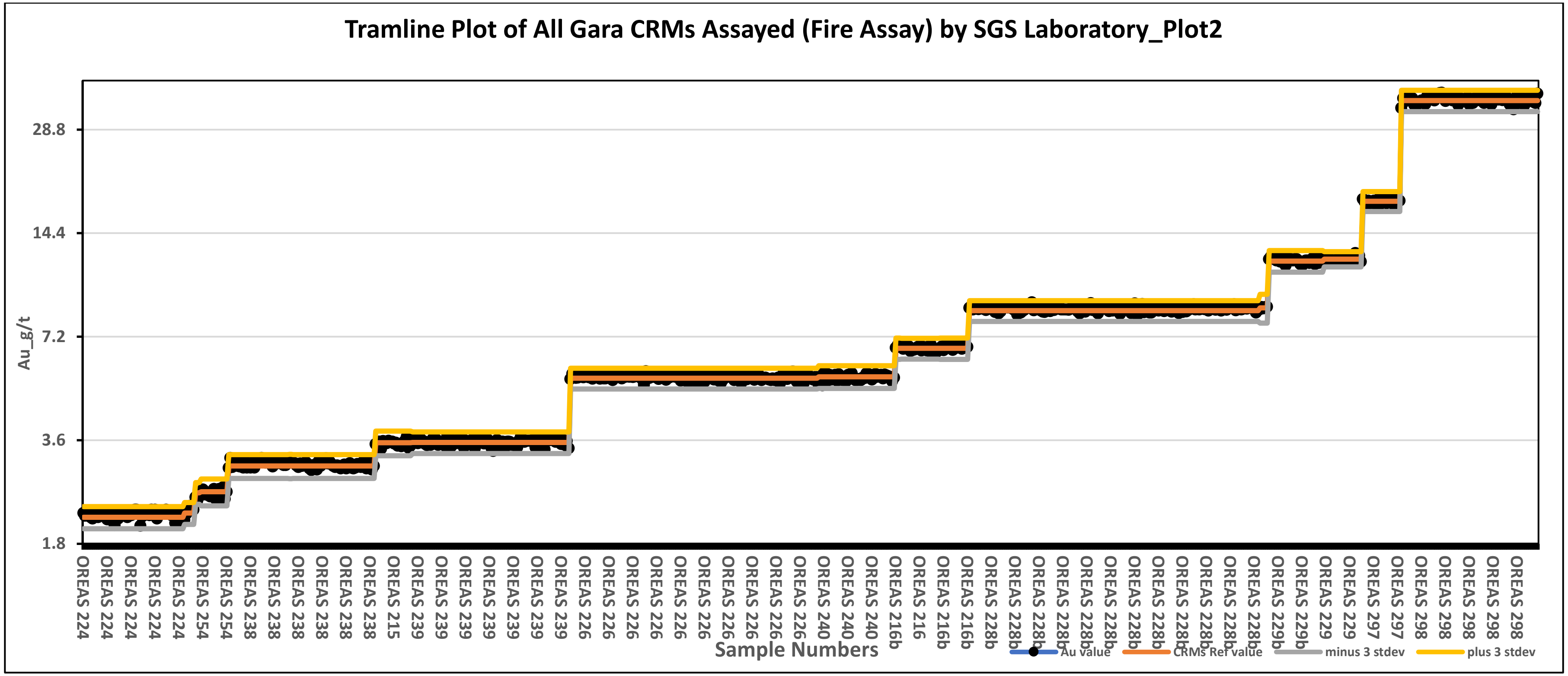


Figure 11-6 Performance Graph of Gara CRMs Assayed by SGS Loulo (11 June 2021 to 06 June 2022) – Plot 2

The above plot (Figure 11-6) shows performance of 795 CRMs, which are part of the overall total of 1,133 reported for Gara. These 795 CRMs were evaluated against 3SD as the acceptable limit. 792 CRMs passed QA/QC and three with IDs LU008148, LE088414, and LU289371 reported by SGS Loulo failed QA/QC. Ten samples above and below the failed CRMs were re-assayed. The failure, which occurred during the reporting period was linked to unstable AAS at the on-site laboratory. Alliance Scientific of South Africa was engaged to rectify the issue. Both original and re-assayed batches have been stored in the database with priority giving the re-assay data. The failed CRMs have been excluded from the above plot for the purposes of scaling. Overall, the QP considered the performance of the CRM quality control checks to be very good.

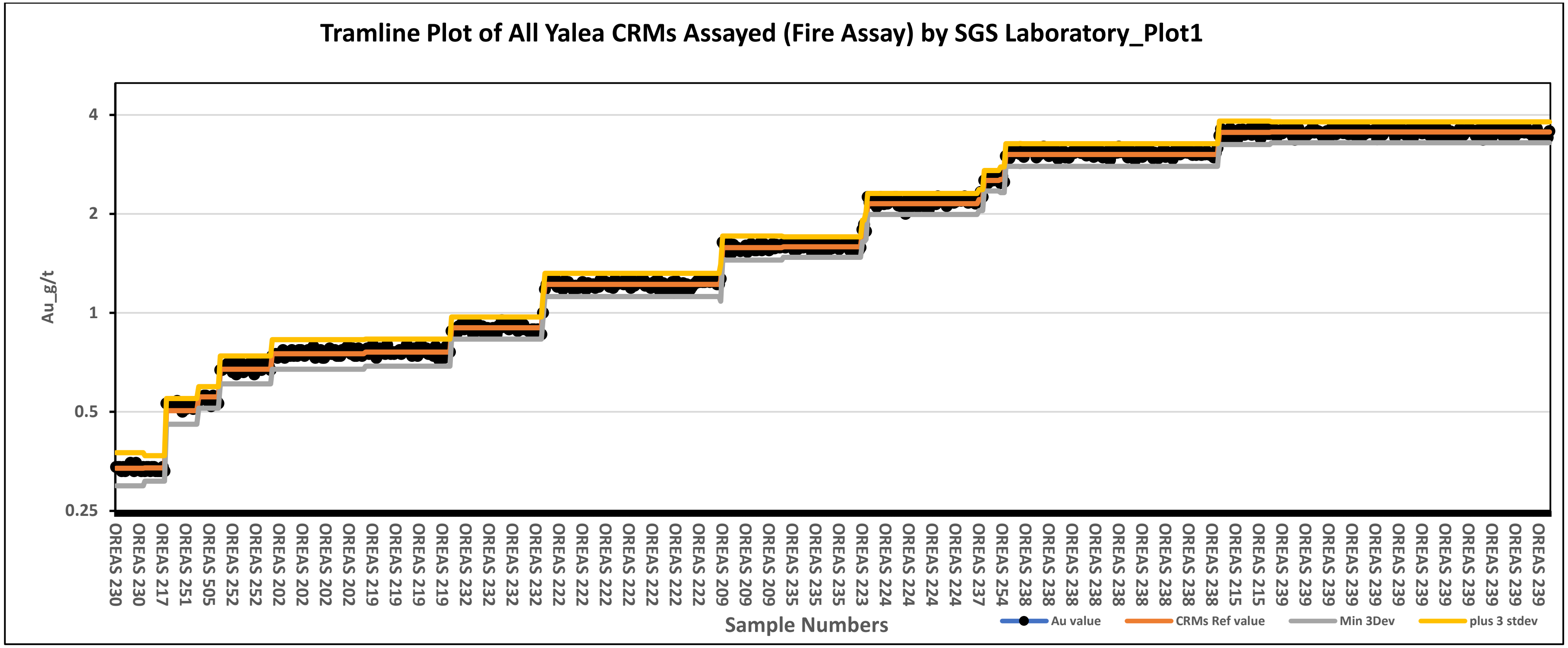


Figure 11-7 Performance Graph of Yalea CRMs Assayed by SGS Loulo (15 July 2021 to 06 July 2022) – Plot 1

A total of 1,292 CRMs of 34 different types were reported during the period for Yalea. For legibility, Yalea CRMs reported have been split into two plots. The plot above (Figure 11-7) shows performance of 803 CRMs, evaluated against 3SD as the acceptable limit. 800 CRMs passed QA/QC and three with IDs LU317324, LU298206 and LU298232 reported by SGS Loulo failed. Ten samples above and below the failed CRMs were re-assayed. The failure, which occurred during the reporting period was linked to unstable AAS at the on-site laboratory. The services of Alliance Scientific of South Africa were engaged to rectify the issue. Both original and re-assayed batches have been stored in the database with priority giving the re-assay data. The failed CRMs have been excluded from the above plot for the purposes of scaling. Overall, the QP considered the performance of the CRM quality control checks to be very good

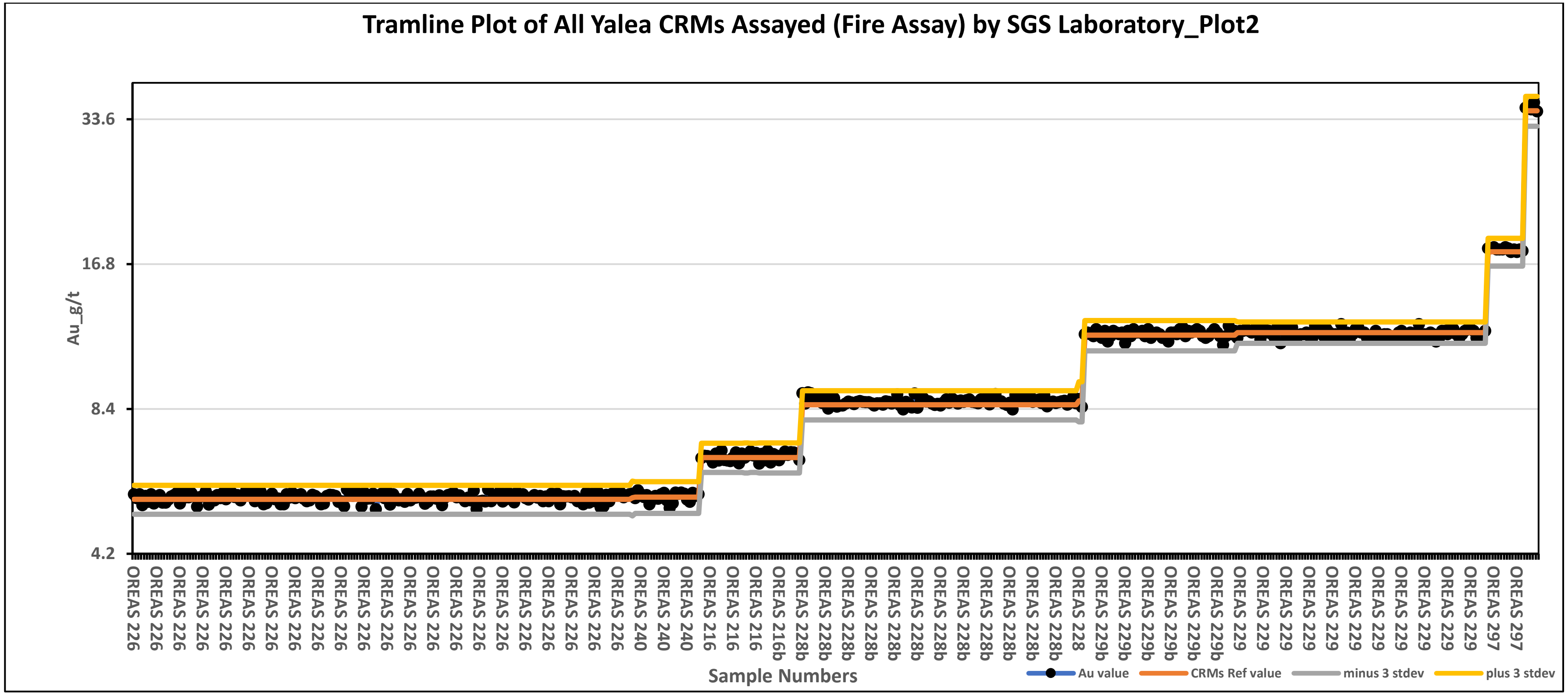


Figure 11-8 Performance Graph of Yalea CRMs Assayed by SGS Loulo (15 July 2021 to 06 July 2022) – Plot 2

Figure 11-8 shows performance of 489 CRMs which are part of the overall total of 1,292 reported for Yalea. These 489 CRMs were also evaluated against 3SD as the acceptable limit. 488 CRMs passed QA/QC and one with ID LU318714 reported by SGS Loulo failed. Ten samples above and below the failed CRMs were re-assayed. The failure, which occurred during the reporting period, was linked to unstable AAS at the on-site laboratory. The services of Alliance Scientific of South Africa were engaged to rectify the issue. Both original and re-assayed batches have been stored in the database with priority giving the re-assay data. The failed CRMs have been excluded from the above plot for the purposes of scaling. Overall, the QP considered the performance of the CRM quality control checks to be very good.

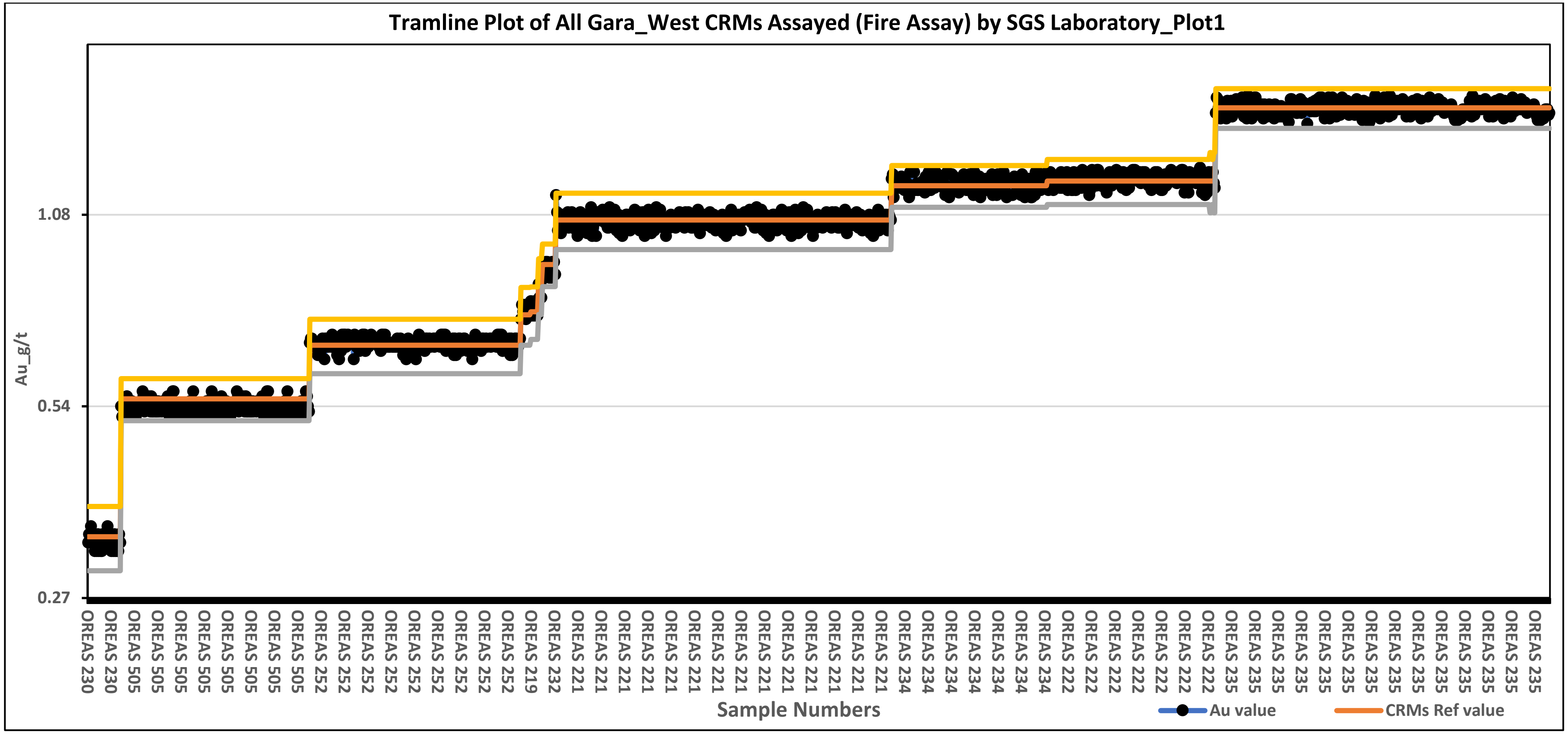


Figure 11-9 Performance Graph of Gara West CRMs Assayed by SGS Loulo SGS Loulo (20 December 2021 to 27 July 2022) – Plot 1

A total of 3,449 CRMs of 23 different types were reported during the period for Gara West. For legibility, Gara West CRMs reported have been split into two plots. The above plot (Figure 11-9) shows performance of 1,503. All 1,503 CRMs were evaluated against 3SD as the acceptable limit. Overall, the QP considered the performance of the CRM quality control checks to be very good.

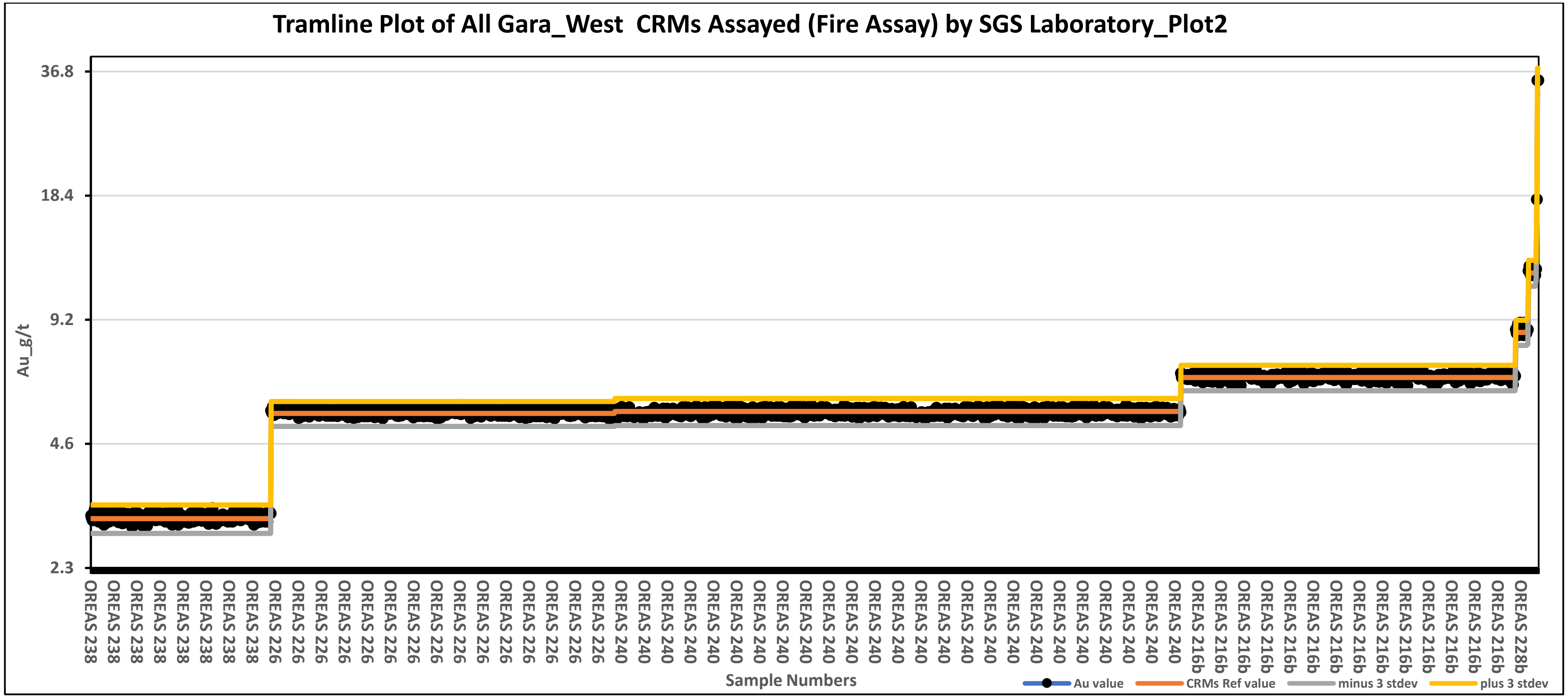


Figure 11-10 Performance Graph of Gara West CRMs Assayed by SGS Loulo (20 December 2021 to 27 July 2022)– Plot 2

Figure 11-10 shows performance of 1,946 CRMs which are part of the overall total of 3,449 reported for Gara West. These 1,946 CRMs were evaluated against 3SD as the acceptable limit. Overall, the QP considered the performance of the CRM quality control checks to be very good.

Gounkoto

A total of 6,228 samples, consisting of 42 different types of CRMs, were submitted to SGS Loulo during the review period. Twenty CRMs reported in 13 batches failed QA/QC. All failed batches were re-assayed. Both original and re-assayed batches have been stored in the database with the re-assay data being prioritised. Table 11-7 to Table 11-9 and Figure 11-11 to Figure 11-14 present CRM performance during the review period, which overall was considered good by the QP.

Table 11-7 Summary of Gounkoto and Faraba CRMs Assayed by SGS Loulo – 2021 and 2022

CRM ID	Certified Au Value (g/t)	+3SD (g/t)	-3SD (g/t)	Gounkoto			Faraba		
				Min Assay (g/t)	Max Assay (g/t)	Quantity	Min Assay (g/t)	Max Assay (g/t)	Quantity
OREAS 217	0.338	0.308	0.368	0.32	0.36	103	-	-	-
OREAS 505	0.555	0.513	0.597	0.35	0.65	441	0.51	0.57	129
OREAS 219	0.76	0.688	0.832	0.71	0.8	134	0.73	0.8	59
OREAS 220	0.866	0.806	0.926	0.81	2.28	39	-	-	-
OREAS 232	0.902	0.833	0.971	0.85	0.96	420	0.88	0.95	58
OREAS 221	1.06	0.952	1.168	1	1.12	67	-	-	-
OREAS 222	1.22	1.121	1.319	1.16	1.28	114	1.16	1.78	
OREAS 205	1.244	1.085	1.403	1.17	1.29	44	-	-	-
OREAS 235	1.59	1.476	1.704	1.5	2.16	361	1.61	1.62	2
OREAS 223	1.78	1.645	1.915	1.7	1.85	87	1.71	1.86	98
OREAS 224	2.15	1.991	2.309	2.07	2.26	156	2.14	2.25	46
OREAS 237	2.21	2.048	2.372	1.57	2.34	418	2.12	2.34	155
OREAS 238	3.03	2.79	3.27	2.91	3.2	122	2.85	3.18	49
OREAS 226	5.45	5.072	5.828	3.56	5.6	4	5.4	5.66	6
OREAS 216b	6.66	6.186	7.134	5.57	8.63	664	6.44	6.94	135
OREAS 216	6.66	6.195	7.125	6.27	6.68	3	6.28	6.79	8
OREAS 228b	8.57	7.973	9.567	8.32	9.02	51	8.74	8.74	1
OREAS 229b	11.95	11.086	12.814	11.7	12.6	59	-	-	-
OREAS 229	12.11	11.492	12.728	11.56	12.5	18	-	-	-
OREAS 297	17.83	16.642	19.018	17.14	18.85	10	-	-	-
OREAS 298	34.99	32.494	37.486	33.5	37.62	10	35	35	1
OREAS 202	0.752	0.674	0.83	0.72	0.83	153	0.73	0.79	52
OREAS 209	1.58	1.448	1.712	1.49	1.66	155	1.53	1.66	70
OREAS 210	5.49	5.034	5.946	4.92	5.68	81	-	-	-
OREAS 214	3.03	2.784	3.276	2.9	3.37	76	3.07	3.07	1
OREAS 215	3.54	3.249	3.831	3.39	3.64	6	-	-	-
OREAS 230	0.337	0.298	0.376	0.32	1.25	89	0.32	2.24	55
OREAS 239	3.55	3.292	3.808	3.41	3.67	25	3.38	3.71	50
OREAS 251	0.504	0.459	0.549	0.51	0.52	6	0.49	0.55	112
OREAS 252	0.674	0.608	0.74	0.64	0.7	11	0.68	0.68	1
OREAS 254	2.55	2.322	2.778	2.41	2.61	2	-	-	-
OREAS 234	1.2	1.11	1.29	1.18	1.24	6	1.15	1.26	70

CRM ID	Certified Au Value (g/t)	+3SD (g/t)	-3SD (g/t)	Gounkoto			Faraba		
				Min Assay (g/t)	Max Assay (g/t)	Quantity	Min Assay (g/t)	Max Assay (g/t)	Quantity
OREAS 242	8.67	8.025	9.315	8.46	9.13	61	8.67	8.67	1
OREAS 253	1.22	1.088	1.352	1.15	1.26	70	1.15	1.28	684
OREAS 250	0.309	0.27	0.348	0.3	0.33	6	0.3	0.34	149
OREAS 256	7.66	6.946	8.374	7.56	7.56	1	7.36	7.92	10
OREAS 208	9.248	7.934	10.562	8.92	9.5	8	-	-	-
OREAS 233	1.05	0.963	1.137	-	-	-	1	1.24	38
OREAS 240	5.51	5.093	5.927	-	-	-	5.34	5.34	1
OREAS 218	0.531	0.48	0.582	-	-	-	0.53	0.54	3
OREAS 611	15.7	13.897	17.503	-	-	-	15.8	16	2
OREAS 203	0.871	0.781	0.961	0.8	0.8	1	-	-	-
Total						**4,082**			**2,046**

Table 11-8 Summary Statistics of Gounkoto CRMs (Certified Value vs Assayed)

Discrete Statistics					Percentile Statistics				
	CRM	Assayed	% Diff	Units	Distribution	CRM	Assayed	% Diff	Units
Population	4082	4082			25.0%	0.90	0.88	-2.44%	ppm
Minimum	0.309	0.300	-2.91%	ppm	50.0%	1.59	1.60	0.63%	ppm
Maximum	34.99	37.62	7.52%	ppm	75.0%	3.55	3.48	-2.04%	ppm
Mean	2.90	2.91	0.40%	ppm	80.0%	6.66	6.56	-1.50%	ppm
Std Dev	3.22	3.26	1.08%	ppm	90.0%	6.66	6.77	1.65%	ppm
CV*	1.11	1.12	-0.07%		97.5%	9.25	9.22	-0.31%	ppm
Correlation	99%				99.9%	34.99	35.67	1.94%	ppm

Note. *CV – coefficient of variation

A total of 4,082 CRMs were assayed by SGS Loulo for Gounkoto during the period under review. All 4,082 were evaluated against 3SD, with 4,069 passing QA/QC and 13 failing. CRMs assayed by SGS Loulo show 99% correlation. The QP considers this performance to be good and indicates that SGS Loulo meets industry standards.

Table 11-9 Summary Statistics of Faraba CRMs (Certified Value vs Assayed)

Discrete Statistics					Percentile Statistics				
	CRM	Assayed	% Diff	Units	Distribution	CRM	Assayed	% Diff	Units
Population	2146	2146			25.0%	0.83	0.78	-6.25%	ppm
Minimum	0.348	0.300	-13.79%	ppm	50.0%	1.35	1.22	-9.76%	ppm
Maximum	37.49	35.00	-6.63%	ppm	75.0%	1.92	1.76	-8.22%	ppm
Mean	1.83	1.69	-7.32%	ppm	80.0%	2.31	2.17	-6.02%	ppm
Std Dev	1.93	1.81	-6.18%	ppm	90.0%	3.54	3.28	-7.40%	ppm
CV*	1.06	1.07	-7.88%		97.5%	7.13	6.77	-5.10%	ppm
Correlation	100%				99.9%	16.32	14.78	-9.44%	ppm

Note. *CV – coefficient of variation

A total of 2,146 CRMs were assayed by SGS Loulo for Faraba during the period under review. All 2,146 were evaluated against 3SD, with 2,139 passing QA/QC and seven failing. CRMs assayed by SGS Loulo show 99% correlation. The QP considers this performance to be good and indicates that SGS Loulo meets industry standards.

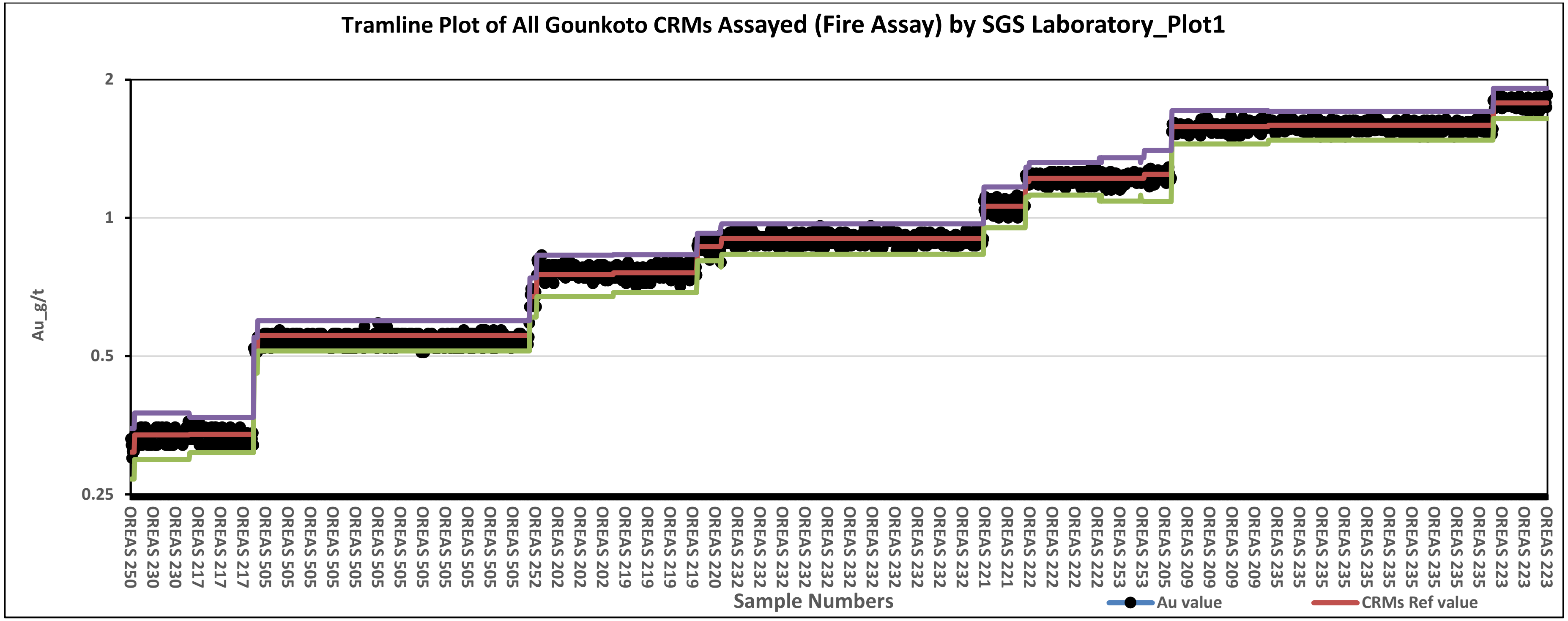


Figure 11-11 Performance Graph of Gounkoto CRMs Assayed by SGS Loulo (01 July 2021 to 27 June 22) – Plot 1

A total of 4,082 CRMs of 38 different types were reported for Gounkoto during the period. For legibility, Gounkoto CRMs reported have been split into two plots. The above plot (Figure 11-11) shows performance of 2,277 CRMs. All 2,277 CRMs were evaluated against 3SD as the acceptable limit. 2,269 CRMs passed QA/QC and eight failed. The failed CRMs had IDs LS219943, GS482260, GS450615, GS450589, GS450603, GS450606, GU018432, and GS482180 reported in separate batches failed QA/QC and were re-assayed. The failure is linked to laboratory performance. The failure, which occurred during the reporting period, was linked to unstable AAS at the on-site laboratory. The services of Alliance Scientific of South Africa were engaged to rectify the issue. Both original and re-assayed batches have been stored in the database with the re-assay data being prioritised. The failed CRMs have been excluded from the above plot for purposes of scaling. Overall, the QP considered the performance of the CRMs quality control checks to be very good.

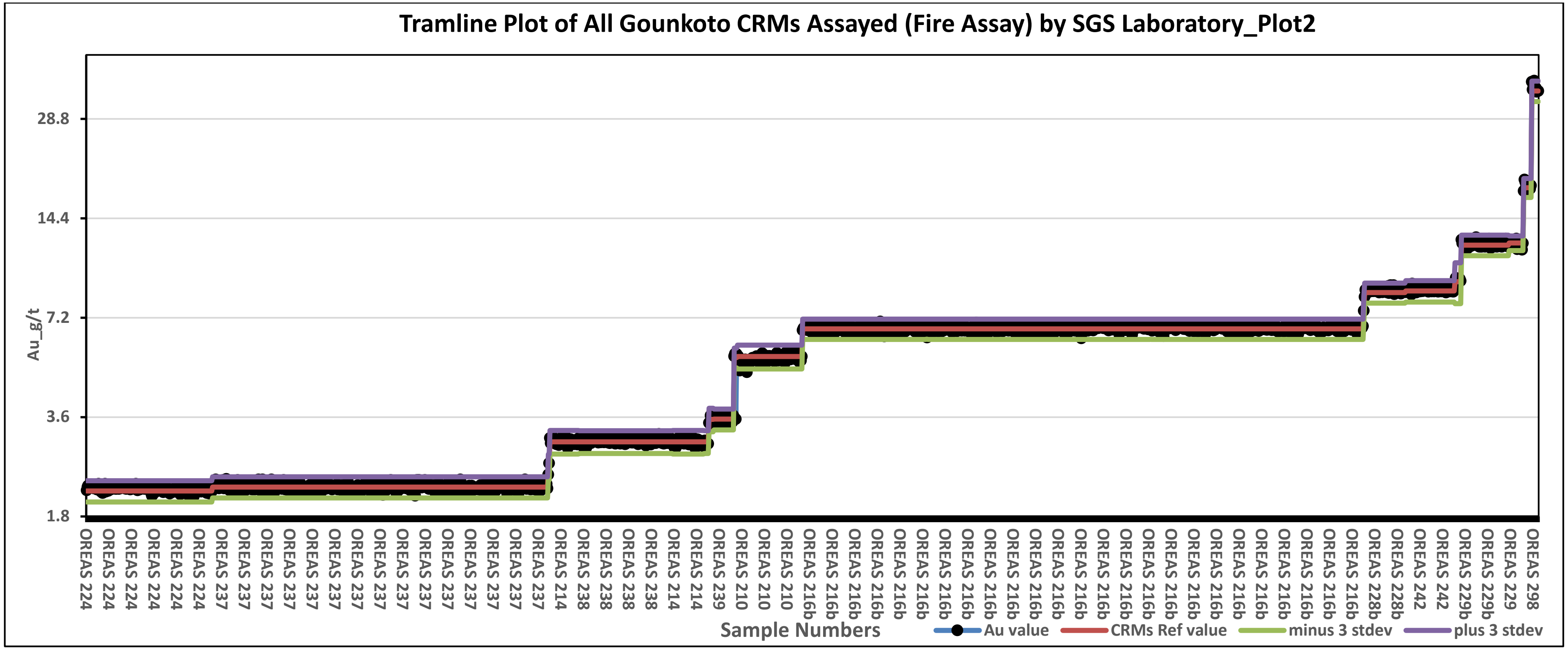


Figure 11-12 Performance Graph of Gounkoto CRMs Assayed by SGS Loulo (01 July 2021 to 27 June 2022) – Plot 2

The above plot (Figure 11-12) shows performance of 1,805 CRMs which are part of the overall total of 4,082 reported for Gounkoto. These 1,805 CRMs were evaluated against 3SD as the acceptable limit. Overall performance of the 1,805 CRMs is very good, however, five CRMs with IDs GU021313, GU021333, GU015261, GS459860, and GU016904 reported in separate batches failed QA/QC and were re-assayed. The failure is linked to laboratory performance. The failure, which occurred during the reporting period, was linked to unstable AAS at the on-site laboratory. The services of Alliance Scientific of South Africa were engaged to rectify the issue. Both original and re-assayed batches have been stored in the database with the re-assay data being prioritised. The failed CRMs have been excluded from the above plot for purposes of scaling.

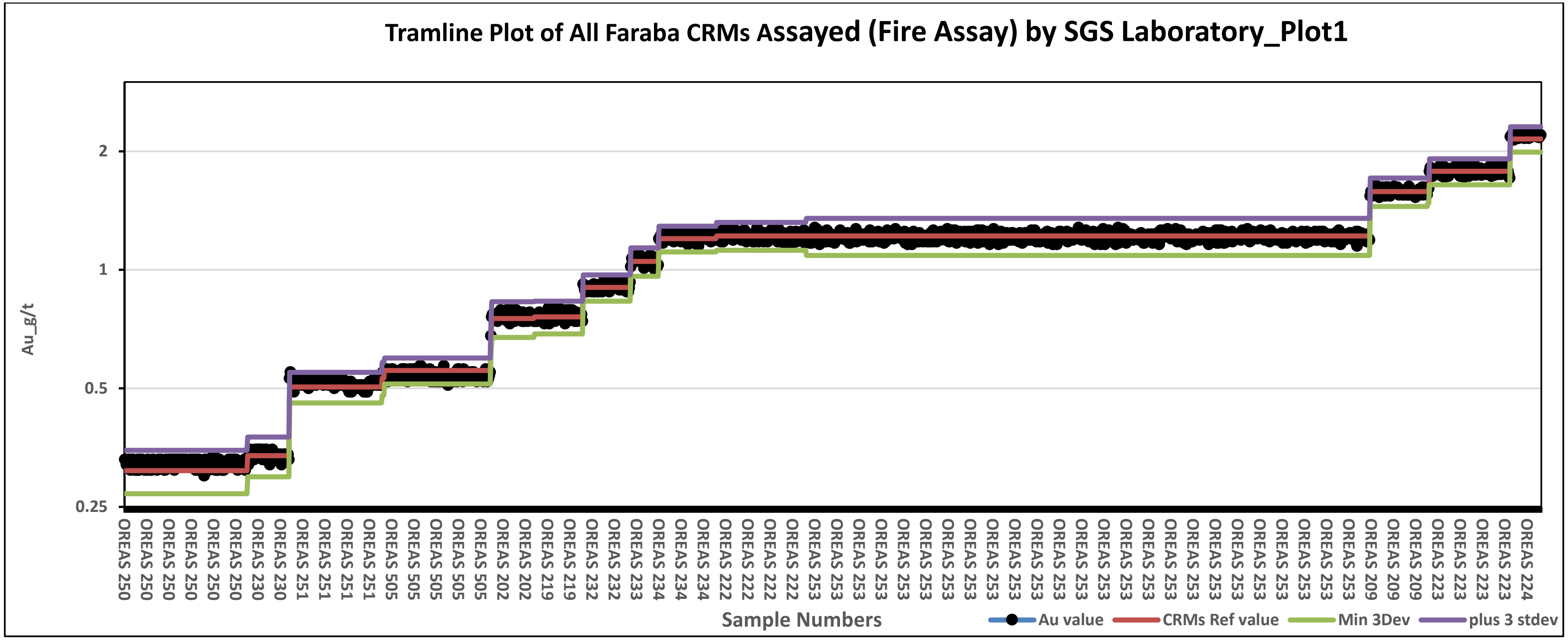


Figure 11-13 Performance Graph of Faraba CRMs Assayed by SGS Loulo (15 July 2021 to 01 August 2022) – Plot 1

A total of 2,146 CRMs of 30 different types were reported for Faraba during the period. For legibility, Faraba CRMs reported have been split into two plots. The above plot (Figure 11-13) shows performance of 1,726 CRMs. All 1,726 CRMs were evaluated against 3SD as the acceptable limit. Overall performance of CRMs is very good. However, seven CRMs with IDs LS214420, LS214440, LS214460, LS214480, GE063919, GE063959, and GE058540 reported in separate batches failed QA/QC and were re-assayed. The failure is linked to laboratory performance. The failure, which occurred during the reporting period, was linked to unstable AAS at the on-site laboratory. The services of Alliance Scientific of South Africa were engaged to rectify the issue. Both original and re-assayed batches have been stored in the database with the re-assay data being prioritised. The failed CRMs have been excluded from the above plot for purposes of scaling.

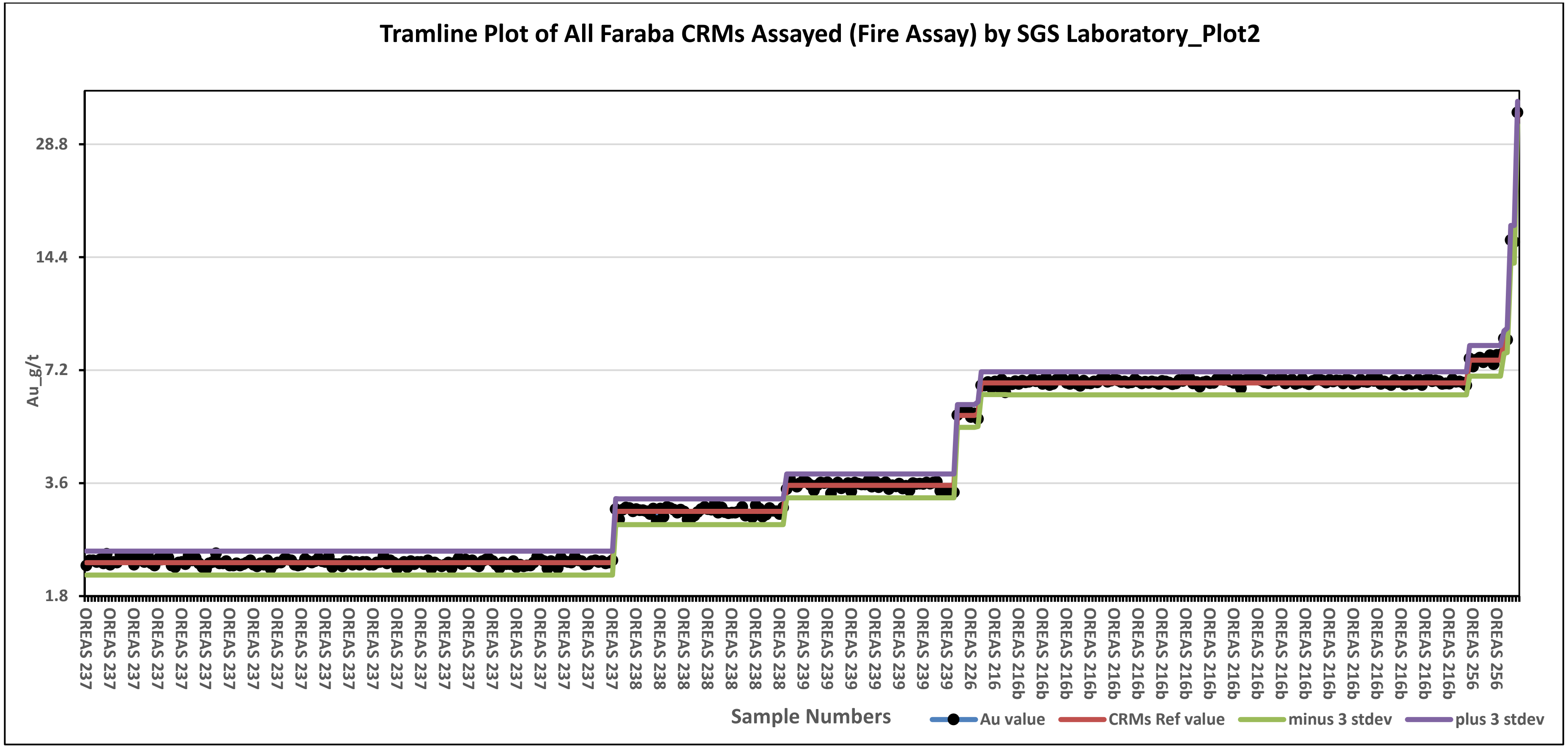


Figure 11-14 Performance Graph of Faraba CRMs Assayed by SGS Loulo (15 July 2021 to 01 August 2022) – Plot 2

The above plot (Figure 11-14) shows performance of 420 CRMs which are part of the overall total of 2,146 reported for Faraba. These 420 CRMs were also evaluated against 3SD as the acceptable limit. Overall, the QP considered the performance of the CRM quality control checks to be very good. All CRMs passed QA/QC with even distribution.

Blanks

Blank samples are free media (gold-free for these analyses) assayed to help ensure no false-positives are obtained from the laboratories and to check for contamination. These samples return gold assay values below the analytical detection limit (i.e., less than 0.01 ppm or g/t). Approximately 79% of blanks used for Loulo were sourced form OREAS, Australia. The remaining 21% were prepared on site from barren sandstone material.

During the collection of samples, blank sample materials were inserted into the sample stream prior to distribution to the laboratory at a rate of approximately 1:19, representing 5.26% of the total samples. These samples undergo the same sample preparation as the field samples and are used to detect inter-contamination due to poor cleaning of sample preparation equipment throughout the various sub-sampling process.

Overall, the QP considered the performance of the blanks used in the quality control checks to be within specification and to support the reporting of a Mineral Resource.

Loulo

A total of 5,556 blank samples were used during the reporting period, including 1,065 samples representing 19% of the total, for Gara, 1,229 samples, representing 22% of the total, for Yalea, and 3,260 samples, representing 59% of the total, for Gara West. All blanks were evaluated against three times the detection limit (DL) as the failure limit (FL). The overall performance shows a 99.93% pass rate of blank samples assayed, with five failures.

Table 11-10 summarises results of Gara coarse blank samples assayed during the reporting period and Figure 11-15 shows performance of all 1,065 coarse blank samples sourced from OREAS. All samples returned assays within three times the DL as the FL and passed QA/QC.

Table 11-10 Gara Coarse Blank Results Returned During Reporting Period

Orebody	Min Assay (g/t)	Max Assay (g/t)	N° Samples	Above 3x Detection Limit	Between DL and TL	Below DL	%Pass	% Fail
Gara	0.005	0.03	1,065	0	71(6.67%)	994(93.33%)	1,065 (100%)	0 (0.00%)

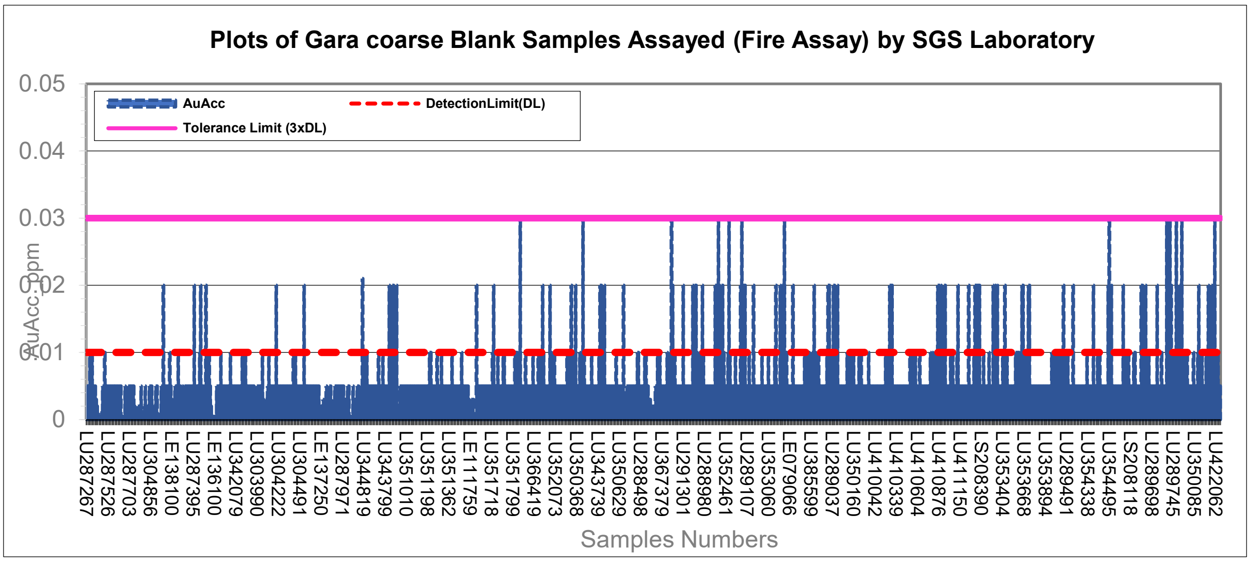


Figure 11-15 Performance Graph of Gara Coarse Blank Samples Assayed (FA) by SGS Laboratory (11 June 2021 to 06 June 2022)

Table 11-11 summarises results of Yalea coarse blank samples assayed during the reporting period and Figure 11-16 shows performance of all 1,229 coarse blank samples sourced from OREAS. Overall, samples returned assays within three times the DL as the FL, with 1,226 passing QA/QC. However, three samples assayed by SGS Loulo failed QA/QC and were re-assayed. Ten samples below and above the failed sample were re-assayed. Both original and re-assayed batches have been stored in the database, with priority given to re-assay data. The failed samples have been excluded from the plot for the purposes of scaling.

Table 11-11 Yalea Coarse Blank Results Returned During Reporting Period

Orebody	Min Assay (g/t)	Max Assay (g/t)	N° Samples	Above 3x Detection Limit	Between DL and TL	Below DL	%Pass	% Fail
Yalea	0.005	0.03	1,229	0	324(25.55%)	916(74.45%)	1,226 (99.76%)	3 (0.24%)

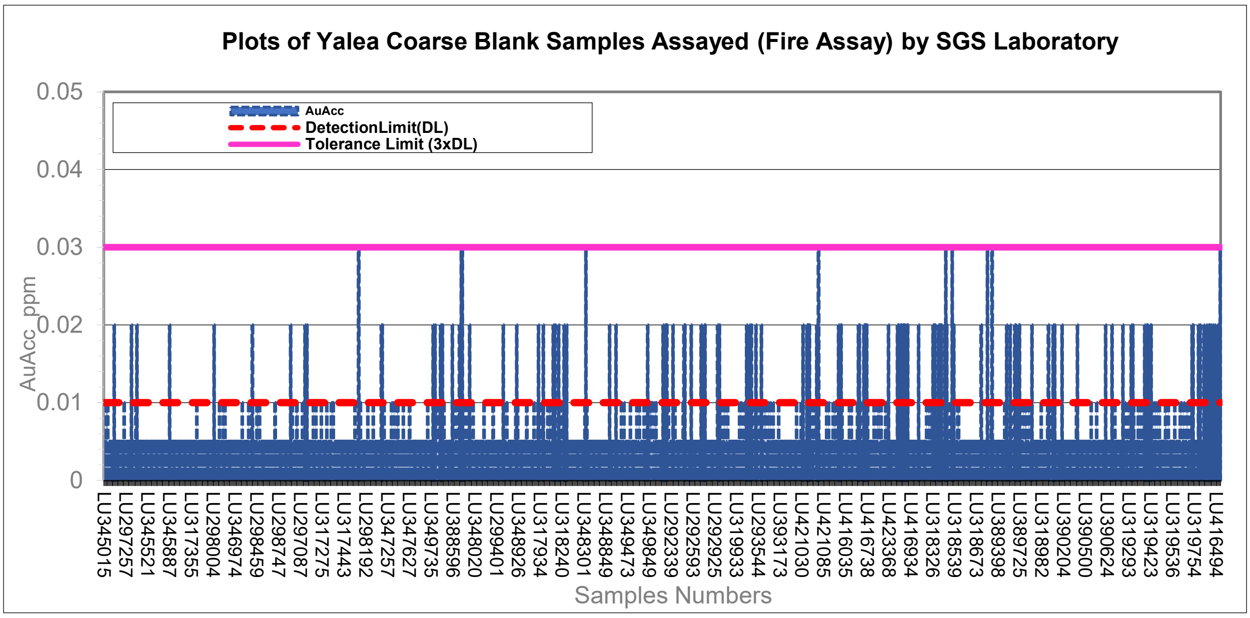


Figure 11-16 Performance Graph of Yalea Coarse Blank Samples Assayed (FA) by SGS Laboratory (15 July 2021 to 06 July 22)

Table 11-12 summarises results of Gara West coarse blank samples assayed during the reporting period and Figure 11-17 shows performance of all 3,260 coarse blank samples sourced from OREAS. Overall, the samples returned assays within three times the DL as the FL, with 3,258 passing QA/QC. However, two samples assayed by SGS Loulo failed QA/QC and were re-assayed. Ten samples below and above the failed sample were re-assayed. Both original and re-assayed batches have been stored in the database, with priority given to re-assay data. The failed samples have been excluded from the plot for the purposes of scaling.

Table 11-12 Gara West Coarse Blank Results Returned During Reporting Period

Orebody	Min Assay (g/t)	Max Assay (g/t)	N° Samples	Above 3x Detection Limit	Between DL and TL	Below DL	%Pass	% Fail
Gara West	0.005	0.03	3,260	0	884(27.12%)	2,376(72.88%)	3,258 (99.94%)	2 (0.06%)

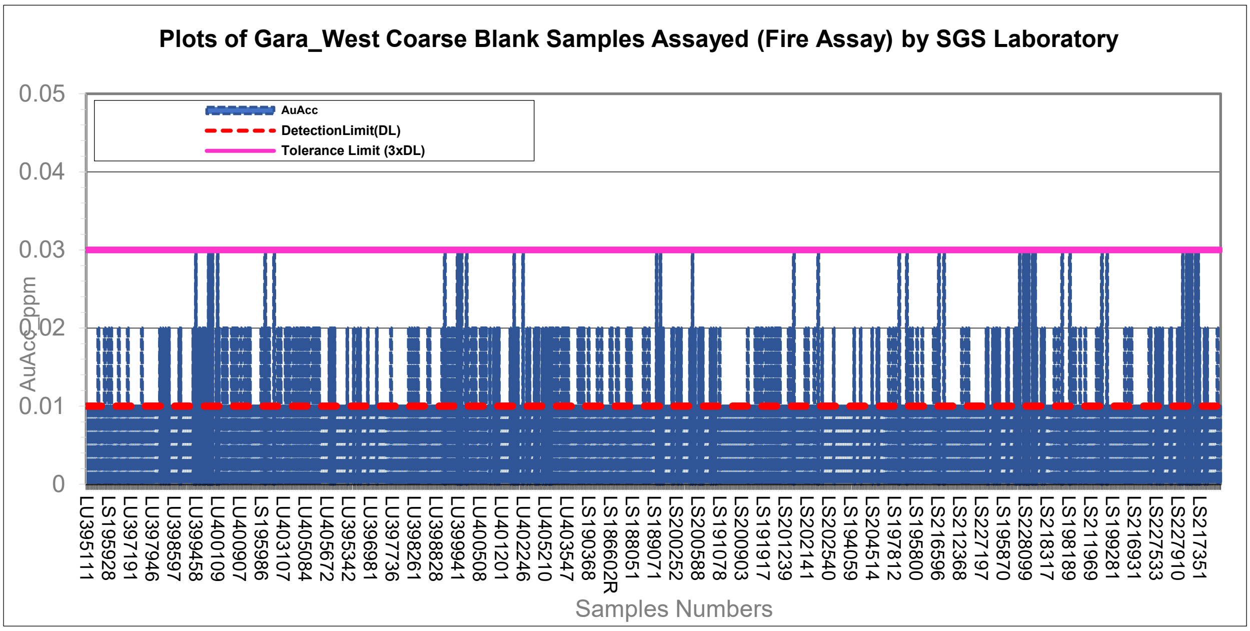


Figure 11-17 Performance Graph of Gara West Coarse Blank Samples Assayed (FA) by SGS Laboratory (20 December 2021 to 27 July 2022)

Gounkoto

A total of 5,969 coarse blank samples were submitted to SGS Loulo, including 3,868 samples, representing 65% of the total, from Gounkoto and 2,101 samples, representing 35% of the total, from Faraba. All blanks were evaluated against three times the DL as the FL. The overall performance shows that 100% of the blanks assayed within the FL.

Table 11-13 summarises results of Gounkoto coarse blank samples assayed during the reporting period and Figure 11-18 shows performance of all 3,868 coarse blank samples sourced from OREAS. 3,865 samples returned assays within three times the DL as the FL. However, three samples assayed by SGS Loulo failed QA/QC. Ten samples below and above the failed samples were re-assayed. Both original and re-assayed batches have been stored in the database, with priority given to re-assay data. The failed samples have been excluded from the plot for the purposes of scaling.

Table 11-13 Gounkoto Coarse Blank Results Returned During Reporting Period

Orebody	Min Assay (g/t)	Max Assay (g/t)	N° Samples	Above 3x Detection Limit	Between DL and TL	Below DL	%Pass	% Fail
Gounkoto	0.005	0.03	3,868	0	957(24.74%)	2,911(75.26%)	3,865 (100%)	3 (0.08%)

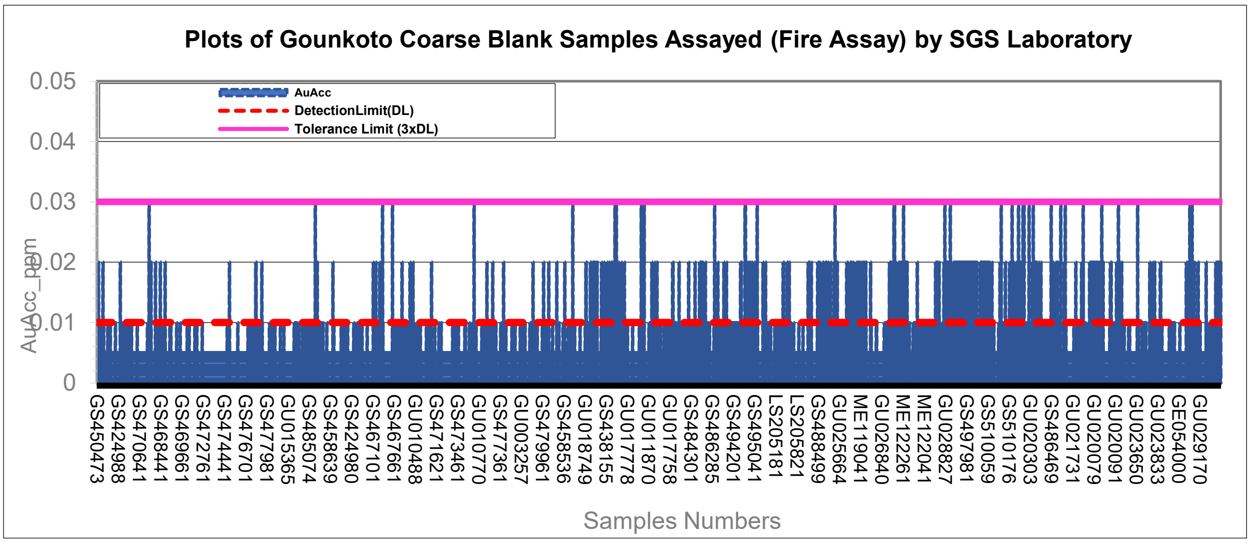


Figure 11-18 Performance Graph of Gounkoto Coarse Blank Samples assayed (FA) by SGS Laboratory (01 July 2021 to 27 June 2022)

Table 11-14 summarises results of Faraba coarse blank samples assayed during the reporting period and Figure 11-19 shows performance of all 2,101 coarse blank samples sourced from OREAS. 2,100 samples returned assays within three times the DL. However, one sample assayed by SGS Loulo failed QA/QC. Ten samples below and above the failed sample were re-assayed. Both original and re-assayed batches have been stored in the database, with priority given to re-assay data. The failed sample has been excluded from the plot for the purposes of scaling.

Table 11-14 Faraba Coarse Blank Results Returned During Reporting Period

Orebody	Min Assay (g/t)	Max Assay (g/t)	N° Samples	Above 3x Detection Limit	Between DL and TL	Below DL	%Pass	% Fail
Faraba	0.005	0.03	2,101	0	505(24.04%)	1,596(75,96%)	2,100 (99.95%)	1 (0.05%)

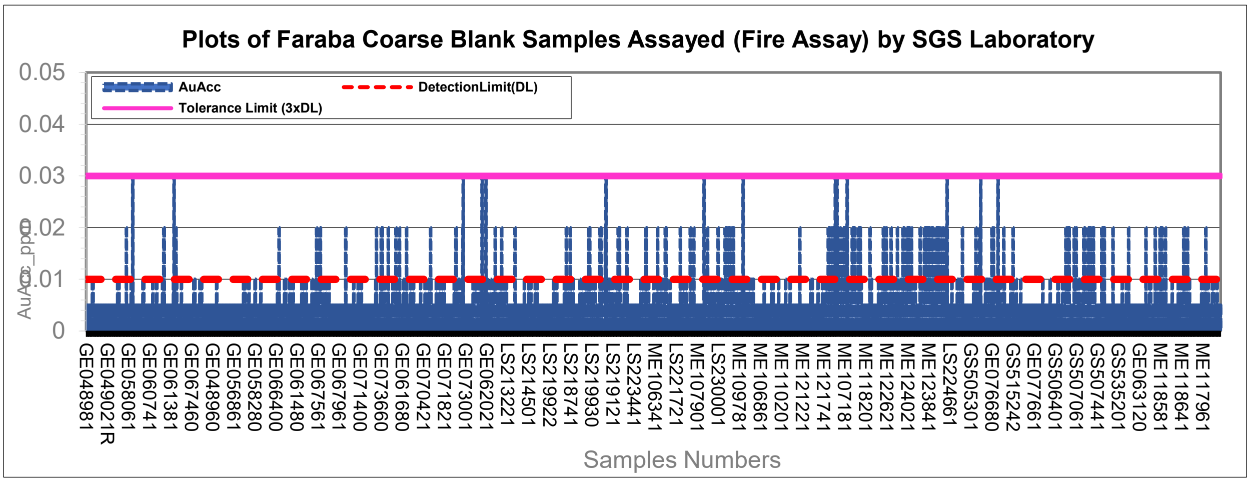


Figure 11-19 Performance Graph of Faraba Coarse Blank Samples Assayed (FA) by SGS Laboratory (15 July 2021 to 01 August 2022)

Spiked Blanks

During the period under review, spiked blanks were added to the sampling stream as an additional QA/QC measure. The spiked blanks are obtained from barren sandstone material crushed then mixed with a known quantity of CRM. Spiked blank sample materials were inserted into the sample stream at a rate of approximately 1:100. The performance of spiked blanks indicates no issue at SGS Loulo.

Overall, the QP considered the performance of the Spike Blanks used in the quality control checks to be within specification and to support the reporting of a Mineral Resource.

Loulo

A total of 233 spiked blank samples were assayed during the period under review. Of these, 159 samples, representing 68.24% of the total, returned gold values between 0.03 ppm and 1.92 ppm, while 74 samples, representing 31.76% of the total, returned gold values less than the lower detection limit (LDL) of 0.03 ppm. The QP considers that the performance of spiked blank samples indicates that the laboratory is not spotting QC samples, and that overall performance is reasonable. Spiked blanks will continue to be inserted into the sample stream at Loulo.

Figure 11-20 shows performance of the spiked blanks.

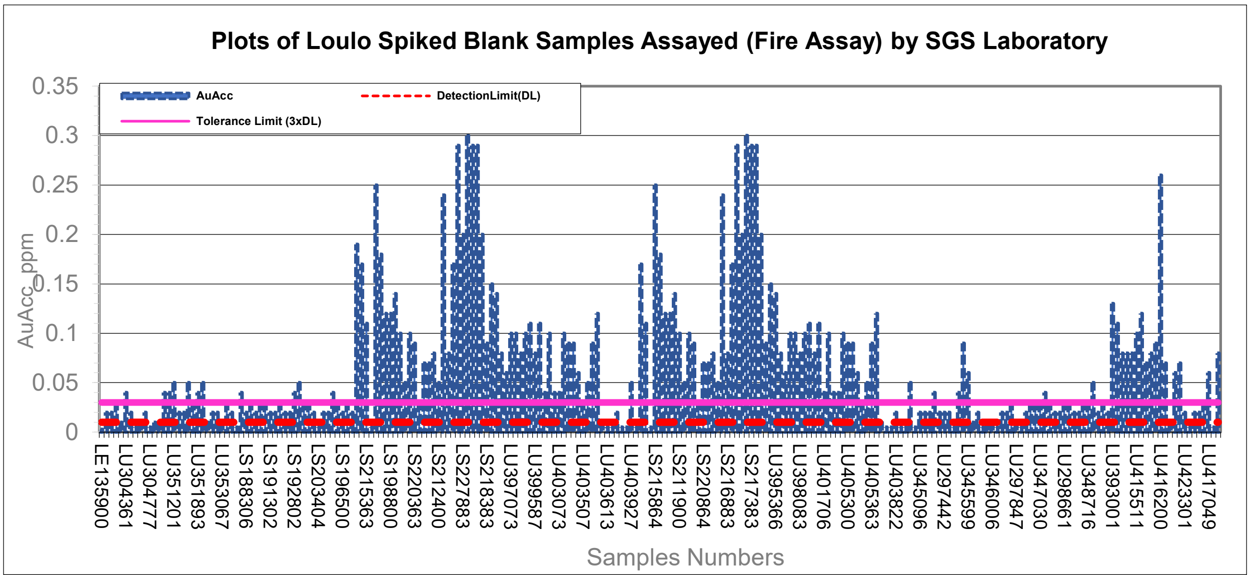


Figure 11-20 Performance Graph of Loulo Spiked Blank Samples Assayed (FA) by SGS Laboratory (11 June 2021 to 27 July 2022)

Gounkoto

A total of 495 spiked blank samples were assayed during the period under review. Of these, 451 samples, representing 91.3% of the total, returned gold values between 0.03 ppm and 3.75 ppm, while 43 samples, representing 8.70% of the total, returned gold values less than 0.03 ppm LDL.

In the QP's opinion, the spiked blank results indicate that the laboratory is not spotting QC samples, and that overall performance is reasonable. Spiked blanks will continue to be inserted into the sample stream at Gounkoto.

Figure 11-21 shows performance of all 495 spiked blank samples assayed for Gounkoto and Faraba during the period under review.

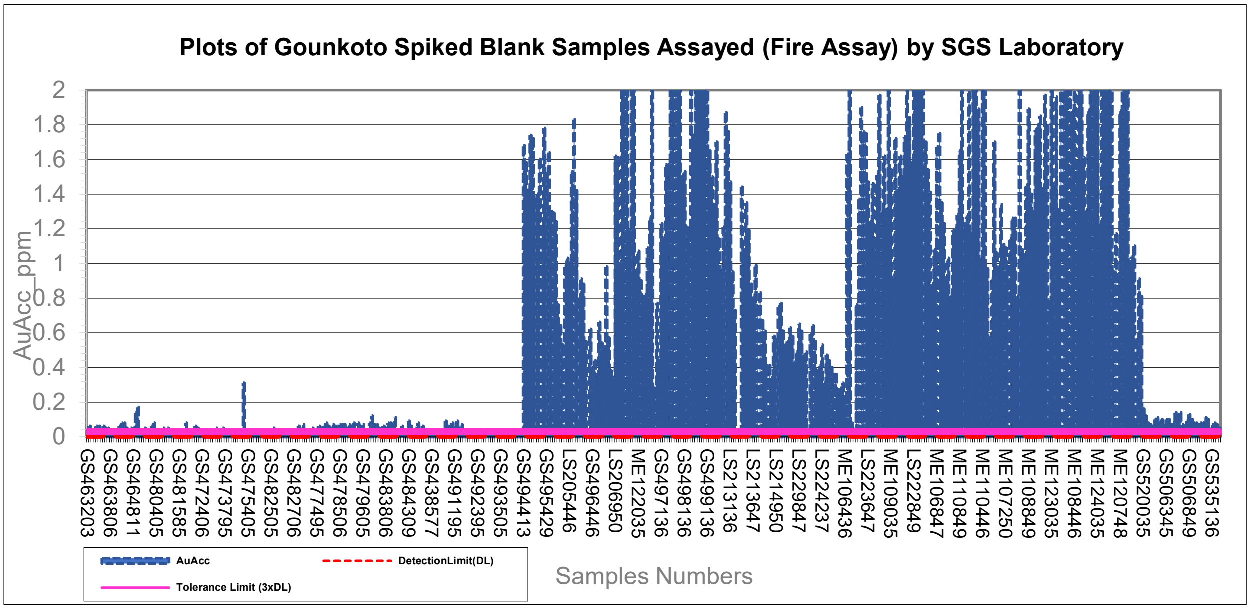


Figure 11-21 Performance Graph of Gounkoto and Faraba Spiked Blank Samples assayed (FA) by SGS Labs (01 July 2021 to 01 August 2022).

Duplicates

Duplicate samples are primarily used to assess precision (repeatability) of the assay data and to check for the presence of bias in the sample preparation chain, from each sample reduction stage. A duplicate sample is a second split from the original, prepared and analysed separately with a unique sample number, and inserted after every 19th sample.

Duplicate samples can be obtained from three sources and are as follows:

- **Field Duplicates** are obtained from the initial splitting of the RC sample during sampling at the rig.
- **Coarse Crushed (Reject) Duplicates** are obtained from the coarse reject sample that is returned from the laboratory after the initial crush to 2 mm of the entire half core sample.
- **Pulp Duplicates** are obtained from the pulverised 75-micron sample that is returned from the laboratory after the pulp is removed for analysis.
- **Pulp Repeat:** a duplicate sample from the same pulp packet, submitted later and blind to the same laboratory, which quantifies the analytical error, but crucially can help identify bias trends over time (accuracy determination).
- **Umpire:** a duplicate sample from the same pulp packet, submitted later to an alternative laboratory, to independently confirm the accuracy of the primary laboratory.

Field duplicates are not undertaken on DD samples as there is a high variance between the two halves of core due to the nuggety nature of gold mineralisation. At Loulo, drilling is predominantly DD.

Loulo

Loulo Coarse Crushed Duplicates

A total of 1,292 coarse crush duplicates were taken from DD holes, however, due to outliers, this analysis covers 701 samples (Table 11-15).

Table 11-15 Statistics for Loulo Coarse Crushed Reject Duplicates Assayed by SGS Loulo

Discrete Statistics					Percentile Statistics				
	Original	Duplicate	% Diff	Units	Distribution	Original	Duplicate	% Diff	Units
Population	701	701			25.0%	0.22	0.22	0.00%	ppm
Minimum	0.060	0.060	0.00%	ppm	50.0%	0.88	0.89	1.14%	ppm
Maximum	423.00	389.00	-8.04%	ppm	75.0%	3.37	3.41	1.19%	ppm
Mean	4.10	4.04	-1.44%	ppm	80.0%	4.56	4.43	-2.85%	ppm
Std Dev	17.61	16.38	-6.99%	ppm	90.0%	8.71	8.79	0.92%	ppm
CV*	4.30	4.06	0.01%		97.5%	25.25	24.60	-2.57%	ppm
Correlation	99%				99.9%	184.16	174.52	-5.23%	ppm

Note. *CV – coefficient of variation

Figure 11-22 shows good correlation at 99% with no bias. The QP considers the performance to be very good, and the analysis indicates no bias.

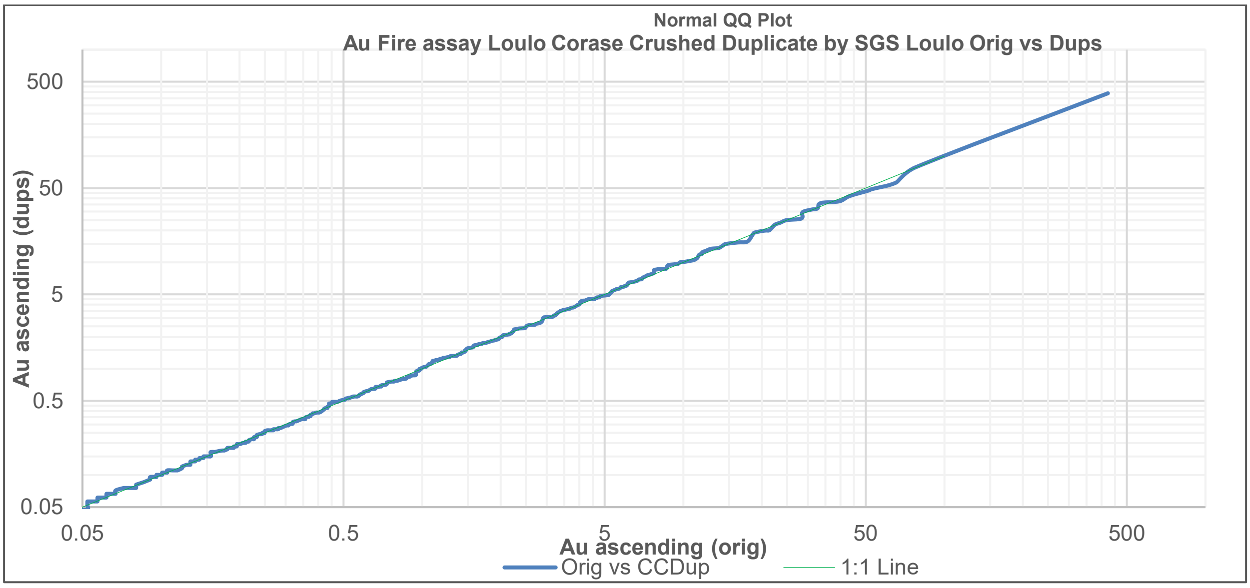


Figure 11-22 QQ Plot of Loulo Coarse Crushed Reject Duplicates Assayed by SGS (11 June 2021 to 27 July 2022)

Figure 11-23 shows good correlation, with little scatter around the 1:1 expected result. The QP considers the performance to be good.

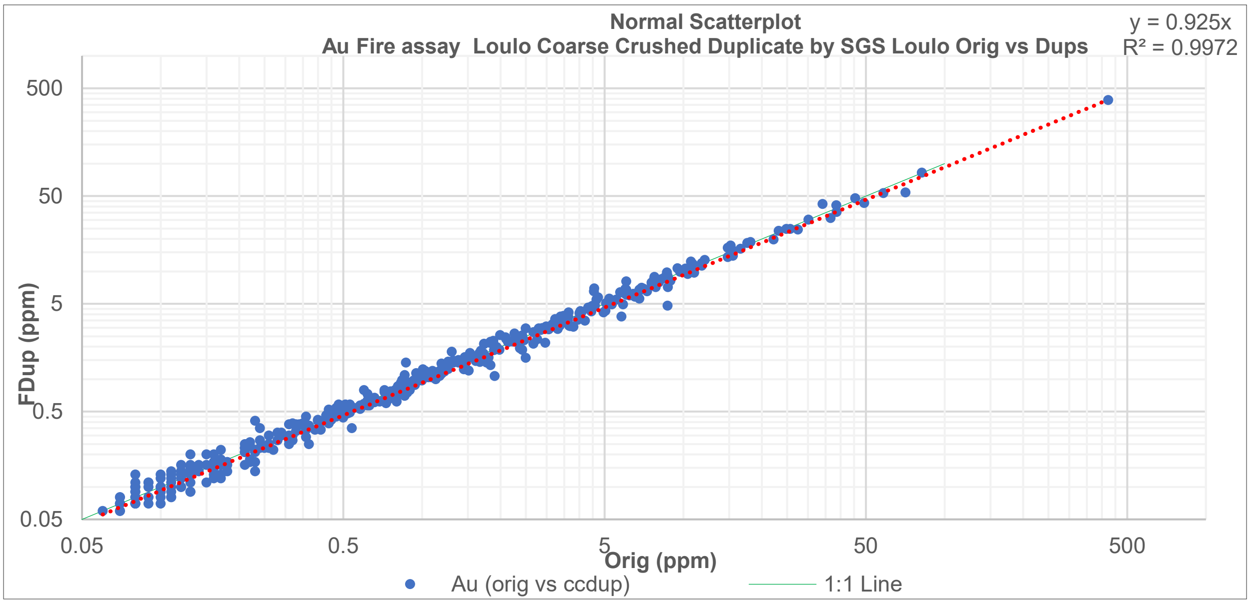


Figure 11-23 Log Scatter Plot of Loulo Original Samples vs Coarse Crushed Duplicates (11 June 2021 to 27 July 2022).

Figure 11-24 and Table 11-16 show that 56% of coarse crushed duplicates returned paired results within a 0% to 5% precision range and the remaining 44% returned paired results within a 5% to 50% range. The QP considers the results to be reasonable.

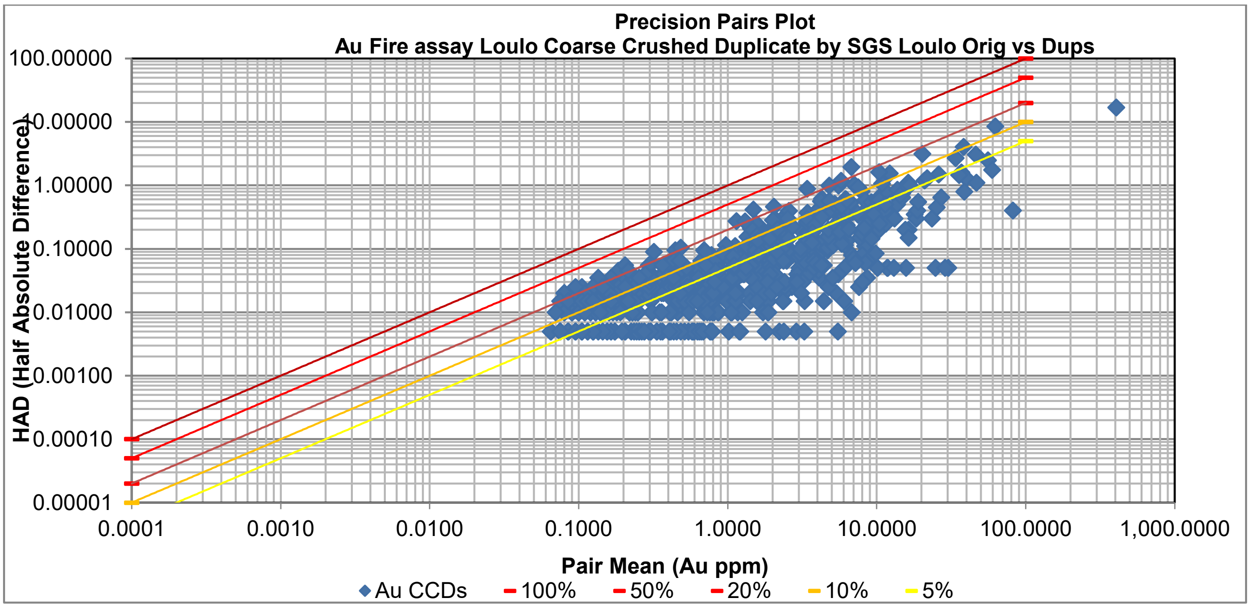


Figure 11-24 Precision Pairs Plot of Loulo Original Samples vs Coarse Crushed Duplicates Assayed by SGS Loulo (11 June 2021 to 27 July 2022).

Table 11-16 shows that 56% of Loulo coarse crushed duplicates returned paired results within a 0% to 5% precision and the remaining 44% returned paired results within a 5% to 100% precision. The QP considers the performance to be very good.

Table 11-16 Precision Pairs Plot of Loulo Original Samples vs Coarse Crushed Duplicates Assayed by SGS Loulo

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	701	395	185	100	21	0
Pair %	100%	56%	26%	14%	3%	0%

Similar to the QQ and precision plots, the Ranked Half Absolute Relative Difference (HARD) plot – used as another measure of precision (Figure 11-25) - shows that 90% of all samples have a HARD of less than 13%. The QP considers the performance to be very good.

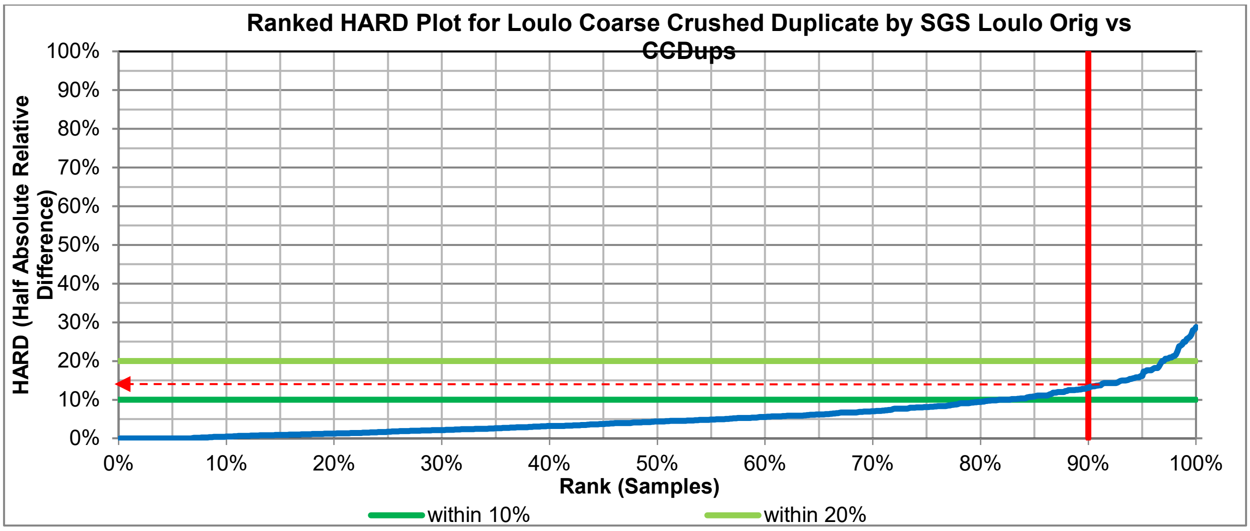


Figure 11-25 HARD Plot of Loulo Course Crush Rejects Duplicate Assayed by SGS Loulo (11 June 2021 to 27 July 2022)

<u>Loulo Pulp Duplicate Analysis</u>

Pulp duplicates are obtained from the pulverised 75-micron sample that is returned from the laboratory after the pulp has been removed for analysis. Due to no material difference in results during this reporting period, Loulo pulp duplicate analyses have not been reported by deposit.

A total of 3,692 pulp duplicates were analysed during this reporting period. The samples were collected, re-bagged into new bags/envelopes by Barrick staff, and then submitted to the laboratory. Pulp duplicate analysis for the period covers 3,483 results, considering only samples greater than 0.05 ppm.

Analysis for the period shows 97% correlation, with Ranked HARD showing 90% of all samples with a HARD of less than 17% (Table 11-17). This performance is considered good.

Table 11-17 Statistics for Loulo Pulp Duplicates Assayed by SGS Loulo

Discrete Statistics					Percentile Statistics				
	Original	Duplicate	% Diff	Units	Distribution	Original	Duplicate	% Diff	Units
Population	3,483	3,483			25.0%	0.36	0.37	2.78%	ppm
Minimum	0.060	0.060	0.00%	ppm	50.0%	1.42	1.47	3.52%	ppm
Maximum	146.00	184.00	26.03%	ppm	75.0%	5.26	5.35	1.71%	ppm
Mean	4.48	4.52	1.07%	ppm	80.0%	6.63	6.80	2.50%	ppm
Std Dev	8.45	8.84	4.62%	ppm	90.0%	11.70	11.88	1.54%	ppm
CV*	1.89	1.95	0.25%		97.5%	25.10	26.80	6.75%	ppm
Correlation	97%				99.9%	89.51	89.24	-0.30%	ppm

Note. *CV – coefficient of variation

Pulp duplicate performance during the period has improved compared to 2021. Figure 11-26 shows a minor bias where coarse crushed duplicates return higher assay values for gold at greater than 60 g/t. The QP considers the results to be acceptable, as no major issue is observed.

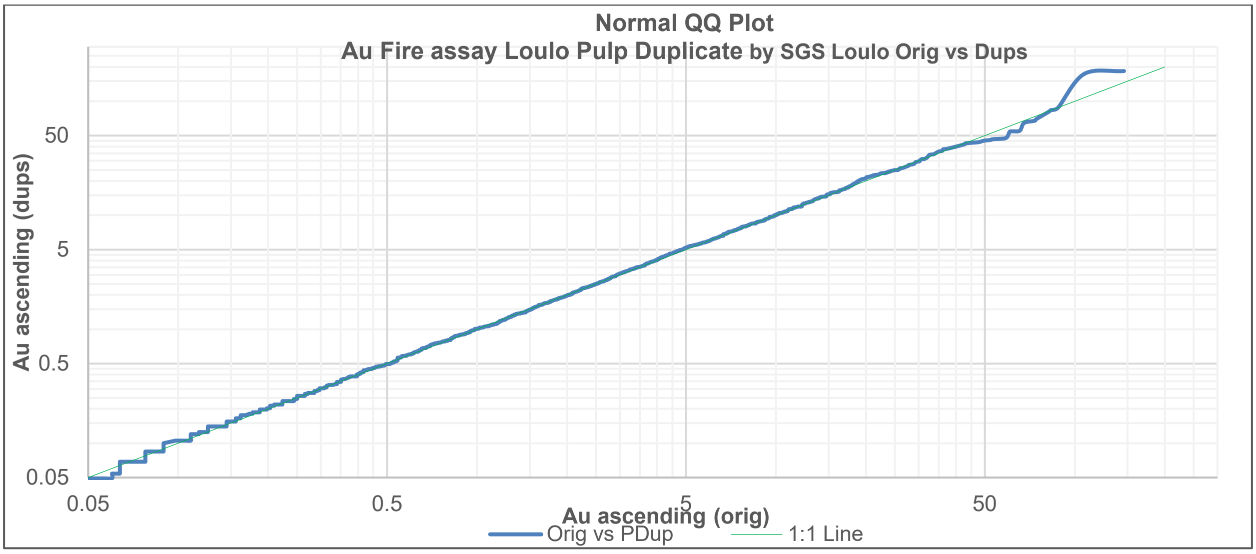


Figure 11-26 QQ Plot of Loulo Original vs Pulp Duplicate Assayed by SGS Loulo (11 June 2021 to 27 July 2022)

The plot in Figure 11-27 shows good correlation, with little scatter around the 1:1 expected result. The QP considers results to be acceptable, as no major issue is observed.

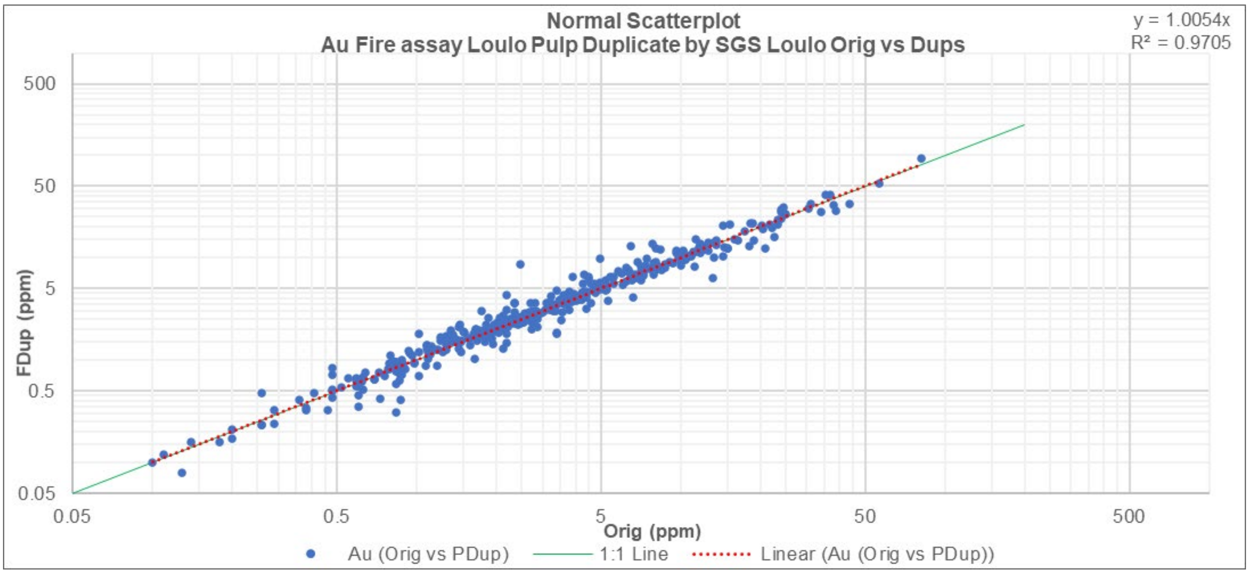


Figure 11-27 Log Scatter Plot of Loulo Original Samples vs Pulp Duplicates (11 June 2021 to 27 July 2022)

Figure 11-28 and Table 11-18 show that 49% of pulp duplicates returned paired results within a 0% to 5% precision range and the remaining 51% returned paired results within a 5% to 100% range. This confirms the same trend noted in the QQ plots, and the QP considers the results to be reasonable.

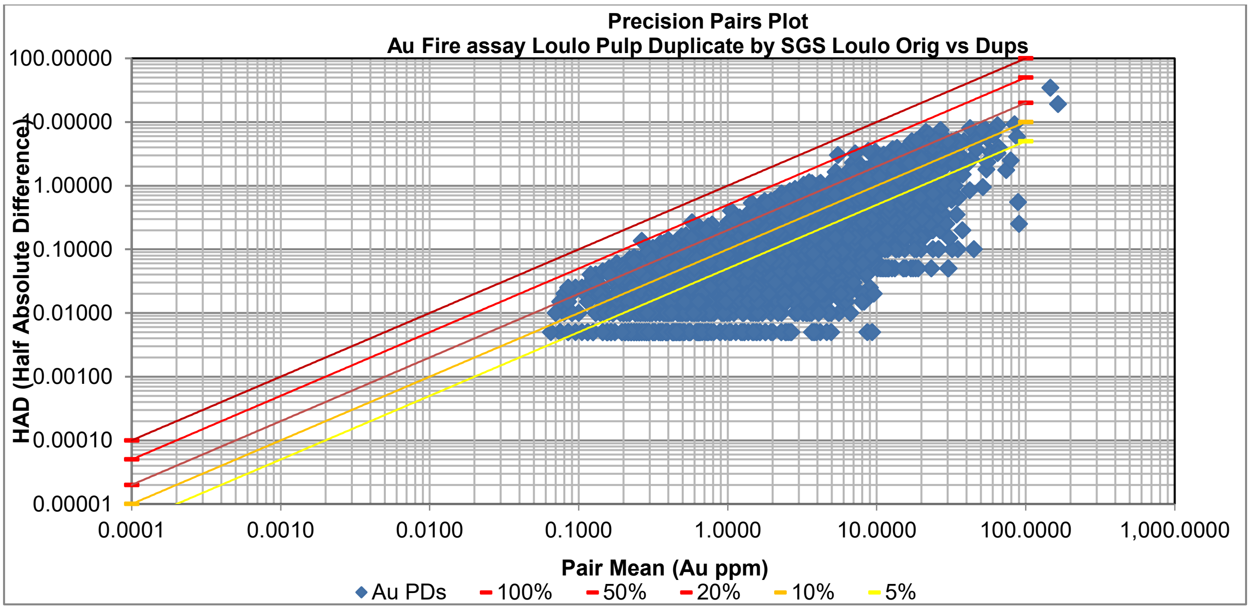


Figure 11-28 Precision Pairs Plot of Loulo Original Samples vs Pulp Duplicates Assayed by SGS Loulo (11 June 2021 to 27 July 2022)

Table 11-18 Recap Precision Pairs for Loulo Original vs Pulp Duplicates Assayed by SGS Loulo

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	3,483	1,715	883	639	244	2
Pair %	100%	49%	25%	18%	7%	0%

The Ranked HARD plot in Figure 11-29 shows that 90% of all samples have a HARD of less than 17%. This performance is acceptable and is attributed to the use of roll mat and Alliance Scientific of South Africa for AAS services.

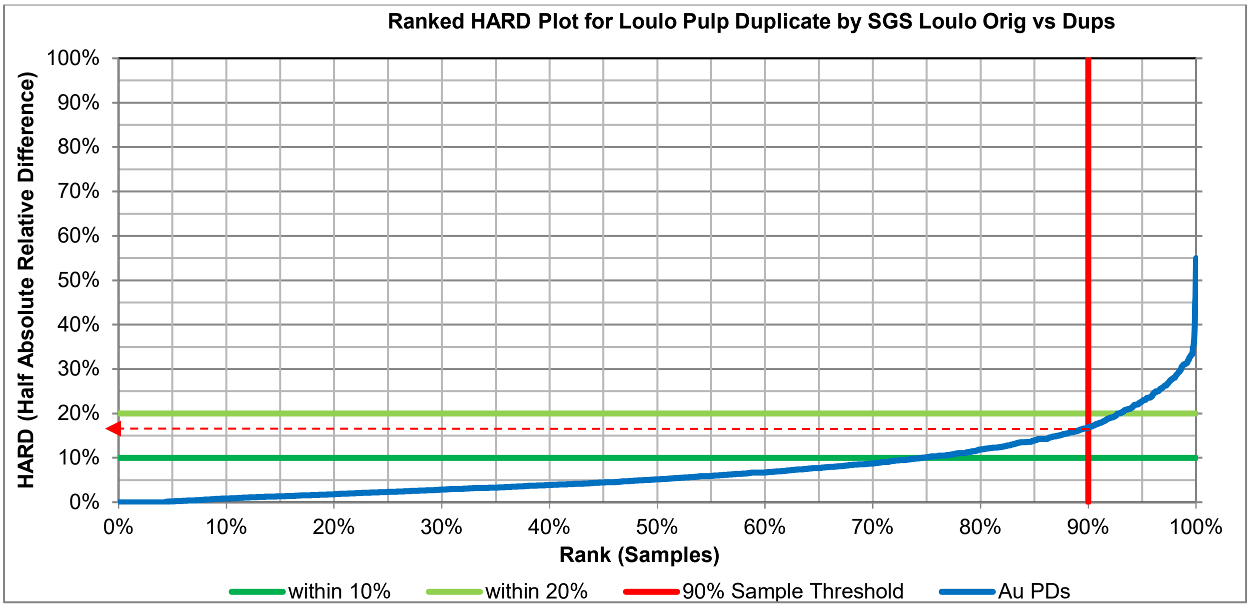


Figure 11-29 HARD Plot of Loulo Pulp Duplicate Assayed by SGS Loulo (11 June 2021 to 27 July 2022)

Gara West Field Duplicates

A total of 1,845 field duplicate results were reported by SGS Loulo during the period. Analysis covers 597 results due to exclusion of samples below 0.05 ppm. Original samples and field duplicates show good agreement at 98% (Table 11-19). Also, 90% of the samples have a HARD of less than 21%, indicating that the precision is good but needs improvement.

Table 11-19 Statistics for Gara West Fields Duplicates Assayed by SGS Loulo

Discrete Statistics					Percentile Statistics				
	Original	Duplicate	% Diff	Units	Distribution	Original	Duplicate	% Diff	Units
Population	597	597			25.0%	0.12	0.12	0.00%	ppm
Minimum	0.060	0.060	0.00%	ppm	50.0%	0.28	0.28	0.00%	ppm
Maximum	28.50	31.00	8.77%	ppm	75.0%	1.22	1.21	-0.82%	ppm
Mean	1.26	1.31	3.62%	ppm	80.0%	1.75	1.66	-4.91%	ppm
Std Dev	2.59	2.89	11.57%	ppm	90.0%	3.40	3.44	1.12%	ppm
CV*	2.05	2.21	-0.64%		97.5%	7.80	8.28	6.14%	ppm
Correlation	98%				99.9%	23.26	26.95	15.88%	ppm

Note. *CV – coefficient of variation

Figure 11-30 shows minor bias where gold is less than 10 g/t, with duplicate sample grades slightly higher relative to the original. The QP considers this to be a minor issue which can be addressed by organising more training for the technicians and testing the use of Metzke splitters for RC sampling in 2023, to reduce loss of fines.

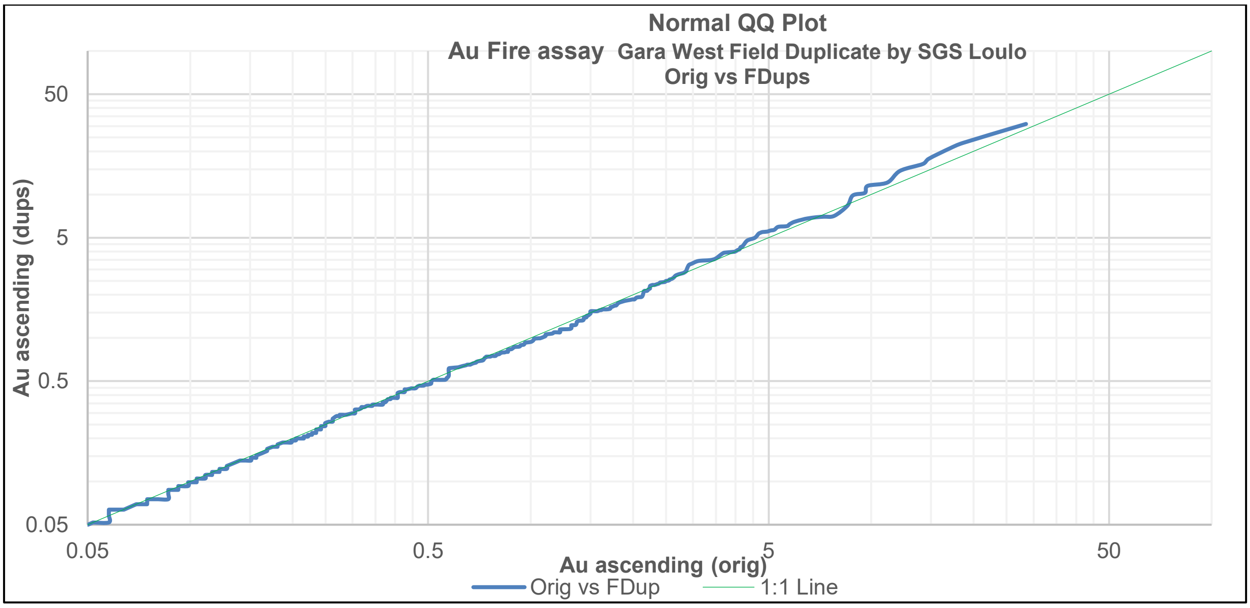


Figure 11-30 QQ Plot of Gara West Fields Duplicate Assayed by SGS Loulo (20 December 2021 to 27 July 2022)

Figure 11-31 shows good correlation, with low scatter around the 1:1 expected distribution.

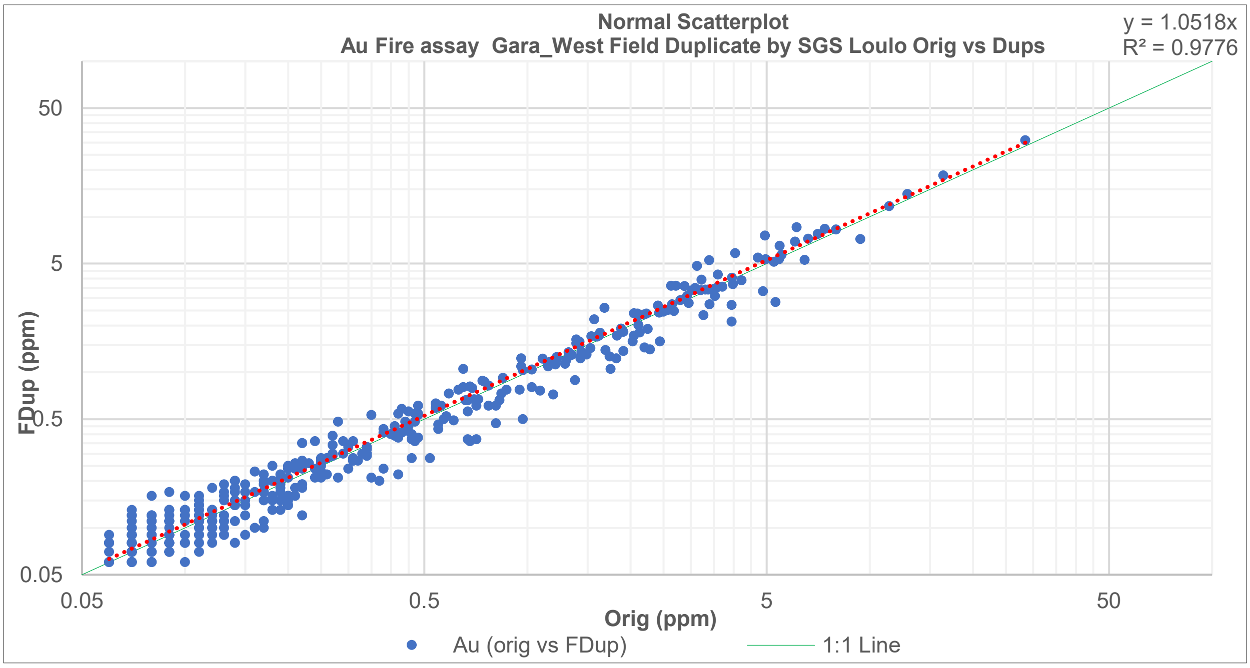


Figure 11-31 Scatter Plot of Gara West Original Samples vs Field Duplicates Assayed by SGS Loulo (20 December 2021 to 27 July 2022)

Figure 11-32 and Table 11-20 show that 37% of Gara West field duplicates returned paired results within a 0% to 5% precision and the remaining 63% returned paired results within a 5% to 50% precision.

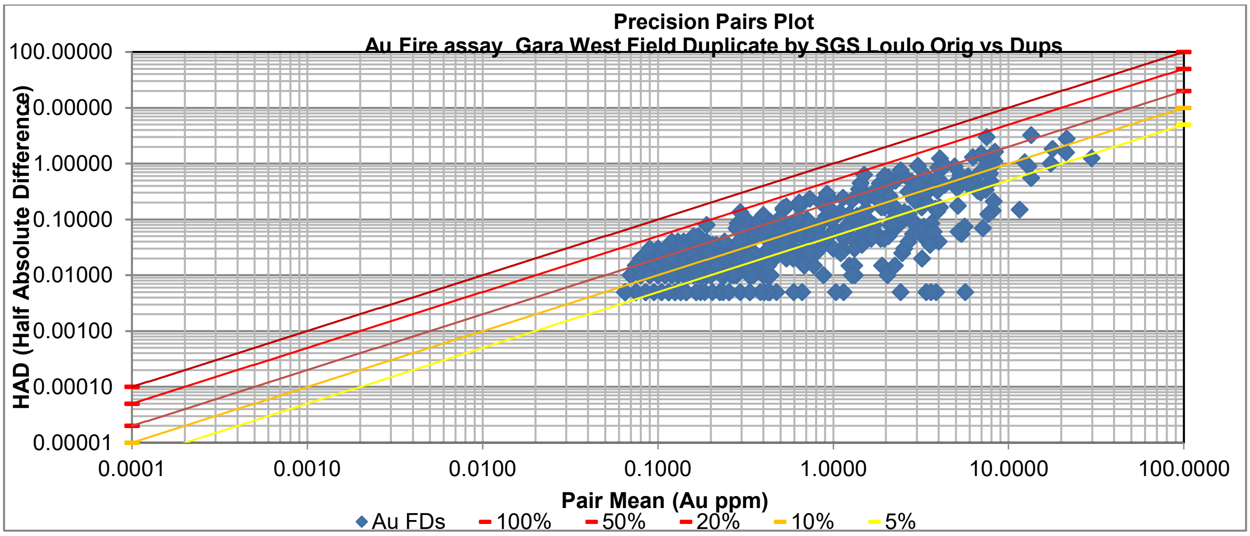


Figure 11-32 Precision Pairs Plot of Gara West Original Samples vs Field Duplicates Assayed by SGS Loulo (20 December 2021 to 27 July 2022)

Table 11-20 Recap Precision Pairs for Gara West field Duplicates Assayed by SGS Loulo

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	597	222	150	159	66	0
Pair %	100%	37%	25%	27%	11%	0%

The Ranked HARD plot (Figure 11-33) shows that 90% of the all samples have a HARD of less than 21%, which is considered acceptable for field duplicates in a variable-grade gold deposit.

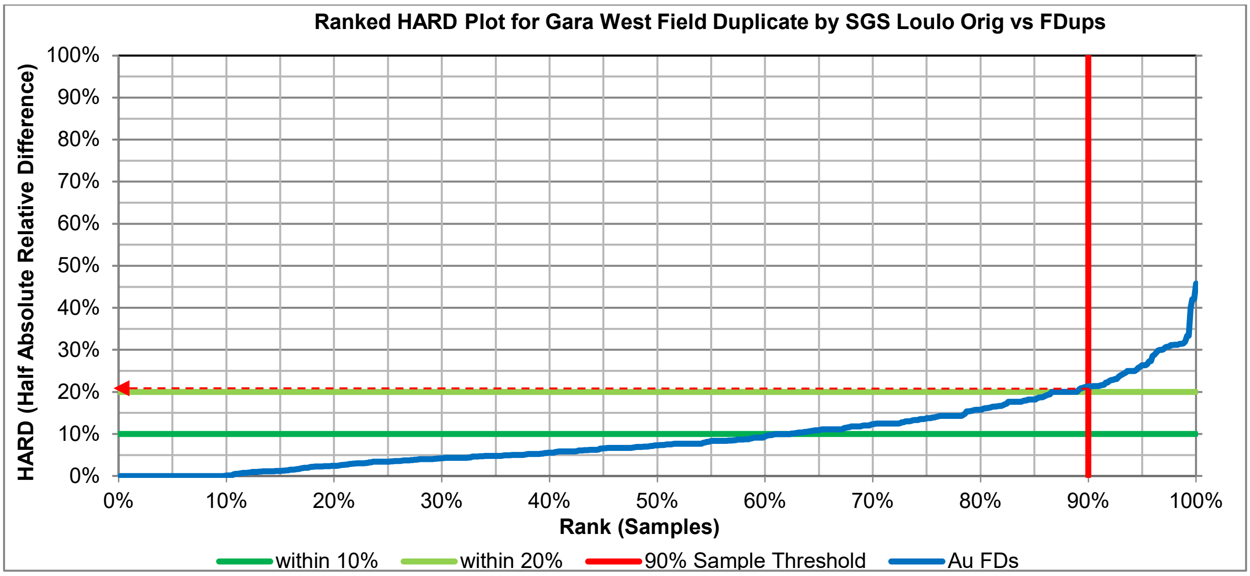


Figure 11-33 HARD Plot of Gara West fields duplicate Assayed by SGS Loulo (20 December 2021 to 27 July 2022)

Gounkoto

Gounkoto and Faraba Field Duplicate

A total of 3,628 field duplicates of Gounkoto RC samples were analysed by SGS Loulo during this period (Table 11-21). Field duplicate results from the laboratory show a good correlation between the original and duplicate samples. Field duplicate analysis covers 1,430 results due to outliers. Field duplicate analysis for Gounkoto shows that there is little or no bias in the results.

Table 11-21 Statistics for Gounkoto/Faraba Field Duplicates Assayed by SGS Loulo

Discrete Statistics					Percentile Statistics				
	Original	Duplicate	% Diff	Units	Distribution	Original	Duplicate	% Diff	Units
Population	1430	1430			25.0%	0.13	0.13	0.00%	ppm
Minimum	0.010	0.060	500.00%	ppm	50.0%	0.29	0.30	1.72%	ppm
Maximum	69.90	73.40	5.01%	ppm	75.0%	0.92	0.87	-5.43%	ppm
Mean	1.56	1.56	-0.37%	ppm	80.0%	1.28	1.22	-4.69%	ppm
Std Dev	4.81	4.82	0.24%	ppm	90.0%	3.41	3.26	-4.17%	ppm
CV*	3.08	3.10	-1.22%		97.5%	13.20	13.33	0.97%	ppm
Correlation	99%				99.9%	67.51	69.90	3.53%	ppm

Note. *CV – coefficient of variation

Results shown in the log QQ plot in Figure 11-34 indicates no major bias between the original and field duplicates, above detection limit. Both datasets returned 99% correlation. This also indicates that there are no issues at the on-site laboratory. The QP considers the results to be good.

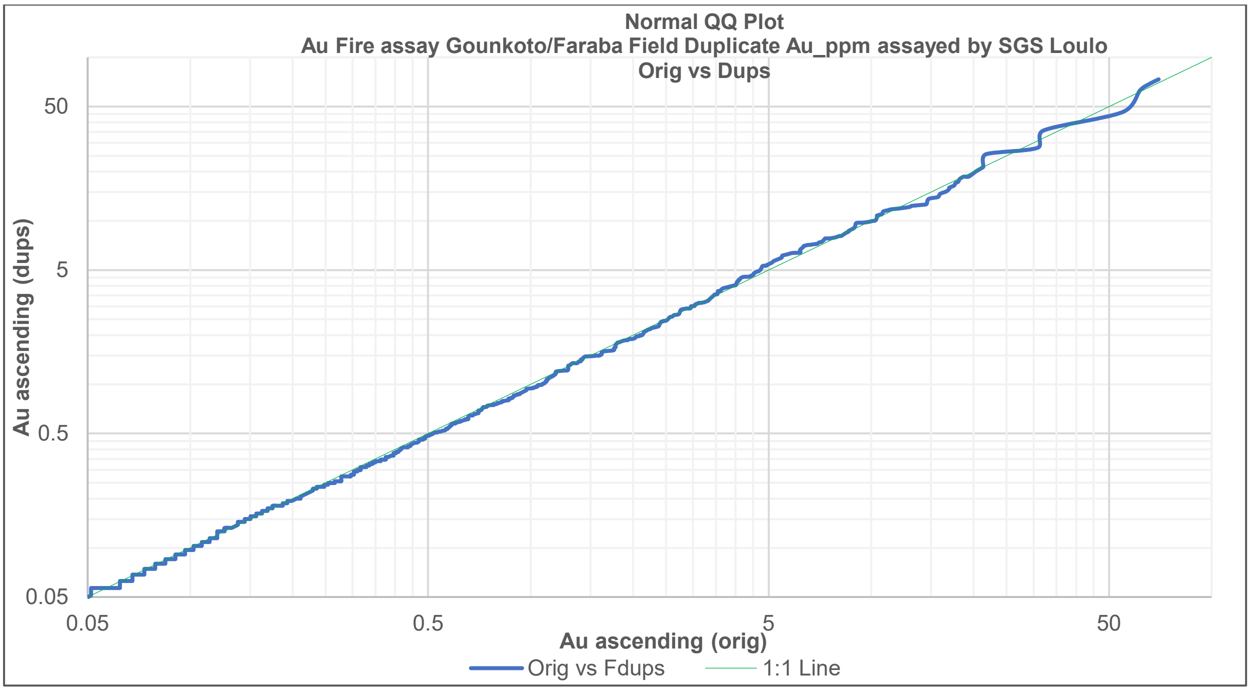


Figure 11-34 Log QQ Plot of Gounkoto/Faraba Field Duplicate Assayed by SGS Loulo (01 July 2021 to 01 August 2022)

The Ranked HARD plot in Figure 11-35 shows that 90% of the all samples have a HARD of less than 28%, which is considered to be acceptable for field duplicates in a variable-grade gold deposit with a nugget effect of 5% to 30% modelled at Gounkoto and Faraba.

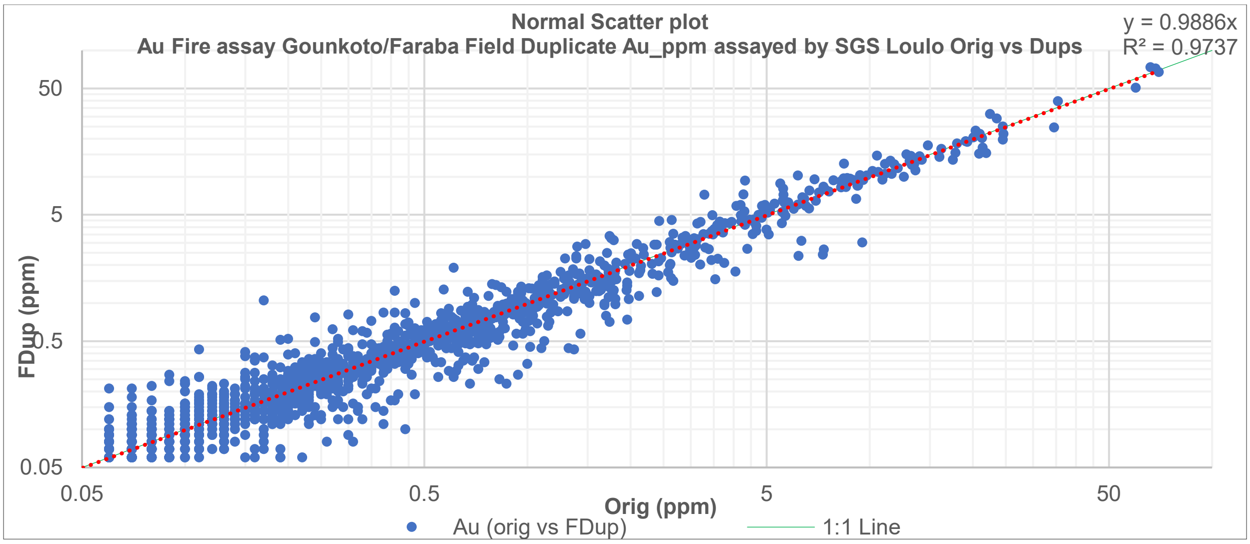


Figure 11-35 Scatter Plot of Gounkoto/Faraba Original samples vs Field Duplicates Assayed by SGS Loulo (01 July 2021 to 01 August 2022)

The QP considers this to be acceptable but that more training should be organised for the technicians and Metzke splitters for RC sampling to remove sample issues with loss of fines and dust will be tested in 2023.

Figure 11-36 and Table 11-22 show that 34% of Gounkoto field duplicates returned paired results within a 0% to 5% precision and the remaining 66% returned paired results within a 5% to 100% precision.

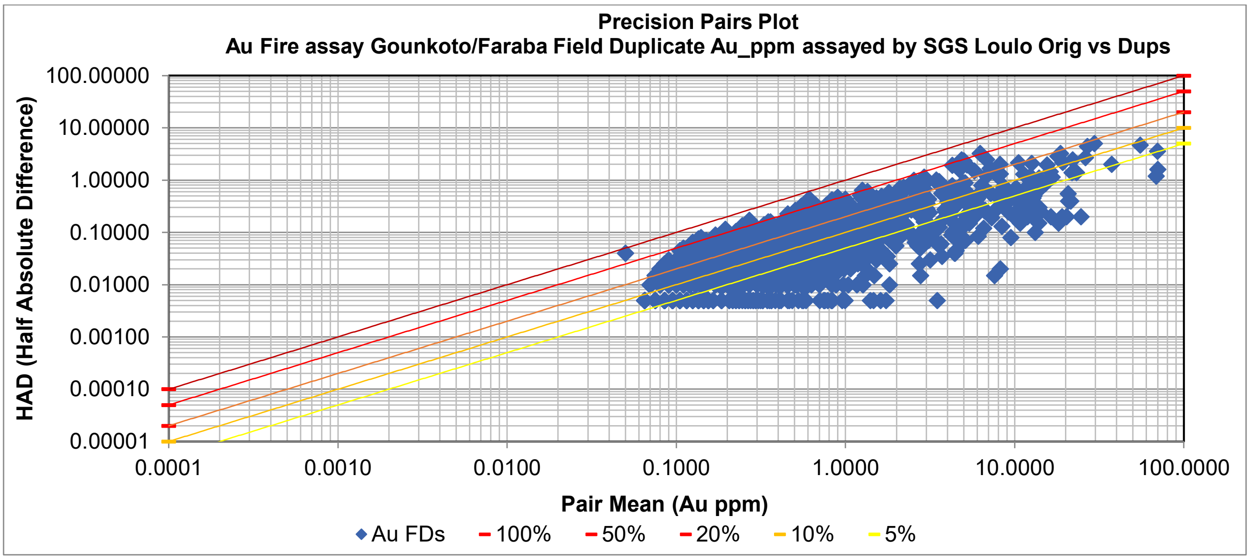


Figure 11-36 Precision Pairs Plot of Gounkoto/Faraba Original Samples vs Field Duplicates Assayed by SGS Loulo (01 July 2021 to 01 August 2022)

Table 11-22 Recap Precision Pairs for Gounkoto Field Duplicates Assayed by SGS Loulo

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	1,430	445	366	368	228	23
Pair %	100%	31%	26%	26%	16%	2%

Umpire Analysis

Pulp duplicate samples are routinely submitted to Advanced Mineral Technology Laboratory Ltd. (AMTEL) and ALS Vancouver in Canada, ALS in Ouagadougou, Burkina Faso (ALS Ouaga), and Bureau Veritas in Abidjan, Côte d'Ivoire, for umpire analysis. These laboratories are independent of Loulo-Gounkoto. Umpire samples are submitted every two weeks, with CRM samples inserted within batches to check for bias at the umpire laboratory.

Loulo

A total of 2,472 pulp duplicate samples from SGS Loulo were submitted, along with CRMs, to AMTEL and ALS Vancouver, in Canada, ALS Ouaga, and Bureau Veritas Abidjan for umpire analysis. The analysis in this report covers 2,416 results due to a data cut-off of greater than or equal to 0.05 ppm. Results show correlation of 98% for AMTEL/ALS Vancouver, 97% for ALS Ouaga, and 95% for Bureau Veritas (Table 11-23).

Table 11-23 Loulo Umpire Sample Summary

Laboratory	Number of Samples	Correlation (%)	Original		Umpire	
			Min Au	Max Au	Min Au	Max Au
AMTEL/ALS Vancouver	602	98	0.08	71	0.06	72.9
ALS Ouaga	535	97	0.09	59	0.09	61.4
Bureau Veritas Abidjan	1,335	95	0.06	93.8	0.06	100

The analysis of the 2,416 results show a good trend with no bias for AMTEL, ALS Vancouver, and Bureau Veritas and a minor bias for ALS Ouaga. This performance has been achieved through such measures as increasing the frequency of sampling review from quarterly in 2021 to fortnightly in 2022 and increasing the frequency of AAS maintenance from once every six months to every three months.

SGS Loulo vs AMTEL/ALS Vancouver Assay Analysis

SGS Loulo vs AMTEL/ALS Vancouver umpire analysis covers a total of 592 samples (Table 11-24 and Figure 11-37).

Table 11-24 Statistics for Loulo Umpire: SGS Loulo vs AMTEL/ALS Vancouver Assayed

Discrete Statistics					Percentile Statistics				
	Original	Umpire	% Diff	Units	Distribution	Original	Umpire	% Diff	Units
Population	592	592			25.0%	0.63	0.62	-1.98%	ppm
Minimum	0.080	0.060	-25.00%	ppm	50.0%	1.71	1.73	1.17%	ppm
Maximum	71.00	72.90	2.68%	ppm	75.0%	5.44	5.27	-3.26%	ppm
Mean	4.34	4.41	1.61%	ppm	80.0%	6.66	6.47	-2.88%	ppm
Std Dev	7.25	7.31	0.78%	ppm	90.0%	10.65	10.95	2.77%	ppm
CV*	1.67	1.66	-0.62%		97.5%	25.49	24.90	-2.31%	ppm
Correlation	98%				99.9%	68.99	66.34	-3.84%	ppm

Note. *CV – coefficient of variation

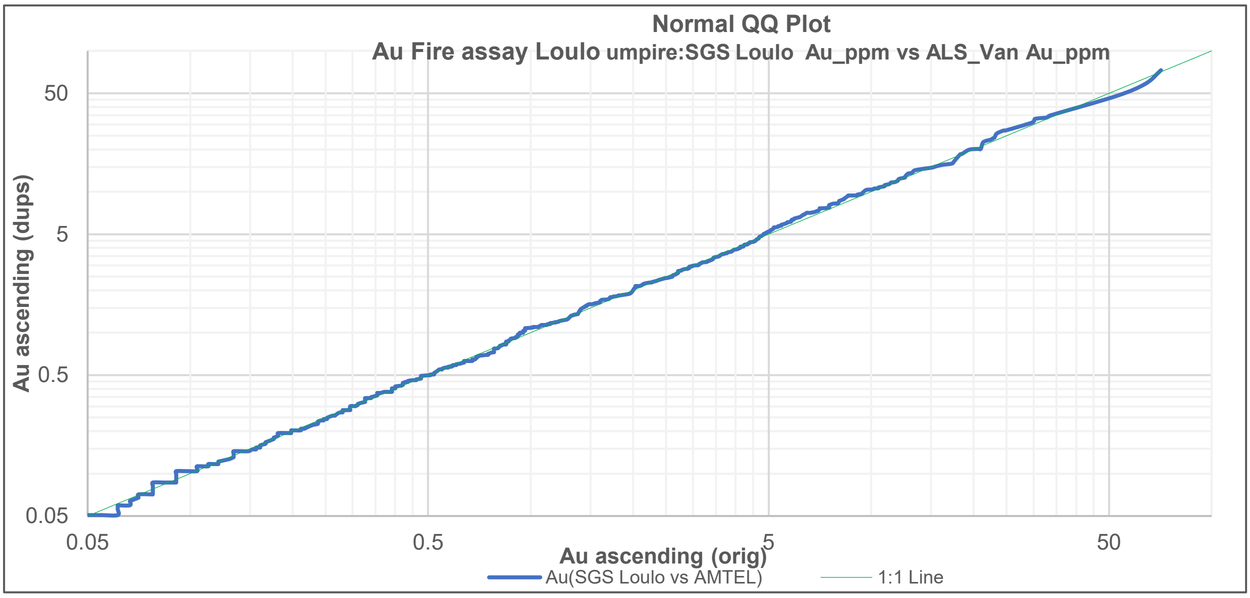


Figure 11-37 QQ Plot of Loulo Umpire: SGS Loulo vs AMTEL/ALS Vancouver (11 June 2021 to 27 July 2022)

A correlation of 98% is reported between the two datasets, with no bias. The QP considers the performance to be very good.

Figure 11-38 and Table 11-25 show that 51% of both datasets returned paired results within a 0% to 5% precision and the remaining 49% returned paired results within a 5% to 100% precision.

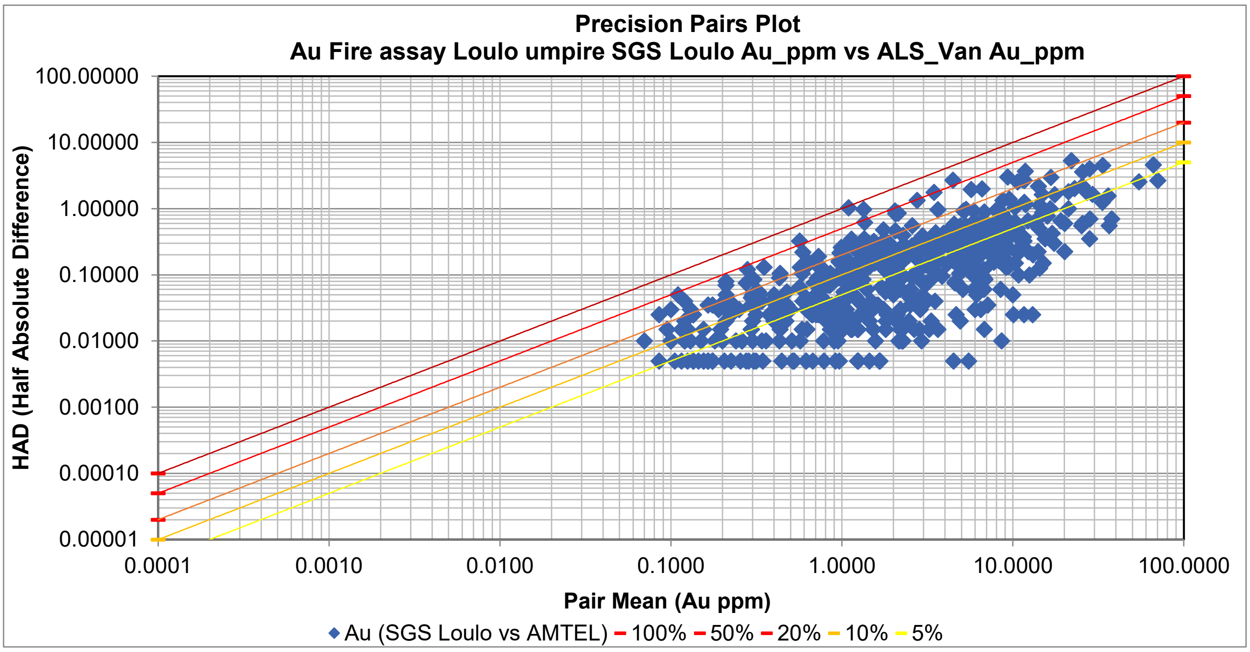


Figure 11-38 Precision Pairs Plot of Loulo Umpire: SGS Loulo vs AMTEL/ALS Vancouver (11 June 2021 to 27 July 2022)

Table 11-25 Recap Precision Pairs for Loulo Umpire: SGS Loulo Au_ppm vs AMTEL/ALS Van Au_ppm

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	592	300	145	96	46	5
Pair %	100%	51%	24%	16%	8%	1%

The HARD plot (Figure 11-39) shows that 90% of all samples have a HARD of less than 18%. This performance is deemed good.

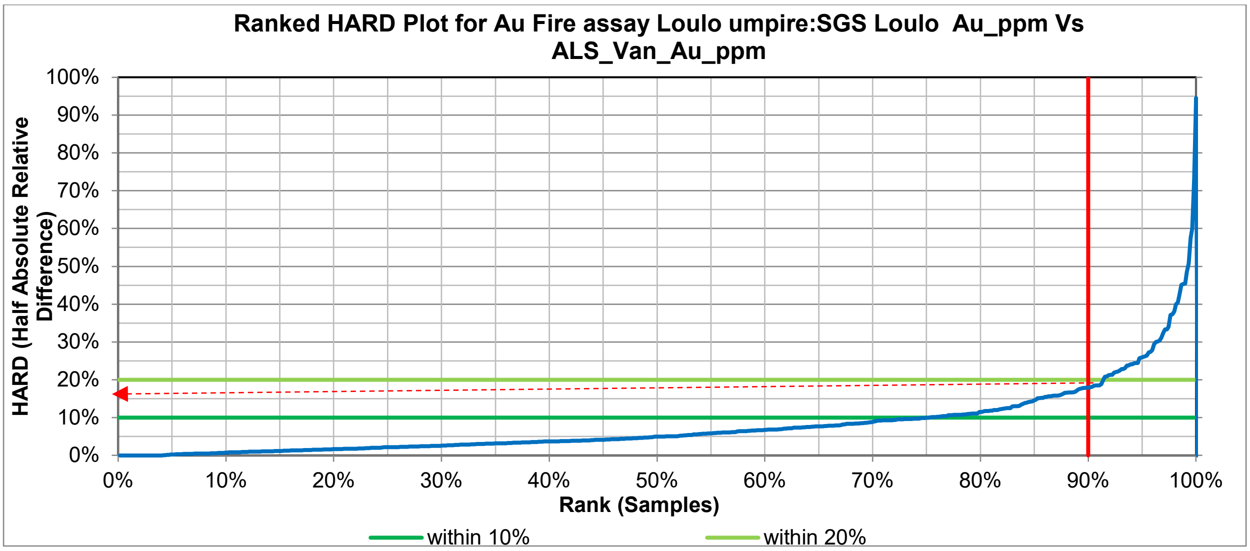


Figure 11-39 HARD Plot of Loulo Umpire Assay: SGS Loulo vs AMTEL/ALS Vancouver (11 June 2021 to 27 July 2022)

SGS Loulo vs ALS Ouaga Assay Analysis

SGS Loulo vs ALS Ouaga umpire analysis covers a total of 529 samples (Table 11-26 and Figure 11-40).

Table 11-26 Statistics for Loulo Umpire: SGS Loulo vs ALS Ouaga Assayed

Discrete Statistics					Percentile Statistics				
	Original	Umpire	% Diff	Units	Distribution	Original	Umpire	% Diff	Units
Population	529	529			25.0%	1.27	1.26	-0.79%	ppm
Minimum	0.090	0.090	0.00%	ppm	50.0%	2.72	2.73	0.37%	ppm
Maximum	59.00	61.40	4.07%	ppm	75.0%	5.69	5.95	4.57%	ppm
Mean	4.87	5.04	3.40%	ppm	80.0%	6.98	7.16	2.64%	ppm
Std Dev	6.56	6.78	3.32%	ppm	90.0%	11.38	11.35	-0.26%	ppm
CV*	1.35	1.34	2.06%		97.5%	19.88	21.94	10.36%	ppm
Correlation	97%				99.9%	55.04	56.65	2.92%	ppm

Note. *CV – coefficient of variation

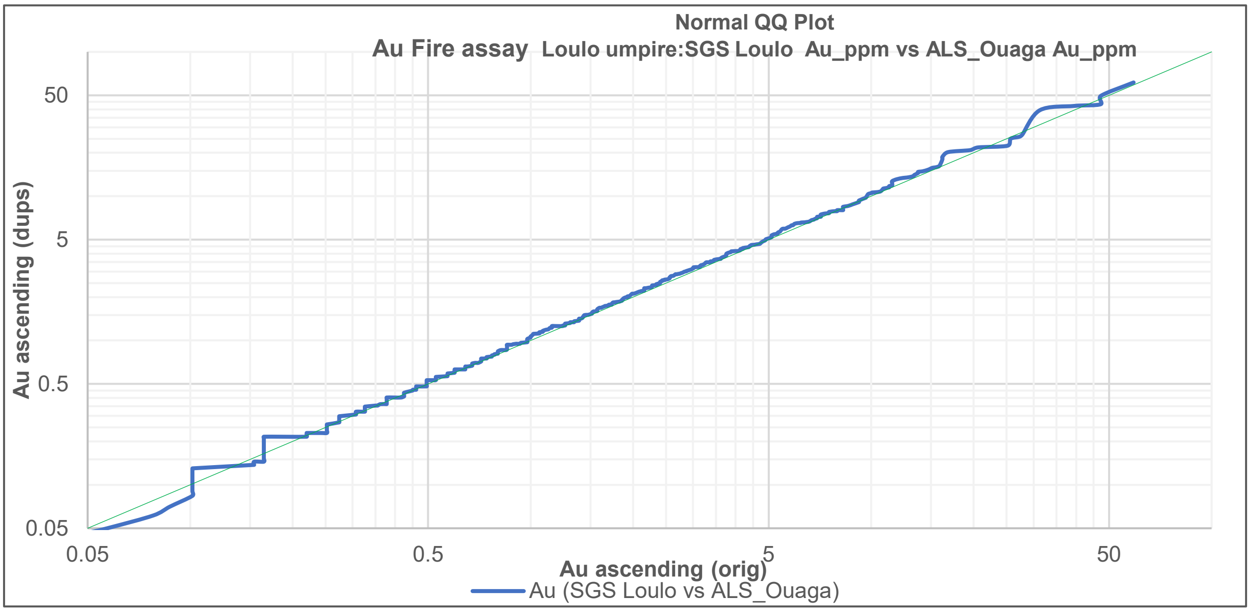


Figure 11-40 QQ Plot of Loulo Umpire: SGS Loulo vs ALS Ouaga (11 June 2021 to 27 July 2022)

A 97% correlation was observed between the two datasets, with a minor bias shown by the slightly higher results at ALS Ouaga. The results are considered acceptable and pose no material risk to estimation of Mineral Resources and Mineral Reserves.

Table 11-27 and Figure 11-41 show that 53% of both datasets returned paired results within a 0% to 5% precision and the remaining 47% returned paired results within a 5% to 50% precision.

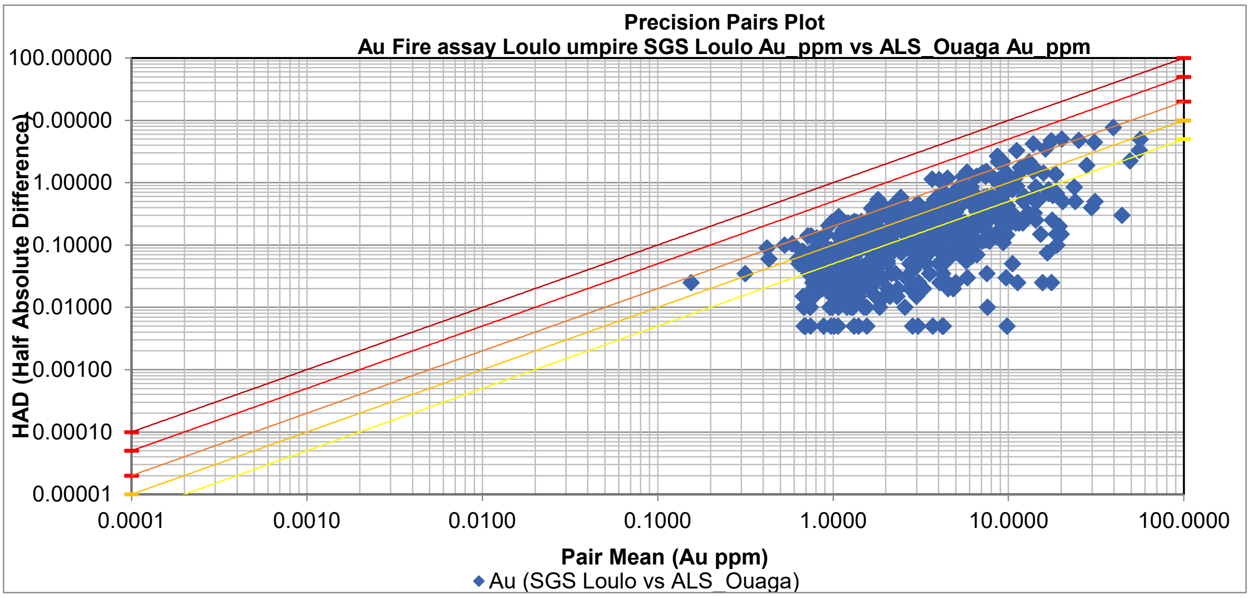


Figure 11-41 Precision Pairs Plot of Loulo Umpire: SGS Loulo vs ALS Ouaga (11 June 2021 to 27 July 2022)

Table 11-27 Recap Precision Pairs for Loulo Umpire: SGS Loulo vs ALS Ouaga

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	529	278	127	100	24	0
Pair %	100%	53%	24%	19%	5%	0%

The HARD plot (Figure 11-42) shows that 90% of all samples have a precision of less than 15%. The QP considers the performance to be very good.

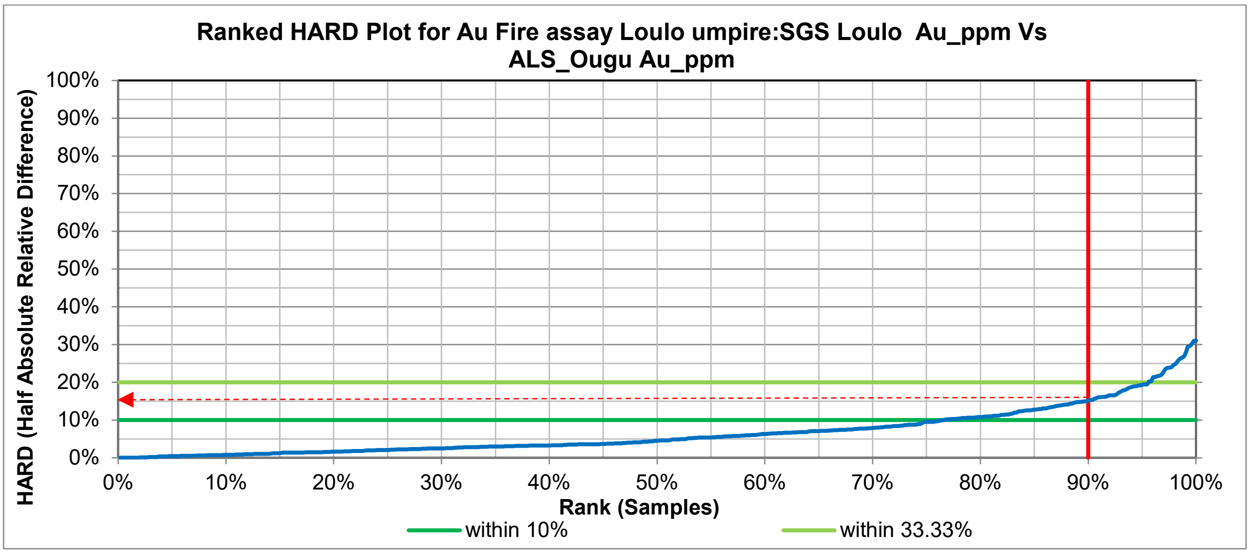


Figure 11-42 HARD Plot of Loulo Umpire Assay: SGS Loulo vs ALS Ouaga (11 June 2021 to 27 July 2022)

SGS Loulo vs Bureau Veritas Abidjan Analysis

SGS Loulo vs Bureau Veritas Abidjan umpire analysis covers a total of 1,335 samples (Table 11-28 and Figure 11-43).

Table 11-28 Statistics for Loulo Umpire: SGS Loulo vs Bureau Veritas Assayed

Discrete Statistics					Percentile Statistics				
	Original	Umpire	% Diff	Units	Distribution	Original	Umpire	% Diff	Units
Population	1,295	1,295			25.0%	0.86	0.81	-5.81%	ppm
Minimum	0.060	0.060	0.00%	ppm	50.0%	1.85	1.86	0.54%	ppm
Maximum	93.80	100.00	6.61%	ppm	75.0%	4.27	4.36	2.11%	ppm
Mean	4.34	4.35	0.25%	ppm	80.0%	5.42	5.45	0.48%	ppm
Std Dev	7.83	7.78	-0.67%	ppm	90.0%	10.26	10.24	-0.19%	ppm
CV*	1.80	1.79	-0.23%		97.5%	23.90	25.24	5.62%	ppm
Correlation	95%				99.9%	82.59	81.63	-1.17%	ppm

Note. *CV – coefficient of variation

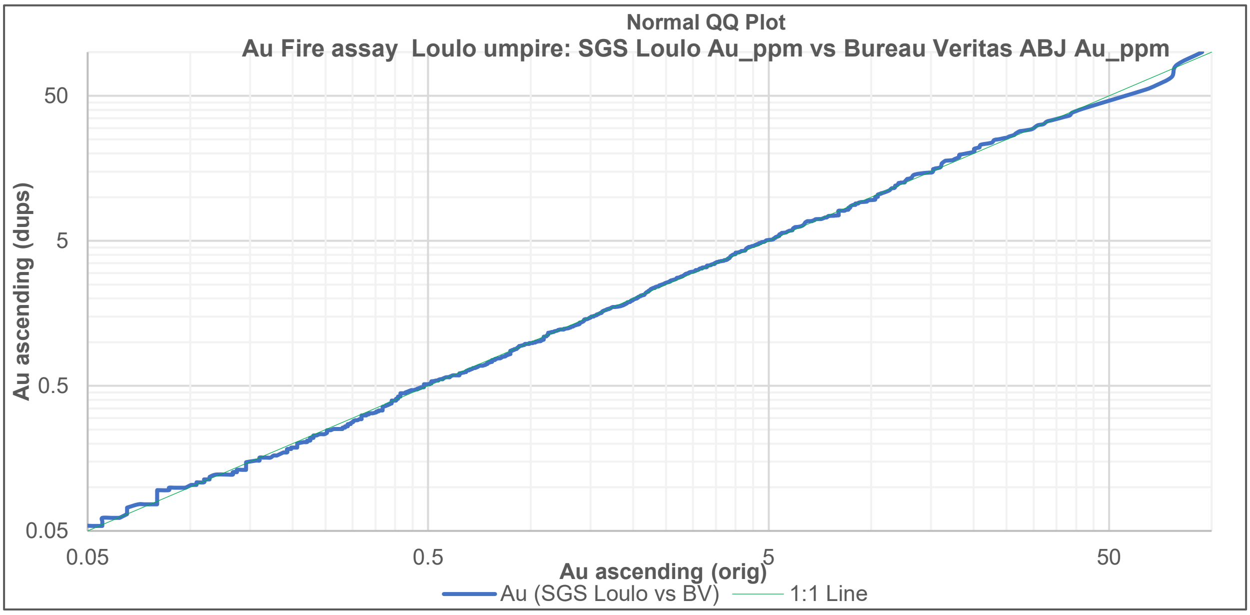


Figure 11-43 QQ Plot of Loulo Umpire: SGS Loulo vs Bureau Veritas Abidjan (11 June 2021 to 27-07-22).

A correlation of 95% is observed between the two datasets. This performance is considered good and indicates that there are no issues with the on-site laboratory.

Figure 11-44 and Table 11-29 show that 45% of both datasets returned paired results within a 0% to 5% precision and the remaining 55% returned paired results within a 5% to 100% precision.

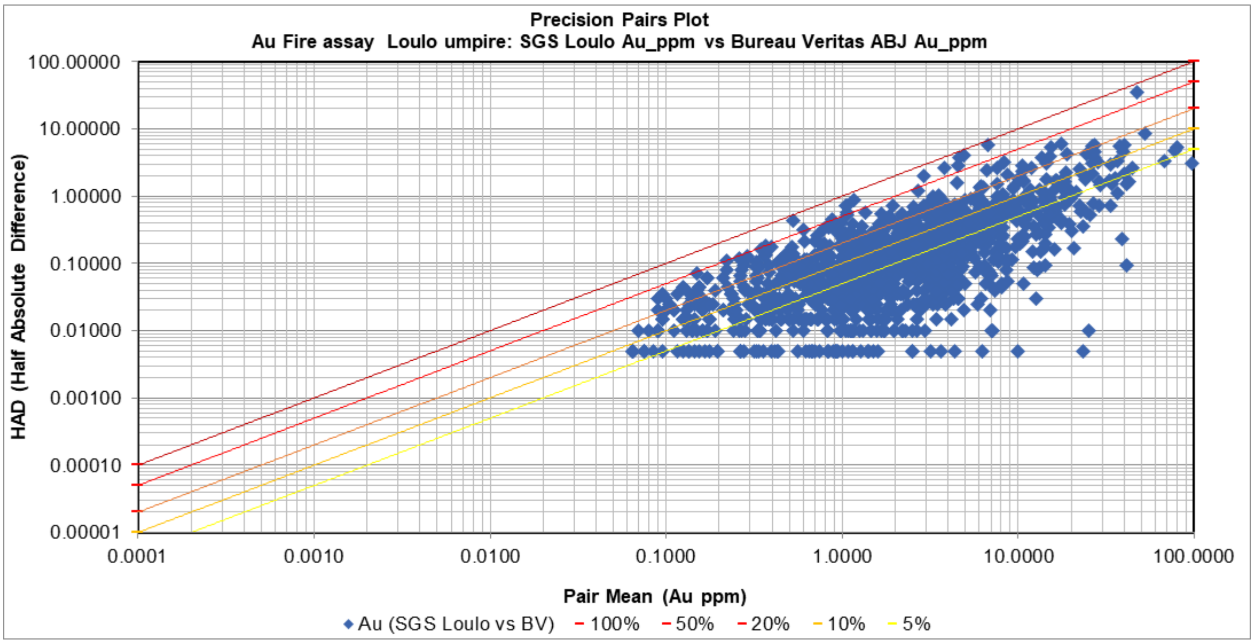


Figure 11-44 Precision Pairs Plot of Loulo Umpire: SGS Loulo vs Bureau Veritas ABJ (11 June 2021 to 27 July 2022).

Table 11-29 Recap Precision Pairs for Loulo Umpire: SGS Loulo vs Bureau Veritas ABJ

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	1295	587	341	238	114	15
Pair %	100%	45%	26%	18%	9%	1%

The Ranked HARD plot (Figure 11-45) shows that 90% of all samples have a HARD of less than 20%.

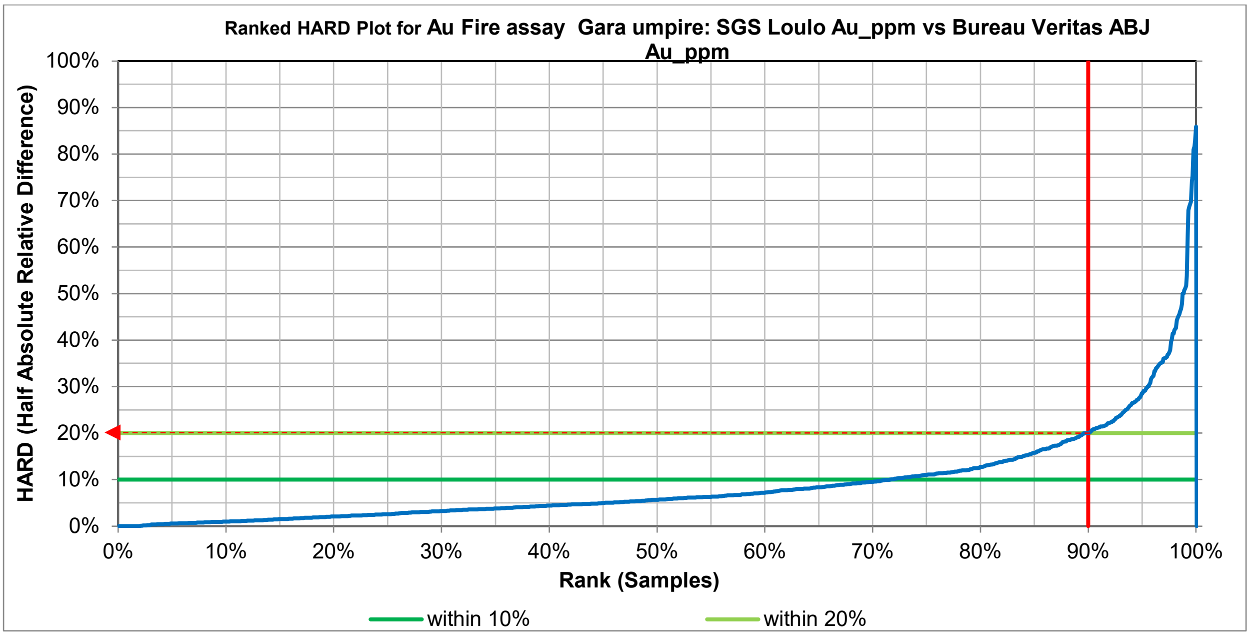


Figure 11-45 HARD Plot of Loulo Umpire Assay: SGS Loulo vs Bureau Veritas Abidjan (11 June 2021 to 27 July 2022)

Gounkoto

A total of 2,746 pulp duplicate samples from SGS Loulo and Bamako were submitted to AMTEL in Canada, ALS Vancouver, ALS Ouaga, and Bureau Veritas in Abidjan for umpire analysis. This analysis covers 2,700 results, as 46 outliers have been excluded. Result show correlation of 99.99% for AMTEL/ALS Vancouver, 96% for ALS Ouaga and 98% for Bureau Veritas (Table 11-30). Log QQ plots and Ranked HARD plots of all umpire analysis from all laboratories are presented in Figure 11-46 and Figure 11-48.

Table 11-30 Gounkoto/Faraba Umpire Sample Summary

Deposit/Ore Body	Laboratory	Number of Samples	Correlation (%)	Original		Umpire	
				Min Au	Max Au	Min Au	Max Au
Gounkoto/Faraba	AMTEL CAN/ALS VAN	494	99	0.08	97.6	0.06	94.6
	ALS OUAGA	222	96	0.14	91.2	0.1	94.6
	BUREAU VERITAS ABIDJAN	1,984	98	0.06	111	0.06	100

Gounkoto/Faraba original SGS results vs AMTEL/ALS Vancouver, ALS Ouaga, and Bureau Veritas Abidjan show good correlation with little to no bias, indicating that there is no major issue with the on-site laboratory. This performance has been achieved through such measures as increasing the frequency of sampling review from quarterly to fortnightly and increasing the frequency of AAS maintenance to every three months.

SGS Loulo vs AMTEL/ALS Vancouver Assay Analysis

SGS Loulo vs AMTEL/ALS Vancouver umpire analysis covers a total of 494 samples (Table 11-31 and Figure 11-46).

Table 11-31 Statistics for Gounkoto/Faraba Umpire: SGS Loulo vs AMTEL/ALS Vancouver Assayed

Discrete Statistics					Percentile Statistics				
	Original	Umpire	% Diff	Units	Distribution	Original	Umpire	% Diff	Units
Population	494	494			25.0%	0.37	0.38	2.70%	ppm
Minimum	0.080	0.060	-25.00%	ppm	50.0%	1.03	1.03	-0.49%	ppm
Maximum	97.60	94.50	-3.18%	ppm	75.0%	3.06	3.06	-0.16%	ppm
Mean	4.20	4.14	-1.43%	ppm	80.0%	3.79	4.06	7.07%	ppm
Std Dev	10.24	9.91	-3.24%	ppm	90.0%	9.87	9.12	-7.63%	ppm
CV*	2.44	2.39	-0.28%		97.5%	31.26	28.07	-10.21%	ppm
Correlation	99%				99.9%	87.94	86.37	-1.79%	ppm

Note. *CV – coefficient of variation

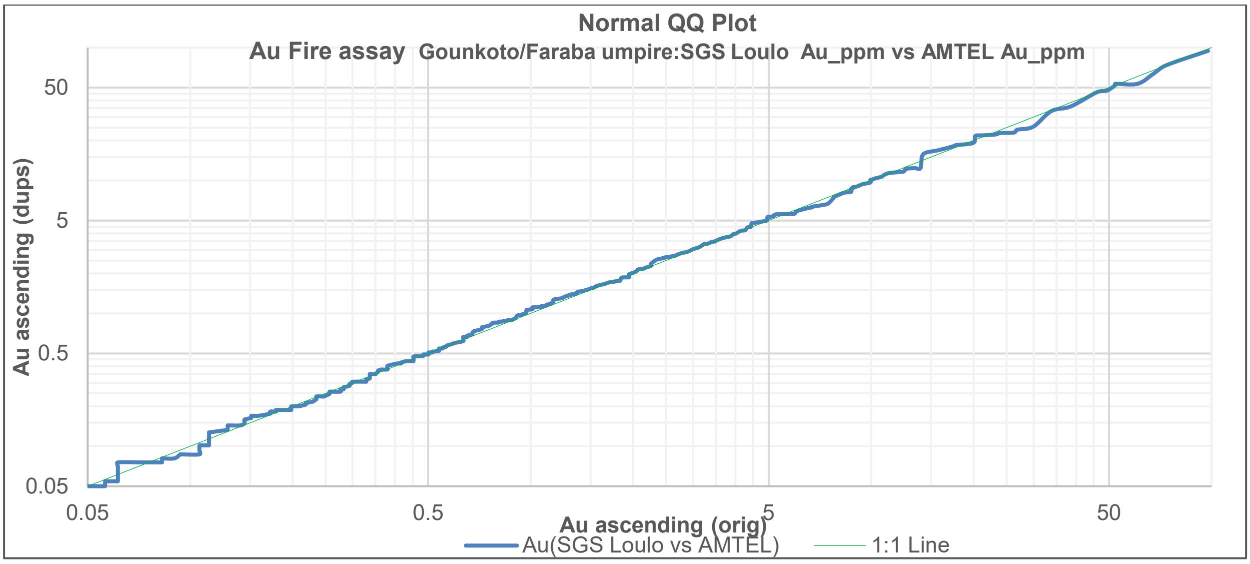


Figure 11-46 QQ Plot of Gounkoto/Faraba Umpire: SGS Loulo vs AMTEL/ALS Vancouver (01 July 2021 to 01 August 2022)

A correlation of 99% is reported between the two datasets. The QP considers the performance to be very good.

Table 11-32 and Figure 11-47 show that 47% of both datasets returned paired results within a 0% to 5% precision and the remaining 53% returned paired results within a 5% to 100% precision.

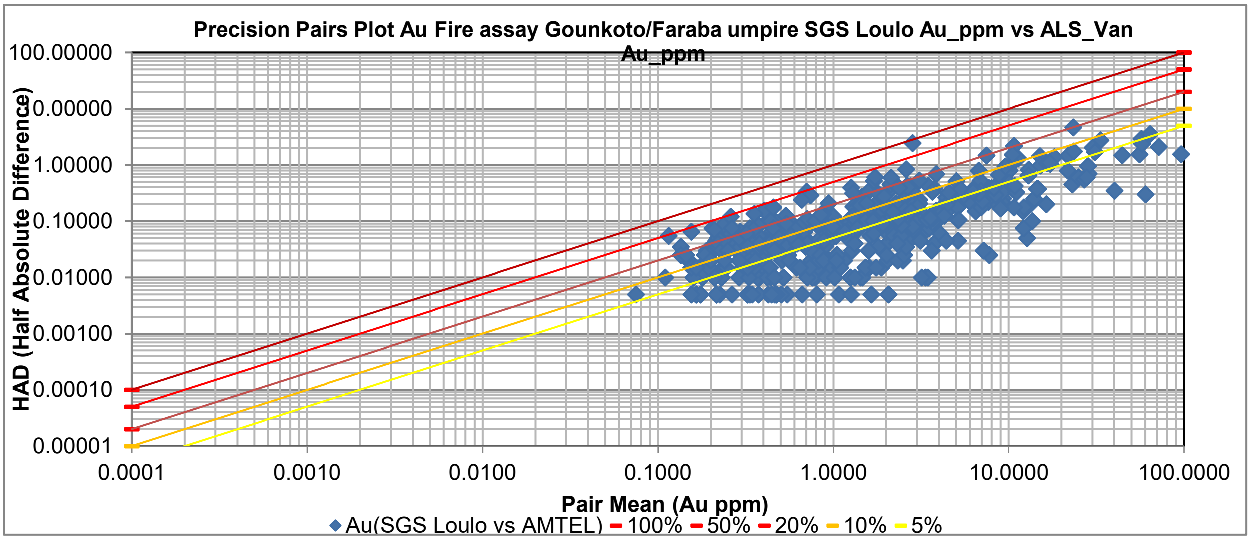


Figure 11-47 Precision Pairs Plot of Gounkoto/Faraba Umpire: SGS Loulo vs AMTEL/ALS_VAN (01 July 2021 to 01 August 2022)

Table 11-32 Recap Precision Pairs for Gounkoto/Faraba Umpire: SGS Loulo vs AMTEL/ALS_VAN

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	494	231	138	91	33	1
Pair %	100%	47%	28%	18%	7%	0%

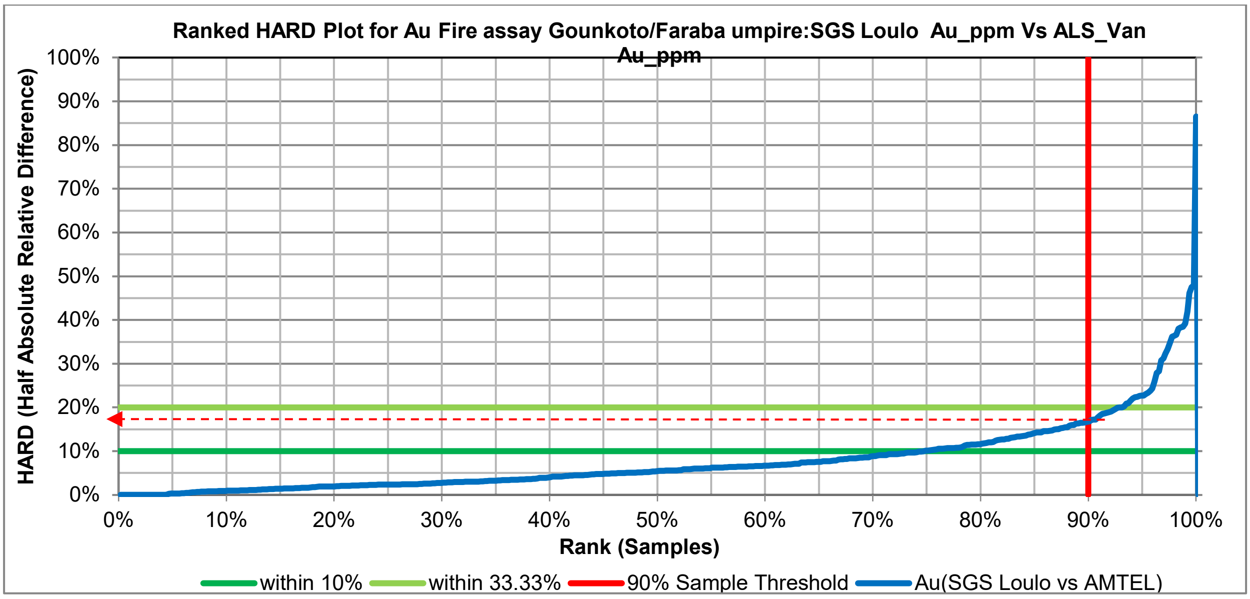


Figure 11-48 HARD Plot of Gounkoto/Faraba Umpire: SGS Loulo vs AMTEL/ALS_VAN (01 July 2021 to 01 August 2022)

The Ranked HARD plot of umpire assays (Figure 11-48) shows that 90% of all samples have a HARD of less than 17%. This performance is linked to measures such as refresher training for field technicians implemented during the period under review.

SGS Loulo vs ALS Ouaga Assay Analysis

SGS Loulo and Bamako vs ALS Ouaga umpire analysis covers a total of 222 samples. Results reported show a correlation of 96% (Table 11-33 and Figure 11-49).

Table 11-33 Statistics for Gounkoto/Faraba Umpire: SGS Loulo and Bamako vs ALS Ouaga Assayed

Discrete Statistics					Percentile Statistics				
	Original	Umpire	% Diff	Units	Distribution	Original	Umpire	% Diff	Units
Population	222	222			25.0%	0.16	0.18	12.50%	ppm
Minimum	0.140	0.100	-28.57%	ppm	50.0%	0.31	0.32	3.23%	ppm
Maximum	91.20	94.60	3.73%	ppm	75.0%	0.92	0.96	4.08%	ppm
Mean	3.33	3.61	8.50%	ppm	80.0%	1.13	1.34	17.99%	ppm
Std Dev	10.75	12.25	13.96%	ppm	90.0%	6.13	7.15	16.59%	ppm
CV*	3.23	3.39	0.89%		97.5%	28.56	33.37	16.83%	ppm
Correlation	96%				99.9%	88.15	94.07	6.72%	ppm

Note. *CV – coefficient of variation

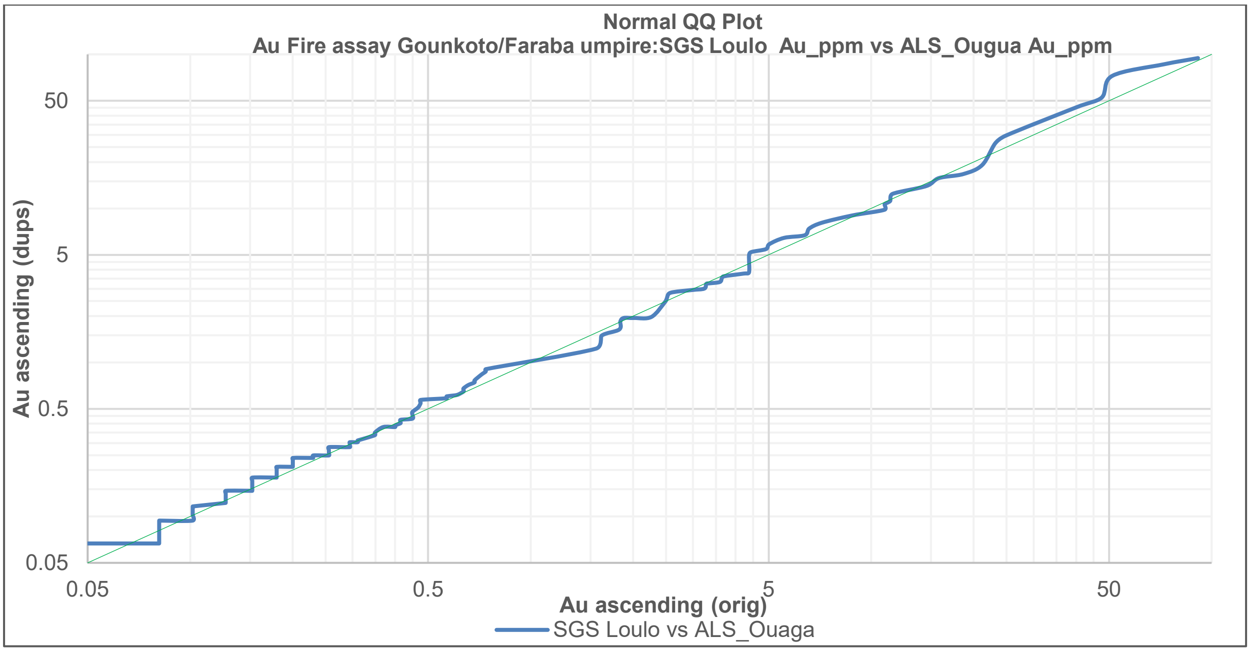


Figure 11-49 QQ Plot of Gounkoto/Faraba Umpire: SGS Loulo vs ALS Ouaga (01 July 2021 to 01 August 2022)

Although there is a 96% correlation reported between the two datasets, a minor bias is observed, with each dataset showing higher/lower results at various ranges of gold grades. The results indicate that there is no major issue with the on-site laboratory. This has been achieved by increasing the servicing frequency of the AAS reader machine from twice a year to every three months with Alliance Scientific in South Africa. The QP considers the performance to be acceptable.

Figure 11-50 and Table 11-34 show that 41% of both datasets returned paired results within a 0% to 5% precision and the remaining 59% returned paired results within a 5% to 100% precision.

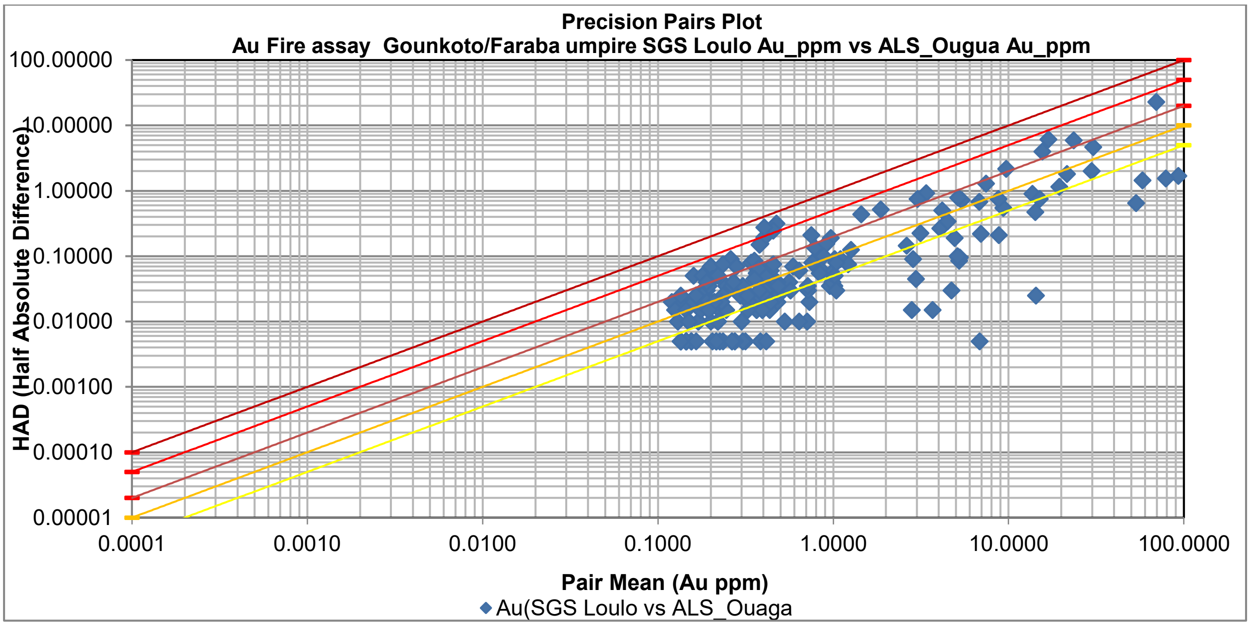


Figure 11-50 Precision Pairs Plot of Gounkoto/Faraba Umpire: SGS Loulo vs ALS Ouaga (01 July 2021 to 01 August 2022)

Table 11-34 Recap Precision Pairs for Gounkoto/Faraba Umpire: SGS Loulo vs ALS Ouaga

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	222	92	59	42	26	3
Pair %	100%	41%	27%	19%	12%	1%

The Ranked HARD plot (Figure 11-51) of umpire assays shows that 90% of all samples have a HARD of less than 24%. Although the QP considers this performance to be acceptable, Barrick intends to improve performance in 2023 by engaging with both laboratory partners and increasing QAQC submission rates.

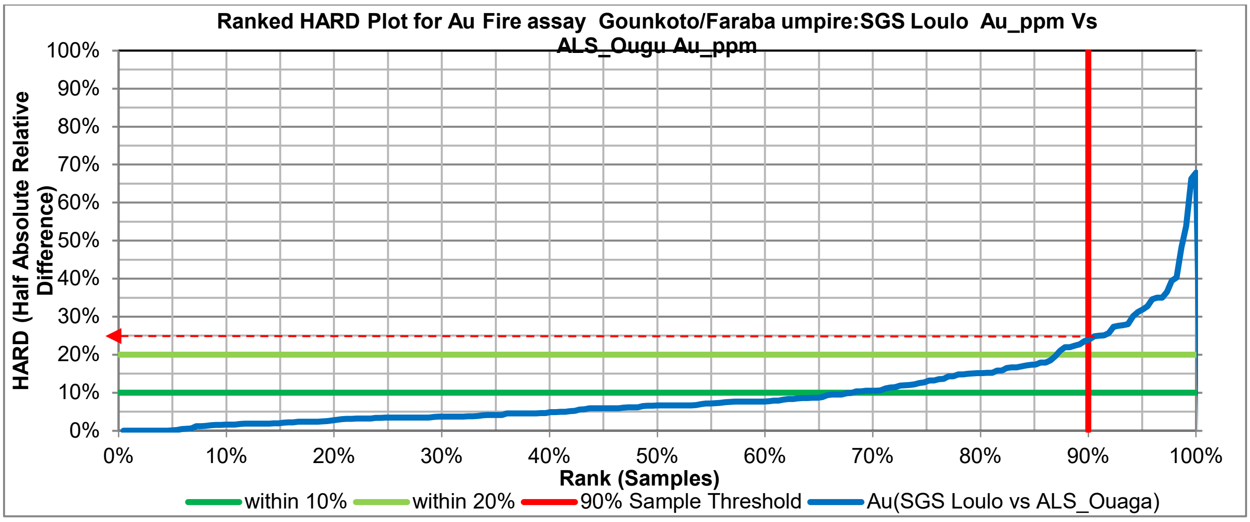


Figure 11-51 HARD Plot of Gounkoto/Faraba Umpire Assay: SGS Loulo vs ALS Ouaga (01 July 2021 to 01 August 2022)

SGS Loulo vs Bureau Veritas Abidjan Analysis

SGS Loulo vs Bureau Veritas Abidjan umpire analysis totals 880 samples (Table 11-35 and Figure 11-52). A difference of -9.91% is noted between maximum assays of the two datasets.

Table 11-35 Statistics for Gounkoto/Faraba Umpire: SGS Loulo vs Bureau Veritas Assayed

Discrete Statistics					Percentile Statistics				
	Original	Duplicate	% Diff	Units	Distribution	Original	Duplicate	% Diff	Units
Population	880	880			25.0%	0.39	0.45	14.74%	ppm
Minimum	0.060	0.060	0.00%	ppm	50.0%	0.86	0.88	2.33%	ppm
Maximum	111.00	100.00	-9.91%	ppm	75.0%	2.36	2.27	-3.71%	ppm
Mean	2.70	2.74	1.61%	ppm	80.0%	2.79	2.93	5.01%	ppm
Std Dev	6.71	6.69	-0.27%	ppm	90.0%	5.84	5.85	0.09%	ppm
CV*	2.49	2.44	1.36%		97.5%	20.51	21.69	5.75%	ppm
Correlation	96%				99.9%	73.20	76.40	4.37%	ppm

Note. *CV – coefficient of variation

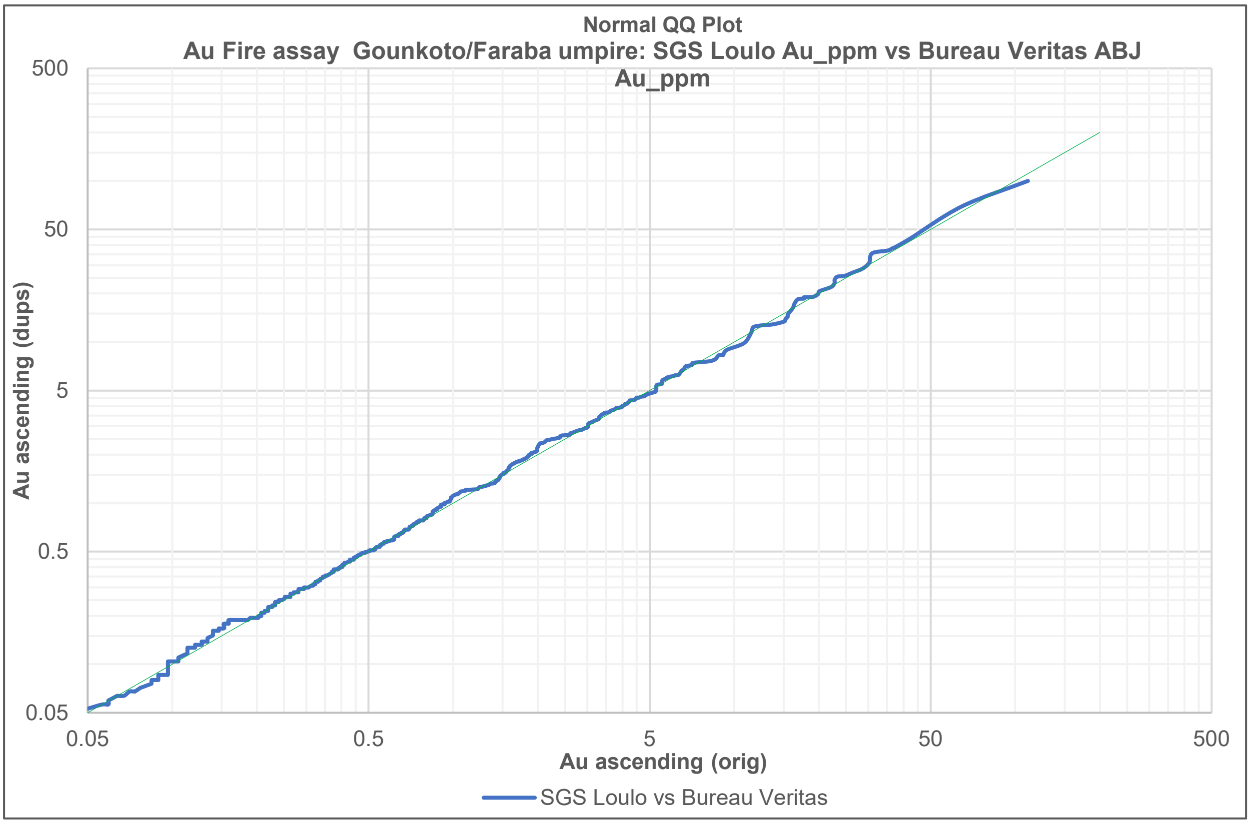


Figure 11-52 QQ Plot of Gounkoto/Faraba Umpire: SGS Loulo vs Bureau Veritas Abidjan (01 July 2021 to 01 August 2022)

A correlation of 96% is observed between the two datasets. This performance is considered very good, as no bias has been identified.

Figure 11-53 and Table 11-36 show that 43% of both datasets returned paired results within a 0% to 5% precision and the remaining 57% returned paired results within a 5% to 100% precision.

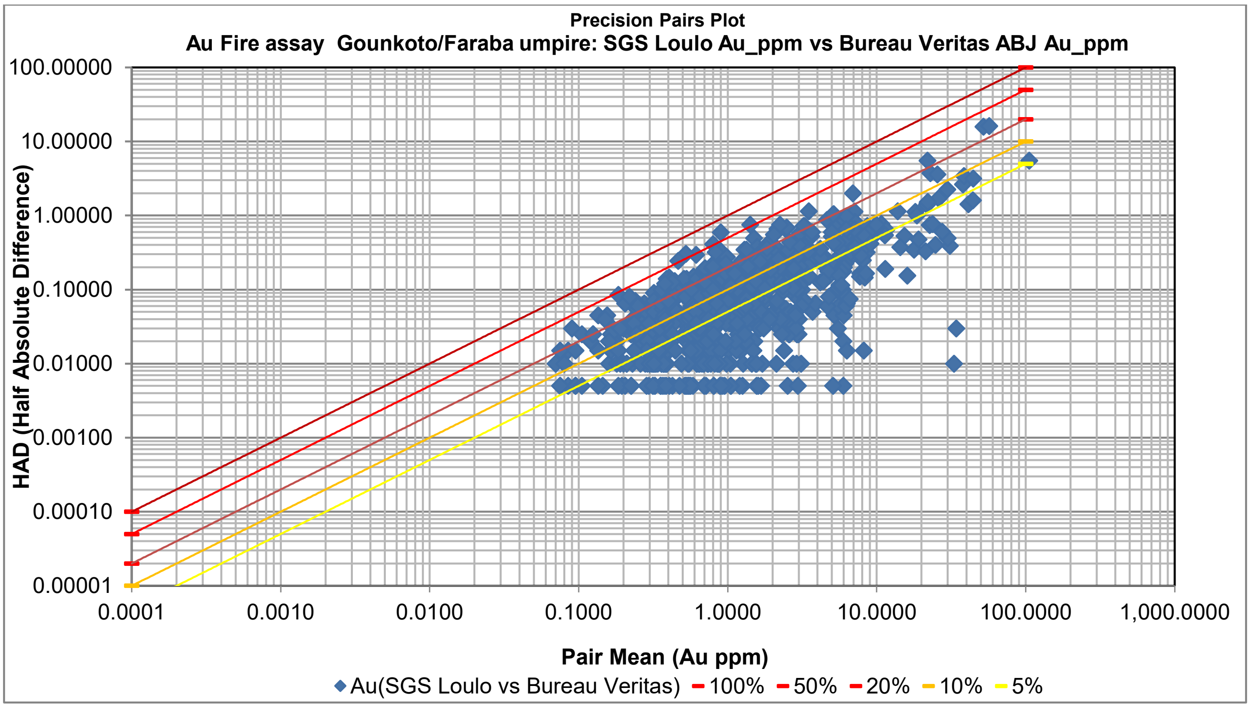


Figure 11-53 Precision Pairs Plot of Gounkoto/Faraba Umpire: SGS Loulo vs Bureau Veritas Abidjan (01 July 2021 to 01 August 2022)

Table 11-36 Precision Pairs for Gounkoto/Faraba Umpire: SGS Loulo vs Bureau Veritas Abidjan

Relative Difference (%)	ALL	0-5%	5-10%	10-20%	20-50%	>50%
Pair Count	880	375	237	194	69	5
Pair %	100%	43%	27%	22%	8%	1%

The Ranked HARD plot (Figure 11-54) shows that 90% of all samples have a HARD of less than 18%. The QP considers the performance to be good.

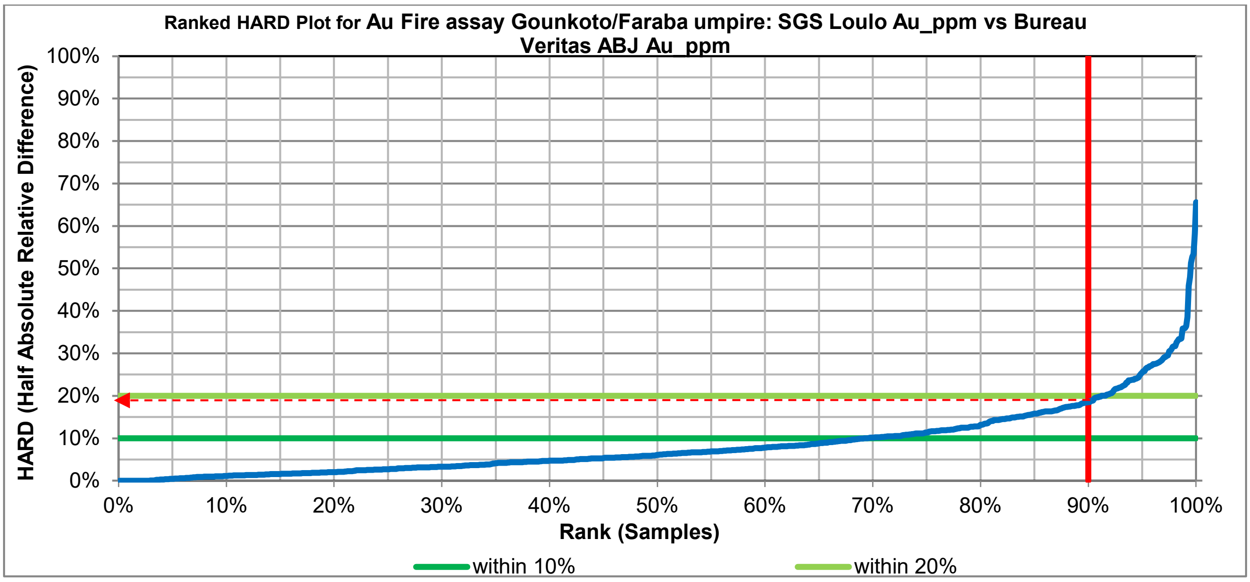


Figure 11-54 HARD Plot of Gounkoto/Faraba Umpire Assay: SGS Loulo vs Bureau Veritas (01 July 2021 to 01 August 2022).

11.4 Sample Security

RC samples taken on the rigs are bagged, tied with custom Loulo tags, weighed, and documented. RC samples and diamond core are transported by Barrick personnel from the rig to the core yard or a secure storage facility.

Labelled samples are placed into large bags and sealed. The samples are placed in crates which are transported to SGS Loulo located within the mine site. Samples which are to be prepared or analysed outside of SGS Loulo are transported by SGS staff.

All laboratory sample backlogs are actively monitored on a weekly basis and if the backlog becomes excessive, samples are dispatched to SGS Bamako. All samples are stored on site in a secure sampling facility until they can be dispatched.

During Q4 2020, there was an update to the Standard Operating Procedures (SOP) for sample security for samples being sent to external laboratories. A chain of custody document/tracker now accompanies all samples dispatched to off-site laboratories. This document is completed by all persons who handle the samples at any stage while it is still being transported to the designated laboratory. When samples arrive at the laboratory, an inspection is conducted, and the form is endorsed and emailed to site for archiving.

Results from all laboratories are emailed to a select group of individuals at the Complex and are later imported into the database by the database administrator.

All Loulo-Gounkoto data has been migrated and secured in industry standard Maxwell Geoservices (Maxwell) Datashed SQL database for optimal validation through constraints, library tables, triggers, and stored procedures. All site software application databases will be set up to link back to the main database for information retrieval via an Open Database Connectivity (ODBC) link.

During the migration to the SQL database, initially all assay data was migrated from the MS Access database. Subsequently, all assay data has been re-imported directly from assay certificates from the laboratory and ranked such that they will have a higher priority than the MS Access imported data.

11.5 Independent Audit

An external audit on the Mineral Resource and input data procedures was completed in August 2018 by Optiro, with the final report received in February 2019 (Glacken & Barron, 2018). This report stated that Loulo has a good performance with data collection and high performance for data quality.

Optiro stated that SGS Loulo was under-estimating the high-grade Yalea samples, based upon the umpire sampling programme. Optiro recommended that SGS Loulo implement gravimetric finish on all high-grade samples over 15 g/t Au for Yalea. Barrick implemented this procedure starting with the 2019 year and has extended it to all drilling, regardless of deposit.

Other minor recommendations include the collection of core tray weights for use in bulk density determination, increasing the field duplicate insertion rate to 1 in 19, and increasing the use of digital loggers, all of which have been fully implemented.

Optiro identified a bottleneck in the sample analysis caused by insufficient capacity for sample preparation. Barrick has addressed this by purchasing a mobile sample preparation facility to add extra capacity of 200 samples, which was installed in 2019. Construction of a new laboratory building was budgeted in 2019, in order to increase the sample preparation capacity from 700 samples to 1,000 samples a day. This was completed and operational in 2020 and improved the turnaround from one week to three days by adding fire assay extra capacity by rack from 50 samples to 84 samples.

Barrick has implemented all of Optiro's recommended improvements.

In September 2022, RSC completed an independent audit of the Mineral Resource and Mineral Reserve processes used at Loulo-Gounkoto (Roux & Sterk, 2022). This included the sampling procedures used to collect the data informing Mineral Resource estimates. The audit demonstrated that Mineral Resource and Mineral Reserve processes conform to good practices. RSC made several recommendations to Loulo-Gounkoto for continual improvement; including use of additional CRMs in umpire sampling with a ratio of 1:1, and insertion of duplicate samples only in the mineralised zone, which will be implemented in 2023.

11.6 Discussion

The QP is of the opinion that the sample collection, preparation, analysis, and security used at Loulo-Gounkoto are performed in accordance with best practice and industry standards and are appropriate for the style of deposit.

The QA/QC procedures and management are consistent with industry standards and the assay results within the database are suitable for use in Mineral Resource estimation. The QP has not identified any issues that could materially affect the accuracy, reliability, or representativeness of the results.

12 Data Verification

All forms of project data are securely stored in an industry standard Maxwell Geoservices (Maxwell) DataShed SQL database. Data must pass validation through constraints, library tables, triggers, and stored procedures prior to importing. Failed data is either rejected or stored in buffer tables awaiting correction. A full-time database administrator employed at site manages the database.

Daily, weekly, monthly, and quarterly backups are made and stored on a hard disk onsite and automatically stored on the cloud which is in the UK but can be accessed globally.

A custom MS Access front end application has been designed for data entry, reporting, and viewing via ODBC, which utilises the data validation procedures from the SQL database. All other geological and mining software databases on site use ODBC link to retrieve information from the DataShed SQL database.

Assay data is imported directly from assay certificates from the laboratory and validated. Only fully trained and authorised network users can upload laboratory data. Assay data is stored in a normalised format and multiple assays are stored for each sample. Ranking of different assay formats is performed automatically so that one assay result is displayed in the final table. Any change to the rankings in the assay table must be approved by the onsite Database Manager.

Downhole survey data is directly uploaded from an associated handheld unit to Reflex Hub, a cloud based database server where each hole is reviewed by the respective geologist. Once approved, survey data is directly integrated with the Loulo-Gounkoto database under an initial temporary table using a customised integration key. After further validation, it is written to the final survey table.

The data is reported to and reviewed by the QP on a weekly and monthly basis. The QP completes an additional data review prior to Mineral Resource estimation.

12.1 Independent Audit

An independent external database audit was completed by Maxwell in 2020 (Maxwell, 2020). Maxwell identified that the Mineral Resource data within the SQL database was in good order and only minor data issues were identified.

Continued training and mentoring are ongoing for the database administrators as recommended by Maxwell.

12.2 Discussion

In the QP's opinion, the data verification program, as well as the sample collection, preparation, analysis, and security procedures comply with industry standards and the data is free of any material sources of error or bias, thus can be deemed suitable for the purposes of Mineral Resource estimation and are regularly audited.

13 Mineral Processing and Metallurgical Testing

Metallurgical characterisation test work on the Loulo-Gounkoto gold bearing mineralisation has produced a substantial body of knowledge that informs processing decisions. A list of technical reports with their subject matter title and name of test institution is provided in Table 13-1. Pre-production reports number 1 to 16 characterised the metallurgical aspects of the known resources supporting the Complex feasibility study. The results and interpretations of these reports were used to design the gold recovery process for the mine. Gold production commenced with the commissioning of the plant in 2005. Metallurgical test work conducted on site and using external institutions as recorded in reports number 17 to 25 was undertaken on an ongoing basis to inform process optimisation decisions and to characterise metallurgical response from new deposits being added to the resource.

Table 13-1 Summary of Test Work

#	Name of Programme	Laboratory	Report ID or Number	Publication Date
1	Grind/Carbon in Leach (CIL)	Anglo American Research Laboratories (AARL)	84-RDM-067-MIN	1984
2	Heap Leach	BRGM	85-DAM-032-MIN	1985
3	Heap Leach	BRGM	86-MLI-066-MIN	1986
4	Grind/CIL	BHP	Progress No. 4	1995
5	Grind/CIL	A R MacPherson	ARMC 8481	1995
6	Mineralogical	Microsearch	MRGE	1997
7	Grind/CIL	AARL	S72517	1997
8	Grind/CIL	AARL	S72653	1997
9	Grind/CIL	AARL	S72681	1997
10	Grind/CIL	OMC/AMTEL	37105	1997
11	Grind/CIL	Eimco	F1711-2.MPC	1997
12	Grind/CIL	AARL	S72706	1997
13	Heap Leach	AARL	S72731/1	1998
14	Heap Leach	AARL	S72731/2	1998
15	Grind/CIL	Lakefield Research	MET 01/D81	2002
16	Grind/CIL	Mintek	(None)	2002
17	Gold Deportment in Loulo CIL Tails	AMTEL	AMTEL report 09/39	2009
18	Deportment of gold in future feeds and CIL tails from Loulo	AMTEL	AMTEL report 13/27	2013
19	Deportment of gold in Loulo's mill feed and CIL tails	AMTEL	AMTEL report 14/26	2014
20	Gold deportment in Loulo's leach feed, Intermediate & final CIL tank solids	AMTEL	AMTEL report 15/44	2015
21	Gold deportment analysis of four Metallurgically challenging Loulo ores	AMTEL	AMTEL report 15/60	2015
22	Gold deportment analysis of Loulo 2017 CIL feed & tails	AMTEL	AMTEL report 18/19	2018
23	Gold deportment analysis of Yalea ug Ore samples	AMTEL	AMTEL report 20/28	2020

#	Name of Programme	Laboratory	Report ID or Number	Publication Date
24	Gold deportment analysis of Yalea south Op ore samples	AMTEL	AMTEL report 21/58	2021
25	Gold deportment analysis of Yalea south Upper op ore samples	AMTEL	AMTEL report 22/19	2022

An overview of plant performance regarding yearly tonnage throughput, gold production, and gold recovery is presented in Table 13-2.

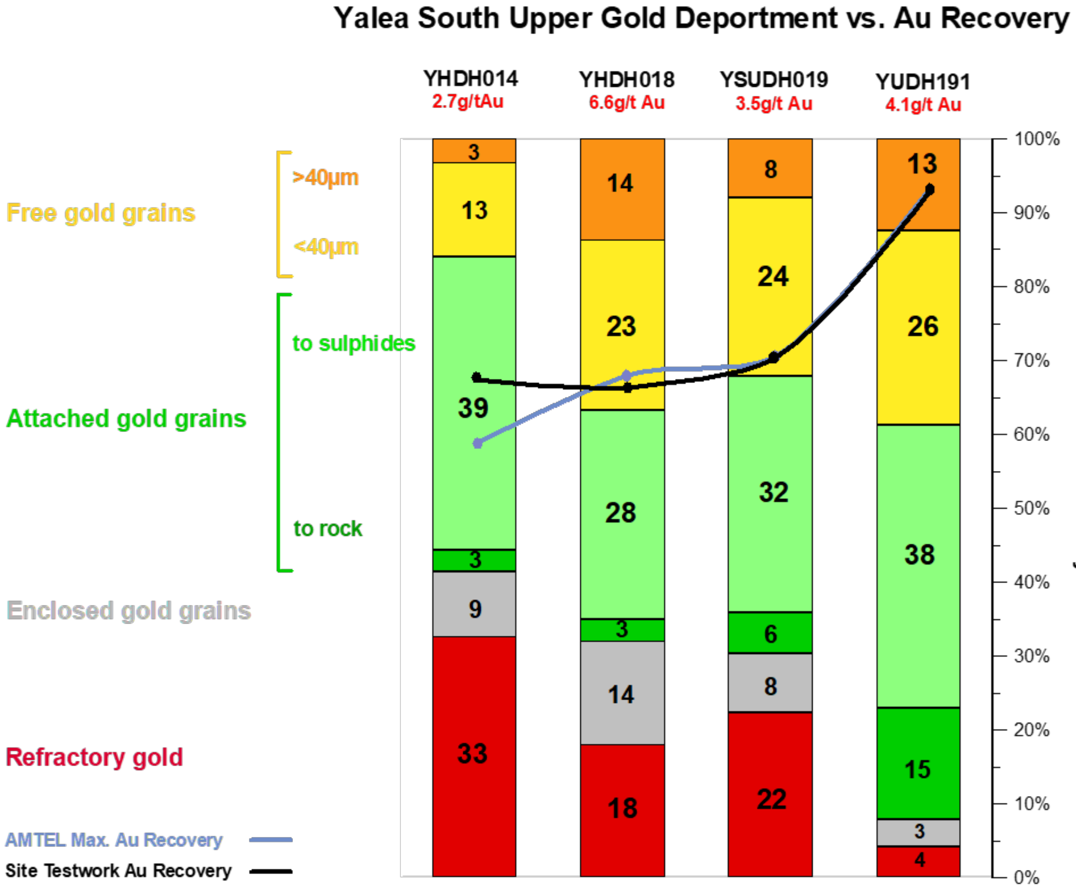
Table 13-2 Summary of Yearly Production and Gold Recovery

Year	Tonnes Milled (kt)	Head Grade (g/t)	Gold Produced (koz)	Recovery (%)
2005	527	3.72	68	95.9
2006	2,595	3.15	242	93.9
2007	2,654	3.30	265	93.1
2008	2,721	3.22	258	91.5
2009	2,947	4.22	352	87.7
2010	3,158	3.36	317	92.5
2011	3,619	3.38	346	88.1
2012	4,354	4.02	503	89.2
2013	4,463	4.60	580	88.4
2014	4,396	4.99	639	90.2
2015	4,543	4.78	630	90.1
2016	4,875	4.96	707	91.0
2017	4,918	4.96	730	92.7
2018	5,154	4.30	670	92.3
2019	4,931	4.90	715	91.9
2020	4,895	4.76	680	90.9
2021	5,019	4.79	700	90.5
2022	5,087	4.59	684	91.2
Total	**70,856**	**4.40**	**9,085**	**90.7**

Plant gold recovery is generally in line with the recovery predicted by metallurgical test work.

13.1 Refractory Gold

Test work on Yalea South Upper mineralised samples extracted from four drill cores indicated that gold recovery from this ore can range from a low of 59% to a high of 93% as depicted in Figure 13-1. The low recovery is due to the presence of refractory gold and finely disseminated gold particles enclosed/locked in sulphides. On-site test work on all deposits within the Loulo-Gounkoto Complex has identified low and high recovery ore zones. Gold recovery data as well as gold, copper, and arsenic grades are recorded from GC drilling for the three main ore sources (Yalea, Gounkoto, and Gara). The mine plan models are updated 24 months ahead of mining. The mine plan is developed considering that the feed to the plant should be a blend of ores with copper below 100 ppm and arsenic below 4,000 ppm.



Source: Venter and Chryssoulis, 2022

Figure 13-1 Gold Deportment on Yalea South Upper, AMTEL vs On-site Test Work Recovery Results

Both AMTEL maximum recoverable gold and site test work results are closely matched. Each sample contains free gold of less than 40 µm (difficult to recover by gravity) and attached gold. Gold leachability can be negatively impacted by silver, iron, and arsenic-rich coatings forming on gold particles. The coatings have more impact on larger particles which take longer to dissolve. Recovery is limited by the refractory gold and the gold enclosed/locked in sulphides.

Current milling practice is to grind to 75% passing 75 µm for an overall recovery of ≥ 90%. It is not economical to grind the entire plant feed to a fine grind of P_{80} 30 µm which would be required to improve gold recovery from the fraction of refractory gold in the ore. The plant feed blending strategy is currently successful in maintaining recovery ≥ 90%, however, it may in the future be feasible to invest in flotation recovery of sulphides followed by separate ultra-fine grinding and intensive cyanide leaching with oxygen enrichment.

13.2 Sampling and Sample Representativity

Since the pre-feasibility stage, from 1985 up until the present time, extensive test work campaigns have been undertaken on Loulo (Gara and Yalea) and, more recently, on Gounkoto, plus the satellite bodies of P129, P125, Loulo 3, and Baboto, incorporating both major and minor pits and deeper, underground orebodies. Special care has been taken to ensure that the samples are:

- Spatial representative
- Redox and weathering representative
- Lithological representative

An example of this approach was used in the evaluation of the Gounkoto Super Pit. Figure 13-2 shows sampling within the Super Pit completed as part of the feasibility work undertaken to develop recovery estimates for the orebody (the blue line being the outline of the 2018 as-mined pit and green line representing the Super Pit).

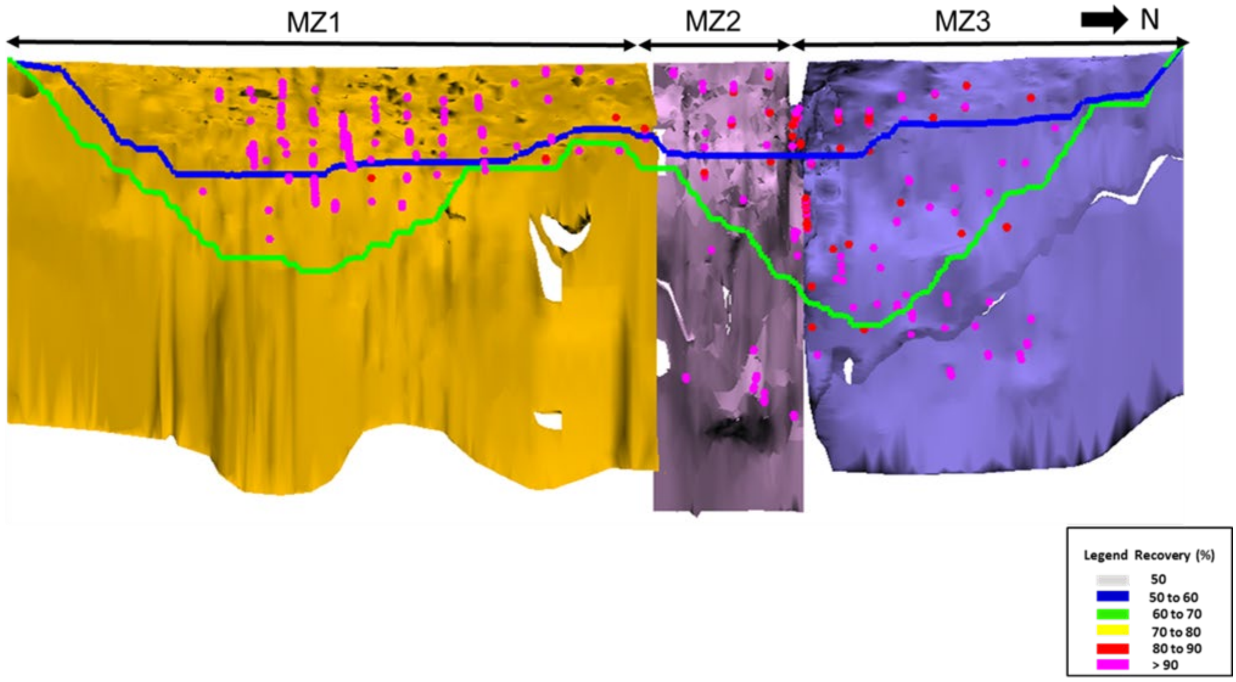


Figure 13-2 Gounkoto Cyanidation Sample Locations

13.3 Metallurgical Test Work on Gounkoto samples

The samples collected and tested were spatially representative of the mineralisation mined in the Super Pit. The test work produced data for comminution, CIL, and general ore characteristics.

The 2021 and 2022 test work campaign indicated an average gold recovery from Gounkoto ore of 91.15% (Table 13-3).

Table 13-3 Gounkoto Metallurgical Test Work

Campaign	Objectives	Ore Zone	ID Series	Sample Received	Met Series Composite	Sample Type	Testing & Assays	Metal				Cyanide Addition (g/t)	SCN Recovery	CIL Recovery	Average	Reagents Consumption (kg/t)		Note on Cyanidation Conditions
								Au (g/t)	As (wt %)	Cu (g/t)	Fe (wt %)				Recovery (%)	NaCN	Lime	
0_2009	Pre-feasibility	MZ1	GK00_series	3	Individual	DDH	Loulo Met Lab					500	95.7	96.9	96.3	NA	NA	Optimal leach conditions
			001…003									5,000	95.1	95.7	95.4			Excess leach conditions
1_2009	Scoping study : On site	MZ1,2,3	Met_CND_series 001..0030	30	LG MG HG	DDH, RC	Loulo Met Lab	12.19				1,000	94.58	95.22	94.9	0.6	1.12	Excess leach conditions
2_2010	Scoping review	Enter deposit Strike Depth	Ox_	10	Composite	Trench RC DDH	SENET SGS KC Africa	8.53	0.02	50	5.14	500		92.98	96	0.36	0.86	24hr BRT at natural DO
	Pre-feasibility	MZ1,2,3 and HW	Tran_	10	Composite			9.86	0.03	41	5.66	500		90.82	94	0.36	2.44	24hr BRT at natural DO
	Plant design		10x Sulf_	10	Composite			7.82	0.03	32.91	4.88	500		90.01	91	0.34	0.32	24hr BRT at excess DO
5_2010	Feasibility confirmation	Enter deposit Strike_ Depth MZ1,2,3 and HW	Var Samples series 01 .10 (Sulphides)	20	Series 40,000	DDH	SGS SA KC Africa					1,000						Excess leach conditions
6_2010/2011	Petrographic Studies and Met campaign	MZ1,2, and HW	GKMET_PHASE6series_0112	12	GKDH series	DDH	Micro-search refer to Lawrence	13.39	0.39	135.92	9.16	500			90.17	0.33	0.71	Optimal leach conditions
												1,000			92.56	0.73	0.62	Excess leach conditions
7_2011	Scoping study : HEAP LEACH	M3	GKMET_PHASE7_GOUNKOTseries	6	GKDH217 (6x)	Core		12.19										
9_2012	Feasibility Polysius AG ; HPGR	MZ1,2,3	Polysius AG	10	GKPQ Met ID not found	DDH	Polysius ?											
2014_Camp refer as Campaign 15	Gounkoto OP extension to UG Feasibility study	MZ3_UG and UG_Extension MZ2_UG	GKMet_MZ3DDH 0001	66		DDH	Loulo Met Lab	21	2860	95	8.1	400			95.24	0.79	2.35	Optimal leach conditions
			GKMet_MZ3DDH 0002			Core		3.92	540	39.8	4.99	400			92.32	0.63	1.55	Optimal leach conditions

Campaign	Objectives	Ore Zone	ID Series	Sample Received	Met Series Composite	Sample Type	Testing & Assays	Metal				Cyanide Addition (g/t)	SCN Recovery	CIL Recovery	Average	Reagents Consumption (kg/t)		Note on Cyanidation Conditions
								Au (g/t)	As (wt %)	Cu (g/t)	Fe (wt %)				Recovery (%)	NaCN	Lime	
			GKMet_MZ3DDH 0003					2.3	490	22	4.099	400			91.55	0.63	1.47	Optimal leach conditions
			GKMet_MZ2DDH 0001					6.2	0.95	151	8.24	400			91.63	0.83	1.82	Optimal leach conditions
			GKMet_MZ2DDH0002					6.96	0.61	101.4	4.14	400			91.79	0.83	1.71	Optimal leach conditions
			GKMet_MZ2DDH 0003					4.3	0.39	34.5	2.38	400			91.28	0.66	1.35	Optimal leach conditions
			Gounkoto 44651 UG	16			AMTEL 2013	11.62	0.47	550		400			90			Optimal leach conditions
				54			ALS 2014					Varied						Variability leach test
2016_Camp	Gounkoto OP extension to a Super Pit Feasibility Study	MZ3	GKMet_MZ3DDH series	40			DDH	4.26				400			88.12	2.14	0.67	Optimal leach conditions
								4.26				1,000			90.02	2.07	1.01	Excess leach conditions
		HW	GS_series	15			DDH	1.99				400			94.15	1.34	0.6	Excess leach conditions
								1.99				1,000			93.87	1.23	0.93	Excess leach conditions
2017_Camp	Gounkoto OP extension to a Super Pit Feasibility Study	MZ1	GCRC_ series	16			DDH	5.49	168	27	4	400			94.09	0.62	1.33	Optimal leach conditions
								5.49	168	27	4	1,000			93.62	0.95	1.19	Excess leach conditions
		MZ3	GCRC_ series	10			DDH	4.25	2301	109	3	400			90.38	0.72	1.75	Excess leach conditions
								4.25	2301	109	3	1,000			92.49	0.98	1.54	Excess leach conditions

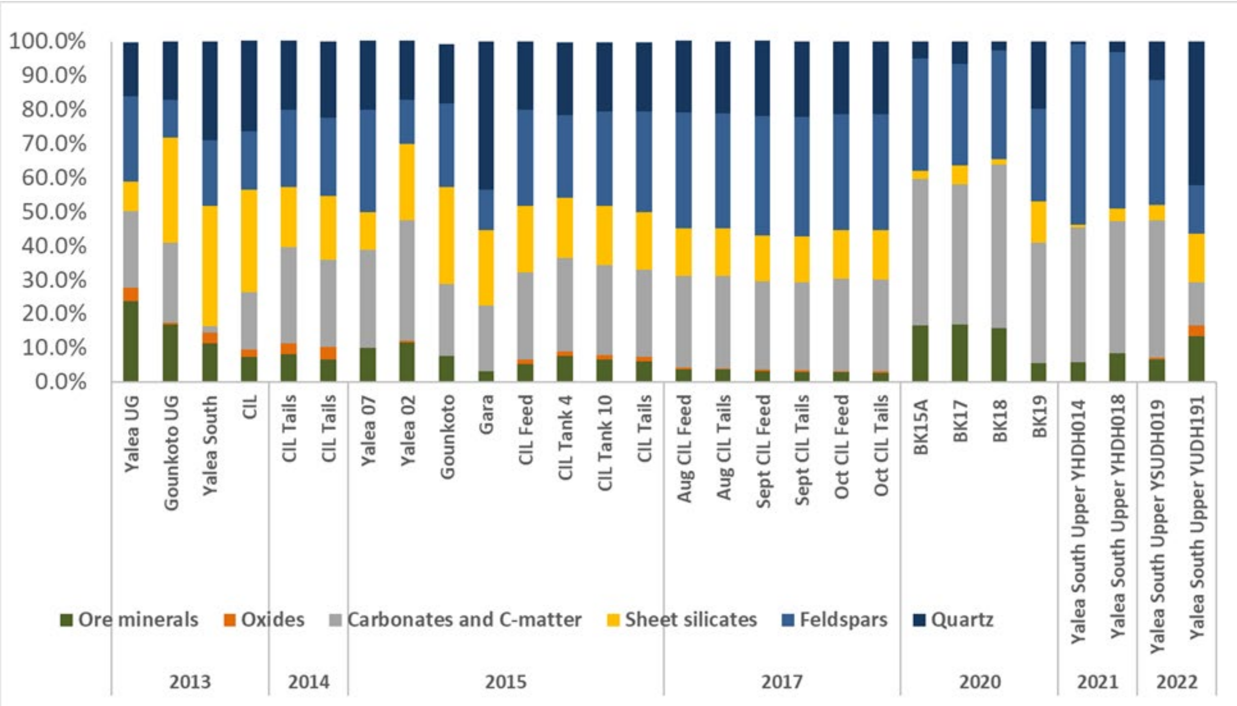
Campaign	Objectives	Ore Zone	ID Series	Sample Received	Met Series Composite	Sample Type	Testing & Assays	Metal				Cyanide Addition (g/t)	SCN Recovery	CIL Recovery	Average	Reagents Consumption (kg/t)		Note on Cyanidation Conditions
								Au (g/t)	As (wt %)	Cu (g/t)	Fe (wt %)				Recovery (%)	NaCN	Lime	
		HW	GCRC_ series	10			DDH	2.35	107	65	2	400			92.31	0.85	1.29	Excess leach conditions
								2.35	107	65	2	1,000			94.04	1.00	1.19	Excess leach conditions
2018_Camp	Gounkoto OP extension to a Super Pit Feasibility Study	HW1	GCRC_ series	34			DDH	2.60	940	75	3	400			95.58	0.65	1.67	Optimal leach conditions
								2.60	940	75	3	1,000			96.16	1.05	1.59	Excess leach conditions
2019_Camp	Gounkoto OP extension to a Super Pit Feasibility Study	MZ1	GCRC_ series	90			DDH	12.64	703	33	4	400			93.59	0.51	1.99	Optimal leach conditions
								12.64	703	33	4	1,000			94.11	0.80	1.94	Excess leach conditions
		MZ2	GCRC_ series	6			DDH	4.29	163	13	6	400			92.86	0.41	1.81	Excess leach conditions
								4.29	163	13	6	1,000			93.69	0.60	1.63	Excess leach conditions
		P64	GCRC_ series	12			DDH	4.31	578	38	3	400			90.64	0.50	2.25	Excess leach conditions
								4.31	578	38	3	1,000			91.22	0.67	2.08	Excess leach conditions
2020_Camp	Gounkoto OP extension to a Super Pit Feasibility Study	MZ1	GCRC_ series	26			DDH	4.02	2413	87	163	400			93.80	0.52	1.45	Optimal leach conditions
								4.02	2413	87	163	1,000			93.69	0.76	1.38	Excess leach conditions
		MZ2	GCRC_ series	14			DDH	5.53	378	27	5	400			91.88	0.46	1.64	Excess leach conditions
								5.53	378	27	5	1,000			91.94	0.74	1.54	Excess leach conditions

Campaign	Objectives	Ore Zone	ID Series	Sample Received	Met Series Composite	Sample Type	Testing & Assays	Metal				Cyanide Addition (g/t)	SCN Recovery	CIL Recovery	Average	Reagents Consumption (kg/t)		Note on Cyanidation Conditions
								Au (g/t)	As (wt %)	Cu (g/t)	Fe (wt %)				Recovery (%)	NaCN	Lime	
		MZ3	GCRC_ series	140			DDH	3.78	1985	52	336	400			91.01	0.59	1.39	Excess leach conditions
								3.78	1985	52	336	1,000			91.89	0.90	1.31	Excess leach conditions
		MZ4	GCRC_ series	12			DDH	4.02	2561	84	3	400			89.85	0.62	1.48	Excess leach conditions
								4.02	2561	84	3	1,000			90.14	0.80	1.56	Excess leach conditions
		HW	GCRC_ series	12			DDH	1.07	386	26	3	400			94.41	0.39	1.28	Excess leach conditions
								1.07	386	26	3	1,000			94.05	0.72	1.20	Excess leach conditions
2021_Camp	Gounkoto OP extension to a Super Pit Feasibility Study	MZ1	GCRC_ series	142			DDH	6.31	556	134	3	400			90.95	0.53	1.70	Optimal leach conditions
								6.31	556	134	3	1,000			91.24	0.83	1.62	Excess leach conditions
		MZ2	GCRC_ series	182			DDH	2.94	352	36	4	400			88.98	0.49	1.65	Excess leach conditions
								2.94	352	36	4	1,000			90.11	0.83	1.65	Excess leach conditions
		MZ3	GCRC_ series	476			DDH	3.40	519	52	3	400			90.99	0.52	1.69	Excess leach conditions
								3.40	519	52	3	1,000			92.39	0.86	1.55	Excess leach conditions
		MZ4	GCRC_ series	42			DDH	2.29	92	13	3	400			86.23	0.58	2.55	Excess leach conditions
								2.29	92	13	3	1,000			86.94	0.88	2.01	Excess leach conditions

Campaign	Objectives	Ore Zone	ID Series	Sample Received	Met Series Composite	Sample Type	Testing & Assays	Metal				Cyanide Addition (g/t)	SCN Recovery	CIL Recovery	Average	Reagents Consumption (kg/t)		Note on Cyanidation Conditions
								Au (g/t)	As (wt %)	Cu (g/t)	Fe (wt %)				Recovery (%)	NaCN	Lime	
		HW	GCRC_ series	230			DDH	1.92	164	36	3	400			92.35	0.53	1.59	Excess leach conditions
								1.92	164	36	3	1,000			92.74	0.80	1.66	Excess leach conditions
2022_Camp	Gounkoto OP extension to a Super Pit Feasibility Study	MZ3	GCRC_ series	118			DDH	4.71	1073	40	4	400			89.34	0.32	1.60	Optimal leach conditions
								4.71	1073	40	4	1,000			91.63	0.66	1.56	Excess leach conditions
		FW	GCRC_ series	16			DDH	4.06	257	22	4	400			92.86	0.80	1.20	Excess leach conditions
								4.06	257	22	4	1,000			93.28	0.42	1.15	Excess leach conditions
		HW1	GCRC_ series	16			DDH	1.54	151	39	3	400			93.89	0.27	1.32	Excess leach conditions
								1.54	151	39	3	1,000			94.55	0.41	1.28	Excess leach conditions

13.4 Mineralogical Assessment

Core samples and plant samples are regularly submitted for mineralogical assessment of factors affecting gold recovery to improve orebody knowledge. Figure 13-3 summarises the comparative bulk mineralogy of the Loulo-Gounkoto Complex and ore blend in the plant from 2013 to 2022.



Source: Compiled from Venter and Chryssoulis, 2015, 2020a, 2020b, and 2022

Figure 13-3 2013 to 2022 Mineralogical Comparison

13.5 Comminution Characterisation Tests

The Complex’s metallurgical laboratory conducts a weekly test work programme for the continuous monitoring of the Bond ball mill work index (BBWi) and abrasion index (Ai). The data is used to support the mill feed blending strategy to optimise mill power to produce the target grind at the target feed rate within an acceptable wear rate of liners and steel balls as indicated by the abrasion index of material tested. Figure 13-4 shows the trend of BBWi and Ai for the ore treated in the processing plant for the first 31 weeks of 2022. The processing plant continues to show improvement of the overall plant energy consumption, as shown in Figure 13-5.

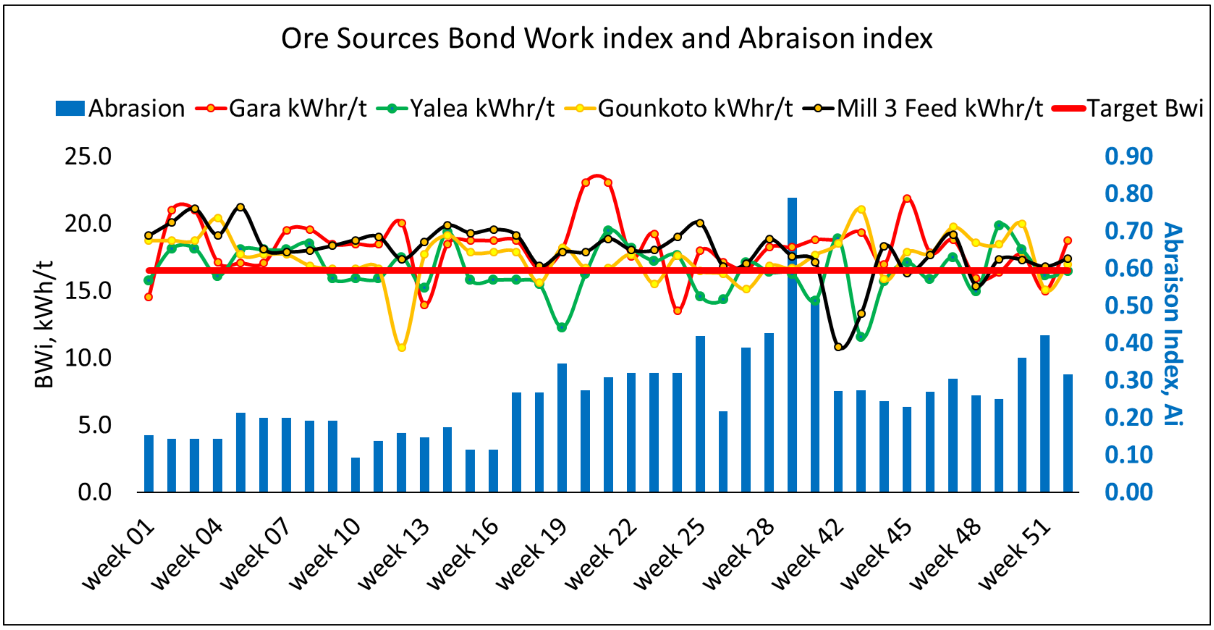


Figure 13-4 Weekly Bond Work Index and Abrasion Index for the First 31 Weeks of 2022

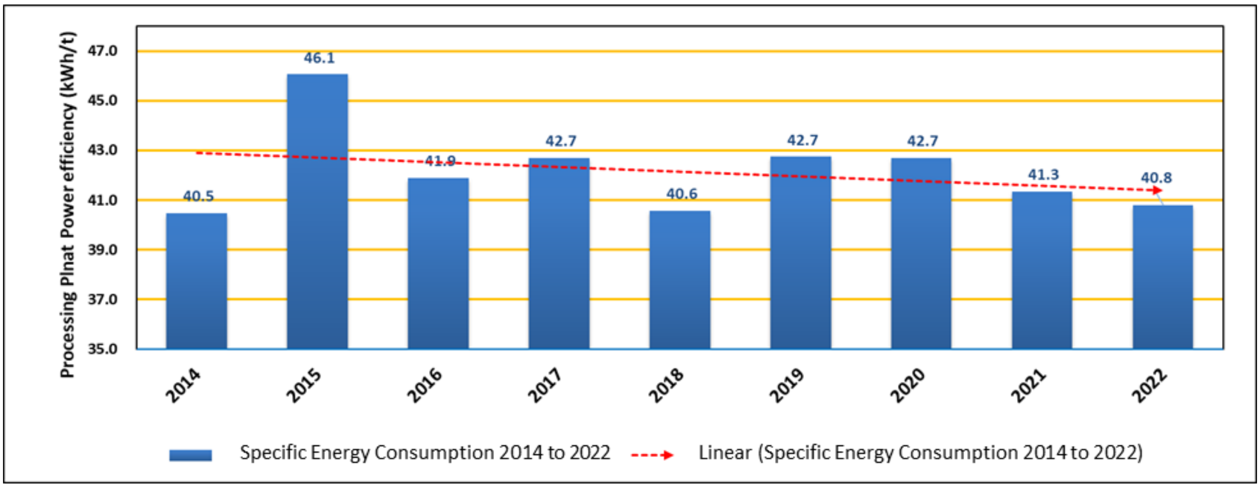


Figure 13-5 2014 to 2022 Yearly Processing Power Efficiency

13.6 Metallurgical Recoveries

The samples tested and analysed for the orebodies and metallurgical recoveries expected at the Loulo-Gounkoto Complex and used in the block model have been selected by site geologists and metallurgists and, in the opinion of the QP, are representative of the orebodies across the deposit. The average recoveries indicated by test work per mine area are presented in Table 13-4.

Table 13-4 Summary of Average Recovery for All Samples

Ore Source	Mining type/zone	Average Recovery Primary Only (%)
Gounkoto	Open Pit	94.46
	Underground	91.85
Loulo OP	Open Pit	92.53
Yalea UG	Center	83.37
	North	83.57
	South A	86.08
	South B	87.69
	South C	89.44
	South Upper	79.14
	South Lower	86.54
Gara UG	North	91.76
	Center	93.32
	South	91.67
	South A	92.95
	South B	92.81
	South LOWER	93.1
	South A UPPER	92.8
	South UPPER	94.21

The Loulo-Gounkoto processing plant monthly gold recoveries for 2022 are indicated in Figure 13-6.

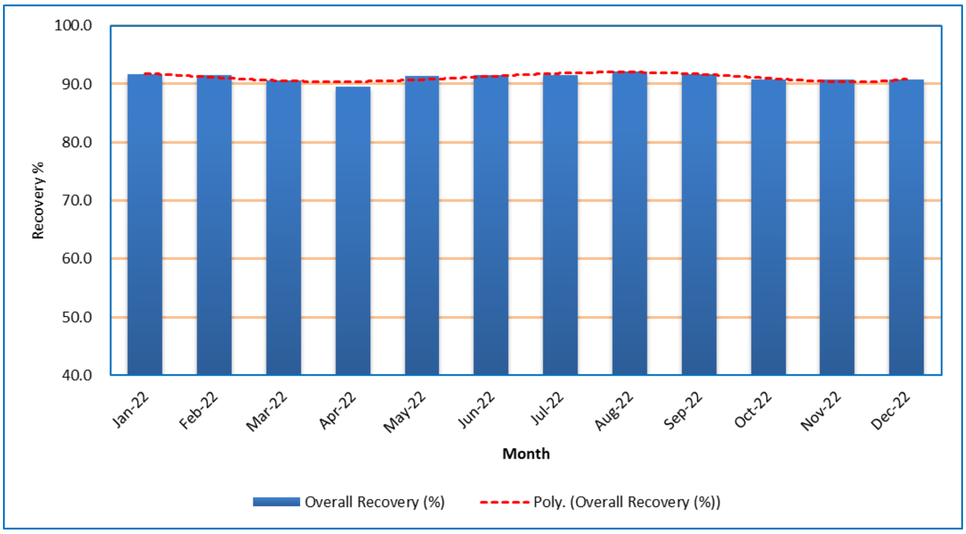


Figure 13-6 2022 Loulo Processing Plant Process Recovery

13.7 Deleterious Elements

The initial design of the Complex at Loulo called for an unlined TSF. During the LOM, an increase in the arsenic content of the deeper underground ores has been observed. This, coupled with the subsequently erected paste plants which require benign slurry streams, has led to Loulo implementing an enhanced mitigation strategy for the deleterious elements present in the slurry streams.

Arsenic and copper are the key deleterious elements, and the strategy of mitigation is ore blending to ensure their concentrations do not reach levels that could adversely affect recovery, with copper controlled below 100 ppm and arsenic below 4,000 ppm. The arsenic level in the water discharged into the environment is maintained at less than 0.1 ppm. It is noted that with the TSF being unlined, keeping the supernatant pool as small as possible helps restrict the negative impact of the resultant plume having an increased driving force to expand. This has not always been possible to achieve considering the effects of wet seasons coupled with plant restrictions to accepting recycled process water.

All the above issues have been addressed with a formal action plan in place to permanently reduce the size of the supernatant pool, but also to implement a direct mitigation treatment regime of the residue stream prior to it leaving the processing plant for the TSF. Thus arsenic, copper, and cyanide tenors are to a large extent eradicated before they have the chance of entering the environment either by controlled discharge or seepage. Environmental borehole monitoring attest to the fact that none of this risk has been manifested to date.

Specific remedial measures are discussed below.

Cyanide

Loulo-Gounkoto is certified by the ICMI, based on the current cyanide discharge levels at the TSF point of discharge meeting the guidelines below 50 ppm. This certification was achieved through an on-site audit based on the ICMI guidelines.

Mitigation occurs inside the plant domain at an area known as the Intermediate Plant, or I-Plant, which comprises a series of tanks, thickeners, and ponds used specifically to direct water flows, as needed, for the rest of the mine. This is a technical requirement for the underground paste plants, which must use detoxified coarse tailings as backfill material to fill the stopes. The Intermediate Plant has cyanide destruction together with cycloning to remove clay and fines and discharges the coarse fraction into a tank backfill production. The process involves two stages of cyanide detoxification using hydrogen peroxide. The paste backfill stream is detoxed to 0.1 ppm free cyanide and 0.5 ppm weak acid dissociable (WAD) cyanide. The tails stream to the TSF is detoxed up to 10 ppm and 50 ppm for free and WAD cyanide, respectively.

AZMET Cyanide Recovery Plant (CRP) pilot test option will be explored for the full tailings stream cyanide recovery process, with pilot plant trials planned for 2023. This process has a concomitant additional gold recovery component, making it more economically attractive as an alternative detoxification process.

Arsenic

Arsenic is the main deleterious element present in the ore coming from Yalea deposit, which can result in dissolved arsenic being present in tailings solution. An arsenic treatment unit using ferrous sulphate to precipitate arsenic from solution was commissioned at the water treatment plant in 2020. Recently the Loulo treatment plant has begun construction of an arsenic stabilisation unit, aimed at stabilising dissolved arsenic in solid form in the upstream tailings slurry thereby decreasing the level of arsenic in the solution. The initial commissioning of the plant was scheduled for Q4 2022 and has meanwhile been delayed to Q2 2023 because of the unavailability of semi-conductors for the control equipment.

Copper

Copper, though not a predominant element in the orebody, does occur in the Yalea orebody at elevated concentrations in excess of 100 ppm, which has been established as the maximum threshold level before copper concentration starts to impact the overall plant recovery and reagent consumption. It is, however, not a known source of problem in the discharge slurry and hence water at the TSF.

13.8 Conclusion

Mineral processing and metallurgical testing fundamentals are well established. The ore characterisation insights gained have contributed to the achievement of ongoing relatively high, consistent, and predictable gold recoveries.

In the opinion of the QP, the rigorous representative sampling and testing of new deposits provides a sound geometallurgical understanding of process requirements as mining activities advance.

Test work and gold recovery variability characterisation has, in the QP's opinion, resulted in provision of considerable flexibility and rigour within the plant processes.

In the QP's opinion there are no further factors that can have a significant effect on potential economic extraction.

14 Mineral Resource Estimate

14.1 Summary

The Loulo-Gounkoto Complex Measured and Indicated Mineral Resources, as of 31 December 2022, are estimated on a 100% ownership basis at approximately 92 Mt at 3.85 g/t Au containing 11 Moz of gold, with an additional Inferred Mineral Resource of approximately 28 Mt at 2.6 g/t Au containing 2 Moz of gold (Table 14-1). The Mineral Resource estimates have been prepared according to the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) 2014 Definition Standards for Mineral Resources and Mineral Reserves dated 10 May 2014 (CIM (2014) Standards) as incorporated into NI 43-101 and using the guidance outlined in CIM Estimation of Mineral Resource and Mineral Reserve Best Practice Guidelines 2019 (CIM (2019) MRMR Best Practice Guidelines).

Table 14-1 Loulo-Gounkoto Mineral Resource Estimate Summary – 31 December 2022

Type	Category	Tonnes (Mt)	Grade (g/t Au)	Contained Gold[1] (Moz Au)	Attributable Gold[1] (Moz Au)
Stockpiles	Measured	8.1	1.77	0.46	0.37
Open Pit	Measured	7.1	3.30	0.76	0.61
	Indicated	20	2.90	1.8	1.5
	Inferred	8.1	1.9	0.48	0.38
Underground	Measured	22	4.39	3.1	2.5
	Indicated	35	4.63	5.3	4.2
	Inferred	20	2.9	1.8	1.5
Total Mineral Resources	**Measured**	**37**	**3.61**	**4.3**	**3.4**
	Indicated	**55**	**4.02**	**7.1**	**5.7**
	Measured + Indicated	**92**	**3.85**	**11.4**	**9.1**
	Inferred	**28**	**2.6**	**2.3**	**1.9**

Notes:

1. Mineral Resources are reported on a 100% and attributable basis. Attributable refers to the quantity attributable to Barrick based on Barrick's 80% interest in each of SOMILO and Gounkoto SA.
2. The Mineral Resource estimate has been prepared according to CIM (2014) Standards and using CIM (2019) MRMR Best Practice Guidelines.
3. All Mineral Resource tabulations are reported inclusive of that material which is then modified to form Mineral Reserves.
4. Open pit Mineral Resources are reported at a $1,700/oz gold price at an average cut-off grade of 0.79 g/t Au (minimum 0.5 g/t Au and maximum 0.87 g/t Au).
5. Underground resources are reported in situ within a minimum mineable stope shape at an average cut-off grade of 1.43 g/t Au (minimum 1.33 g/t Au and maximum 1.8 g/t) at a $1,700/oz gold price.
6. Mineral Resources for Loulo were estimated under the supervision of Mr Simon Bottoms, CGeol, MGeol, FGS, FAusIMM, an officer of Barrick and QP.
7. Numbers may not add due to rounding. Tonnes and contained gold are rounded to 2 significant figures. All Measured and Indicated grades are reported to 2 decimal places whilst Inferred Mineral Resource grades are reported to 1 decimal place.

The QP is not aware of any environmental, permitting, legal, title, taxation socioeconomic, marketing, political, metallurgical, fiscal, or other relevant factors, that could materially affect the Mineral Resource estimate.

The cut-off grade selected for reporting each of the open pit Mineral Resource estimates corresponds to the in-situ marginal cut-off grade at either fresh, transitional, or saprolite oxidation states, using a gold price of $1,700/oz Au. The pit shell selected for constraining Mineral Resources of each of the deposits also corresponds to a gold price of US$1,700/oz Au. Reasonable prospects for eventual economic extraction are demonstrated by this pit optimisation process.

Underground Mineral Resources were reported using Mineable Shape Optimiser (MSO), effectively within a minimum mineable stope shape, applying reasonable mineability constraints, which include a 4.5 m minimum mining width, a reasonable distance from current or planned development, and a measure of assumed profitability at the related resource cut-off grade. As such, underground Mineral Resources are considered to have reasonable prospects for eventual economic extraction.

Stockpiles are comprised of mineralised material stored at the surface ROM pad, originating from both open pit and underground production. Each stockpile is filled with similar material types, with an established grade range and oxidation state, tracked as part of normal mining operations and metal accounting. The stockpiles are measured by a weekly drone survey. Grade and tonnage of open pit stocks are estimated according to source dig blocks and number of truck counts, using a weighbridge to adjust for fluctuations in both density and truck fill factor. Grade and tonnage of underground stocks are estimated according to shaft skip weights and ore pass truck counts and their source blasts from stopes, adjusting for the presence of paste dilution.

The Loulo-Gounkoto Complex Mineral Resources are made up of several ore bodies. Table 14-2 lists the deposits, their producing status, and the resource model date.

Table 14-2 Summary of Deposits and Model Date

Deposit	Producing Status	Model Date
Yalea Underground	Active	15/07/2022
Yalea South Open Pit	Partially Mined	15/07/2022
Gara Underground	Active	15/08/2022
Gounkoto Underground	Active	27/06/2021
Gounkoto Open Pit	Active	27/06/2021
Gara-West Open Pit	Active	31/07/2021
Yalea-Ridge	Unmined	05/05/2021
Faraba	Unmined	15/09/2022
Baboto	Partially Mined	14/05/2017
Loulo 3 (inclusive of L2/3 gap, Loulo 2 and Loulo 1)	Partially Mined	30/08/2020
P129	Partially Mined	31/12/2009
P125L3	Unmined	31/12/2011
P129QT	Partially Mined	31/12/2006
PQ10	Unmined	31/12/2010

14.2 Resource Database

Yalea

Table 14-3 summarises the database used for the Yalea 2022 Mineral Resource Estimate, which has a data cut-off of 15 July 2022. Both Yalea OP and UG deposits are modelled in a single block model.

Table 14-3 Yalea Drill Summary Used in the 2022 Mineral Resource Estimate

Year Completed	Drill Type	No. of Holes	Min. Depth (m)	Max. Depth (m)	Total Drilled (m)
2022	DDH	69	51	1,316	14,152
2021	DDH	231	75	1,419	64,724
2020	DDH	310	45	1,580	89,370
2019	DDH	582	27	1,205	96,362
2018	DDH	214	46	1,197	58,506
2017	DDH	208	42	1,202	45,591
2016	DDH	104	51	1,359	22,618
2015	DDH	33	19.7	1,140	10,980
2015	RC	70	14	94	4,479
2014	DDH	134	39	1,038	25,845
2013	DDH	70	21	942	12,995
2012	DDH	39	60	915	8,118
2011	DDH	139	36	382	16,415
2010	DDH	124	15	300	11,461
2010	RC	286	10	102	7,265
2009	DDH	21	25.46	81.15	1,073
2009	RC	1459	6	150	41,253
2008	RC	164	9	167	7,696
2008	DDH	16	10.7	71.5	765
2007	RC	88	17	169	4,327
2006	RC	118	20	159	8,945
2005	TR	24	8	91.5	1,004
2005	GL	267	8.5	146.6	15,325
2005	DDH	92	51	1,429.8	49,317
2004	RC	44	20	125	3,381
2004	DDH	58	149	782	26,954
2003	DDH	19	30	714	4,929
2002	TR	3	42	58	147
2001	DDH	4	120	136	504
1998	DDH	18	80	182	2,476
1997	DDH	90	42	232	13,121
1996	DDH	4	109	150	511
1994	DDH	1	43	43	43
1993	DDH	8	9	90	468

Year Completed	Drill Type	No. of Holes	Min. Depth (m)	Max. Depth (m)	Total Drilled (m)
1993	PIT	9	1	2	12
1993	GL	37	7.4	73	1,396
1993	DDH	3	51	126	294
Total		**5,160**	**-**	**-**	**672,822**

Yalea currently consists of seven ore domains and three mineralised carbonate domains: 9001, 9002, 9003, 9004, 9005, 9006, 9007, 8002, 8003, and 8004.

Gara

Table 14-4 summarises the database used for the 2022 Gara Mineral Resource estimate, which has a data cut-off of 15 August 2022.

Table 14-4 Drill Summary of Gara Holes Used in the 2022 Mineral Resource Estimate

Year Completed	Drill Type	No. of Holes	Min. Depth (m)	Max. Depth (m)	Total Drilled (m)
2022	DDH	134	57	1,327	37,335
2021	DDH	189	39	249	23,151
2020	DDH	342	24	285	41,676
2019	DDH	504	42	950	69,032
2018	DDH	157	69	1,176	25,781
2018	CH	22	4.6	6.3	118.1
2017	DDH	182	12	1,182	38,514
2017	CH	238	4	26.3	1,345.4
2016	DDH	252	27	1219	66,235
2016	CH	107	4	7.5	559.3
2016	RC	115	48	234	16,937
2016	TR	15	36	120	1,182
2015	DDH	171	21	1,143	45,762
2015	CH	24	5	5.8	125.8
2015	TR	4	81.61	116	401
2014	DDH	158	42	951	31,540
2014	CH	63	4	7	346.8
2013	DDH	88	42	522	13,660
2013	CH	182	4.5	24	1,104.3
2013	TR	2	27	107	134
2012	DDH	124	15	252	12,735
2012	CH	202	4	11	1,094.3
2012	RC	102	14	32	2,512
2011	DDH	46	30	192	4,523
2011	RC	133	10	35	3,254
2010	RC	152	10	30	3,477
2009	RC	75	8	30	1,969
2008	DDH	12	90	185	1,375

Year Completed	Drill Type	No. of Holes	Min. Depth (m)	Max. Depth (m)	Total Drilled (m)
2008	RC	245	8	210	7,770
2007	DDH	21	396	1,206	15,071
2007	RC	862	5	216	24,421
2006	DDH	34	131	791	16,891
2006	RC	604	10	206	13,963
2005	DDH	24	159	728	10,103
2005	RC	85	42	126	6,321
2004	DDH	5	78	473	1,280
2004	RC	18	44	90	1,186
2003	DDH	44	65.5	601	10,200
1997	DDH	15	101	198	2,335
1994	DDH	32	48	602.2	4,810
1993	DDH	95	15.8	375	11,611
Total		**5,879**	**-**	**-**	**571,841**

The complete resource databases used to update the 2022 model updates are detailed in Table 14-4. Underground channel samples were only used for the Mineral Resource estimation at Gara. Due to the vein stockwork nature of this deposit, a cross face channel sample provides a true representation of the mineralisation.

Gara currently consists of four mineralised domains: 100, 200, 300, and 400.

Gounkoto

During 2022, a total of 136 DD and RC drill holes were completed for a total of 25,739 m.

Table 14-5 summarises the database used for the Gounkoto 2022 Mineral Resource estimate, which has a data cut-off of 27 June 2022.

Table 14-5 Gounkoto Drill Summary Used in the 2022 Mineral Resource Estimate

Year Completed	Drill Type	No. of Holes	Min Depth (m)	Max Depth (m)	Total Drilled (m)
2022	DDH	91	45	219	13,704
	RC	45	185	330	12,035
2021	DDH	131	81	915	32,899
	RC	374	10	325	56,172
2020	DDH	64	425	1,050	40,272
	RC	658	10	354	76,789
2019	DDH	26	194	1,022	15,567
	RC	755	12	288	81,065
2018	DDH	21	52	449	4,775
	RC	769	7	336	69,801
2017	DDH	9	134	323	2,059
	GT	4	100	110	430

Year Completed	Drill Type	No. of Holes	Min Depth (m)	Max Depth (m)	Total Drilled (m)
	RC	781	6	133	40,681
2016	DDH	22	221	512	8,196
	GT	28	100	604	6,766
	RC	930	6	250	46,811
2015	DDH	20	9	792	7,046
	GT	292	5	400	5,466
	RC	1,012	7	280	54,578
2014	DDH	63	9	1,202	33,502
	GT	5	120	350	1,160
	RC	368	8	270	28,711
2013	DDH	40	9	1,006	17,299
	GT	9	41	882	2,729
	RC	878	6	250	50,638
2012	DDH	2	188	805	993
	GT	1	453	453	453
	RC	1,329	6	99	37,965
2011	DDH	25	152	1,232	15,100
	RC	130	15	216	10,479
2010	DDH	108	53	929	40,622
	GT	21	101	257	3,619
	RC	339	20	150	26,602
2009	DDH	72	41	398	15,289
	RC	24	26	156	2,010
2008	DDH	2	158	167	325
2002	RC	1	57	57	57
2000	RC	2	100	100	200
Total		**9,451**			**862,866**

Gounkoto has been sub-divided into fourteen geological domains based upon structural controls, alteration type, and mineralisation style. These comprise four main zones (MZ1, 2, 3, 4), two footwall zones (FWFE, FWNE), six hanging wall zones (HW), P64E, and P64W.These geological domains are further sub-divided into 51 estimation domains according to geometry, grade, and host lithology.

Faraba

During 2022, a total of 256 DD and RC drill holes were completed for a total of 40,998 m. The drilling at Faraba consists of a Resources to Reserves conversion drilling programme generally completed at a 25 m by 25 m spacing but in some areas, 50 m by 50 m spacing.

Table 14-6 summarises the database used for the Faraba 2022 Mineral Resource estimate, which has a data cut-off of 15 September 2022.

Table 14-6 Faraba Drill Summary Used in the 2022 Mineral Resource Estimate

Year Completed	Drill Type	No. of Holes	Min Depth (m)	Max Depth (m)	Total Drilled (m)
2022	DDH	51	114	449	1,2761.1
	RC	203	20	335	27,704
	RC_DDH	2	219	314	533
2021	DDH	5	170.5	437	1,287.5
	RC	42	87	348	9,879
	RC_DDH	1	300	300	300
2019	DDH	12	116	725	3,352.5
	RC	7	108	270	1,122
2018	DDH	5	245	485	1,655.9
	RC	7	83	144	919
2017	DDH	-	-	-	-
	RC	19	66	216	2,340
2013	DDH	-	-	-	-
	RC	1	141	141	141
2012	DDH	-	-	-	-
	RC	8	48	150	784
2011	DDH	5	227	350	1,372.8
	RC	30	50	151	3,316
2010	DDH	-	-	-	-
	RC	32	97	105	3204
2008	DDH	8	160.7	433.5	2,418.8
	RC	-	-	-	-
2007	DDH	13	176	344	3,255.2
	RC	-	-	-	-
2006	DDH	6	206	322	1,683
	RC	39	40	212	3,566
2005		-	-	-	-
	RC	23	50	246	2,887
Total		**519**			**84,481.80**

Faraba currently consists of nine main mineralised lode systems; FN_MZ, FN_FW, FN_HW, FM_MZ, FM_FW, FM_HW, F_Gap_MZ, F_Gap_FW, and F_Gap_HW, which each have different structural and/or lithological controls. These systems are further sub-divided into individual lodes according to grade, position, and host lithology. There are a total of three domains in the FN_MZ lode system (1101, 1102, and 1103), seven domains in the FN_HW lode system (1201, 1202, 1203, 1204, 1205, 1206, and 1207), eight domains in the FN_FW lode system (1301, 1302, 1303, 1304, 1305, 1306, 1307, and 1308), one domain in the FM_MZ lode system (3100), two domains in the FM_HW lode system (3200 and 3201), six domains in the FM_FW lode system (3300, 3301, 3302, 3303, 3304 and 3305), three domains in the F_Gap_MZ lode system (2101, 2102, and 2103), four domains in the F_Gap_HW lode system (2201, 2202, 2203 and 2204), and two domains in the F_Gap_FW lode system (2301 and 2302).

Gara West

At Gara West, a total of 484 RC drill holes were completed during 2022 for GC drilling on a 10 m by 5 m spacing and totalling 37,767 m. Table 14-7 summarises the database used for the 2022 Gara West Mineral Resource estimate, which has a data cut-off of 31 July 2022.

Table 14-7 Gara West Drill Summary Used in the 2022 Mineral Resource Estimate

Company	Year Completed	Drill Type	No. of Holes	Min Depth (m)	Max Depth (m)	Total Drilled (m)
SOMILO	2022	RC	484	6	225	37,767
SOMILO	2021	RC	1,105	6	196	59,717
SOMILO	2020	DDH	2	131	140	271
SOMILO	2018	DDH	1	354	354	354
SOMILO	2015	DDH	1	169	169	169
SOMILO	2009	RC	61	15.8	113	3,241
SOMILO	2007	RC	61	30	132	4,066
SOMILO	2005	DDH	1	79	79	79
SOMILO	2003	DDH	20	85	226	2,943
SOMILO	2003	TR	21	10	119.3	1,455
Grand Total			**1,757**	**6**	**354**	**110,062**

Table 14-20 presents statistics of the composite samples used in the 2022 Mineral Resource estimate for the Gara West deposit.

14.3 Geological Modelling

Geological interpretation and modelling are based on the following standard procedures:

- Hard copy geological cross sections and longitudinal sections are generated and updated during drill campaigns. These are then scanned and georeferenced to be used as a basis for 3D modelling.
- Geological interpretations are digitised as polylines on cross sections spaced (5 m or 10 m) apart. Lithological, weathering, oxidation, low- and high-grade polylines are drawn on each section and snapped to the corresponding sample interval.
- For active mining areas, the geological and mineralisation models are updated monthly when additional GC data is available.
- Interpretations are regularly cross checked with DD core and RC chips to ensure the model is representative.
- Chip samples are used within the underground development area to provide an additional source of information regarding the mineralisation associated with the alteration, particularly when mapping low-grade halo contacts. This data is recorded on the underground geological maps, which are then scanned and georeferenced for wireframe model updating. However, this data is used only for modelling of geological contacts and is not directly used for Mineral Resource estimation.
- Rip-line samples are used within the open pit exposed benches to provide an additional source of information regarding lithologies and mineralisation, particularly when mapping

contacts and updating the exact dimensions of modelled internal dilution, artisanal depletion, and carbonaceous shale units. This data is used for refining geological models but is not used for Mineral Resource estimation.

For the Gara, Yalea, Gounkoto, Faraba, and Gara West models updated in 2022, geological wireframes were generated in Vulcan on vertical sectional interpretations, spaced based upon the drill hole density (typically 10 m to 20 m). For feasibility projects, such as Loulo 3, 3D geological wireframes were generated in Seequent Leapfrog Geo software, using validated mineralisation and geological intercepts.

Some historic models (P125L3, P129, P129QT, and PQ10, representing only 0.5% of the total ounces) have not been updated recently due to lack of new geological information, having previously been generated in Gemcom software using sectional interpretation on variable spacing depending on the drill hole density. Based upon observed structural controls and density variations, the domain solids were sub-domained prior to estimation. The procedures for generating the solids have not altered from those outlined in the 2018 Technical Report on the Loulo-Gounkoto Gold Mine Complex (Randgold, 2018).

Yalea

The geology model wireframes were generated in Vulcan on 5 m spaced vertical sections. Wireframe strings are generated on these sections based on trenches, RC, and diamond drill holes, including underground infill GC drilling, and the HW and FW shears as bounding structures. There is generally a sharp contact between the mineralisation and waste material with a strong correlation between the grade change and that of the alteration and structure deformation.

The Yalea solid consists of Yalea South, Yalea North, P125 Zone, and a high-grade domain referred to as ‘Purple Patch’ (domain 9006). Additional HW mineralisation hosted in Carbonate units (CB2, CB3, CB4) was modelled to capture any significant continuous splays. These mineralised solids were cropped against a basal surface. The basal surface for each deposit was generated at the limit of geological continuity, which is above that of the deepest drill hole intersects. The mineralised model has also been updated to follow the Yalea Shear. The first update of the Panel Zone target in Yalea South was completed in Q4 2019 to resolve the splay-type geometry below the -580RL at Yalea (i.e., HW Zone and Yalea Shear). The splay-type geometry is driven by the divergence of a carbonate unit from the Yalea Shear which corresponds to HW Zone mineralisation. During the Optiro review (Glacken & Barron, 2018) it was postulated that the same splay-type geometry may extend through the northern part of the system, pending validation. This has now been validated and implemented. A separate lithology and fault model has been constructed in Leapfrog Geo.

The domain solids have been separated into weathering domains and structural orientation sub-domains (Figure 14-1). The ‘Purple Patch’ is located predominantly in the northern portion of the mineralisation and has been modelled as a separate high-grade domain due to the very high sulphide content within this zone, which gives it a higher density (on average 3.1 g/cm^3). This domain is observed in drill core and underground as visually different from the other fresh domains, with high density and grade associated with strong shearing and chlorite alteration that further supports estimation with a hard boundary.

A complete re-log of all the existing drill core from within the ‘Purple Patch’ concluded that ‘Purple Patch’ style mineralisation only occurred in areas where at least two of the three phases of alteration were present (Figure 14-1). The application of longitudinal sub-domain wireframes within the ‘Purple Patch’ enabled a minimum wireframe thickness of 1.5 m and thus delineated better statistical populations, minimising the amount of waste samples included in the domains.

During 2021, infill and step out resource definition drilling to the south of the main Yalea resource defined a significant extension to the Yalea South Mineral Resources, especially at depth. Yalea South Open Pit and Yalea Underground Resources are modelled together in a single block model, as part of the same continuous mineralised body.

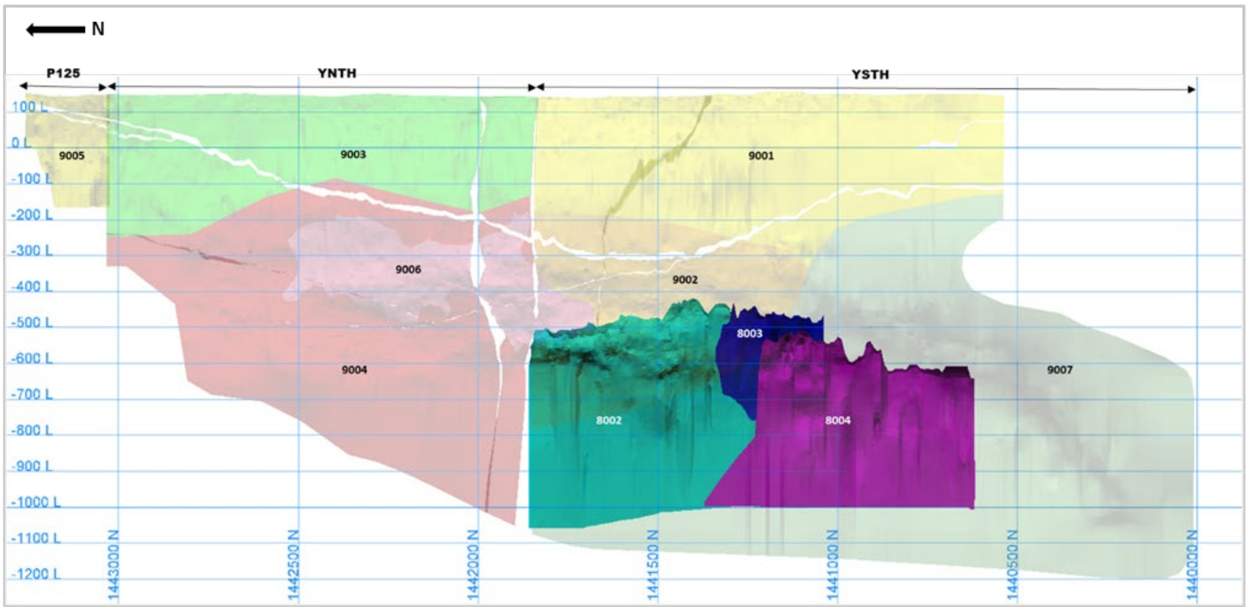


Figure 14-1 Yalea Model Geological Domains (Looking East), Cropped Against a Basal Surface

Yalea geological domains for both Yalea South OP and Yalea Underground are then sub-domained by grade distribution and mean grades for the estimation (Figure 14-2).

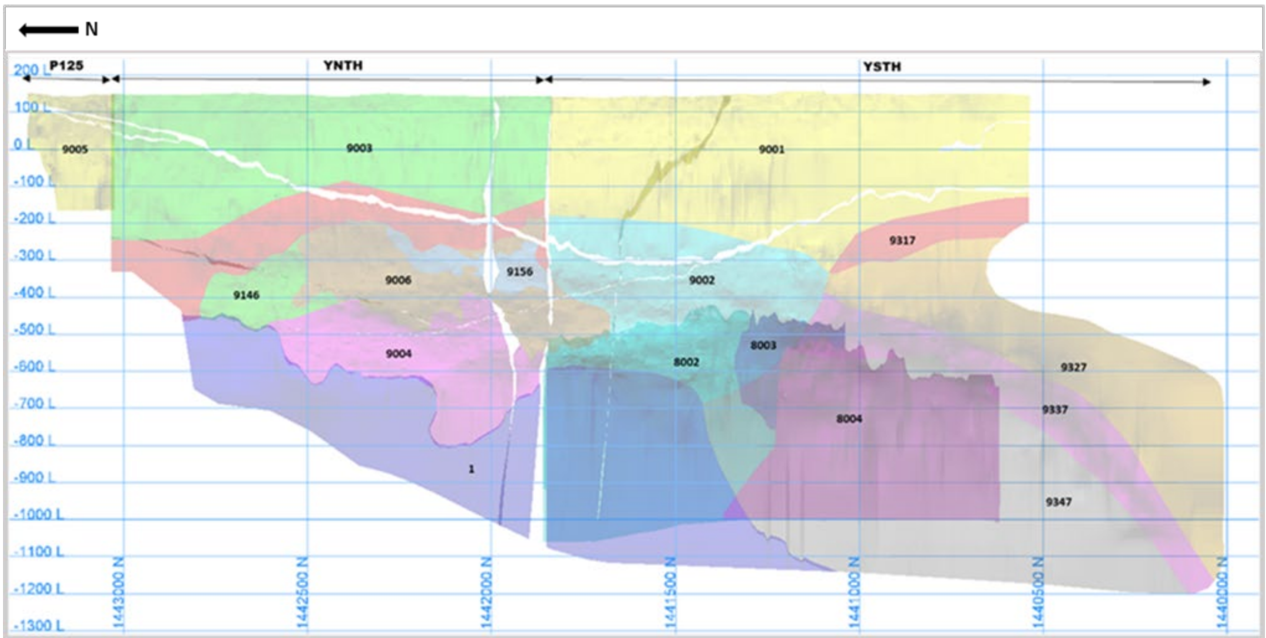


Figure 14-2 Yalea Model Estimation Sub-Domains (Looking East), Cropped Against Basal Surface

Gara

The Gara geological domain solid model was generated in Vulcan modelling software from 5 m spaced vertical section strings. Wireframe section strings were created using trenches, advanced RC, grade control RC, and diamond drill holes, including underground drilling, and mapping information. There is generally a sharp shear contact between the mineralisation and HW waste material. The FW contact is more complex due to the gradational reduction in the degree of tourmalinisation. Due to the folded nature of the body, the solids have been sub-divided into separate structural orientation domains (Figure 14-3), although dynamic anisotropy (DA) is used during the estimate. The mineralisation domains show a strong correlation between the gold grade and the silicium-calcium (Si-Ca) fracture vein intensity, as a function of syn-mineralisation deformation. A separate lithology and fault model has been constructed in Leapfrog Geo.

Drilling in 2017 defined southerly extensions of the mineralisation, following on from exploration conversion drilling during 2016. These have been classed under the Gara Far South and Gara Far South Extension, coded as domains 7605, 9600, 4605, and 9605. Domains 4600, 4605, and 8400 are all excluded from underground Mineral Resource reporting as they are not deemed to demonstrate reasonable prospects for eventual economic extraction.

Each geological domain is attributed a single code for the estimation. The homoclinal limb of the fold is coded as geological domains 3000, 4000, 4600, and 4605, which correspond to Zone 1 in the historic model terminology. Gara is also domained by drill domain for estimation purposes (Figure 14-4), with drill domain 100 being open pit GC, 200 as UG GC, 300 as UG AGC, and drill domain 400 as exploration spacing.

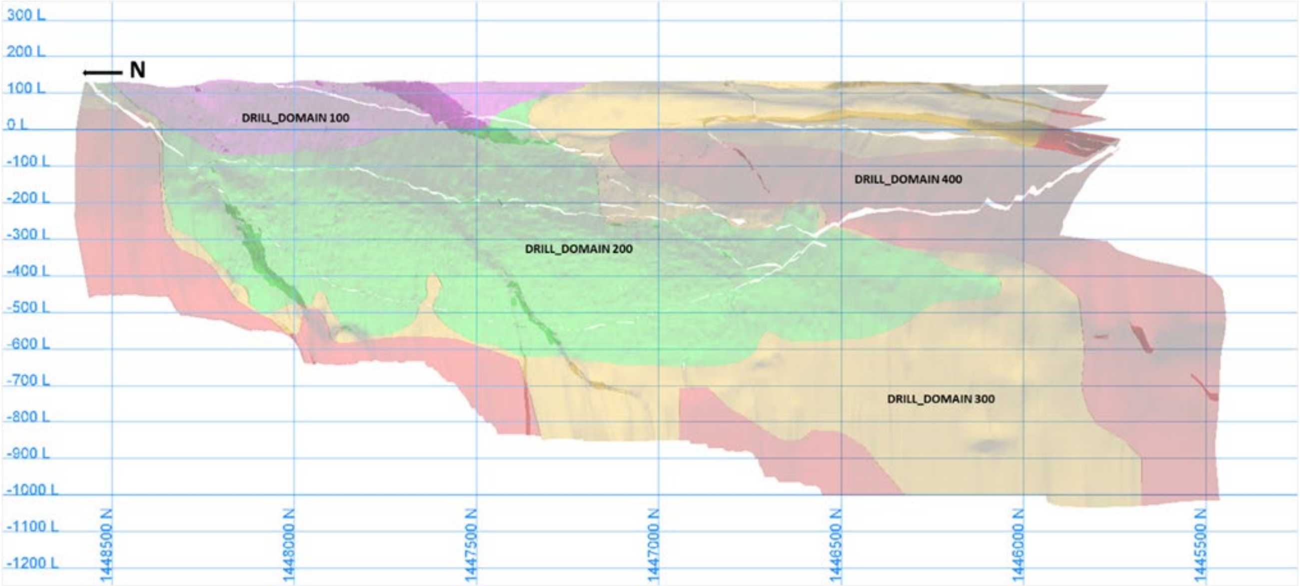


Figure 14-3 Gara Model and Geological Domains (Looking East)

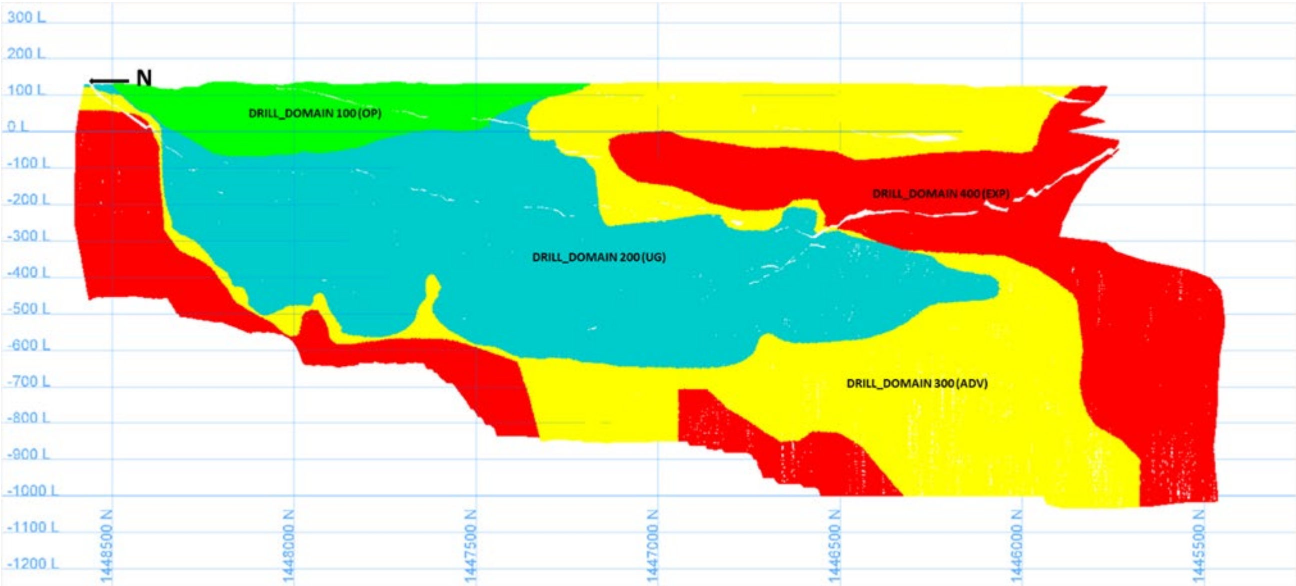
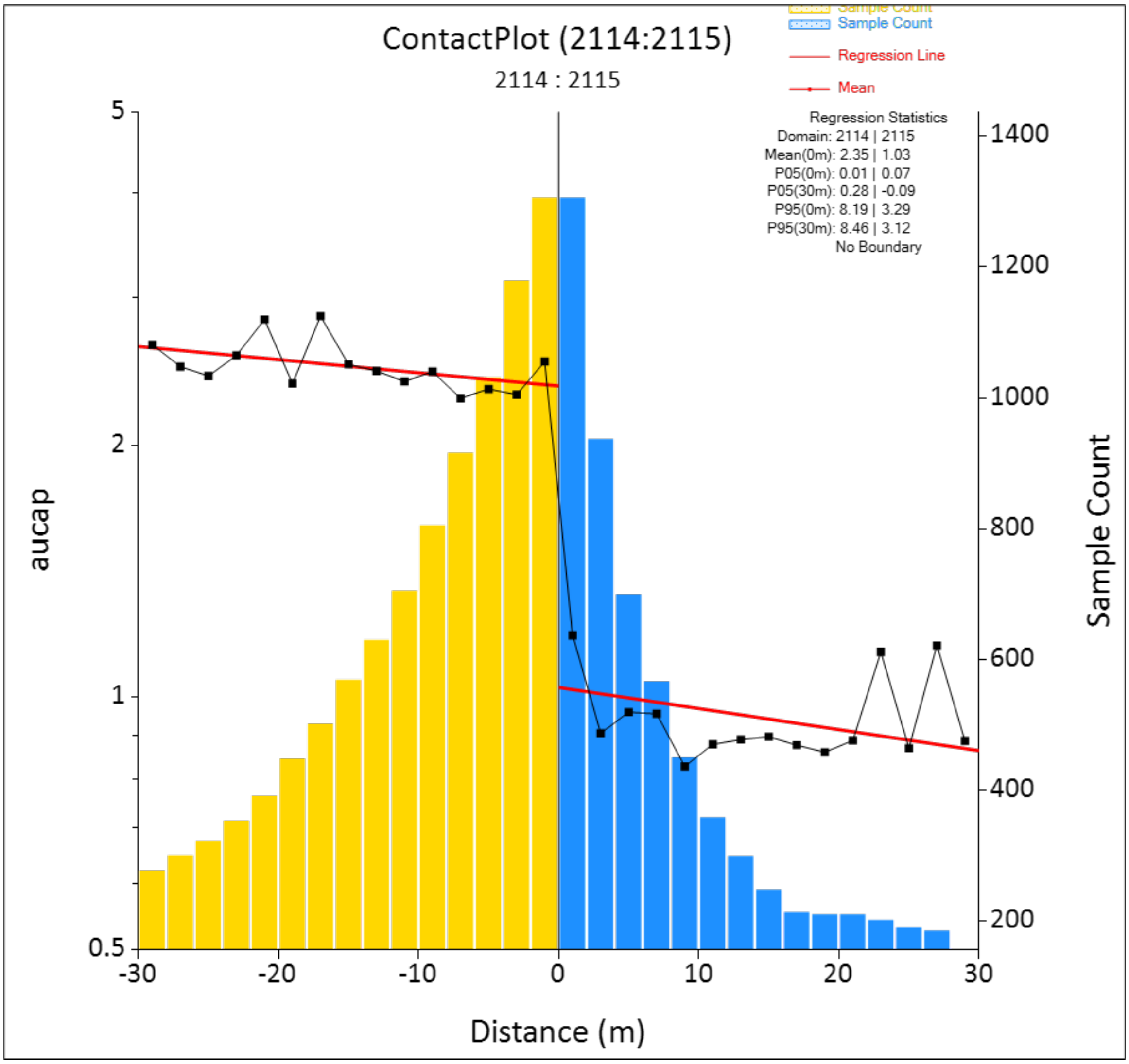


Figure 14-4 Gara Model and Drill Spacing Domains (Looking East)

Gounkoto

Mineralisation domains were built based on a combination of grade, lithology, alteration, and structural data, and the presence of pyrite. In areas where further contiguous high-grade shoots are evident and supported by the geological logging, high-grade continuity wireframes were also built. The intention of the geological domaining is to generate a single stationary geostatistical population for each of the domains.

Boundary analysis (Figure 14-5) is completed to check the nature of the grade transition across domain contacts, most profiles being sharp (hard) and rarely gradual (soft). This helps delineate the rod-like high-grade mineralisation shoots noted in the Gounkoto deposits.



Notes: Aucap shown in g/t

Figure 14-5 Boundary Analysis between Gounkoto High-Grade (2114) and Low-Grade (2115) Domains

Composites are coded by domain. These codes are used for statistical analysis and domain control during the estimation process. The coding of the composites and block model is prioritised to ensure that the high-grade domain codes are preserved when they are situated within surrounding low-grade mineralisation envelopes.

Consistent domain codes are assigned to both the database and geological block model. The high-grade mineralised envelopes are predominantly situated within low-grade mineralisation wireframes, which are built independently of each other. Since Boolean operations are not utilised to remove these overlaps between internal high-grade shoot models and surrounding low-grade mineralisation envelope wireframes, care is taken to avoid the double-counting of samples and blocks.

Gounkoto open pit was optimised on a $1,700/oz Au pit shell and is effectively unchanged from the $1,500/oz pit shell as it is constrained by both waste dump infrastructure around the pit and underground infrastructure, making it insensitive to gold price changes above $1,200/oz.

Figure 14-6 shows a 3D view of the Gounkoto mineralisation.

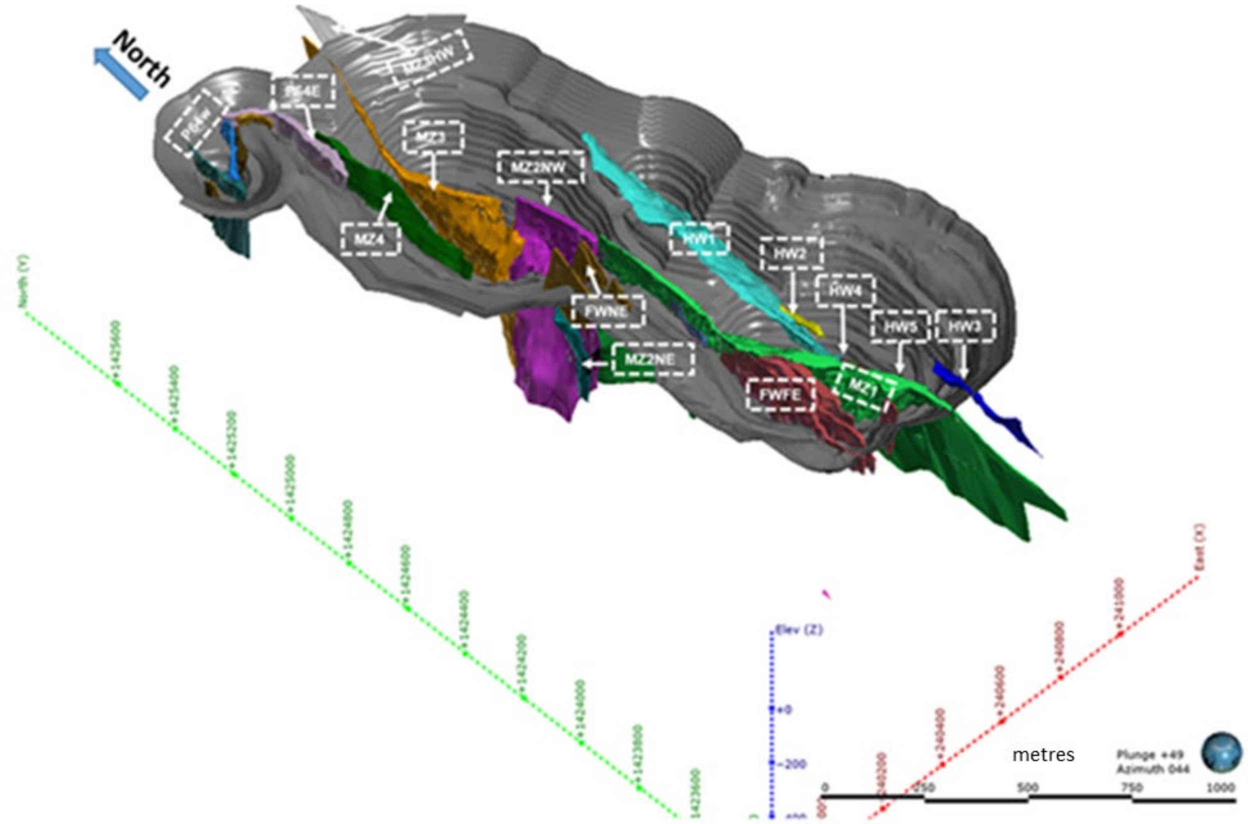


Figure 14-6 3D View of Gounkoto Mineralisation

Faraba

This area has been modelled using a combination of grade continuity, alteration, mineralisation, and structural readings, where available.

The mineralisation wireframes generally followed a threshold grade of 0.5 g/t Au but included some internal dilution of lower-grade material, where applicable, to create reasonably continuous envelopes. The geological model of Faraba consists of a series of discrete shears and hydrothermal breccias developed generally at the rheological contacts between competent coarse-grained sandstone units and relatively ductile polymictic breccia associated with silica albite alteration overprinted by hematite and chlorite. Mineralisation consists of quart-carbonate veins with pyrite and arsenopyrite in fracture fill and dissemination styles. At Faraba North, the mineralisation is sub-parallel to stratigraphy and the dips vary from 50° to 60° to the east, while at Faraba Main, the mineralisation crosscuts the primary foliation parallel bedding and is directly adjacent to Dip Domain Boundary (DDB) in the HW package. The mineralisation wireframe has been constrained between the newly defined DDB structure to the east and an inferred hematite fault to the west.

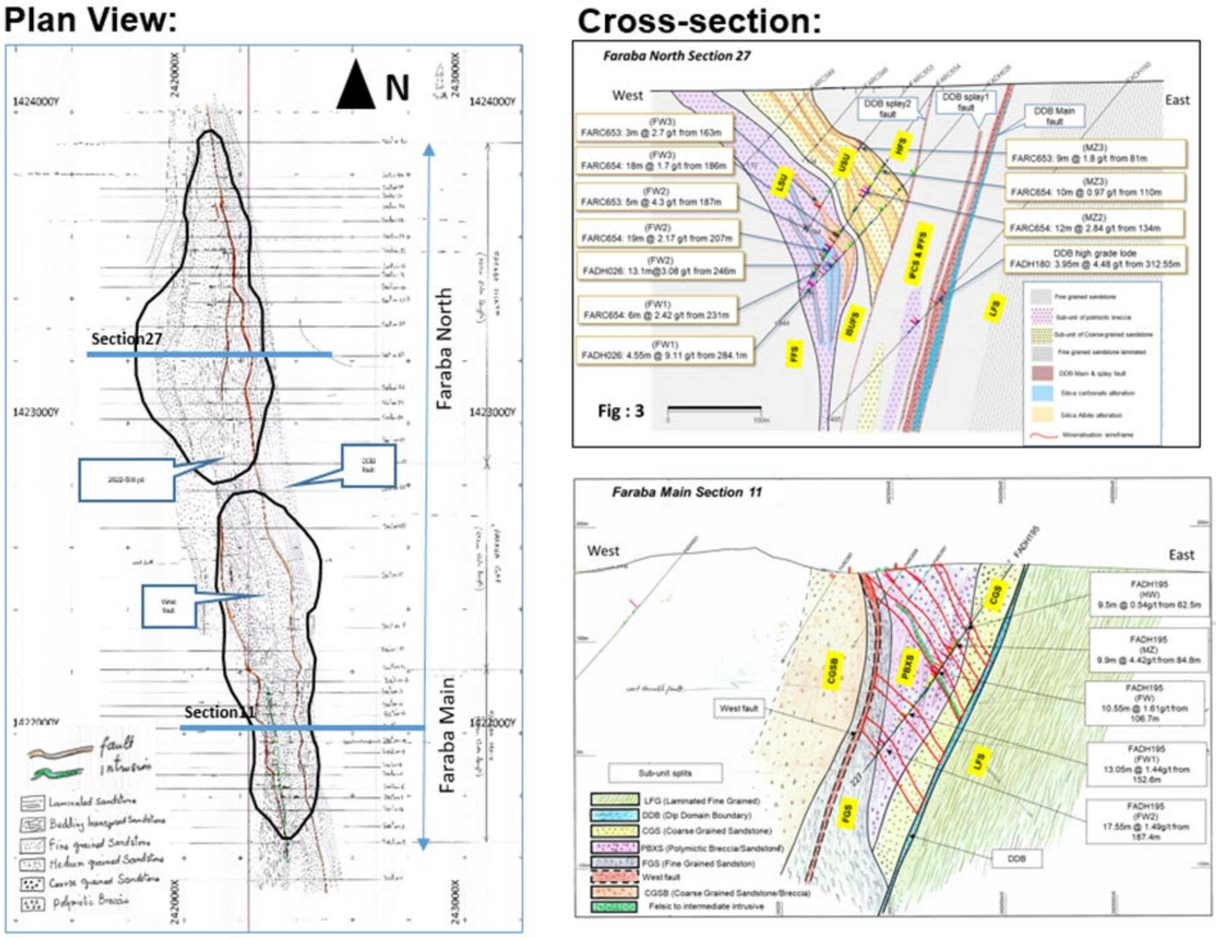
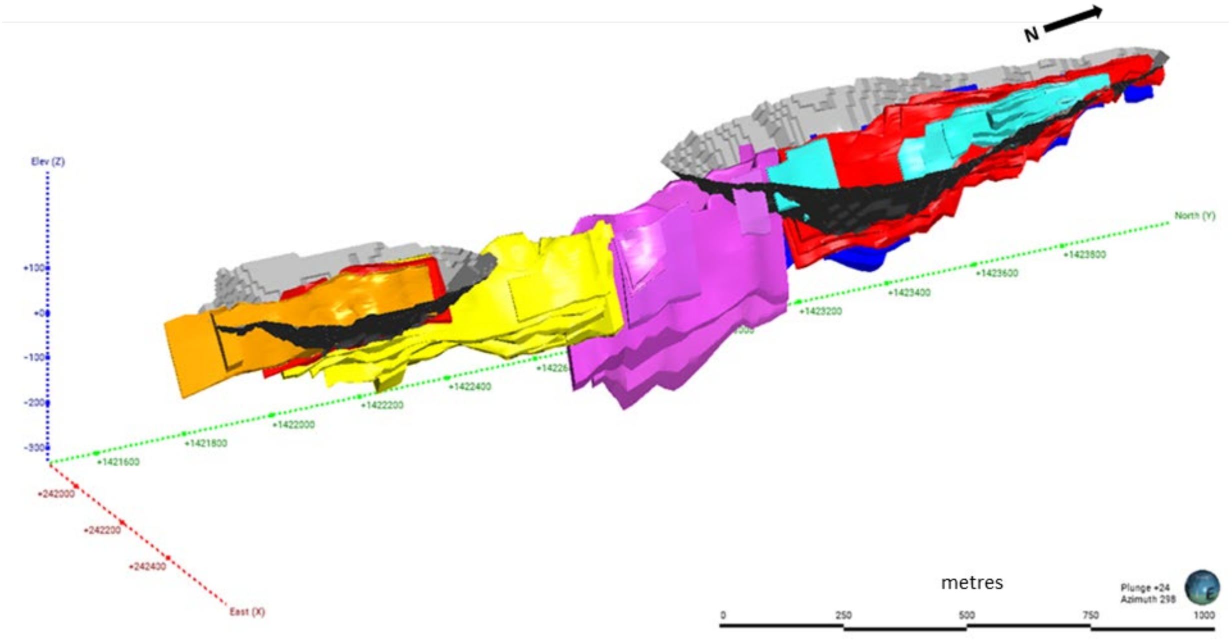


Figure 14-7 Faraba Complex Geological Domains

Mineralisation at Faraba has been grouped into nine lodes (FN_MZ, FN_FW, FN_HW, FM_MZ, FM_FW, FM_HW, F_Gap_MZ, F_Gap_FW, and F_Gap_HW). The F_Gap lodes consist of lodes which were not defined in the previous models but are now modelled as new mineralised envelopes with steeper dip to the east than other areas (Figure 14-8). The 2022 drill programme has defined significant additional mineralisation within the FN_FW and FM_FW lodes.



Notes:

1. Faraba Lodes (Red, Blue, Cyan, Pink, Yellow and Orange) and $1,700/oz Au Optimised Pit Design (Grey)
2. Looking Northwest

Figure 14-8 3D View of Faraba Mineralisation

The August 2022 updated model has better constrained the mineralisation and alteration described (Figure 14-9).

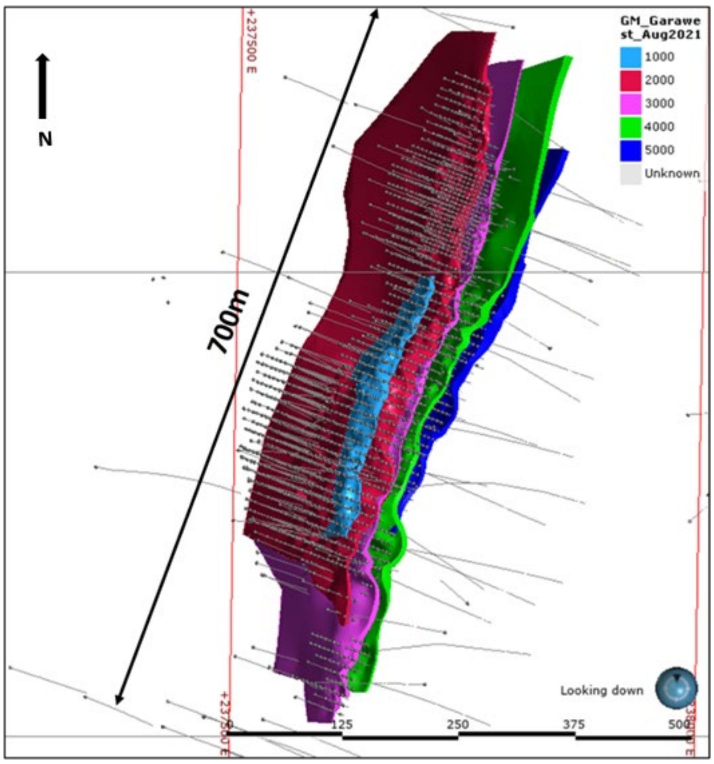


Figure 14-9 Gara West Model Geological Domains

The domain wireframes and geological solids were generated in Leapfrog using a combination of 10 m spaced vertical drill sections. All wireframes were modelled separately and coded to represent the domain that they belong to.

Consequently, the model now contains five individual, parallel mineralised lenses striking NNE and dipping moderately west. The spacing of the sections was based on a drilling grid of 10 m by 5 m. The 3D wireframes were generated using RC and DD holes that intersected the mineralisation, showing it to dip steeply to the west and strike NNE (Figure 14-9). The mineralisation wireframes were snapped to drill holes to create a more accurate interpretation, minimising the influence of unwanted zones in the final composite files. Gara West mineralisation is open down plunge (30°) towards the SSW, representing further exploration potential.

Topography

Topography has been depicted using a digital terrain model (DTM) LiDAR 5 m resolution surface for all deposits in the Loulo and Gounkoto Permits (clipped from the regional DTM completed by Randgold in October 2010). This topography includes historical artisanal pits.

The topography surface covers the entire Complex area as required for mine design purposes. Where surface mining has occurred, updated LiDAR surveys have been completed on a monthly and annual basis. The surface was visually checked against drill hole collar elevations for the Complex, and an acceptable match was found.

14.4 Bulk Density

Bulk density measurements were carried out on the mineralised and waste material. The distributions of each group were analysed, with outliers excluded and the mean value calculated for each rock type, which was then hard coded into the model.

Fresh, transition, and saprolite core was obtained from diamond drilling and the bulk density was calculated using Archimedes' principle (water immersion method). Drill core was cut 10 cm for HQ (63.5 mm diameter) core and 15 cm for NQ (47.6 mm diameter) core lengths before being measured in air and again in water. Where needed, core was wrapped prior to weighing to prevent water ingress. The mass measurements are accurate to 0.1 g and the scale is equipped with a hook and basket for weighing the sample in water. The dry mass and submerged mass of each sample were recorded, and the following formula utilised to calculate the density of the sample:

$$Density = \frac{Weight(in\ air)}{(Weight(in\ air) - Weight(in\ water))}$$

Distributions of each group were studied, with outliers excluded before the mean value was calculated, based upon the mean or median of the density dataset for each domain/rock type.

A single density value is coded to the block model for each rock type, with the exception of the Yalea domains 9006, 9146, and 9337, which have interpolated density due to the significant variability within the density data distribution resulting from a gradational geological contact.

The depth of the weathering interfaces has been interpreted from drill hole geological logs. The weathering is divided into three categories:

- Fresh rock is the unweathered underlying lithology.
- Saprock and Transition materials contain both material that is still oxidised and unweathered material that requires drill and blast. Depending on the topographic morphology, this transitional zone may be quite thin.
- Saprolite and Oxide material is a zone of red/orange coloured silt/clay fragments with no recognisable lithology, generally rich in clay.

Table 14-8 summarises Yalea density data by rock type.

Table 14-8 Yalea Density Data

Rock Type	Specific Gravity
HW Fresh	2.76
HW Transition	2.3
HW Saprolite	1.96
FW Fresh	2.76
FW Transition	2.3
FW Saprolite	1.96
Dolerite Fresh	2.96
Dolerite Transition	2.5
Dolerite Saprolite	2.3
Sulphide	2.74 to 3.11 background assign
Transition	2.10 to 2.62
Oxide	1.76 to 1.83

Due to the presence of a consistent tonnage bias of 5% in 2017, when stopes were mined in domains 9004 and 9007, the Yalea density estimation approach was reviewed and an inverse distance squared (ID^2) estimation of bulk density was implemented within the 2022 Yalea resource model for domains 9004, 9006, and 9007. After a single pass search estimation, the mean density was calculated for each sub-domain and then assigned to any un-estimated portion. The resultant 2022 density for the Yalea Mineral Resource is shown below in Figure 14-10.

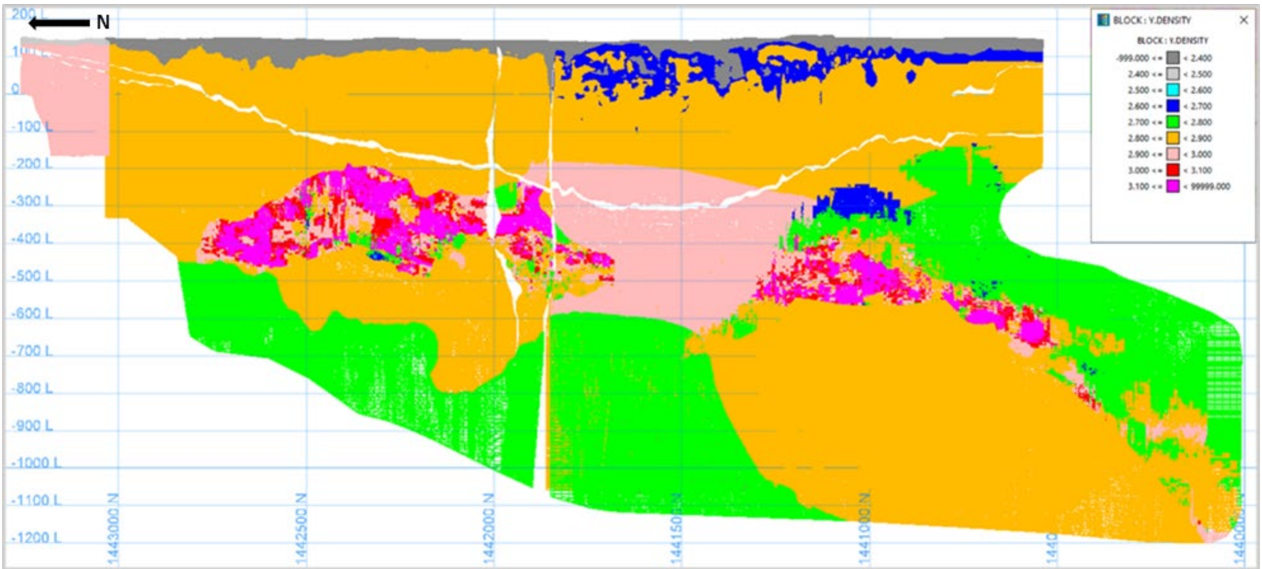


Figure 14-10 Yalea 2022 Mineral Resource Block Model Densities

Table 14-9, Table 14-10, Table 14-11, and Table 14-12 summarise the assigned density values for Gara, Loulo 3, Baboto, and Gounkoto, respectively.

Table 14-9 Gara Density Data

Rock Type	Specific Gravity
HW Fresh	2.76
HW Transition	2.39
HW Saprolite	2.27
FW Fresh	2.76
FW Transition	2.39
FW Saprolite	2.27
Dolerite Fresh	2.93
Dolerite Transition	2.3
Dolerite Saprolite	2.27
Oxide	1.76 to 1.83
Transition	2.10 to 2.47
Sulphide	2.75 to 3.09

Table 14-10 Loulo 3 Density Data

Lithology	Oxidation	Specific Gravity	Lithology	Oxidation	Specific Gravity	Lithology	Oxidation	Specific Gravity
Laminated sandstone	FR	2.75	Laminated sandstone	TR	2.17	Laminated sandstone	Ox	1.78
HW and FW argillite	FR	2.76	HW and FW argillite	TR	2.33	HW and FW argillite	Ox	2.16
Grits	FR	2.72	Grits	TR	2.17	Grits	Ox	2.1
Grits and QV	FR	2.71	Grits and QV	TR	2.3	Grits and QV	Ox	2.1

Lithology	Oxidation	Specific Gravity	Lithology	Oxidation	Specific Gravity	Lithology	Oxidation	Specific Gravity
Coarse massive sandstone	FR	2.73	Coarse massive sandstone	TR	2.17	Coarse massive sandstone	Ox	1.82
QT	FR	2.78	QT	TR	2.5	QT	Ox	1.75
Dyke	FR	2.92	Dyke	TR	2.5	Dyke	Ox	2.3
Felsic intrusive	FR	2.9	Felsic intrusive	TR	2.5	Felsic intrusive	Ox	2.3
Int intrusive	FR	2.76	Int intrusive	TR	2.5	Int intrusive	Ox	2.3
Mafic intrusive	FR	2.85	Mafic intrusive	TR	2.5	Mafic intrusive	Ox	2.3
MZ1	FR	2.76	MZ1	TR	2.5	MZ1	Ox	1.75
MZ1_fault	FR	2.71	MZ1_fault	TR	2.5	MZ1_fault	Ox	1.75
MZ1_N	FR	2.74	MZ1_N	TR	2.5	MZ1_N	Ox	1.75
MZ2	FR	2.79	MZ2	TR	2.5	MZ2	Ox	1.75
FW3	FR	2.75	FW3	TR	2.5	FW3	Ox	1.75
MZ2_FW	FR	2.76	MZ2_FW	TR	2.5	MZ2_FW	Ox	1.75
MZ2_FW2	FR	2.75	MZ2_FW2	TR	2.5	MZ2_FW2	Ox	1.75
FWN	FR	2.73	FWN	TR	2.5	FWN	Ox	1.75
MZ2_HG	FR	2.85	MZ2_HG	TR	2.5	MZ2_HG	Ox	1.75
FW1_HG	FR	2.8	FW1_HG	TR	2.5	FW1_HG	Ox	1.75
FW2_HG	FR	2.78	FW2_HG	TR	2.5	FW2_HG	Ox	1.75
						Waste dump	50	1.82

Table 14-11 Baboto Density Data

Rock Type	Specific Gravity
Dolerite Saprolite	2.3
Dolerite Transition	2.5
Dolerite Fresh	2.96
Oxide	1.95
Sulphide	2.72
Transition	2.33
Quartzite/SQR SAP	1.34
Quartzite/SQR Transition	2.34
Quartzite/SQR Fresh	2.74
Transported Cover	1.34

Table 14-12 Gounkoto Lodes Assigned Density Summary

Material	Unit	MZ1	MZ2NW, MZ2NWFW	MZ3	MZ4, MZ4FW	HW1 to 4, MZ3HW	FWFE1 to 11, FWNE1 to 5	P64W, P64E	HW Waste	FW Waste
Saprolite	g/cm^3	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.68	1.86
Transition	g/cm^3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.56
Fresh	g/cm^3	2.81	2.98	2.86	2.81	2.79	2.81	2.81	2.74	2.76

The high-density sub-domains have a significantly higher fresh rock density than others, due to a significant increase in the iron carbonate and hematite alteration (Table 14-13).

Table 14-13 Gounkoto High Density Domain Assigned Density Summary

Material	Domain	Unit	MZ1	MZ2NW	MZ3
Fresh	HSG1	g/cm^3	2.97	3.08	2.87
	HSG2	g/cm^3	-	3.03	2.99

Table 14-14 and Table 14-15 show the assigned densities for Faraba and Gara West, respectively.

Table 14-14 Faraba Assigned Density Summary

Lodes	Weathering	Density (g/cm^3)
Mineralisation	Saprolite	1.83
	Transition	2.4
	Fresh	2.8
HW and FW waste	Saprolite	1.68
	Transition	2.4
	Fresh	2.75

Table 14-15 Gara West Assigned Density Summary

	Rock Type	Density (g/cm^3)
Ore	Sulphide ore	2.82
	Transition ore	2.48
	Oxide ore	1.73
Waste	HW Fresh	2.75
	HW Transition	2.23
	HW Saprolite	1.73
	FW Fresh	2.74
	FW Transition	2.48
	FW Saprolite	1.69
	Late Dolerite cutting all lithologies	
	Dolerite Fresh	2.96
	Dolerite Transition	2.3
	Dolerite Saprolite	2.3

14.5 Compositing

Drill hole data is composited prior to top cutting. All drill hole information within the mineralised zones is composited, with a minimum sample length applied so that any shorter samples are assigned to a -999 'ignored' code and not used during estimation. The non-composited residuals (those below minimum sample length) are analysed for each estimation domain to ensure that the discarded points do not bias the remaining data populations. The composite samples are flagged using the mineralised domains. Missing sample intervals are ignored during compositing, although the sources of missing samples are investigated to ensure that there is no bias.

Data within the estimation domains has been composited using Vulcan software. Composites below the minimum length (residuals) are reset to -999 and ignored in the estimate. The minimum lengths applied in the estimates are discussed below.

A 2.0 m composite length with a minimum sample length of 1.0 m was utilised at Yalea and Gara. At Baboto, Gara West, and Loulo 3, a 1.0 m composite length with a minimum sample length of 0.5 m was used.

Yalea and Gara

Data within the estimation domains has been composited to 2.0 m lengths using Vulcan software. The compositing method applied attempted to create a maximum sample composite length of 3.0 m and a minimum length of 1.0 m. Most composite lengths are 2.0 m.

Table 14-16 presents statistics of the composite samples used in the 2022 Mineral Resource estimate for Yalea.

Table 14-16 Yalea Composite Data – 2022 Mineral Resource Estimate

Domain	Raw					Capped			
	No. of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	CV*	Grade (g/t Au)	Mean (g/t Au)	CV*	No. of Samples
1	241	0.005	28.03	1.99	1.75	28.03	1.99	1.75	-
8002	1,144	0.005	46.81	4.18	1.14	25	4.15	1.1	6
8003	103	0.005	20.55	2.37	1.42	8.75	2.1	1.08	3
8004	126	0.005	23.13	2.94	1.22	13.5	2.8	1.06	4
9001	9,295	0.005	249.98	4.55	1.49	70	4.53	1.39	2
9002	3,436	0.005	74.38	6.43	1.11	46	6.41	1.08	7
9003	6,721	0.005	58.67	3.82	1.23	45	3.82	1.22	5
9004	1,536	0.005	149.29	6.58	1.22	60	6.51	1.1	3
9005	1,352	0.005	117.85	3.55	1.97	43	3.44	1.71	7
9006	2,015	0.005	109.25	9.34	0.89	71	9.32	0.87	2
9014	1,380	0.005	108.62	2.84	1.58	25	2.74	1.12	3
9145	863	0.005	48.78	3.18	1.21	27	3.12	1.06	5
9147	589	0.005	142.61	13.34	1.3	90	13.07	1.2	5
9156	94	0.005	59.93	9.94	1.06	33.5	9.5	0.95	2
9317	29	0.005	1.74	0.43	1.15	-	0.43	1.15	-
9327	278	0.005	21.83	1.28	1.93	7	1.12	1.49	9
9337	556	0.005	100.75	8.39	1.19	46	8.24	1.1	3
9347	424	0.005	84.62	3.92	1.51	30	3.79	1.21	1
Total	**30,290**	**0.005**	**249.98**	**5.02**	**1.41**	**-**	**4.98**	**1.33**	**67**

Note. *CV – coefficient of variation

Figure 14-11 shows a log histogram, log probability plot of the gold grades, and histogram of length distributions after compositing for the 2.0 m uncapped composites at Yalea. The cumulative length distribution shows approximately 90% of the composited data with lengths of 2.0 m or more.

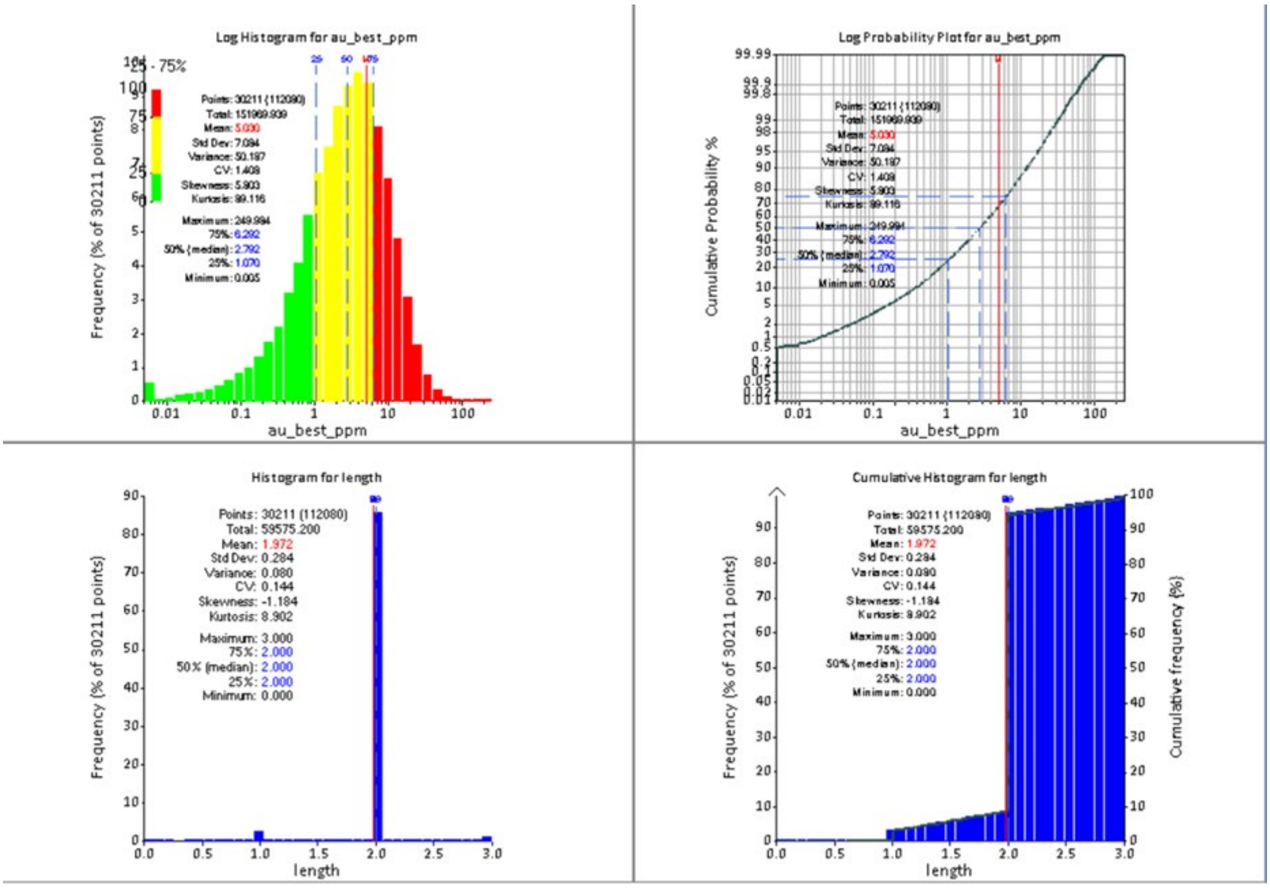


Figure 14-11 Yalea Log Histogram, Log Probability Plot, Length Histogram, and Cumulative Length Distribution of 2.0 m Uncapped Composites

Table 14-17 presents statistics of the composite samples used in the 2022 Mineral Resource estimate for Gara Underground.

Table 14-17 Gara Composite Data – 2022 Mineral Resource Estimate

Domain	Raw					Capped			
	No. of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	CV*	Grade (g/t Au)	Mean (g/t Au)	CV*	No. of Samples
100	14,716	0.005	223.86	3.47	1.71	72	3.45	1.6	5
200	14,290	0.005	1808.58	4.33	1.87	97	4.26	1.87	9
300	1,433	0.005	135.71	3.18	1.89	44	3.1	1.56	2
400	192	0.005	42.09	3.1	1.78	-	3.1	1.78	-
Total	**30,631**	-	-	**3.52**	-	-	**3.48**	-	**16**

Note. *CV – coefficient of variation

Figure 14-12 shows a log histogram, log probability plot of the gold grades, and histogram of length distributions after compositing for the 2.0 m uncapped composites at Gara Underground. The cumulative length distribution shows approximately 90% of the composited data with lengths of 2.0 m or more.

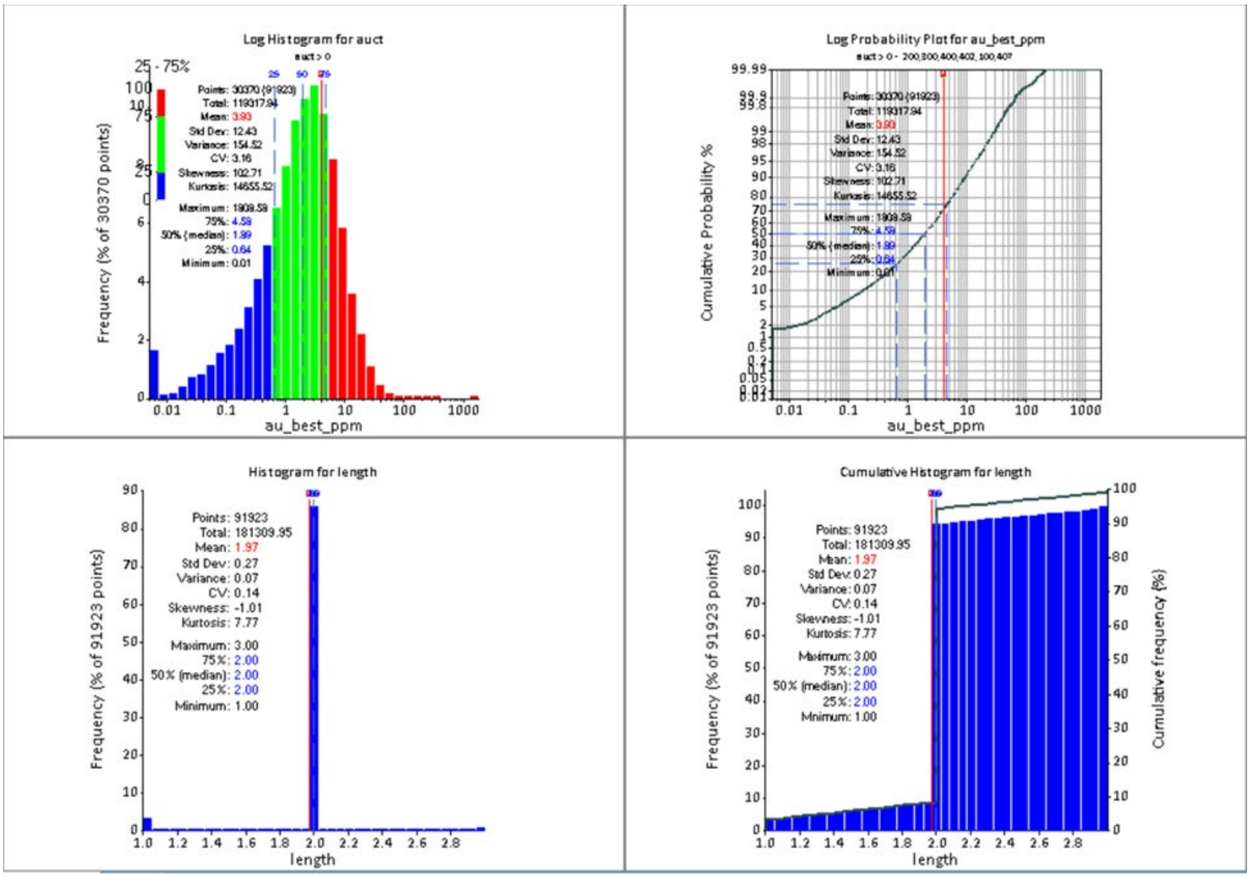


Figure 14-12 Gara UG Log Histogram, Log Probability Plot, Length Histogram, and Cumulative Length Distribution of 2.0 m Uncapped Composites

Gounkoto

A 2.0 m composite length was applied to the Gounkoto data. The different lodes show cumulative length distributions with approximately 92% of the composited data showing lengths of 2.0 m.

Table 14-18 presents statistics of the composite samples used in the 2022 Mineral Resource estimate for Gounkoto open pit and underground.

Table 14-18 Gounkoto Lodes Composite Data – 2022 Mineral Resource Estimate

Domain	Raw					Capped			
	No. of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	CV*	Grade (g/t Au)	Mean (g/t Au)	CV*	No. of Samples
1100	11,420	0.005	197.95	3.04	2.37	82	3.02	2.27	3
1101	299	0.005	7.5	0.22	3.45	-	0.22	3.45	-
1102	10,354	0.005	208.01	9.44	1.59	150	9.42	1.57	7
1103	12,290	0.005	129.2	3.73	1.93	85	3.72	1.91	6
1109	248	0.005	8.4	0.56	1.65	5	0.55	1.50	3
1112	828	0.005	101.25	3.37	2.71	51	3.15	2.35	8
1200	2,375	0.005	97.44	3.98	1.95	66	3.95	1.88	6
1201	1,236	0.005	135.97	16.01	1.03	92	15.93	1.00	3
1203	4,278	0.005	88.78	2.50	2.16	55	2.47	2.06	6
1211	218	0.005	48.57	5.26	1.59	40	5.22	1.57	2
1221	14	0.005	4.46	0.94	1.15	-	0.94	1.15	-
1222	8	0.005	14.52	4.53	0.97	-	4.53	0.97	-
1223	39	0.005	26.67	4.99	1.25	13	4.29	1.04	3
1302	604	0.008	34.08	1.48	2.29	27	1.46	2.18	3
1303	1,138	0.005	82.5	3.95	2.09	50	3.82	1.91	11
1313	1,163	0.02	124.5	11.15	1.16	81	11.08	1.12	4
1317	4,520	0.005	126.61	4.26	1.84	85	4.25	1.80	4
1318	82	0.005	16.9	2.48	1.19	-	2.48	1.19	-
1327	6,736	0.005	170.95	2.62	2.08	67	2.59	1.90	4
1328	1,098	0.005	49.71	1.77	2.03	35	1.75	1.95	2
1400	1,794	0.005	53.69	2.79	2.03	43	2.78	2.00	4
1402	46	0.02	7.73	1.50	1.05	-	1.50	1.05	-
1500	2349	0.003	104.05	1.50	2.74	40	1.44	2.14	3
1501	1,973	0.005	49.38	1.40	2.03	20	1.35	1.70	6
1512	199	0.02	3.41	0.65	0.85	-	0.65	0.85	-
1600	2,266	0.005	31.82	2.74	1.57	30	2.74	1.57	3
1700	787	0.005	33.69	1.31	2.20	25	1.29	2.09	3
1800	44	0.005	8.19	0.65	2.20	2.5	0.47	1.43	2
1900	3	0.13	5.7	2.52	0.93	1.73	1.19	0.63	1
2114	9,076	0.005	145.92	2.86	1.55	47	2.84	1.45	4
2115	8,796	0.005	57.28	0.93	2.13	36	0.92	2.03	3
2200	177	0.005	19.37	1.53	1.58	-	1.53	1.58	-
2300	214	0.005	8.01	0.84	1.51	-	0.84	1.51	-
2400	230	0.005	13.96	1.51	1.44	-	1.51	1.44	-
2500	24	0.005	10.26	1.74	1.35	-	1.74	1.35	-
3101	2082	0.005	103.97	1.18	2.82	24	1.13	2.12	2
3102	134	0.005	12.1	1.302	1.291	8	1.27	1.51	1
3103	3668	0.005	60.84	2.69	1.84	35	2.66	1.77	8

Domain	Raw					Capped			
	No. of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	CV*	Grade (g/t Au)	Mean (g/t Au)	CV*	No. of Samples
3104	978	0.005	113.04	3.05	2.35	45	2.96	2.11	4
3105	482	0.005	13.02	1.32	1.45	10	1.31	1.41	3
3106	25	0.005	5.93	1.14	1.32	3	0.96	1.11	2
3107	494	0.005	18.85	1.27	1.65	12	1.24	1.54	4
3108	26	0.005	13.15	2.14	1.69	-	2.14	1.69	-
3109	19	0.005	5.06	1.08	1.65	-	1.08	1.65	-
3110	27	0.005	3.93	1.03	0.99	3	0.99	0.94	3
3111	32	0.005	6.58	2.08	0.86	5.5	2.05	0.83	2
4101	34	0.14	3.34	0.95	0.82	3	0.93	0.79	1
4102	25	0.1	6.5	1.26	1.36	5	1.17	1.24	2
4103	68	0.005	15.95	1.10	2.13	6.5	0.94	1.65	3
4104	82	0.005	25.17	1.15	2.47	9	0.95	1.38	1
4105	253	0.005	11.14	0.69	1.91	-	0.69	1.91	-
Total	**95,355**			**3.68**	**2.21**		**3.66**		**140**

Note. *CV – coefficient of variation

Figure 14-13 illustrates a log histogram, log probability plot of the gold grades, and the length distributions for the 2.0 m uncapped composites within Gounkoto mineralised lodes.

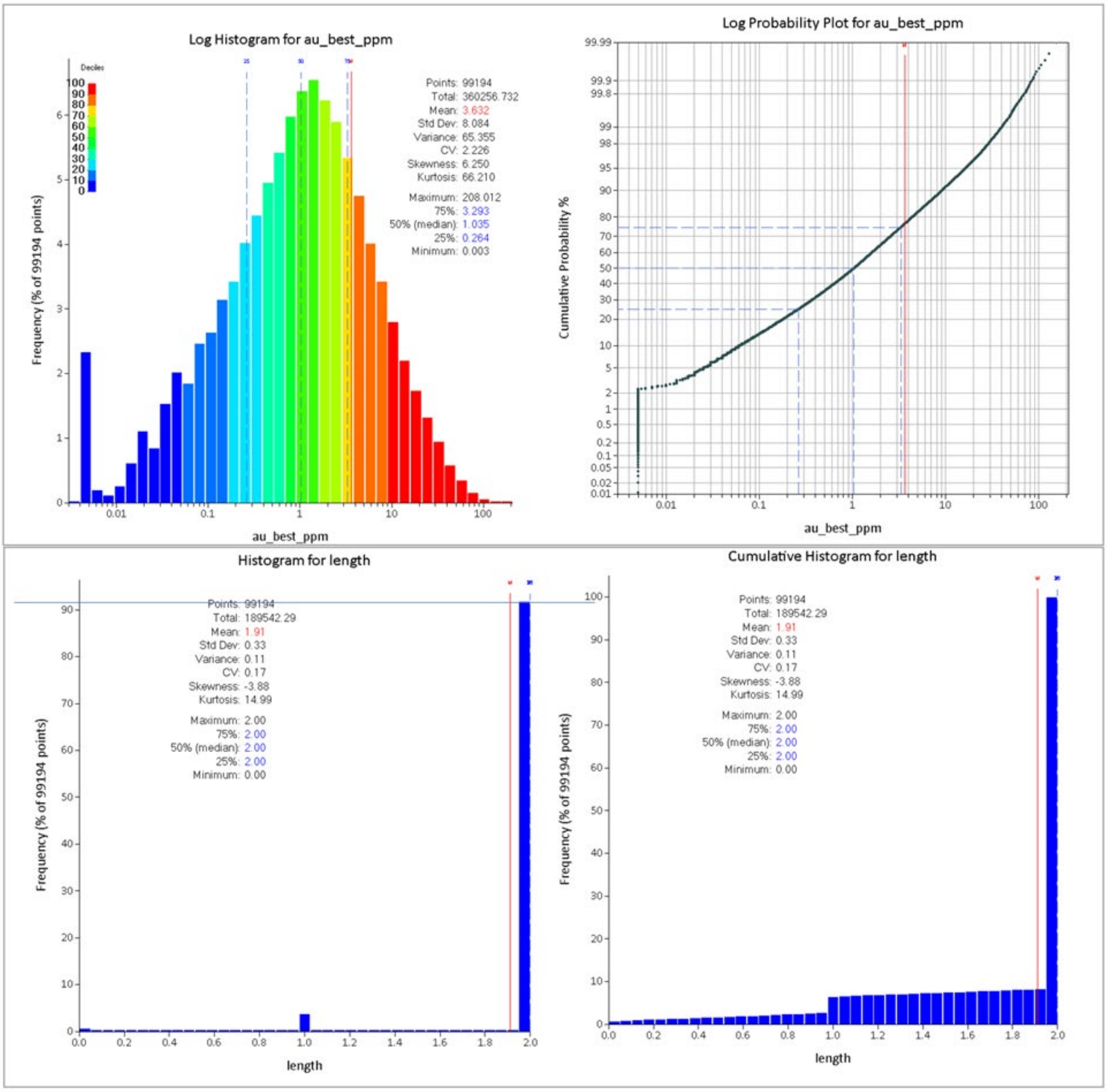


Figure 14-13 Gounkoto Lodes Log Histogram, Log Probability Plot, Length Histogram, and Cumulative Length Distribution of 2.0 m Uncapped Composites

Faraba

Compositing was undertaken on 1.0 m lengths for the drill hole data. The overall raw mean length is 1.0 m which is equal to the median and the mode. At 1.0 m composite length, the mean is in line with the raw mean, and there is a stable coefficient of variation (CV) which is relatively low compared to the raw data.

The lodes show cumulative length distributions with approximately 99% of the composited data showing lengths of 1.0 m or more.

Table 14-19 presents statistics of the composite samples used in the 2022 Mineral Resource estimate for the Faraba domains.

Table 14-19 Faraba Lodes Composite Data – 2022 Mineral Resource Estimate

Domain	Raw					Capped			
	No. of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	CV*	Grade (g/t Au)	Mean (g/t Au)	CV*	No. of Samples
1101	1,049	0.005	72.4	1.91	2.43	52	1.89	2.31	1
1102	1,099	0.005	165	1.97	3.38	52	1.82	2.24	3
1103	809	0.007	37.2	1.45	1.89	52	1.45	1.89	-
1201	316	0.01	41.19	1.61	2.46	22.5	1.47	1.90	3
1202	196	0.005	17.3	1.33	1.64	22.5	1.33	1.64	-
1203	74	0.02	11.6	1.27	1.46	22.5	1.27	1.46	-
1204	33	0.06	22.4	3.33	1.63	22.5	3.33	1.63	-
1205	32	0.02	19.863	2.53	1.91	22.5	2.53	1.91	-
1206	27	0.02	5.679	0.93	1.17	22.5	0.93	1.17	-
1207	26	0.05	3.789	0.57	1.33	22.5	0.57	1.33	-
1301	60	0.02	25.2	2.90	1.82	25	2.90	1.82	1
1302	116	0.005	15.6	1.74	1.49	25	1.74	1.49	-
1303	179	0.005	16.313	1.35	1.64	25	1.35	1.64	-
1304	12	0.07	1.24	0.46	0.82	25	0.46	0.82	-
1305	91	0.005	4.68	0.63	1.43	25	0.63	1.43	-
1306	49	0.06	119.971	4.72	3.65	25	2.78	1.97	1
1307	35	0.005	21.1	1.62	2.20	25	1.62	2.20	-
1308	61	0.02	11.714	1.13	1.71	25	1.13	1.71	-
2101	353	0.005	25.832	1.22	2.00	17	1.20	1.86	1
2102	335	0.005	19.2	1.14	1.84	17	1.13	1.57	1
2103	25	0.11	4.949	1.30	0.84	17	1.30	0.84	-
2201	53	0.022	11.609	1.38	1.54	17	1.38	1.54	-
2202	16	0.02	11.7	2.50	1.23	17	2.50	1.23	-
2203	24	0.11	15.197	2.22	1.46	17	2.22	1.46	-
2204	19	0.03	16	2.28	1.68	17	2.28	1.68	-
2301	35	0.005	37.928	3.08	2.38	17	2.39	1.93	2
2302	23	0.012	4.33	0.89	1.24	17	0.89	1.24	-
3100	1511	0.005	73.6	2.36	1.83	24	2.26	1.48	7
3200	749	0.005	23.663	0.89	2.07	12.4	0.86	1.78	4
3201	18	0.14	26.6	3.02	2.03	12.4	2.23	1.49	1
3300	643	0.005	35.835	2.07	1.69	27.5	2.06	1.65	1
3301	484	0.005	68.584	1.42	2.71	27.5	1.33	1.96	1
3302	600	0.005	44.29	1.53	2.26	27.5	1.49	2.05	2
3303	616	0.005	41.6	1.55	1.78	27.5	1.53	1.61	1
3304	41	0.04	32.692	2.43	2.13	27.5	2.30	1.93	1
3305	20	0.04	13.9	1.55	1.98	27.5	1.55	1.98	-
Total	**9,829**			**1.73**	**2.43**				**31**

Note. *CV – coefficient of variation

Figure 14-14 illustrates a log histogram, log probability plot of the gold grades, and the length distributions for the 1.0 m uncapped composites within all lodes at Faraba.

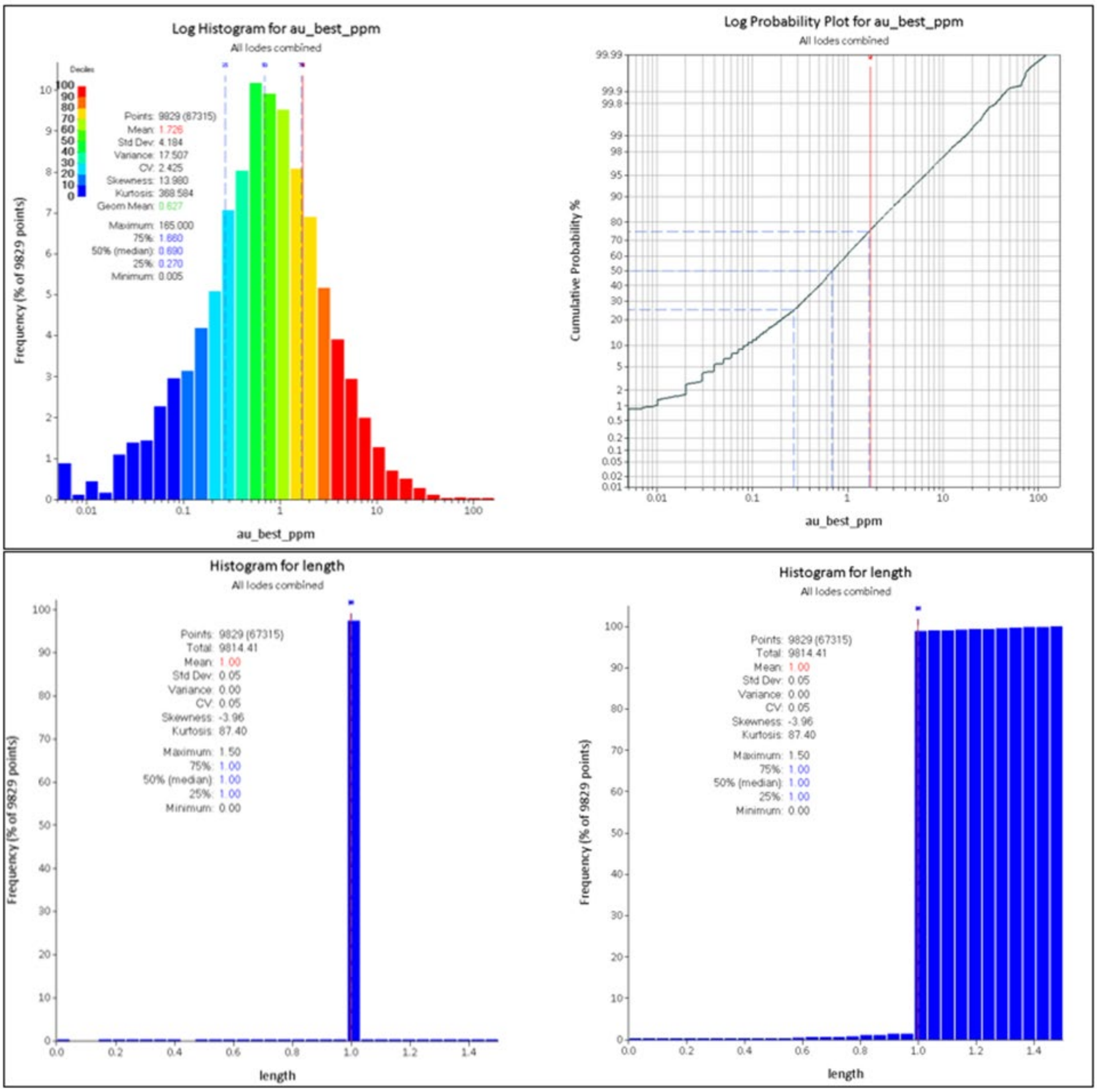


Figure 14-14 Faraba Log Histogram, Log Probability Plot, Length Histogram, and Cumulative Length Distribution of 1.0 m Uncapped Composites

Gara West

The samples were composited within lodes, honouring the wireframe boundaries. Two metre compositing is applied with a 0.5 m minimum sample length on the drill hole data. The lode shows a cumulative length distribution with approximately 93% of the composited data with lengths of 2.0 m or more. This method minimises the impact of residuals, and any remaining residuals of less than 0.5 m in length are reset to -999 and subsequently ignored. The resultant composite database samples are tabulated in Table 14-20.

Table 14-20 Gara West Total Model 2 m Composite Dataset

Domain	Raw					Capped			
	No. of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	CV*	Grade (g/t Au)	Mean (g/t Au)	CV*	No. of Samples
1000	731	0.01	61.89	1.6	2.3	33	1.58	2.05	3
2000	3,727	0.01	107.34	2.18	1.74	60	2.14	1.61	4
2200	150	0.01	31.91	6.69	0.8	60	6.99	0.77	2
3000	3,662	0.01	59.14	2.31	1.63	40	2.31	1.56	5
3200	241	0.05	211.08	6.95	2.03	40	6.18	0.9	0
4000	1,384	0.01	24.19	1.24	1.92	13	1.16	1.72	2
4200	54	0.07	22.84	6.29	0.8	13	5.65	0.7	0
5000	841	0.01	53.95	1.84	1.9	17	1.73	1.55	1
5200	59	0.31	23.9	5.81	0.81	17	5.85	0.68	0
Total	**10,849**			**2.25**			**2.21**		**17**

Note. *CV – coefficient of variation

Figure 14-15 illustrates a log histogram and log probability plot of the gold grades and length distributions for the 2.0 m uncapped composites within all mineralised domains at Gara West.

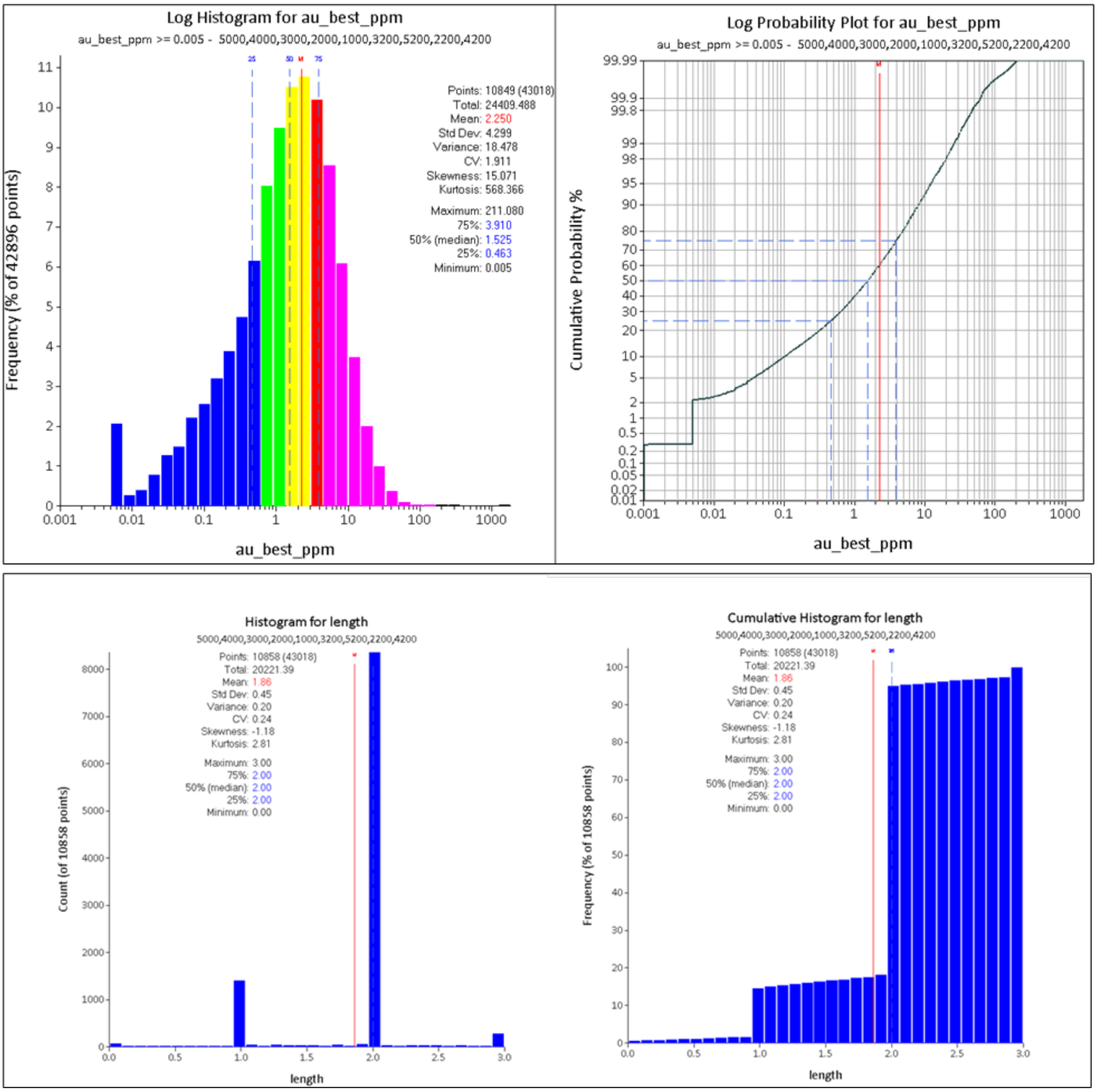


Figure 14-15 Gara West Log Histogram, Log Probability Plot, Length Histogram, and Cumulative Length Distribution of 2.0 m Uncapped Composites

14.6 Treatment of High-Grade Outliers (Top Cutting)

Top cutting was applied to reduce the effect of high-grade outliers during resource estimation. Generally, the top cutting occurred between the 95th and 99.9th percentiles within individual mineralised domains. A multi-variate analysis method was used to select the top cap, analysing a combination of histograms, probability plot, disintegration, mean, and CV curve to identify the stability point and metal at risk.

Yalea and Gara

At Yalea, a total of 30,182 samples were included in the database for top cutting analysis. A total of 67 samples were top cut, ranging between 1.74 g/t Au and 249.98 g/t Au for the high-grade domain. Top cutting reduced the average mean grade from 4.95 g/t Au to 4.84 g/t Au and resulted in a reduction of the CV from 1.35 to 1.20. In total, the metal reduction was -2.8%.

For Gara Underground, a total of 30,631 samples were included in the database for top cutting analysis. A total of 16 samples were top cut, ranging between 42.09 g/t Au and 1,808.58 g/t Au. Top cutting reduced the average mean grade from 3.52 g/t Au to 3.48 g/t Au and resulted in a reduction of the CV from 1.81 to 1.70. Overall, the metal reduction was -1.1%.

A detailed breakdown of the statistical analysis for top cutting at Yalea and Gara is presented in Table 14-21 and Table 14-22.

Table 14-21 Yalea Top Cutting Analysis

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw (g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
1	241	0.005	28.03	1.99	1.75	28.03	1.99	1.75	-	0.0%
8002	1,144	0.005	46.81	4.18	1.14	25	4.15	1.1	6	0.8%
8003	103	0.005	20.55	2.37	1.42	8.75	2.1	1.08	3	11.4%
8004	126	0.005	23.13	2.94	1.22	13.5	2.8	1.06	4	4.9%
9001	9,295	0.005	249.98	4.55	1.49	70	4.53	1.39	2	0.4%
9002	3,436	0.005	74.38	6.43	1.11	46	6.41	1.08	7	0.4%
9003	6,721	0.005	58.67	3.82	1.23	45	3.82	1.22	5	0.1%
9004	1,536	0.005	149.29	6.58	1.22	60	6.51	1.1	3	1.1%
9005	1,352	0.005	117.85	3.55	1.97	43	3.44	1.71	7	3.3%
9006	2,015	0.005	109.25	9.34	0.89	71	9.32	0.87	2	0.3%
9014	1,380	0.005	108.62	2.84	1.58	25	2.74	1.12	3	3.5%
9145	863	0.005	48.78	3.18	1.21	27	3.12	1.06	5	2.0%
9147	589	0.005	142.61	13.34	1.3	90	13.07	1.2	5	2.0%
9156	94	0.005	59.93	9.94	1.06	33.5	9.5	0.95	2	4.5%
9317	29	0.005	1.74	0.43	1.15	-	0.43	1.15	-	0.0%
9327	278	0.005	21.83	1.28	1.93	7	1.12	1.49	9	12.3%
9337	556	0.005	100.75	8.39	1.19	46	8.24	1.1	3	1.8%
9347	424	0.005	84.62	3.92	1.51	30	3.79	1.21	1	1.8%
Total	**30,182**	**-**	**4.95**	**-**	**-**	**-**	**4.84**	**-**	**67**	**2.80%**

Note. *CV – coefficient of variation

Table 14-22 Gara Underground Top Cutting Analysis

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw (g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
100	14,716	0.005	223.86	3.47	1.71	72	3.45	1.6	5	0.5%
200	14,290	0.005	1808.58	4.33	1.87	97	4.26	1.87	9	1.5%
300	1,433	0.005	135.71	3.18	1.89	44	3.1	1.56	2	2.5%
400	192	0.005	42.09	3.1	1.78	-	3.1	1.78	-	0.0%
Total	**30,631**	**-**	**-**	**3.52**	**-**	**-**	**3.48**	**-**	**16**	**1.10**

Note. *CV – coefficient of variation

Gounkoto

At the Gounkoto MZ1 lodes (1100 to 1112), a total of 35,439 samples were included in the database for top cutting analysis. A total of 27 samples were top cut, ranging between 5 g/t Au and 150 g/t Au, for the high-grade lodes. Top cutting reduced the average mean grade from 5.11 g/t Au to 5.09 g/t Au and resulted in a reduction of the CV from 2.00 to 1.95. Overall, the metal reduction was -0.5%.

For MZ2 lodes (1200 to 1223), a total of 8,168 samples were included in the database for top cutting analysis. A total of 20 samples were top cut, ranging between 13 g/t Au and 92 g/t Au. Top cutting reduced the average mean grade from 5.06 g/t Au to 5.02 g/t Au and resulted in a reduction of the CV from 1.90 to 1.83. Overall, the metal reduction was -0.9%.

For the MZ3 lodes (1302 to 1328), a total of 15,341 samples were included in the database for top cutting analysis. A total of 28 samples were top cut, ranging between 27 g/t Au and 85 g/t Au. Top cutting reduced the average mean grade from 3.74 g/t Au to 3.71 g/t Au and resulted in a reduction of the CV from 1.94 to 1.82. Overall, the metal reduction was -1.0%.

For the HW1 lodes (2114 to 2115), a total of 17,872 samples were included in the database for top cutting analysis. A total of seven samples were top cut, ranging between 36 g/t Au and 47 g/t Au. Top cutting reduced the average mean grade from 1.91 g/t Au to 1.90 g/t Au and resulted in a reduction of the CV from 1.83 to 1.74. Overall, the metal reduction was -0.4%.

A detailed breakdown of the statistical analysis for top cutting at Gounkoto is presented in Table 14-23 to Table 14-26.

Table 14-23 Gounkoto MZ1 Lodes Top Cutting Analysis

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw (g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
1101	299	0.005	7.5	0.22	3.45	-	0.22	3.45	0	0.0%
1102	10,354	0.005	208.01	9.44	1.59	150	9.42	1.57	7	-0.2%
1103	12,290	0.005	129.2	3.73	1.93	85	3.72	1.91	6	-0.2%
1100	11,420	0.005	197.95	3.04	2.37	82	3.02	2.27	3	-0.6%
1109	248	0.005	8.4	0.56	1.65	5	0.55	1.50	3	-2.8%
1112	828	0.005	101.25	3.37	2.71	51	3.15	2.35	8	-6.3%
Total	**35,439**	**-**	**-**	**5.11**	**-**	**-**	**5.09**	**-**	**27**	**-0.5%**

Note. *CV – coefficient of variation

Table 14-24 Gounkoto MZ2 Lodes Top Cutting Analysis

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw (g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
1203	4,278	0.005	88.78	2.50	2.16	55	2.47	2.06	6	-1.0%
1201	1,236	0.005	135.97	16.01	1.03	92	15.93	1.00	3	-0.5%
1200	2,375	0.005	97.44	3.98	1.95	66	3.95	1.88	6	-0.8%
1211	218	0.005	48.57	5.26	1.59	40	5.22	1.57	2	-0.8%
1221	14	0.005	4.46	0.94	1.15	-	0.94	1.15	0	0.0%
1222	8	0.005	14.52	4.53	0.97	-	4.53	0.97	0	0.0%
1223	39	0.005	26.67	4.99	1.25	13	4.29	1.04	3	-13.9%
Total	**8,168**	**-**	**-**	**5.06**	**-**	**-**	**5.02**	**-**	**20**	**-0.9%**

Note. *CV – coefficient of variation

Table 14-25 Gounkoto MZ3 Lodes Top Cutting Analysis

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw (g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
1302	604	0.008	34.08	1.48	2.29	27	1.46	2.18	3	-1.8%
1303	1,138	0.005	82.5	3.95	2.09	50	3.82	1.91	11	-3.3%
1313	1,163	0.02	124.5	11.15	1.16	81	11.08	1.12	4	-0.7%
1317	4,520	0.005	126.61	4.26	1.84	85	4.25	1.80	4	-0.3%
1318	82	0.005	16.9	2.48	1.19	-	2.48	1.19	0	0.0%
1327	6,736	0.005	170.95	2.62	2.08	67	2.59	1.90	4	-1.0%
1328	1,098	0.005	49.71	1.77	2.03	35	1.75	1.95	2	-0.9%
Total	**15,341**	**-**	**-**	**3.74**	**-**	**-**	**3.71**	**-**	**28**	**-1.0%**

Note. *CV – coefficient of variation

Table 14-26 Gounkoto HW1 Lodes Top Cutting Analysis

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw (g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
2114	9,076	0.005	145.92	2.86	1.55	47	2.84	1.45	4	-0.4%
2115	8,796	0.005	57.28	0.93	2.13	36	0.92	2.03	3	-0.4%
Total	**17,872**	**-**	**-**	**1.91**	**-**	**-**	**1.90**	**-**	**7**	**-0.4%**

Note. *CV – coefficient of variation

Faraba

Due to poor data quantities in several domains, exploratory data analysis (EDA) has been done by merging those which had the same geological control into a single lode, however, estimation is undertaken separately and informed by only samples in the domain, using a hard boundary.

At Faraba North, the main zone lode (domains 1101, 1102, and 1103 merged), a total of 2,957 samples were included in the database for top cutting analysis. A total of four samples were top cut at 52.00 g/t Au. Top cutting reduced the average mean grade from 1.81 g/t Au to 1.75 g/t Au and resulted in a reduction of the CV from 2.83 to 2.22. Overall, the metal reduction was -3.4%.

For the Faraba North hanging wall lode (domains 1201, 1202, 1203, 1204, 1205, 1206, and 1207 merged), a total of 702 samples were included in the database for top cutting analysis. A total of three samples were top cut at 22.50 g/t Au. Top cutting reduced the average mean grade from 1.55 g/t Au to 1.49 g/t Au and resulted in a reduction of the CV from 2.19 to 1.90. Overall, the metal reduction was -3.9%.

For the Faraba North footwall lodes (domains 1301, 1302, 1303, 1304, 1305, 1306, 1307, and 1308 merged), a total of 579 samples were included in the database for top cutting analysis. A total of two samples were top cut at 25.00 g/t. Top cutting reduced the average mean grade from 1.73 g/t Au to 1.56 g/t Au and resulted in a reduction of the CV from 3.32 to 1.98. Overall, the metal reduction was -9.5%.

For the Faraba Gap lodes (domains 2101, 2102, 2103, 2201, 2202, 2203, 2204, 2301, and 2302 merged), a total of 788 samples were included in the database for top cutting analysis. A total of three samples were top cut at 17.00 g/t Au. Top cutting reduced the average mean grade from 1.36 g/t Au to 1.32 g/t Au and resulted in a reduction of the CV from 1.98 to 1.75. Overall, the metal reduction was -3.1%.

At the Faraba Main domain 3100 (main zone lode), a total of 1,392 samples were included in the database for top cutting analysis. A total of eight samples were top cut at 24.50 g/t Au. Top cutting reduced the average mean grade from 2.32 g/t Au to 2.21 g/t Au and resulted in a reduction of the CV from 1.90 to 1.52. Overall, the metal reduction was -4.5%.

For the Faraba Main hanging wall lodes (domains 3200 and 3201 merged), a total of 668 samples were included in the database for top cutting analysis. A total of five samples were top cut at 12.40 g/t Au. Top cutting reduced the average mean grade from 0.97 g/t Au to 0.91 g/t Au and resulted in a reduction of the CV from 2.28 to 1.86. Overall, the metal reduction was -6.1%.

For the Faraba Main footwall lodes (domains 3300, 3301, 3302, 3303, 3304, and 3305 merged), a total of 2,404 samples were included in the database for top cutting analysis. A total of six samples were top cut at 27.50 g/t. Top cutting reduced the average mean grade from 1.67 g/t Au to 1.63 g/t Au and resulted in a reduction of the CV from 2.05 to 1.82. Overall, the metal reduction was -2.3%.

A detailed breakdown of the statistical analysis for top cutting at Faraba is presented in Table 14-27.

Table 14-27 Faraba Lodes Top Cutting Analysis

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw (g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
1101	1,049	0.005	72.4	1.91	2.43	52	1.89	2.31	1	-1%
1102	1,099	0.005	165	1.97	3.38	52	1.82	2.24	3	-8%
1103	809	0.007	37.2	1.45	1.89	52	1.45	1.89	-	0%
1201	316	0.01	41.19	1.61	2.46	22.5	1.47	1.90	3	-8%
1202	196	0.005	17.3	1.33	1.64	22.5	1.33	1.64	-	0%

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw (g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
1203	74	0.02	11.6	1.27	1.46	22.5	1.27	1.46	-	0%
1204	33	0.06	22.4	3.33	1.63	22.5	3.33	1.63	-	0%
1205	32	0.02	19.863	2.53	1.91	22.5	2.53	1.91	-	0%
1206	27	0.02	5.679	0.93	1.17	22.5	0.93	1.17	-	0%
1207	26	0.05	3.789	0.57	1.33	22.5	0.57	1.33	-	0%
1301	60	0.02	25.2	2.90	1.82	25	2.90	1.82	1	-0.10%
1302	116	0.005	15.6	1.74	1.49	25	1.74	1.49	-	0%
1303	179	0.005	16.313	1.35	1.64	25	1.35	1.64	-	0%
1304	12	0.07	1.24	0.46	0.82	25	0.46	0.82	-	0%
1305	91	0.005	4.68	0.63	1.43	25	0.63	1.43	-	0%
1306	49	0.06	119.971	4.72	3.65	25	2.78	1.97	1	-41%
1307	35	0.005	21.1	1.62	2.20	25	1.62	2.20	-	0%
1308	61	0.02	11.714	1.13	1.71	25	1.13	1.71	-	0%
2101	353	0.005	25.832	1.22	2.00	17	1.20	1.86	1	-2%
2102	335	0.005	19.2	1.14	1.84	17	1.13	1.57	1	-1%
2103	25	0.11	4.949	1.30	0.84	17	1.30	0.84	-	0%
2201	53	0.022	11.609	1.38	1.54	17	1.38	1.54	-	0%
2202	16	0.02	11.7	2.50	1.23	17	2.50	1.23	-	0%
2203	24	0.11	15.197	2.22	1.46	17	2.22	1.46	-	0%
2204	19	0.03	16	2.28	1.68	17	2.28	1.68	-	0%
2301	35	0.005	37.928	3.08	2.38	17	2.39	1.93	2	-23%
2302	23	0.012	4.33	0.89	1.24	17	0.89	1.24	-	0%
3100	1511	0.005	73.6	2.36	1.83	24	2.26	1.48	7	-4%
3200	749	0.005	23.663	0.89	2.07	12.4	0.86	1.78	4	-4%
3201	18	0.14	26.6	3.02	2.03	12.4	2.23	1.49	1	-26%
3300	643	0.005	35.835	2.07	1.69	27.5	2.06	1.65	1	-1%
3301	484	0.005	68.584	1.42	2.71	27.5	1.33	1.96	1	-6%
3302	600	0.005	44.29	1.53	2.26	27.5	1.49	2.05	2	-3%
3303	616	0.005	41.6	1.55	1.78	27.5	1.53	1.61	1	-2%
3304	41	0.04	32.692	2.43	2.13	27.5	2.30	1.93	1	-5%
3305	20	0.04	13.9	1.55	1.98	27.5	1.55	1.98	-	0%
Total	**9,829**	**-**	**-**	**1.73**	**2.43**	**-**	**1.66**	**-**	**31**	**-3%**

Note. *CV – coefficient of variation

Gara West

Gara West contains five discrete lodes all striking 020° and dipping west (50° to 70°) with small to moderate changes of direction and dip. Due to the physical separation, for each of the lodes the grade distribution is assessed independently. The top cut is applied as detailed in Table 14-28.

At Gara West, a total of 10,849 samples were included in the database for top cutting analysis. A total of 17 samples were cut, ranging between 13 g/t Au and 60 g/t Au. Top cutting reduced the average mean grade from 2.25 g/t Au to 2.21 g/t Au and resulted in a reduction of the CV from 1.94 to 1.60. The total metal reduction was -8%. A detailed breakdown of the statistical analysis for top cutting at Gara West is provided in Table 14-28.

Table 14-28 Gara West Top Cutting Values Applied to Composites

Domain	No. of Samples	Min Raw (g/t Au)	Max Raw (g/t Au)	Mean Raw g/t Au)	CV* Raw	Top Cut (g/t Au)	Mean Cut (g/t Au)	CV* Cut	No. of Samples Cut	% Metal Reduction
1000	731	0.005	61.89	1.6	2.3	33	1.58	2.05	3	4%
2000	3,727	0.005	107.34	2.19	1.74	60	2.14	1.61	4	1%
2200	150	0.005	31.91	6.69	0.8	60	6.99	0.77	2	1%
3000	3,662	0.005	59.14	2.31	1.63	40	2.31	1.56	5	1%
3200	241	0.005	211.08	6.95	2.03	40	6.18	0.9	0	0%
4000	1,384	0.005	24.19	1.24	1.92	13	1.16	1.72	2	0%
4200	54	0.005	22.84	6.29	0.8	13	5.65	0.7	0	0%
5000	841	0.005	53.95	1.84	1.9	17	1.73	1.55	1	2%
5200	59	0.005	23.9	5.81	0.81	17	5.85	0.68	0	0%
Total	**10,849**	**-**	**-**	**2.25**	**-**	**-**	**2.21**	**-**	**17**	**8%**

Note. *CV – coefficient of variation

14.7 Variography

EDA was conducted using Snowden Supervisor statistical software, with all modelling and estimation completed in Maptek Vulcan software. Values less than the detection limit (<0.01 g/t Au) were replaced by half the limit (0.005 g/t Au).

Variography has been used to analyse the spatial continuity and relation within the individual mineralised domains, to determine the appropriate search strategy and estimation parameters. The variogram modelling process involved the following steps:

- Apply a normal score transform to all data prior to undertaking variography on the top cut, declustered composite dataset. The data was transformed into a normal score space using Snowden Supervisor.
- Calculate and model the omni-directional or down hole variogram to characterise the nugget effect.
- Systematically calculate orientated variograms in three dimensions to identify the plane of greatest continuity.
- Calculate a variogram fan within the plane of greatest continuity to identify the direction of maximum continuity within this plane.
- Model experimental variogram in the direction of maximum continuity and the orthogonal directions.
- Apply a back transform to all variogram models to obtain the appropriate variogram models for interpolation of the capped composite data.

Where an individual domain has insufficient samples to undertake variography, the variography parameters from a comparative domain with a similar trend were used and the orientation adjusted to match the domain with insufficient data.

Yalea

At Yalea, the relative nugget effect ranged from 6% to 14% for all the domains. Figure 14-16 illustrates an example of Yalea South (9001 and 9002) normal score and nested back transformed variogram models.

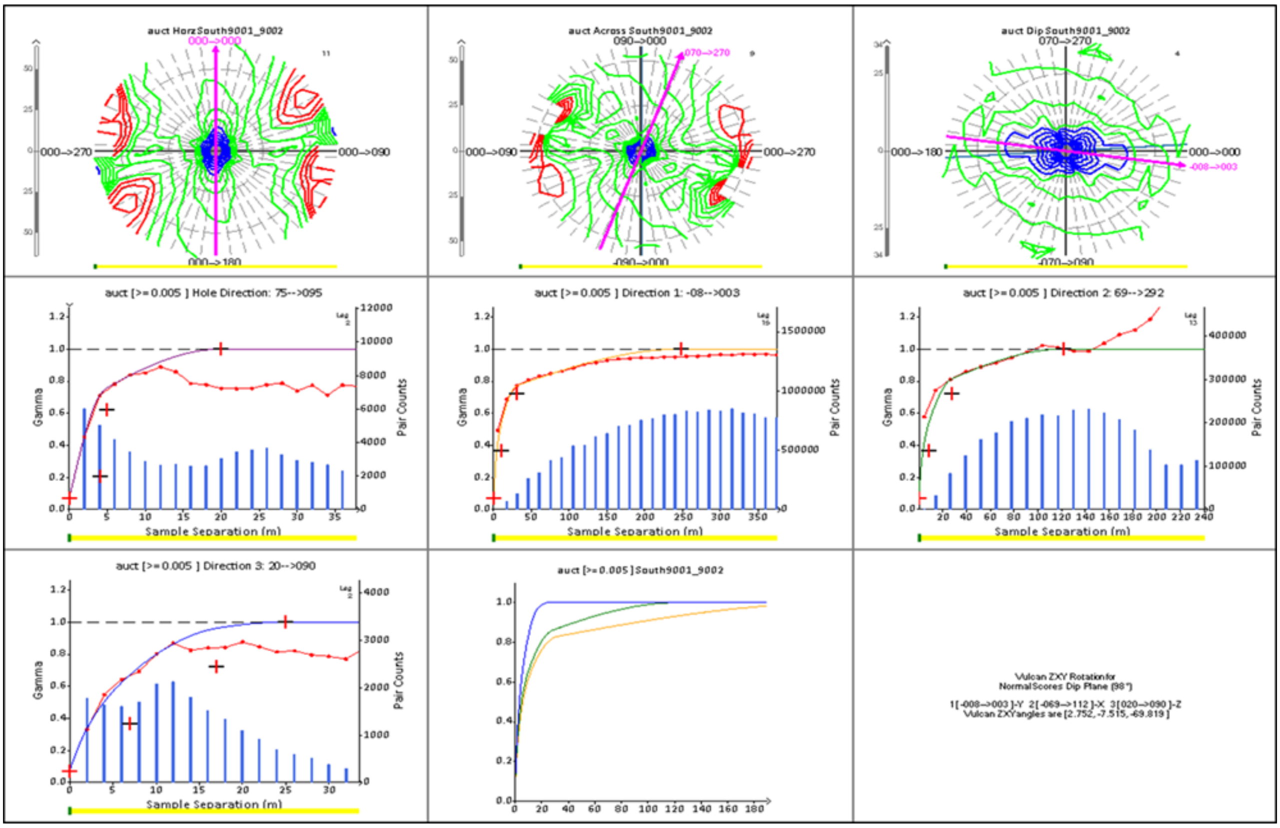


Figure 14-16 Yalea Normal Score Variogram Models and Nested Back Transformed Variogram Model

Gara

At Gara, the relative nugget effect is 20% for all the drill domains. Figure 14-17 illustrates an example of Gara normal score and nested back transformed variogram models.

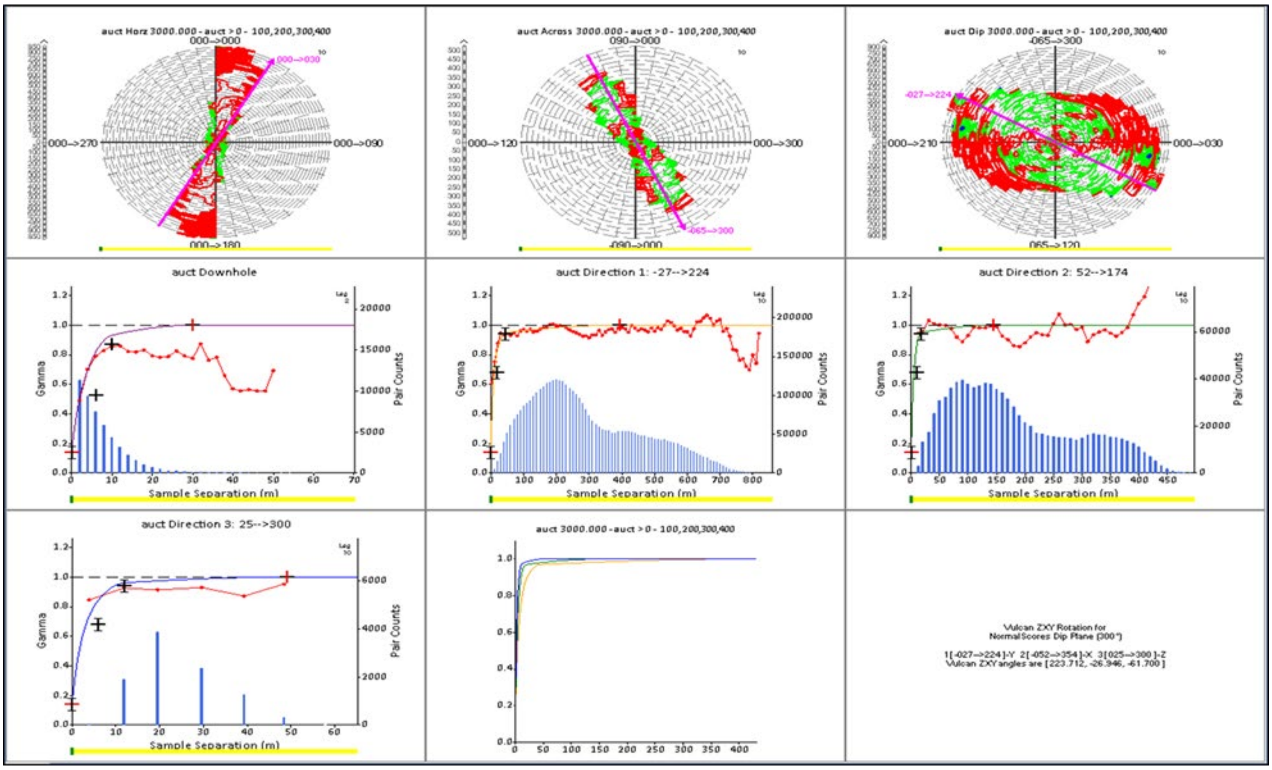


Figure 14-17 Gara UG Normal Score Variogram Models and Nested Back Transformed Variogram Model

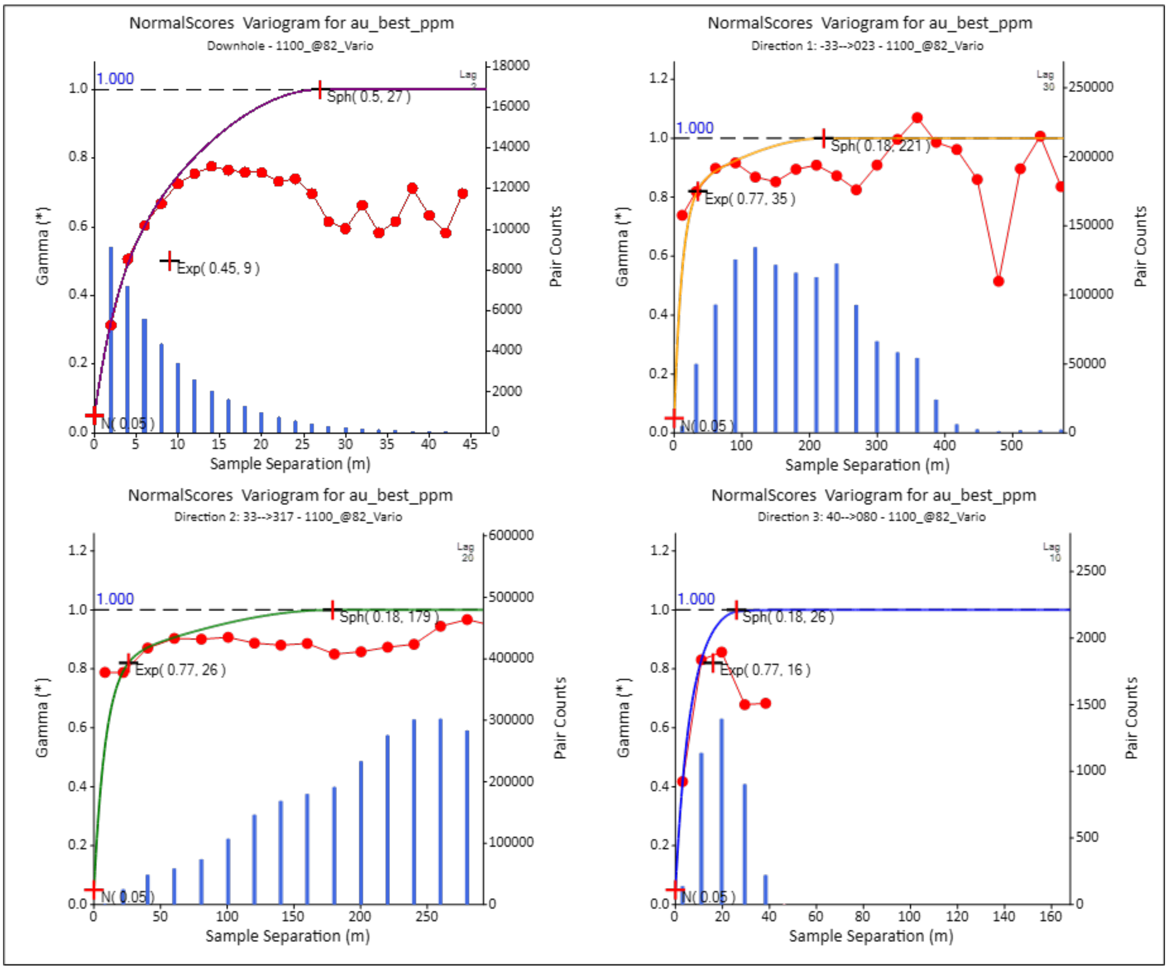
Gounkoto

At Gounkoto, due to the structural complexity which controls the 3D geometry and the data distribution, individual variogram models have been completed for each orientation sub-domains principally in the main mineralisation (MZ1, MZ2, MZ3, and HW1).

At the footwall zone, where some domains lacked sufficient data points to support variogram modelling, variography parameters of similar (geologically and spatially) domains were applied.

MZ1 Lodes

For the MZ1 lodes, the relative nugget effect ranged from 5% to 21%. Figure 14-18 illustrates an example of the Gounkoto 1100 normal score and nested back transformed variogram models.



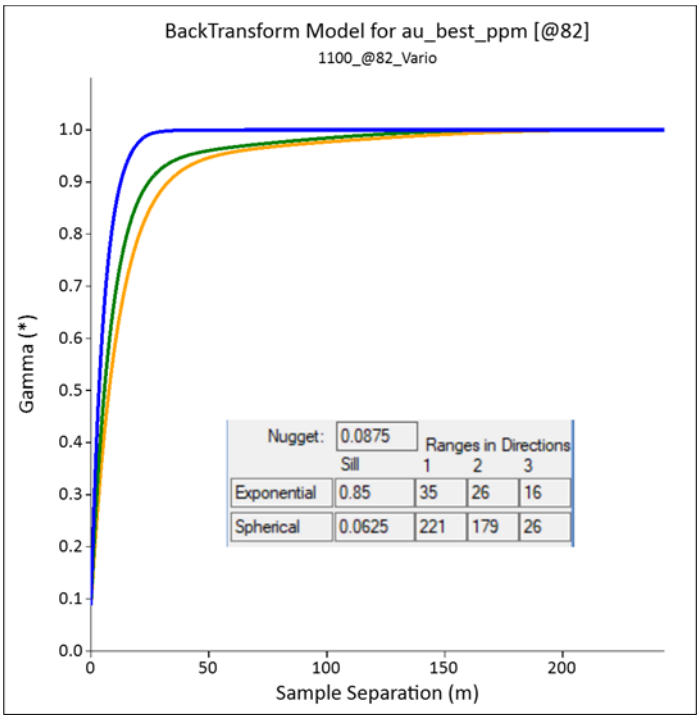


Figure 14-18 Gounkoto Domain 1100 Normal Score Variogram Models and Nested Back Transformed Variogram Model

HW1 Lodes

For the HW1 lodes, the relative nugget effect was 8% in the lower grade and 11% in the high-grade zones. Figure 14-19 illustrates the Gounkoto 2114 lodes normal score and nested back transformed variogram models.

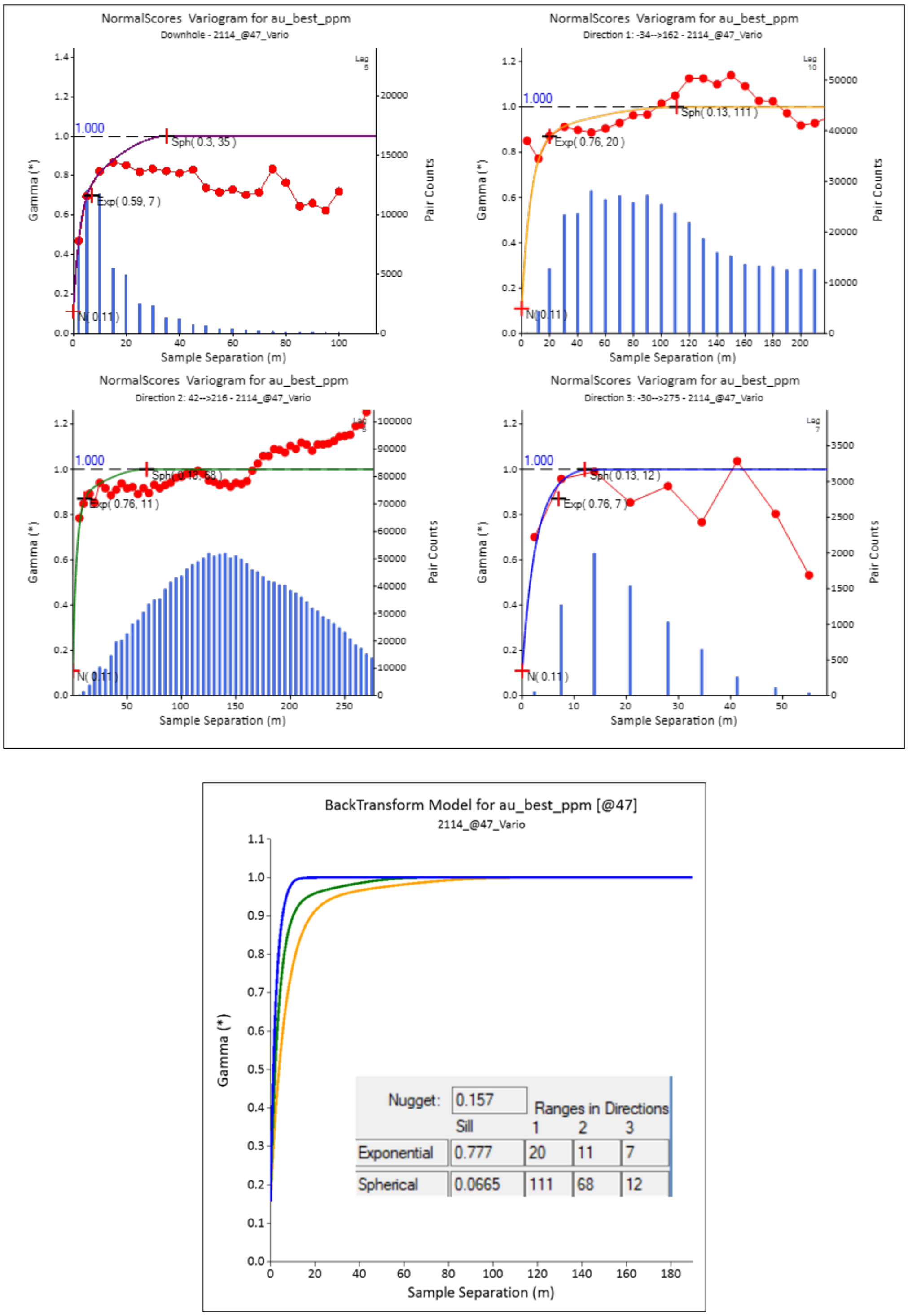


Figure 14-19 Gounkoto Domain 2114 Normal Score Variogram Models and Nested Back Transformed Variogram Model

Faraba

At Faraba, variography is based on grouped domains.

Faraba North Main Zone Lode (Domains 1101, 1102, and 1103)

At the Faraba 1101, 1102, and 1103 lodes, the resultant back transformed nugget effect was 15% for all domains. Figure 14-20 illustrates an example of Faraba 1101, 1102, and 1103 grouped normal score and nested back transformed variogram models.

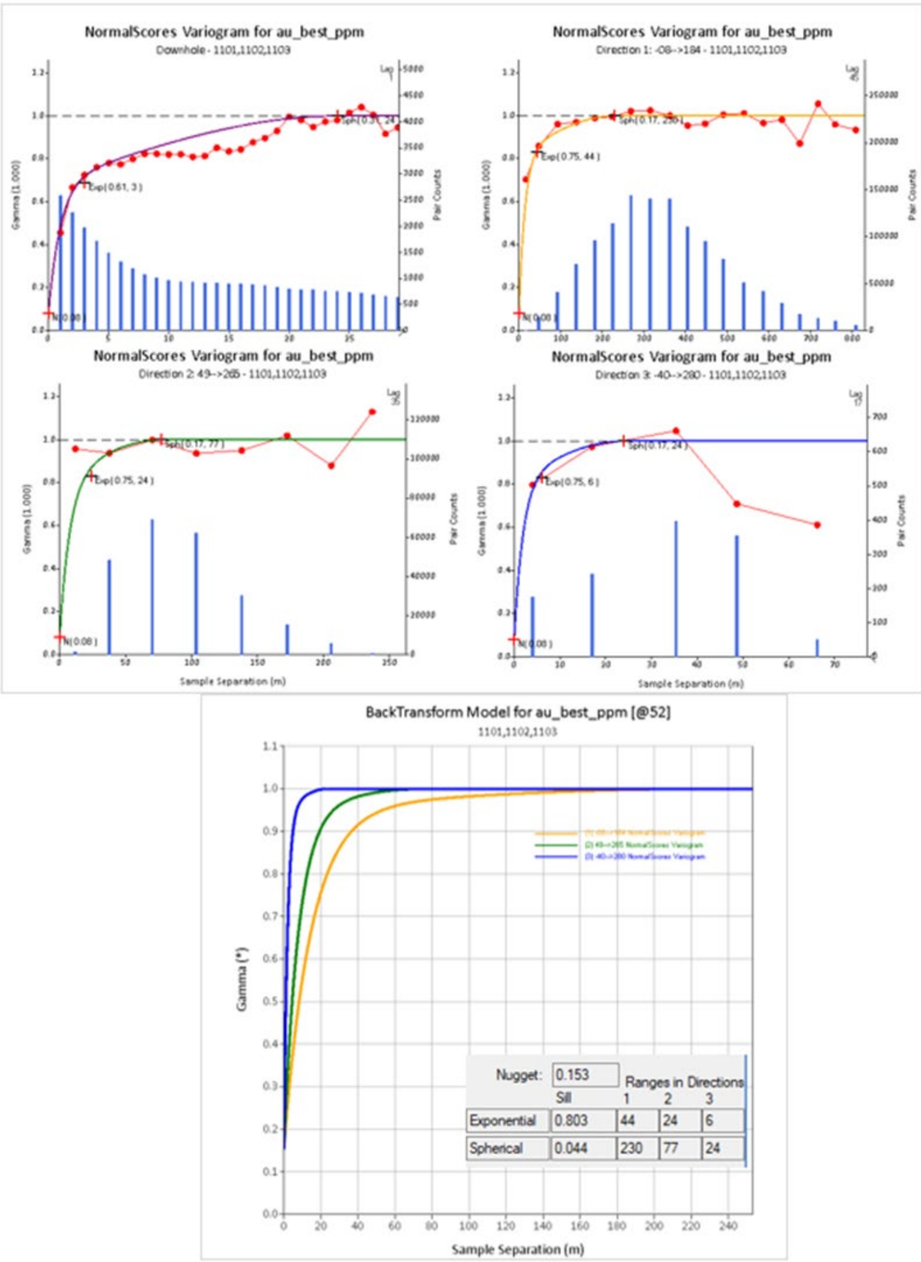


Figure 14-20 Faraba Domains 1101, 1102, and 1103 Grouped Normal Score Variogram Models and Nested Back Transformed Variogram Model

Faraba Main Domain 3100 (MZ Lode)

For domain 3100 (Faraba main MZ lode), the relative nugget effect was 20%, with a resultant back transformed nugget effective of 28%. Figure 14-21 illustrates an example of the Faraba main domains 3100 normal score and nested back transformed variogram models.

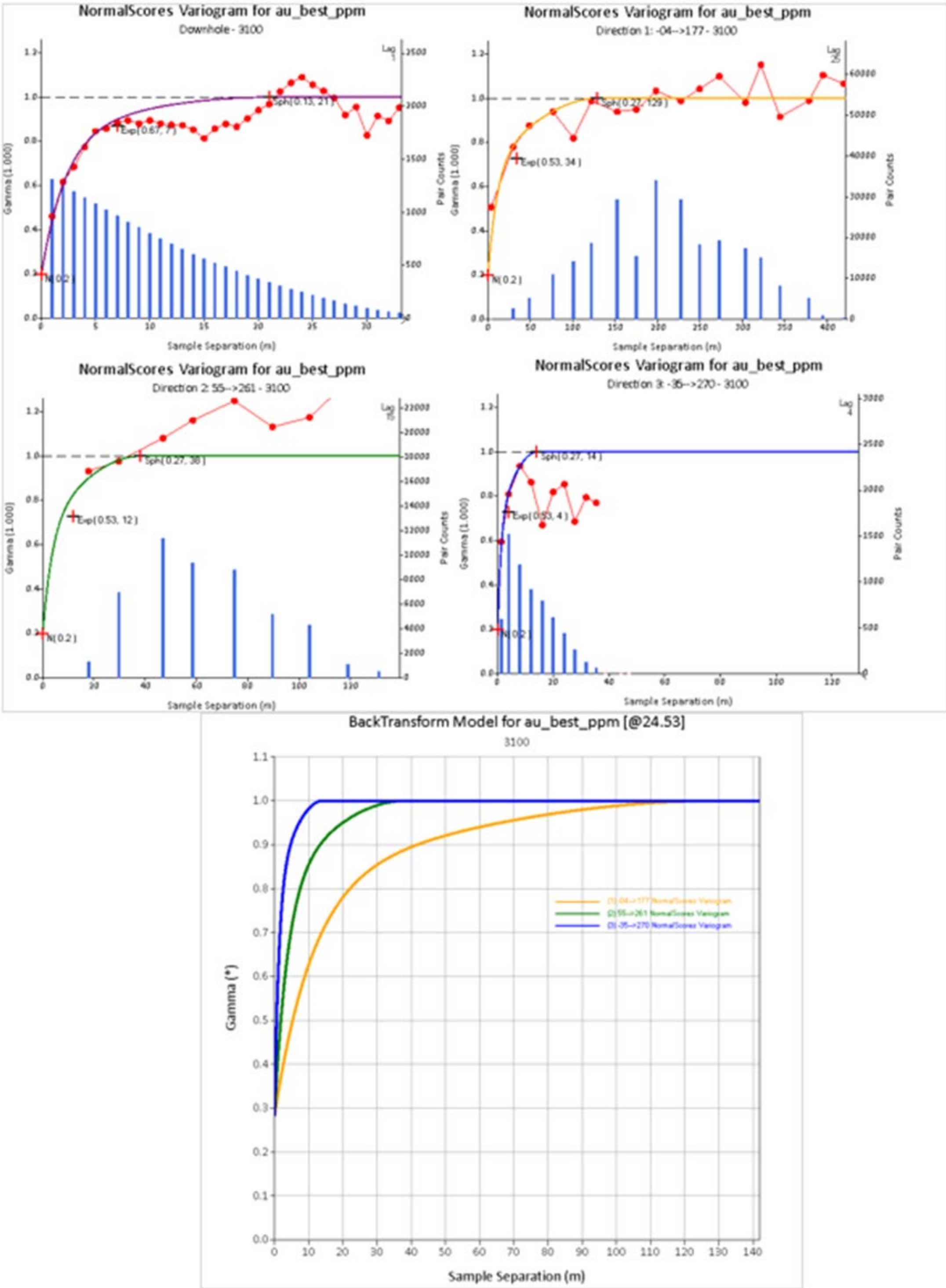


Figure 14-21 Faraba Main Domain 3100 Normal Score Variogram Models and Nested Back Transformed Variogram Model

Gara West

At Gara West, the relative nugget effect was modelled at 13%, with a resultant back transformed nugget effect of 19%. Figure 14-22 illustrates an example of combined normal score and nested back transformed variograms models for domain 2000 and 3000, which were combined for variography.

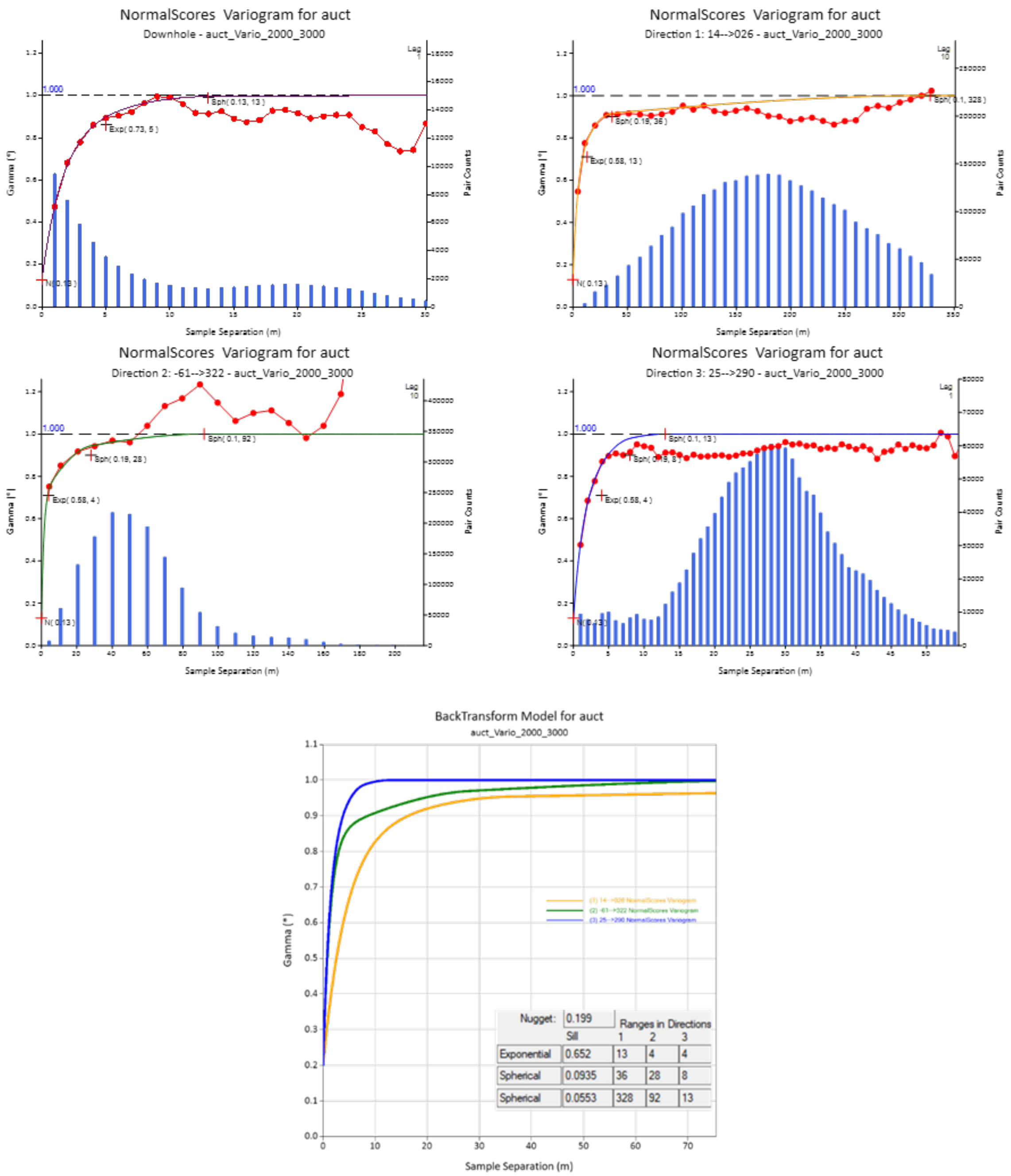


Figure 14-22 Gara West Domain 2000 Individual Structure Normal Score Variogram Models and Nested Back Transformed Variogram Model

14.8 Block Model Estimation

Setup

Consideration is given to selectivity during mine design and planning when choosing an appropriate block size. Selective Mining Units (SMUs) reflect the geological knowledge of the deposit and balancing equipment efficiency and anticipated ore loss and dilution. Block sizes used on each deposit and domain are based on the data density, directly linked to the drill campaign (GC, AGC, or EXP). Block sizes are typically one half to one third the drilling spacing.

The block model was flagged by each mineralisation domain separately by priority. Wireframes are built to define the three drill campaign areas, which are GC, AGC, and EXP/resource drilling, listed in order of decreasing drillhole density. The drill campaign wireframes control the maximum size of the blocks that are built in a specified block model area, allowing the estimation to be carried out on a parent block size appropriate to each drill campaign, within a single block model. Sub-blocking was used to define the geological and domain contacts to an acceptable level of accuracy within the block model, allowing a higher resolution when the model is interpolated.

Yalea

The Yalea block model has a parent block size of 10 m by 20 m by 10 m with a minimum sub-cell size of 0.5 m by 1.0 m by 0.5 m. Underground drilling was completed on an approximately 15 m by 20 m spacing. Table 14-29 summarises the Yalea block model extents.

Table 14-29 Yalea Global Block Model Extent (With Rotation)

Block Extents	Easting (X)	Northing (Y)	Elevation (Z)
Origin	240,160	1,439,320	-1,400
Minimum Offset	0	0	0
Maximum Offset	950	4,280	1,640
Parent Block Size (m)	10	20	10
Sub Cell Size (m)	0.5	1.0	0.5
Rotation (°)	90	0	0

Gara

The Gara block model has a parent block size of 8 m by 30 m by 25 m with a minimum sub-cell size of 0.5 m by 1.25 m by 1.25 m. Table 14-30 summarises the Gara block model extents.

Table 14-30 GARA Global Block Model Extent (With Rotation)

Block Extents	Easting (X)	Northing (Y)	Elevation (Z)
Origin	236,656	1,445,250	-1,100
Minimum Offset	0	0	0
Maximum Offset	1,280	3,900	1,300
Parent Block Size (m)	8	30	25
Sub Cell Size (m)	0.5	1.25	1.25
Rotation (°)	105	0	0

Gounkoto

The Gounkoto block model has a parent block size of 15 m by 30 m by 9.9 m with a minimum sub-cell size of 1.25 m by 2.5 m by 0.825 m. This considers that most of the higher-grade open pit drill holes were on a 12.5 m by 6.25 m grid spacing. Underground drilling was completed on an approximate 10 m by 10 m spacing. Table 14-31 summarises the Gounkoto block model extents.

Table 14-31 Global Block Model Extent (With Rotation)

Block Extents	Easting (X)	Northing (Y)	Elevation (Z)
Origin	239,595	1,422,840	-675
Minimum Offset	0	0	0
Maximum Offset	1,950	3,090	851
Parent Block Size (m)	15	30	9.9
Sub Cell Size (m)	1.25	2.5	0.825
Rotation (°)	90	0	0

Faraba

The Faraba block model has a parent block size of 2.5 m by 10 m by 10 m with a minimum sub-cell size of 0.5 m by 2.0 m by 1.0 m. Table 14-32 summarises the Faraba block model extents.

Table 14-32 Faraba Global Block Model Extent (With Rotation)

Block Extents	Easting (X)	Northing (Y)	Elevation (Z)
Origin	241,700	1,421,370	-450
Minimum Offset	0	0	0
Maximum Offset	1,100	2,800	700
Parent Block Size (m)	2.5	10	10
Sub Cell Size (m)	0.5	2	1
Rotation (°)	90	0	0

Gara West

The Gara West block model has a parent block size of 8 m by 30 m by 10 m with a minimum sub-cell size of 0.5 m by 1.25 m by 1.25 m. Table 14-33 summarises the Gara West block model extents.

Table 14-33 Gara West Block Model Extents

Block Extents	Easting	Northing	Elevation
	(X)	(Y)	(Z)
Origin	236,656	1,445,250	-1,100
Minimum Offset	0	0	0
Maximum Offset	1,280	3900	1300
Parent Block Size (m)	8	30	10
Sub Cell Size (m)	0.5	1.25	1.25
Rotation (°)	105	0	0

Dynamic Anisotropy

Since 2018, many of the models have been estimated using DA functionality within Vulcan software. These are usually simple surfaces that trend through the middle of the 3D mineralisation wireframes, orientation data from which is written to the block model and used to orientate the search neighbourhood. These reference surfaces are then flagged to the empty block models by providing a reference azimuth to provide the strike, dip, and plunge for interpolation.

Figure 14-23 to Figure 14-25 show examples of DA surfaces from Yalea, Gounkoto, and Faraba, respectively.

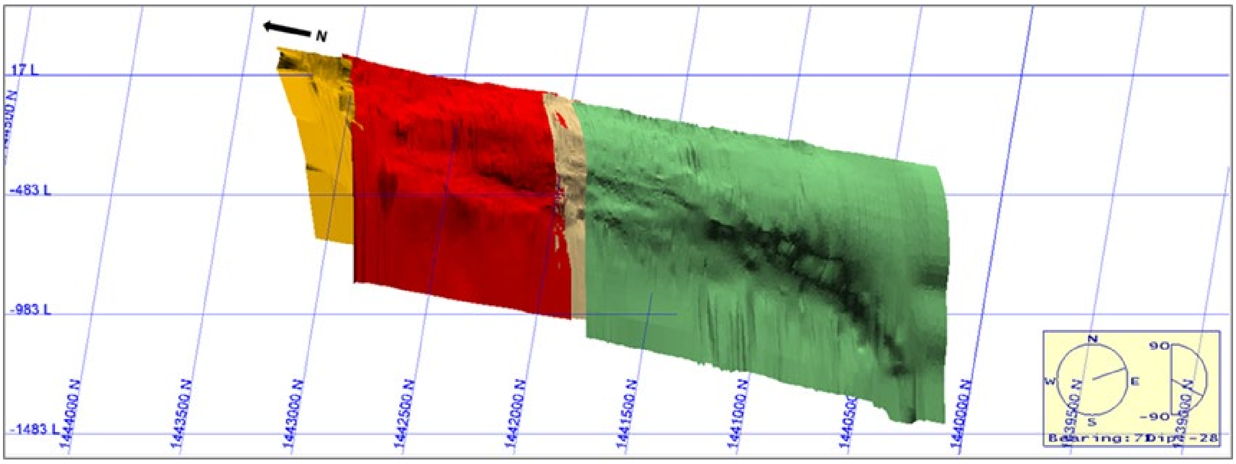
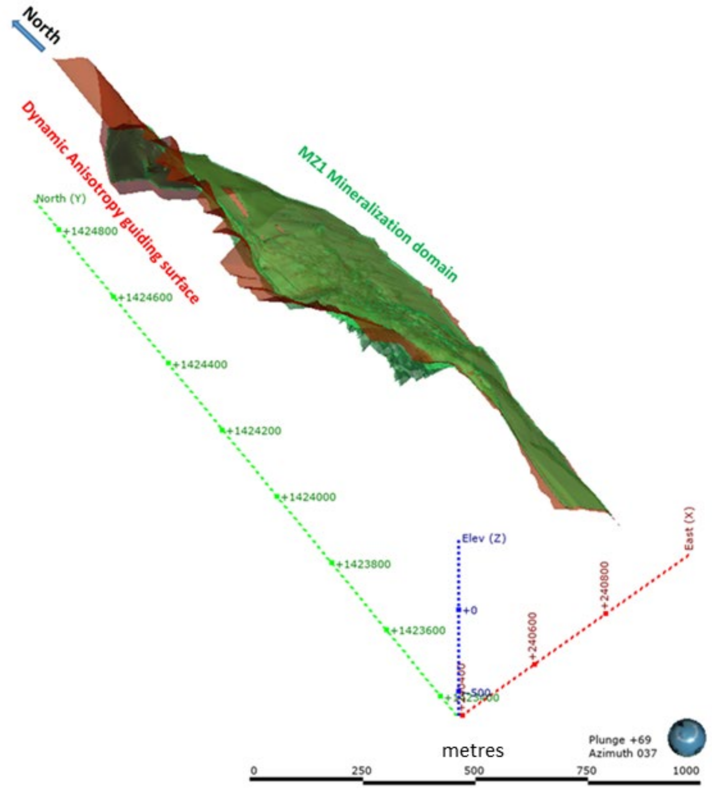


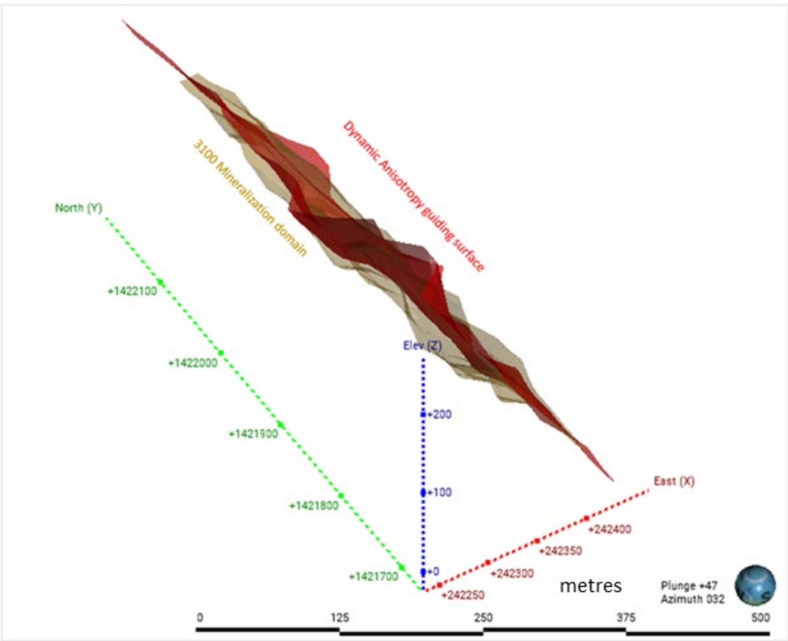
Figure 14-23 3D View of Yalea Guiding DA Surface



Notes:

1. DA surface (red), and MZ1 mineralised domain (green)
2. Looking NE

Figure 14-24 3D View of Gounkoto MZ1 and Guiding DA Surface



Notes:

1. DA surface (red), and 3100 mineralised domain (brown)
2. Looking NE

Figure 14-25 3D View of Faraba Domain 3100 and Guiding DA Surface

Estimation

All models are sub-domained by data density such that shorter search ranges could be achieved within the GC sub-domains. Thus, smaller, more localised searches could be applied to the estimation of the GC domains relative to wider spaced exploration domains. When selecting the appropriate block size, consideration is given to selectivity during mine design and planning relative to the geology, spatial variability, and drill spacing. The Mineral Resources are generated with the multiple block size using different sub-sizes. The block models were interpolated with ordinary kriging (OK).

The search strategy used was based on the variogram results obtained through considering the data distribution for each of the domains. The search ellipsoids were orientated optimally for each domain, considering the plunge and dip of the wireframe.

Each pass is completed using a varying degree of restrictions before any given block can be estimated. A total of four passes were used on every block model, each with increasing search radius representing the decreasing confidence in the blocks for each subsequent run. In rare situations, a fifth pass was considered to fill a small number of edge blocks with grades, typically in conceptual/exploration target zones.

Dolerite dykes were wireframed and coded into the block with the relevant grade field set to zero as default.

All block models use a standardised attribute field setup to ensure consistency of nomenclature and data capture across all deposits.

For all deposits, gold, arsenic, and copper grades are estimated using OK. Only metallurgical recovery is estimated using ID.

Yalea

Each estimation domain has been assigned its own estimation parameters defined from a set of quantitative kriging neighbourhood analysis (QKNA). The QKNA is utilised to optimise the block size, search ranges, sample numbers, and discretisation. Optimisations look at kriging efficiency (KE) and slope of regression (SR) to minimise negative kriging weights. The QKNA has been completed in each variogram domain with the first pass of estimation. Figure 14-26 illustrates the results of the QKNA for Yalea domains 9001 and 9002.

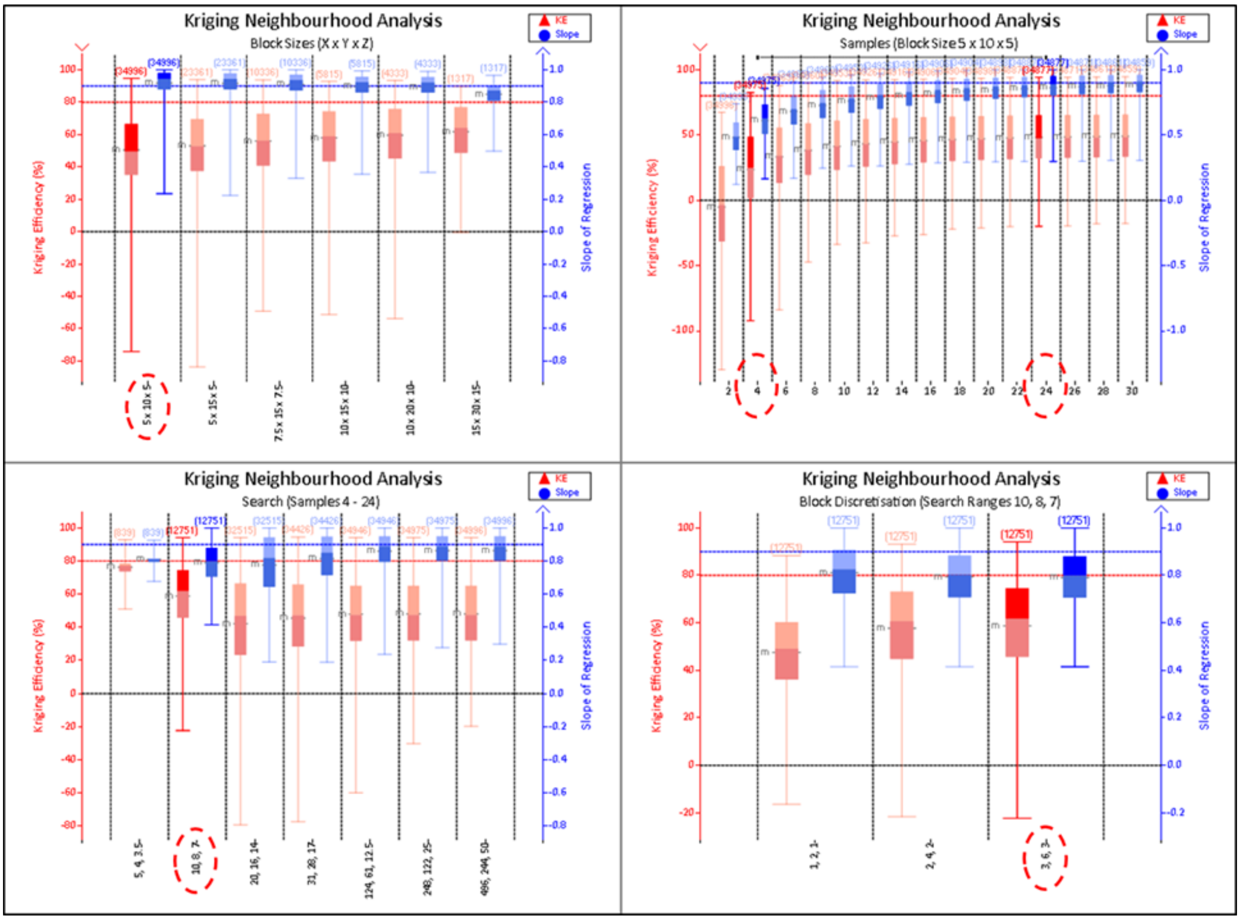


Figure 14-26 QKNA for Yalea Domains 9001 and 9002 UG

At Yalea, the Mineral Resources are generated with the multiple block size using different sub-sizes. Table 14-34 details QKNA Parameters used for the Yalea South 9001 domain in 2022.

Table 14-34 QKNA Parameters for Yalea South 9001 Domain

Domain	AREA	Block Size (m)			Run	Search Radius (m)			No. of Samples		Max Samples Per Drill Hole	Discretisation			High-Grade Yield (g/t Au)	High-Grade Yield Restriction		
		X	Y	Z		Y	X	Z	Min	Max		X	Y	Z		X	Y	Z
9001	GC	5	10	5	1	20	16	14	4	24	6	3	6	3	-	-	-	-
					2	31	28	17	4	24	8	3	6	3	45	20	16	14
					3	124	61	12.5	4	24	-	3	6	3	45	20	16	14
					4	248	122	25	4	24	-	3	6	3	45	20	16	14
9001	AGC	7.5	15	7.5	1	31	28	17	4	24	10	3	6	3	-	-	-	-
					2	62	30	6	4	24	-	3	6	3	45	20	16	14
					3	124	61	12.5	4	24	-	3	6	3	45	20	16	14
					4	248	122	25	4	24	-	3	6	3	45	20	16	14
9001	EXP	10	20	10	1	31	28	17	4	24	12	3	6	3	-	-	-	-
					2	124	61	12.5	4	24	-	3	6	3	45	20	16	14
					3	248	122	25	4	24	-	3	6	3	45	20	16	14
					4	330	149	33	4	24	-	3	6	3	45	20	16	14

Gara

Each estimation domain has been assigned its own estimation parameters defined from a set of QKNA. The QKNA is utilised to optimise the block size, search ranges, sample numbers, and discretisation. Optimisations look at KE and SR to minimise negative kriging weights. The QKNA has been completed in each variogram domain with the first pass of estimation. Figure 14-27 illustrates the results of the QKNA for Gara Underground domain 100.

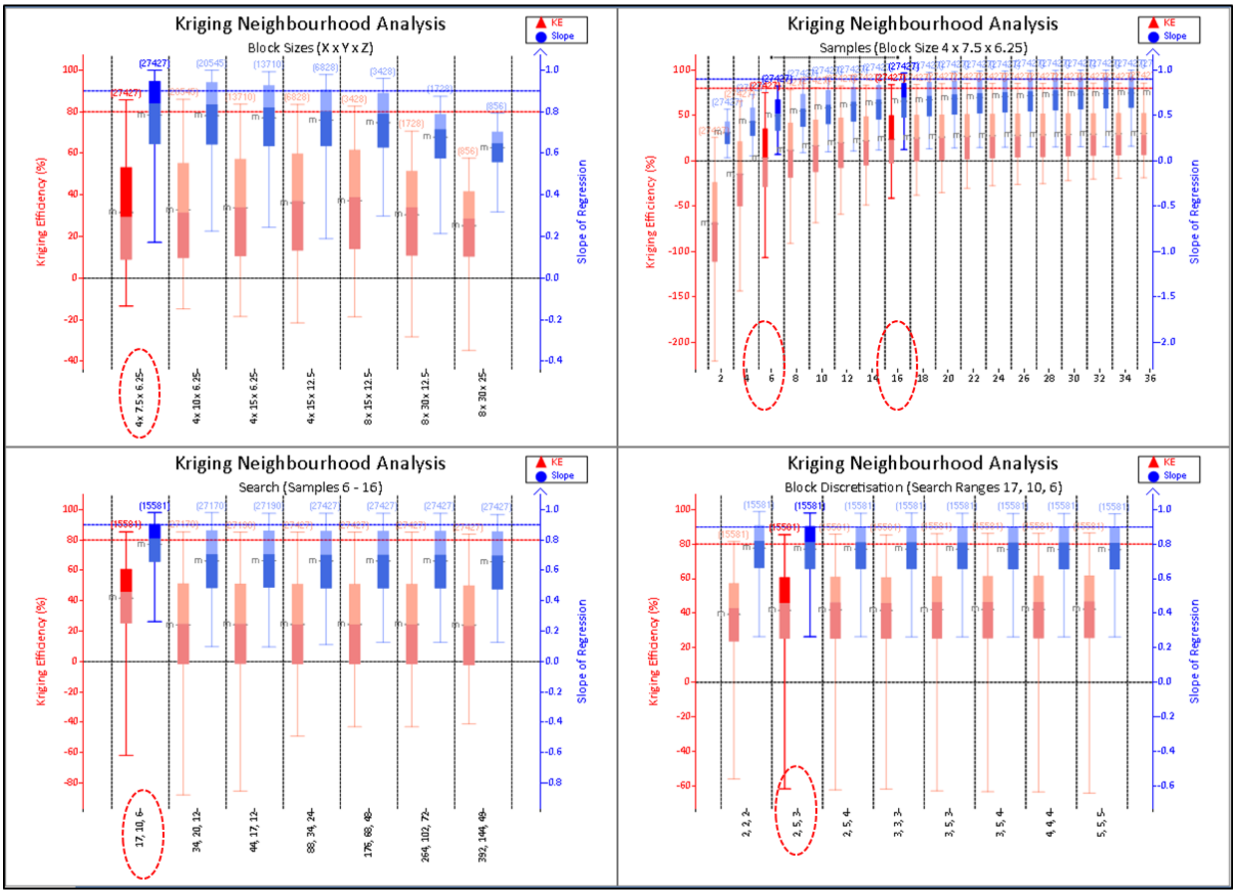


Figure 14-27 QKNA for Gara Domain 100

At Gara Underground, the Mineral Resources are generated with the multiple block sizes using different sub-cell sizes. Table 14-35 details the block size and rotations for models updated in 2022.

Table 14-35 QKNA Parameters for Gara, All Ore Domain

Domain	AREA	Block Size (m)			Run	Search Radius (m)			No. of Samples		Max Samples Per Drill Hole	Discretisation			High-Grade Yield (g/t Au)	High-Grade Yield Restriction		
		X	Y	Z		Y	X	Z	Min	Max		X	Y	Z		X	Y	Z
100,200,300,400	GC	4	7.5	6.25	1	17	10	6	6	18	2	2	5	3	na	na	na	na
					2	34	20	12	6	18	2	2	5	3	45	17	10	6
					3	88	34	24	6	18	2	2	5	3	45	17	10	6
					4	392	144	49	6	18	2	2	5	3	45	17	10	6
100,200,300,400	AGC	4	15	12.5	1	34	20	12	6	18	4	2	5	4	na	na	na	na
					2	88	34	24	6	18	4	2	5	4	20	34	20	12
					3	176	68	48	4	18	4	2	5	4	20	34	20	12
					4	392	144	49	4	18	4	2	5	4	20	34	20	12
100,200,300,400	EXP	8	30	25	1	34	20	12	6	18	4	2	6	4	na	na	na	na
					2	88	34	24	6	18	4	2	6	4	9	34	20	12
					3	176	68	48	4	18	3	2	6	4	9	34	20	12
					4	392	144	49	4	18	3	2	6	4	9	34	20	12

Gounkoto

In certain cases, the input estimation parameters were adjusted following block model validation checks employed by Gounkoto, which involved visual checks, swath plots, decluster plots, change of support (COS) checks, and global mean block model versus data comparisons. Figure 14-28 illustrates the results of the QKNA for domain 1317 at Gounkoto.

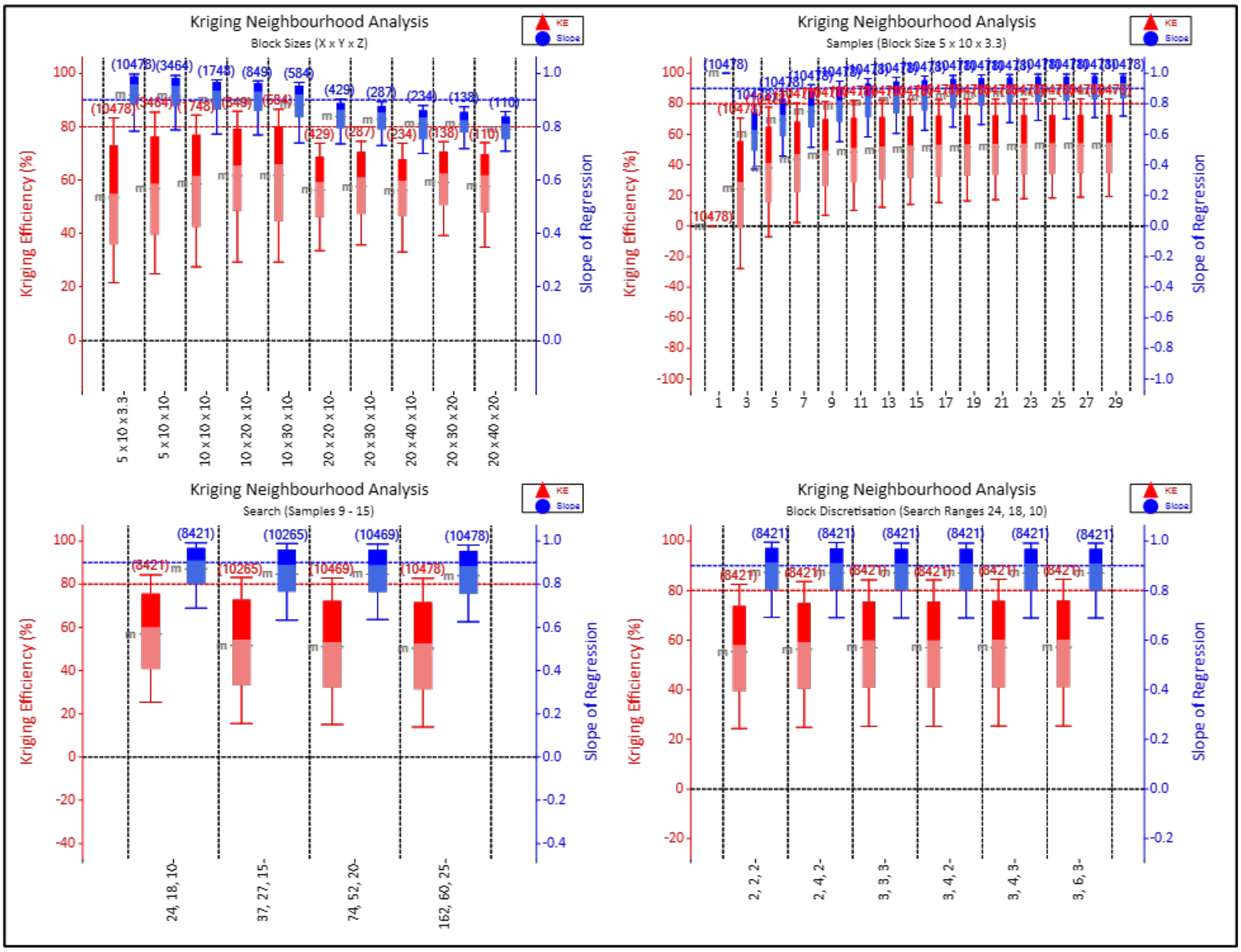


Figure 14-28 QKNA for Gounkoto Domain 1317 GC Zone Barrick 20220627

At Gounkoto, four estimation passes are completed for each drill campaign (GC, AGC, and EXP) in most of the estimation domains. In the GC area, the search ellipse in the first pass uses 50% of the first range of the variogram and a multiple factor is applied until the fourth pass, which covers 72% to 80% of the total sill. In AGC, the first pass uses 100% of the first range and the fourth pass uses the full ranges of the variogram models. In the EXP area, where the drill spacing is the widest, the first pass generally uses double the first range of the variogram models and the fourth pass uses 1.5X the full variogram model ranges.

Overall, Gounkoto contains 51 estimation domains. Except for the footwall fingers structures at MZ1 and MZ3 where the search ellipsoid was orientated individually, the Gounkoto model was constructed using DA during estimation to capture any slight change in the orientation of the mineralisation.

Due to the large number of estimation domains within each of the Gounkoto deposits, Table 14-36 presents a small subset of the QKNA parameters as an example.

Table 14-36 QKNA Parameters for Gounkoto 1100 and 1201 Domains

Domain	Drill Campaign	Block Size (m)			Run	Search Radius (m)			No. of Samples		Max Samples Per Drill Hole	Discretisation			High-Grade Yield (g/t Au)	High-Grade Yield Restriction		
		X	Y	Z		Y	X	Z	Min	Max		X	Y	Z		X	Y	Z
1100	GC	5	10	3.3	1	18	14	8	9	15	3	3	6	3	30	12	9	5
					2	35	26	16	9	15	3	3	6	3	30	12	9	5
					3	80	50	20	9	15	3	3	6	3	30	12	9	5
					4	160	100	24	3	12	-	3	6	3	30	12	9	5
	AGC	7.5	15	4.95	1	35	26	16	8	16	4	3	6	3	30	12	9	5
					2	80	50	20	8	16	4	3	6	3	30	12	9	5
					3	160	100	24	8	16	4	3	6	3	30	12	9	5
					4	221	179	30	2	12	-	3	6	3	30	12	9	5
	EXP	15	30	9.9	1	80	50	20	8	16	-	3	6	3	30	12	9	5
					2	160	100	24	8	16	-	3	6	3	30	12	9	5
					3	221	179	30	8	16	-	3	6	3	30	12	9	5
					4	331	260	36	2	12	-	3	6	3	30	12	9	5
1201	GC	5	10	3.3	1	20	15	6	8	14	3	3	6	3	65	10	10	4
					2	30	20	8	8	14	3	3	6	3	65	10	10	4
					3	40	30	10	8	14	3	3	6	3	65	10	10	4
					4	60	40	20	2	14	-	3	6	3	65	10	10	4
	AGC	7.5	15	4.95	1	30	20	8	8	14	4	3	6	3	65	10	10	4
					2	40	30	10	8	14	4	3	6	3	65	10	10	4
					3	60	40	20	8	14	4	3	6	3	65	10	10	4
					4	120	80	25	2	14	-	3	6	3	65	10	10	4
	EXP	15	30	9.9	1	60	40	20	8	14	-	3	6	3	65	10	10	4
					2	120	80	25	8	14	-	3	6	3	65	10	10	4
					3	300	200	40	8	14	-	3	6	3	65	10	10	4
					4	500	300	80	2	14	-	3	6	3	65	10	10	4

Faraba

In certain cases, the input estimation parameters were adjusted following block model validation checks employed by Loulo-Gounkoto, which involved visual checks, swath plots, decluster plots, COS checks, and global mean block model versus data comparisons. Figure 14-29 illustrates the results of the QKNA for domain 3100 at Faraba.

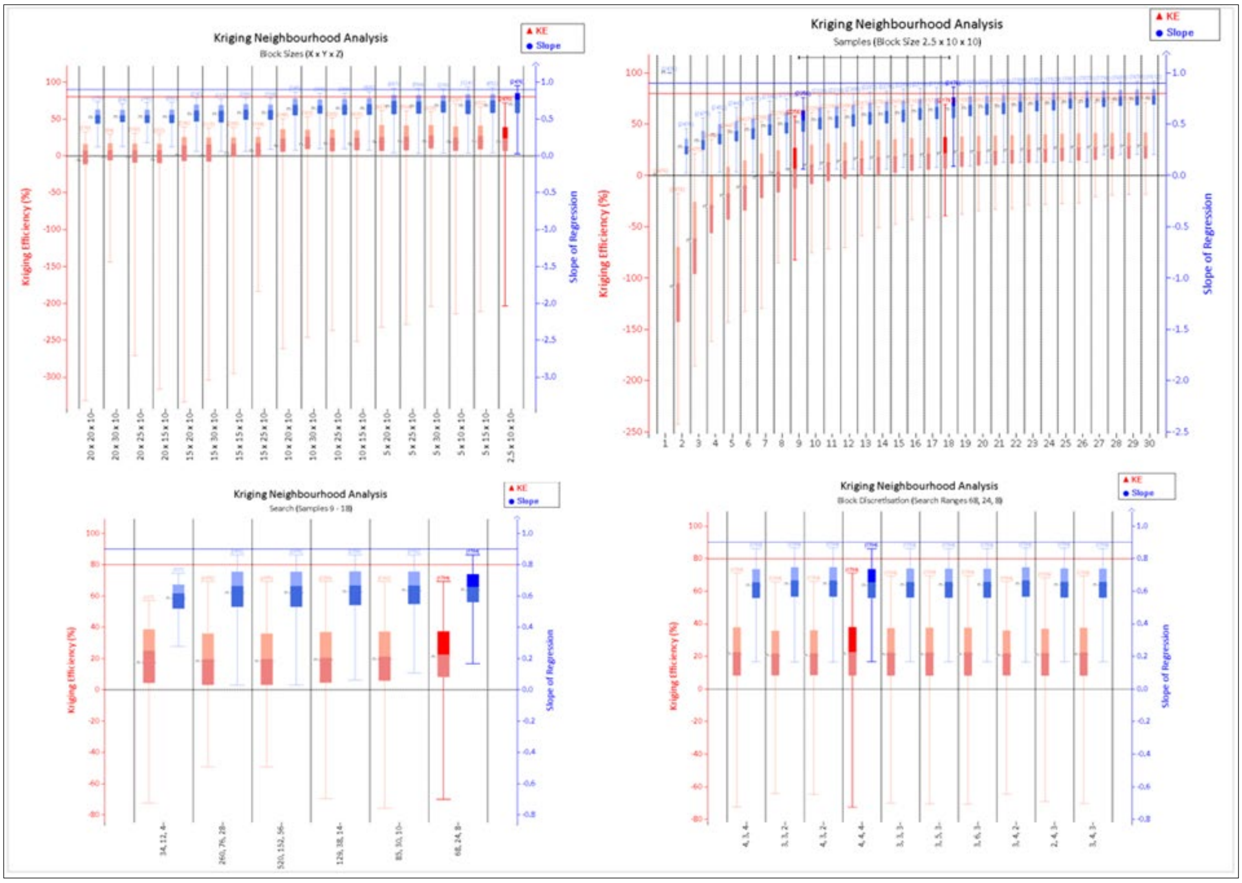


Figure 14-29 QKNA for Faraba Domain 3100

At Faraba, the search ellipse in the first estimation pass was set to the first ranges of the variogram models, which were typically between 75% and 95% of the total sill from the different grouped domains. The typical variograms modelled in Faraba show extended ranges associated with the last C2 structure (typically, representative of the final 5% to 25% of the sill). The search ellipse in the second pass was set up as the half of the full ranges of the variogram models. The third pass was at the full variograms model ranges and the fourth pass was double the variogram model range.

The block model was flagged by each mineralisation domain separately by priority.

Overall, Faraba contains 36 estimation domains. The Faraba model was constructed using DA during estimation to capture any slight change in the orientation of the mineralisation.

Due to the large number of domains within each of the Faraba deposits, Table 14-37 presents a small subset of the Faraba QKNA parameters as an example.

Table 14-37 QKNA Parameters for Faraba Domain 3100

Domain	Block Size (m)			Run	Search Radius (m)			No. of Samples		Max Samples Per Drill Hole	Discretisation			High-Grade Yield (g/t Au)	High-Grade Yield Restriction		
	X	Y	Z		Y	X	Z	Min	Max		X	Y	Z		X	Y	Z
1101 to 1103	2.5	10	10	1	44	24	6	9	18	3	4	4	4	26	22	12	3
				2	90	40	12	9	18	3	4	4	4	26	22	12	3
				3	230	77	24	6	18	3	4	4	4	26	22	12	3
				4	300	90	36	3	15	-	4	4	4	26	22	12	3
1201 to 1207	2.5	10	10	1	28	20	6	9	18	3	4	4	4	7	14	10	3
				2	56	30	12	9	18	3	4	4	4	7	14	10	3
				3	101	40	30	6	18	3	4	4	4	7	14	10	3
				4	200	60	40	3	15	-	4	4	4	7	14	10	3
1301 to 1308	2.5	10	10	1	34	17	4	9	18	3	4	4	4	15	17	9	2
				2	69	37	8	9	18	3	4	4	4	15	17	9	2
				3	239	60	33	6	18	3	4	4	4	15	17	9	2
				4	300	70	40	3	15	-	4	4	4	15	17	9	2
2101 to 2103/ 2201 to 2204/ 2301 to 2302	2.5	10	10	1	59	43	15	9	18	3	4	4	4	8	30	20	8
				2	159	89	80	9	18	3	4	4	4	8	30	20	8
				3	250	140	120	6	18	3	4	4	4	8	30	20	8
				4	350	200	160	3	15	-	4	4	4	8	30	20	8
3100	2.5	10	10	1	34	12	4	9	18	3	4	4	4	14.5	17	6	2
				2	68	24	8	9	18	3	4	4	4	14.5	17	6	2
				3	129	38	14	6	18	3	4	4	4	14.5	17	6	2
				4	260	76	28	3	15	-	4	4	4	14.5	17	6	2
3200 to 3201	2.5	10	10	1	61	21	6	9	18	3	4	4	4	6	30	10	3
				2	100	34	9	9	18	3	4	4	4	6	30	10	3
				3	180	56	12	6	18	3	4	4	4	6	30	10	3
				4	360	110	18	3	15	-	4	4	4	6	30	10	3
3300 to 3305	2.5	10	10	1	48	15	6	9	18	3	4	4	4	11	24	8	3
				2	100	30	9	9	18	3	4	4	4	11	24	8	3
				3	211	65	20	6	18	3	4	4	4	11	24	8	3
				4	300	90	28	3	15	-	4	4	4	11	24	8	3

Gara West

OK was used to estimate all Mineral Resources. QKNA was applied to help to determine the minimum number of samples, search radius, and block discretisation for each domain. Almost all domains use hard boundaries to ensure that separate grade populations do not influence the grades.

In certain cases, the input estimation parameters were adjusted following block model validation checks, which involved visual checks, swath plots, decluster plots, COS checks, and global mean block model versus data comparisons. Figure 14-30 illustrates the results of the QKNA for domains 2000 and 3000 at Gara West, while Table 14-38 shows the QKNA parameters used.

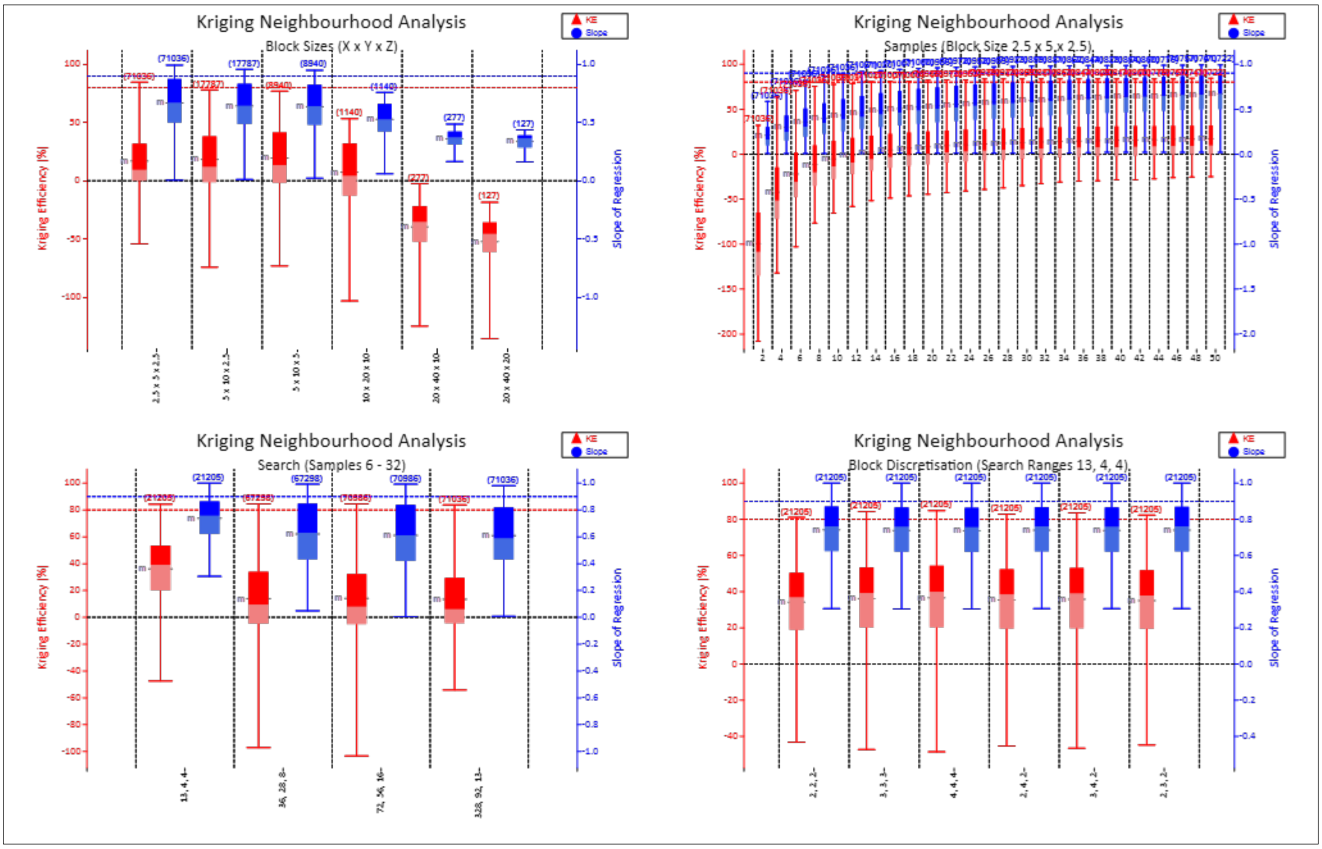


Figure 14-30 QKNA for Gara West Domains 2000 and 3000

Table 14-38 QKNA Parameters from Gara West

Domain	Drill Campaign	Block Size (m)			Run	Search Radius (m)			No. of Samples		Max Samples Per Drill Hole	Discretisation			High-Grade Yield (g/t Au)	High-Grade Yield Restriction		
		X	Y	Z		Y	X	Z	Min	Max		X	Y	Z		X	Y	Z
2000, 3000	GC	4	7.5	5	1	6.5	2	2	6	16	3	2	5	3	30	6.5	2	2
					2	13	4	4	6	16	3	2	5	3	30	13	4	4
					3	36	28	8	6	16	3	2	5	3	30	13	4	4
					4	72	56	16	6	16	3	2	5	3	0	0	0	0
2000, 3000	AGC	4	15	10	1	36	28	8	6	16	3	2	5	3	30	6.5	2	2
					2	72	56	16	6	16	3	2	5	3	30	13	4	4
					3	328	92	13	6	16	3	2	5	3	30	13	4	4
					4	492	138	19.5	6	16	3	2	5	3	0	0	0	0
2000, 3000	EXP	8	30	10	1	36	28	8	6	16	3	2	5	3	30	6.5	2	2
					2	72	56	16	6	16	3	2	5	3	30	13	4	4
					3	328	92	13	6	16	3	2	5	3	30	13	4	4
					4	492	138	19.5	6	16	3	2	5	3	0	0	0	0

14.9 Resource Classification

Current Resources

Under the CIM (2014) Standards, a "Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support mine planning and final evaluation of the economic viability of the deposit".

An Indicated Mineral Resource is "that part of a Mineral Resource for which "quantity, grade or quality, densities, shape, and physical characteristics are estimated with sufficient confidence sufficient to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit". An Indicated Mineral Resource has a lower level of confidence than a Measured Mineral Resource.

An Inferred Mineral Resource is "that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade continuity or quality continuity'. An Inferred Mineral Resource has a lower level of confidence than an Indicated Mineral Resource and must not be converted to a Mineral Reserve.

Mineral Resource classification was based on geological continuity and drill data density, variogram range continuity and stability, as well as estimation quality in the form of SR and KE. This was carried out by displaying the estimated blocks (SR and KE), together with the supporting data as a guide.

Yalea and Gara

The Mineral Resource classification criteria used at Yalea and Gara Underground are summarised in Table 14-39.

Table 14-39 Yalea and Gara UG Mineral Resource Classification Parameters

Statistic	Measured	Indicated	Inferred
Minimum Samples	8	6	4
Minimum Consecutive Sections	5	Good Geological Continuity	-
Maximum Drilling Density	30 m	30 m by 80 m	~80 m

For Indicated Mineral Resources, there are some allowances for areas where drilling density is lower but successive drilling campaigns have shown that there is continuity of grade and geology.

Gounkoto

The Mineral Resource classification criteria used at Gounkoto are summarised in Table 14-40.

Table 14-40 Gounkoto Mineral Resource Classification Parameters

Statistic	Deposit	Measured	Indicated	Inferred
Minimum Samples	Gounkoto	9	8	8
Minimum Consecutive Sections	Gounkoto	4	Good Geological Continuity	-
Maximum Drilling Density	Gounkoto Open Pit	12.5 m by 12.5 m or 6.25 m by 6.25 m Finger zone	< 30 m	< 100 m
	Gounkoto Underground	10 m by 10 m	40 m by 30 m	< 100 m

For Indicated Mineral Resources, there are some allowances for areas where drilling density is lower, but successive drilling campaigns have shown that there is continuity of grade and geology.

Faraba

The Mineral Resource classification criteria used at Faraba are summarised in Table 14-41.

Table 14-41 Faraba Mineral Resource Classification Parameters

Statistic	Measured	Indicated	Inferred
Minimum Samples	9	6	3
Minimum Consecutive Sections	4	Good Geological Continuity	-
Maximum Drilling Density	12.5 m by 12.5 m	< 30 m	<100 m

For Indicated Mineral Resources, there are some allowances for areas where drilling density is lower, but successive drilling campaigns have shown continuity of grade and geology.

Gara West

The Mineral Resource classification criteria used at Gara West are summarised in Table 14-42.

Table 14-42 Gara West Mineral Resource Classification Parameters

Statistic	Measured	Indicated	Inferred
Minimum Samples	6	4	2
Minimum Consecutive Sections	3	Good Geological Continuity	-
Maximum Drilling Density	10 m by 5 m	20 m by 10 m	40 m by 20 m

For Indicated Mineral Resources, there are some allowances for areas where drilling density is lower, but successive drilling campaigns have shown continuity of grade and geology.

14.10 Block Model Depletion

Active mining areas are scanned monthly using cavity monitoring laser scanners, while detailed drone photometry surface scans are completed on a weekly basis.

Every block model was flagged with the regional 2 m DTM, and any blocks above the surface were flagged as air.

The following deposits have not been mined and no depletion was applied:

- Yalea South OC
- Faraba
- Baboto
- Yalea Ridge
- Loulo 3 (inclusive of Loulo 1, Loulo 2, Loulo 3, and Loulo 2 / Loulo 3 Gap)
- P12
- P125L3
- P129QT
- PQ10

Gounkoto

Depletion pit surveys at Gounkoto OP were updated in August 2022 and used to flag the block model. The Gounkoto Underground resource block model was similarly depleted using the end of month (EOM) August 2022 ore development scans.

14.11 Block Model Validation

Before, during, and after the block models were classified, validation checks were undertaken on the block model volumes and estimated grades to ensure that no major errors occurred during the model build or estimation process, as well as test the precision and accuracy and assess any bias in the estimated grades.

The block models were validated using the following steps:

1. Volume reconciliation between the block model estimation domains and related wireframes. Table 14-43 summarises the variances between the wireframe and block model volumes across all deposits.
2. Blocks estimated with negative grades are reset to the block grade of the closest sample.
3. A comparison between the composite and block grade minimum, maximum, mean, declustered mean, and the estimation mean for each of the domains (within the open pit or underground drill campaigns is created). This is completed to check for possible over or under-estimation.
4. Swath plots are created for each geological domain to validate the estimated grade variability compared to the composite along strike, across strike, and along the Z axis. This is to check that the model estimate follows the trends seen in the data and that there is no general bias with over or under-estimation. Areas with less data support are also highlighted for further drilling and geological work. The swath plots for Gounkoto show that the confidence for the deposit is within acceptable limits and that conditional bias is kept to a minimum.
5. Visual check comparing the composite data to the block estimates to check for an acceptable correlation.
6. COS histogram plots which compare the distribution of the block estimate with the distribution of the COS local block estimate. These COS graphs demonstrate how the variance is reduced from the composited data to the COS value of each composite. In addition, decluster plots are generated to compare the OK block estimate against the local COS block estimate.

Gara

Block model and wireframe volume comparisons are shown for Yalea and Gara Underground in Table 14-43.

Table 14-43 2022 Block Model Volume Comparison

Deposit	Wireframe Volume (m^3)	Block Model Volume (m^3)	Variance (%)
Yalea	36,142,930	36,140,891	0%
Gara UG	22,244,746	22,244,194	0%

Swath plots for Gara domain 100 along strike, across strike, and along height are shown in Figure 14-31, Figure 14-32, and Figure 14-33, respectively.

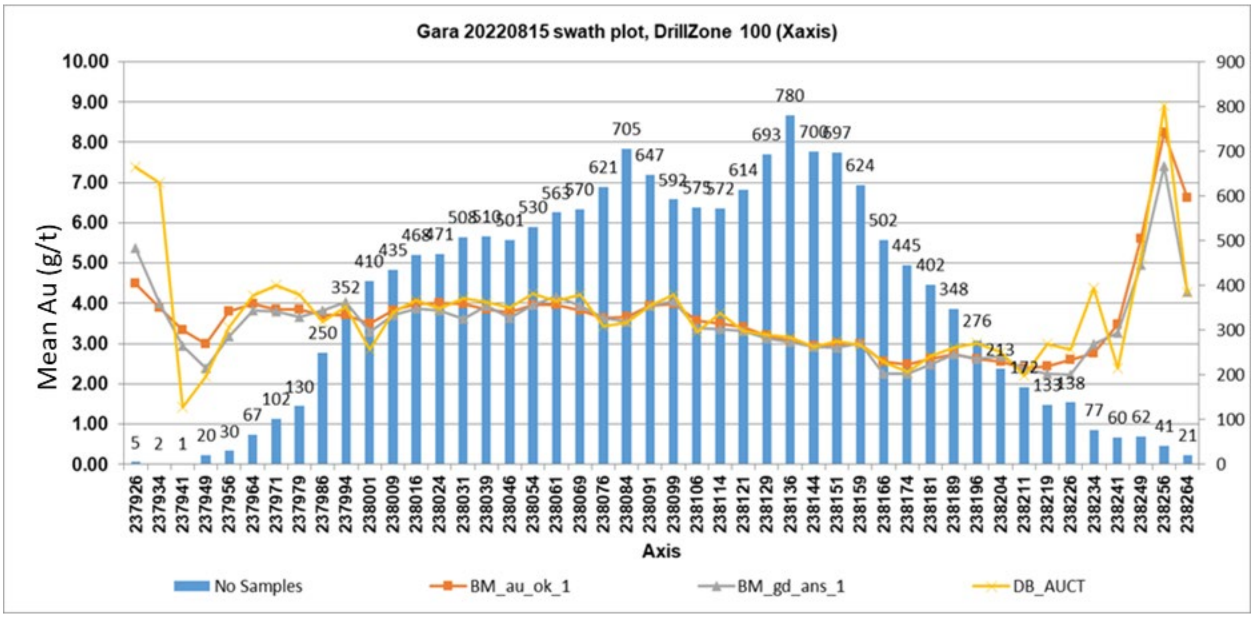


Figure 14-31 Gara Swath Plot of Au (g/t) in Domain 100 Along Strike

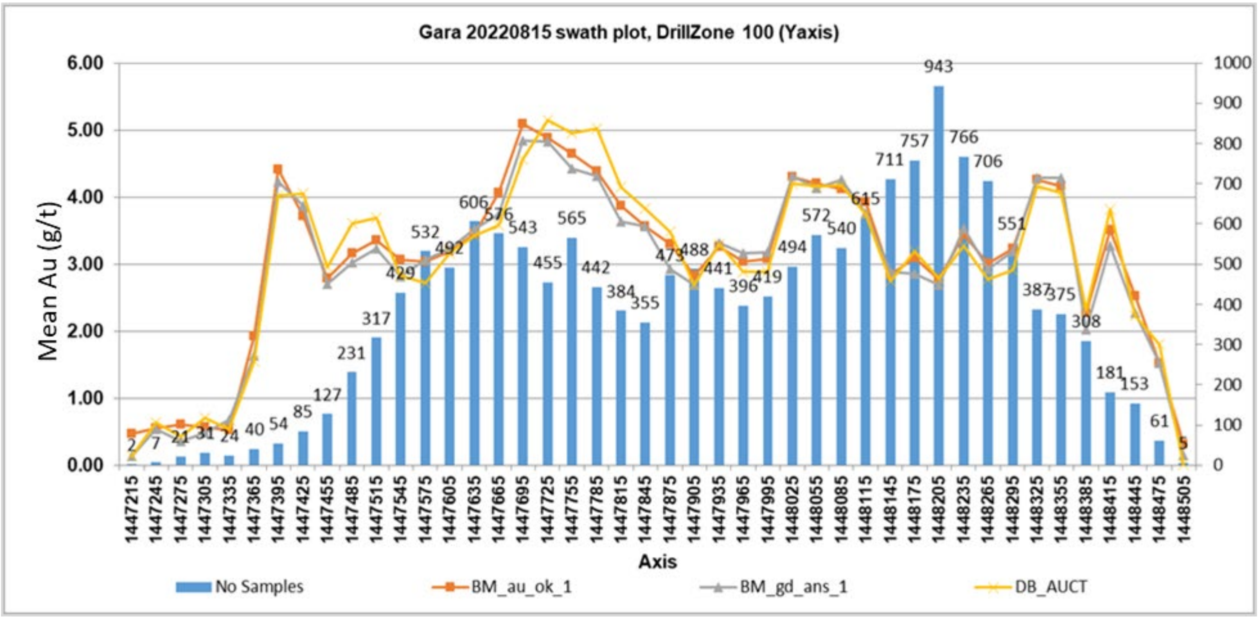


Figure 14-32 Gara Swath Plot of Au (g/t) in Domain 100 Across Strike

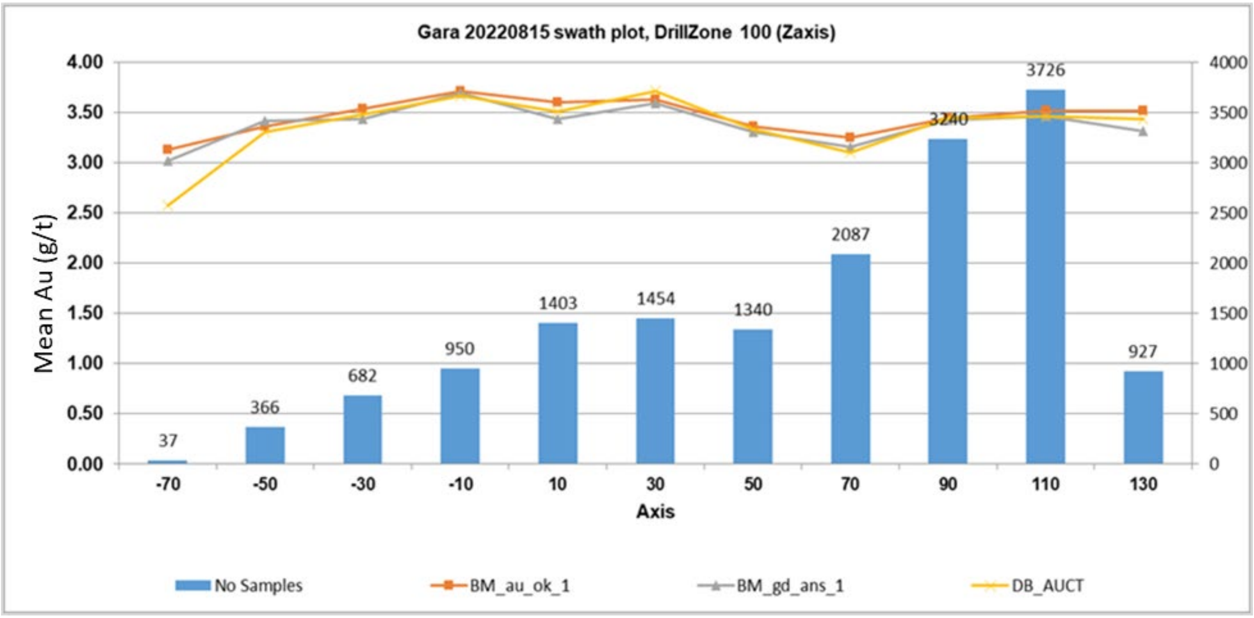


Figure 14-33 Gara Swath Plot of Au (g/t) in Domain 100 Along Height

A cross-section showing visual comparison of block and composite grades for Gara is provided in Figure 14-34.

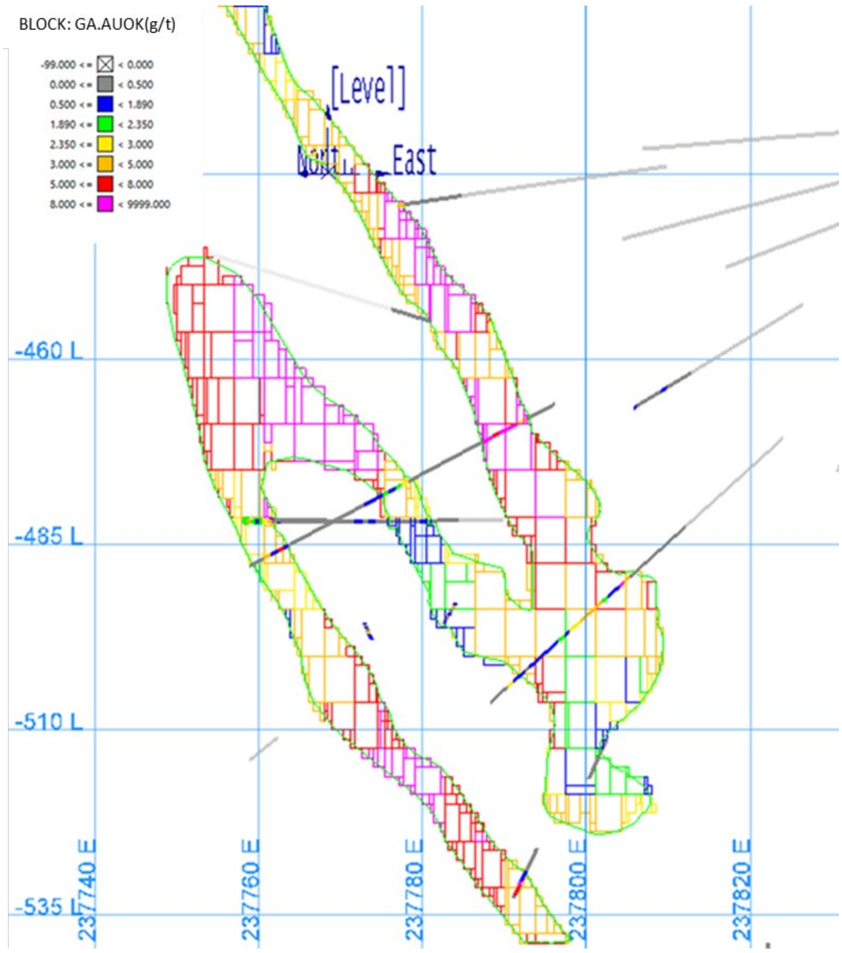


Figure 14-34 Example of the Gara Visual Checks on Section for Folding Area (Section 315)

A COS plot for Gara GC area is shown in Figure 14-35, while Gara decluster plots are shown in Figure 14-36.

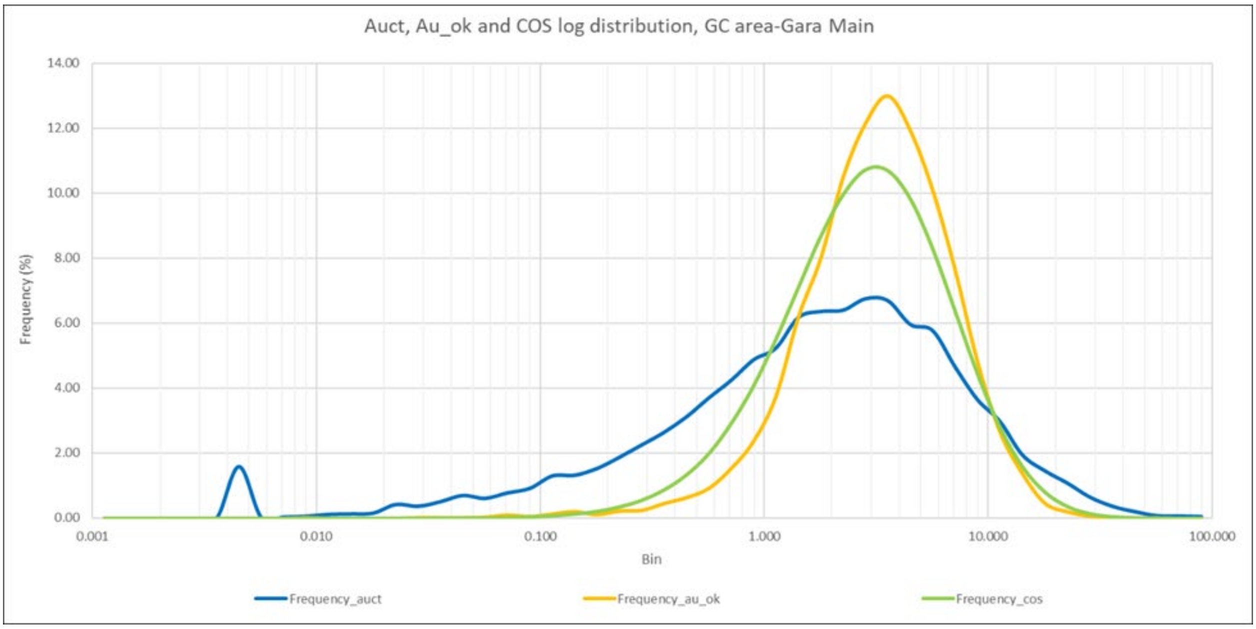


Figure 14-35 COS Plot for Gara GC Area

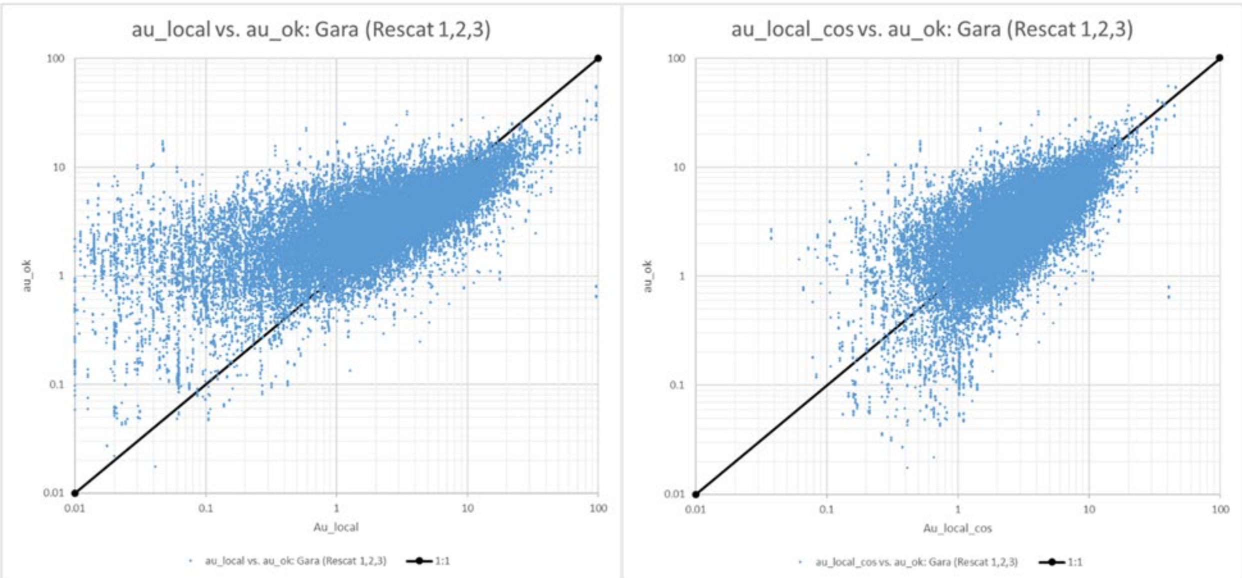


Figure 14-36 Decluster Plots for Gara All Domains

Gounkoto

Block model and wireframe volume comparisons are summarised for Gounkoto in Table 14-44.

Table 14-44 Gounkoto Block Model Volume Comparison

Deposit	Wireframe Volume (m^3)	Block Model Volume (m^3)	Variance (%)
Gounkoto	47,508,245	47,519,665	0%

Swath plots for Gounkoto MZ1 and MZ3 are shown in Figure 14-37 and Figure 14-38, respectively.

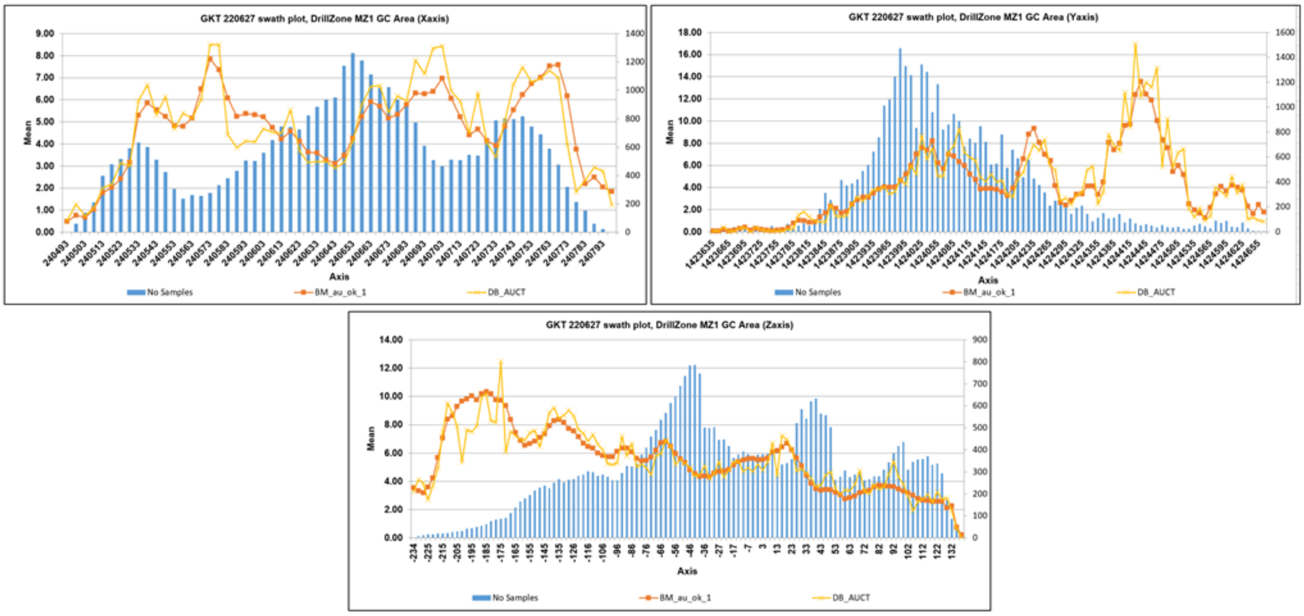


Figure 14-37 Gounkoto Swath Plot of MZ1

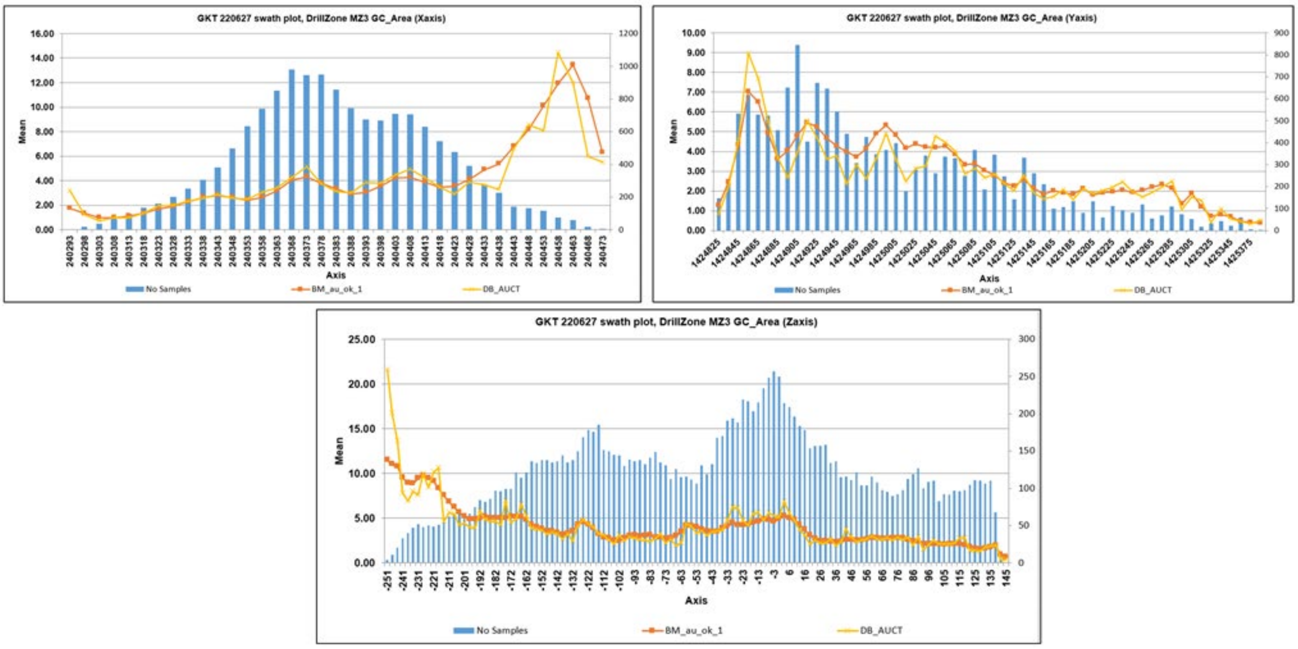


Figure 14-38 Gounkoto Swath Plot of MZ3

An example section showing visual comparison of block and composite grades for Gounkoto is provided in Figure 14-39.

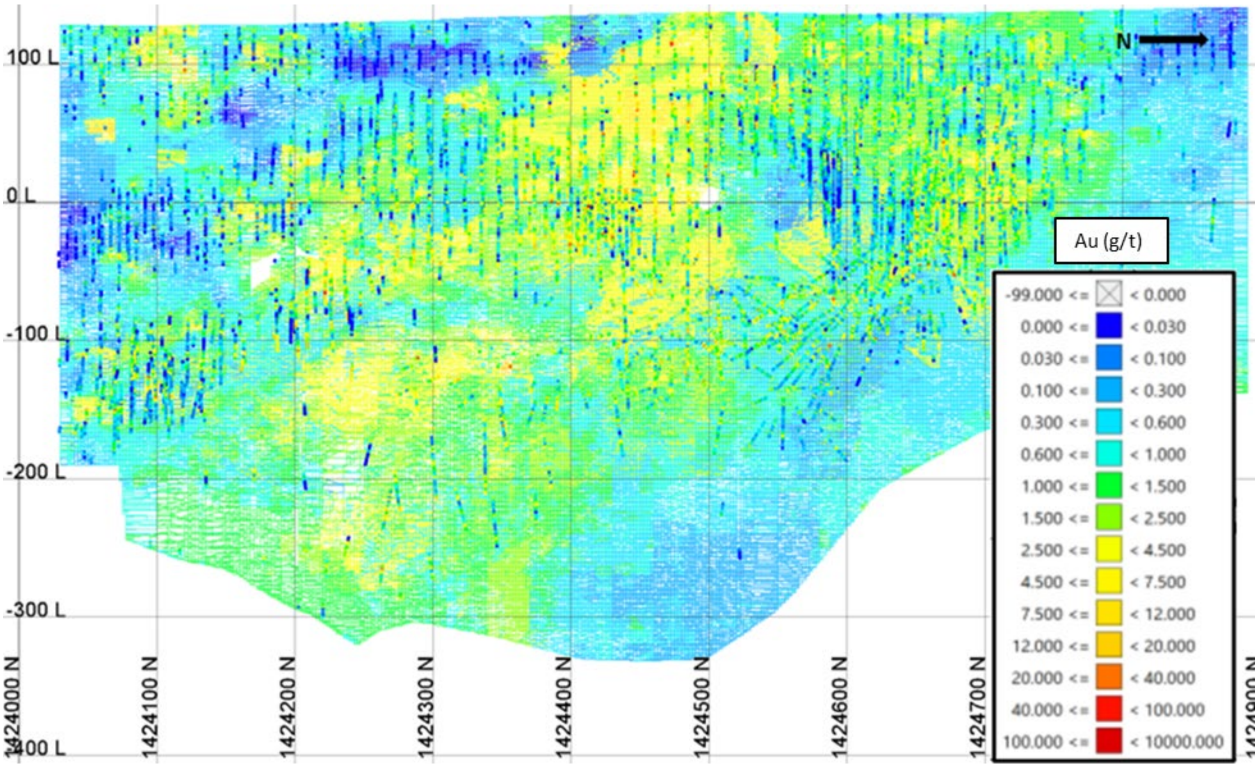


Figure 14-39 Example of the Gounkoto Visual Checks on Longitudinal Section Looking West for HW1

A COS plot for the Gounkoto High-Grade domains is shown in Figure 14-40, while decluster plots for the Gounkoto High-Grade domains are shown in Figure 14-41.

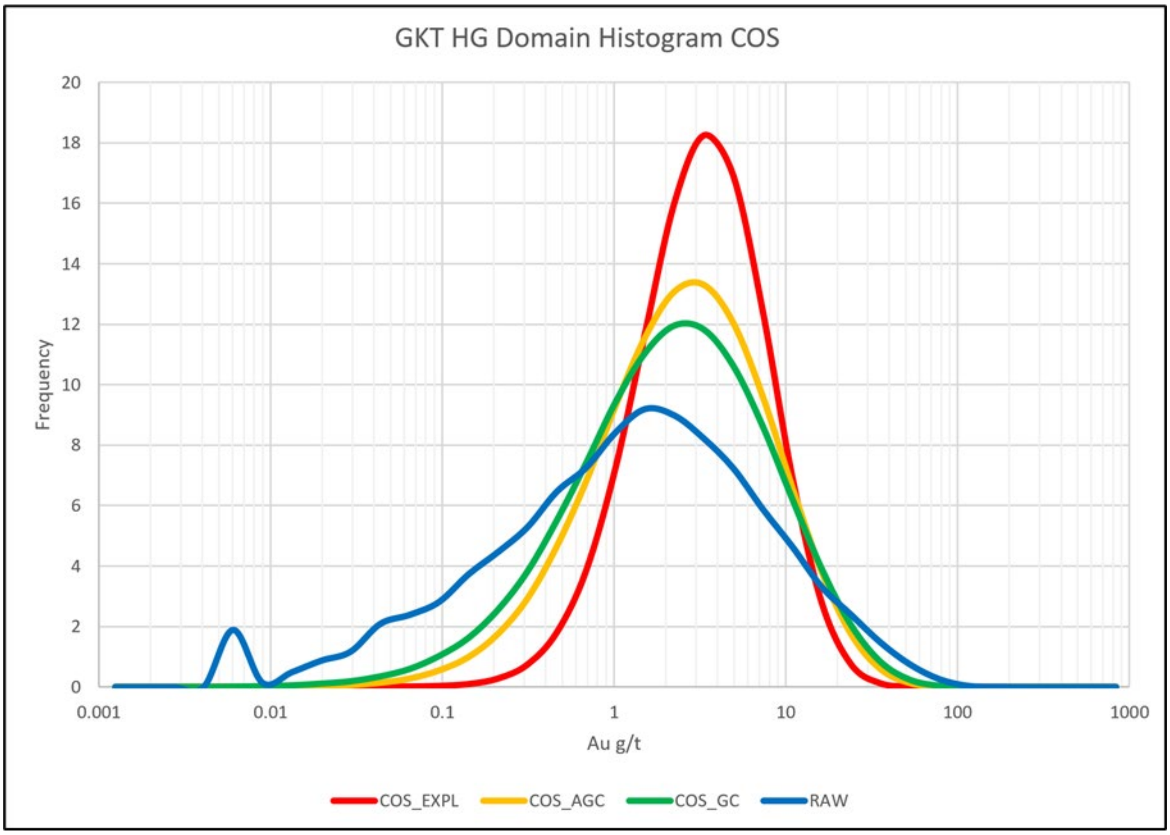


Figure 14-40 COS Plot for Gounkoto High-Grade Domains

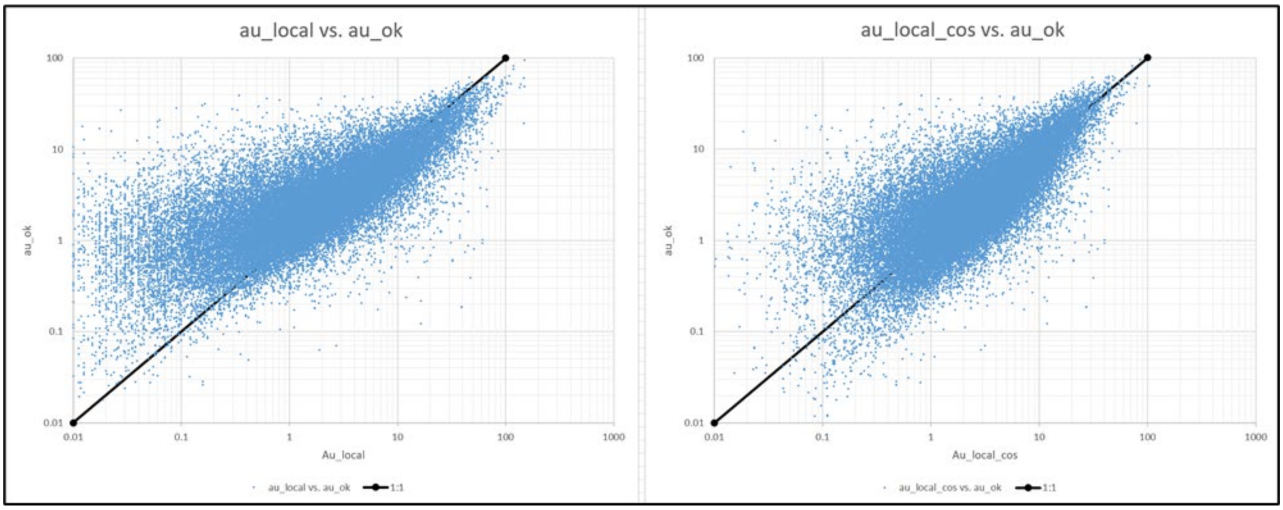


Figure 14-41 Decluster Plot for Gounkoto High-Grade Domains

14.12 Loulo 3 Resource Cut-Off Grades

The assumptions used to generate cut-off grades (COG) for Mineral Resource estimation are based on operational data. A gold price of $1,700/oz is used in line with Barrick corporate guidelines, which considers long-term gold price forecasts, as summarised in Table 14-45.

Table 14-45 Resource Cut-Off Grades

Category	Deposit	COG (g/t Au)	Gold Price used for the Pit Shell ($/oz)	Active Operation	Comments
Open Pit	Baboto	0.65	1,700	No	Supporting Pit, Not updated
Open Pit	Faraba	0.88	1,700	No	Supporting Pit, Updated
Open Pit	Gara West	0.66	1,700	Yes	Supporting Pit, Updated
Open Pit	Gounkoto+P64	0.87	1,700	Yes	Main Pit, Updated
Open Pit	Loulo 3	0.68	1,700	No	Supporting Pit, Not Updated
Open Pit	P125L3	0.50	1,700	No	Supporting Pit, Not Updated
Open Pit	P129	0.65	1,700	No	Supporting Pit, Not Updated
Open Pit	P129QT	0.50	1,700	No	Supporting Pit, Not Updated
Open Pit	PQ10	0.50	1,700	No	Supporting Pit, Not Updated
Open Pit	Yalea South	0.83	1,700	No	Supporting Pit, Updated
Underground	Gara	1.33	1,700	Yes	Main Underground, Updated
Underground	Gounkoto	1.52	1,700	Yes	Main Underground, Updated
Underground	Loulo 3	1.80	1,700	No	Supporting Underground, Not Updated
Underground	Yalea	1.44	1,700	Yes	Main Underground, Updated

Yalea

Yalea Underground Resources

The COG calculations for the Yalea Underground Mineral Resources are summarised in Table 14-46.

Table 14-46 Yalea Underground 2022 Optimisation Parameters

YALEA UNDERGROUND RESOURCES COG PROFILE				
Description	**Units**	**Break-Even COG**	**Incremental COG**	**Broken Muck COG**
Gold Price	$/oz Au	1,700	1,700	1,700
Processing Plant Gold Recovery	%	85.89	85.89	85.89
Government of Mali Royalty	%	6	6	6
Opex Development	$/t mined	10.07	10.07	
Fixed Cost	$/t mined	15.28		
Grade Control	$/t mined	1.81	1.81	
UG Haulage	$/t mined	1.90	1.90	1.90
Mine Production and Backfill	$/t mined	20.98	20.98	
Mine Operating Cost - Total	**$/t mined**	**50.04**	**34.76**	**1.90**
Sustaining Capital	$/t mined	8.67		
Processing	$/t milled	20.60	20.60	20.60
Site G&A	$/t milled	8.41	8.41	8.41
Total Operating Costs	$/t milled	87.71	63.76	30.91
Mining Cut-Off Grade	**g/t Au**	**1.99**	**1.44**	**0.70**

Yalea Underground Optimised Mineable Stope Shapes

For the current Mineral Resource estimate, MSO shapes were used to differentiate blocks that demonstrate reasonable prospects for eventual economic extraction. This reporting method of using stopes, rather than blocks, excludes high-grade blocks that are geometrically isolated and can generally include blocks at lower grades that are geometrically contiguous.

A marginal mined COG of 1.44 g/t Au at $1,700/oz Au defines the Yalea Underground optimised mineable stope shapes, below the $1,700/oz Au pit shell.

The MSO is executed with parameters that are less restrictive than those used for Mineral Reserve estimation. Stope orientation changes and stope sizes are more flexible, as well as a proportion of waste included. All stope orientations are set to follow wireframe surfaces modelled on deposit structure.

Visual checks were undertaken on blocks that were not included in the MSO shapes primarily due to geology and the shapes of mineralised lodes. These blocks would have been included in the Mineral Resource estimation if a COG only approach had been used. Figure 14-42.

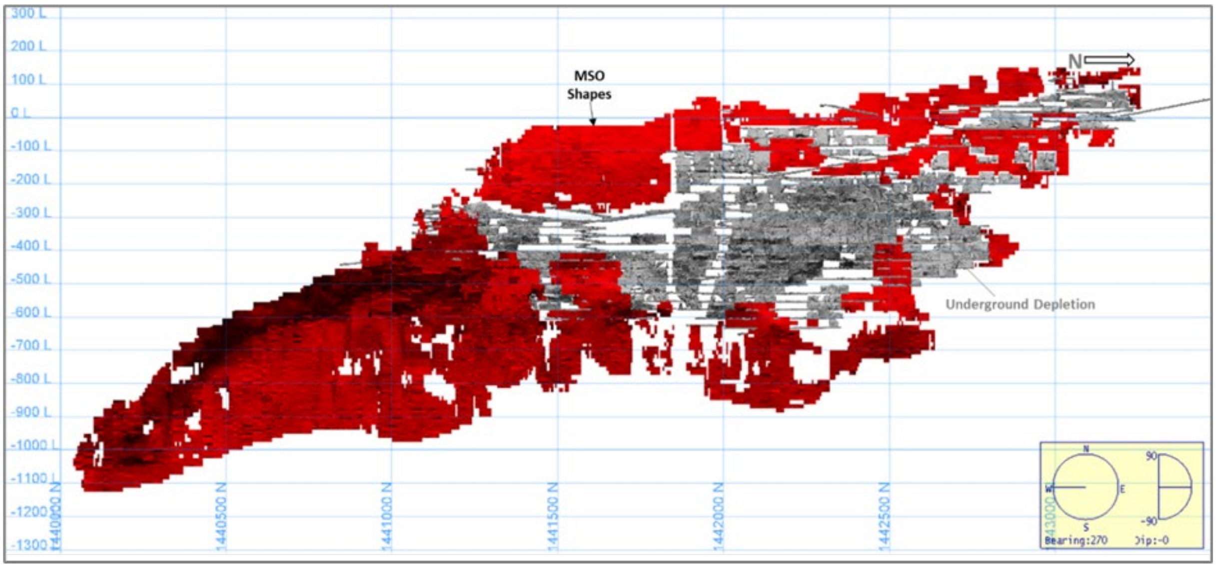


Figure 14-42 Yalea 3D View of MSO Shapes

Yalea South Open Pit Resources

The COG calculations for the Yalea South open pit Mineral Resources are summarised in Table 14-47.

Table 14-47 Yalea South 2022 Optimisation Parameters

Parameter	Unit	2022 LOM
Gold Price	**$/oz**	**1,700**
Royalty	%	6%
Selling Cost	%	0%
Net Gold Price	$/oz	1,598
Met Recovery	%	78%
Dilution	%	10%
Ore Loss	%	3%
Mining Cost - Contractor	US$/t mined	3.34
Mining Cost - Owner's	US$/t mined	0.06
Mining Cost - Grade Control	US$/t mined	0.07
Total Mining Cost	**US$/t mined**	**3.47**
Stripping Ratio	Waste/Ore	22.73
G&A	US$/t milled	8.13
Ore Crushing & Hauling	US$/t milled	
Mining	US$/t milled	82.26
Processing Plant	US$/t milled	20.47
Maintenance/Engineering	US$/t milled	0.00
Total Operating Costs	**$**	**110.86**
Full Grade Cut-Off	**g/t Au**	**2.85**

Parameter	Unit	2022 LOM
Marginal Cut-Off Grade	**g/t Au**	**0.74**

Gara Underground Resources

The COG calculations for Gara Underground Mineral Resources are summarised in Table 14-48.

Table 14-48 Gara Underground 2022 Optimisation Parameters

GARA UNDERGROUND RESOURCES COG PROFILE				
Description	**Units**	**Break-Even COG**	**Incremental COG**	**Broken Muck COG**
Gold Price	$/oz Au	1,700	1,700	1,700
Processing Plant Gold Recovery	%	92.92	92.92	92.92
Government of Mali Royalty	%	6	6	6
Opex Development	$/t mined	9.86	9.86	
Fixed Cost	$/t mined	14.26		
Grade Control	$/t mined	1.76	1.76	
UG Haulage	$/t mined	1.97	1.97	1.97
Mine Production and Backfill	$/t mined	21.01	21.01	
Mine Operating Cost - Total	**$/t mined**	**48.87**	**34.61**	**1.97**
Sustaining Capital	$/t mined	9.39		
Processing	$/t milled	20.60	20.60	20.60
Site G&A	$/t milled	8.41	8.41	8.41
Total Operating Costs	$/t milled	87.26	63.61	30.98
Mining Cut-Off Grade	**g/t Au**	**1.83**	**1.33**	**0.65**

Gara Underground Optimised Mineable Stope Shapes

For the current Mineral Resource estimation, MSO shapes were used to differentiate blocks that demonstrate reasonable prospects for eventual economic extraction. This reporting method of using stopes, rather blocks, excludes high-grade blocks that are geometrically isolated and can generally include blocks at lower grades, but that are geometrically contiguous.

A marginal mined COG of 1.33 g/t Au at $1,700/oz Au defines the Gara Underground optimised mineable stope shapes, below the $1,000/oz Au pit design.

The MSO is executed with parameters that are less restrictive than those used for Mineral Reserve estimation. Stope orientation changes and stope sizes are more flexible, as well as a proportion of waste included. All stope orientations are set to follow wireframe surfaces modelled on deposit structure.

Visual checks were undertaken on blocks that were not included in the MSO shapes primarily due to geology and the shapes of mineralised lodes. These blocks would have been included in the Mineral Resource estimation if a COG only approach had been used (Figure 14-43).

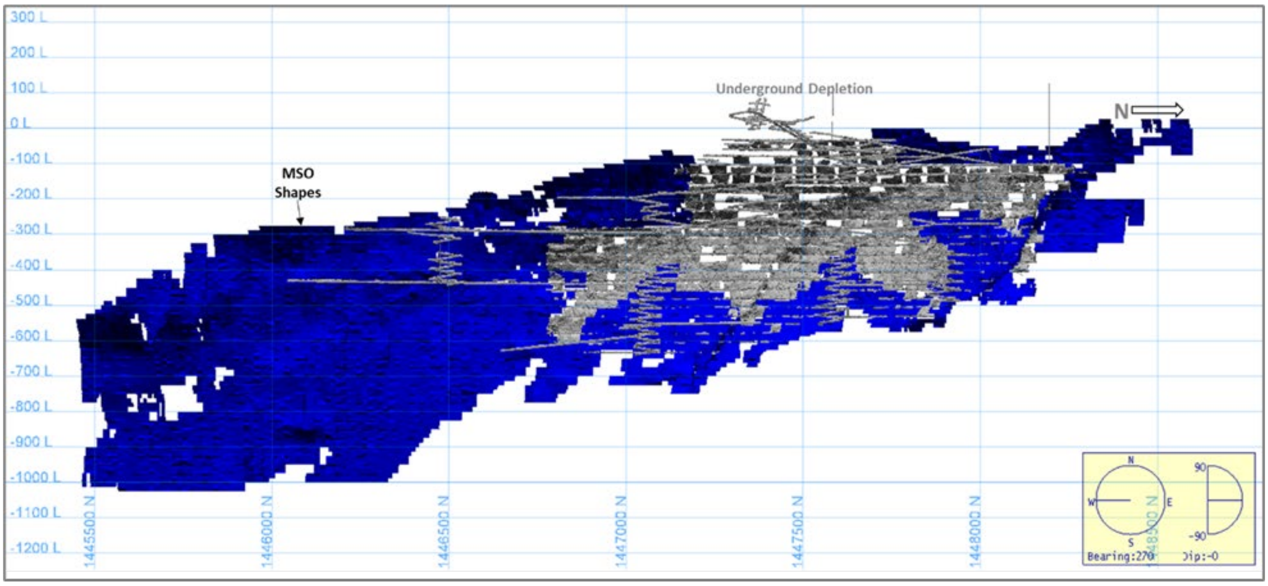


Figure 14-43 Gara 3D View of MSO Shapes

Gounkoto

Gounkoto Open Pit Resources

The COG calculations for the Gounkoto open pit Mineral Resources are summarised in Table 14-49.

Table 14-49 Gounkoto 2022 Optimisation Parameters

Parameter	Unit	2022 LOM
Gold Price	**$/oz**	**1,700**
Government of Mali Royalty	%	6%
Selling Cost	%	0%
Net Gold Price	$/oz	1,598
Met Recovery	%	92%
Dilution	%	10%
Ore Loss	%	2%
Mining Cost - Contractor	US$/t mined	2.95
Mining Cost - Owner's	US$/t mined	0.06
Mining Cost - Grade Control	US$/t mined	0.07
Total Mining Cost	**US$/t mined**	**3.08**
Stripping Ratio	Waste/Ore	16.4

Parameter	Unit	2022 LOM
G&A	US$/t milled	8.80
Ore Crushing & Hauling	US$/t milled	5.89
Mining	US$/t milled	53.53
Processing Plant	US$/t milled	20.70
Maintenance/Engineering	US$/t milled	0.00
Total Operating Costs	**$**	**88.92**
Full Grade Cut-Off	**g/t Au**	**2.18**
Marginal Cut-Off Grade	**g/t Au**	**0.87**

Gounkoto Underground Resources

The COG calculations for Gounkoto Underground Mineral Resources are summarised in Table 14-50.

Table 14-50 Gounkoto Underground 2022 Optimisation Parameters

GOUNKOTO UNDERGROUND RESOURCES COG PROFILE				
Description	**Units**	**Break-Even COG**	**Incremental COG**	**Broken Muck COG**
Gold Price	$/oz Au	1,700	1,700	1,700
Processing Plant Gold Recovery	%	92.00	92.00	92.00
Government of Mali Royalty	%	6	6	6
Opex Development	$/t mined	12.45	12.45	
Fixed Cost	$/t mined	19.90		
Grade Control	$/t mined	3.00	3.00	
UG Haulage	$/t mined	1.97	1.97	1.97
Mine Production and Backfill	$/t mined	21.46	21.46	
Mine Operating Cost - Total	**$/t mined**	**58.78**	**38.88**	**1.97**
Sustaining Capital	$/t mined	8.63		
Processing	$/t milled	24.48	24.48	24.48
Site G&A	$/t milled	8.41	8.41	8.41
Total Operating Costs	**$/t milled**	**100.30**	**71.77**	**34.86**
Mining Cut-Off Grade	**g/t Au**	**2.12**	**1.52**	**0.74**

Gounkoto Underground Optimised Minable Stope Shapes

For the current Mineral Resource estimate, MSO shapes were used to differentiate blocks that demonstrate reasonable prospects for eventual economic extraction. This reporting method excludes high-grade blocks that are geometrically isolated and can include blocks at lower grades that are geometrically contiguous.

A marginal mined COG of 1.52 g/t Au at $1,700/oz Au defines the Gounkoto Underground MSO shapes, below the $1,700/oz Au pit design, which is the current limit of the open pit Mineral Resources.

The MSO for the Mineral Resource estimate is executed with parameters that are less restrictive than those used for Mineral Reserve estimation. Stope orientation changes and stope sizes are more flexible, as well as a proportion of waste included. All stope orientations are set to follow wireframe surfaces modelled on deposit structure.

Visual checks were undertaken on blocks that were not included in the MSO shapes primarily due to geology and the shapes of mineralised lodes. These blocks would have been included in the Mineral Resource estimation if a COG only approach had been used.

Figure 14-44 shows the MSO generated stopes for Gounkoto Underground.

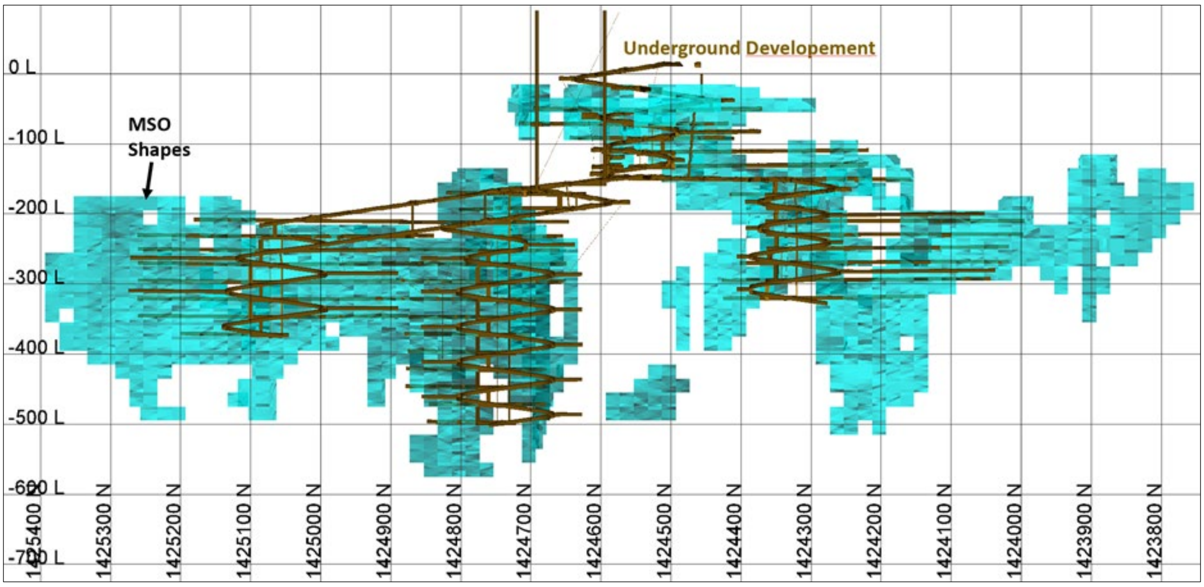


Figure 14-44 Gounkoto 3D View of MSO Shapes Longitudinal Section Looking East

Faraba Open Pit Resources

The COG calculations for the Faraba open pit Mineral Resources are summarised in Table 14-51.

Table 14-51 Faraba 2022 Optimisation Parameters

Parameter	Unit	LoM 2022
Gold Price	**$/oz**	**1,700**
Government of Mali Royalty	%	6%
Selling Cost	%	0%
Net Gold Price	$/oz	1,598
Met Recovery	%	90%
Dilution	%	10%

Parameter	Unit	LoM 2022
Ore Loss	%	3%
Mining Cost - Contractor	US$/t mined	3.42
Mining Cost - Owner's	US$/t mined	0.06
Mining Cost - Grade Control	US$/t mined	0.07
Total Mining Cost	**US$/t mined**	**3.55**
Stripping Ratio	Waste/Ore	4.91
G&A	US$/t milled	8.70
Ore Crushing & Hauling	US$/t milled	6.50
Mining	US$/t milled	20.96
Processing Plant	US$/t milled	20.00
Maintenance/Engineering	US$/t milled	0.00
Total Operating Costs	**$**	**56.16**
Full Grade Cut-Off	**g/t Au**	**1.25**
Marginal Cut-Off Grade	**g/t Au**	**0.78**

Gara West Open Pit Resources

The COG calculations for the Gara West open pit Mineral Resources are summarised in Table 14-52.

Table 14-52 Gara West 2022 Optimisation Parameters

Parameter	Unit	LoM 2022
Gold Price	**$/oz**	**1,700**
Government of Mali Royalty	%	6%
Selling Cost	%	0%
Net Gold Price	$/oz	1,598
Met Recovery	%	90%
Dilution	%	10%
Ore Loss	%	3%
Mining Cost - Contractor	US$/t mined	3.13
Mining Cost - Owner's	US$/t mined	0.06
Mining Cost - Grade Control	US$/t mined	0.21
Total Mining Cost	**US$/t mined**	**3.40**
Stripping Ratio	Waste/Ore	8.09
G&A	US$/t milled	8.63
Ore Crushing & Hauling	US$/t milled	0
Mining	US$/t milled	27.48
Processing Plant	US$/t milled	20.97
Maintenance/Engineering	US$/t milled	0.00
Total Operating Costs	**$**	**57.08**
Full Grade Cut-Off	**g/t Au**	**1.27**
Marginal Cut-Off Grade	**g/t Au**	**0.66**

14.13 Mineral Resource Statement

The Mineral Resource estimates have been prepared according to CIM (2014) Standards as incorporated into NI 43-101. The Mineral Resource estimates were also prepared using the guidance outlined in CIM (2019) MRMR Best Practice Guidelines.

The cut-off grade selected for reporting each of the open pit Mineral Resource estimates corresponds to the in-situ marginal cut-off grade at either fresh, transitional, or saprolite oxidation states, using a gold price of $1,700/oz Au. The pit shell selected for constraining Mineral Resources of each of the deposits also corresponds to a gold price of $1,700/oz Au. Reasonable prospects for eventual economic extraction are demonstrated by this pit optimisation process.

Underground Mineral Resources were reported using MSO, effectively within a minimum mineable stope shape, applying reasonable mineability constraints, which include a 4.5 m minimum mining width, a reasonable distance from current or planned development, and a measure of assumed profitability at the related resource cut-off grade. As such, underground Mineral Resources are deemed as having reasonable prospects for eventual economic extraction.

Stockpiles are comprised of mineralised material stored at the surface ROM pad, originating from both open pit and underground production. Each stockpile is filled with similar material types, with an established grade range and oxidation state, tracked as part of normal mining operations and metal accounting. The stockpiles are measured by a weekly drone survey. Grade and tonnage of open pit stocks are estimated according to source dig blocks and number of truck counts, using a weighbridge to adjust for fluctuations in both density and truck fill factor. Grade and tonnage of underground stocks are estimated according to shaft skip weights and ore pass truck counts and their source blasts from stopes, adjusting for the presence of paste dilution.

The Loulo-Gounkoto Complex Measured and Indicated Mineral Resources, as of 31 December 2022 (Table 14-53), are estimated at 92 Mt at 3.85 g/t Au containing 11 Moz of gold (100% basis), with an additional Inferred Resource of 28 Mt at 2.6 g/t Au containing 2.3 Moz of gold (100% basis). Relative to the 2021 Mineral Resource estimate, the Measured and Indicated category shows an 8% decrease in grade, 7% increase in tonnes, and 2% decrease in contained gold ounces. Inferred category shows a 92% increase in tonnes, 8% decrease in grade, and 77% increase in ounces. The QP is not aware of any environmental, permitting, legal, title, taxation socioeconomic, marketing, political, metallurgical, fiscal, or other relevant factors, that could materially affect the Mineral Resource estimate.

Table 14-53 Loulo/Gounkoto Mineral Resources as of 31 December 2022

Deposit	Cut - Off Grade (g/t Au)	Measured				Indicated				Measured + Indicated				Inferred			
		Tonnes (Mt)	Grade (g/t Au)	Contained (Moz Au)	Attributable Contained Gold[1] (Moz Au)	Tonnes (Mt)	Grade (g/t Au)	Contained (Moz Au)	Attributable Contained Gold[1] (Moz Au)	Tonnes (Mt)	Grade (g/t Au)	Contained (Moz Au)	Attributable Contained Gold[1] (Moz Au)	Tonnes (Mt)	Grade (g/t Au)	Contained (Moz Au)	Attributable Contained Gold[1] (Moz Au)
Open Pit																	
Stockpiles	1.04	8.09	1.77	0.46	0.37	-	-	-	-	8.09	1.77	0.46	0.37	-	-	-	-
Baboto	0.65	1.30	2.35	0.10	0.08	1.50	2.34	0.11	0.09	2.80	2.35	0.21	0.17	0.14	2.4	0.01	0.01
Faraba	0.88	-	-	-	-	8.01	1.98	0.51	0.41	8.01	1.98	0.51	0.41	5.38	1.7	0.29	0.24
Gara West	0.66	1.18	2.40	0.09	0.07	1.42	2.09	0.10	0.08	2.60	2.23	0.19	0.15	0.53	2.0	0.03	0.03
Gounkoto+P64	0.87	2.35	4.66	0.35	0.28	0.16	2.64	0.01	0.01	2.50	4.53	0.36	0.29	0.00	1.7	0.00	0.00
Loulo 3	0.68	0.59	2.98	0.06	0.05	4.71	2.88	0.44	0.35	5.30	2.89	0.49	0.39	1.61	2.1	0.11	0.08
P125L3	0.5	-	-	-	-	0.16	2.51	0.01	0.01	0.16	2.51	0.01	0.01	0.05	2.4	0.00	0.00
P129	0.65	-	-	-	-	0.14	3.42	0.02	0.01	0.14	3.42	0.02	0.01	0.19	2.8	0.02	0.01
P129QT	0.5	-	-	-	-	-	-	-	-	-	-	-	-	0.11	2.6	0.01	0.01
PQ10	0.5	-	-	-	-	-	-	-	-	-	-	-	-	0.06	3.9	0.01	0.01
Yalea South	0.83	1.74	2.89	0.16	0.13	3.51	5.61	0.63	0.51	5.24	4.71	0.79	0.64	-	-	-	-
OP Total	0.5	7.15	3.30	0.76	0.61	19.61	2.90	1.83	1.46	26.76	3.01	2.59	2.07	8.06	1.9	0.48	0.38
Underground																	
Gara	1.33	10.14	4.16	1.36	1.09	9.29	3.99	1.19	0.95	19.43	4.08	2.55	2.04	8.43	2.8	0.76	0.61
Gounkoto	1.52	2.59	4.83	0.40	0.32	8.23	4.32	1.14	0.91	10.82	4.44	1.54	1.24	4.18	2.4	0.32	0.26
Loulo 3	1.8	-	-	-	-	1.98	3.78	0.24	0.19	1.98	3.78	0.24	0.19	0.65	3.2	0.07	0.05
Yalea	1.44	9.14	4.59	1.33	1.06	15.99	5.27	2.71	2.17	25.13	4.99	4.03	3.23	6.37	3.4	0.69	0.55
UG Total	1.33	21.87	4.39	3.09	2.47	35.49	4.63	5.28	4.23	57.36	4.54	8.37	6.70	19.63	2.9	1.83	1.47
Open Pit + Underground																	
Total Resources	**0.5**	**37.11**	**3.61**	**4.31**	**3.44**	**55.10**	**4.02**	**7.11**	**5.69**	**92.21**	**3.85**	**11.42**	**9.13**	**27.69**	**2.6**	**2.31**	**1.85**

Notes:

1. Mineral Resources are reported on a 100% and attributable basis. Attributable refers to the quantity attributable to Barrick based on Barrick's 80% interest in each of SOMILO and Gounkoto SA
2. The Mineral Resource estimate has been prepared according to CIM (2014) Standards and using CIM (2019) MRMR Best Practice Guidelines.
3. All Mineral Resource tabulations are reported inclusive of that material which is then modified to form Mineral Reserves.
4. Open pit Mineral Resources are reported at a $1,700/oz gold price at an average cut-off grade of 0.79 g/t Au (minimum 0.5 g/t Au and maximum 0.87 g/t Au).
5. Underground resources are reported in situ within a minimum mineable stope shape at an average cut-off grade of 1.43 g/t Au (minimum 1.33 g/t Au and maximum 1.8 g/t) at a $1,700/oz gold price.
6. Mineral Resources for Loulo were generated by Mr Mathias Vandelle MAusIMM, Mr Tito Dago Stanis Michel, Mr Madou Cisse, Mr Mahamadou Sylla, Mr Thierno Maiga, and Mr. Mor Fall, and reviewed by Mr Sekou Diallo, MAusIMM, All are officers of Barrick under the supervision of Mr Simon Bottoms, CGeol, MGeol, FGS, FAusIMM, an officer of Barrick and QP.
7. All Measured and Indicated grades are reported using 2 decimal places whilst Inferred grade is reported to one decimal place.

14.14 2022 Versus 2021 EOY Mineral Resource Comparison

Annual comparisons of Mineral Resources are completed to quantify and verify changes due to model updates, depletion, and changes in cut-off grade, where actual declared 2022 Mineral Resources are compared to the actual declared 2021 Mineral Resources. Model changes and depletion at Yalea Underground, Gara Underground, Gounkoto Open Pit, Gounkoto Underground, Faraba, and Gara West were updated in 2022, with the rest unchanged from 2021.

On a 100% basis, a summary of the year-on-year Mineral Resource reconciliation is shown in Figure 14-45.

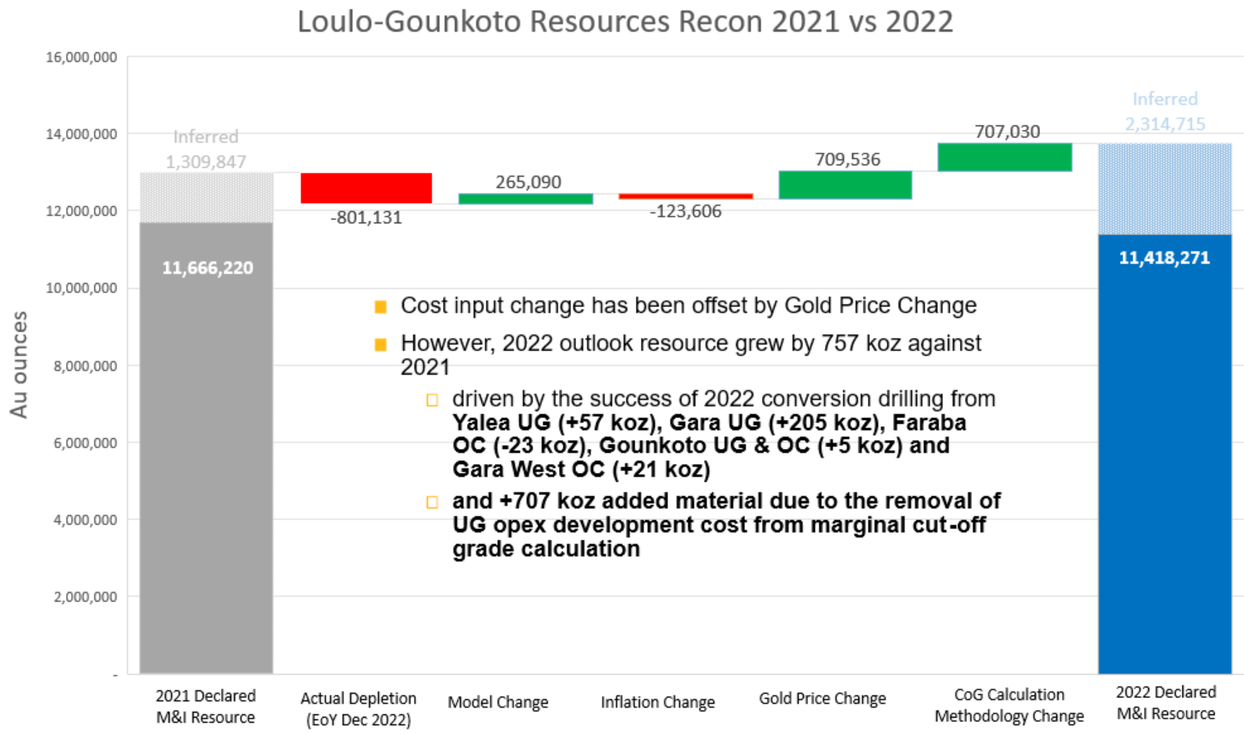


Figure 14-45 Loulo-Gounkoto Complex Resources 2021 vs 2022 Resources

Yalea Underground Resources

The 2022 underground Mineral Resources were reported within optimised MSO shapes at 1.44 g/t Au, below the actual pit and below a planned pit design in the south of $1,700/oz. The Mineral Resource is depleted with EOM December 2022 Cavity Monitoring System (CMS) and ore development scans. Results of the Yalea Underground reconciliations are presented in Table 14-54.

Table 14-54 Yalea Underground 2022 vs 2021 Comparison (100% Basis)

Yalea Underground	M&I Mineral Resource			Inferred Mineral Resource		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2021	26,646,090	5.22	4,469,111	4,631,503	3.47	516,086
2022	25,130,554	4.99	4,034,056	6,367,791	3.35	686,304
Net Change	-6%	-4%	-10%	37%	-3%	33%

Yalea Underground changes show a -265 koz Au decrease as a result of:

- Depletion, which accounted for -409 koz Au (CMS scans and development as at EOM December 2022).
- Model Change, which accounted for +57 koz Au due to additional data.
- Inflation Change, which accounted for -111 koz Au.
- Gold Price Change from $1,500/oz to $1,700/oz resulting in a gain of 38 koz Au.
- COG Change from 1.72 g/t Au to 1.34 g/t Au, resulting in a gain of 159 koz Au.

Gara Underground Resources

The 2022 underground Mineral Resources were reported within optimised MSO shapes at 1.33 g/t Au, below the actual pit (already mined out). The Mineral Resource is depleted with EOM December 2022 CMS and ore development scans. Results of the reconciliations are presented in Table 14-55.

Table 14-55 Gara Underground 2022 vs 2021 Comparison (100% Basis)

Gara Underground	M&I Mineral Resource			Inferred Mineral Resource		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2021	19,128,356	4.39	2,701,942	1,592,118	3.09	158,201
2022	19,431,917	4.08	2,551,038	8,430,191	2.80	759,553
Net Change	1%	-7%	-6%	429%	-9%	383%

Gara Underground changes show a +450 koz Au increase as a result of:

- Depletion, which accounted for -139 koz Au (CMS scans and development as at EOM December 2022).
- Model Change, which accounted for +205 koz Au due extension at depth toward the far south.
- Inflation Change, which accounted for -45 koz Au.
- Gold Price Change from $1,500/oz to $1,700/oz resulting in a gain of 42 koz Au.
- COG Change from 1.72 g/t Au to 1.34 g/t Au, resulting in a gain of 388 koz Au.

Yalea South Open Pit Resources

Open pit Mineral Resources are reported within the 2022 $1,700/oz Au pit shell (Table 14-56).

Table 14-56 Yalea South Open Pit 2022 vs 2021 Comparison (100% Basis)

Yalea South Open Pit	M&I Mineral Resource			Inferred Mineral Resource		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2021	4,366,233	4.89	686,751	0	0	0
2022	5,244,858	4.71	794,810	0	0	0
Net Change	20%	-4%	16%	0%	0%	0%

Yalea Open Pit changes show a +108 koz Au increase as a result of:

- Gold Price Change from $1,500 to $1,700 resulting in a gain of 113 koz Au.
- Inflation Change, which accounted for -3 koz Au.

Gounkoto Open Pit Resources

Open pit Mineral Resources are reported within the $1,700/oz Au pit design depleted with EOM December 2022 mined surfaces (Table 14-57).

Table 14-57 Gounkoto Open Pit 2022 vs 2021 Comparison within Super Pit (100% Basis)

Gounkoto Open Pit	M&I Mineral Resource			Inferred Mineral Resource		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2021	4,488,780	3.79	547,049	3,773	1.7	205
2022	2,461,277	4.56	360,857	2,647	1.8	153
Net Change	-45%	20%	-34%	-30%	6%	-25%

Gounkoto open pit changes show a -186 koz Au decrease as a result of:

- Depletion, which accounted for -184 koz Au.
- Model Change due to additional drill holes into MZ2 and MZ3 where the mineralised zone became slightly thinner than the previous Model, which accounted for -2 koz Au.

Gounkoto Underground Resources

The 2022 underground Mineral Resources were reported within optimised MSO shapes at 1.52 g/t Au, below the planned Super Pit design which is the current limit of open pit and underground. The Mineral Resource is depleted with EOM December 2022 CMS and ore development scans. Results of the reconciliations are presented in Table 14-58.

Table 14-58 Gounkoto Underground 2022 vs 2021 Comparison below Super Pit (100% Basis)

Gounkoto Underground	M&I Mineral Resource			Inferred Mineral Resource		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2021	9,364,241	4.73	1,422,805	3,521,440	2.6	289,216
2022	10,821,645	4.44	1,544,697	4,178,575	2.4	319,928
Net Change	16%	-6%	9%	19%	-7%	11%

Gounkoto Underground changes show a +153 koz Au increase as a result of:

- Depletion, which accounted for -10 koz Au (CMS scans and development as at EOM December 2022).
- Model Change due to the additional drill holes, which resulted in a gain of +19 koz Au.
- Inflation Change, which accounted for -105 koz Au.
- Gold Price Change from $1,500/oz to $1,700/oz, resulting in a gain of 89 koz.
- COG Change from 1.8 g/t Au to 1.55 g/t Au, resulting in a gain of 160 koz Au.

Faraba Open Pit Resources

Open pit Mineral Resources are reported within the 2022 $1,700/oz Au pit shell (Table 14-59).

Table 14-59 Faraba Open Pit 2022 vs 2021 Comparison (100% Basis)

Faraba Open Pit	M&I Mineral Resource			Inferred Mineral Resource		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2021	4,266,871	2.14	293,625	1,869,711	2.1	123,937
2022	8,013,339	1.98	510,227	5,378,432	1.7	294,025
Net Change	88%	-7%	74%	188%	-19%	137%

Faraba changes show a net +387 koz Au increase as a result of:

- Gold Price Change, which accounted for 412 koz Au.Model Change, which accounted for -23 koz Au.
- COG Change, decreasing from 0.87 g/t Au to 0.78 g/t Au resulting in an overall decrease of the mean grade.

Gara West

Table 14-60 presents the Gara West 2022 versus 2021 Mineral Resource comparison within the $1,700/oz Au pit shell.

Table 14-60 Gara West 2022 vs 2021 Comparison Within $1,700/oz Au Pit Shell (100% Basis)

Gara West	M&I Mineral Resource			Inferred Mineral Resource		
	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)	Tonnes (t)	Grade (g/t Au)	Ounces (oz Au)
2021	1,138,818	2.37	86,957	10,805	1.3	462
2022	2,600,873	2.23	186,530	525,802	2.0	32,965
Net Change	128%	-6%	115%	4766%	47%	7031%

Gara West changes show a net +132 koz Au increase as a result of:

- Depletion, which accounted for -48 koz Au.
- Model Change, which accounted for 21 koz Au.
- COG decreasing from 0.85 g/t Au to 0.75 g/t Au due to increased Au price, resulting in an increase of ounces.

14.15 Discussion

External Mineral Resource Audit

An external audit of the Mineral Resource and input data procedures was completed in August 2018 by Optiro (Glacken & Barron, 2018). The report stated that Gounkoto had performed well regarding data collection, however, it noted that there was a high level of manual data entry, which could be improved through the introduction of digital data loggers. The report also noted that despite the level of manual data entry, the quality controls in place ensured data quality. Digital data logging has been implemented for production, resource drilling areas, and for exploration drilling. Barrick has engaged Maxwell Geo Services and digital data logging though the Logchief application was implemented.

Other minor recommendations included: collection of core tray weights for use in bulk density determination, gravimetric finish on assays over 15 g/t Au, increasing the use of digital data loggers, and an increase in field duplicate insertion rates from 1 in 36 to 1 in 20, which was implemented in 2019. Since that period the assay laboratories were instructed to systematically use the gravimetric method for gold assays over 15 g/t and digital logging tablets were configured by Maxwell Geoservice and used by geologists for data entry.

In September 2022, RSC completed an independent audit of the Mineral Resource processes used at Loulo-Gounkoto Complex (Roux & Sterk, 2022). The final RSC audit report indicated that Mineral Resource and Mineral Reserve estimation processes conform to good practices. However, RSC made several recommendations to Loulo-Gounkoto from a Mineral Resource perspective and an action plan was drafted (Table 14-61).

Table 14-61 Action Plan in Response to 2022 RSC Audit

Actions	Responsible Person	Due Date
Review geological domaining based on standardised rules	Resource Geologist	Q2 2023
Implicit modelling to improve geological boundary accuracy	Resource Geologist	Q3 2023
CRM for umpire assay to meet a ratio of 50/50	Database Admin	Immediate
Short term monitoring (weekly) of duplicates precision	Database Admin	Immediate

Relative Accuracy/Confidence of the 2022 Mineral Resource Estimate

The QP considers the Mineral Resource estimation process including the data quality, geological modelling, treatment of outliers, estimation processes, and resource classification to be in line with industry best practices and free of any material forms of error.

The QP offers the following conclusions regarding the relative accuracy/confidence of the 2022 Mineral Resource estimate:

- The application of MSO applies reasonable mineability constraints including a minimum mining width, a reasonable distance from current or planned development, and a measure of assumed profitability at the related resource cut-off grade. This change in the underground reporting method has removed isolated areas of mineralisation and lowered the grade of the reported underground resource by reporting all material, geologically classified as mineralisation, within each mineable shape, whilst ensuring that the overall shape meets the resource cut-off grade. As a result, the Mineral Resources are reported consistent with industry best practice with specific regard to underground resources only being reported if there is an intention to mine the material.

The QP is not aware of any environmental, permitting, legal, title, taxation socioeconomic, marketing, political, metallurgical, fiscal, or other relevant factors, that could materially affect the Mineral Resource estimate.

15 Mineral Reserve Estimate

15.1 Summary

As of 31 December 2022, the total Loulo-Gounkoto Proven and Probable Mineral Reserves in open pits, underground, and stockpiles (100% basis) are estimated to be 67 Mt at an average grade of 3.87 g/t Au, containing approximately 8.3 Moz Au.

The Mineral Reserve estimates have been prepared according to CIM (2014) Standards as incorporated with NI 43-101. Mineral Resource estimates were also prepared using the guidance outlined in CIM (2019) MRMR Best Practice Guidelines.

The Mineral Reserves have been estimated from the Measured and Indicated Mineral Resources and do not include any Inferred Mineral Resources. The estimates use LOM budget costs, the latest resource and geological models, geotechnical inputs, and the latest metallurgical updates. Some inputs were shared across all the operations during the preparation of the Mineral Reserve estimates. Mineral Reserves were based on the development of appropriately detailed and engineered LOM plans. All design and scheduling work was undertaken to a suitable level of detail by experienced engineers using mine planning software. The planning process incorporated appropriate modifying factors and the use of cut-off grades and other technical-economic investigations. Mineral Reserves are stated:

- As of 31 December 2022.
- At a gold price of $1,300/oz.
- As ROM fully diluted grades and tonnage delivered to the plant.
- Including only Measured and Indicated Mineral Resources.

A financial model was constructed to demonstrate that the Mineral Reserves are economically viable.

The total Loulo-Gounkoto open pit and underground Mineral Reserves as of 31 December 2022 are summarised in Table 15-1.

Table 15-1 Loulo-Gounkoto Mineral Reserve Estimate Summary – 31 December 2022

Type	Category	Tonnes (Mt)	Grade (g/t Au)	Contained Gold (Moz Au)	Attributable Gold[1] (Moz Au)
Stockpiles	Proven	8.1	1.77	0.46	0.37
Open Pits	Proven	5.9	3.46	0.65	0.52
	Probable	18	2.78	1.6	1.3
Underground	Proven	11	4.86	1.7	1.4
	Probable	24	5.04	3.9	3.1
Total Mineral Reserves	**Proven**	**25**	**3.54**	**2.8**	**2.3**
	Probable	**42**	**4.08**	**5.5**	**4.4**
	Proven and Probable	**67**	**3.87**	**8.3**	**6.7**

Notes
1. Mineral Reserves are reported on a 100% and attributable basis. Attributable refers to the quantity attributable to Barrick based on Barrick's 80% interest in each of SOMILO and Gounkoto SA.
2. The Mineral Reserve estimate has been prepared according to CIM (2014) Standards and using CIM (2019) MRMR Best Practice Guidelines.
3. All Mineral Reserves are reported at a gold price of $1,300/oz Au.
4. Open pit Mineral Reserves are reported at a weighted average cut-off grade of 0.96 g/t Au, including dilution and ore loss factors. Underground Mineral Reserves are reported at an average cut-off grade of 2.59 g/t Au for Yalea Underground, 2.42 g/t Au for Gara Underground, and 2.70 g/t Au for Gounkoto Underground.
5. Open pit Mineral Reserves were estimated by Derek Holm, FSAIMM, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP. Underground Mineral Reserves were estimated by Ismail Traore, MSc, FAusIMM, M.B. Law, DES, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP.
6. Numbers may not add due to rounding. Tonnes and contained gold are rounded to 2 significant figures. All Proved and Probable grades are reported to 2 decimal places.

The net change between the 2021 combined Mineral Reserves estimate and 2022 combined Mineral Reserves estimate has been an increase of approximately 0.01 Moz Au (+0.14%). This is due to model changes/additions, design changes, and various adjustments to the economic parameters.

The QPs responsible for estimating the Mineral Reserves have performed an independent verification of the block model tonnes and grade, and in their opinion the process has been carried out to industry standards.

The QPs are not aware of any environmental, legal, title, socioeconomic, marketing, mining, metallurgical, infrastructure, permitting, fiscal, or other relevant factors that could materially affect the Mineral Reserve estimate.

15.2 Introduction

The Loulo–Gounkoto Complex consists of several operations.

The Loulo Mine comprises two main deposits, Gara and Yalea, and multiple satellite deposits. Gara is mined from surface and underground, while Yalea is currently only an underground operation, although surface mining is expected to continue in the future. The remaining satellite deposits are all planned open pits.

Gounkoto comprises three primary sources of ore, namely the Gounkoto open pit and underground, and the Faraba open pit.

All the ore from these operations is processed in one plant, so the final production plan considers all of the factors and capacities affecting production from each area and combines them into one overall plant feed. The Gounkoto Mine is located 30 km from the processing plant, which is based at Loulo.

15.3 Mineral Reserve Estimation

Method

Block models received from the Mineral Resource Department were checked for missing cells, absent values, grade errors, and incorrectly assigned densities and weathering profiles. All models received had waste blocks built into them.

Open Pits

The Loulo and Gounkoto open pit Mineral Reserve estimate is based on the following:

- Mineral Resource models for the estimated gold content and material weathering type.
- Estimated processing and G&A costs.
- Metallurgical recovery by material type and by deposit.
- Geotechnical wall angle parameters.
- GMS (mining contractor) 2022 pricing, which was used for mining costs.
- Cut-off grade analysis using estimated costs derived from pit designs and pit schedules, as well as processing and administration costs.
- A gold price of $1,300/oz was used for the Mineral Reserve estimate cash flow and is the Mineral Reserve estimate gold price. Different gold prices were used to define the pit shells and, in some instances, the local cut off grades, for reasons detailed later in this report.
- Open pit stockpiles estimated as of 31 December 2022.
- Only Measured and Indicated Mineral Resources were used for conversion and within the pit designs.
- Use of an integrated mine and feed schedule.

Underground

Datamine Studio 5D was used for the underground Mineral Reserve estimate. Block models and wireframes were converted to a Datamine format from the original Maptek Vulcan format. The underground Mineral Reserves were estimated as follows:

- The mining method was defined by area, based on the geometry, geotechnical considerations, and the mine development requirement to access the orebody.
- Historical and LOM planned costs were reviewed to determine the cut off grades.
- Datamine's MSO was used to determine stope shapes by evaluating the block model mineralisation while applying financial and geotechnical constraints. These initial shapes were manually digitised to conform to particular geotechnical, productivity, and practical mining constraints. The parameters used for generating the MSO shapes are discussed in Section 15.7.
- The development required to access the mineable stopes was designed.
- A production schedule was developed in Datamine Enhanced Production Scheduler (EPS), during which dilution was applied as a varying percentage depending on hanging wall exposure, stope sequences, and the number of paste fill exposures. Mining loss was subtracted as a percentage from diluted tonnes and contained metal.
- The economics of the mining areas and individual stopes were assessed. Sub-economic stopes were excluded from the short term and LOM plan.
- Proven and Probable Mineral Reserves were determined on a proportional basis.

Cut-Off Grade

Open Pit

The cut off grade determination for the Loulo-Gounkoto open pits is complex. The various open pits are used to supplement underground production, so their output is adjusted to match an annual gold ounce production target. For these pits, the priority is meeting the ounce target, rather than mining and processing all the available ore for a given cut off grade.

Open pit optimisation was performed in Whittle. The gold price used for the optimisation work was not always that of the Mineral Reserve declaration. While the Mineral Reserve is declared at $1,300/oz, pit optimisation prices were varied depending on how soon the Mineral Reserves were to be mined. A higher gold price of up to $1,500/oz was used for pit shell selection of those with short mine lives or in current production. However, the economic viability of the material contained within these pits was still evaluated at a $1,300/oz gold price, with any material below the cut-off grade at that price reported as waste. In all instances, the Loulo-Gounkoto pit optimisations resulted in a positive NPV at the $1,300/oz Mineral Reserve gold price and as such, all 2022 Mineral Reserves are declared using $1,300/oz gold price.

The Gounkoto pit, which is currently being mined, is constrained by infrastructure, including a depth limit as underground methods will be used to better extract the planned crown pillar. As such a higher gold price has no impact in the pit shape so this design has not changed despite the increase in Mineral Reserve gold price to $1,300/oz.

The selected pit shells were evaluated using US$1,300/oz. All pits have been confirmed to return a profit, even for the lower price pit shells, making them viable for a $1,300/oz price Mineral Reserve declaration. While mining (or planning to mine) a pit designed using a $1,500/oz gold price at $1,300/oz will result in a slightly lower NPV, the NPV remains positive and, given the current gold price, that pit selection approach remains conservative.

Once pit designs have been developed based on the pit shells, the material inside the pits is separated into waste, mineralised waste, marginal ore, and 'full grade' ore. As the mine is constrained by the processing plant capacity, the mine chooses to not process all of the available ore, and generally leaves the lower-grade ore in a stockpile. Cut-off grades are used to determine the grade ranges for the various stockpiles; however, these cut-off grades are not all based on the immediate gold price or the longer-term gold price. They are selected to adjust the volume of ore that can fill the plant, or based on more general characteristics. The breakdown of waste and ore by grade is the following:

- *Waste* – material below 0.5 g/t Au
- *Mineralised waste* – 0.5 g/t Au to the marginal cut-off grade
- *Marginal Ore* – marginal cut-off grade to the fully costed cut-off grade
- *Full Grade Ore* – ore above the fully costed cut-off grade

Waste is sent to the waste dumps.

Mineralised waste is stockpiled separately, as there may be a time in the future when the mines are exhausted, that this material can be processed. Mineralised waste is excluded from the Mineral Reserve estimate.

Marginal ore is value accretive, but this is generally stockpiled. As production is process capacity constrained, processing this material displaces higher-grade ore. The Marginal Ore is processed if there is a shortfall in Full Grade Ore and will be processed at the end of the mine life. It is included in the Mineral Reserve estimate.

The determination of the various cut-off grades is based on costs, both full and marginal, as well as different gold prices (Table 15-2).

Table 15-2 Summary of Cut-Off Grade Calculations for the Loulo and Gounkoto Open Pits

Parameter	Unit	Loulo				Gounkoto	
		Gara West	Baboto	Loulo 3	Yalea South	Gounkoto	Faraba
Gold Price for Pit Design	$/oz	1,500	1,300	1,300	1,300	1,300	1,500
Gold Price for Cut-Off Grades	$/oz	1,500	1,300	1,300	1,300	1,300	1,500
Government of Mali Royalty	%	6%					
Selling Cost	%	0%					
Net Gold Price	$/oz	1,410	1,222	1,222	1,222	1,222	1,410
Met Recovery	%	90%	91%	93%	78%	93%	90%
Dilution	%	10%					
Ore Loss	%	3%					
Mining Cost - Contractor	$/t mined	3.06	3.38	2.28	3.34	2.87	3.27

Parameter	Unit	Loulo				Gounkoto	
		Gara West	Baboto	Loulo 3	Yalea South	Gounkoto	Faraba
Mining Cost - Owner's	$/t mined	0.06	0.06	0.06	0.06	0.06	0.06
Mining Cost - Grade Control	$/t mined	0.21	0.07	0.21	0.07	0.10	0.07
Total Mining Cost	**$/t mined**	**3.33**	**3.51**	**2.55**	**3.47**	**3.03**	**3.40**
Stripping Ratio	Waste/Ore	8.3	4.4	18.4	22.3	12.6	4.7
G&A	$/t milled	8.63	8.13	8.13	8.13	7.70	8.70
Ore Crushing & Hauling	$/t milled	0.00	3.90	0.00	0.00	5.79	6.50
Mining	$/t milled	27.61	15.37	47.02	77.28	38.27	15.95
Processing Plant	$/t milled	20.97	20.47	20.47	20.47	19.00	20.00
Total Operating Costs	**$**	**57.21**	**47.87**	**75.62**	**105.88**	**70.76**	**51.15**
Full Grade Cut-Off	g/t Au	1.45	1.48	2.21	3.58	2.36	1.36
Marginal Cut-Off Grade	**g/t Au**	**0.75**	**0.94**	**0.81**	**0.94**	**0.98**	**0.88**

As a further check, the full cost cut-off grade and the marginal cut-off grade for reporting of Mineral Reserves were calculated using the $1,300/oz Mineral Reserve price, as shown in Table 15-3.

Table 15-3 Check Calculation of Cut-Off Grades at the Mineral Reserve Gold Price

		Loulo				Gounkoto	
Parameter		**Gara West**	**Baboto**	**Loulo 3**	**Yalea South**	**Gounkoto**	**Faraba**
Reserve Gold Price	$/oz	1,300	1,300	1,300	1,300	1,300	1,300
Reserve Full Cut-Off Grade	g/t Au	1.67	1.38	2.13	3.56	2.00	1.49
Reserve Marginal Cut-Off Grade	g/t Au	0.86	0.84	0.81	0.96	0.82	0.93

Underground

The underground Mineral Reserve COG is updated once a year using input parameters based on recent operating experience, projected costs, and Barrick corporate guidance. The COG parameters are as follows:

- Gold price per ounce
- LOM production costs
- Processing recovery
- Processing costs
- G&A costs
- Royalty costs

A break-even COG is used for Mineral Reserve estimation. All stopes and development material that fail to meet the break-even COG are initially classified as waste. An incremental COG is then applied on the case-by-case basis. It is applied to the mineralised part of the deposit below the break-even COG that can incrementally add value to the operation under certain circumstances, such as:

- Development that goes through low-grade material to expose higher-grade production areas or stopes.
- Low-grade material that is near an already developed part of the mine. These materials are assessed on a case-by-case basis and may be scheduled for mining toward the end of the LOM if practical.
- The mill is operating at capacity, but spare mining capacity remains to build stockpiles that can be processed later.

The incremental COG carries only the variable portion of the mining costs (drilling, blasting, mucking, hoisting), process operating costs, G&A costs, royalties, and re-handling costs if stockpiling is required. Development costs (capital or operating) are only included if the development is required to mine the incremental ore.

Table 15-4 presents the COG calculations for the Yalea Underground Mineral Reserves. Figure 15-1 shows the stopes above the break-even COG.

Table 15-4 Yalea Underground Mine – Cut-Off Grade Calculations

Description	Units	Break-Even COG	Incremental COG Development	Incremental COG Stoping
Gold Price	$/oz Au	1,300	1,300	1,300
Processing Plant Gold Recovery	%	86.61	86.61	86.61
Government of Mali Royalty	%	6	6	6
Opex Development	$/t mined	12.52	12.52	
Fixed Cost	$/t mined	18.26		
Grade Control	$/t mined	1.42		1.42
UG Haulage	$/t mined	3.00	3.00	3.00
Mine Production and Backfill	$/t mined	18.04		18.04
Mine Operating Cost - Total	**$/t mined**	**53.23**	**15.52**	**22.46**
Sustaining Capital	$/t mined	7.27		
Processing	$/t milled	19.90	19.90	19.90
Site G&A	$/t milled	7.76	7.76	7.76
Total Operating Costs	**$/t milled**	**88.16**	**43.18**	**50.12**
Mining Cut-Off Grade	**g/t Au**	**2.59**	**1.27**	**1.47**

The 2022 underground Mineral Reserve COG for Yalea is 2.59g/t Au, compared to 2.56 g/t Au used in 2021. The increase in the COG is a result of higher operating and sustaining capital costs due to inflation.

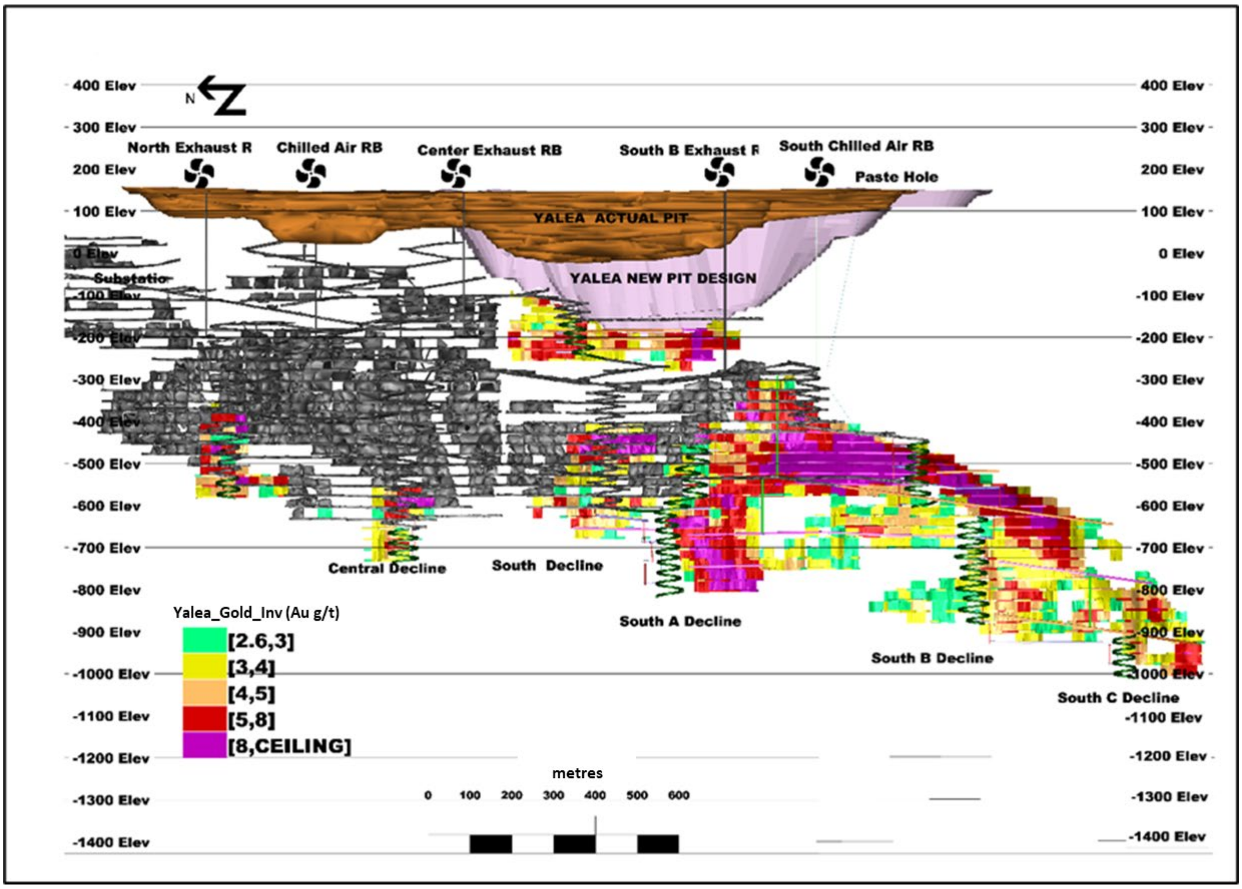


Figure 15-1 Yalea Underground Mineral Reserves

Table 15-5 presents the COG calculations for the Gara Underground Mineral Reserves. Figure 15-2 shows the stopes above the break-even COG.

Table 15-5 Gara Underground Mine Cut-Off Grade Calculations

Description	Units	Break-Even COG	Incremental COG Development	Incremental COG Stoping
Gold Price	$/oz Au	1,300	1,300	1,300
Processing Plant Gold Recovery	%	92.87	92.87	92.87
Royalty	%	6	6	6
Opex Development	$/t mined	9.33	9.33	
Fixed Cost	$/t mined	18.13		
Grade Control	$/t mined	1.68		1.68
UG Haulage	$/t mined	3.03	3.03	3.03
Mine Production and Backfill	$/t mined	19.55		19.55
Mine Operating Cost - Total	**$/t mined**	**51.71**	**12.36**	**24.26**
Sustaining Capital	$/t mined	8.75		
Processing	$/t milled	19.90	19.90	19.90
Site G&A	$/t milled	7.76	7.76	7.76

Description	Units	Break-Even COG	Incremental COG Development	Incremental COG Stoping
Total Operating Costs	**$/t milled**	**88.12**	**40.02**	**51.92**
Mining Cut-Off Grade	**g/t Au**	**2.42**	**1.10**	**1.42**

The 2022 underground Mineral Reserve cut-off grade for Gara is 2.42 g/t Au, compared to 2.35 g/t Au used in 2021. The increase in the cut-off grade is due to higher operating and sustaining capital costs mainly linked to inflation.

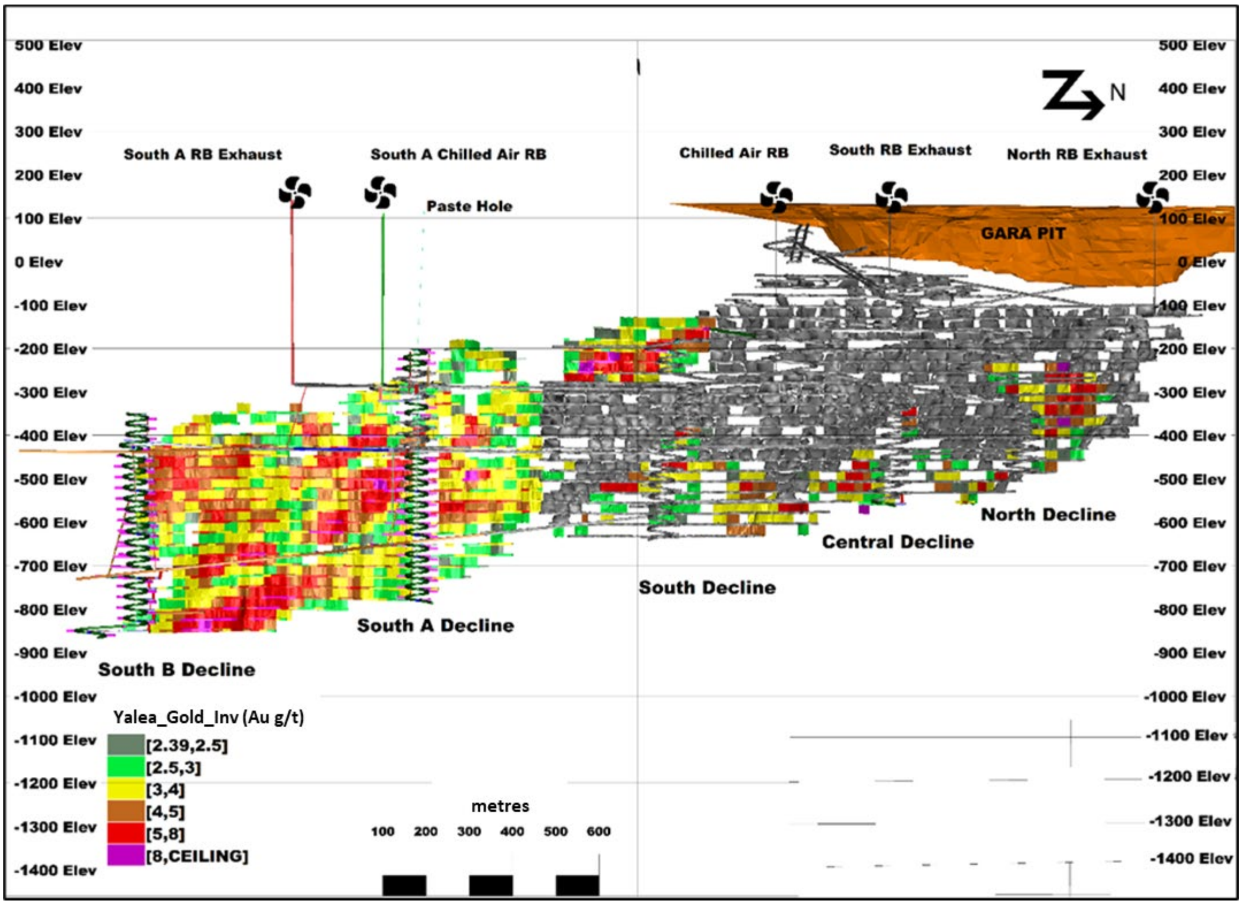


Figure 15-2 Gara Underground Mineral Reserves

Table 15-6 presents the COG calculations for the Gounkoto Underground Mineral Reserves. Figure 15-3 shows the stopes above the break-even COG.

Table 15-6 Gounkoto Underground Mine Cut-Off Grade Calculation

Description	Units	Break-Even COG	Incremental COG Development	Incremental COG Stoping
Gold Price	$/oz Au	1,300	1,300	1,300
Processing Plant Gold Recovery	%	92.02	92.02	92.02

Description	Units	Break-Even COG	Incremental COG Development	Incremental COG Stoping
Royalty	%	6	6	6
Opex Development	$/t mined	7.74	7.74	
Fixed Cost	$/t mined	16.32		
Grade control	$/t mined	3.36		3.36
UG Haulage	$/t mined	3.63	3.63	3.63
Mine Production and Backfill	$/t mined	22.02		22.02
Mine Operating Cost - Total	**$/t mined**	**53.07**	**11.37**	**29.01**
Sustaining Capital	$/t mined	12.90		
Processing	$/t milled	23.81	23.81	23.81
Site G&A	$/t milled	7.76	7.76	7.76
Total Operating Costs	**$/t milled**	**97.55**	**42.94**	**60.58**
Mining Cut-Off Grade	**g/t Au**	**2.70**	**119**	**1.68**

The 2022 underground Mineral Reserve cut-off grade for Gounkoto is 2.70 g/t Au, compared to 2.76 g/t Au used in 2021. The increase in the cut-off grade is due to higher operating and sustaining capital costs mainly linked to inflation.

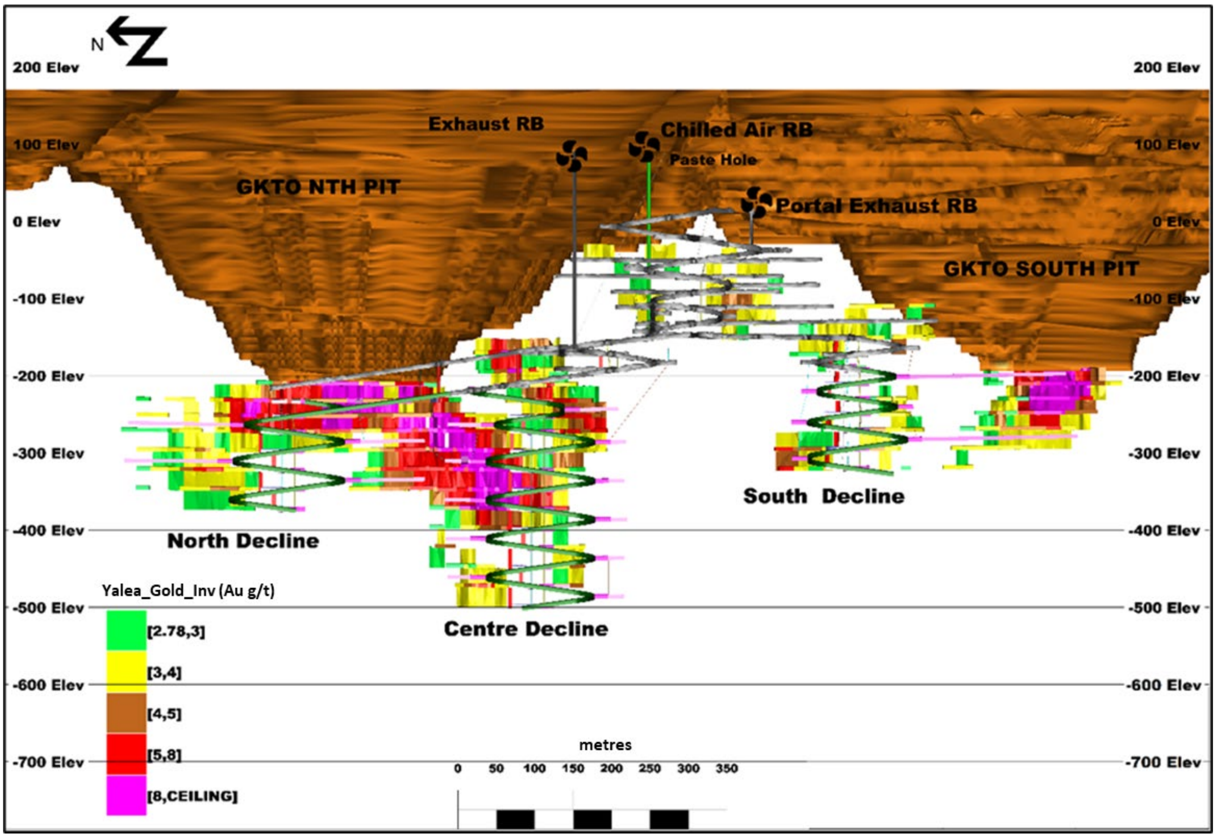


Figure 15-3 Gounkoto Underground Mineral Reserves

15.4 Economic Parameters

Gold Price and Royalties

A gold price of $1,300/oz was used for the LOM cash flow estimate.

Royalties payable to the Malian government remained unchanged from the year-end 2021 estimate. A royalty of 6% of total gold revenue fees was used for the year-end 2022 estimate.

Costs

Current operating costs, with adjustments, were used for optimisation and for the LOM cost evaluation.

The open pit mining costs were derived from the current contractor GMS's 'Budget Unit Plan' and 'Long-Term Review' pricing. This mining cost included fuel, drilling and blasting, load and haul, pit dewatering, rehabilitation, the fixed contractor costs, and the owner's mining department costs. For the optimisation work, these costs were converted into a Mining Cost Adjustment Factor (MCAF). The MCAFs were then imported into their respective block models and assigned to the corresponding benches in Surpac software for the creation of economic block models.

Current underground mining costs were split into stoping, operating development, and capital development costs and applied to the design as scheduled over the life of the mines.

Processing costs for 2022 were reviewed and applied over the LOM.

The G&A costs were reviewed and applied over the LOM.

15.5 Geomechanics

Open Pits

Various geotechnical studies of the pits have been completed over time and have been updated, where relevant, as mining progresses. The work to date has been completed by a combination of consulting geotechnical engineers and the geotechnical team on site.

The geotechnical parameters are given in more detail in the section on mine design, however, overall slope angles (generally inter-ramp slope angles (IRA) with some adjustment for ramp intervals) were used in the optimisation work. The IRAs are given in Table 15-7.

Table 15-7 Open Pit Inter-Ramp Slope Angles

Area/Sector	Soil IRA (°)	Rock IRA (°)
Gounkoto	40-44	51-56
Faraba	40-44	51-56
Yalea	26-44	52-56
Loulo 3	40-48	51
Gara West	44	53-59
Baboto	40-48	53-56

Underground

Various external geotechnical investigations have been completed since 2005, by SRK, Middindi Consulting (Pty) Ltd, Dempers & Seymour Pty Ltd, and more recently, since 2018, Beck Engineering Ltd (Beck Engineering).

This work has covered Yalea, Gara, and Gounkoto and included:

- Measurement of pre-mining rock stress.
- Construction of geotechnical rock mass models.
- Modelling (Map3D) of mining induced stresses of proposed mining sequences.
- Creation of stable span stabile curves based on analysis of local data.
- Development of a dilution rating system (DRS) at Gara and Yalea to improve prediction stope geotechnical conditions.
- LOM stress modelling to evaluate the impact of mining sequencing.

Geotechnical Modelling

The recent LOM stress modelling resulted in several geotechnical recommendations that were included into the LOM plan. These included changing the mining sequence to top down in parts of the mine, modifying stope strike lengths, and changing the planned location of declines to avoid creating a high stress pillar. However, some areas remain where stopes will be subject to increasing stresses and will require active geotechnical management during development and extraction.

More specifically, the LOM stress modelling concluded the following in terms of seismic hazard potential:

- Yalea has experienced low to moderate levels of seismicity to date.
- The mine has experienced multiple events above magnitude 1.0, which are sufficiently large to cause ground support failure and rockfalls (where sufficient dynamic support is not installed) if the events are sufficiently close to drives.
- The seismic potential in other diminishing pillars such as the bottom of the north panel, the south panel, and the far south panel are forecast to have progressively higher level of

energy release (i.e., the levels of seismicity that are expected increase from one region to the next with increasing depth and additional stoping).

- Seismicity in the diminishing pillars is potentially problematic and of sufficient magnitude to cause rockfalls and shakedown events. However, the seismic hazard is not considered to be high or extreme compared to many other seismic mines.

As such the mine has implemented the following:

- The mine has implemented a seismic hazard plan to manage seismic hazards as most diminishing pillars cannot be removed from the mine plan due to existing declines. The triggered action response plan (TARP) , has been developed based on event magnitude (from +0.4 up to +2) with specific actions associated to different magnitude events.
- Increased ground support, including support (such as the MDX bolt) with dynamic capacity, is being installed in these areas.
- Adjustments to the mining sequence and stoping front to maintain a 30° to 45° stope front to avoid the unfavourable stress concentration ahead of the mining front.
- Further modelling has been completed and further adjustments will be made to the planned mining sequence as this data becomes available.

Further operational changes include the use of cable bolts in ore drives where structures are apparent, reducing the strike length of stopes under higher geotechnical risk, using electronic firing to reduce vibration and damage and analysing blasts to reduce their impact on stope walls.

Gounkoto, a much shallower operation, was also recently analysed, with the following stress modelling results:

- Generally low to minor rock mass damage is forecast in the underground workings, except for stopes mined out of sequence which form unconfined pillars and stope walls in proximity to major structures.
- Few instances of significant stope overbreak are forecast. Most stope overbreak is due to major structures in proximity to stope hanging walls.
- Stopes in the central panels toe into the open pit, forming direct drainage paths to the underground mine.
- Generally low stress conditions are observed throughout the mine due to the mining depth.
- Very minor rock mass damage is forecast in the crown pillar between the pit and underground while the upper levels of stopes are being extracted.
- Stress concentration in the crown pillar is not sufficiently high to cause significant rock mass damage due to the relatively high rock mass strength of the mineralisation and SQR domains.
- Deformation in the lower pit slopes and drainage from the pit to underground increases during the final stages of underground mining, when the pit reaches the top of the previously mined stopes.
- Displacements in the lower pit walls are in the order of 200 mm. Widespread instability of the walls in not forecast, however, there is potential for bench to multi-bench scale instability should unfavourably orientated structures be located in the lower pit walls.

In the QP's opinion, the impact of some of the stress changes has been adequately taken into account in the LOM schedule and the Mineral Reserve estimate and does not present a material production risk.

15.6 Dilution and Losses

Open Pit

Global 3% and 10% factors have been used for ore losses and ore dilution in the estimation of open pit Mineral Reserves. In open pit operation, dilution is controlled mainly by controlling blast movement, designing of the pattern to ore geometry, and sizing of equipment when mining the ore.

Reconciliations are completed monthly and, where required, are adjusted to suit the mining conditions. Where pushback mining is being carried out, the ore loss is adjusted to allow for ore spill over on the high wall. The ore spill over loss adjustment is an interim adjustment and is reviewed when the pit floor level reaches the ore spill material. Although there are short-term adjustments in dilution and ore loss, historical results support these values.

Table 15-8 shows the tracking of tonnes to check dilution between GC call tonnes and tails tonnes from the plant and the mine call factor (MCF), which falls within 10% dilution.

Table 15-8 Tonnage Tracking Between GC Call Tonnes and Tails Tonnes

PERIOD		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GC Call Tonnes	kt	510	2,617	2,753	2,807	3,045	3,072	3,192	4,010	4,287	4,404	4,728	5,094	5,177	5,298	5,066	5,012	5,067	5,090
Tails Tonnes	kt	527	2,595	2,654	2,721	2,947	3,158	3,175	4,116	4,349	4,378	4,543	4,875	4,918	5,154	4,931	4,895	5,019	5,087
MCF	%	103	99	96	97	97	103	99	103	101	99	96	96	95	97	97	98	99	100

Table 15-9 shows the plant tracking of grade between GC call grade and check out grade giving an MCF.

Table 15-9 Grade Tracking Between GC Call Grade and Check Out Grade

Period		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GC Call Grade	kt	4.49	3.43	3.30	3.35	4.12	3.74	3.86	4.39	4.87	5.23	5.11	4.99	5.19	4.50	4.82	4.39	4.63	4.43
Check Out Grade	kt	4.46	3.15	3.30	3.22	4.22	3.36	3.71	4.21	4.71	4.99	4.78	4.91	4.96	4.40	4.92	4.74	4.80	4.61
MCF	%	99	92	100	96	103	90	96	96	97	96	93	98	96	98	102	108	104	104

The QP considers that the dilution and loss factors are reasonable assumptions for the estimation of Mineral Reserves.

Underground

Dilution and Mining Recovery

The actual stope performance is routinely reconciled against the planned performance. A dilution and mining loss matrix was developed based on experience with Yalea and Gara, with allowances for certain expected challenges associated with geotechnical structure, paste fill exposure, and stope sequence configuration.

The dilution and ore loss factors applied in the 2022 Mineral Reserve are presented in the dilution and loss matrix in Table 15-10 for Yalea Underground and Table 15-11 for Gara Underground.

Both rock waste and paste dilution were considered in the Mineral Reserve estimate.

The rock waste dilution is defined as unplanned waste that is mined outside of the planned stope and is added at zero grade. Paste dilution is the dilution from adjacent paste fill exposures.

Mining loss occurs where there is under-break in the stope or broken ore is left in the stope at the completion of mining. Like the dilution matrix, a mining loss matrix was developed based on historical stope reconciliation data and stope closure note data.

Based on historical stope reconciliation data and stope closure note data, the equivalent linear over-break/slough (ELOS) dilution matrix was developed. This will be updated as new data becomes available. This strategy is followed at other large stoping operations and is an appropriate approach for Loulo. Based on the historical data, the following geotechnical domains were identified:

- Close out stope (high stress).
- Folding zone with high stress.
- Inflection zone, flat orebody with high stress.
- Stope in good ground.
- Footwall and hanging wall structure adjacent to orebody contact.

Table 15-10 Yalea Underground Summary of Historical Stope Performance and Dilution Parameters

Area	Ave. Dilution (ELOS, m)	Ave. Total Dilution (%)	Ave. Ore Loss (%)	Ave. Paste Dilution (ELOS, m)	Ave Paste Dilution (%)	Total Dilution (%)	Total Dilution (ELOS, m)
North Decline Close_Out	0.60	8%	7%	3.88	4%	12%	4.48
Centre Decline Close_Out	0.52	8%	4%	1.33	1%	9%	1.85
High Stress	0.73	9%	9%	1.33	1%	10%	2.06
Competent	0.15	2%	5%	2.11	2%	4%	2.26
FW_Sliding	0.20	2%	7%	2.11	2%	4%	2.11

Table 15-11 Gara Underground Summary of Historical Stope Performance and Dilution Parameters

Area	Ave. Dilution (ELOS, m)	Ave. Total Dilution (%)	Ave. Ore Loss (%)	Ave. Paste Dilution (ELOS, m)	Ave Paste Dilution (%)	Total Dilution (%)	Ave. Ore Loss (%)
Close Out Stope, High Stress	2.01	23%	8%	0.85	0.3%	23.6%	8.1%
Folding Zone, High Stress	1.7	20%	10.63%	0.55	0.6%	20.6%	10.6%
Inflection, Flat Orebody, High Stress	1.6	16%	13%	0.88	0.6%	16.6%	12.7%
Stope in Good Condition	0.7	10%	5%	0.80	0.4%	10.4%	5.0%

15.7 Optimisation

Open Pit

Economic models were generated from the Mineral Resource block models with the inclusion of the MCAFs for each of the six deposits. Approved geotechnical slope domains and angles based on rock characteristics and behaviour were also assigned to the block models before converting them to block models suitable for optimisation. These were then imported into Geovia Whittle software for the pit optimisation exercise.

The initial optimisation run considered the Measured and Indicated Mineral Resources, with Inferred Mineral Resources excluded.

A second set of optimisations included Inferred Mineral Resources in order to quantify the Inferred portions of the deposits, determine the impact on the mine plan, and to provide direction to the Mine Resource Management (MRM) and Exploration departments for possible targets for drilling and resource conversion.

The ADC and infill drilling campaign in 2022 resulted in major changes to the Faraba and Gara West pits.

Pit Selection

The Loulo-Gounkoto Complex comprises multiple pits.

Most Mineral Reserve pits were designed using a $1,300/oz Au price. The exceptions are the Faraba and Gara pits, where the reserve pit designs were based on a $1,500/oz Au optimised pit shell. The Yalea South design is based on the $1,300/oz Au pit shell that took into account the geotechnical challenges of mining soft material at depth.

The analysis, prior to the final pit selections, considered the mining of larger pits at higher gold prices and associated risks. This is mainly driven by ounces, changes in stripping ratio, life of the pit, and the value of the pits at different metal prices.

For Yalea, the selection of the $1,300/oz (Revenue Factor (RF) 1.038) pit shell generates a net positive cash flow of $0.72 M, demonstrating profitability, and with the application of a $1,300/oz cut-off grade, with any material below the cut-off grade at that price reported as waste, supports the Mineral Reserve declaration at $1,300/oz.

For Faraba, the selection of the $1,500/oz (RF 1.154) pit shell at a sales price of $1,300/oz, generates a net positive cash flow of $120.8 M, demonstrating profitability, and with the application of a $1,300/oz cut-off grade, with any material below the cut-off grade at that price reported as waste, supports the Mineral Reserve declaration at $1,300/oz.

For Gara West, the selection of the $1,500/oz (RF 1.154) pit shell at a sales price of $1,300/oz generates a net positive cash flow of $0.44 M, demonstrating profitability, and with the application of a $1,300/oz cut-off grade, with any material below the cut-off grade at that price reported as waste, supports the Mineral Reserve declaration at $1,300/oz.

No sensitivity analysis has been done for Gounkoto in 2022, which has been constrained by surrounding infrastructure, waste dumps, and the underground mine directly below it.

Underground

Potential stopes are economically assessed in two steps. An initial long-term evaluation considers the capital, development, and operating costs of mining that area. The subsequent short-term evaluation considers individual stope direct costs such as rehabilitation, production, and paste filling.

The initial evaluation uses various geometrical and geotechnical constraints, as well as calculated cut-off grades to generate optimised stope wireframes. Planned dilution is included in these wireframes. Further unplanned dilution and mining losses are added later, based on the geotechnical classification of the stope. This is because the software is not able to effectively capture the changes in the orebody to correctly apply dilution. This is better done with a manual re-design. The parameters used for this initial evaluation with MSO are summarised in Table 15-12.

Table 15-12 MSO Parameters

MSO Parameters	Value
Slice Interval	5
Minimum Mining Width	3 m

MSO Parameters	Value
Cut-Off Grade Yalea UG	2.59 g/t Au
Cut-Off Grade Gara UG	2.42g/t Au
Cut-Off Grade Gounkoto UG	2.70 g/t Au
Footwall Minimum Dip	45°
Hanging Wall Minimum Dip	45°
Maximum Stope Thickness Ratio	4
Near Dilution	0
Far Dilution	0
Section and Level Intervals	Variable based on the mining lode
Sections (U)	Variable based on mining method and mining lode

Mineral Resources that are classified as Measured and Indicated are converted to Proven and Probable Mineral Reserves, respectively. Where stopes have a partial combination of Measured and Indicated material, that proportion is retained in the conversion to the Mineral Reserve estimate. Inferred Mineral Resources are excluded and not classified as Mineral Reserves and are treated as waste.

The following formulae are used for proportionally converting Mineral Resources into Mineral Reserves:

- Proven Mineral Reserves = (Measured Material + % Measured Material x Waste Dilution) x Recovery x Dilution
- Probable Mineral Reserves = (Indicated Material + % Indicated Material x Waste Dilution) x Recovery x Dilution

The location of the Proven and Probable Mineral Reserves at Yalea, Gara, and Gounkoto is shown in Figure 15-4, Figure 15-5, and Figure 15-6, respectively.

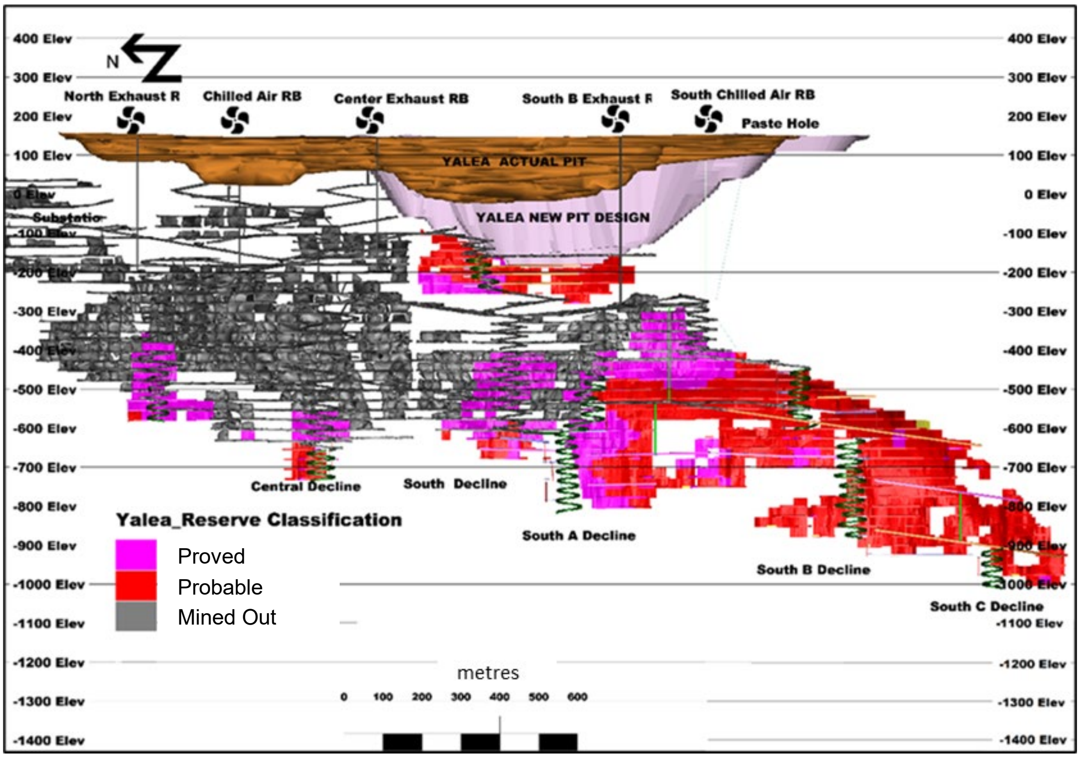


Figure 15-4 Yalea Underground Mineral Reserve by Reserve Category

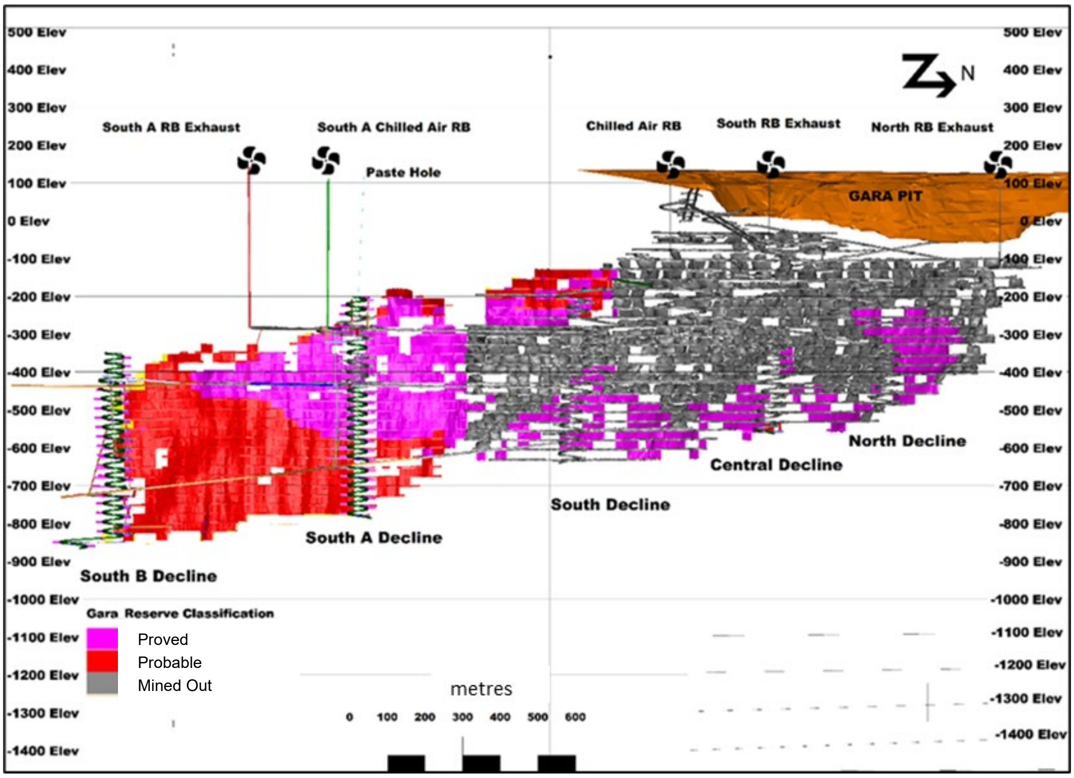


Figure 15-5 Gara Underground Mineral Reserve by Reserve Category

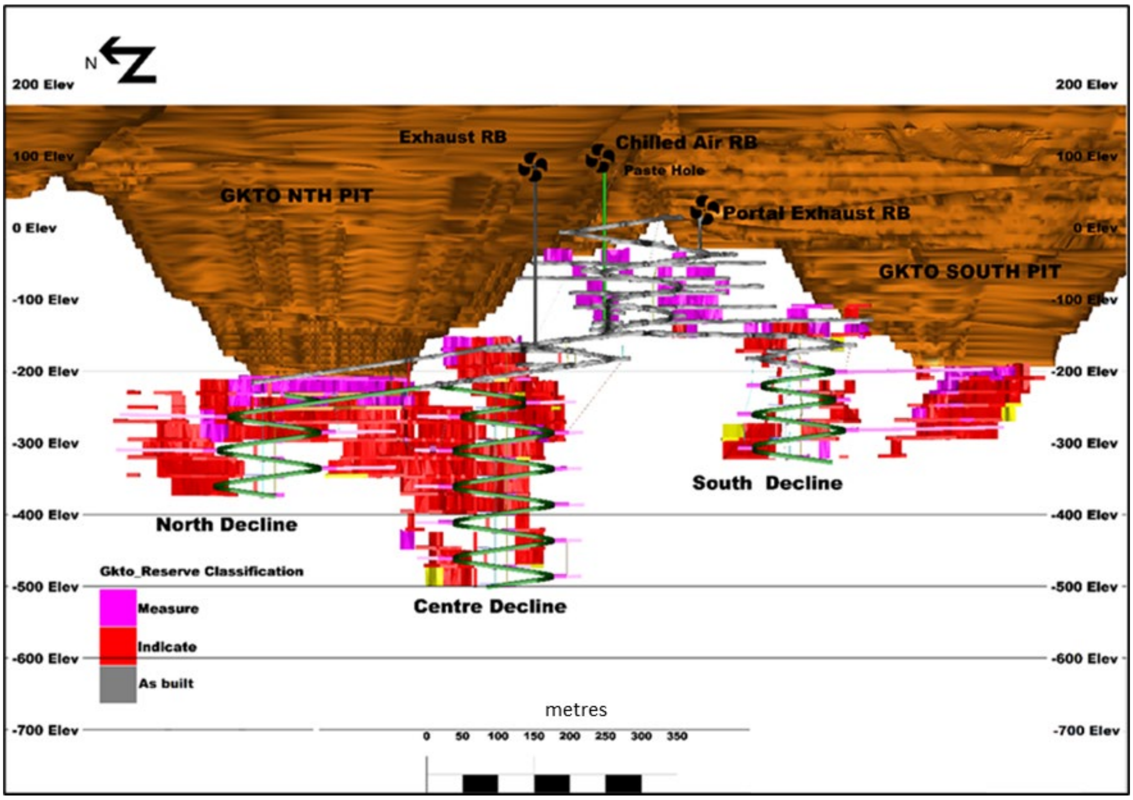


Figure 15-6 Gounkoto Underground Mineral Reserve by Reserve Category

15.8 Mine Design

Open Pit

The pits were designed considering geotechnical factors, costs, mining equipment, and the orebody shape and size. The relatively small dimension of the pits and the characteristics of the orebodies (i.e., narrow, and steeply dipping Birimian meta-sedimentary volcanic sequence), combined with the equipment size, were used to engineer the pit design with the aim of keeping the stripping ratios in line with optimisation results. The process was iterated until an acceptable level of correlation was achieved between the optimised shells and detailed designs.

Allowances made for minimum mining widths, the selective mining unit, and design elements appropriate to the mining method are being considered. Infrastructure, waste disposal, and ore stockpile management requirements were incorporated into the planning process.

The main pit design parameters are provided in Table 15-13.

Table 15-13 Open Pit Design Parameters

Item	All Open Pits
Accesses	Minimum of two accesses always
Ramps	Two single lane ramps (1 driving down, 1 driving up)
Ramp Access	Minimising ramp access in the hanging wall, unless in a temporary wall
Ramp Width	25 m for double lane and 12 m for single lane ramps, except for dumps (30 m)
Ramp Gradient	10%
Batter Angles	60-80°
Switchbacks	Kept to a minimum
Slope Angles	As advised by a geotechnical analysis
Bench Basis	10 m bench
Strip Ratio	Kept as low as possible
Final Face Benches	No ramp accesses
Single Lane Ramps	Used where required

Gounkoto and Faraba

The strength of the rock mass at Gounkoto improves moving away from the orebody rocks and into the walls. The weathering profile is deep in the NE, with top-of-fresh rock averaging approximately 60 m up to a maximum of 80 m depth below original ground surface.

Soil Slope Design

Slopes in soils are controlled by mass stability conditions and are sensitive to both height and water pressure. The design parameters are therefore qualified by slope height and dewatering measures.

- Bench stacks for wall up to 40 m deep/high, a 44° IRA (crest-crest) with a 4.5 m berm.
- Bench stacks for wall greater than 40 m deep from the crest down to the top of fresh rock, a 40° IRA (crest-crest) with a 6 m berm.

Slope angle designs for all the reserve pits in 2022 remained unchanged from those used in the 2021 designs as structural conditions in the area remain unchanged.

In the centre of the pit, ramps were added to both the east and west side of the pit to improve in-pit dumping and ore hauling from the Gounkoto Underground mine.

In the south and north, berm parameters at the pit bottom were reduced to recover additional ore.

Rock Slope Design

The geotechnical study for Gounkoto recommends a twin benching configuration for rock slopes with the following geometry in each sector:

- All sectors have a bench angle (batter) of 75° with an operating offset of 2 m.

- Footwall North: Equivalent twin-bench face angle (top-toe) of 70° with an alternate catch berm width of 8 m and an equivalent IRA of 52.5°.
- Footwall South: Equivalent twin-bench face angle (top-toe) of 70° with an alternate catch berm width of 8.5 m and an equivalent IRA of 51.6°.
- Hanging Wall North and South: Equivalent twin-bench face angle (top-toe) of 80° with an alternate catch berm width of 8 m and an equivalent IRA of 55.9°.

The parameters for various pits in Table 15-14 include the same geotechnical assumptions as in 2021 because there has been no structural change.

In the Faraba open pits, no geotechnical drill holes have been drilled yet and the design is based on the assumptions used for the Gounkoto open pit as Faraba is located in the same geological environment. Drilling has been budgeted for 2023 and, once completed, will be incorporated into the model, to prepare a new optimised shell and update the LOM pit design.

Table 15-14 Gounkoto and Faraba Geotechnical Slope Requirements

Area/Sector	Soil/Rock	IRA (°) (crest-crest)	Bench Height (m)	Bench Angle (°)	Offset (m)	Berm (m)
Soil Slope - Bench Configuration						
Bench stacks for wall up to 40 m (depth <40 m)	All	44	10	60	N/A	4.5
Bench stacks for wall greater 40 m (depth>40 m)	All	40	10	60	N/A	6
Rock Slope - Twin Bench Configuration						
Footwall + Sidewall - North	All	52.5	10	75	2	8
Footwall + Sidewall - South	All	51.6	10	75	2	8.5
Hanging Wall (North and South)	All	55.9	10	80	2	8

The 2022 Gounkoto pit design for the LOM is shown in Figure 15-7, and for Faraba North and Faraba Main in Figure 15-8.

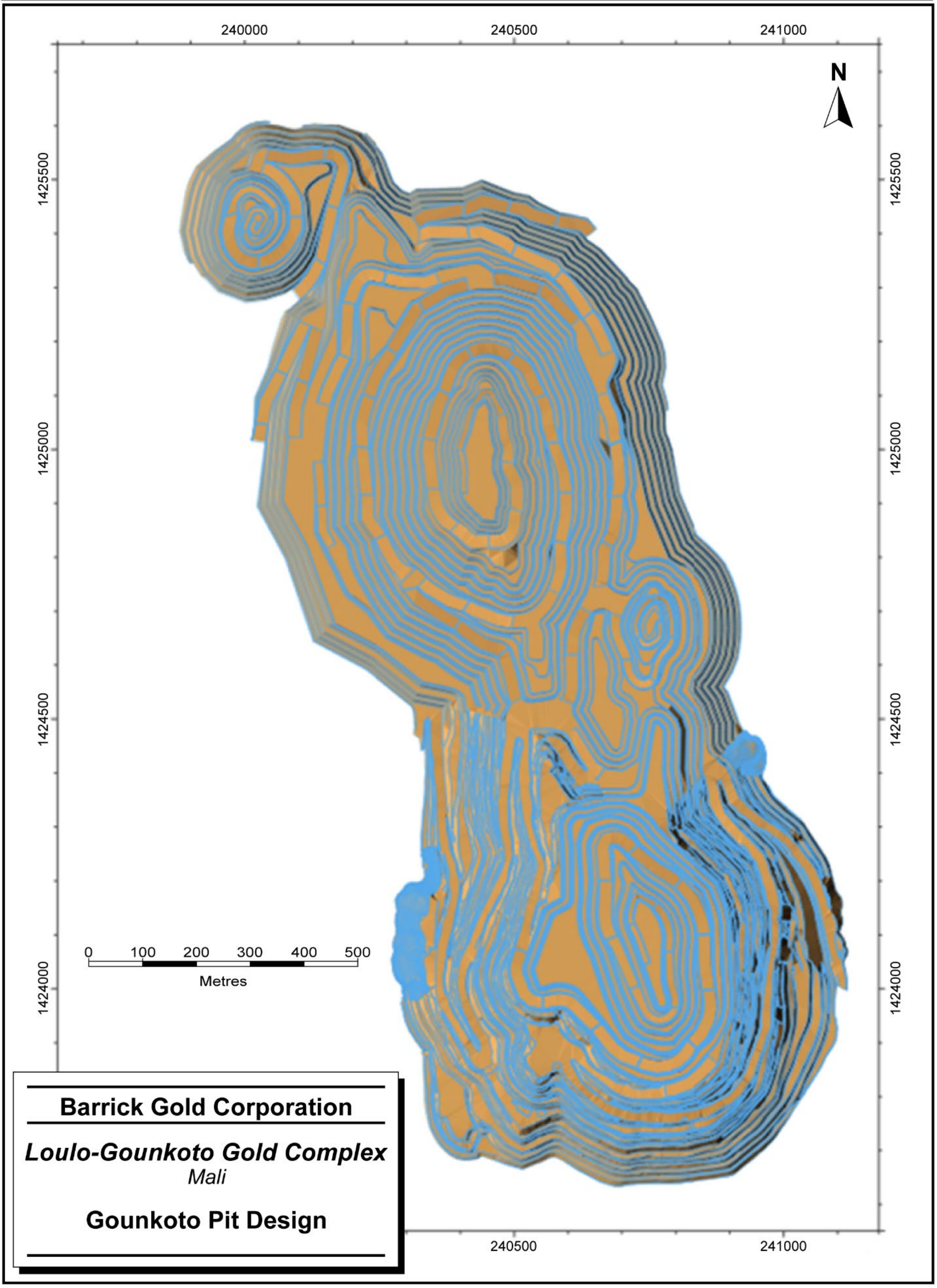


Figure 15-7 Gounkoto Pit Design

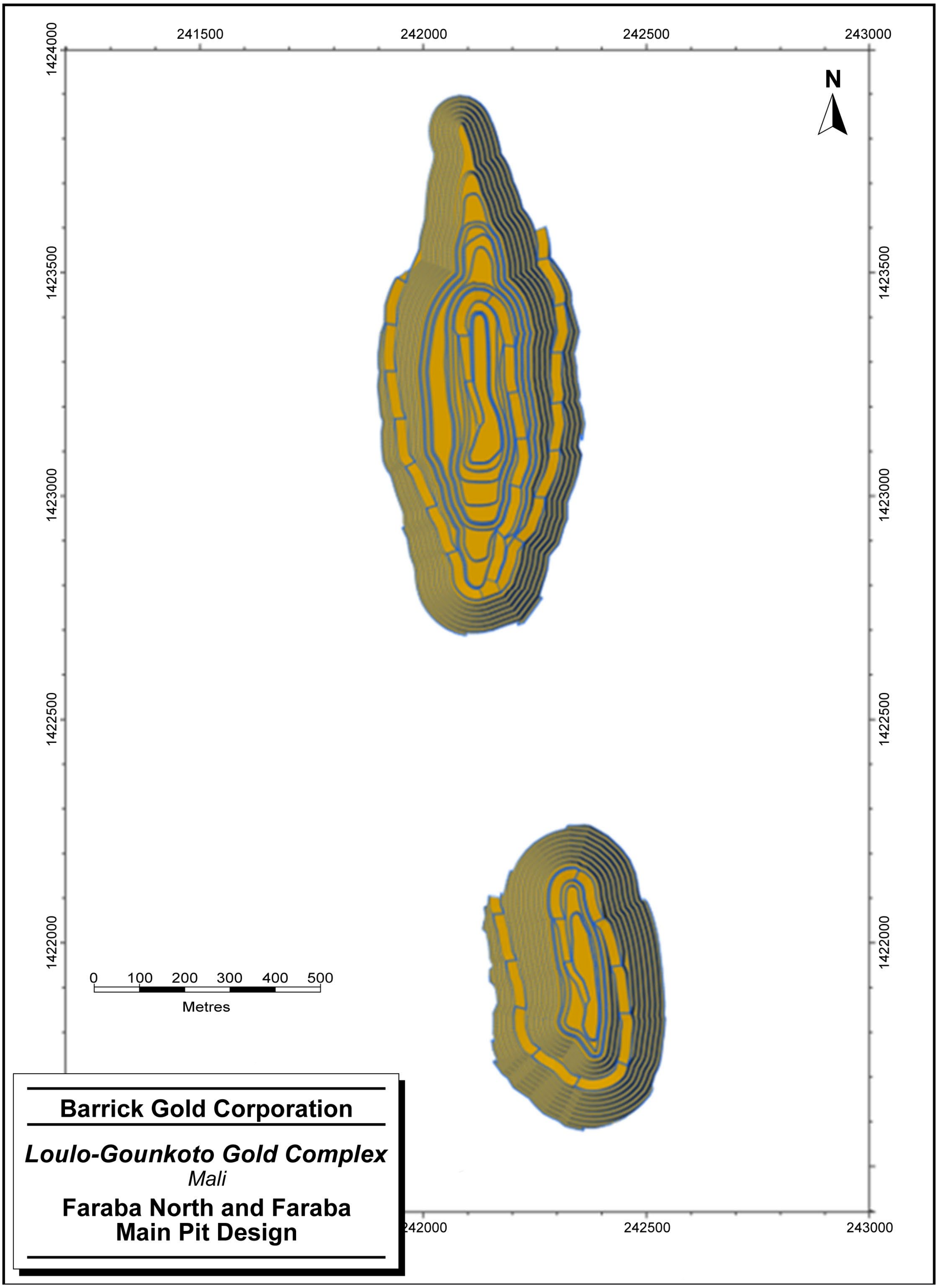


Figure 15-8 Faraba North and Faraba Main Pit Design

Yalea

Geotechnical drilling was conducted in 2021 and geotechnical parameters were developed and applied to the design update in 2022.

Slope design zones were created with wireframes defining the domains of different material properties, stability characteristics or design features, for use with mine planning software.

The slopes in the gouge and tension zones require safety berms, which reduces the overall slope angle in these materials. Optimisation angles included one safety berm at double the usual berm width, plus one or two ramps per wall at 25 m.

The footwall geology supports a 70° wall (pre-split) drilling angle. This differs from the current Gounkoto practice that uses 75° in the footwall. Drilling at 70° is considered feasible, though that remains to be confirmed when in operation. Failing that, a 75°/2 m/8 m configuration will give an IRA of 49° for this sector.

A final drop-cut may be possible, with a slope that is steeper by 3°, though this has not been included in the current design (Figure 15-9).

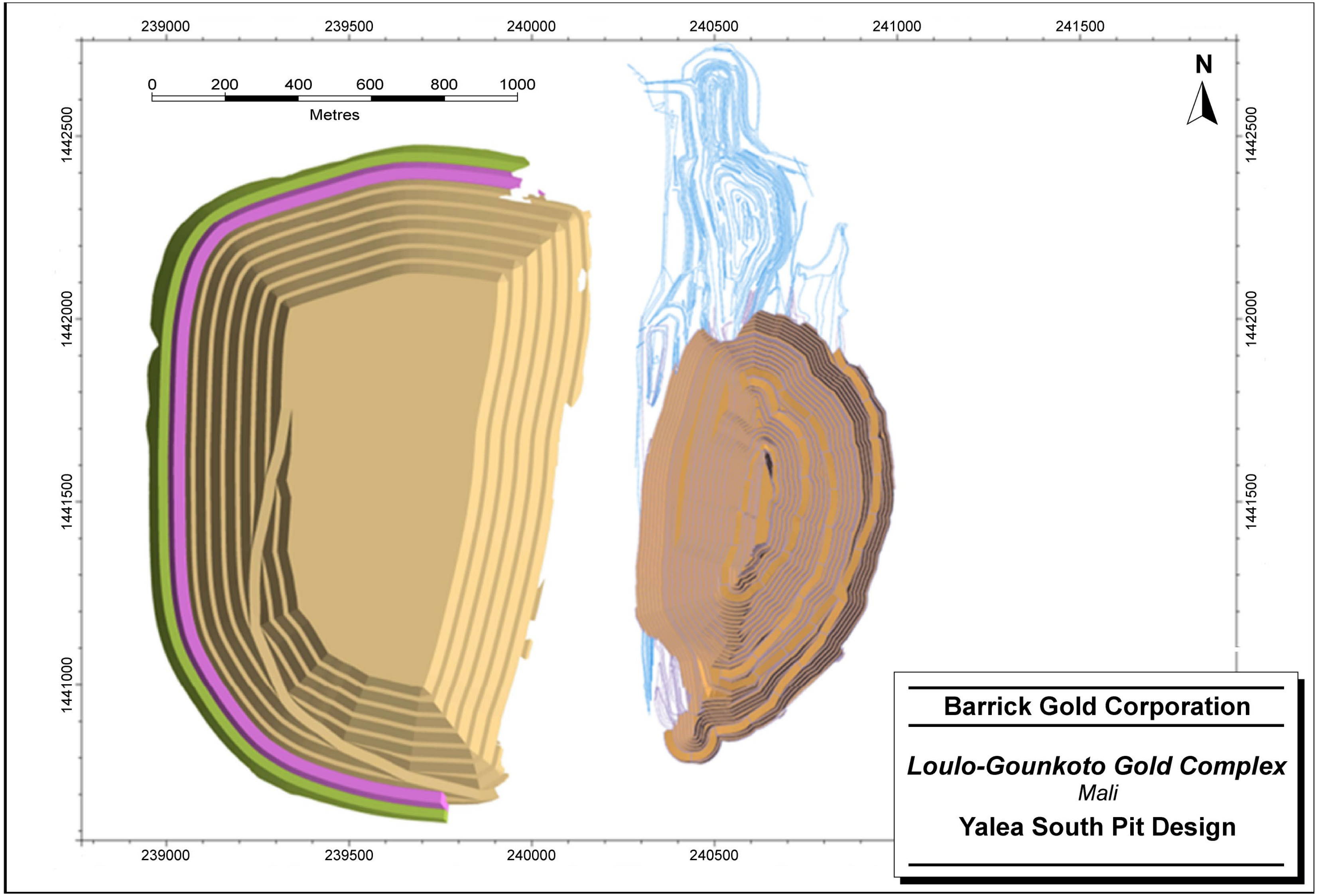


Figure 15-9 Yalea South Pit Design

The different slope parameters used in the design for Yalea open pit are tabulated below in Table 15-15.

Table 15-15 Summary of Pit Design Parameters

Area/Sector	Soil/Rock	IRA (deg.)	Bench Height (m)	Bench Angle (deg.)	Offset (m)	Berm (m)
Saprolite	All	44	10	60	-	4.5
Gouge South Wall	All	40	10	60	-	6
Gouge Footwall	All	26	10	50	-	12
Gouge Hanging Wall	All	26	10	50	-	12
Tension Zone	All	36	10	70	-	10
Fresh Rock Hanging Wall	All	56	10	80	2	8
Fresh Rock Footwall	All	52	10	70	2	6

Loulo 3

The basic classification includes footwall slopes, where the design follows to a greater or lesser extent the foliation dip, and the hanging wall slopes, where the rock fabric is favourably dipping into the wall.

The rock at Loulo 3 is very strong (UCS > 130 MPa). The likelihood of shear failure en masse in the rock mass (analogous to soil failure) is very low and therefore failure analysis was excluded. The strength of the rock mass will be a function of the rock fabric, including the degree of anisotropy caused by planes of weakness due to bedding, faults, joints, and other structures. The main control on rock slope stability is the orientation of planes of weakness, the occurrence of wedges, and toppling. Each rock domain has been kinematically analysed to derive the slope design parameters for each domain (Table 15-16).

Table 15-16 Loulo 3 Slope Parameters

Area/Sector	Soil/Rock	I-R (deg.) (Crest-crest)	Bench Height (m)	Bench Angle (deg.)	Offset (m)	Berm (m)
Soil Slope - Bench Configuration						
Bench stacks for soil thickness up to 20 m (depth < 20 m)	Soil	44	10	60	N/A	4.5
Bench stacks for soil thickness greater 20 m (depth > 40 m)	Soil	40	10	60	N/A	6
Weak rock domain (weathered and broken rock)	All	47.5	10	70	N/A	5.5
Rock Slope - Single Bench Configuration						
Footwall + Side Wall (North and South)	Rock	51	10	70	N/A	5.5
Hanging Wall (North and South)	Rock	51	10	70	N/A	5.5

Groundwater Control for Slope Stability

Groundwater conditions are a primary input for slope stability and therefore any geotechnical investigation must encompass groundwater regimes and surface water issues. Permeability packer tests and piezometers were successfully installed in the five of the six geotechnical holes in the 2019 campaign at Loulo 3. The standpipes are made of galvanised steel one-inch water piping with home-made slotted tips positioned at the bottom of the holes in filter sand reservoirs, isolated with bentonite (pellets).

The data from the piezometers shows that the groundwater regimes are distinct between the two walls:

- The hydraulic gradient is from east to west, following the natural surface drainage.
- The hanging wall (east) levels are correspondingly close to surface and being subject to recharge, will require interception perimeter pumping, unless the saprolite layer is less than or equal to 20 m.
- The footwall (west) is already subject to drawdown being close to the old pit and will continue to be in the ‘shadow’ of the new pit as it is excavated. No perimeter interception measures will be required.
- There is a stream bed crossing the property and this must be diverted and intercepted by pumping – note that stream beds are locally weathered to twice the general depth in this type of environment.
- There will be a requirement for a systematic array of borehole wells in the greater part of the hanging wall.

There is a requirement for a minimum perimeter distance between the rim of an open pit and any dumps or encroaching works, due to the consequent surcharge and excess pressurisation. The minimum perimeter for remedial action has been derived elsewhere as 30 m.

The pit designs for Loulo 3 are shown in Figure 15-10.

Figure 15-10 Loulo 3 Pit Design

Gara West

Four diamond holes were drilled at Gara West in December 2020 and the analysis was completed in 2021.

Gara West is approximately 50 m from the main Gara pit, which was mined to completion about a decade ago, and some sections of the Gara West pit are merging into the existing pit. The footwall of Gara West is on the hanging wall of the main Gara pit.

The walls have been classified into two major domains – footwall and hanging wall according to the dip of the foliation. The footwall follows the adverse dip of the foliation whilst the hanging wall slope has the foliation dipping into the wall, which is favourable for stability. Depending on the rock fabric occurrence and orientation, the slope design considers the allowable slope geometry and the practical achievable angle.

Where the rock mass is weak, shear failure *en masse* (analogous to soil failure) needs to be considered. The strength of a stronger rock mass is primarily a function of the rock fabric, i.e., the degree of anisotropy caused by planes of weakness due to bedding, faults, joint, and the like. The main control on rock slope stability is the orientation of planes of weakness, the occurrence of wedges, toppling, and so forth. Therefore, the first step is to define a rock fabric model as established from the structural logging and analysis. Using this information, the analysis of rock slope stability uses the kinematic analysis to check the stability of the various slope domains.

Table 15-17 tabulates the Gara West slope parameters.

Table 15-17 Gara West Slope Parameters

Area/Sector	Soil/Rock	IRA (deg.) (crest-crest)	Bench Height (m)	Bench Angle (deg.)	Offset (m)	Berm (m)
Soil Slope - Bench Configuration						
Bench stacks for wall up to 40 m (depth = 10 m)	Soil	44	10	60	NA	4.5
Rock Slope - Twin Bench Configuration						
Hanging wall + Sidewalls	Rock	59	10	90	2	10
Footwall	Rock	52.6	10	70	2	6

Figure 15-11 shows the Gara West open pit design.

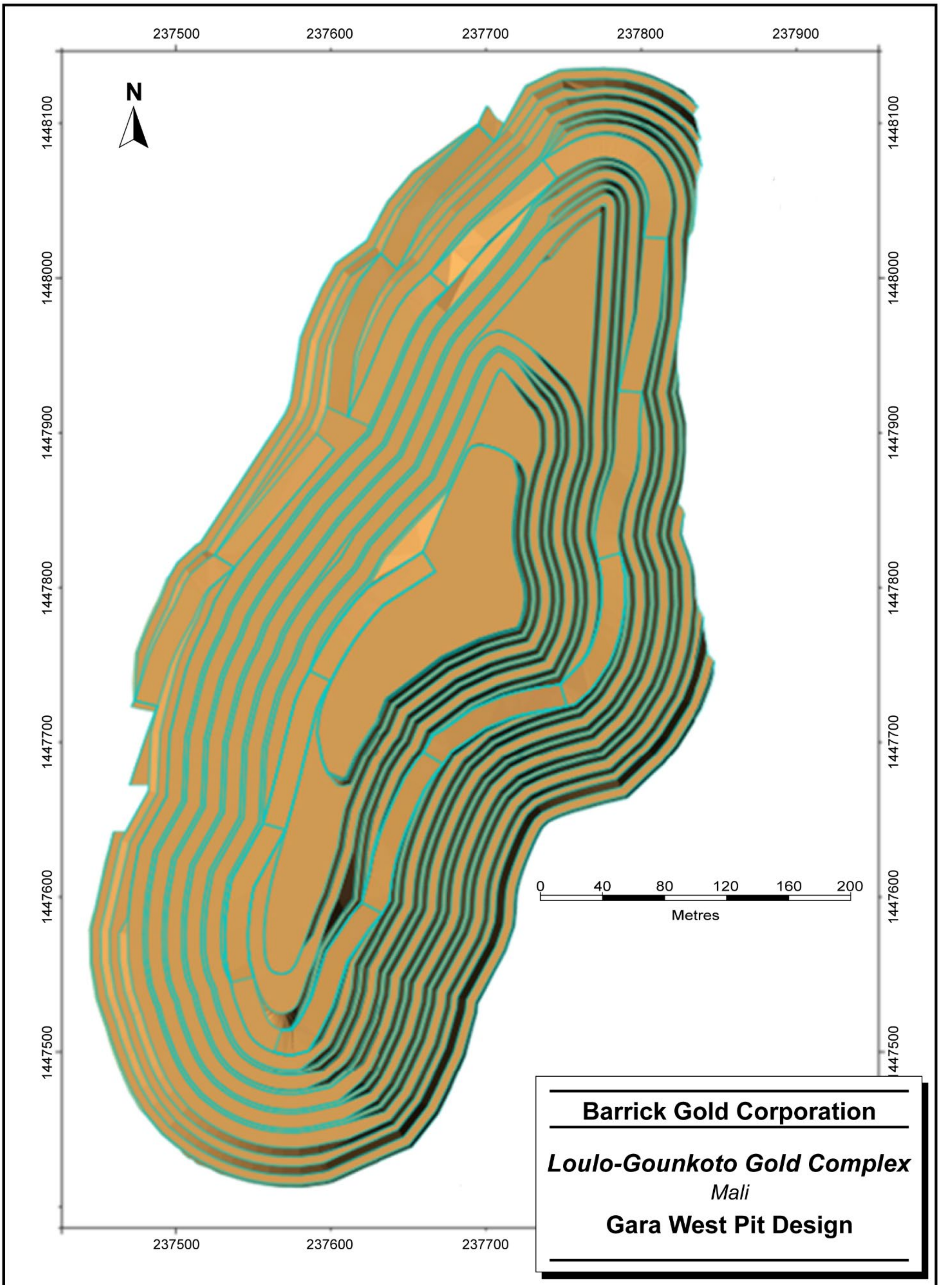


Figure 15-11 Gara West Pit Design

Baboto

The controls on slope angle are geometrical, governed by the orientation of the pit wall relative to the destabilising discontinuities. There are two slope sectors at Baboto – hanging wall and footwall.

The geologically allowable slope angles (inter-ramp) in these two sectors were determined by kinematic analysis:

- Hanging wall: 55°
- Footwall: 52°

The kinematic controls affecting the excavation and stability of benches supported inclined benches in both hanging wall and footwall, although the footwall is more sensitive to planar failure along the foliation.

The rock slope stability was analysed using a kinematic check of the two identified slope sectors determined by the rock fabric analysis. The hanging wall stability check identified that the discontinuities that will control the slope geometry for the wall orientation striking north-south are two steep, westerly dipping sets. These structures will dominate the bench geometry, but there are very few discontinuities which will threaten the overall slope in rock, either shallowly dipping to undercut the planned slope angle or dipping so steeply that they would overcome the angle of sliding friction and fail. The slope parameters are given in Table 15-18.

Table 15-18 Baboto Slope Parameters

Area/Sector	Soil/Rock	I-R (deg.) (crest-crest)	Bench Height (m)	Bench Angle (deg.)	Offset (m)	Berm (m)
Soil Slope - Bench Configuration						
Bench stacks for wall up to 40 m (depth < 40 m)	Soil	44	10	60	NA	4.5
Bench stacks for wall greater 40 m (depth > 40 m)	Soil	40	10	60	NA	6
Weak rock domain (weathered and broken rock)	Weak Rock	47.4	10	75	NA	6.5
Rock Slope - Twin Bench Configuration						
Hanging wall	Rock	55.9	10	80	2	8
Footwall + Sidewall	All	52.5	10	75	2	8

Figure 15-12 and Figure 15-13 show the open pit designs for Baboto South and Baboto Centre, respectively:

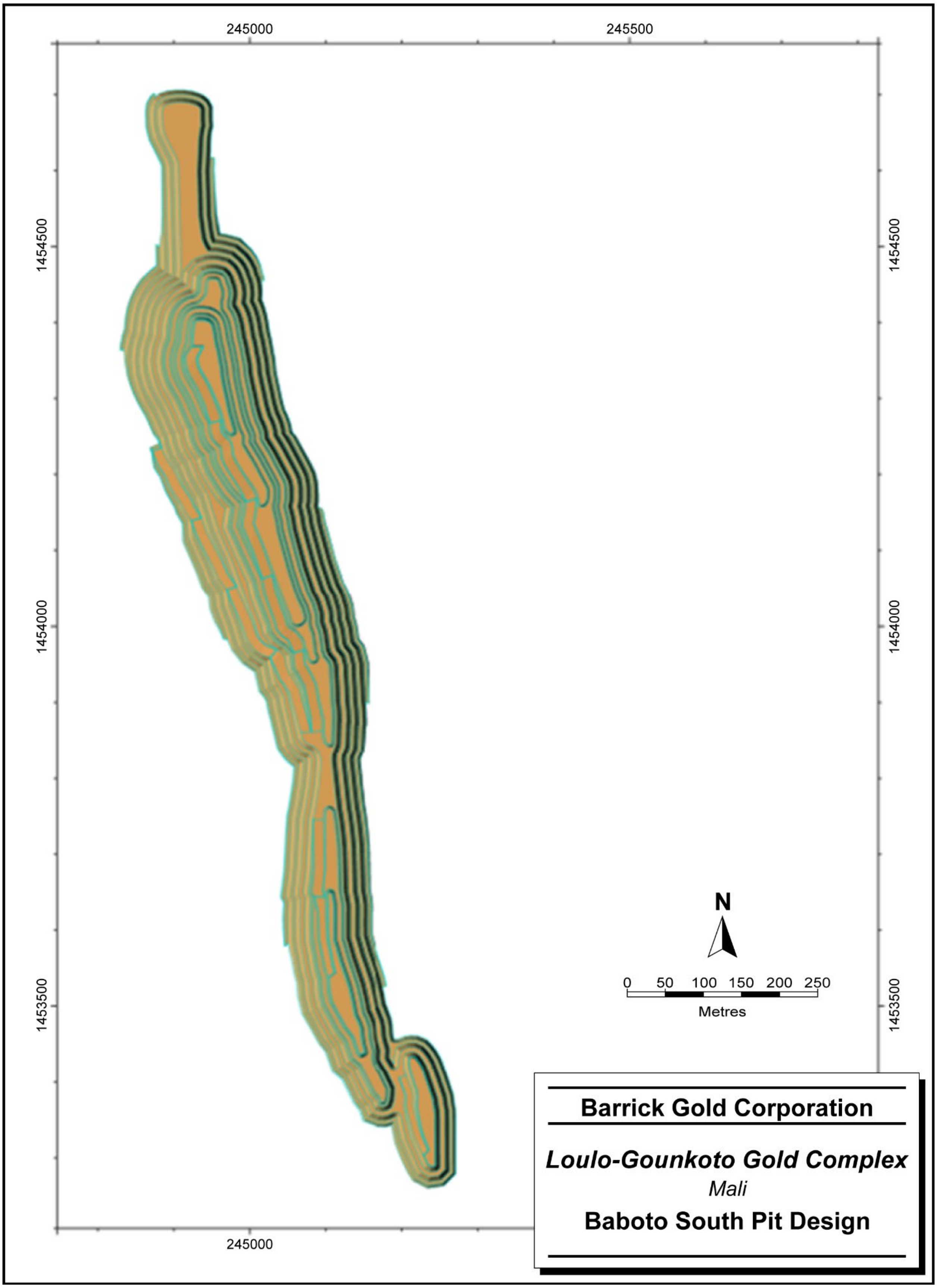


Figure 15-12 Baboto South Pit Design

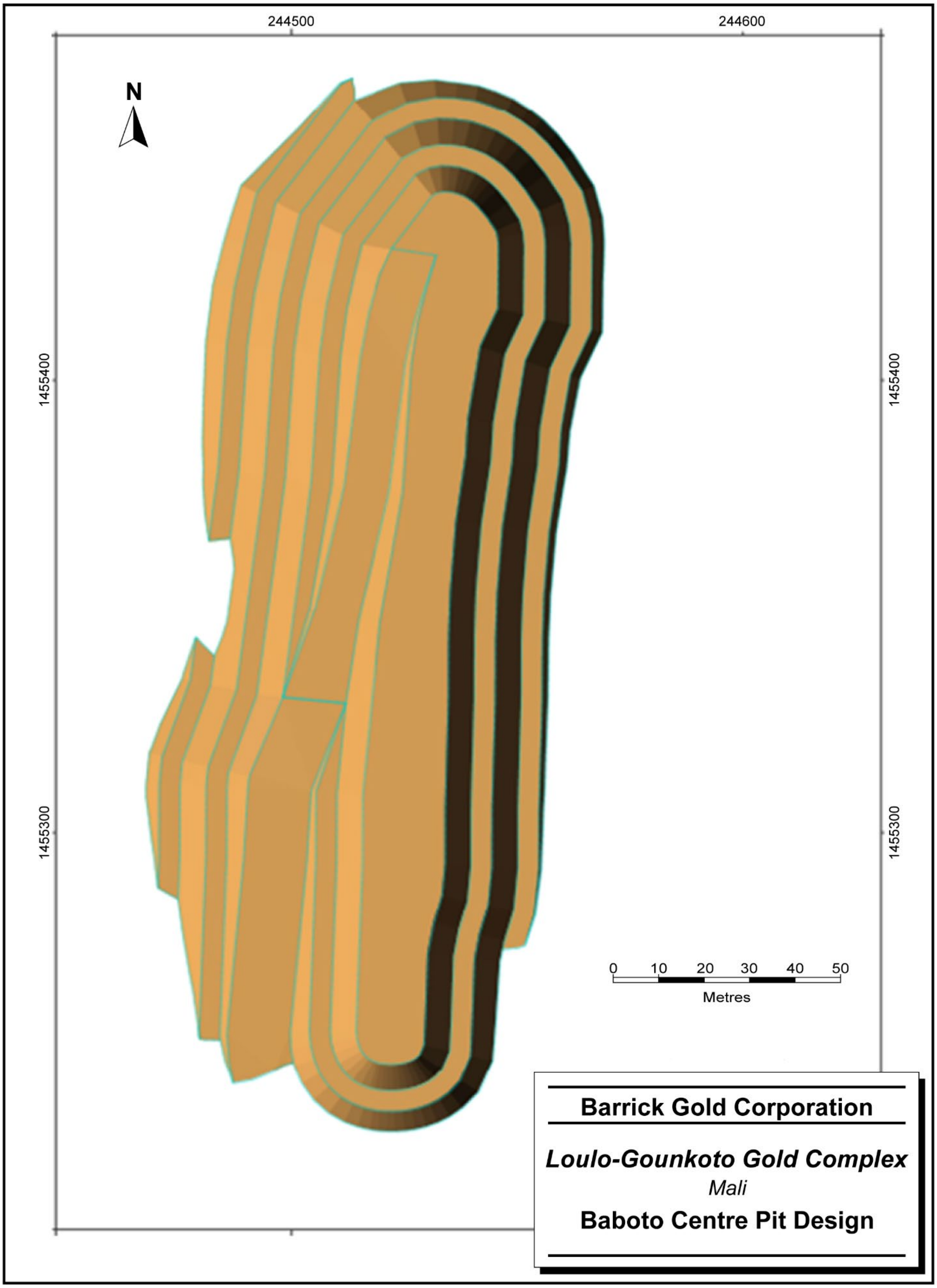


Figure 15-13 Baboto Centre Pit Design

Underground

Several factors contributed to the selection of the mining method including the geology of the deposit, the geometry of the orebody, the geotechnical conditions as well the production and the productivity.

Previous studies have determined that long hole stoping with paste fill as the most appropriate method for Yalea, Gara, and Gounkoto deposits, which in the case of Yalea and Gara has been borne out through years of production. For steeply dipping mineralisation, long hole stoping is a well-established and commonly used method for extraction.

- As illustrated in Figure 15-14 below, long hole longitudinal stoping is used at the Yalea and Gara underground mines. The strike length varies between 30 m and 20 m depending on the geotechnical domain, with a sub-level spacing of 25 m.
- At Gounkoto, stope shapes strike lengths vary from 20 m to 25 m and sublevel spacings from 20 m to 25 m. In general, the stopes above the -270 mRL are 20 m in height, and the one below -275 mRL are 25 m height.

The minimum stope width is 3 m with a minimum footwall angle of 45º to allow blasted material to rill to the draw point. The maximum width for designed stopes is 20 m, with multiple panels being created where the width exceeds 20 m.

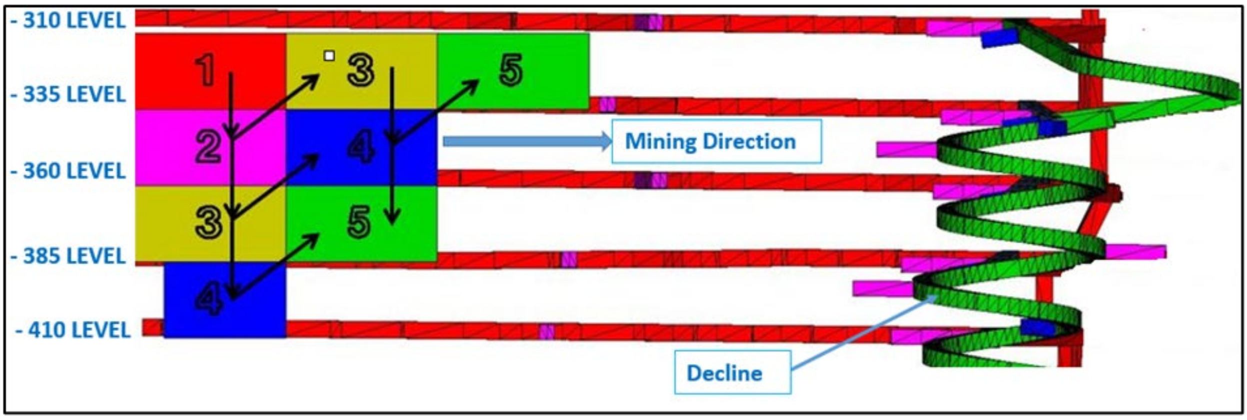


Figure 15-14 Long End Access Mining Open Stoping with Backfill Sequence

The expected stability of a mined-out stope dictates its overall size. As the width is usually determined by the orebody, and the height by the interlevel spacing, the stope length is varied to create a stable result for any given geotechnical condition. Stope stability is assessed using the (Potvin) Modified Stability Graph method. The stability graph method is an empirical method used for the dimensioning of open stopes. The method is based on Q' (the modified Q value) and on three factors accounting for stress, structural orientation, and for gravity effects. The method is used to dimension each surface of the stope separately based on a combination of these factors and on the hydraulic radius (calculated as surface area/perimeter) of the surface.

There are two stability graphs that are used for assessing the stope dimensions, dependent on whether cable bolt reinforcement is used or not.

As part of the assessment, the analysis includes a Mining Rock Mass Model (MRMM) and a structural geology model. By incorporating the MRMM and the structural model, rock mass quality is considered in the sizing of stopes. The MRMM allows stopes to be sized based on geotechnical domains within each orebody zone, improving on a single 'one size fits all' approach.

15.9 Stockpiles

The primary stockpiles are at the ROM pad. This ore is 'feed grade ore' from the open pits and all the underground ore. Each stockpile contains similar material types, with an established grade range and oxidation state, tracked as part of normal mining operations and metal accounting. The stockpiles are measured by weekly drone survey and GPS pickups. The grade and tonnage of the open pit stocks are estimated according to source dig blocks and number of truck counts, using a weighbridge to adjust for fluctuations in both density and truck fill factor. Grade and tonnage of underground stockpiles are estimated using ore pass truck counts and their source blasts from stopes, adjusting for the presence of paste dilution.

Smaller stockpiles are used for re-handling and have been excluded from the Mineral Reserve estimate.

Mineralised waste stockpiles have also been excluded from the Mineral Reserve estimate as most of that material is not currently economically viable.

15.10 Reconciliation

The Loulo-Gounkoto Complex has a standard weekly, EOM, and end of quarter production measurement system that reports and provides reconciliation between grade control and monthly mine production.

The measurement system tracks daily, weekly, monthly, quarterly, and year to date production grade control results versus the plant. The system tracks both underground and open pit domain production against the block model. Summary reports are prepared weekly, monthly, and quarterly.

The reconciliation is for both mines as the Loulo and Gounkoto mines are processed in the same facilities. At the end of December 2022, plant check out versus GC model reconciliation has been 100% for tonnes, 104% for grade, and 104% for ounces. This shows a very good reconciliation and demonstrates the ability of the modelling to predict production.

The positive grade reconciliation is a function of the higher-grade portion feed from Gounkoto FGO stockpile ducted by the variability along the stock.

Table 15-19 shows the EOY 2022 reconciliation.

Table 15-19 Loulo Gounkoto EOY 2022 Reconciliation

Recon Ore Mine from GC model, Stockpiles and Plant out	2022 YTD		
	Tonnes	Grade	Ounces
Mine	6,587,618	3.29	695,847
Stockpile Change	1,485,487	-0.54	-25,935
Grade Control Theoretical Feed	5,102,131	4.40	721,782
Grade Control Actual Feed	5,093,709	4.43	726,227
Grade Control Adjustment	30,084	-0.97	-940
Scats Stock Change	-18,404	2.98	-1,762
Cone Change	21,662	5.03	3,505
Grade Control Call	5,090,451	4.43	724,484
Plant Check Out	5,087,313	4.61	753,220
Grade Control Call vs Plant Check-out (%)	**100**	**104**	**104**

Figure 15-15 presents a chart of mine showing GC feed ratio of the different ore sources for the Loulo processing plant which is tracked on a weekly basis against the Plant CIL recovery.

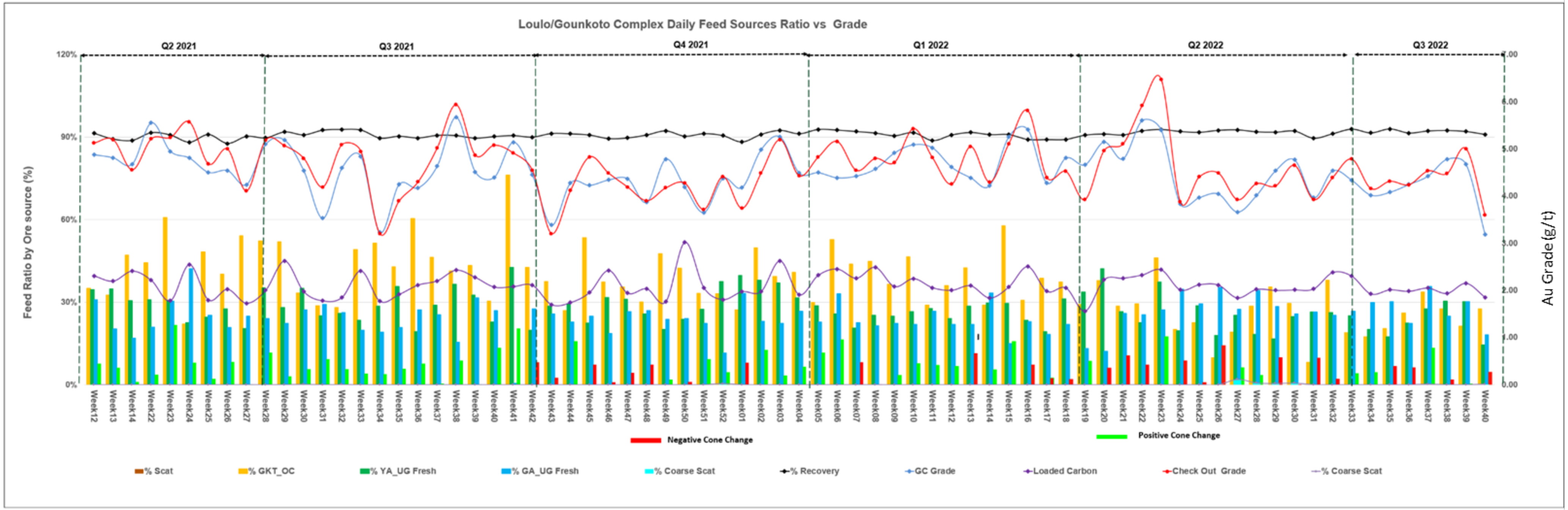


Figure 15-15 2022 GC Estimated Plant Feed Ratio of Different Ore Sources Versus Plant CIL Recovery

As shown in Figure 15-16, the reconciliation between the mine call and plant check-out grade averages 104% for the entire year. The positive reconciliation is largely driven by the portion of higher-grade, and more variable, feed from the Gounkoto FGO stockpile.

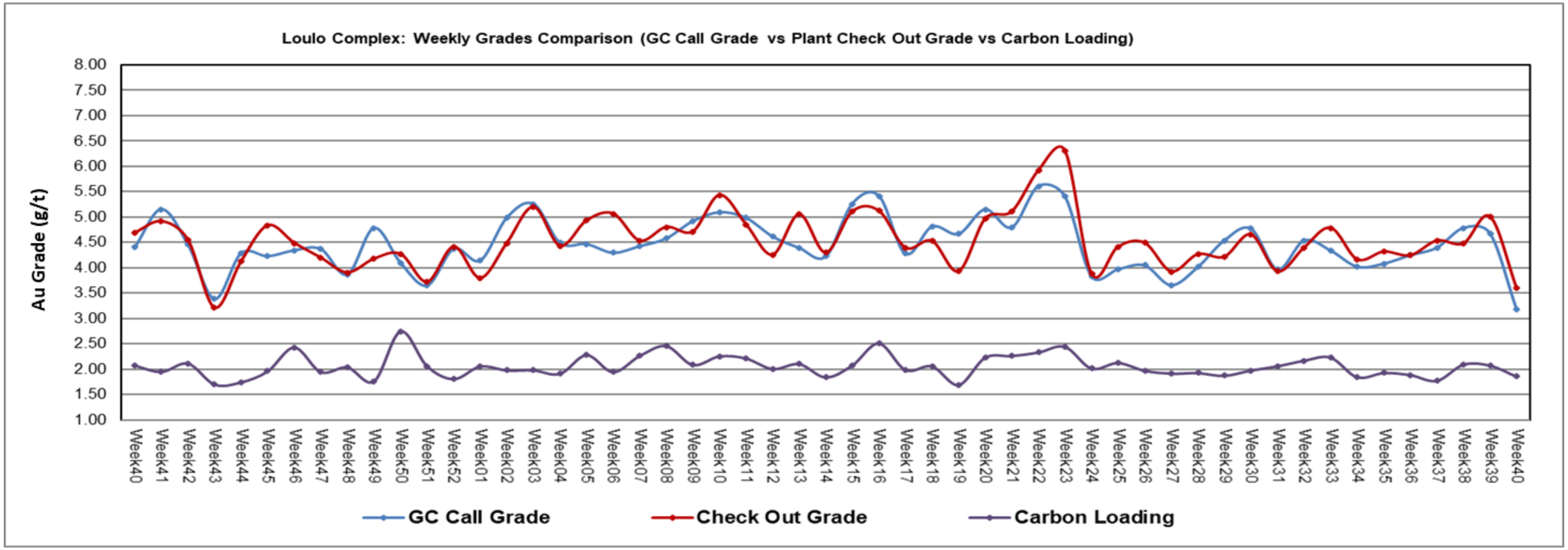


Figure 15-16 2022 Weekly Grades Comparison (Mine Call Grade vs Plant Check Out Grade vs Carbon Loading)

As shown in Figure 15-17, there was a good reconciliation between mine call and plant check-out tonnes, averaging 99% for the entire year.

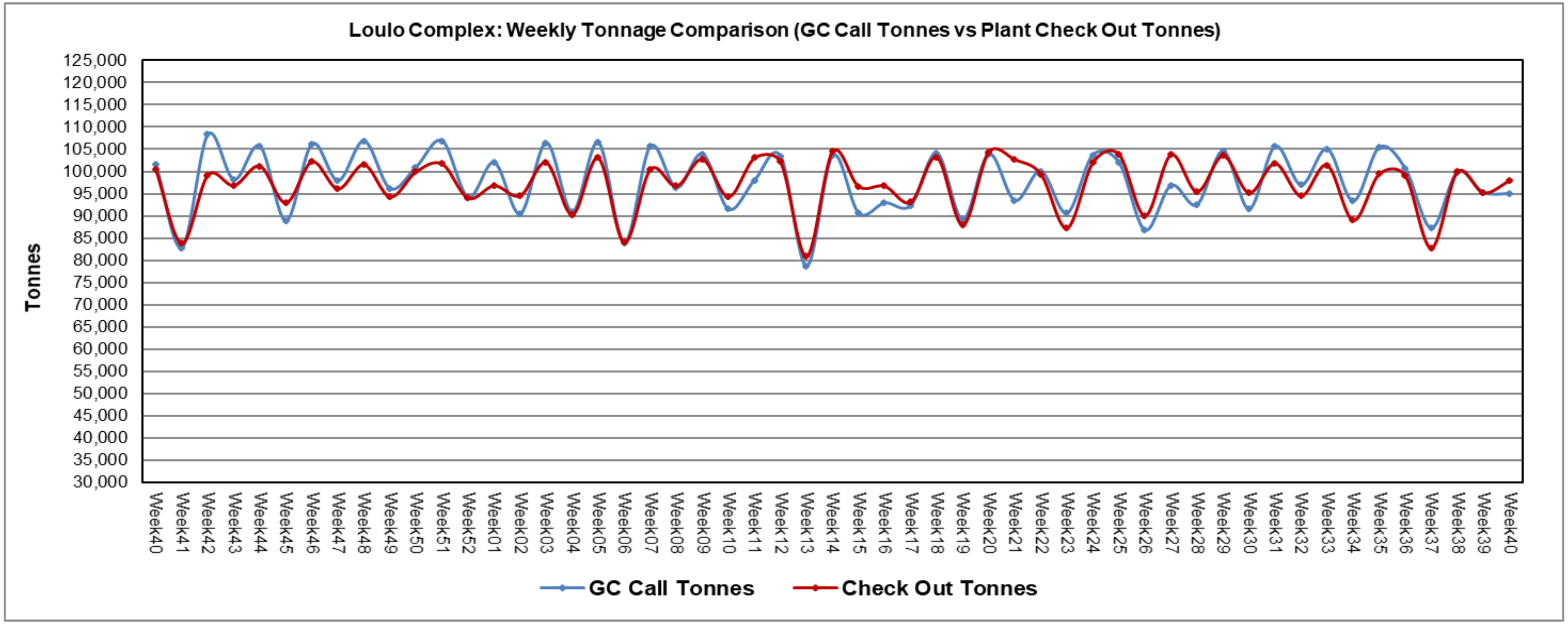


Figure 15-17 2022 Weekly Tonnage Comparison (Mine Call Tonnes vs Plant Check Out Tonnes)

Table 15-20 shows the EOY Resource Call Factor (RCF) reconciliation, comparing 3D volumes mined from the Mineral Resource model against production data from the plant. The 2022 budget models performed well in 2022, with a lower error than the normal reconciliation against the grade control model, demonstrating the model is robust and good for the prediction of production.

Table 15-20 Loulo Gounkoto EOY 2022 Resource Call Factor Reconciliation

Mined to Mill Reconciliation	2022 YTD		
	Tonnes	Grade	Ounces
Mine	5,648,115	4.27	775,196
Stockpile Change	1,485,487	-0.54	-25,935
GC Theoretical Feed (Check In without Scats) "A"	5,102,131	4.40	721,782
GC Actual Feed (Crushed without Scats) "B"	5,093,709	4.43	726,227
GC Adjustment (A - (B-C))	30,084	0.97	940
Scats Stock Change	-18,404	2.98	-1,762
Cone Change "C"	-5,554	4.05	-724
Resource Call	5,077,706	4.45	726,169
Plant Check Out	5,087,313	4.61	683,184
Resource Call vs Plant Check-out	**100**	**104**	**104**

15.11 Mineral Reserve Statement

The Mineral Reserve estimates have been prepared according to the guidelines of the CIM (2014) Standards.

The Mineral Reserve estimates use LOM budget costs, the latest resource and geological models, geotechnical inputs, and the latest metallurgical updates. Some inputs were shared across all the operations during the preparation of the Mineral Reserve estimates. Mineral Reserves were based on the development of appropriately detailed and engineered LOM plans. All design and scheduling work was undertaken to a suitable level of detail by experienced engineers using mine planning software. The planning process incorporated appropriate modifying factors and the use of COG and other technical-economic investigations. Mineral Reserves are stated:

- As of 31 December 2022.
- A gold price of $1,300/oz.
- As ROM grades and tonnage as delivered to the fully diluted and delivered to the plant.
- Including only Measured and Indicated Mineral Resources.

The QPs have performed an independent verification of the block model tonnes and grade, and in their opinion, the process has been carried out to industry standards. The QPs are not aware of any environmental, legal, title, socioeconomic, marketing, mining, metallurgical, fiscal, infrastructure, permitting, or other relevant factors, that could materially affect the Mineral Reserve estimate.

While Loulo and Gounkoto are separate properties, as their ore is processed in the same plant, the combined Mineral Reserves are given in Table 15-21. The Loulo Mineral Reserves are presented in Table 15-22. The Gounkoto Mineral Reserves are presented in Table 15-23.

Loulo-Gounkoto Complex

The year-end 2022 (100% basis) combined Loulo-Gounkoto Proven and Probable Mineral Reserves are estimated to be 67 Mt at 3.87 g/t Au containing 8.3 Moz of gold, of which 6.7 Moz are attributable to Barrick.

The net change between the 2021 combined Mineral Reserves estimate and 2022 combined Mineral Reserves estimate has been a decrease of approximately 0.01 Moz Au (-0.14%). This is further detailed in the reconciliation section.

The average dilution for the open pit deposits was 10% with mining losses estimated at 3%.

The average dilution for the underground deposits ranged from 2% to 9%, with mining losses estimated at 4% to 13%. The average dilution for the open pit deposits was 2% to 10% with mining losses estimated at 2% to 3%.

Table 15-21 Loulo-Gounkoto Mineral Reserves as of 31 December 2022

Combined Loulo-Gounkoto	Cut-Off Grade (g/t)	Process Recovery	Proven			Probable			Total			Attributable Gold (Moz)[1]
			Tonnes	Grade	Contained Gold	Tonnes	Grade	Contained Gold	Tonnes	Grade	Contained Gold	
		(%)	(Mt)	(g/t Au)	(Moz)	(Mt)	(g/t Au)	(Moz)	(Mt)	(g/t Au)	(Moz)	
Stockpile												
Gounkoto Open Pit	0.82	92.99	6.04	1.79	0.35	-	-	-	6.04	1.79	0.35	0.28
Loulo ROM	0.49	92.33	2.05	1.71	0.11	-	-	-	2.05	1.71	0.11	0.09
Stockpile Sub-total			**8.09**	**1.77**	**0.46**	**-**	**-**	**-**	**8.09**	**1.77**	**0.46**	**0.37**
Open Pit												
Loulo 3	0.70	92.23	0.51	3.11	0.05	4.68	2.74	0.41	5.19	2.78	0.46	0.37
Baboto	0.89	92.23	1.22	2.33	0.09	1.17	2.42	0.09	2.39	2.37	0.18	0.14
Gara West	0.74	91.76	1.14	2.25	0.08	1.02	1.95	0.06	2.16	2.11	0.15	0.12
Gounkoto Open Pit	0.88	92.80	1.88	5.26	0.32	0.11	2.45	0.01	1.99	5.11	0.33	0.26
Yalea OC	0.79	77.86	1.11	3.05	0.11	3.48	5.13	0.57	4.59	4.63	0.68	0.54
Faraba Main	0.88	94.46	-	-	-	7.39	1.88	0.45	7.39	1.88	0.45	0.36
Open Pit Sub-total			**5.87**	**3.46**	**0.65**	**17.85**	**2.78**	**1.60**	**23.72**	**2.95**	**2.25**	**1.80**
Surface Sub-Total			**13.96**	**2.48**	**1.11**	**17.85**	**2.78**	**1.60**	**31.80**	**2.65**	**2.71**	**2.17**
Underground												
Gara UG	2.42	92.87	6.15	4.03	0.80	7.39	4.01	0.95	13.54	4.02	1.75	1.40
Yalea UG	2.59	86.61	3.70	5.71	0.68	12.18	5.63	2.20	15.88	5.65	2.88	2.31
Gounkoto UG	**2.70**	**92.02**	**1.26**	**6.44**	**0.26**	**4.48**	**5.13**	**0.74**	**5.74**	**5.42**	**1.00**	**0.80**
Underground Sub-Total			**11.11**	**4.86**	**1.74**	**24.05**	**5.04**	**3.90**	**35.16**	**4.98**	**5.63**	**4.50**
Total			**25.06**	**3.54**	**2.85**	**41.90**	**4.08**	**5.49**	**66.97**	**3.87**	**8.34**	**6.67**

Notes

1. Mineral Reserves are reported on a 100% and attributable basis. Attributable refers to the quantity attributable to Barrick based on Barrick's 80% interest in each of SOMILO and Gounkoto SA.
2. The Mineral Reserve estimate has been prepared according to CIM (2014) Standards and using CIM (2019) MRMR Best Practice Guidelines.
3. All Mineral Reserves are reported at a gold price of $1,300/oz Au.
4. Open pit Mineral Reserves are reported at a weighted average cut-off grade of 0.96 g/t Au, including dilution and ore loss factors. Underground Mineral Reserves are reported at an average cut-off grade of 2.59 g/t Au for Yalea Underground;2.42 g/t Au for Gara Underground, and 2.70 g/t Au for Gounkoto Underground.

5. Open pit Mineral Reserves were estimated by Derek Holm, FSAIMM, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP. Underground Mineral Reserves were estimated by Ismail Traore, MSc, FAusIMM, M.B. Law, DES, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP.
6. Numbers may not add due to rounding. Tonnes and contained gold are rounded to 2 significant figures. All Proved and Probable grades are reported to 2 decimal places.

Loulo

The Loulo Proven and Probable Mineral Reserves are estimated to be 43.77 Mt at 4.34 g/t Au containing 6.11 Moz of gold of which 4.89 Moz (80%) are attributable to Barrick.

The Loulo Mineral Reserves are listed in Table 15-22.

Table 15-22 Loulo Mineral Reserves as of 31 December 2022

Source	Mineral Reserve	Tonnes (Mt)	Grade (g/t Au)	Contained Gold (Moz)	Attributable Gold (Moz)[1]
Yalea UG	Proven	3.70	5.71	0.68	0.54
	Probable	12.18	5.63	2.20	1.76
	Proven + Probable	**15.88**	**5.65**	**2.88**	**2.31**
Gara UG	Proven	6.15	4.03	0.80	0.64
	Probable	7.39	4.01	0.95	0.76
	Proven + Probable	**13.54**	**4.02**	**1.75**	**1.40**
Baboto pit	Proven	1.22	2.33	0.09	0.07
	Probable	1.17	2.42	0.09	0.07
	Proven + Probable	**2.39**	**2.37**	**0.18**	**0.14**
Loulo 3 Pit	Proven	0.51	3.11	0.05	0.04
	Probable	4.68	2.74	0.41	0.33
	Proven + Probable	**5.19**	**2.78**	**0.46**	**0.37**
Yalea South pit	Proven	1.11	3.05	0.11	0.09
	Probable	3.48	5.13	0.57	0.46
	Proven + Probable	**4.59**	**4.63**	**0.68**	**0.54**
Gara West pit	Proven	1.14	2.25	0.08	0.07
	Probable	1.02	1.95	0.06	0.05
	Proven + Probable	**2.16**	**2.11**	**0.15**	**0.12**
Total	**Proven**	13.84	4.07	1.81	1.45
	Probable	29.93	4.47	4.30	3.44
	Proven + Probable	43.77	4.34	6.11	4.89

Notes

1. Mineral Reserves are reported on a 100% and attributable basis. Attributable refers to the quantity attributable to Barrick based on Barrick's 80% interest on each of SOMILO and Gounkoto SA.
2. All Mineral Reserves are reported at a gold price of $1,300/oz Au.
3. Open pit Mineral Reserves are reported at a weighted average cut-off grade of 0.96 g/t Au, including dilution and ore loss factors. Underground Mineral Reserves are reported at an average cut-off grade of 2.59 g/t Au for Yalea Underground and 2.42 g/t Au for Gara Underground.
4. Open pit Mineral Reserves were estimated by Derek Holm, FSAIMM, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP. Underground Mineral Reserves were estimated by Ismail Traore, MSc, FAusIMM, M.B. Law, DES, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP.
5. Numbers may not add due to rounding. Tonnes and contained gold are rounded to 2 significant figures. All Proved and Probable grades are reported to 2 decimal places.

Gounkoto

The Gounkoto Mineral Reserves are estimated to be 23.20 Mt at 2.99 g/t Au containing 2.23 Moz of gold of which 1.79 Moz (80%) are attributable to Barrick.

The Gounkoto Mineral Reserves are listed in Table 15-23.

Table 15-23 Gounkoto Mineral Reserves as of 31 December 2022

Source	Mineral Reserve	Tonnes (Mt)	Grade (g/t Au)	Contained Gold (Moz)	Attributable Gold (Moz)[1]
Stockpiles	Proven	8.09	1.77	0.46	0.37
Gounkoto Pit	Proven	1.88	5.26	0.32	0.25
	Probable	0.11	2.45	0.01	0.01
	Proven + Probable	1.99	5.11	0.33	0.26
Faraba Pit	Proven		-		
	Probable	7.39	1.88	0.45	0.36
	Proven + Probable	7.39	1.88	0.45	0.36
Gounkoto UG	Proven	1.26	6.44	0.26	0.21
	Probable	4.48	5.13	0.74	0.59
	Proven + Probable	5.74	5.42	1.00	0.80
Total	**Proven**	**11.23**	**2.88**	**1.04**	**0.83**
	Probable	**11.97**	**3.10**	**1.19**	**0.95**
	Proven + Probable	**23.20**	**2.99**	**2.23**	**1.79**

Notes

1. Mineral Reserves are reported on a 100% and attributable basis. Attributable refers to the quantity attributable to Barrick based on Barrick's 80% interest on each of SOMILO and Gounkoto SA.
2. All Mineral Reserves are reported at a gold price of $1,300/oz Au.
3. Open pit Mineral Reserves are reported at a weighted average cut-off grade of 0.96 g/t Au, including dilution and ore loss factors. Underground Mineral Reserves are reported at an average cut-off grade of 2.70 g/t Au for Gounkoto Underground.
4. Open pit Mineral Reserves were estimated by Derek Holm, FSAIMM, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP. Underground Mineral Reserves were estimated by Ismail Traore, MSc, FAusIMM, M.B. Law, DES, an officer of Barrick and QP, and reviewed by Richard Peattie, M.Phil, FAusIMM, an officer of Barrick and QP.
5. Numbers may not add due to rounding. Tonnes and contained gold are rounded to 2 significant figures. All Proved and Probable grades are reported to 2 decimal places.

Stockpiles

Details of surface stockpiles of ore sourced from open pits and underground are presented in Table 15-24. As the ore from Loulo is combined with some of the ore from Gounkoto, the totals from the two properties are combined and are already reported under the Gounkoto Mineral Reserves.

Table 15-24 Loulo-Gounkoto Surface Stockpile Breakdown as of 31 December 2022

Stockpile	Tonnes (kt)	Grade (g/t Au)	Contained Gold (koz)
Gounkoto Ore Stockpiles	6,041.68	1.79	346.97
Loulo Ore Stockpiles	2,046.30	1.71	112.73

Reconciliation

The current 2022 Mineral Reserve estimates were compared to the prior 2021 Mineral Reserve estimates. This comparison was made across mining methods given the nature of the comparative changes. The changes for open pit and underground Mineral Reserves are summarised in Table 15-25 and Table 15-26, respectively.

Table 15-25 Loulo-Gounkoto Open Pit Mineral Reserve Changes (100% attributable)

		Tonnage (Mt)	Grade (g/t Au)	Contained Gold (Moz)	Comments
	2021 Declared Reserves	**63.81**	**4.06**	**8.33**	2021 Declared Reserves
Mining Depletion	**Gounkoto**	(2.64)	2.39	(0.20)	Gounkoto OP, Gounkoto UG 2022 Actual depletion
	Loulo	(3.94)	3.89	(0.49)	Loulo UG 2022 Actual depletion
	Total	**(6.59)**	**3.29**	**(0.70)**	
Model Changes/Additions	**Gounkoto**	3.38	1.28	0.14	Gounkoto model losses after drilling, Model gains in Gara and Faraba after drilling in 2022 Gounkoto material gain from MZ2 FW2&3 as well as HW1
	Loulo	2.40	4.64	0.36	Yalea additional material gain mainly on the carbonate unit as well as on Transfer Zone
					Gara material gain from South B ramp zone upper area from GC drilling
	Total	**5.78**	**2.67**	**0.50**	
		(0.16)	**3.52**	**(0.02)**	Gara Dilution and ore loss parameters changes (ore loss change from 4% to 5% and 1.3 metres dilution applied to close up blocks) Yalea Actual YTD Geotechnical Losses
	Total	**(0.16)**	**3.52**	**(0.02)**	
Inflation	**Gounkoto**	(0.65)	2.38	(0.05)	Faraba COG changes Change Link to Economical-Inflation
	Loulo	(3.11)	2.31	(0.23)	Yalea, Gara West COG changes Change Link to Economical-Inflation
	Total	**(3.76)**	**2.32**	**(0.28)**	
Gold Price Change	**Gounkoto**	**1.75**	**2.14**	**0.12**	Impact of price change from $1,200 to $1,300
	Loulo	**4.29**	**2.54**	**0.35**	Impact of price change from $1,200 to $1,300
Stockpile Change	**Loulo-Gounkoto**	**1.37**	**(0.46)**	**(0.02)**	Stockpile change
	2022 Declared Reserves	**66.97**	**3.87**	**8.34**	2022 Declared Reserves
2022 vs 2021		**3.16**	**0.12**	**0.01**	
2022 vs 2021 in %		**4.95%**	**-4.58%**	**0.14%**	

Table 15-26 Underground Mineral Reserve Comparison to Previous Estimate (100% attributable)

Yalea Underground			
Yalea–Underground-Change	**Tonnes (Mt)**	**Grade (g/t Au)**	**Ounces (Moz Au)**
December 2021 Declared Reserves	**17.15**	**5.44**	**3.00**
December 2022 Mining Depletion	(1.37)	5.68	(0.25)
Model Changes/Additions	0.37	13.47	0.16
Economic-Inflation/Cut-off Grade Changes	(1.15)	2.69	(0.10)
Gold Price Changes	(1.02)	2.71	0.09
Design Changes	(0.14)	3.36	(0.01)
December 2022 Mineral Reserve Estimate	**15.88**	**5.67**	**2.88**
Gara Underground			
Gara–Underground-Change	**Tonnes (Mt)**	**Grade (g/t Au)**	**Ounces (Moz Au)**
December 2021 Declared Reserves	**14.37**	**3.90**	**1.80**
Mining Depletion	(1.35)	3.60	(0.16)
Model Changes/Additions	0.88	4.71	0.13
Economic-Inflation/Cut-off Grade Changes	(1.48)	(2.49)	(0.12)
Gold Price Changes	1.16	2.51	0.09
Design Changes	(0.02)	4.49	(0.00)
December 2022 Mineral Reserve Estimate	**13.54**	**4.02**	**1.75**
Gounkoto Underground			
Gounkoto–Underground-Change	**Tonnes (Mt)**	**Grade (g/t Au)**	**Ounces (Moz Au)**
December 2021 Declared Reserves	**5.15**	**5.63**	**0.93**
Mining Depletion	(0.13)	(3.34)	(0.01)
Model Changes/Additions	(0.48)	(3.90)	0.06
Economic-Inflation/Cut-off Grade Changes	(0.49)	(2.85)	(0.04)
Gold Price Changes	(0.72)	(2.81)	(0.07)
Design Changes			
December 2022 Mineral Reserve Estimate	**(5.74)**	**(5.42)**	**(1.00)**
Total Underground			
Total–Underground-Change	**Tonnes (Mt)**	**Grade (g/t Au)**	**Ounces (Moz Au)**
December 2021 Declared Reserves	36.67	4.86	5.73
December 2022 Mineral Reserve Estimate	35.16	4.98	5.63

16 Mining Methods

16.1 Summary

The Loulo-Gounkoto Complex comprises both open pit and underground mining operations. The general layout of the Loulo and Gounkoto mines is shown in Figure 16-1, in relation to site infrastructure.

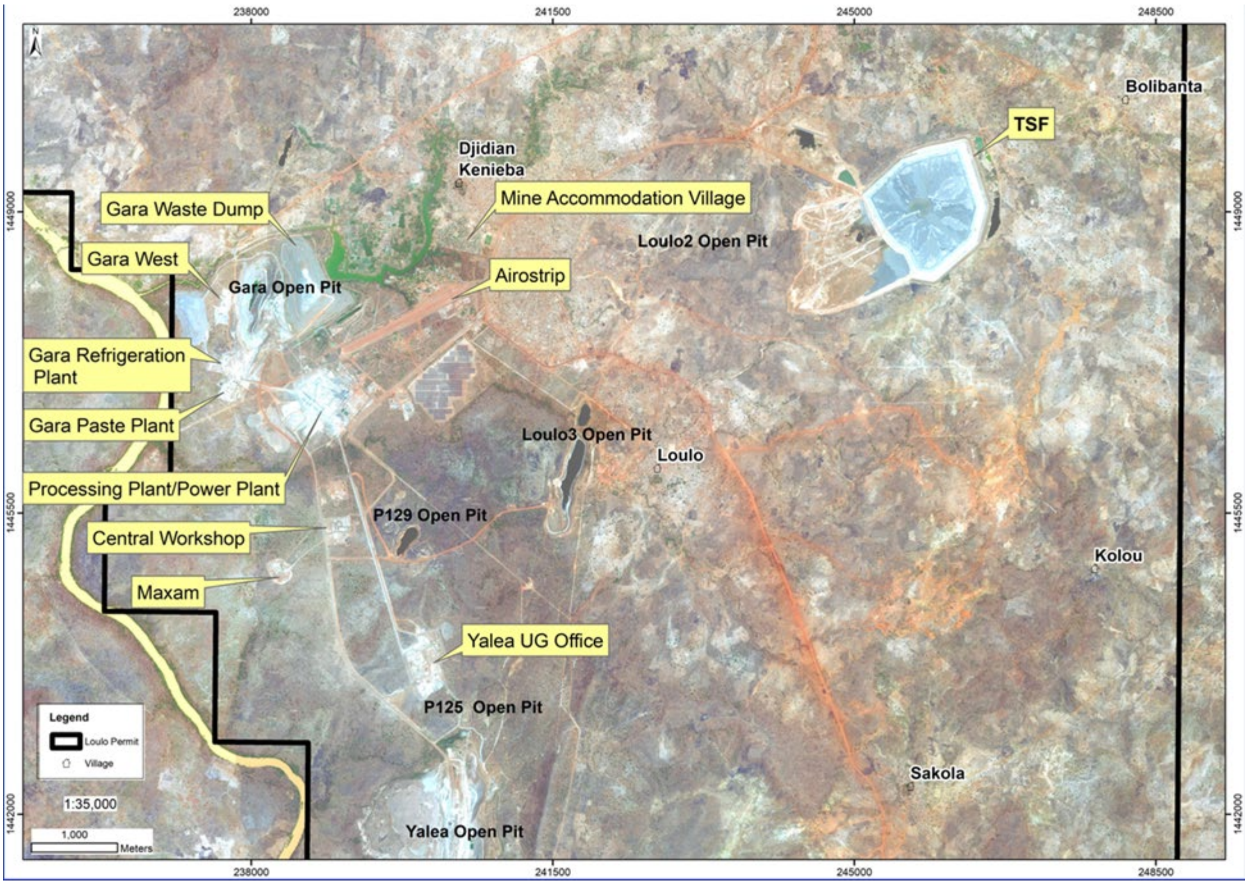


Figure 16-1 Loulo Major Infrastructure Locations

16.2 Open Pit Mining

Open pit mining is carried out using conventional drill, blast, load, and haul surface mining methods. Mining of the main pits is carried out by GMS, a mining contractor.

From 2022 onwards, open pit production will be from the Gounkoto, Yalea South pit, Gara West pit, Loulo 3, Faraba pits, and Baboto pits. The Gara main pit and Yalea pit are completely mined out, although the Yalea South is planned for 2023 in the LOM.

The upper levels of the open pits are usually in weathered material, which typically is free digging material. Once fresh (un-weathered) rock is encountered, drilling and blasting is required.

Emulsion explosives are supplied as a down-the-hole service by the mine's explosive contractor Maxam.

Ten-metre benches are used in both the free dig material in the upper levels and in the harder ground that requires drilling and blasting. The 10 m benches containing ore are excavated in three flitches of equal height.

Local mining contractors are mining ore and waste from the Gounkoto and Gara West pits and will do so until the pits are exhausted. Mining operations are carried out seven days per week, three shifts per day, utilising four shift crews.

The contractor complement is 638 people, working in teams for load and haul, drilling and blasting, plant maintenance of equipment, administration, and Environmental, Health and Safety (EHS).

Mining is done with Liebherr 9350 excavators equipped with 14 m buckets loading 90 t capacity Caterpillar 777 or Komatsu 785HD trucks. Mining operations are monitored and controlled using an office-based modular dispatch system.

Production drilling is done by the contractor on a 6 m by 6 m pattern, with holes drilled to a depth of 11.6 m (10 m bench height plus 1.6 m sub-drill). Controlled presplit drilling and buffer line blasting is practised against final walls. The blasting contractor, Maxam, charges holes with emulsion which are detonated using an electronic blasting system to control the blast movement.

Dilution is controlled through blast patterns that are entirely in ore, the use of electronic blasting detonators to reduce blast movements, through the sizing of equipment and through the help of spotters who monitor the mining process.

Fleet

The contractor mining fleet is presented in Table 16-1 for 2022, 2023, and 2024-2026. The maintenance schedule allows for some annual rebuilds of the equipment each year.

In the opinion of the QP, the fleet size is adequate to achieve the LOM production targets based on Mineral Reserves.

Table 16-1 Current Primary Open Pit Mine Equipment Fleet

Fleet	Current Quantity 2022	Planned 2023	Planned 2024-2026
Liebherr 9350 Excavators	4	4	4
Liebherr9250 Excavators	1	1	0
Small Excavators	4	4	4
Caterpillar 777D + HD785 DUMP Trucks	7 + 16	7 + 16	7 + 16
Caterpillar 992WHEEL Loaders	1	1	1

Fleet	Current Quantity	Planned	Planned
	2022	2023	2024-2026
Caterpillar D9R Dozer	9	9	9
Caterpillar 16M Graders	4	4	4
Caterpillar 834 Pusher	0	0	0
Blast Drill Rigs	8	8	8
Water Bowsers	2	2	2

Planned Pits

Multiple pits will be mined over the LOM, scheduled to create a practical production profile. The total ore and waste tonnes scheduled over the LOM are given in Table 16-2:

Table 16-2 Loulo-Gounkoto Open Pits Estimated Ore and Waste

Gounkoto Open Pit	Ore		Waste	Total	
	Tonnes	Grade	Tonnes	Tonnes	Stripping Ratio
	(Mt)	(g/t Au)	(Mt)	(Mt)	
Gounkoto Surface Operations					
Gounkoto	2.0	5.1	11.1	13.1	5.6
Faraba pits	7.4	1.9	70.6	78.00	9.5
Loulo Surface Operations					
Yalea South pit	4.6	4.6	142.5	147.1	31
Loulo 3	5.2	2.8	101.0	106.2	19.4
Gara West pit	2.2	2.1	23.4	25.6	10.6
Baboto pit	2.4	2.4	7.9	10.2	3.3
Total	**23.8**	**3.95**	**356.5**	**380.2**	**15.0**

Waste Dumps

An estimated 356 Mt of waste will be mined over the remaining LOM based on Mineral Reserves.

The evaluated capacity of the Loulo-Gounkoto planned waste dumps (370.3 Mm^3) is enough for the estimated LOM waste tonnes. A swell factor of 20% was used to estimate the dump capacities. Where necessary, haul roads were adjusted to ensure access from pit exits.

In 2022, in-pit dumping was carried out in the Gounkoto South pit and will continue to 2025, where it will be later used by the Gounkoto underground operation. Future work will consider using some of the mined-out satellite pits for waste dumping to reduce the mining cost.

Table 16-3 summarises the estimated waste dump capacities.

Table 16-3 Waste Dump Capacities

	Planned Future Waste Capacity (Mt)
Gounkoto Waste Dump	
Gounkoto	11.1
Faraba	70.6
Loulo Waste Dump	
Yalea South	147.1
Loulo 3	106.2
Baboto	10.3
Gara West	25.6
Total	**370.9**

16.3 Underground Mining

The Loulo operation consists of two established underground mines, namely Yalea and Gara. An additional underground mine, Gounkoto, is part of the Gounkoto Mine. All three mines employ a similar mining method and can share equipment as required. All three feed the same processing plant. As such, while the Loulo and Gounkoto properties are separate, the three mines are described together in this report.

The underground mines are accessed with twin declines. Further to this, stopes are accessed by multiple ramps developed at approximately 500 m intervals along strike. This limits loader tramming to a maximum of 250 m. The sub-level spacing varies between 25 m and 20 m. Generally, newer areas are 25 m apart while older areas, crown pillar areas, and geotechnically complex areas are 20 m apart.

The mine design incorporates a minimum 50 m stand-off between the ramps and the stopes. This distance minimises the potential damage due to ground stress changes and stope blasting. This stand-off also allows for the excavation of the level accesses and cubbies for stockpiles and sumps.

Geotechnical Design

Rock Mass Modelling

Frequent geotechnical rock mass modelling is done for both Yalea, Gara, and Gounkoto to extend and update the current 3D models with significant geotechnical structures.

Gounkoto Rock Mass Model

In 2022, the Gounkoto mining rock mass model has been updated with significant geotechnical structures and relevant rock mass parameters and ratings.

The Gounkoto rock mass characteristics can be summarised as:

- The weathered units are classified as Poor to Very Poor with average Rock Mass Rating (RMR) values between 14 and 39 and Q' between 0.2 and 4.5.
- The rock units are classified as Fair to Good with average RMR values between 48 and 67 and Q' values between 10 and 31.
- The geotechnical features and faults are classified as Very Poor to Poor with RMR values in the range of 27 to 39 and Q' between 0.6 and 4.3.

Yalea Underground Rock Mass Model

Most of the hanging wall rock mass is classified as Fair to Good rock using the Q-system.

The rock mass in the hanging wall of Yalea is more competent than the footwall mainly due to the presence of the footwall structure striking parallel to the orebody, approximately 50 m away.

Gara Rock Mass Model

The immediate hanging wall and footwall of the Gara orebody are classified as Poor to Fair with Q ranging from 2 to 20.

The hanging wall shear is classified as Poor ground, however, it moves to Fair ground below -400 mRL with localised Poor ground.

On the far south, the surrounding of the orebody is mainly classified as Fair rock mass quality.

With the inflexion of the Gara orebody, the Fair rock mass footwall becomes poorer quality.

Recent Geotechnical Modelling

Most of the actions resulting from the LOM numerical modelling have been implemented including the following:

- Mining sequence reviewed from bottom up to top down and advancing face and stope strike lengths changed to 30 m.
- An additional South C decline added on Yalea Far South and additional South A decline added on Yalea South.
- Ladder raises eliminated and slashing slots introduced, eliminating exposure of personnel to rockburst hazards.

- Trigger Action Response Plan (TARP) System for managing rockburst hazards at the source implemented at both Yalea and Gara.
- Damage mapping for development of geotechnical damage model completed.
- Laser scanning to determine rock mass deformation implemented in both Yalea and Gara.
- Ground support regimes reviewed with dynamic bolt capacity completed.
- Seismic System Implementation completed at Yalea in Q4 2020.
- Laboratory Rock Strength Testing completed at Yalea in Q4 2021.
- Numerical modelling of the reviewed mining sequences with the last budget model for Yalea – Action completed by Beck Engineering.
- MDX Bolt introduced in November 2020 as dynamic support; 44% of ground support will be yielding bolts used in yielding rock mass conditions and 56% will be stiff support used in static rock mass conditions (ongoing).
- Point measurements such as extensometers implemented in Q3 2022.

The recommendations remaining to be implemented in 2023 include the following:

- Seismic System implementation at Gara (Q4 2023).
- Laboratory rock strength testing for Gara (Q2 2023).
- Plan for expansion of Yalea seismic system (Q1 2023).
- Mine design changes to some limited areas in Yalea South and Far South (throughout the year)

Recommendations were made to change some of the mining sequence to bottom up, to change some of the level spacings, and to backfill in order to control surface drainage issues, amongst others.

Ground Support

The ground support regime adopted at Yalea, Gara, and Gounkoto takes into consideration several factors including: the expected service life of excavations, the geology, hydrogeological conditions, rock mass classification data (Barton's Q Classification), structural analysis, seismic considerations, and size of the excavations.

The ground support regime adopted for Loulo-Gounkoto is presented in Table 16-4.

Table 16-4 Loulo/Gounkoto Ground Support Regime

Development Types	Surface Support	Ground Reinforcement	Ring Spacing by Bolt Spacing
Return Air Raise Cross Cuts, Footwall Drives (5.5 m x 5.5 m), Diamond Drill Cubby 5 m x 5 m, Ore Drive 5 m x 5.5 m	4 sheet of Mesh across the backs & walls at 4.5 m above the floor	9 Split sets, 2.4 m long per ring in backs and walls	1.1 m x 1.4 m

Development Types	Surface Support	Ground Reinforcement	Ring Spacing by Bolt Spacing
Stockpile 5.5 m x 6 m, Sump 5 m x 5.5 m	3 sheet of Mesh across the backs & walls at 5.3 m above the floor	7 Split sets, 2.4 m long per ring in backs and walls	1.1 m x 1.4 m
Vehicle Decline, Footwall Drive 5.5 m x 6 m, Return Air Raise, Conveyor Decline 6m x 5.5 m	6 sheet of Mesh across the backs & walls at 1.5 m above the floor	13 Grouted or nine Split sets, 2.4m long per ring in backs and walls	1.1 m x 1.4 m
High Stress Zone Vehicle Decline, Footwall Drive 5.5 m x 6 m, High Stress Zone Mineral Drive 5 mx 6 m	6 sheet of Mesh across the backs & walls at 1.5 m above the floor	7 MDX bolt and 6 Split sets, 2.4 m long per ring in backs and walls	1.1 m x 1.4 m
Four Way or Three Way Intersection for 5.5 m or 6 m wide Drives	Sheet of Mesh across the backs & walls	6 m twin-strand cable bolts	2.5 m x 2.5 m

Yalea

On a 100% basis, the Yalea underground mine is a long hole stoping operation producing at a rate of approximately 1.4 Mtpa of ore. Development commenced in 2007, stoping commenced in 2008, and production has ramped up to 1.4 Mt in 2013 on a 100% basis.

The mine is accessed via twin declines starting in the Yalea open pits. One is a conveyor decline and the other is used for mobile equipment. The lower part of the mine has been developed through a number of single ramps for truck haulage up to crushers located approximately 350 m below surface which feed ore and waste onto the conveyors.

The historical mining tonnage of the Yalea underground mine is presented in Figure 16-2:

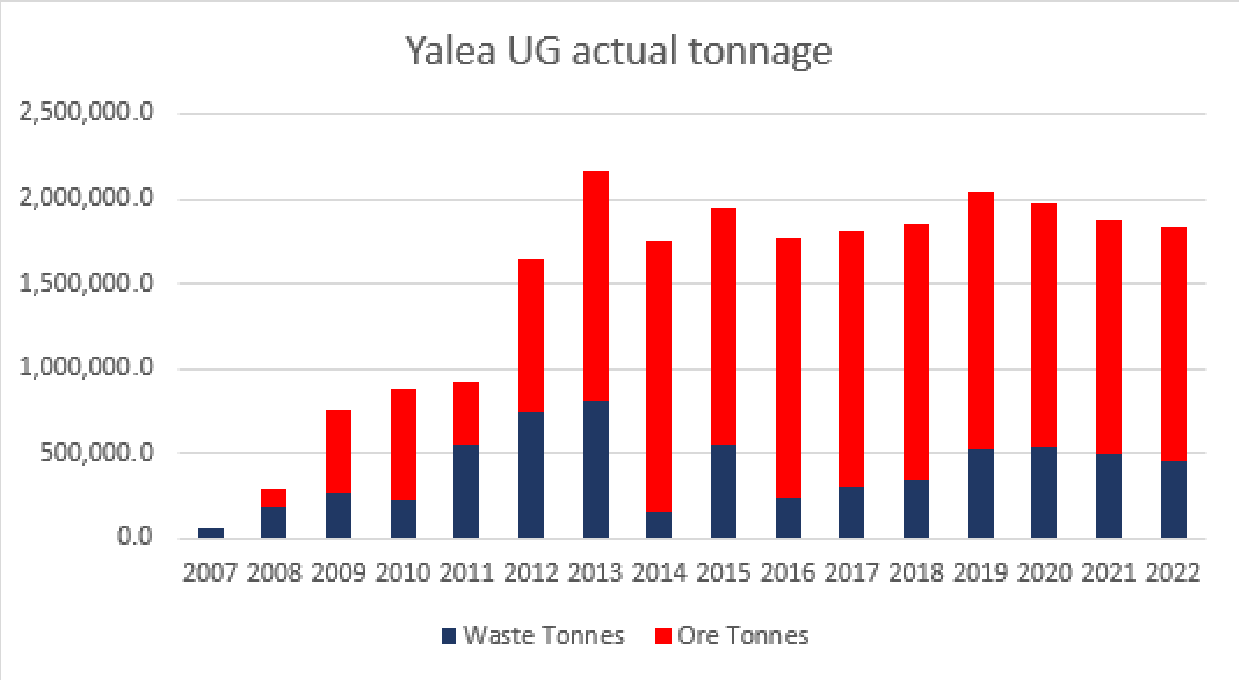


Figure 16-2 Historical Mining Tonnage of Yalea Underground Mine

Figure 16-3 shows the existing (as of 31 December 2022) mine and the planned LOM development at Yalea.

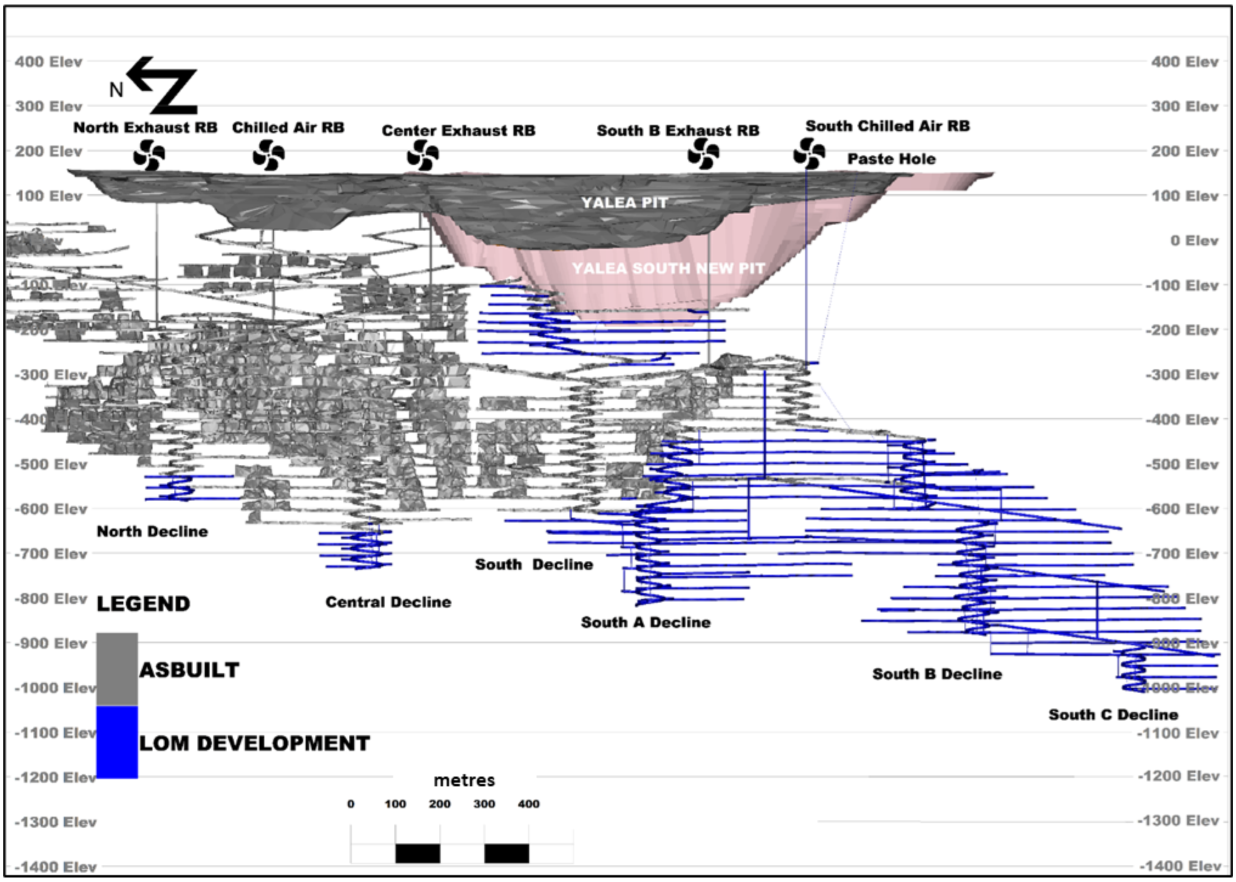


Figure 16-3 Yalea Underground Existing Mine (as built, end of 2022), Infrastructure, and Planned LOM Development

Dilution and Mining Loss Improvement

Loulo has made a significant effort toward improving the drill and blasting practices. The continuous optimisation of the drill and blast designs has been providing step improvement in the mining practices over time.

Further improvement initiatives include the following.

- Paste dilution reduction through:
  - Leaving crush pillars on a case-by-case basis to avoid significant paste failure.
  - Increasing the binder percentage in the case of a cold joint formation.
  - Implementation of slag cement.
- Waste rock dilution reduction through:
  - Leaving stand-off distance from the structures and weak rock mass based on the DRS model in order to mitigate the impact of higher explosive energy on the weak rock mass.
  - Implementation of blast liner in blastholes close to fractured zones or high stress footwall dominant to prevent seepage of explosive into the cracked areas and avoid over-break into the walls.
  - Installing the cable bolts in the top and bottom of ore drives to help stabilise footwall structures and hanging wall shears.

- Reducing the strike length of stopes from 30 m to 20 m in geotechnically challenging ground to reduce the exposure period and the hydraulic radius.
- Implementing electronic firing in weak ground and highly stressed zones to help produce smooth walls and less vibration, reducing dilution.
- Implementing a blast vibration monitor to detect the amplitude of blast waves and the energy release, and to use analysis to reduce the impact of energy on the walls.

- Mining loss reduction through:
    - The implementation of an emulsion QA/QC system to manage temperature, viscosity, cup density, and gazing test, on surface and underground, has significantly improved blasting. This monitoring will continue going forward to avoid rock bridges which cause ore losses.
    - Drilling of de-stress holes in highly stressed areas prior to production drilling reduces the frequency of hole collapses and improves drilling efficiency.
    - Dewatering stopes by drilling drainage holes from the stopes above. Extending reamers holes to break through into the stopes above ensure that water from the paste filled stopes is drained prior to charging.
    - Drilling of up and down holes in flat dipping stopes (stope less than 45° dip) to improve mining recovery.

Gara

On a 100% basis, the Gara underground mine is a long hole stoping operation producing at a rate of 1.3 Mtpa of ore. Development began in 2010, with production gradually ramping up to 1.2 Mt in 2017 and 1.3 Mt in 2020 (on a 100% basis).

Similar to Yalea, the Gara underground mine is accessed via twin declines from the pit base. One of these is a conveyor decline and the other a trucking decline. The lower part of the mines has been developed as single declines with truck haulage up to crushers which feed ore and waste onto the conveyor. Currently, the crushers are 220 m below surface at 90 Level.

The historical mining tonnage of the Gara underground mine is presented in Figure 16-4.

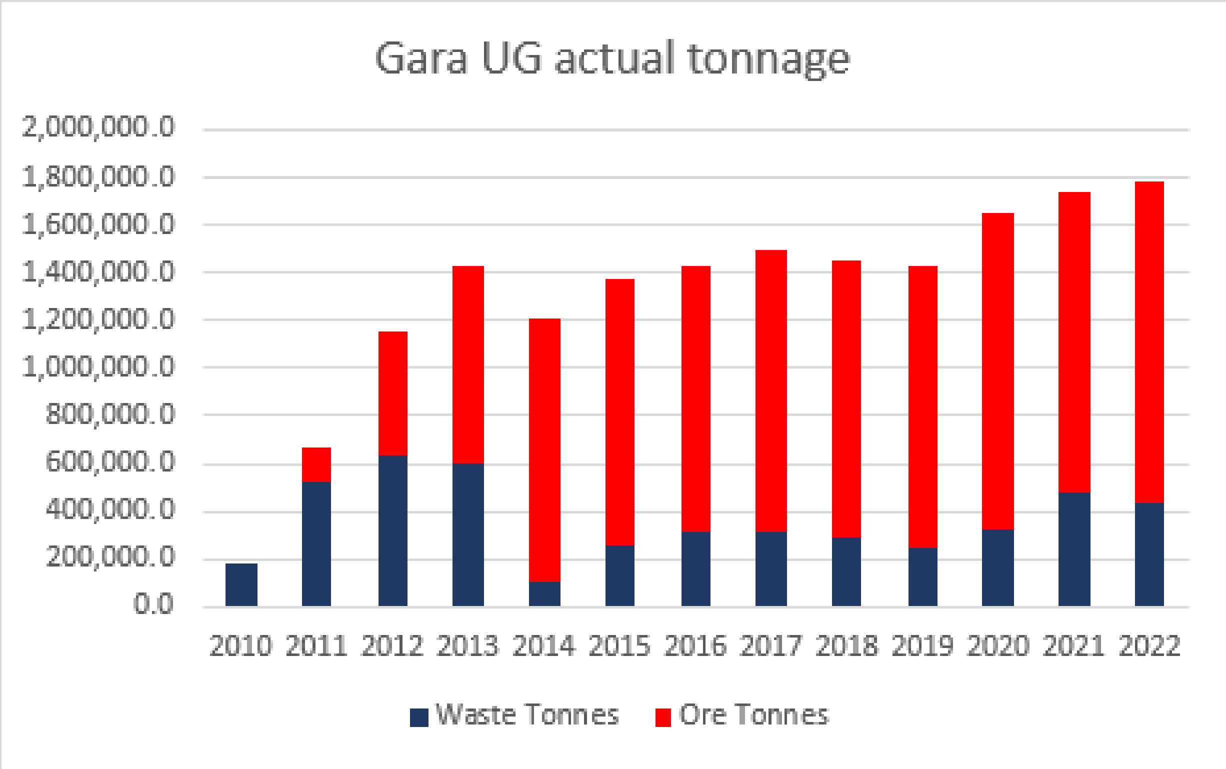


Figure 16-4 Gara Underground Mining Tonnes (Mineral and Waste) History

Figure 16-5 shows the existing (as of 31 December 2022) mine and the planned LOM development at Gara.

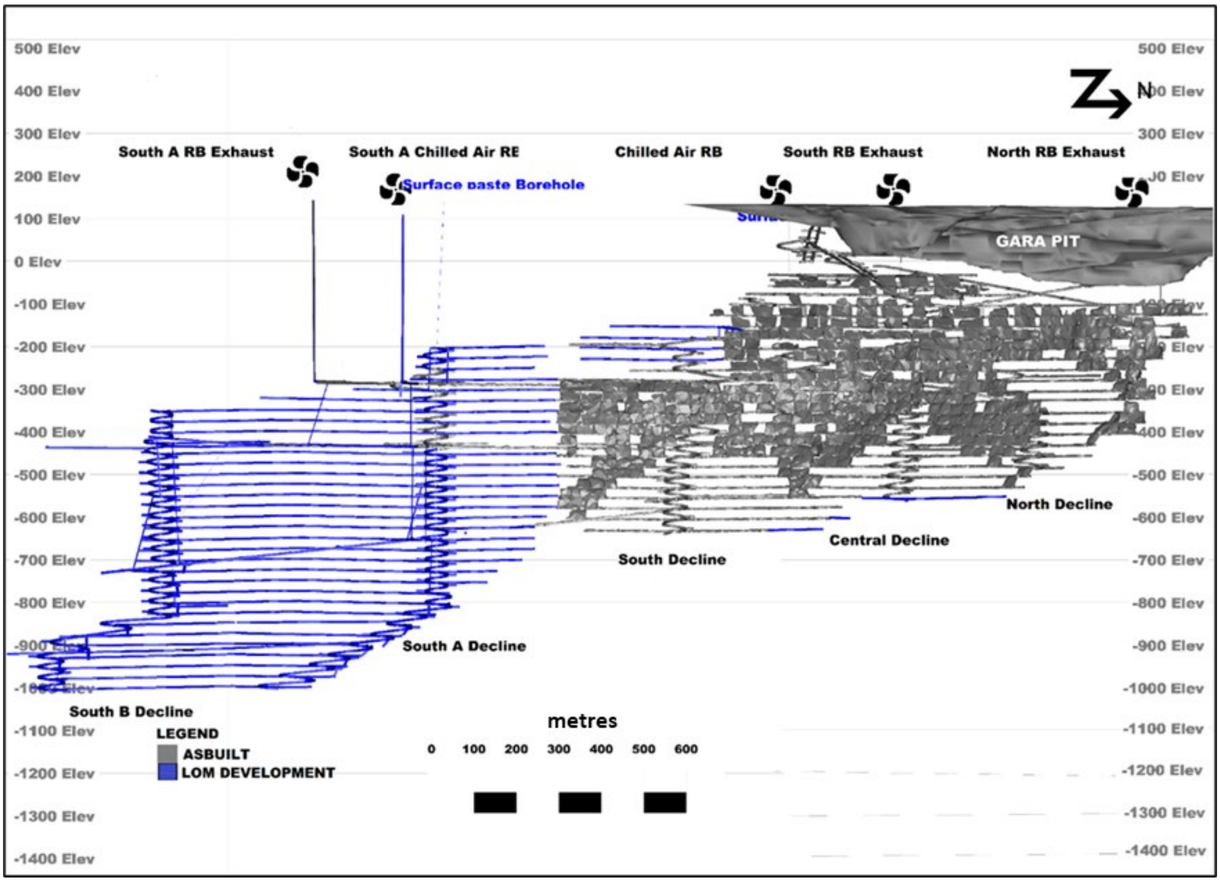


Figure 16-5 Gara Underground Existing Mine (as built end of 2022), Infrastructure, and Planned LOM Development

Gounkoto

The Gounkoto underground mine is accessed with a single ramp, of which various other ramps access four main deposit zones.

Longitudinal long hole mining method with paste fill will be used, except in the wider zone where a primary-secondary method with fill will be used. This will be at the same 25 m sub-level spacing as in the other operations.

The 60 m thick crown pillar below the base of the pit will be mined first and then backfilled. A smaller 20 m sub-level spacing is planned in this zone as poor-quality rock conditions are anticipated.

Development commenced in 2020, with first ore produced in 2021. The historical mining tonnage of Gounkoto is presented in Figure 16-6.

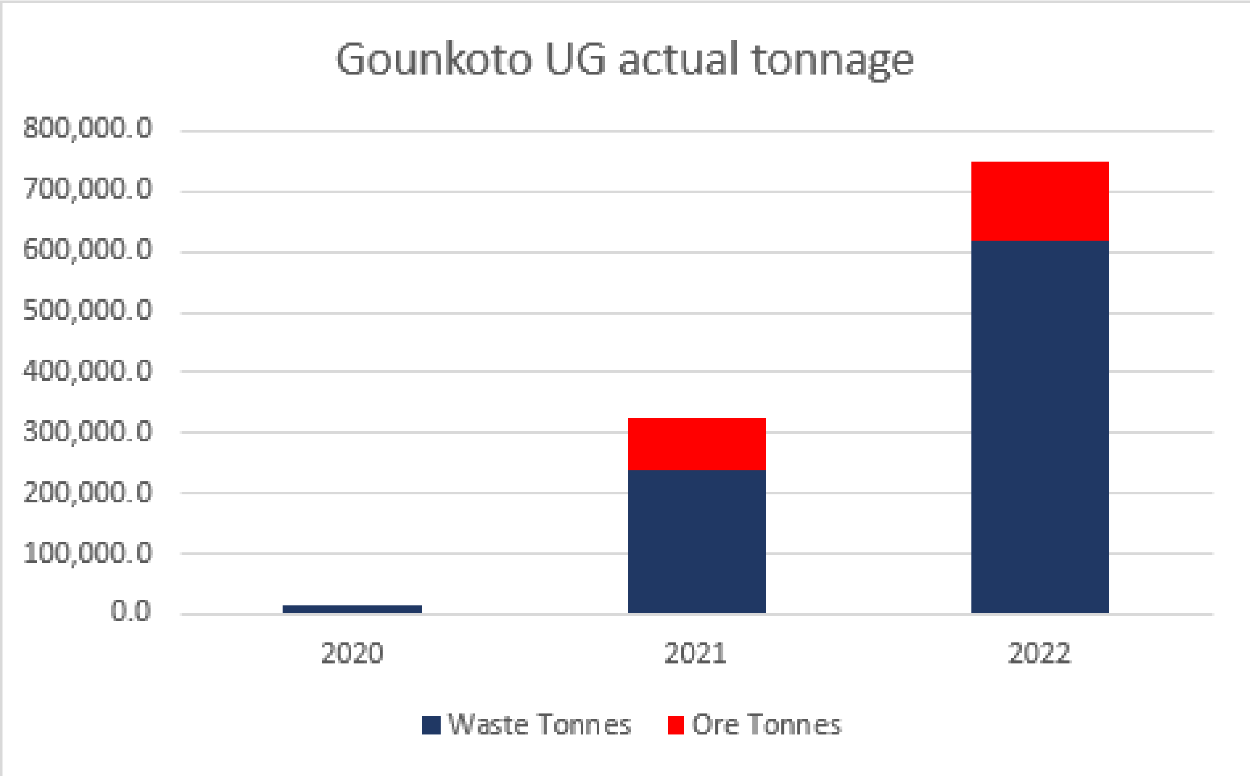


Figure 16-6 Gounkoto Underground Mining Tonnes (Mineral and Waste) History

Figure 16-7 shows the existing (as of 31 December 2022) mine and the planned LOM development at Gounkoto.

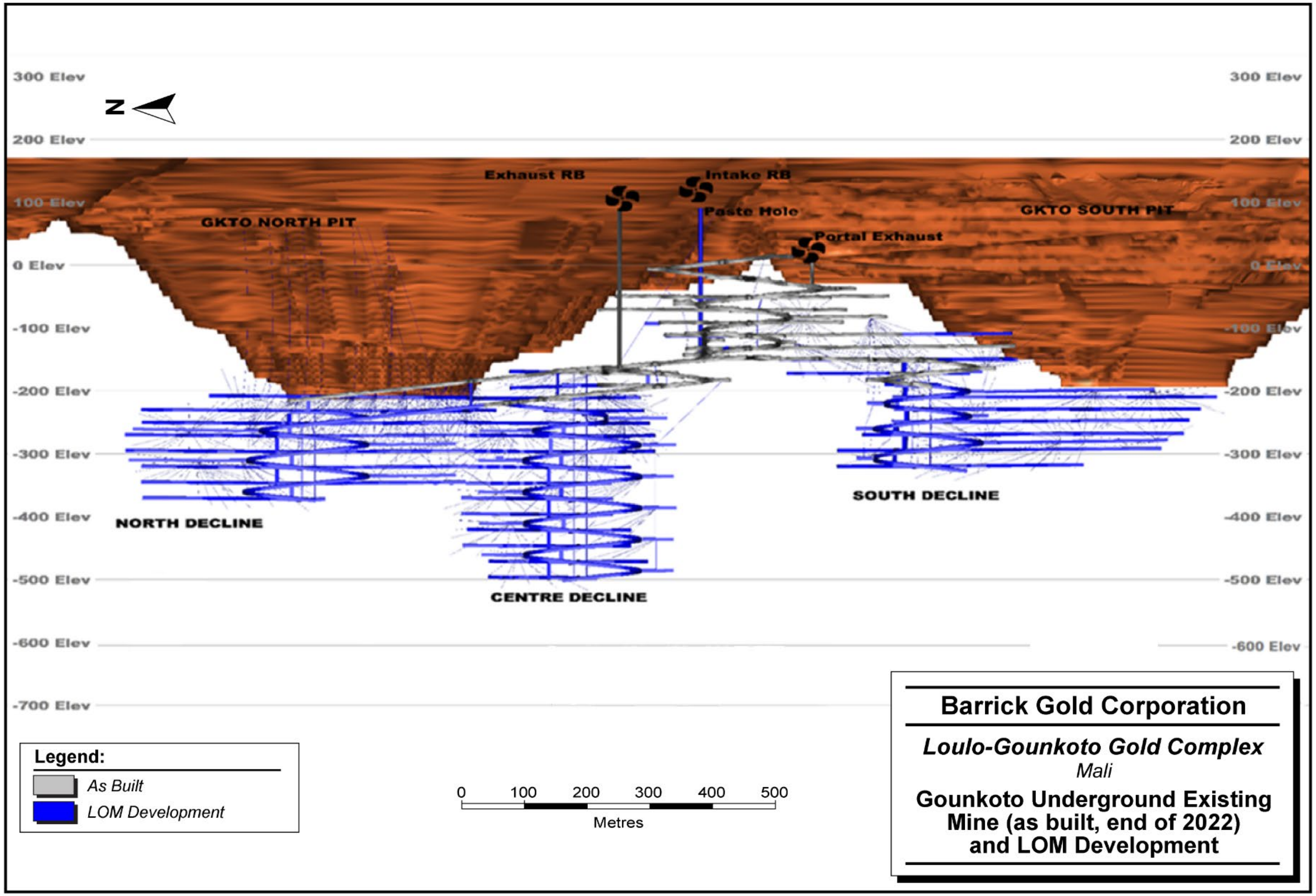


Figure 16-7 Gounkoto Underground Existing Mine (as built, end of 2022) and LOM Development

Stoping

The mining method employed at all three operations is similar, with the general approach being as follows:

- Development is undertaken using two twin boom jumbos at each mine. The development cycle consists of the drilling, charging, firing, mucking, and supporting of the development faces. One jumbo drills the production round while the other drills and installs the ground supports. The drilling cycle takes three to four hours per development face. Once drilling is completed, the face is charged with a MacLean charger which takes one to two hours.
- The stoping cycle consists of cable bolting (where required), drilling, charging, firing, and mucking of the stope to the stockpile or to the truck. Cable bolting usually takes place prior to drilling and consists of supporting the stope crown, hanging wall, or stope brow. The cable bolting and grouting is done a rate of 150 m/day to 200 m/day. Production drilling is completed with two rigs at both Yalea and Gara, with Gounkoto to follow in the future. Drilling is done at a rate of 250 m/day to 300 m/day.
- Holes are charged up with emulsion, using a dedicated crew and loader.
- Emulsion is used for stoping and development, while in stope blasting, both electric and electronic detonators are used. Both are blasted at the end of the shift.
- Broken rock is loaded by six LHDs at Yalea, six LHDs at Gara, and four LHDs at Gounkoto. The loaders are shared across development, stope production, and crusher loading. Broken rock is usually loaded into a re-handling cubby before being loaded onto a truck. Both tele remote and conventional loaders are used.
- Rock is hauled by six trucks at Yalea and at Gara, while four are expected for Gounkoto once it is in full production. At Yalea and Gara, rock is hauled either to the crusher tip or to the portal. From the crusher, material is conveyed to the surface or to the ROM pad. At Gounkoto, material is hauled and dumped just beyond the portal, from where it is hauled by a separate fleet to a surface crusher and then transported to the Loulo processing plant by a contractor truck.

Fleet

The underground equipment consists mainly of development drills, production drills, trucks, LHDs, some of which are remote configured and some of which are fully automated, and auxiliary equipment (Getman, Mancleans, etc.). A list of underground equipment is presented in Table 16-5 for Loulo (Yalea and Gara) and Table 16-6 for Gounkoto.

Table 16-5 Loulo Underground Mining Equipment

Loulo Underground Equipment (Yalea and Gara)					
Manufacturer	**Model**	**Type**	**Number**	**Yalea Underground**	**Gara Underground**
Sandvik	TH663i	Truck	12	6	6
Sandvik	LH621	Loader	6	2	4
Sandvik	LH621i	Loader	7	5	2
Sandvik	DL421	Drill	5	2	2
Sandvik	DL421i	Drill	1	1	0
Sandvik	DD421	Drill	6	3	3
Sandvik	DS421	Drill	2	1	1
Sandvik	DU411	Drill	1	1	
Caterpillar	120K	Grader	3	2	1
Normet	Spraymec	Shotcreter	1	1	0
MacLean	Trans mixer	Mixer truck	1	1	0
Getman	A64	Scissor Lift	2	1	1
MacLean	EC3-026	Explosives Charger	1	1	0
MacLean	EC3	Explosives Charger	2	0	2
Getman	A64	Explosives Charger	2	1	1
Getman	Spraymec	Shotcreter	1	0	1

Table 16-6 Gounkoto Underground Mining Equipment

Gounkoto UG Equipment			
Manufacturer	**Model**	**Type**	**Number**
Sandvik	TH663i	Truck	2
Sandvik	LH621i	Loader	2
Sandvik	DD421	Drill	2
Caterpillar	120K	Grader	1
Normet	Spraymec	Shotcreter	1
MacLean	CML 12	Mixer truck	1
MacLean	EC3-026	Explosives Charger	1

16.4 Life of Mine Production Schedule

Open Pits

Production Scheduling

The six Mineral Reserve pit designs were scheduled with their respective updated block models with cut-off grades in Evolution software for the 2022 LOM schedule and budget. The mine schedule was based on a marginal grade cut-off. Material classes for various material types were created with different grade categorisation of high, medium, and low grades. These categorisations were based on the grade and tonnage distribution of ore in each deposit.

The mine schedule was generated based on basic mining productivity per month, modified for the impact of rainfall, which results in 10 to 15 lost hours per month over approximately four months each year. The overall schedule was created from a combination of production volumes from various pits, in order to maximise annual mill ore feed.

LOM Schedule

The mining sequence for the Loulo and Gounkoto open pits incorporates the planned Gounkoto underground production, expected to continue ramping-up in 2023. The combined annual production target is approximately above 500 koz from 2023 onwards (on a 100% basis). Production from the Gounkoto open pit has been slowed down from 2023 to 2025 in order to maintain a 45 m crown pillar between the bottom of the pit and the underground workings. This will allow the crown pillar to be more effectively mined through the underground workings. The first stage of the Gara West pit was finished and the pit will be re-started in 2024 following further GC drilling.

Based only on Mineral Reserves, Loulo-Gounkoto annual gold production is planned to be approximately +500 koz Au per year for 10 years (on a 100% basis) as summarised in Table 16-7.

Table 16-7 Loulo-Gounkoto Open Pit LOM Mining Schedule Based on Mineral Reserves (100% Basis)

Open Pit	Total	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Total OP Waste (Mt)	356.6	24.2	29.7	36.4	38.0	51.1	35.6	35.0	52.4	19.5	16.7	10.5	7.4
Total OP Ore (Mt)	23.7	1.1	1.4	0.8	1.4	1.8	4.4	0.7	4.4	2.7	2.8	0.7	1.4
Total (Ore + Waste)	380.3	25.3	31.1	37.3	39.4	53.0	40.1	35.7	56.7	22.2	19.6	11.3	8.8
Average Strip Ratio (t:t)	15.0	21.6	21.4	43.3	26.9	27.8	8.0	52.3	12.0	7.3	5.9	14.2	5.3
OP Grade Mined (g/t Au)	2.9	3.0	3.8	4.9	2.2	4.1	4.1	2.1	2.5	1.8	3.1	2.5	0.4
Total OP Ounces (Moz Au)	2.2	0.1	0.2	0.1	0.1	0.2	0.6	0.0	0.3	0.2	0.3	0.1	0.0

Underground Mine

Production Schedule

The underground LOM plan is based upon Proven and Probable Mineral Reserves and was scheduled using Datamine 5DP and EPS software.

To create the production schedule, each evaluated design element in the schedule, such as a stope or part of a development, is assigned a duration or a rate. Durations are used for time dependent activities and rates are used for productivity dependent activities. Resources are assigned to design elements and their capacity is profiled over the LOM to produce a practical schedule.

The underground production schedule is summarised in Table 16-8.

Based only on current Mineral Reserves and on a 100% basis, Yalea, Gara, and Gounkoto Underground are planned to sustain a production rate of 2.6 Mtpa to 3.3 Mtpa for 10 years, tapering off to 2.2 Mtpa in year 11 and 0.6 Mtpa for the last two years.

Table 16-8 Loulo-Gounkoto Underground LOM Mining Schedule Based on Mineral Reserves (100% Basis)

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
Yalea Underground															
Total UG Mineral (Mt)	1.36	1.39	1.28	1.31	1.31	1.33	1.24	1.33	1.35	1.33	1.15	0.63	0.53	0.35	15.89
UG Grade (g/t Au)	6.36	6.02	7.35	6.79	5.42	5.54	5.68	5.86	5.72	5.17	4.15	3.60	4.40	3.84	5.66
Total Contained UG Ounces (Moz)	0.28	0.27	0.30	0.29	0.23	0.24	0.23	0.25	0.25	0.22	0.15	0.07	0.08	0.04	2.89
Gara Underground															
Total UG Mineral (Mt)	1.17	1.14	1.10	1.10	1.06	1.11	1.13	1.24	1.24	1.11	1.10	0.69	0.31	0.04	13.53
UG Grade (g/t Au)	4.21	3.81	3.97	3.77	3.45	3.88	4.08	4.09	4.49	4.33	4.41	3.77	3.47	2.62	4.02
Total Contained UG Ounces (Moz)	0.16	0.14	0.14	0.13	0.12	0.14	0.15	0.16	0.18	0.15	0.16	0.08	0.03	0.00	1.75
Gounkoto Underground															
Total UG Mineral (Mt)	0.78	0.91	0.89	0.98	0.90	0.79	0.35	0.11							5.73
UG Grade (g/t Au)	6.50	6.98	5.23	4.26	4.43	5.21	4.90	8.03							5.42
Total Contained UG Ounces (Moz)	0.16	0.20	0.15	0.13	0.13	0.13	0.05	0.03							1.00

Complex Mine Schedule

Over the Loulo-Gounkoto LOM, a total of 58.9 Mt of ore at 4.16 g/t Au is planned to be mined over 15 years up to 2037. Ore supplied to the plant during this period, including stockpiles, is estimated to be 66.9 Mt at an average grade of 3.87 g/t Au resulting in 7.5 Moz recovered gold at an average processing recovery of 89.5% on a 100% basis. From 2030 onwards, the Gounkoto Underground will be exhausted, and the operation intends to increase the ore mined and delivered to the plant from 5 Mtpa to 6.2 Mtpa to compensate, allowing it to maintain a target production profile of +500 koz per year up to 2032 (on a 100% basis).

The Yalea and Gara operations will continue until 2037, with the Loulo open pits (Yalea South and Loulo 3) mined from 2023 through to 2030. The Gara West pit is planned to be mined out by 2026. The Gounkoto open pit, also referred to as the 'Super Pit', will be mined out in 2025 and the Faraba open pit will be mined beyond 2026. Gounkoto Underground stoping ore is planned in 2023 and mining will continue until 2030.

A LoM plan that is different from the one presented here is used by the mine to guide long term planning. This does include a small proportion of inferred material that is expected to be converted in the future. That plan was not used to declare the Mineral Reserve.

In the QPs' opinion, the parameters used in the Mineral Resource to Mineral Reserve conversion process are reasonable.

Based on current Mineral Reserves only, Table 16-9 presents the integrated 10-year plan and LOM for the Complex from 2023 to 2037 showing when each mine is sequenced to come online and when it is expected to be depleted.

The LOM feed tonnes by source shows that Yalea Underground and Gara Underground will continue to provide ore tonnes to the plant throughout the LOM plan to 2037 with Gounkoto Underground set for ore stoping and delivery to the plant from 2023 to 2030. Supply from open pits to the plant has been mainly driven by the Gounkoto open pits, which is blended from stockpiles and will continue in later years with the addition of the Gara West pits in 2022, Yalea South pits in 2023, and the Loulo 3, Faraba, and Baboto pits beyond 2027.

Table 16-9 Integrated 10-year Plan and LOM Based on Mineral Reserves for the Loulo-Gounkoto Complex from 2023 to 2037 (excluding stockpile contributions)

	LOM	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Waste Mined (Mt)																
Gara	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yalea South	142.5	11.8	21.9	28.3	31.8	30.3	18.5	-	-	-	-	-	-	-	-	-
Loulo 3	101.0	-	-	-	-	20.9	14.5	26.7	39.0	-	-	-	-	-	-	-
Baboto	7.9	-	-	-	-	-	-	-	-	4.5	3.4	-	-	-	-	-
Gara West	23.4	2.9	6.7	7.7	6.2	-	-	-	-	-	-	-	-	-	-	-
Gounkoto	11.1	9.5	1.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-
Faraba	70.6	-	-	-	-	-	2.6	8.3	13.4	15.1	13.3	10.5	7.4	-	-	-
Gara UG	6.4	0.3	0.3	0.3	0.3	0.2	0.2	0.6	0.5	0.5	0.5	0.9	0.8	0.6	0.5	-
Yalea UG	7.4	0.3	0.2	0.2	0.2	0.2	0.2	0.8	0.8	0.8	0.5	0.9	0.9	0.7	0.6	-
Gounkoto UG	2.2	0.4	0.4	0.3	0.5	0.3	0.3	-	-	-	-	-	-	-	-	-
Total Waste	**372.5**	**25.2**	**30.6**	**37.2**	**38.9**	**51.8**	**36.4**	**36.3**	**53.7**	**20.8**	**17.8**	**12.3**	**9.1**	**1.4**	**1.0**	**-**
Ore Mined (Mt)																
Gara	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yalea South	4.6	-	0.1	0.1	0.4	1.3	2.7	-	-	-	-	-	-	-	-	-
Loulo 3	5.2	-	-	-	-	0.5	1.5	0.2	3.0	-	-	-	-	-	-	-
Baboto	2.4	-	-	-	-	-	-	-	-	0.6	1.7	-	-	-	-	-
Gara West	2.2	0.2	0.5	0.5	1.0	-	-	-	-	-	-	-	-	-	-	-
Gounkoto	2.0	0.9	0.8	0.2	-	-	-	-	-	-	-	-	-	-	-	-
Faraba	7.4	-	-	-	-	-	0.3	0.5	1.3	2.0	1.1	0.7	1.4	-	-	-
Gara UG	13.5	1.3	1.3	1.3	1.3	1.3	1.3	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.2	0.2
Yalea UG	15.9	1.4	1.4	1.4	1.5	1.4	1.4	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.2
Gounkoto UG	5.7	0.8	1.1	1.1	0.8	0.8	0.6	0.4	0.1	-	-	-	-	-	-	-
Total Ore	**58.9**	**4.6**	**5.2**	**4.6**	**4.9**	**5.3**	**7.8**	**2.8**	**6.1**	**4.4**	**4.5**	**2.4**	**3.1**	**1.6**	**1.1**	**0.4**

	LOM	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Total Mined (Mt)																
Gara OP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yalea South	147.1	11.8	21.9	28.4	32.2	31.6	21.2	-	-	-	-	-	-	-	-	-
Loulo 3	106.2	-	-	-	-	21.4	16.0	26.8	42.0	-	-	-	-	-	-	-
Baboto	10.3	-	-	-	-	-	-	-	-	5.1	5.1	-	-	-	-	-
Gara West	25.6	3.1	7.2	8.1	7.2	-	-	-	-	-	-	-	-	-	-	-
Gounkoto	13.1	10.4	1.9	0.7	-	-	-	-	-	-	-	-	-	-	-	-
Faraba	78.0	-	-	-	-	-	2.9	8.8	14.7	17.1	14.4	11.3	8.8	-	-	-
Gara UG	19.9	1.6	1.6	1.5	1.6	1.5	1.4	1.4	1.3	1.3	1.3	1.7	1.6	1.4	0.7	0.2
Yalea UG	23.2	1.7	1.6	1.6	1.6	1.6	1.7	1.6	1.7	1.7	1.5	1.9	1.8	1.6	1.5	0.2
Gounkoto UG	7.9	1.2	1.5	1.4	1.2	1.1	1.0	0.4	0.1	-	-	-	-	-	-	-
Total Mined	**431.4**	**29.8**	**35.7**	**41.8**	**43.8**	**57.2**	**44.2**	**39.1**	**59.8**	**25.2**	**22.3**	**14.8**	**12.2**	**3.0**	**2.2**	**0.4**
Gold Grade (g/t)																
Gara OP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yalea South	4.60	-	1.40	1.80	1.90	4.90	5.10	-	-	-	-	-	-	-	-	-
Loulo 3	2.80	-	-	-	-	2.40	2.70	3.50	2.90	-	-	-	-	-	-	-
Baboto	2.40	-	-	-	-	-	-	-	-	2.30	2.40	-	-	-	-	-
Gara West	2.10	2.20	2.10	1.70	2.30	-	-	-	-	-	-	-	-	-	-	-
Gounkoto	5.10	3.20	4.90	13.10	-	-	-	-	-	-	-	-	-	-	-	-
Faraba	1.90	-	-	-	-	-	1.50	1.60	1.60	1.60	4.30	2.50	0.40	-	-	-
Gara UG	4.00	4.00	3.90	3.70	3.70	3.30	3.70	4.20	4.50	4.60	4.70	4.80	4.50	3.70	4.40	3.80
Yalea UG	5.60	6.10	5.90	7.00	6.50	5.20	5.30	6.30	7.00	6.60	5.70	4.10	4.00	4.40	4.20	4.20
Gounkoto UG	5.40	7.20	6.30	4.70	4.40	4.40	5.60	4.40	7.50	-	-	-	-	-	-	-
Average Mined Grade	**4.20**	**5.00**	**4.90**	**5.20**	**4.20**	**4.20**	**4.40**	**4.40**	**3.50**	**3.30**	**3.90**	**3.90**	**2.50**	**4.10**	**4.30**	**4.00**

	LOM	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Gold Mined (koz)																
Gara OP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yalea South	683	-	3	7	25	202	445	-	-	-	-	-	-	-	-	-
Loulo 3	464	-	-	-	-	42	128	18	277	-	-	-	-	-	-	-
Baboto	183	-	-	-	-	-	-	-	-	47	135	-	-	-	-	-
Gara West	147	15	32	26	75		-	-	-	-	-	-	-	-	-	-
Gounkoto	326	93	133	100	-	-	-	-	-	-	-	-	-	-	-	-
Faraba	446	-	-	-	-	-	13	27	70	106	151	60	20	-	-	-
Gara UG	1,751	166	158	153	153	134	151	108	115	119	119	122	115	88	31	20
Yalea UG	2,884	282	266	308	305	236	245	173	192	193	167	121	115	129	124	29
Gounkoto UG	999	183	223	172	108	111	110	63	30	-	-	-	-	-	-	-
Total Mined	**7,883**	**740**	**816**	**766**	**665**	**724**	**1,091**	**388**	**684**	**465**	**572**	**303**	**251**	**217**	**154**	**49**
Stockpiles																
Tonnes from Stockpile (Mt)	8.1	0.4	-	0.4	0.1	-	-	3.5	0.1	1.9	1.7	0.0	-	-	-	-
Grade from Stockpile (g/t)	1.8	1.2	-	1.7	1.8	-	-	1.9	1.8	1.8	1.7	1.7	-	-	-	-
Processed Tonnes (Mt)	67.0	5.0	5.0	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	1.0
Processed Grade (g/t)	3.9	4.7	4.7	4.7	3.9	3.9	3.9	4.1	4.0	3.9	3.9	2.5	2.5	3.5	3.7	4.0
Gold to Plant (koz)	8,343	755	761	752	634	634	625	589	574	565	561	356	363	504	540	132
Gold Recovered (koz)	7,463	680	680	666	570	559	551	518	515	510	508	323	330	453	482	118

16.5 Services and Infrastructure

The majority of the infrastructure required for mining and processing is already in place. The LOM plan includes provision of additional infrastructure for mine ventilation, refrigeration, backfill, and dewatering. The infrastructure schedules for the next five years at Yalea, Gara, and Gounkoto are shown below in Table 16-10.

Table 16-10 Underground Infrastructure Near Term Schedule

YEAR	2023	2024	2025	2026	2027
Pumping Station	2	2	1		
Electrical Substation	1	2		1	
Primary Ventilation Fan					
UG Service Bay					
Surface Ventilation Raise Bore	1				
Underground Ventilation Raise	1	1	1		1
Mineral Pass Raise Bore	1		1	1	
Main Paste Boreholes		1			1
Surface Main Paste Boreholes	1				
Pumping Station	1	0	2	1	1
Electrical Substation	2		1		1
Primary Ventilation Fan	1				
Surface Ventilation Raise Bore	2				
Underground Ventilation Raise	2	2	2	1	2
Mineral Pass Raise Bore		2			
Main Paste Boreholes	2		1		
Surface Main Paste Boreholes	1				
Pumping Station	2	1	1		
Electrical Substation	2	1		1	
Primary Ventilation Fan					
Surface Ventilation Raise	1				
Underground Ventilation Raise Bore	2			2	
Mineral Pass Raise Bore					
Main Paste Boreholes	9	6	7	4	3
Surface Main Paste Boreholes					

Backfill

Areas are mined using an underhand (top down) sequence which retreats to central accesses in an echelon format. Panels are 30 m long, mined as single level stopes (25 m high) and filled with cemented paste fill. The paste fill is exposed by the mining of both the panel below and the next panel on the same level.

In 2014, paste fill plants were commissioned at both Yalea and Gara, while the plant for Gounkoto is expected to be commissioned in 2023.

The paste fill plants produce cemented paste material. The design strength of the paste fill varies from 0.3 MPa to 0.5 MPa compressive strength for stopes that are not exposed below, which is an overhand (bottom up) stoping method, and 0.9 MPa to 2.4 MPa compressive strength for stopes that will be exposed below, which is an underhand (top down) stoping method. The plant is currently operating on 100% classified mill tailings, previously a 30% aggregate / 70% paste ratio mix and a 50% aggregate / 50% paste ratio mix have been used. These were changed to reduce pipe wear and viscosity to enable paste reticulation to the extremities of the mine. Cement percentages vary from 2.2% to 5.7% for the above design strength range.

Paste is mixed at a plant located on the surface and delivered underground through a series of cased boreholes using a positive displacement paste pump to overcome the friction in the line. From here the paste is reticulated through rigid steel pipes which convey the paste to the stope voids requiring filling.

For a particular stope, a required UCS and curing time are determined, which then determine the percentage binder, as shown in Table 16-11.

Table 16-11 Average UCS Yalea and Gara Achievement

% Binder	Curing Time in Days				
	14	28	56	112	180
1.50%	0.54	0.70	N/A	N/A	N/A
2.00%	0.55	0.72	N/A	N/A	N/A
3.50%	1.67	2.15	2.65	1.10	1.25
4.00%	1.45	1.80	2.11	2.45	NA
4.50%	2.05	2.47	2.93	3.20	3.55
6.00%	3.05	4.26	4.80	5.06	5.81

Hydrogeology

A groundwater monitoring programme has been implemented at Loulo. Modelling has been done from feasibility through to current production. Since 2015, Artois Consulting LLC (Artois Consulting) have been advising on the hydrogeology and water management. In addition, a groundwater monitoring programme has been developed and implemented at both Yalea and Gara.

Yalea

In 2019, a dewatering programme was implemented for draining the Yalea South Upper zone as the weathering extends approximately 300 m below surface, which would expose the mine workings to higher than usual volumes of water. As part of that programme, drain holes were drilled from a drainage drive, a pump station established, and piezometers were installed in surface boreholes to create a monitoring network.

This area is being dewatered with ground water levels currently between 140 m to 280 m. The water levels will need to be drawn down to consistently 200 MASL (340 m below surface) to enable mining adjacent to the oxidised zone. Even though the water level has reduced considerably, additional holes are planned to be drilled at the bottom of the saprolite to completely remove the remainder of water.

The Yalea open pit final pushback will increase the effective catchment area to 681,988 m^2 with direct surface water recharge into the pit and the estimated in-pit run-off coefficient is normally between 65% to 100%. The current water management plan assumes that all surface run-off from the catchment will be diverted around the pit and only rainfall water within the pit footprint will be collected in the pit. Artois Consulting in 2016 carried out a hydrological assessment for Yalea operations and found that a 155 mm/24-hour storm event as measured in August 2015 is likely to increase in frequency from approximate 1 in 50-year return period to a 1 in 25-year return period due to changes in Sahel weather pattern. Such a storm will contribute directly 84,567 m^3 of water to the open pit operations and for this reason the planned stage pumping to be implemented in the Yalea pit will require seven days to dry the pit at 80% efficiency of the staged pumping system. The water inflow (surface and groundwater) into the pit will be managed with dewatering reticulation consisting of four stages. The stages will be connected in series, with each stage having an HL260 (diesel) pump with a 533 m^3/hr discharge rate. The pumping stage system will be implemented as the pit develops. The first stage on 40 mRL will be operational before the end of 2023. The second, third, and fourth stages will be on -60 mRL, -130 mRL, and -194 mRL, respectively.

Gara

Hydrogeological studies will be undertaken prior to mining of the Gara South extension. A full study is planned in 2023 to evaluate the extension.

The objectives of this hydrogeological programme include quantifying water resources by:

- Measuring the hydraulic conductivity (or permeability) of the different geological units using borehole packer tests.
- Measuring the groundwater levels and pore pressures with vibrating wire piezometers to monitor the water drainage effect.

Figure 16-8 shows the location of the Far South operations with respect to the catchment, and the groundwater levels in the area. The New Far South expansion develops the underground mine further south.

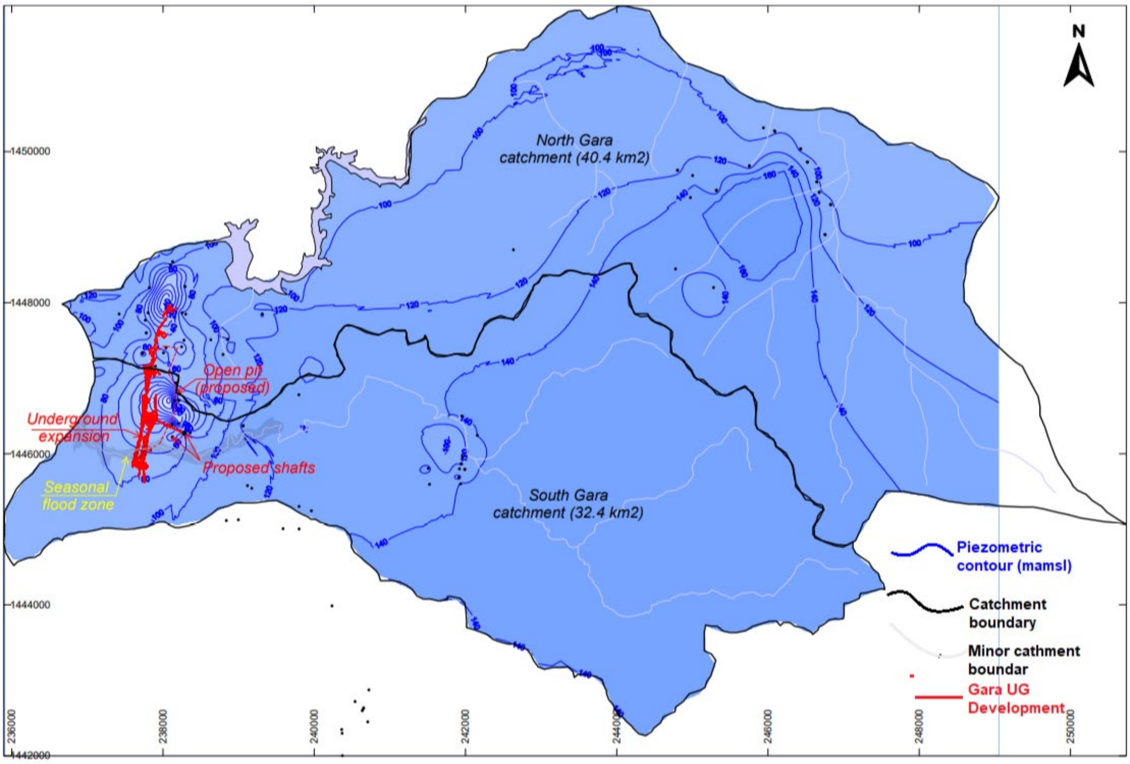


Figure 16-8 Gara Underground Catchment Map

Gounkoto

Hydrogeological modelling was undertaken for Gounkoto Underground prior to starting mining and the main characteristics relevant to the Gounkoto mine are as follows:

- Groundwater recharge is estimated to amount to approximately 5% of the Mean Annual Precipitation (MAP) (55 mm/year). Across the entire Gounkoto catchment of 57.3 km^2, this amounts to an annual groundwater through-flow of approximately 100 L/s (8,640 m^3/day).
- Most of the water flow through the catchment (70% to 80%) is concentrated along the upper, near surface, transported regolith layer that covers most of the lower lying areas in the basin. The regolith forms natural drainage corridors that transmit water from east to west, discharging the water as flood plain evaporation or diffuse baseflow to the Falémé River. It is underlain by a lower permeability saprolite that separates the near surface flow from the flow in the fractured bedrock underneath.
- The silicified sedimentary rocks are preferentially sheared and fractured along a north-south trend. Micro-diorite intrusions, typically observed along the western foot wall, also dominantly strike north-south. As a result, and in contrast to the surface regolith layer, the groundwater flow in the fractured bedrock tends to be orientated north-south. Deep groundwater flow is expected to amount to between 20% and 30% of the total flow in the catchment. Although clays and mineral alterations may have reduced the permeability, the north-south fault zones around the ore (Fault Gouge, Fault Breccia, Foot Wall Fault) have been defined as principal flow conduits at depth. A conceptual diagram of the likely groundwater inflow conditions during the Gounkoto expansion is presented in Figure 16-9. It is likely that the underground development will draw down the groundwater level and help de-saturate the eastern North Pit wall.

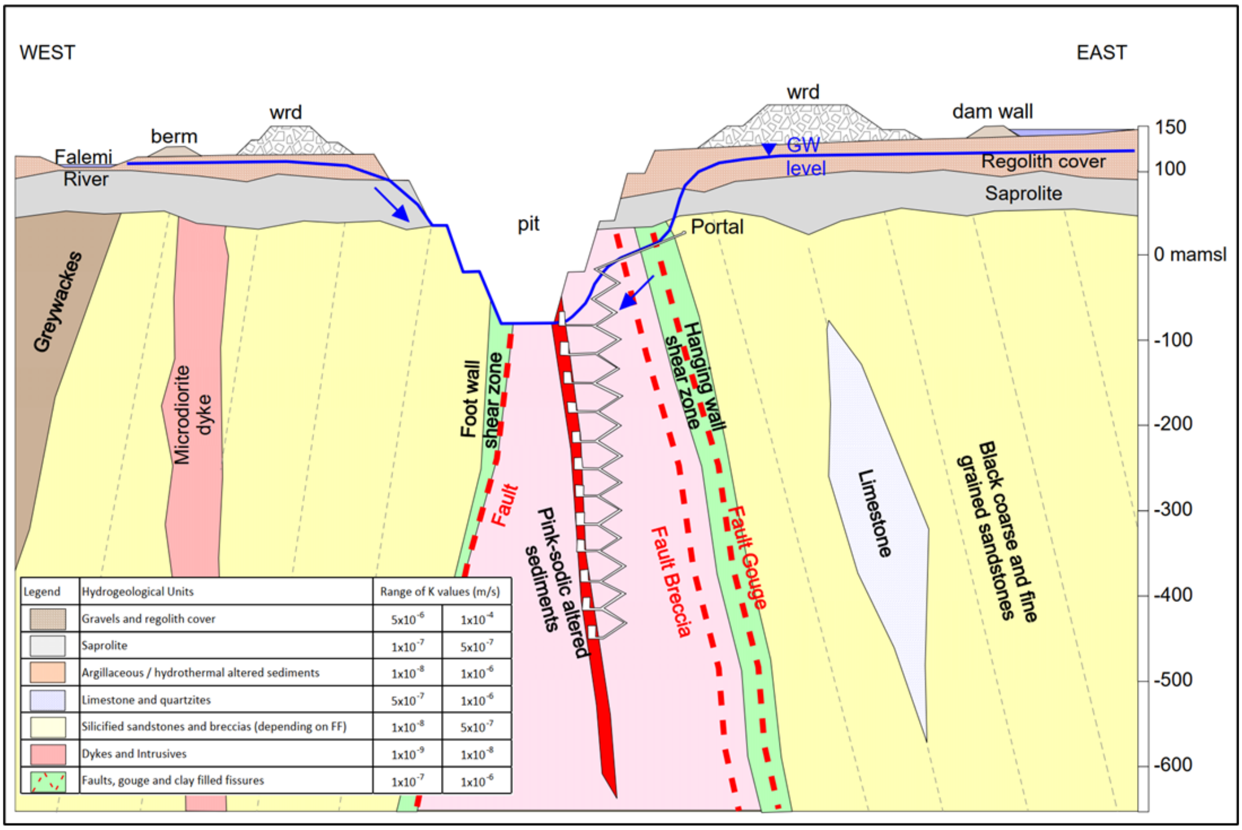


Figure 16-9 Conceptual Hydrogeological Model

Mine Dewatering

Yalea

The current pumping rate at Yalea is 110 L/s from the underground and 40 L/s from the old open pit. The current reticulation uses the stage striker's pump system in each decline.

In 2023, plans are to increase the cascade volume pumped by 25 L/s by drilling and equipping four extra bore holes from 483C-383 Nth, 383Nth -258C, 258C-108L and 108L-Portal.

The Yalea LOM pumping reticulation is shown in the Figure 16-10 below.

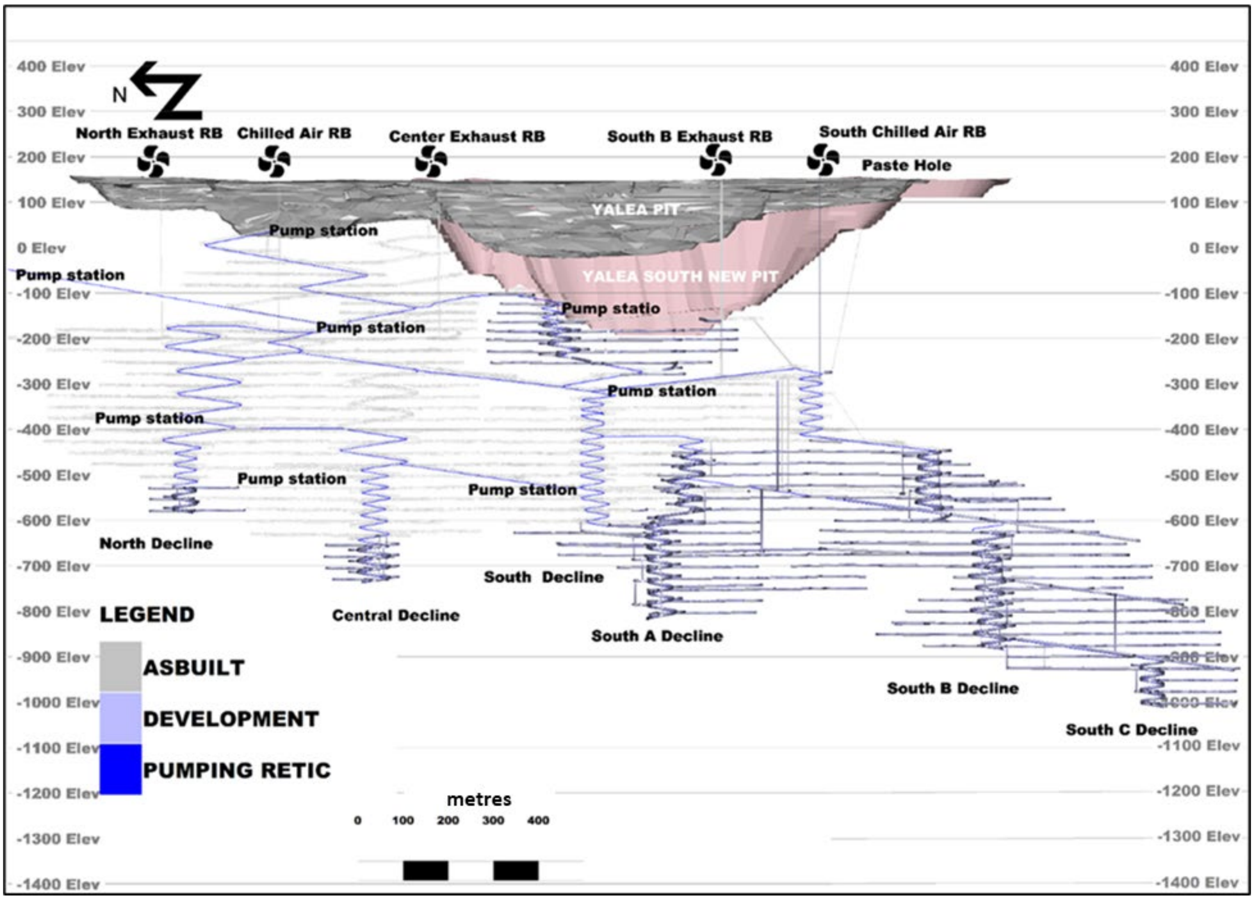


Figure 16-10 Yalea Underground LOM Pump Stations

Gara

Currently at Gara a series of 20 L/s Mono pumps cascade from one station to another. The total pumping capacity at Gara is 120 L/s.

In 2023, the pumping volume is planned to increase by 30 L/s by installing a new pump station.

The Gara LOM pumping reticulation is shown in the Figure 16-11 below.

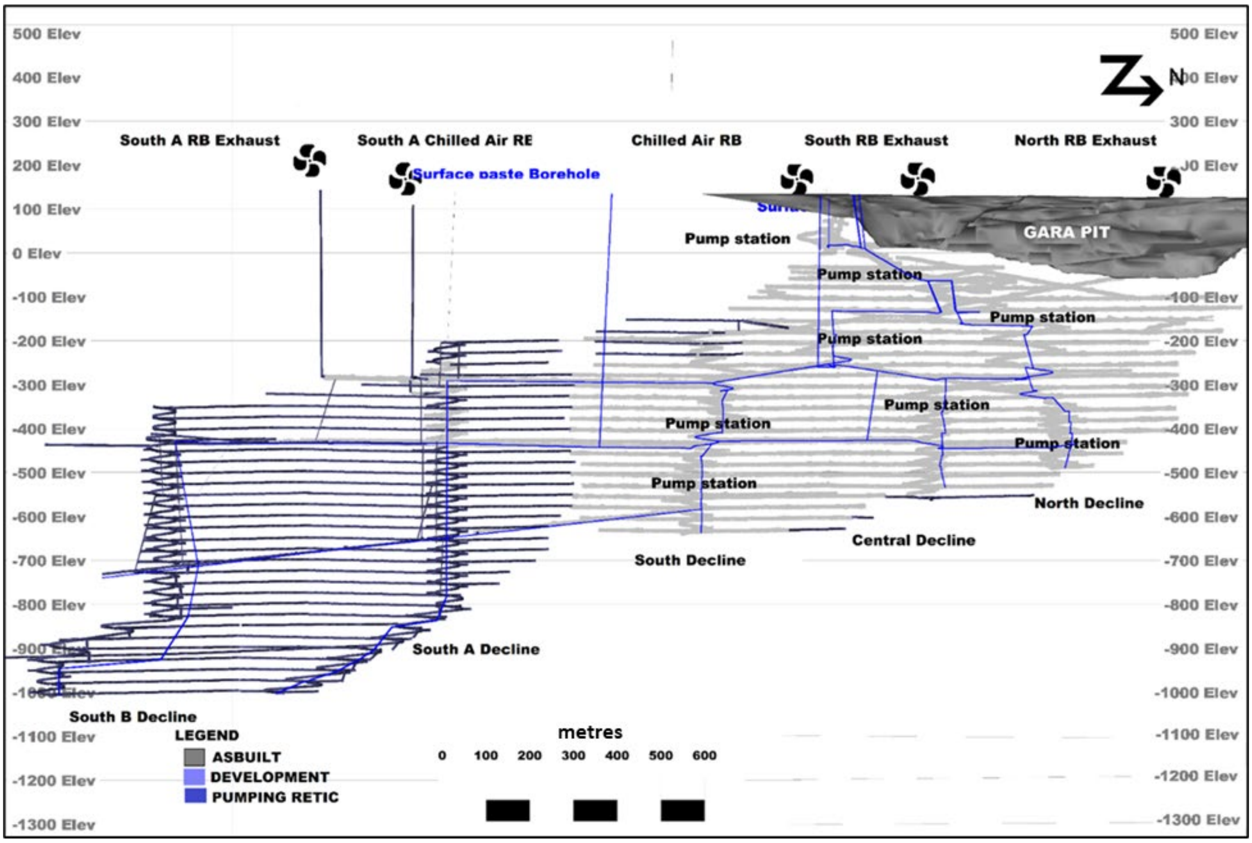


Figure 16-11 Gara Underground LOM Pumping Reticulation

Gounkoto

There is the potential for significant inflow from the open pit, especially once the pit reaches its ultimate depth and breaks through into the underground workings.

Based on empirical and numerical flow modelling, the pit expansion and the underground mine will collect additional storm water and groundwater seepage. Based on a 1 in 50 year storm event (183 mm/24 hours), the maximum predicted inflow volumes are as follows:

- Storm water run-off to the North Pit: 141,000 m^3/day
- Groundwater inflow to the North Pit: 4,060 m^3/day
- Groundwater inflow to the underground mine: 4,400 m^3/day

The proposed mining of the crown pillar will establish a hydraulic connection between the pit and the underlying workings, potentially increasing the water volumes handled underground. In order to control the potential inflows, the following mine water management system will be implemented:

- Surface water diversion:

A compacted earth berm along the western perimeter of the North and South pits (1,100 m length) will divert storm water run-off, via gravity flow, around the pit. The berm is designed to a nominal base width of 3 m and a height of 1.5 m.

- North pit dewatering system:

  The in-pit dewatering system will consist of a multi-level HDPE lined trench system to intercept the majority of storm water run-off generated inside the pit. The groundwater inflow will be controlled by the existing pit perimeter wells and a set of sub-horizontal drains. The in-pit sump will collect the remaining storm water inflow and groundwater seepage. The water will be lifted using two in-pit pumping stations installed at ML-130 and ML+10, each equipped with five 300 HP pumps and a storage capacity of 5,000 m^3/day. Pit floor dewatering will be accomplished by up to two 300 HP pumps.

- Underground mine dewatering system:

  In addition to the groundwater seepage of 4,400 m^3/day, the underground dewatering system is designed assuming that a peak storm water volume of 20,000 m^3/day will enter through the crown pillar. This water will be collected at a pumping station to prevent further downward infiltration. The station will be equipped with four 250 HP pumps and a 5,000 m^3 emergency storage basin. Additional storage basins will increase the total storage capacity underground to 10,000 m^3. The deep levels will be dewatered with portable pumps and one 150 HP pump installed at the deepest level. All water from the underground mine will be pumped to the saddle inside the open pit.

- South pit dewatering system:

  The South pit will be pumped using a series of five stacked pumping wells. This will reduce inflows to the underground mine.

The Figure 16-12 illustrates the Gounkoto mine dewatering system.

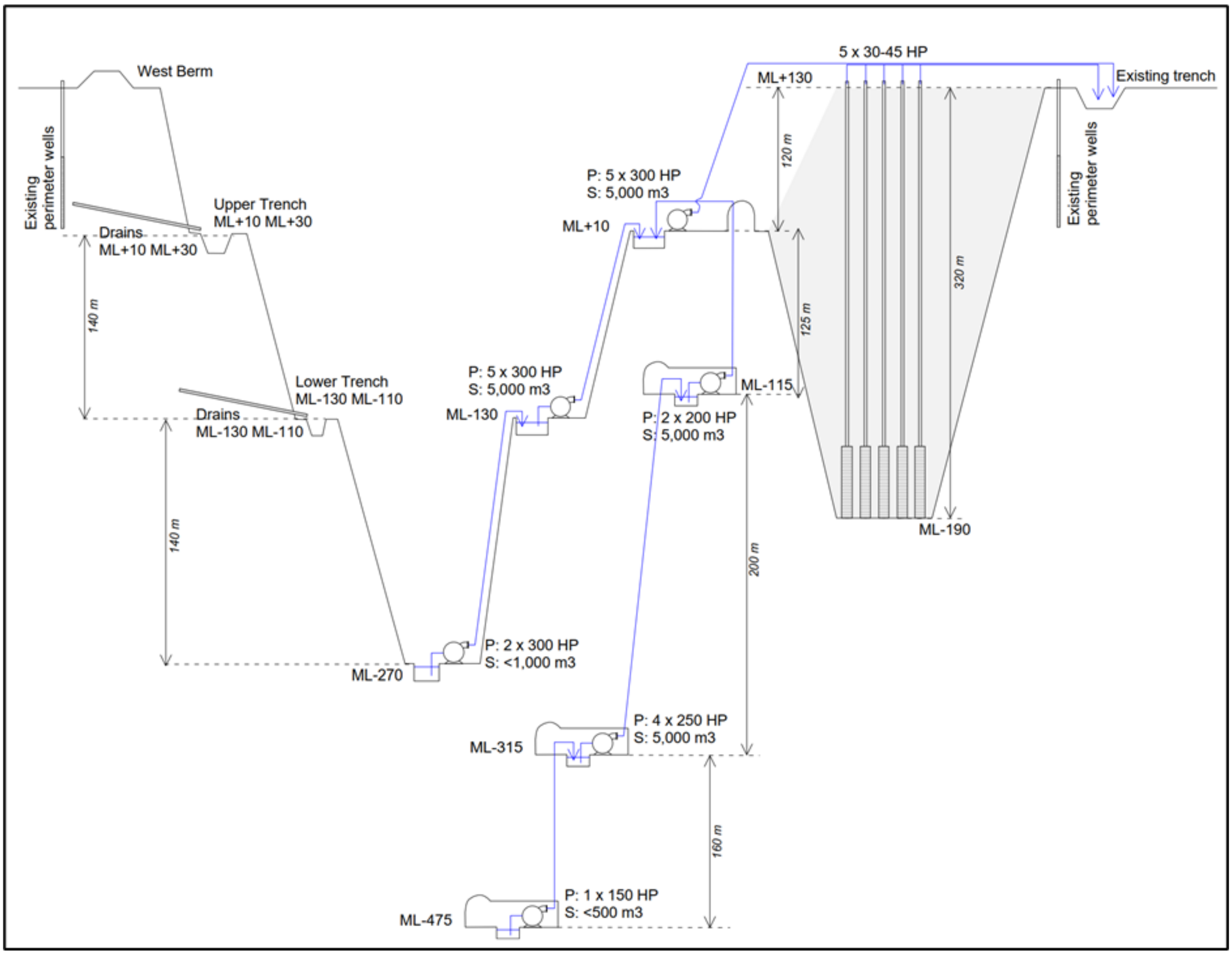


Figure 16-12 Gounkoto Mine Dewatering System

Figure 16-13 illustrates the Gounkoto pumping system.

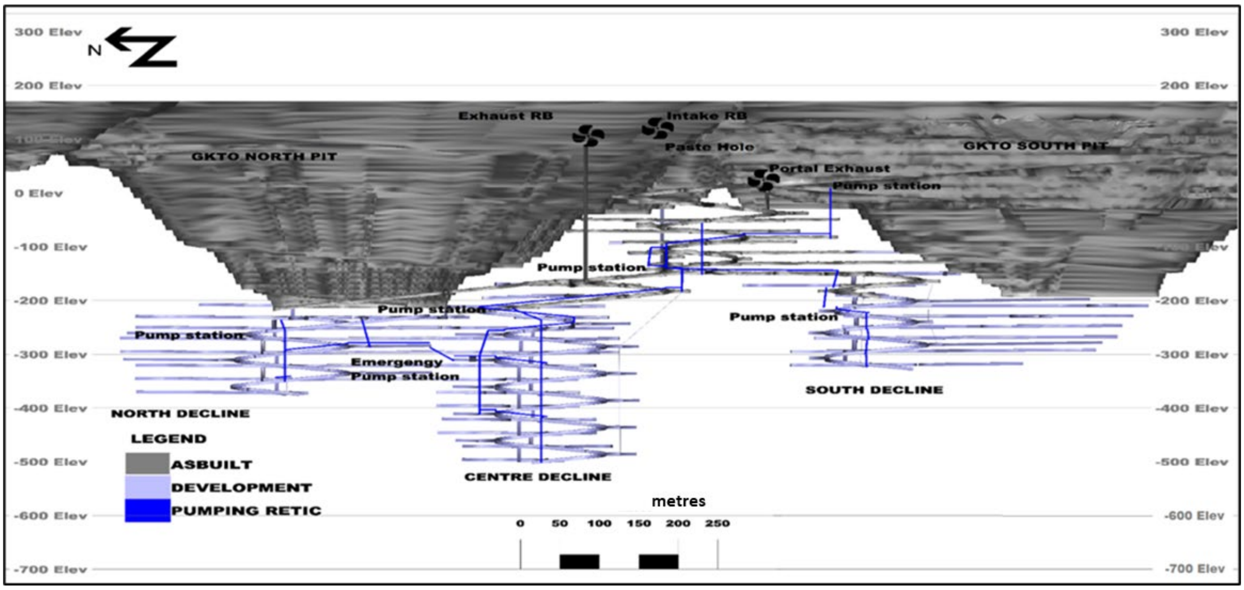


Figure 16-13 Gounkoto Underground Pumping Stations

Mine Ventilation

At Yalea, Gara, and Gounkoto Underground, fresh air is delivered through the declines and intake raises. Air is exhausted up an exhaust raise.

Large 14 MWr refrigeration plants have been constructed at both Yalea and Gara. These plants are identical and cool the intake air by 13°C with a throughput of 280 m^3/s. The cooled air enters the mine via the chilled air raise to 260 Level for Gara and to 233 Level for Yalea from where it is mixed with the other fresh air. Both plants were commissioned in early 2017.

Due to mine extension to the south side on both Yalea and Gara, a new 8 MWr refrigeration plant is planned to be built at both Yalea and Gara in 2023.

Ventilation capacity requirements are based on the equipment engine rates presented in Table 16-12.

Table 16-12 Ventilation Requirement per Equipment

Equipment	Manufacture	Engine Rate (kW)	Ventilation Requirement (m^3/s)
Truck	SANDVIK TH663i	565	28.25
Loader	SANDVIK LH621i	352	17.6
Truck + Loader		917	45.9
Charge up rig	MACLEANS AC3	150	7.5
IT	CAT 962H	172	8.6

Yalea

As shown in Figure 16-14, the Yalea ventilation system consists of the following:

- Three declines that serve as intake airways including: two portals, a conveyor decline, and intake chilled air raise (North raise).
- Three ventilation raises serve as return airways.
- Primary fans at Yalea are five 630 kW units, two 630 kW units located at the North raise, two 630 kW units at the Centre raise, and one 630 kW units at the South B raise.
- Secondary ventilation to working areas is provided with a variety of secondary vent fans from 55 kW up to 220 kW fans and 1,220 mm to 1,400 mm ventilation ducting.

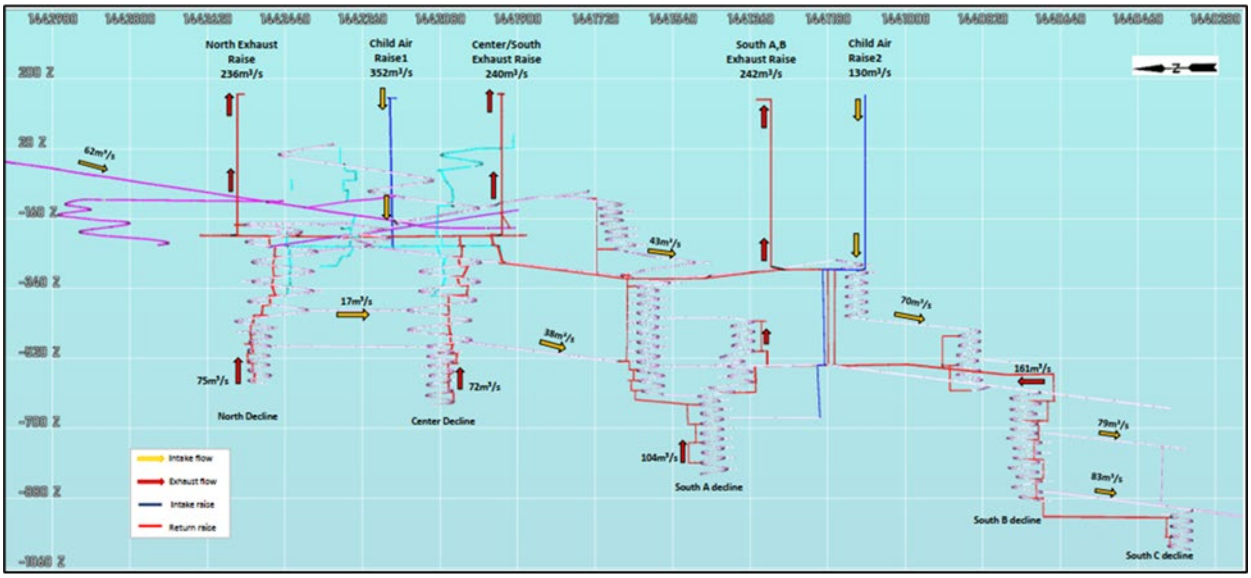


Figure 16-14 Yalea Underground LOM Ventilation Network (Looking East)

As shown in the longitudinal sectional view, the measured air flow at the North and Centre raises is 240 m^3/s and 120 m^3/s at the South B raise.

Gara

As shown in Figure 16-15, the Gara ventilation system consists of the following:

- Primary intake ventilation provided through twin portal, a chilled air raise, and a raise located in the pit.
- Exhaust air exits through two raises equipped with five 630 kW units.
- Three 630 kW units located at the South raise and two 630 kW units at the Centre raise.
- Secondary ventilation to working areas is provided with 55 kW to 220 kW fans and 1,220 mm and 1,400 mm ventilation ducting.

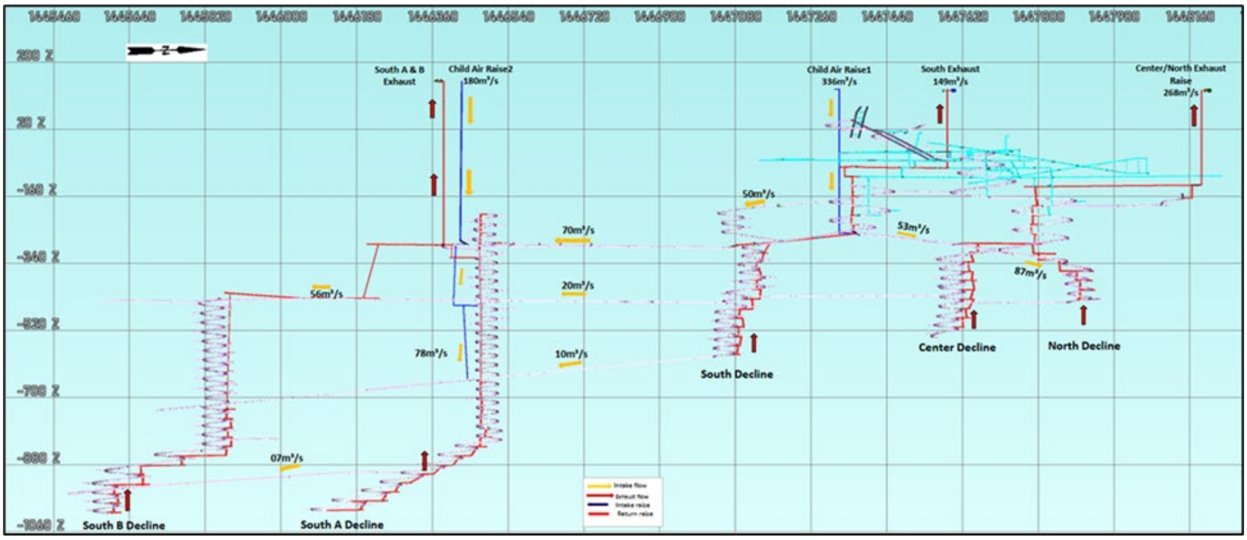


Figure 16-15 Gara Underground LOM Ventilation Network (Looking West)

As shown in the longitudinal sectional view, the measured air flow is 360 m^3/s at the South raise and 240 m^3/s at the Centre and North raises.

Gounkoto

As shown in Figure 16-16, the Gounkoto Underground primary ventilation circuit is set up as a draw circuit similar to Yalea and Gara:

- Fresh air will be drawn through the main haulage portal located at the 10 mRL, as well as the ventilation intake raise located at the 90 mRL.
- In addition, there will be a 7 MWr refrigerator plant.
- Exhaust air will be removed from the system via two surface connections, one each located in the South decline/ramp and Central/North ramp at the 0 mRL and 90 mRL, respectively.
- There will be two separate primary ventilation installations, one 850 kW for the South ramp and one 850 kW for the Central and North ramp. The central and North fan was commissioned on 22 October 2022 and the South fan is planned for May 2023.
- Secondary ventilation to working areas is provided with a variety of secondary vent fans from 55 kW up to 220 kW fans and 1,220 mm to 1,400 mm ventilation ducting.

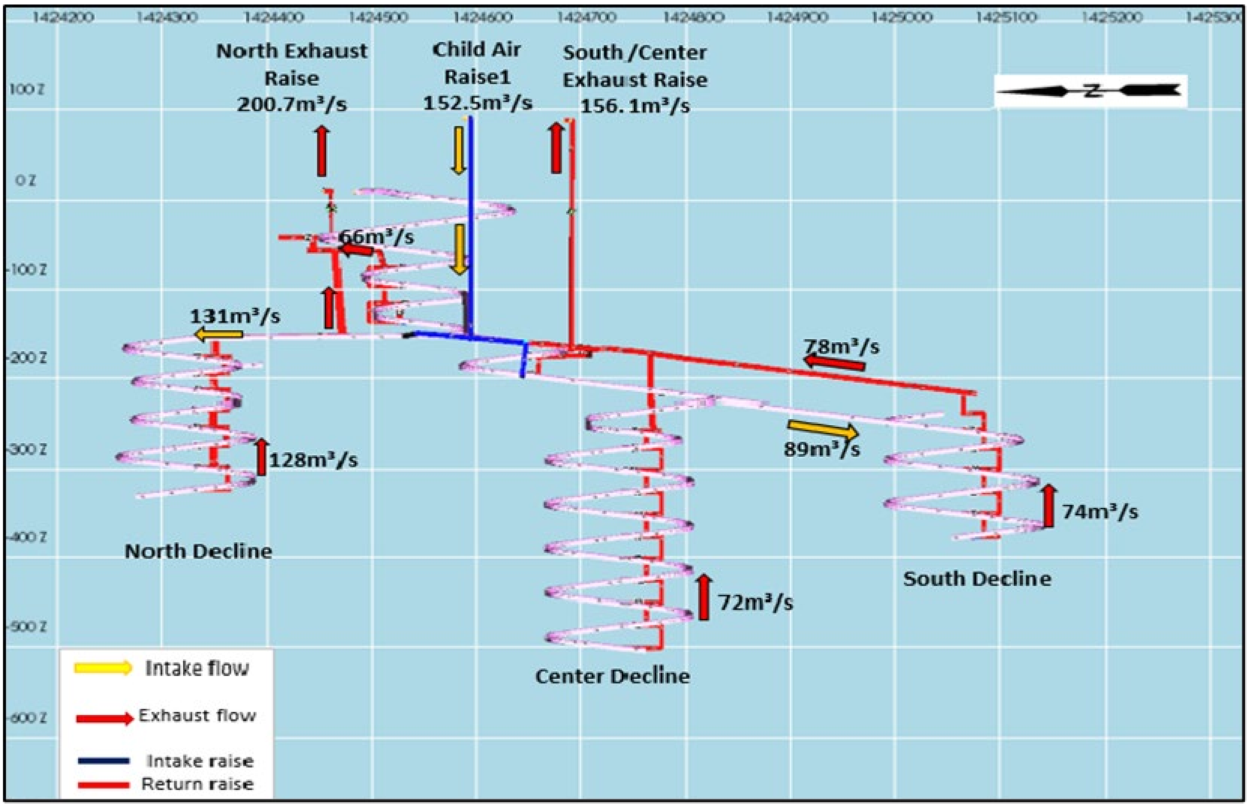


Figure 16-16 Gounkoto Underground LOM Ventilation Network (Looking East)

As shown in the longitudinal sectional view, the measured air flow is 175 m^3/s at the Central and North declines and 90 m^3/s at the South decline.

Maintenance and Communications

Yalea and Gara have various underground workshops. One will be built at Gounkoto as mining ramps up. All three operations have larger surface workshops suitable for maintaining primary production equipment.

The operations also have mine-wide radio communications.

Power Supply

Loulo-Gounkoto underground mines are powered through 11 kV rated feeders. Different voltages are used across the mine (400 V, 525 V, and 1,000 V) and substations are used to step down the voltage from 11,000 V to the required voltage.

At the production areas, substations are installed every fourth level. As the upper production levels become exhausted, the 2 MVA substations are relocated to the lower levels as required and are replaced by smaller 1 MVA substations. The 1 MVA substation will stay in place to power LOM permanent infrastructure such as pump stations, workshops, and crushers.

Figure 16-17, Figure 16-18, and Figure 16-19 show the LOM power reticulation for Yalea, Gara, and Gounkoto, respectively.

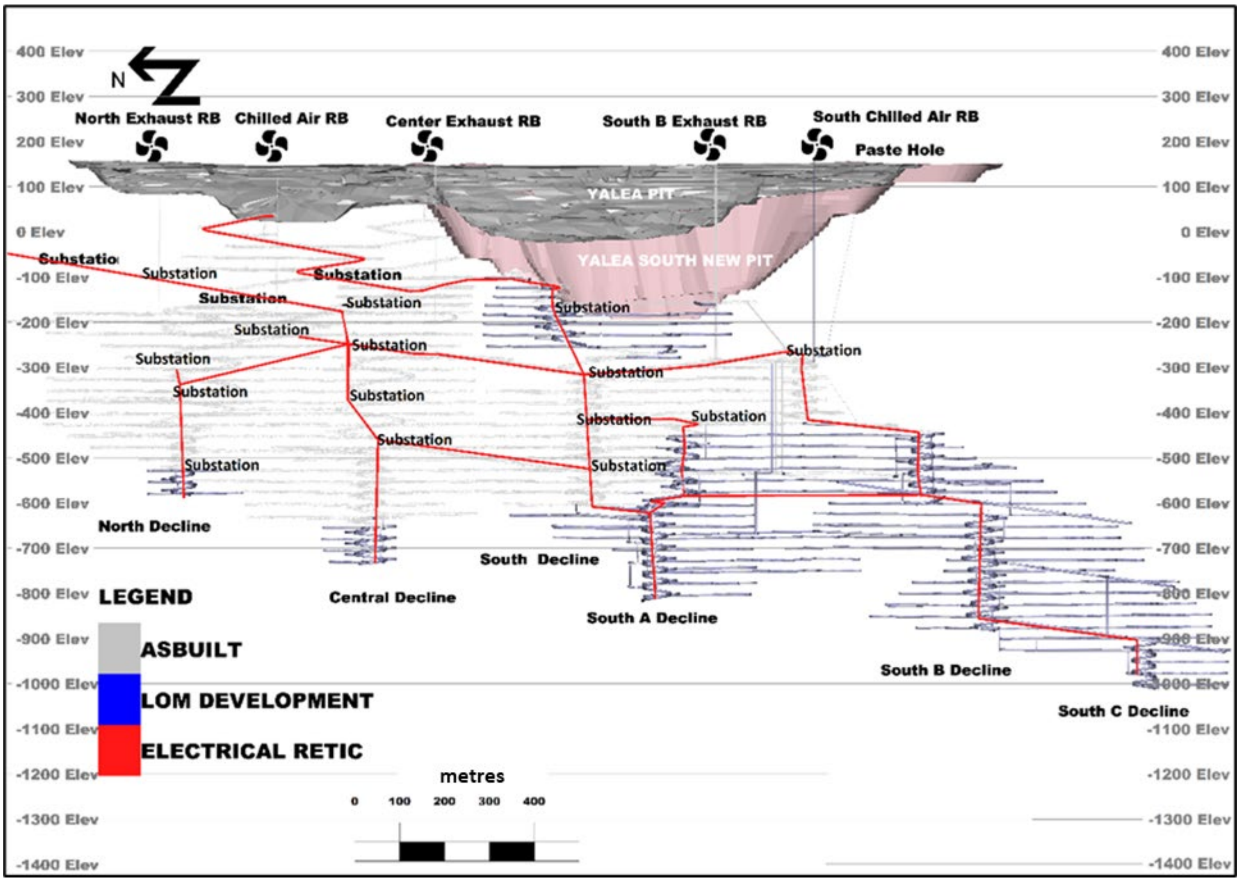


Figure 16-17 Yalea Underground Electrical Substation

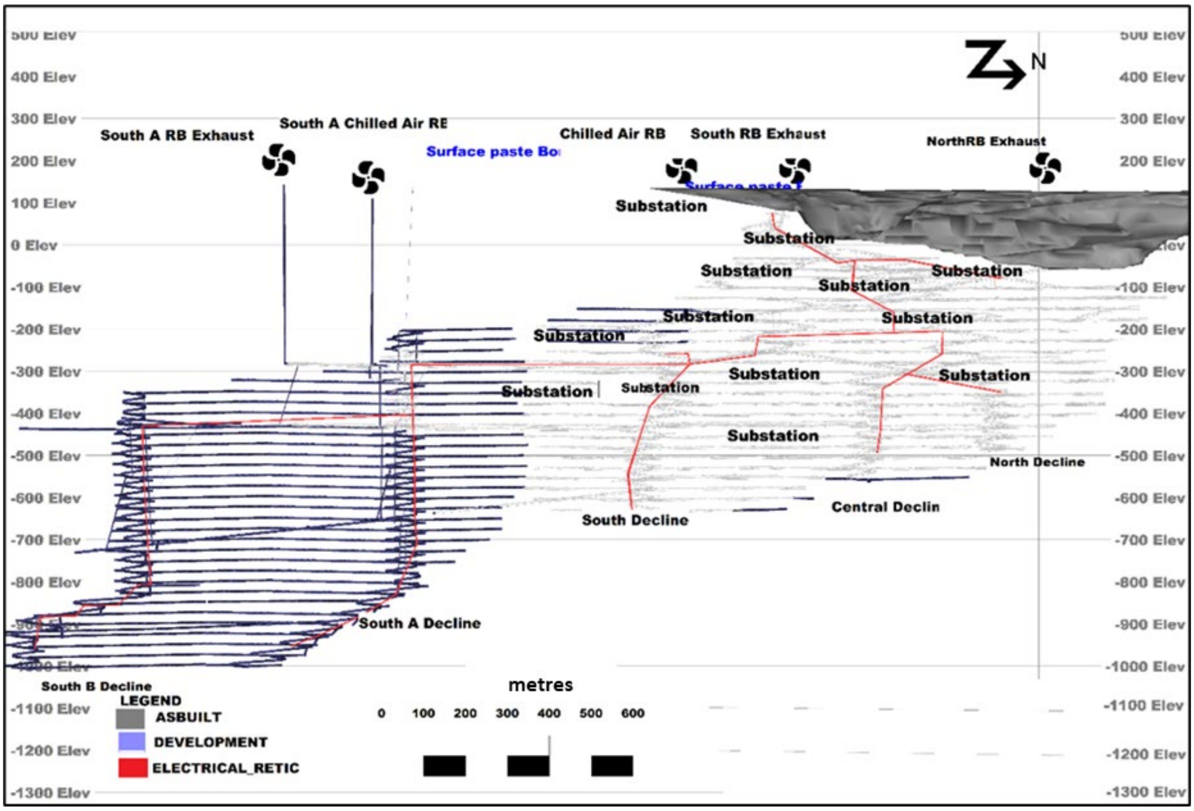


Figure 16-18 Gara Underground Electrical Substations

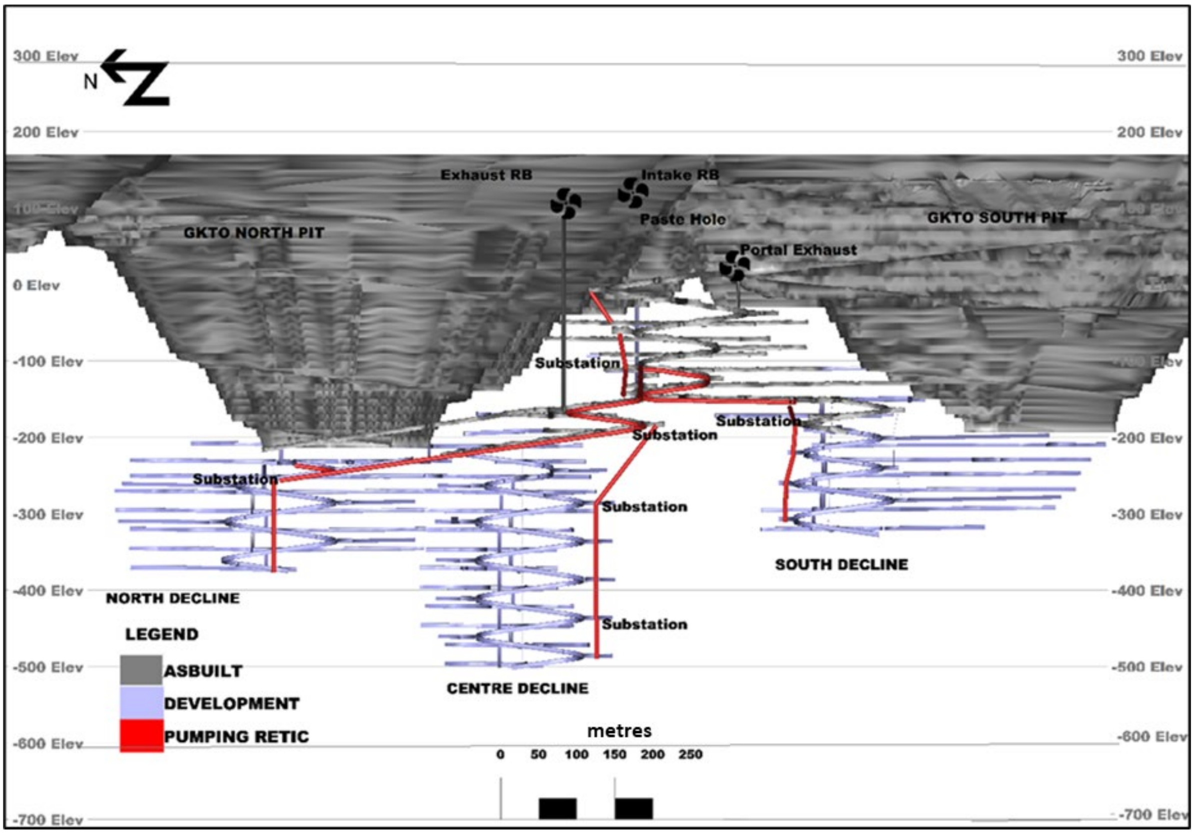


Figure 16-19 Gounkoto Underground Electrical Substations

17 Recovery Methods

17.1 Processing Plant

The Loulo processing plant uses a carbon in leach (CIL) gold extraction process with a throughput capacity of 5.0 Mtpa, which has progressively increased to a peak of 5.1 Mtpa. There is planned processing plant expansion scheduled to commence in 2027 which will expand the annual processing plant capacity to 6.2 Mtpa from 2029 onwards. The main expansion works, in parallel to the current flow sheet, will build an independent flow sheet of 4,200 tpd processing plant that include:

- A complete secondary and tertiary crushing circuit in closed circuit with the screening plant to produce a sub-12 mm product
- A closed-circuit single stage milling circuit, comprising a 4.5 MW ball mill and a hydrocyclone cluster producing a P_{80} of minus 75 micron
- A high-rate thickener capable of handling the combined streams from the existing and new processing plant streams prior to feeding CIL at a total of 18,400 tonnes per hour (tph) throughput
- Additional three 2,500 m^3 CIL tanks
- An upgrade of the current CIL circuit ancillary equipment as well as the tailings handling facilities

The processing plant expansion project definitive feasibility studies and construction are planned to be completed prior to full commissioning in 2029. Key to the execution of the Complex is to ensure that zero to minimal interruptions will be experienced in the current operations and that the ounce profiles are delivered as planned during the construction period.

A simplified flow sheet is seen in Figure 17-1, which depicts a standard processing circuit for free milling ores including conventional circuits for comminution, milling, classification, and CIL. The plant originally included a gravity gold recovery circuit as indicated in the diagram. This circuit has been decommissioned due to low yield and no material improvement on overall recovery. However, all test work on new ore materials includes gravity recoverable gold (GRG) tests to ensure that should an orebody with significant GRG be discovered, then the installation will be revisited.

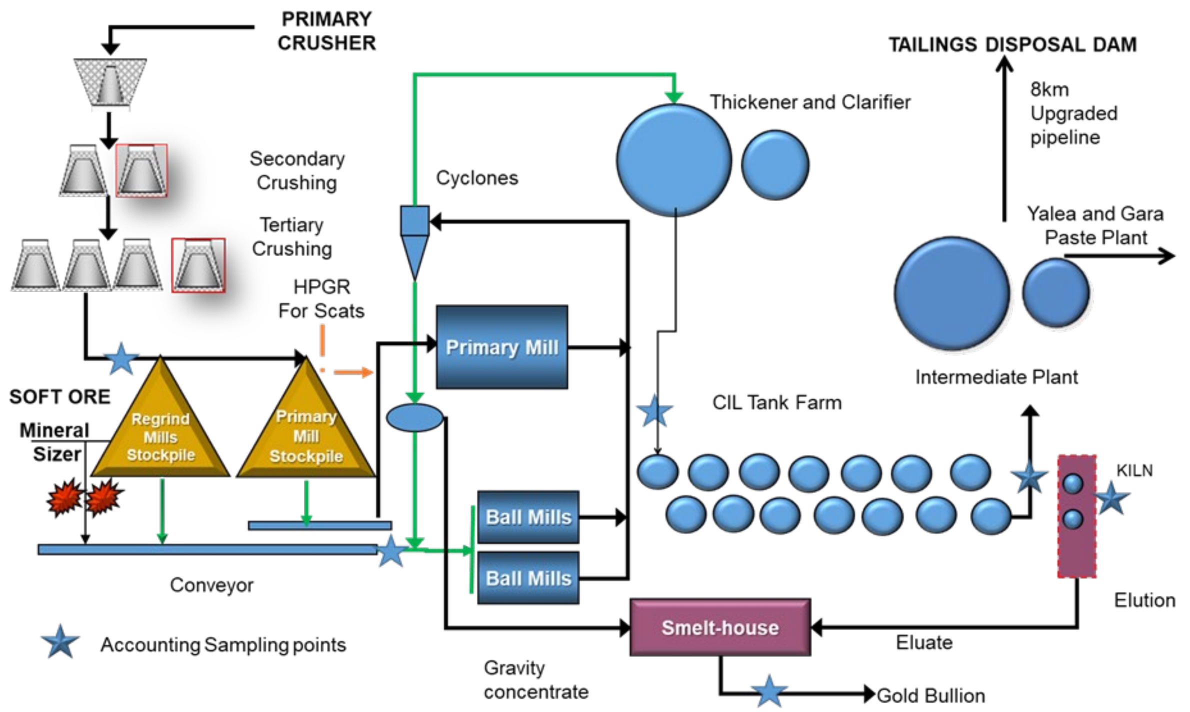


Figure 17-1 Simplified Metallurgical Flow Sheet

The Loulo Gounkoto processing plant performed at stable availability and utilisation from 2014 to 2022 as depicted in Table 17-1. Disciplined execution of preventative maintenance resulted in a consistent availability performance above 95% in the past three years. Good operating practices supported by high utilisation led to stable throughput and a reduction in energy efficiency.

Table 17-1 Plant Availability and Utilisation

Years	2014	2015	2016	2017	2018	2019	2020	2021	2022
Availability (%)	93.18	94.79	96.92	97.07	96.54	92.95	95	95.53	95.99
Utilization (%)	98.45	98.03	99.08	97.61	97.2	99.29	99.26	99.68	99.3

Power supply from renewable energy is planned to be expanded from the 20 MW of existing solar plant to a total capacity of 60 MW, combined with battery energy storage, and an additional 15 MW of thermal power generation units are being added to bring the installed capacity to 88 MW, which fully supports the LOM power demand. In the QP's opinion, the supply of power for the processing of the current LOM reserves will be sufficient.

The specific energy efficiency progressively improved and has stabilized at around 40 kWh/t, consistent with the current ore feed blending strategy (Figure 17-2). This is expected to remain in this range based on the current LOM Mineral Reserves and Mineral Resources. Potential upside exists from better fragmentation with the transition to the Gounkoto underground mine from the open cast.

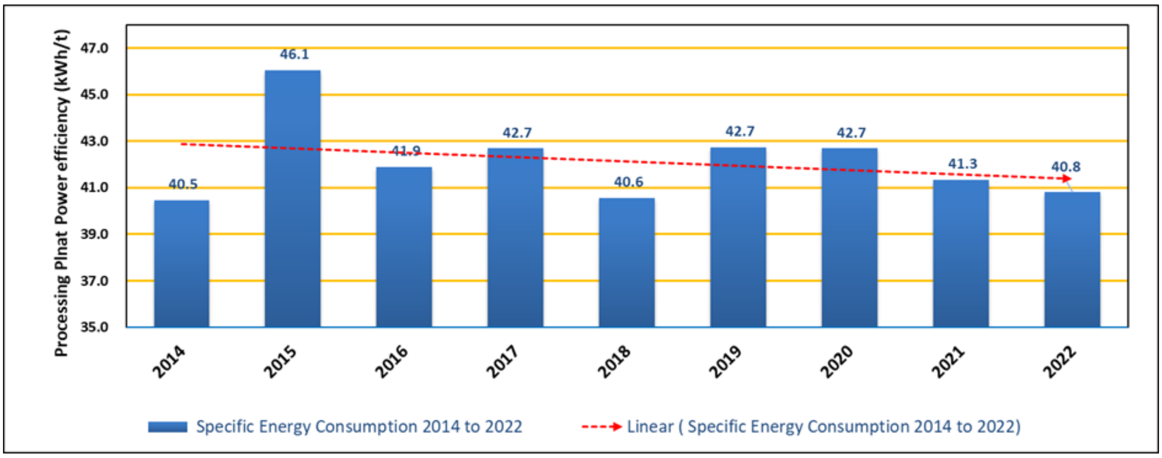


Figure 17-2 Loulo-Gounkoto Processing Plant Specific Energy Consumption 2014 to 2022

Figure 17-3 and Figure 17-4 below show the total fresh and specific water consumption to the Loulo-Gounkoto processing plant. A 50% fresh water consumption step down took place in 2018 from a move to recycling water internally. To further improve and sustain the recycling efficiency, a water treatment plant was installed and is planned to be further expanded during 2023 to harness different sources. UG dewatering as an alternative to river water for the treatment for use in the processing plant sections of elution and gland water service is being explored. Specific water consumption is expected to remain at these levels for the remaining LOM.

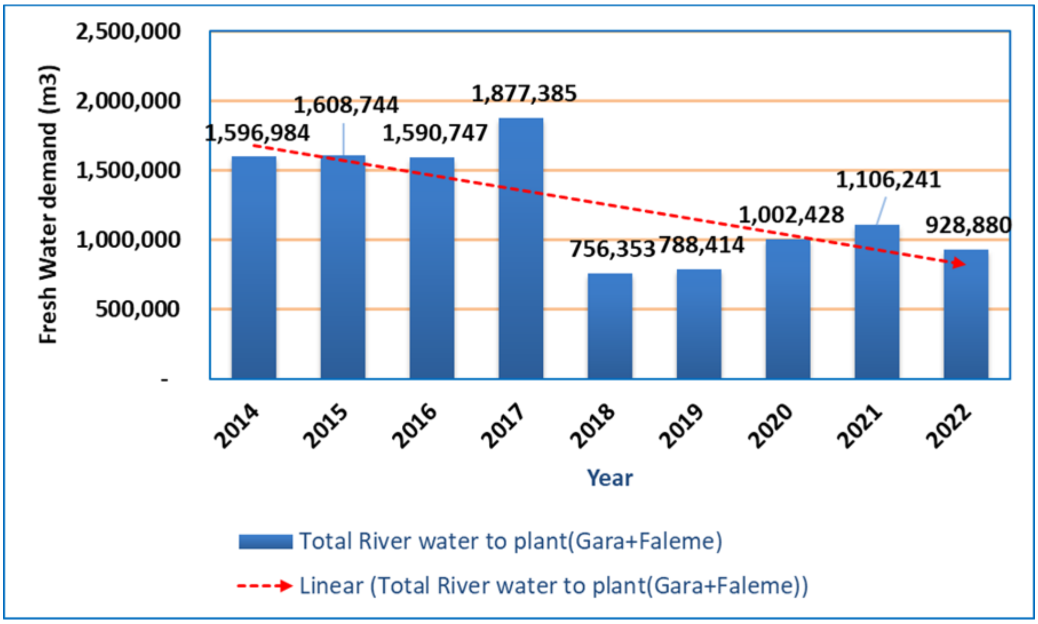


Figure 17-3 Loulo-Gounkoto Processing Plant Water Demand 2014 to 2022

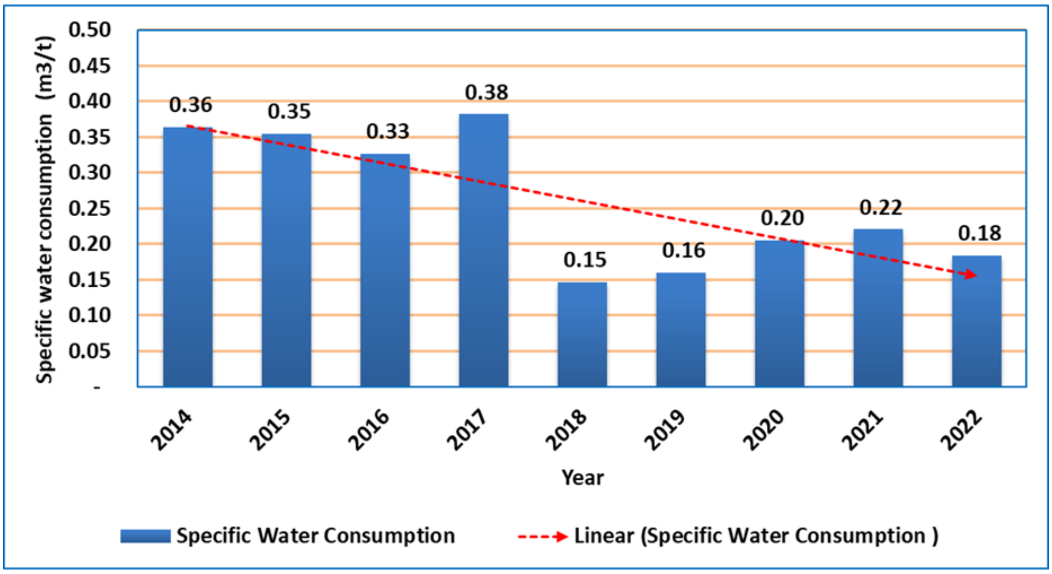


Figure 17-4 Loulo Gounkoto Processing Plant Specific Water Consumption 2014 to 2022

Extensive metallurgical test work campaigns on the Loulo-Gounkoto Complex demonstrated two distinct behavioural patterns. The first is from ore composites from Gounkoto, Gara UG, and satellites, which have free milling characteristics suitable for gold extraction by a conventional CIL metallurgical process. The second distinct behavioural pattern is from Yalea UG ore, which exhibits a degree of refractoriness and resultant lower recoveries compared to the free milling ores. To mitigate the impact on recovery from Yalea ore, the operation uses a mill feed blending strategy limiting the ratio of refractory gold and its associated copper and arsenic mineralisation within the overall mill feed blend. This metallurgical process consists of industry standard technology and is appropriate for the style of mineralisation present at the Complex.

Since 2014, multiple optimisation projects have been undertaken, resulting in increased throughput and improved recoveries. It is expected that the improvement initiatives will continue but are considered part of operations and not necessarily confined to capital projects. The expected throughputs and recoveries are based on historical metallurgical test work and the actual operational performance.

The upgraded processing plant remains a conventional crushing, milling, CIL, and tailings disposal circuit. It will process an average of 605 tph using the following circuits:

- Crushing – three stage crushing circuit for the hard rock sulphide ores and a single stage roll toothed crusher for the soft weathered oxide ores.
- Milling – one primary mill (8 MW), two identical single stage ball mills (4.5 MW), one scat conveyor system is inserted to return all mills scats back to primary mill via a cone crusher.
- CIL recovery process.
- Twin Zadra elution process.
- Electrowinning.
- Tailings pumping/deposition split between slime dam and paste plant.

Processing plant production statistics for the period 2015 to 2022 are shown in Table 17-2.

Table 17-2 Plant Production Statistics 2015 -2022

	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual
Total Ore to Plant (kt)	4,543	4,875	4,918	5,154	4,931	4,895	5,019	5,087
Recovery (%)	90.32	91.00	92.70	92.25	91.9	90.9	90.5	91.2
Recovered Ounces	630,167	707,116	730,372	660,234	714,802	680,215	700,133	684,225

The processing plant has 190 employees, assisted by 66 contractors whose responsibilities are split as per below:

- Paragon: TSF management (59 employees)
- Air Liquide: Oxygen plant production and maintenance (7 employees)

Crushing – Hard Ore

Hard rock is delivered to the tipping bin. Tipping can be completed from two directions.

The hard rock crusher plant consists of a primary gyrator crusher (FFE Minerals 1,300 mm by 1,750 mm) driven by a 450 kW electric motor. A tramp iron magnet is installed over the product conveyor to remove steel. A metal detector trips the conveyor if metal is detected.

The primary crusher operated at a rate of +700 tph feeds the secondary crushers, which operate in open circuit, and then the tertiary crushers operate in closed circuit. An additional metal detector is installed on the feed to the tertiary crushers.

The secondary circuit consists of two Sandvik CS660 Hydrocone crushers and the tertiary circuit consists of four CH660 Hydrocone crushing units; all are powered by a 315 kW electric motor. The secondary and tertiary crushers are housed in separate buildings connected via transfer conveyors.

The final product from the tertiary crushers discharges onto a reclaim ore stockpile, via a conveyor system, and has a live capacity of approximately 40,000 t and a total capacity of approximately 115,000 t. This is the feed to the primary mill.

Crushing - Soft Ore

A separate facility exists to crush the soft ore when it is available. The soft ore crushing consists of a tooth roll crusher (MMD 625 - 3 tooth) driven by a 250 kW electric motor. This feeds a separate stockpile area, and the roll crusher product is fed directly onto the ball mill conveyor feed.

Grinding and Classification

The milling section produces a leach feed with approximately 75% passing 75 microns. The milling circuit is composed of a ball mill operating as the primary mill (6.1 m diameter and 9.5 m effective grinding length (EGL) and installed motor power of 7,000 kW upgraded to 8,000 kW) in the open circuit. The oversize or scats are re-handled to the stockpile and re-crushed. The primary mill discharge feeds to two parallel single stage overflow type ball mills (5.5 m diameter by 8.0 m EGL) with a power rating of 4,500 kW each, operating in closed circuit with a dedicated cluster of twelve 250 mm hydrocyclones, of which eight are typically in use.

An additional High Pressure Grinding Roll (HPGR) has been installed to treat scats at a rate of 100 tph.

Leaching and Adsorption

The CIL circuit consists of fourteen tanks that operate in series, each having a nominal capacity of 2,500 m^3 giving a retention time of approximately 40 hours. Cyclone overflow, at a density of 35% solids, is introduced onto a linear trash screen (0.7 mm by 0.7 mm apertures) and the undersize goes to the leach feed thickener. The thickener underflow at a density of 50% solids by mass is presented as leach feed. One pre-oxidation tank (CIL Tank 1) in the CIL circuit is equipped with six high-shear reactors (Aachen REA-400) upgraded with an additional powerful unit of high-shear reactors (Aachen REA-450). Cyanide is added into CIL Tank 2 and doses automatically to control concentration around the desired value within ± 2%. and equipped as well with six high-shear reactors (Aachen REA-400) as part of the Aachen Assisted Leach system to enhance leach kinetics. An oxygen dispersion system, consisting of power mixers (EKATO installed in Tanks 3 to 7), is installed to maintain optimal dissolved oxygen across CIL to assist leaching. The oxygen plant, operated by Air Liquide, supplies 64 tpd. Hydrogen peroxide is injected at the thickener underflow, as required, to maintain the required dissolved oxygen levels when necessary for the process. Each CIL tank is fitted with a mechanically swept cylindrical inter-tank screen (0.8 mm) complete with pumping mechanism from CIL Tank 3 to the end of the circuit.

Fresh carbon and regenerated carbon is introduced to tank fourteen and is advanced to tank three in counter current flow to the pulp, using recessed impeller vertical pumps.

Elution and Gold Recovery

Loaded carbon is recovered from CIL tank 3 into the acid wash cone. After elutriation, it is acid-washed using a 3% hydrochloric acid solution, followed by a caustic neutralisation/water flushing step. The rinsed carbon is transferred to one of two elution columns where the caustic/cyanide solution is circulated at elevated temperature (135°C) and pressures using the Zadra process. Loulo carbon stripping consists of two parallel circuits from harvest – elution column – heat exchangers to electro-winning cells in the gold room.

The pressure Zadra method utilises a pressure strip vessel that reverses the chemical equilibrium of the adsorbed gold-cyanide complex – calcium ion pair on the activated carbon resulting in desorption of the gold-cyanide complex from the activated carbon into the strip solution.

The pressure Zadra process is conducted in a batch-by-batch process and requires approximately eight to 16 hours to complete.

The gold is then recovered downstream from the strip column by electro-winning. Eight electro-winning cells are installed in the gold room for the electro-winning circuit where the pregnant electrolyte is introduced for gold deposition.

After a certain number of elution, the gold loaded stainless steel mesh cathodes are removed from the electro-winning cells and hosed down with a high pressure water stream. This removes the plated gold onto a hopper where it is collected, settled, decanted, and the sludge smelted after it has been dried in one of two electrically heated calcine ovens to produce doré bullion.

The barren carbon is now transferred to the adsorption circuit or to the carbon regeneration kiln, where it is regenerated at 700°C in a horizontal gas fired kiln.

The regenerated carbon is charged back into the CIL circuit.

Tailings Thickening and Paste Preparation

Tailings, discharging from No.14 CIL tank, gravitate through the tails linear screen (0.8 mm by 0.8 mm), then feed into the tails tank from where it is pumped to the Intermediate Plant. This is a technical requirement for the underground paste plants, which must use detoxified coarse tailings as backfill material to fill the stopes. The Intermediate Plant has cyanide destruction together with arsenic fixing and two-stage cycloning to remove clay and fines (if present) and discharges the coarse fraction into a tank. The coarse tailings are used for paste backfill and the fine slimes are pumped to the TSF. The tailings pump station is equipped with two streams of four stage pumps and a flow diversion valve, where the delivery line of the duty (mild steel pipe) is dedicated to high throughput deposition. At the valve station, there is a possibility to use a standby line (HDPE pipe) for low throughput operation. Mild steel pipe rotation is planned to extend the life of main delivery line.

The tailings pipeline is a 450 mm diameter steel pipe, lying above ground and inside a trench, along a vehicle access road between the TSF and the processing plant. The return water line is in the same trench and consists of two 450 mm diameter HDPE pipes.

Recycled water is received from underground paste plants and tailings storage facilities. Total recycled water is targeted at 80%.

Reagents

A dedicated reagent section has been provided for the warehousing of raw materials, make-up, and storage of reagents. These are:

- **Sodium cyanide** is delivered as solid briquettes in bulk bags packed within wooden crates. Make up involves hoisting the bags and lowering them onto a bag splitter above a makeup tank. After agitation for a short period, this solution is transferred to a dosing tank from where it is pumped to the addition points in the plant.
- **Lime** is delivered in powdered form also in bulk bags. It is made into slurry through a similar make up system to the cyanide and pumped to the plant addition points.
- **Flocculants** are delivered in powder form and made up in a traditional eductor hydration system.
- **Caustic soda** is dissolved in an agitated tank and pumped to the elution section.
- **Hydrochloric acid** is delivered in concentrated form which is stored in a tank and pumped to the elution section.
- **Oxygen** is produced by Air Liquide under contract via six Pressure Swing Adsorption (PSA) units outside the plant producing 64 tpd which is piped to the leach section.
- **Hydrogen peroxide** is stored in 1 m^3 plastic isotainers.

These are mixed in a dedicated area outside the security fence and then pumped in as required. This minimises the number of vehicles that require access to the plant. Apart from the acid, the reagents are all in solid form when delivered and stored onsite.

Maintenance

The mineral processing operations have a formal scheduled maintenance system. Calendar based maintenance is conducted daily, weekly, bi-weekly, quarterly, bi-annual, and yearly. The plant shuts for 26 hours every monthly to two-week interval when all mills stop. Statutory inspections and Original Equipment Manufacturer (OEM) checks are conducted at OEM recommended intervals based on the vendor and equipment. Mills undergo inspections yearly, Putzmeister pumps are inspected by OEM every six months, crushers are inspected yearly, by Sandvik, etc.

A comprehensive Supervisory Control and Data Acquisition (SCADA) captures data on the equipment. There is online, continuous monitoring of the mills for temperature (bearings and lubrication system), and vibration.

Oil testing is undertaken by Shell, and soon an onsite laboratory will be commissioned. Other condition monitoring includes thermography, relay testing, and vibration analysis. A reliability team has been established to monitor and sustain operation and life cycle management of the equipment.

A total of 112 employees provides staffing of the maintenance department for processing on all shifts and rotations. Contractors and OEM representatives are utilised, as well, for specific tasks.

SAP is utilised as the maintenance software programme for planning, creation of job cards (work orders), and creating/storing historical maintenance and performance data. In addition, failure analysis to better understand breakdown root causes and to see if a change in maintenance tactics will reduce downtime are performed.

Corrosion

A five-year corrosion protection plan was adopted in 2020, which covers the processing plant and both paste plants. A third party was appointed to carry out this job. Most ground surface areas in the processing plant have been concreted, and spillage is reasonably well managed.

Plant MCCs

The Motor Control Centres (MCCs) are housed in converted shipping containers fitted with passive point fire detection which is monitored locally and remotely at the control room. The structures are raised and air-conditioned to ensure optimal operating temperatures.

Cables are all bottom entry from the void below. All high voltage cabling and connections are thermo-graphically checked by a third-party ahead of the rainy season.

Mill motors are fed directly at 11 kV from the power station, via an underground pipe.

Processing and Gold Recovery

Recovery is discussed in detail in Section 13. The Loulo-Gounkoto Complex has demonstrated successful operation both in terms of processing throughput and gold recovery. The average gold recovery in 2022 was 91.2%, slightly above the 2021 recovery of 90.5% and in line with the predicted recovery from the ore feed blends year to date. The trend of yearly average recoveries from 2005 to 2022 is presented in Figure 17-5.

The major corrosion prevention work performed on CIL tanks meant that one tank was off-line every month and thus slightly impacting recovery. In year 2022, four of the eight PSA oxygen modular plant units (PSA 1, 2, 3 & 4) at 14 thousand tonnes per day (ktpd) capacity were replaced by two efficient units of 2x10 ktpd. This had a positive impact of improving the overall oxygen plant delivery from 54 ktpd to 60 ktpd. The increase of an additional 6 ktpd gives more flexibility when receiving difficult ore. The ore blend for 2022 was very stable and resulted in an operating CIL circuit with little adjustment. The success of the predictive model is based on consistency of ore blend as well as proactive onsite test work. This has been further enhanced by the upgrade of the site laboratory and procurement of pilot size high shear reactors for oxygenation tests.

The current LOM plan has an average processing plant recovery of 89.47%, predicted from LOM blended feed proportions of 24% Yalea Underground, 24% Gara Underground, 27% Gounkoto (UG and OP), and 25% Loulo open pits.

Copper and arsenic are assayed for all grade control drilling and are estimated in the grade control and resource models. The mine plan is developed aiming to maintain blended material with concentrations of copper below 100 ppm and arsenic below 4,000 ppm.

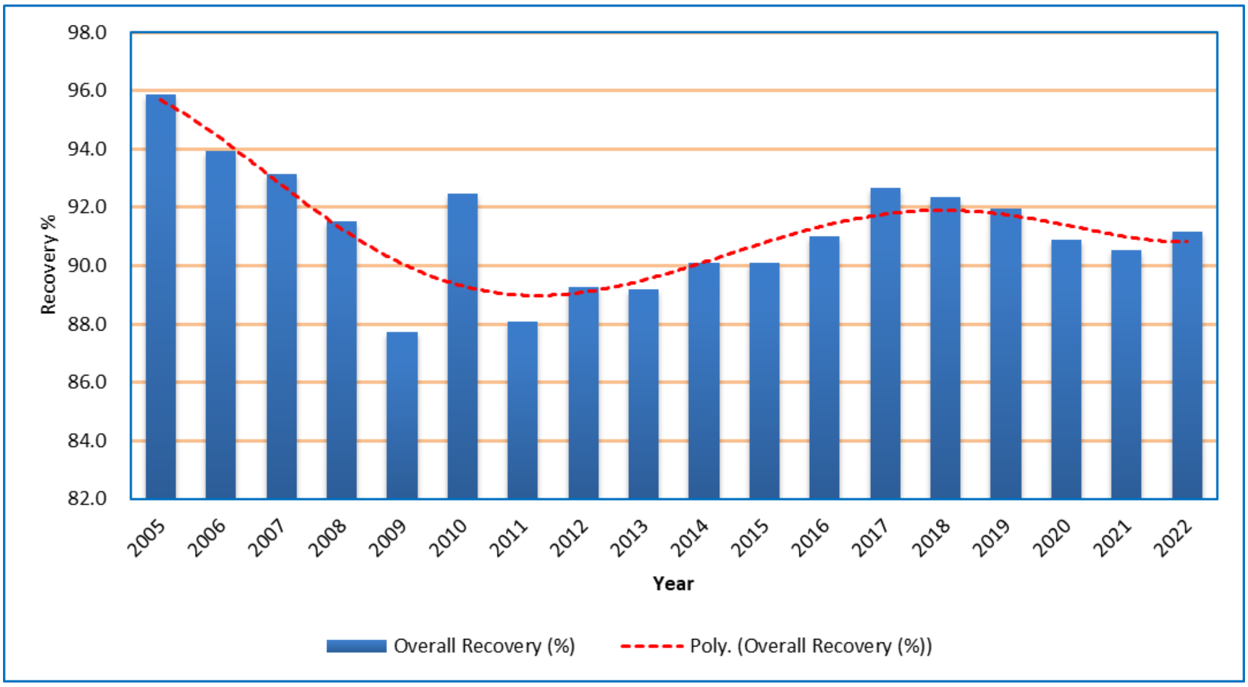


Figure 17-5 Loulo Processing Plant Historical Recovery

The Loulo processing plant specific energy consumption currently sits at 40.8 kWh/t and the major component driver of this energy demand is the milling circuit, which has a total specific energy consumption of between 17 kWhr/t to 22 kWhr/t. The mill power consumption depends on the ore feed blend being treated at any given time and the Bond Work Indices are tracked on a weekly basis as shown. As part of the geometallurgical work on site, all the ore sources have been characterised in terms of the Bond Work Indices and these are within the current mill specific energy consumptions. Power supply from renewable energy is planned to be expanded from the 20 MW of existing solar plant to a total capacity of 60 MW, combined with battery energy storage, and an additional 15 MW of thermal power generation units are being added to bring the installed capacity to 88 MW, which fully supports the LOM power demand. In the QP's opinion, the supply of power for the processing of the current LOM reserves will be sufficient.

The specific energy efficiency progressively improved and has stabilized at around 40 kWh/t, consistent with the current ore feed blending strategy. This is expected to remain in this range based on the current LOM ore reserve and resources. The impact of the future processing plant expansion on the power demand will be catered for during the planned expansions of existing site power supply.

17.2 Sampling and Analyses for Metal Accounting and Process Control

Table 17-3 presents a list of the plant streams that are sampled, and details of the sample type and analyses performed. The metal accounting head and tails slurry samples are produced by automatic cross-stream sample cutters. These and all other samples assembled for each 12 hour shift are delivered to the onsite SGS Loulo assay laboratory.

SGS manages and operates the laboratory. The laboratory has a sample preparation section which is equipped with crushers, splitters, and pulverisers which, when in full operation, can prepare 1,000 samples a day. The laboratory has a fire assay section equipped with two fusion and two cupellation furnaces that can take 168 samples at a time.

The laboratory has a wet-chemistry section, an AAS section and an XRF facility. The wet-chemistry laboratory has two fume hood workstations and the AAS section has four workstations.

The laboratory analyses a range of elements of which gold by fire assay is the most frequent analysis. It also determines gold in plant solutions, plant carbons, bullion refined analysis, base metal determination (copper, arsenic, iron, etc.) and titration. It also analyses geological samples, for example soil, RC, and drill core samples.

The laboratory is accredited by the SANAS for gold assay (SCHEME CODE: FAA50V10). The Certificate is valid until April 2024 with a surveillance audit every year.

The laboratory is managed by one Senior Site Manager assisted by three Senior Chemists and a total workforce of 68, inclusive of management. A total of 35,000 samples are submitted per month with determinations of approximately 45,000 assays.

Table 17-3 Samples and Measurements List on the Process Stream

Area	Daily Frequency	Assays					
		Au (g/t)	% Moisture	Screen Analysis	% Ca	% Activity	% Solids
1. CRUSHING							
Con No. 7 feed belt samples	12hour comp. (M)	x	x	x			
Con No. 8 feed belt samples	12hour comp. (M)	x	x	x			
2. MILLING							
Mill No. 1 discharge	12hour comp. (M)	x		x			
Mill No. 2 discharge	12hour comp. (M)	x		x			
Mill No. 3 discharge	Hourly (A))	x		x			
Mill No 1 & 2 discharge density	Hourly (M)						x
Cyclone Overflow 1	12hour comp. (M)			x			x
Cyclone Overflow 2	12hour comp.(M)			x			x
Cyclone Underflow 1	12hour comp.(M)	x		x			

Area	Daily Frequency	Assays					
		Au (g/t)	% Moisture	Screen Analysis	% Ca	% Activity	% Solids
Cyclone Underflow 2	12hour comp.(M)	x		x			
Cyclone Underflow 1 & 2 density	Hourly (M)						x
3. CIL							
CIL Feed	12hour comp.(A)	x		x			
CIL Feed density	Hourly (M)						x
CIL Solid Profile	grab	x					
CIL Solution Profile	grab	x					
CIL Carbon Profile	grab	x					
CIL Tails residue solids	12hour comp.(A)	x		x			
CIL Tails residue solution	12hour comp.(A)	x					
CIL Tails density	Hourly (M)						x
PLANT Tails	12hour comp.(M)	x		x			
PLANT Tails solution	12hour comp.(M)	x					
PLANT Tails density	12hour comp.(M)						x
4. ELUTION & REGENERATION							
Loaded Carbon	Hourly	x			x	x	
Spent solution after:	Every after-Acid washing						
Eluted Carbon	grab	x			x	x	
Regenerated Carbon	grab	x			x	x	

Notes:
(A) – Automatic samples
(M) – Manual samples

The results from analysis of the samples are used to control the process and for metallurgical accounting.

At Loulo, there is one plant sampler on every shift. This plant sampler is responsible for the manual sampling of parts of the process stream where auto sampling is not available, and for preparing and submitting all rocks and slurry samples to the assay laboratory. Upon submission of samples, the plant sampler records the complete list of all samples submitted and the type of assay analysis to be performed on the “sampling control sheets”. The individual responsible for assay laboratory sample preparation accepts the samples by signing onto the “sampling control sheets”, indicating the samples have been received from the plant sampler.

The samples are processed by splitting them first to the required quantity (Jones splitter in the case of rocks/ solids samples and slurry splitter in the case of pulp samples), filtering them either by vacuum or pressure filtration, collecting the required solutions, and drying the solid samples. The dried samples are also crushed and placed into correctly labelled sample packets. All samples used for grade estimation or metal accounting (CIL feed and plant tails sample) are auto sampled to reduce sampling error.

17.3 Tonnage Balance

Tonnage calibration is done to confirm or otherwise the plant's instrument measurement by determining the exact tonnage (actual) over a period into a calibration tank that corresponds to a certain measurement value. This is very crucial in accurate metallurgical accounting. The balance must work on the principle of check or reference points, and a check in/out system for inventories. Metallurgical and instrumental teams have implemented biweekly rise tests on treated tonnes to verify the accuracy of flow and density measurement.

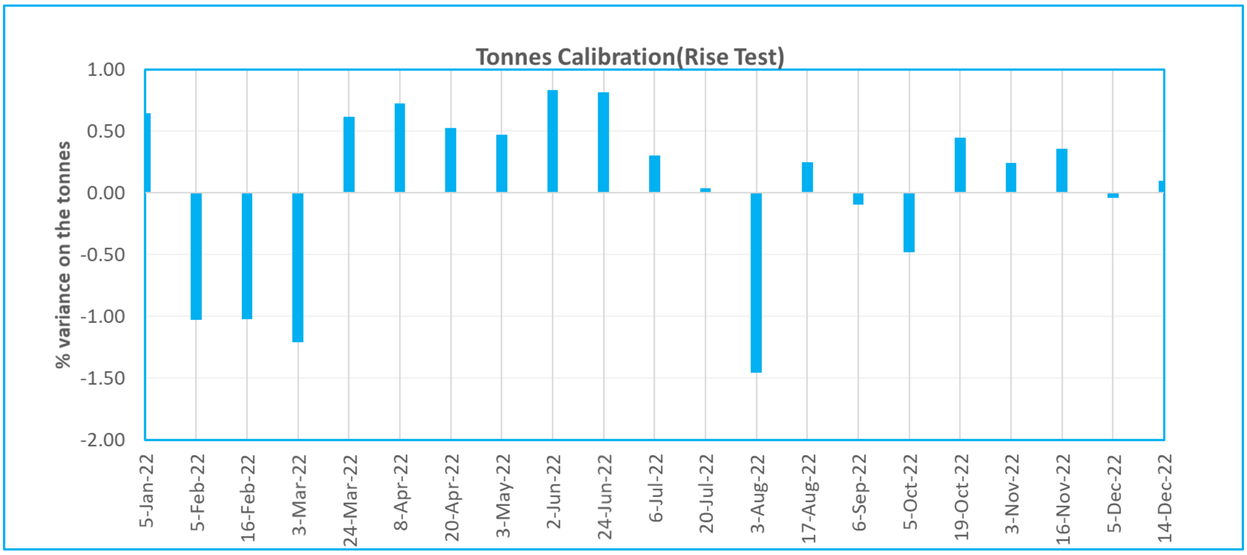


Figure 17-6 2022 Tonnes Calibration Determinations

Figure 17-6 above gives the trends of variance obtained in the calibrations on the throughput measurement to ensure the reconciliations. The above parameters are used in the gold accounting performance monitoring to ensure that any deviations are investigated and closed out. Weekly reports are prepared and cross-checked prior to sharing with the Mineral Resource Management and Mine team as official production. Regular calibration as stated above are conducted in line with best practice in gold accounting.

The formula for Plant Call Factor and Unaccounted Gain/Loss are shown below:

$$Plant\ Call\ Factor = \frac{Recon\ Grade}{Assay\ Grade} * 100$$

$$Unaccounted\ Gain/Loss\ = \frac{Recon\ Grade - Assayed\ Grade}{Recon\ Grade} * 100$$

Further to the plant check versus checkout analysis and illustrated by the unaccounted gains/losses, plant checkout data is routinely, on a weekly and monthly basis, compared with the GC check in data. The results of this analysis are shown in Table 17-4.

Table 17-4 Loulo-Gounkoto 2022 Mine Call Factors

Mine Call Factor	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tonnes MCF (%)	101	97	103	100	99	101	98	95	99	96	107	102
Grade MCF (%)	99	108	102	105	101	111	100	107	105	107	104	101
Ounces MCF (%)	100	106	105	105	101	112	99	102	104	103	112	103

The team has been historically exposed to P754 Metallurgical Accounting Code of Practice and principles without necessarily going through formal training. Based on the current Loulo metallurgical accounting, the key elements that guide the team are:

- Using the Sarbanes-Oxley Act of 2002 (SOX) as the main guiding principle including external or independent auditing of the metallurgical accounting and reporting.
- Comparisons of estimates from different sources over a specific time period (weekly, monthly and yearly).
- Ensuring all QA/QC protocols for the samples submitted to the onsite laboratory are followed with periodic CRM submission.
- Performing a simple in and out mass balance over the processing operation supported by calibration of measuring instruments and reported within the tolerance limits.

17.4 Loulo Processing Plant Laboratory

Metallurgical testing at the Loulo processing plant covers all CIL process simulation tests on the ore sources sampled across the different ore bodies, and all green field and brown field projects. The laboratory utilises the standard bottle roll test procedures for the recovery test simulation. The recovery test is utilised to predict plant recovery ahead of mining. A graph of historical predicted recovery versus actual plant recovery is presented in Figure 17-7. There is generally strong correlation between the actual recovery achieved during operations and predicted values. This, over the years, has enabled the site laboratory to maintain testing that is aligned with advanced grade control drilling.

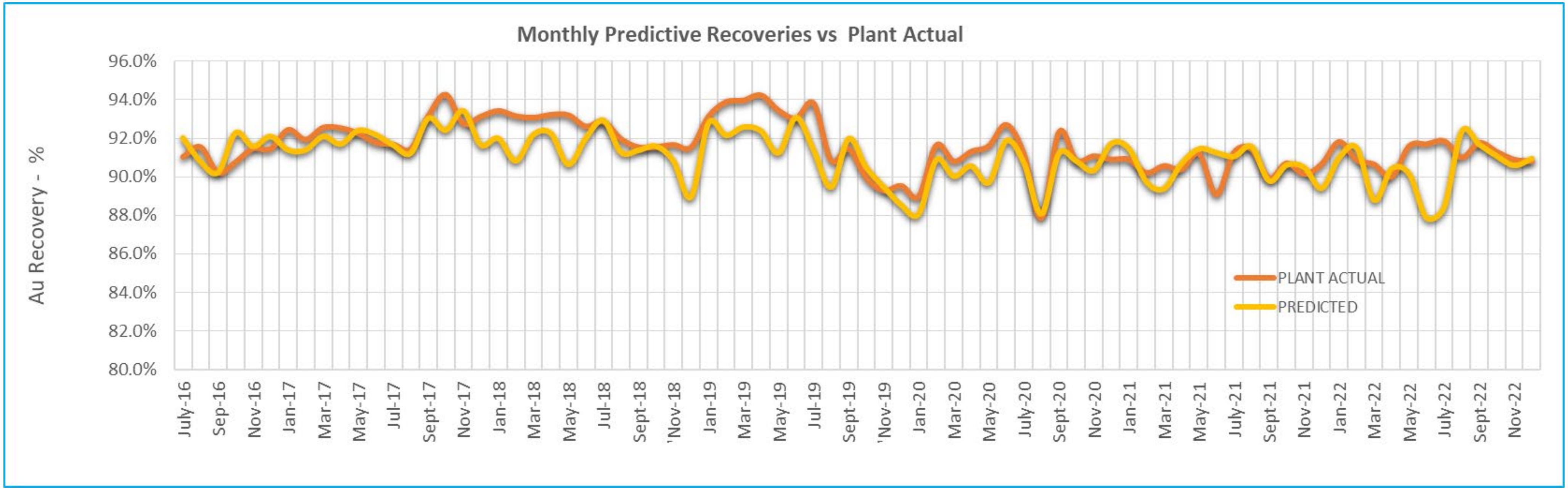


Figure 17-7 Loulo-Gounkoto Processing Plant Monthly Predicted Recoveries versus Actual Recoveries

18 Project Infrastructure

The Loulo-Gounkoto Complex comprises two distinct mining areas, Loulo and Gounkoto, with the central processing plant and administration complex located at Loulo.

Current mining is centred on the Gounkoto open pit and three underground mines at Yalea, Gara, and Loulo 3.

The current access route to supply the site is by road from the port of Dakar in Senegal (the Port) to the site. There is also access to the Loulo Mine by road from Bamako or by charter flights from Bamako to the airstrip situated near the Gara deposit.

Figure 18-1 denotes the relative positions of the major infrastructure items in the immediate vicinity of Loulo. Note that Gounkoto is not shown here as it lies approximately 32 km from Loulo in a southerly direction. These infrastructure items are described in greater detail in the following subsections.

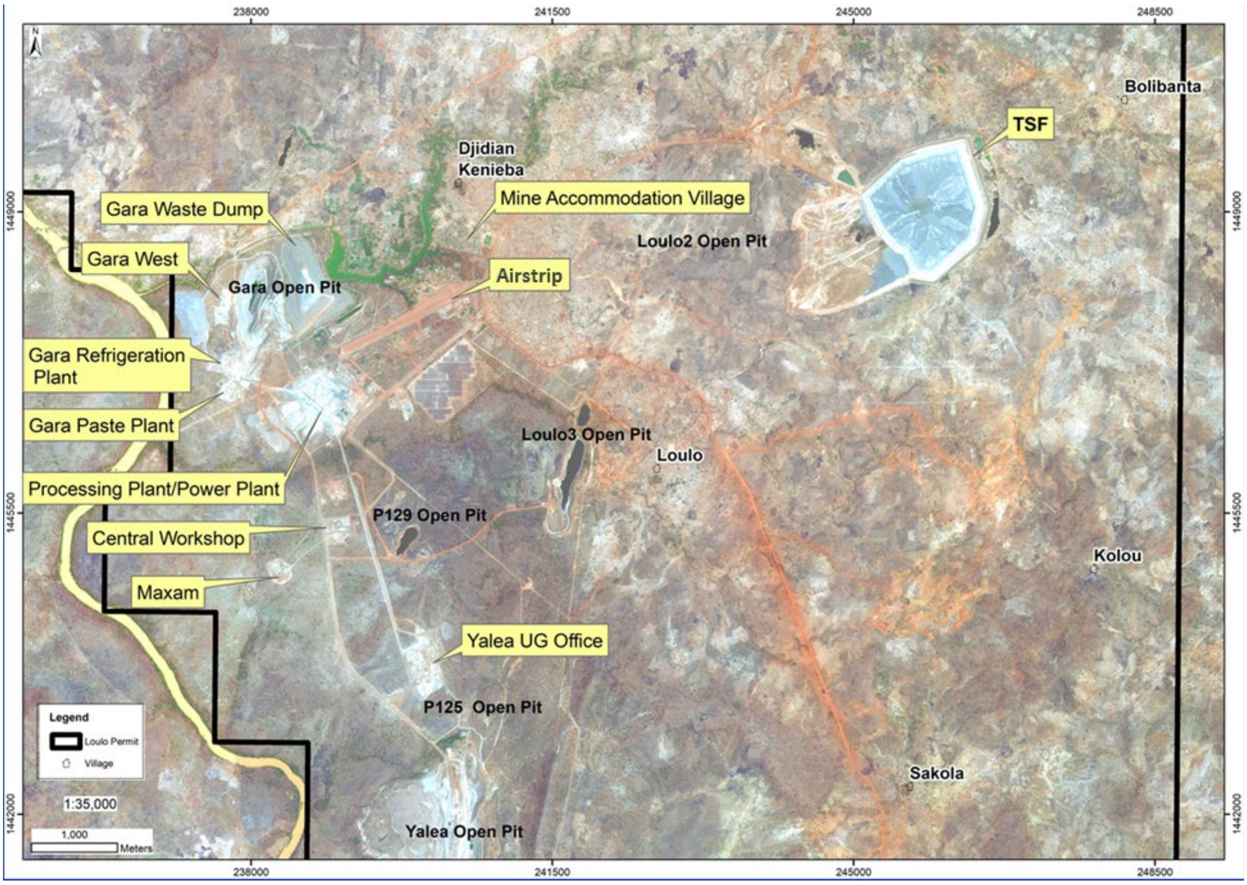


Figure 18-1 Loulo Major Infrastructure Locations

18.1 Mine Roads

The Dakar to Bamako Millennium Highway crosses the Loulo-Gounkoto haul road, approximately six kilometres north of the Gounkoto pit. This highway serves as the primary access point for the mine and provides excellent road transport links with the rest of the country as well as to Senegal, for which the border is within three kilometres of the Loulo Mine.

The local road infrastructure was developed initially during the geological drilling programmes and upgraded during the construction of the mine. Internal roads provide access to various infrastructure areas, including explosives storage, land fill site, mine villages (Senior and Junior), central mine offices, general mining operations areas, new exploration areas, various water boreholes, and overhead line routes.

The road leading to the TSF is a public road, which runs past the nearby village of Djidian Kenieba. An upgrade exercise was undertaken whereby the roads linking the mine villages to the central office complex via a ring road ultimately culminating at the plant area were tarred. All other roads are constructed by layered rock/gravel/laterite varying in specification according to traffic expectations.

18.2 Supply Chain

From the inception of Loulo-Gounkoto, the supply chain partner, CSTT-AO, and its subsidiary companies namely Afrilog and Multilog, have been intricately involved in the procurement, warehousing, freight, and all other logistical aspects.

The Port is used for goods destined to Loulo. The customs process and port authorities are efficient and port costs are consistent with the global market. Dakar customs and border control operate on a five-day week basis.

Should containers be shipped to Dakar, the majority are trans-shipped in Las Palmas or Algeciras. Shuttle shipments between these trans-shipment ports to Dakar are frequent. The Port is also well equipped to handle heavier materials and equipment which are frequently received for Loulo-Gounkoto.

Border crossing clearance of goods is typically seamless and efficient between Dakar and Mali customs. This relies heavily on the long-standing partnerships both CSTT-AO and Barrick have developed over several decades in West Africa.

With respect to trucking and road freight, CSTT-AO is equipped with adequate trucks, lowbed trucks and lifting equipment capable of lifting loads of up to 100 tonnes (available in Dakar).

CSTT-AO has the following fleet capabilities:

- 90 tractors
- 90 flatbed and semi-trailers

- One low bed of 110 tonnes capacity
- One low bed of 300 tonnes capacity

Where possible load heights are restricted to less than 485 cm, including the vehicle height, to allow easy passage from the Port to site, with no disruption to power lines or having to make use of bridge bypass routes.

CSTT-AO is equipped and licensed to transport all hazardous materials, including being specifically ICMC compliant.

Clearing of sea freight at the Port takes eight to twelve days on average and the road transport from Dakar to the Complex site is estimated at two to three days.

CSTT-AO has been developing activities at Kaolack port since November 2016. This is beneficial as Kaolack is 200 km closer to the Malian border than Dakar port.

The maximum draft allowed is 4.3 m (2,400 tonnes of break bulk vessel).

To date, quick lime, hydrated lime, grinding media and slag cement have all been imported in break bulk and sent to the mining companies located in the vicinity of the southeastern region of Senegal and Mali.

Air freight occurs via Bamako airport by Afrilog and documentation is processed within 48 hours, while sea freight is cleared at Dakar port, except for the slag, which is cleared at Kaolack port. CSTT-AO completes the clearing at both ports. The costs associated with 20 ft and 40 ft containers for both sea-freight and inland transport (Dakar to Loulo mine site) are calculated on a cost-plus basis. This is a fully transparent exercise with shipping/freight invoices being sent through for verification.

18.3 Surface Water Management

The wet season in Mali has torrential rain, under which mining can be impossible. There is allowance in the mine schedule for time to dig sumps, as well as providing more than one working area to allow for flexible mining if required. Ore stockpiled at the Gounkoto ROM pad and the low-grade stockpile at Gounkoto can provide plant feed in the event that mine production must be stopped due to weather conditions.

There is an occasional torrential rainfall threat to the operations with the risk of flash flooding. Drainage and diversion ditches are in place around the pits and operational facilities to help mitigate this risk.

There are river diversions at all the old and current pits. A trench designed for a 1 in 100-year event has been constructed at Gara. At Yalea, the Falémé River runs to the west of the pit and a diversion channel has been dug on the east side to prevent water from creeks entering the pit.

The ground is sloped away from the pit wall to further reduce the risk of flooding. The diversions remain in place to protect the underground workings.

Gounkoto is bounded on the west by the Falémé River, and a 1.8 km berm and diversion channel have been constructed. On the east side of the pit, a river diversion has been necessary to drain water around the pit to the north and subsequently into the Falémé.

For the Gounkoto open pit, a high-capacity pumping system of large, high-head diesel pumps has been installed. Pumping from pit bottom sumps to booster pumps delivers captured water to treatment ponds prior to releasing to river flow. During the wet season, pumping volumes average 5,000 m^3/day from the southern sump and 4,000 m^3/day from the northern sump.

18.4 Water Supply

The Falémé River is the natural border between Mali and Senegal and provides the majority of the Complex water requirements.

A main pumping station with two transfer pumps is situated in the river basin upstream of a weir, which maintains a one metre raise to ensure water availability during the dry season. Water is pumped to the Raw Water Dam at Loulo, from where water is delivered to the processing plant. There are no restrictions on the amount of water which can be abstracted from the river.

A water treatment plant, fed from the river water supply, supplies all the potable water needs of the operation. A borehole pump is situated near the offices to provide back-up potable water.

There is a very low requirement for water at Gounkoto. The principal water uses are for crushing the ROM material and dust suppression. Rainfall is regular, and the pit dewatering ponds provide enough water for dust suppression purposes. A small on-site dam provides water storage.

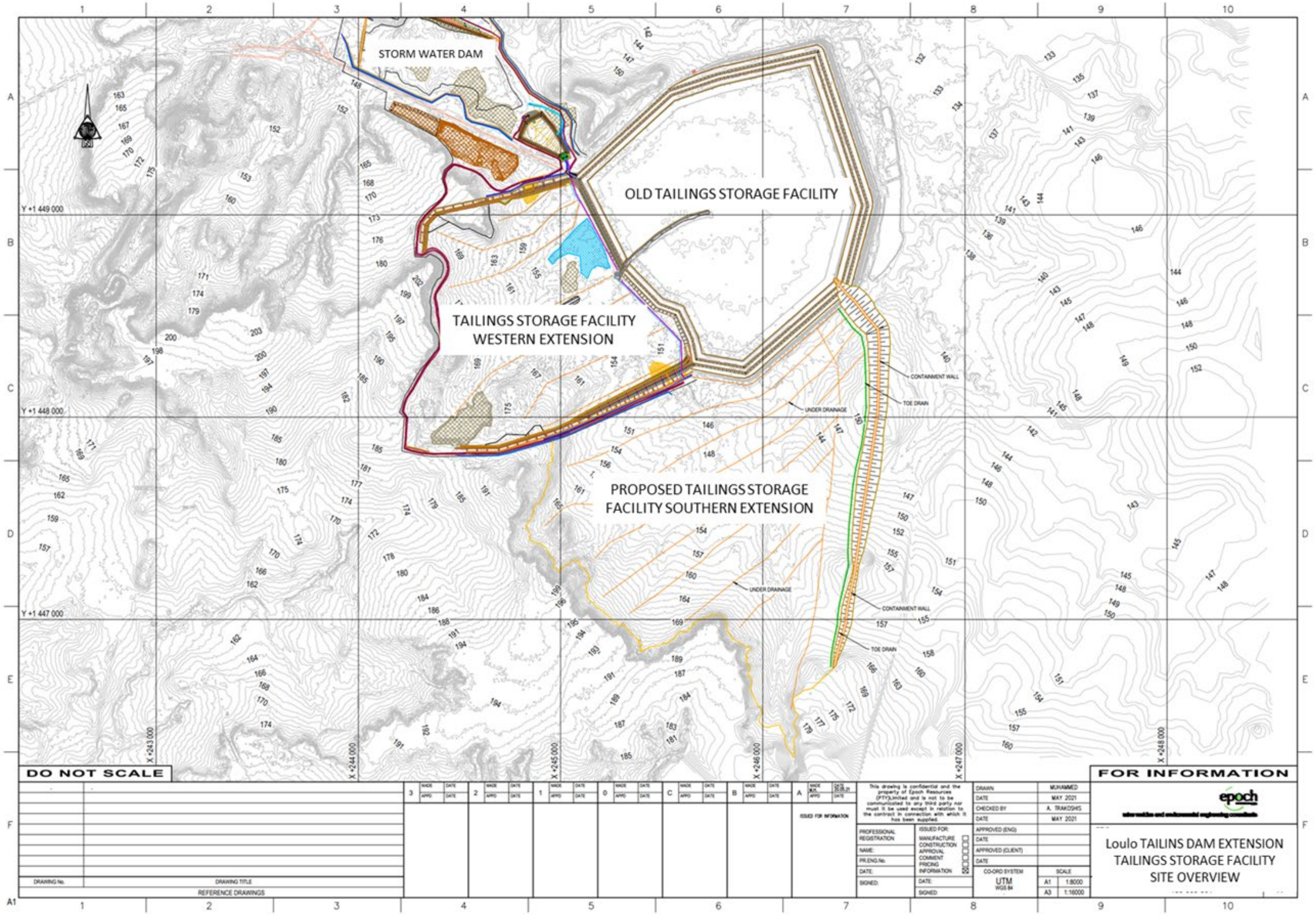
18.5 Tailings Facilities

The TSF for Loulo (Figure 18-2) is eight kilometres from the processing plant in an area with several natural ridges. It has been designed to maintain a minimum freeboard of 2.7 m to provide sufficient storage to contain a 1 in 50-year rainfall event over a 72-hour period. The TSF was designed by Knight Piésold Ltd (Knight Piésold) and initially operated by Fraser Alexander Limited. EPOCH Resources (Pty) Ltd (Epoch) of South Africa subsequently took over as the Engineer of Record, including the designs of all expansion and current buttressing work. Paragon Tailings, a contractor, is now responsible for tailings operations.

The tailings disposal operation is based on a 42-paddock system, disposing in two paddocks at any one time. Each paddock is 100 m in length and 35 m wide. Each lift is 200 mm and construction of the walls is done by hand packing using shovels with slurry deposition using spigots inside the paddocks. Each paddock is used for 36 hours to 48 hours.

It takes approximately one and a half months to complete an overall 200 mm lift of tailings in the TSF, which gives an annual rise of approximately 2.0 m (current rate of rise as of 31 December 2022 is 2.03 m/year). At approximately 10 m height, the paddock area was stepped in to leave an approximately 8 m wide bench.

Tailings deposition in the old TSF footprint is scheduled to stop in Q1 2025 at an elevation of 175 MASL while deposition on the western extension will continue until 2028, to an elevation of 172.6 MASL. The proposed southern extension, shown with starter wall on the eastern side of the dam, is currently scheduled to come online in Q2 of 2025 and will remain in operation to the end of LOM in 2037. The final elevation of the southern extension will be 173.5 MASL. These close out as single combined footprint with a proposed spillway located on the western extension. The whole footprint will be rock buttressed to ensure factors of safety that comply with the Global International Standards for Tailings Management (GISTM).



Source: Epoch Resources, 2021

Figure 18-2 Complete Loulo-Gounkoto TSF

Tailings are discharged from the relevant CIL tank, screened at the tails linear screen (0.8 mm by 0.8 mm) and report to the tails tank from where they are pumped to either the Intermediate Paste Plant or TSF. The current split is approximately 40% / 60%. Total tailings production is approximately 12,000 tpd. The tails delivery pumps are equipped with a flow diversion valve, where the delivery lines of the duty and standby pipes combine into the tailings main pipe.

There are two steel tailings lines connecting the plant and the TSF and one HDPE return water pipe. The second steel line is used as a back-up line. All pipelines are of 450 mm diameter, lying above ground and inside a trench, along a vehicle access road between the TSF and the processing plant. The tailings are pumped by two 90 kW pumps with a total capacity of 620 m^3/hr at an in-situ density of 1.37 t/m^3.

Return water is pumped from a floating barge with two electric pumps. It is estimated that the TSF retains approximately 25% of the water. Current estimated water storage in the TSF is maintained at not more than 200,000 m^3 in the pool as part of the strategy to ensure minimal water storage in the dam and compliance to the dam management policy.

During the three-month wet season, the TSF receives more rainwater. The quantity of retained water reduces over the remaining nine months of the year. A marker system on top of the TSF is used to measure the pool size. Different colour markers are placed around the pool to monitor any increase in the size of the pool. Freeboard is measured weekly.

If required, excess water can be pumped into the detox pond by a 600 m^3/hr pump to the raw water dam (RWD). From this point, any excess water besides that pumped to the processing plant is detoxed through the 150 m^3/hr arsenic treatment plant with the discharge of water at less than 0.1 ppm arsenic, in conformance with the IFC guidelines into the stormwater dam (SWD).

Monitoring piezometers surround the facility and data is collected using data loggers and monitored and analysed regularly as part of the TSF management system. The overall TSF management strategy is based on the GISTM system, which has allowed for the increase of the total freeboard from 1.5 m to 2.7 m.

The TSF operation is audited regularly by Epoch, which last visited the Complex in October 2022. No major areas of concern were noted other than an area of low Factor of Safety, which require a sacrificial buttress to enable tailings deposition above the current designed final height of 43 m. The need to exceed the current height is driven by the delay in the construction of the Southern Extension which will come into operation in Q2 2025.

The TSF water management is achieved with adequate maximum installed pumping capacity of 3,000 m^3/hr to maintain water volumes within safe operating limits in all operating dams. The maximum pumping capacity is designed to cater for the maximum probable precipitation event.

18.6 Power Supply

Power is derived from a hybrid thermal-and renewable sources. Thermal generation fuel is imported from Senegal and transported by road. Filtration and centrifugation are used to produce a 'clean' diesel which can be used in the mobile equipment and the power plant. At Loulo, there are two main fuel farms, one near to the workshops and warehouse and the other at the power plant.

At the warehouse, there are five 500 kL diesel tanks in a common bund, all protected by a fire detection and suppression system. There are also five 50 kL tanks for clean diesel, four at the powerhouse and one for light vehicles.

The second major fuel farm is at the power plant for storage of heavy fuel oil (HFO). The medium speed generators run on HFO and high-speed engines running on diesel. The tank farm comprises:

- Three 2,000 kL tanks for HFO storage
- Two 230 kL HFO settling tanks
- Two 253 kL day tank for filtered and settled HFO
- One 230 kL light fuel oil (LFO) tank
- One additional 230 kL completed as part of the power plant expansion project.

Fire protection for the HFO tank farm and both power stations consist of a pump set with a main diesel pump with an electrical jockey pump to maintain pressure under normal circumstances. Water is supplied from a pump station dedicated to these areas. A fire suppression upgrade is underway, which will consist of additional deluge around the power plant, and a fully automated fire detection and suppression system including cameras.

At Gounkoto, there are two 500 kL tanks and one 75 kL and one 45 kL clean diesel tanks, all protected by a fire detection and suppression system.

Current power demand for the Complex is approximately 53 MW. The main power plant is located at Loulo and has an installed capacity of 72 MW, with an additional 16.2MW of thermal addition and 20 MW solar power. Capacity comprises a mixture of PV, medium-speed, and high-speed generators. The power station for the site is operated by West Africa Power & Environment (WAP&E), a local company with managing shareholding held by United State Power & Environment (USP&E). A full maintenance contract is in place.

The existing power plant has a combination of PV, medium-speed, and high-speed generators as follows:

- 20 MW PV plant
- Fourteen CAT 3512B-HB 1.2 MW high-speed generators
- Ten 8CM32 3.5 MW medium-speed generators

- Two 12CM32 5.2 MW medium-speed generators
- Three 16CM32 7.2 MW medium speed generators
- Three 12CM32 5.2 MW which are ready for commissioning and performance testing.

The high-speed generators run on normal diesel. The medium speed generators are operated on HFO180.

All high-speed generators are installed within one powerhouse building. Four of the 8CM32 3.5 MW generators are housed within one building. The other four 12CM32 3.5 MW units are located in the in the power building, below the control room. Two 12CM32 3.5 MW are housed alongside two 12CM32 5.2 MW and three 16CM32 7.2 MW units. The three new 12CM32 5.2 MW are housed in a separate building.

Power is distributed around the site at 11 kV. A central medium voltage room is used as a switching room to distribute power across the mine through several feeders via 11 kV overhead lines. The high-speed generators produce power at 400 V, which is then stepped up to 11 kV through individual transformers. The CM generators produce at 11 kV.

The site base load capacity is met by the CM generators, while PV is used to offset fuel during sunny days. The CAT generators are used for peak loads and grid stability. Currently 70% of total generation capacity is needed to meet the site demand.

Gounkoto is supplied from Loulo via 33 kV power duty and standby lines. Four standby CAT 3512 1.2 MW generators are located at Gounkoto power station.

18.7 Site Infrastructure

Operational Camp (Village)

The Loulo offices, warehouses and accommodation village are located to the east of the Gara open pit. Due to the remote nature of the operations, there is a comprehensive provision of auxiliary facilities at Loulo. Living quarters include a mine village for the expatriate labour and senior staff.

A small clubhouse and mine recreation facility have been built on site, which is the focal point of the mine living quarters. This structure is designed to blend into the environment. The recreation rooms are designed in a flexible manner so that they are used for all mine functions and training when required.

Offices, Stores, and Workshops

Extensive use has been made of old shipping containers for buildings either individually or as part of a brick constructed building such as for the workshops. The mine site buildings are therefore a mixture of constructions. These comprise:

- Administration office buildings
- Warehouse and Stockyard
- Light vehicle workshop
- Laboratory

The warehouse at Loulo serves the Gounkoto Mine.

Both Gara and Yalea underground mines have small workshops near the surface portals where servicing of mobile mine equipment is completed, including preventative maintenance and specific component change outs. A central workshop is used for more substantial maintenance, such as major overhauls and large component change outs.

The central workshop is undergoing an expansion, increasing it from 7 to 22 bays. A 10 t overhead crane is installed. Sandvik has established a warehouse on-site where it maintains an inventory stock.

The mine workshop at Gounkoto is owned by SOMILO but is operated by the contractor, GMS. The workshop consists of six large bays and each bay can accommodate one CAT 777 truck, or up to four smaller mobile mining machines.

Emergency Response and Medical Facilities

There are three medical clinics available: one in Loulo with three doctors and nurses, one in Gounkoto and one in the Junior Village. Each clinic has an ambulance.

A number of local medical facilities have been identified which could assist in case of multiple injuries. Planes and ambulances can be used for medical evacuations.

There are Mine Rescue teams (referred to as Proto teams) in place to serve the underground operations at the Complex, each comprising of ten persons. In addition, a turnout agreement has been concluded with the Byrnecut Proto Team at the neighbouring Tabakoto Mine which is owned by Endeavour.

A Mine Rescue (Proto) Room is established and equipped with facilities for washing and storing the Draeger BG 4 breathing apparatus (BG4) sets, a Draeger pump for recharging the cylinders used in the BG4 sets, and the kit of the individual members.

A fully equipped fire truck is stationed at Loulo and is used at the airstrip when planes land. In addition, both at Loulo and Gounkoto mine water trucks are available to supply additional water and firefighting capability.

Airstrip

The airstrip is 1.5 km long and built from laterite. It has been approved by the National Directorate for Civil Aviation. The maximum size of aircraft that can use the airstrip is six tonnes per single wheel and twelve tonnes per double wheel. The airstrip is capable of taking aircraft with a typical capacity of 40 seats.

Barrick organises charter flights from Bamako twice per week, usually using 20-seater Beechcraft 1900 planes.

18.8 Communication and Information Technology

Internet access is through a very small aperture terminal (VSAT) at both Loulo and Gounkoto, and a network link that connects the two sites. The IT/Communications configuration networks Gounkoto into the Loulo network with a high-speed terrestrial network link with each site providing redundancy to the other. The dual VSAT links provides redundancy in the event that either VSAT becomes temporarily non-operational. The dual VSAT links also allow communication for their respective site if the terrestrial link is severed.

A very high frequency radio system is installed to provide contact with all mobile equipment and all of the service vehicles. Handheld radios are used by roving operators and supervisors to ensure adequate communication.

18.9 Security

There is comprehensive security infrastructure at the site, with good access control commensurate with the operations at the site. The Security Manager reports directly to the onsite General Manager. A contractor, AMM, provides the security service. There are also 18 local hunters being used to provide external security patrols. In addition, the government of Mali, as part owners of the operations, also provide security.

The principal risks are ongoing loss of company equipment and stores by means of fraud and theft, mainly by employees and the ever-present risk of break-ins and petty thefts in the residential village.

The Loulo Mine property is partially fenced with 2.4 m high chain link fence topped by flat wrapped razor wire and a road runs along the entire perimeter. Site fencing is also provided at Gounkoto.

The plant area is fenced with the access controls at the main gate and to the more sensitive areas within the plant. An electronic access system for the plant is operation.

There is one main entrance to the Loulo site, where a security gatehouse has been erected and is manned by three guards, on a 12-hour shift cycle. A similar arrangement exists at Gounkoto.

The spares and materials storage sites are fenced off by a 1.8 m fence topped by a 0.5 m barrier of flat-wrapped razor wire. The access gates are kept permanently locked and access is controlled by staff in an adjacent office.

Gold is shipped from the mine site to Rand Refinery, with responsibility held by Brinks Southern Pty Ltd (Brinks) once it leaves the Gold Room. The gold is escorted from the site Gold Room to the airport by Mine Security, Gendarme (part of the Malian armed forces), and Brinks representatives. State representatives are present to witness and record the transfer of product. Gold is directly transferred to Bamako and from there to Rand Refinery. The shipping follows no fixed pattern in date or day of the month.

19 Market Studies and Contracts

The principal commodity produced at the Complex is gold, which is freely traded at prices that are widely known, so that prospects for sale of any production are virtually assured. Prices are usually quoted in US dollars per troy ounce.

19.1 Revenue, Tax and Royalty

Financial evaluation and cut-off grade calculation for the Loulo Mineral Reserves has been based on a gold price of $1,300/oz.

A royalty of 6% of the proceeds of gold sales is payable by Loulo-Gounkoto to the Mali government.

As further described in Section 4.4, Loulo-Gounkoto pays income tax at a rate of 30% to the Mali government.

19.2 Markets

The gold market is highly liquid and benefits from terminal markets (London, New York, Tokyo, and Hong Kong) on almost a continuous basis. Gold prices were in general downward trending from 1980 to 2000 falling to approximately $250/oz. Between 2000 and 2011, the market was on a general upward trend that moved spot prices to a peak of $1,900/oz during 2012. In 2013, there was a sharp correction in the upward trend, with the spot price dropping to approximately $1,250/oz. Between 2014 and 2019, the gold price fluctuated in the range of $1,050/oz to $1,400/oz, before rising significantly to peak above $2,050/oz in August 2020. Prices then fell and generally traded in the range of $1,650/oz to $1,900/oz before peaking above $2,050/oz again in March 2022. As of December 2022, prices have subsequently fallen to approximately $1,700/oz.

Gold produced at the Complex is shipped from site, under secured conditions, to a refining company. Under pre-established contractual conditions, the refiner purchases the gold from Loulo-Gounkoto with the proceeds automatically credited to Loulo-Gounkoto's bank account. The operation is unhedged.

19.3 Contracts

It is Barrick's strategy to outsource open pit mining activities to contractors and, in all instances, the contract states that the mining operation can purchase the equipment at the end of the contract period at its depreciated price or, should the contractor default, at a predetermined pricing mechanism. Prior to start-up, all major mining contractors are requested to tender, and the most appropriate tender is accepted thereby ensuring that the best competitive current pricing is achieved. Care is taken at the time of finalising contracts to ensure that the rise and fall formula is fully representative of the build-up of the quoted price per unit. At the time of award prices quoted are compared to benchmark prices of other owner miner operations.

The contract mining costs are dependent on when tenders are issued as the price of major equipment varies dependant on demand as well as the cost of finance. Rise and fall can be negatively affected by currency fluctuations.

The main open pit mining contractor is Gounkoto Mining Services, a subsidiary of DTP Mining, part of Bouygues, a French company.

Loulo-Gounkoto produces doré bars which are sent to an accredited gold refinery for refining. Refining prices are subject to fluctuations in the cost of transport as well as insurance costs. Other contracts that are put in place include assay facilities, drilling, oxygen supply, catering services, fuel supply, explosive supply, security.

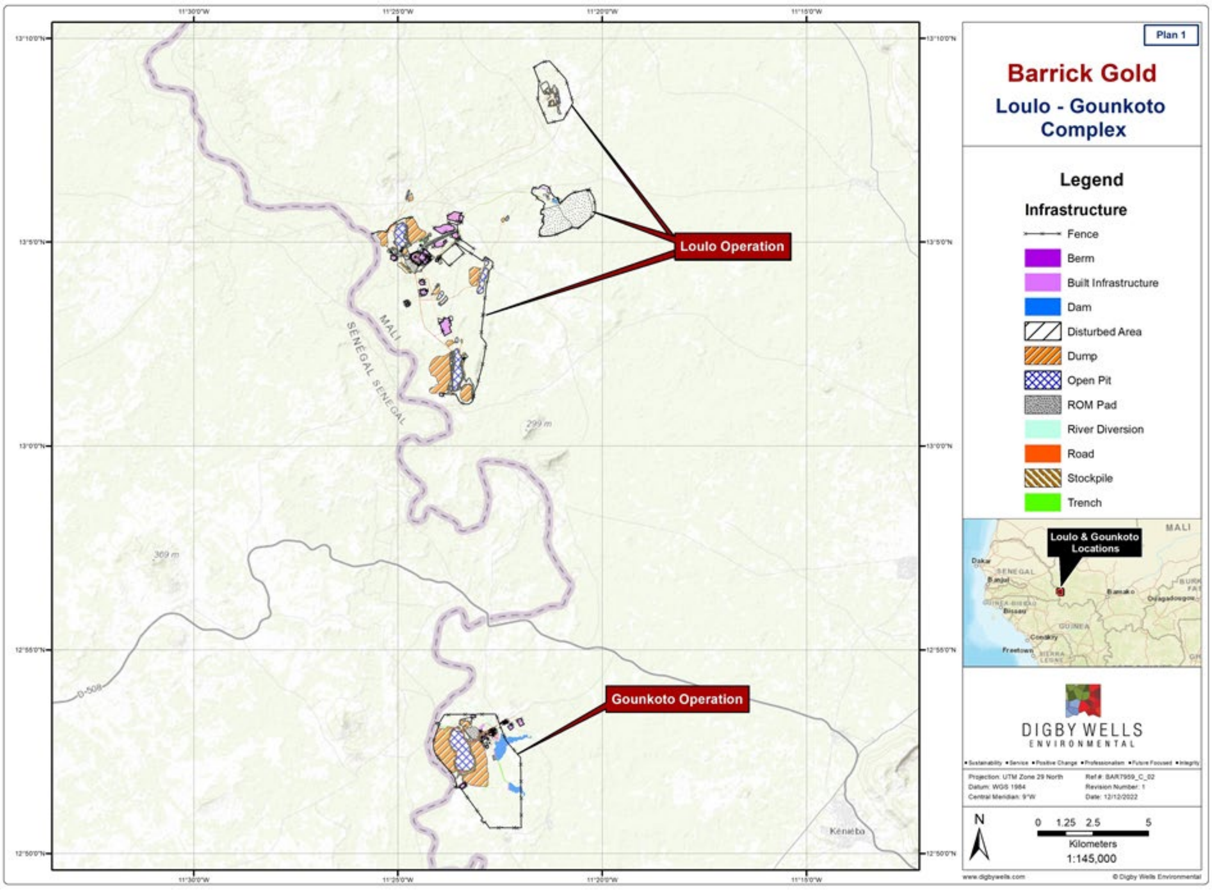
The QP notes that all material contracts discussed above are currently in place and the terms contained within the sales contracts are typical and consistent with standard industry practice and are similar to contracts for the supply of doré elsewhere in the world. All contract terms, rates and charges are within the norms of Barrick's regional benchmarks, which are generally within the lower half of industry wide standards.

20 Environmental Studies, Permitting, and Social or Community Impact

20.1 Environmental and Social Management

Summary

The Complex is a complex of open pit and underground operations across the two main mine sites, Loulo and Gounkoto, which are approximately 32 km apart and have been operating since 2005 and 2011 respectively (Figure 20-1). Gounkoto operates under a separate Exploitation Permit from Loulo since 2012 with ore being toll treated at Loulo. The Complex is situated in Kéniéba circle, 350 km NW of Bamako.



Source: Digby Wells, 2022

Figure 20-1 Local Setting of Loulo-Gounkoto

Loulo mining activities consist of the Yalea and Gara underground mines, as well as the Gara West open pit. Other satellite pits include Baboto, PQ10, P129, P125, Loulo 2, and Loulo 3. These pits have been mined, are now left open, and are not currently being mined, with P129 and Loulo 3 being used for water storage. The open pits are made safe by being within the fenced area of the mine. Gounkoto mining activities consist of one open pit and linked underground operations.

Barrick intends to increase the size of the Yalea pit, which will involve the extension of the existing WRDs, increasing the size of the Loulo 3 and Gara West pits and mining the Faraba pit in the Gounkoto area. The Yalea expansion is currently being permitted and studies are being undertaken. The environmental notice applications for Yalea are planned to be submitted early in 2023 to the authorities for approval.

Ore from Gounkoto is crushed, stockpiled, and trucked via a dedicated and paved haul road to the Loulo processing plant, where it is further crushed, ground, and passed through a gravity circuit and CIL plant. The gold is eluted from the carbon before being smelted to produce bullion. The Gounkoto and Loulo ore are treated together at the Loulo metallurgical facility.

Approximately 70% of the tailings are pumped eight kilometres east to the TSF. The remaining portion of the tails are fed to the Yalea and Gara paste plants and pumped to the underground workings for underground support. Plans are in place to transport paste tailings to the newly constructed Gounkoto paste plant. The Loulo TSF is a self-raising facility. An extension of the TSF was undertaken in 2020 on the western side of the current facility, and a new extension on the southern side should be completed in 2025 to accommodate the current LOM production. As per legal requirements (Decree No. 2018-0991 / P-RM of 31 Dec 2018), an ESIA associated with the southern extension has been completed and validated by the Inter-ministerial Technical Committee (ITC) during a workshop in November 2022. The environmental permit for the southern extension is expected to be issued in Q1 2023. The southern extension will be a lined facility as the ground below it has high conductivity and programmes are underway to devise a plan to ensure that previous artisanal workings below this facility are sealed and do not affect the TSF lining.

The original TSF was not lined and over the past number of years a plume of contaminated water has been detected originating below the topographical low-lying areas. This plume can be managed and contained using cut-off trenches and cut-off boreholes with pumps, and the modelling shows an area of influence which can be kept away from regional streams and villages.

The western extension has been lined using perforated pipes, which have been designed to capture seepage and direct it to return pumping systems.

There is a major project to construct a rock buttress around the facility to improve the factor of safety. This rock buttress will make closure of the facility easier in terms of wall slope and stability and by preventing erosion.

Facilities at Gounkoto include accommodations, canteen, workshops, offices, a cut-off trench to divert surface water flows from the east and prevent water from entering the open pit, and two dams, both receiving water from diversion trenches and a waste handling area. Gounkoto has a separate fuel farm of 1,709,000 L of storage capacity. The Falémé River bounds the western edge of the site and demarcates the border with Senegal.

Waste rock has been disposed of on WRDs that are located adjacent to the pits, and in pit deposition is practised. The Gounkoto West WRD lies between the pit and the Falémé River. It has been designed by the Complex's geotechnical team with a system of underdrainage and seepage collection structures to avoid any potential discharges from the WRD into the Falémé River. The East WRD has been partially reclaimed and the LOM plans for waste rock will involve the filling of the southern portion of the open pit and filling it such that it connects with the East WRD.

The waste rock is deposited at the angle of repose which is approximately 37°; and the WRD will then be shaped using bulldozers to an angle of 27° or less to ensure stability. The shaping of the WRDs from 37° to 27° will reduce the offset area from 15 m to 5 m from the Falémé River berm. The berm has been reinforced with a hard-core toe buttress to serve as a rock-fill drain and a retaining wall. A finger drain or seepage collection toe has been constructed from the toe wall extending for 50 m under the WRD to drain any potential seepage from the WRD to an evaporation pond. The WRD is 100 m from the Falémé River at its closest.

Loulo has various facilities supporting the operation of the mine, including, amongst other, accommodation, canteen, offices, workshops, crushing and processing plant, as well as a power plant, a central fuel farm, and three fuel depots at Gara, Yalea, and the central workshop area. The total fuel storage capacity is 4,145,000 L for LFO and 6,713,000 L for HFO.

A 20 MW solar array was installed in 2020, reducing mine dependence on diesel for power generation and reduced operational GHG emissions by 27 kt of carbon dioxide per year (kt CO_2/year). This also resulted in employment opportunities, with youth from nearby communities employed to perform cleaning and maintenance of the solar panels. Ground has been cleared for an additional 40 MW of solar capacity and a new battery storage facility. This is positive from a carbon reduction perspective, as it lessens transport of hazardous goods on the roads and has the potential to leave behind legacy projects after mine closure.

A climate committee has been set up to identify and develop short-, medium-, and long-term GHG reduction initiatives for the mine. Their remit is to align initiatives at the Complex with Barrick's GHG emissions reduction strategy, to reduce GHG emissions by 30% from 2018 levels by 2030 (assuming a steady production profile) and achieve net zero emissions by 2050.

The Loulo and Gounkoto operations are managed by the mine General Manager (GM) and share an Environmental and Social Department. The Head of the Environmental and Social Department reports to the GM, with a functional report to the Head of Sustainability for Africa and Middle East (AME) as shown in Figure 20-2 below.

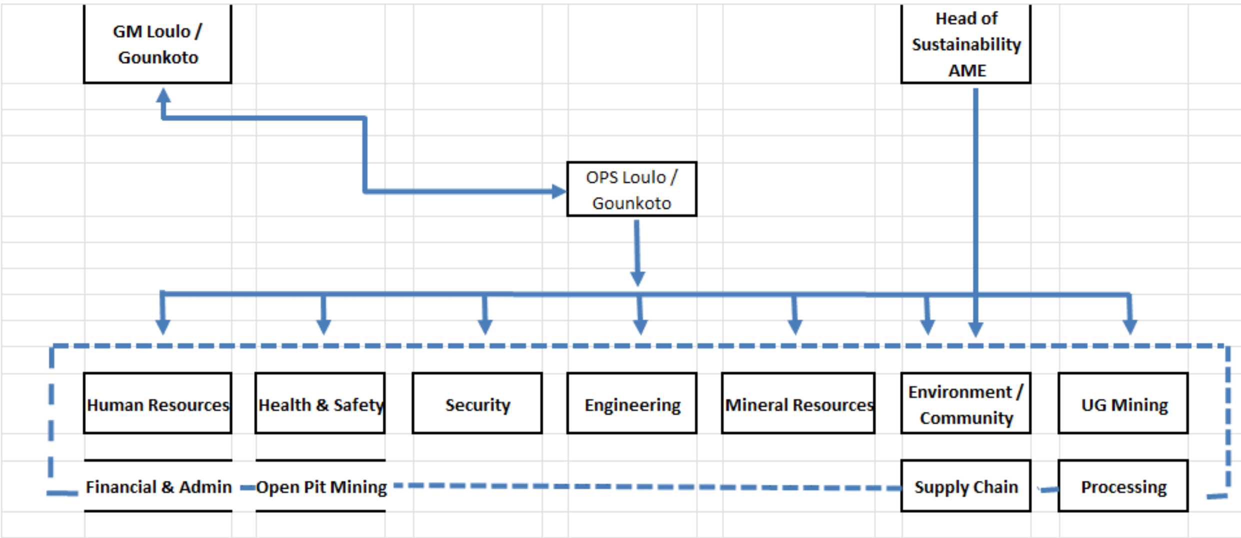


Figure 20-2 Mine Organogram

An EMS is in place in accordance with the ISO14001 standard, which covers both operations. The Loulo and Gounkoto operations are ISO 14001:2015 certified compliant and independently audited annually to ensure compliance with the standard's requirements.

Environmental Assessment and Permitting

All environmental permits and authorisations for the operations to comply with Malian legal requirements are in place and up to date. Audits are conducted every five years by the Direction National de Control de Pollutions et Nuisances (DNACPN) to evaluate conformance against the operational ESMP. The latest environmental clearance permit was received in December 2021 following a successful audit.

As the operations have expanded and new infrastructure incorporated, additional ESIAs have been undertaken to determine the baseline conditions of new areas to be disturbed and potential negative and positive impacts associated with these new activities. In 2021, an ESIA was completed, and an environmental permit granted to develop the Gara West operations. In addition, the ESIA for the southern extension of the TSF and buttressing thereof was completed and validated by the ITC at the end of Q3 2022 and the environmental permit is expected in Q1 2023. The Gounkoto Super Pit is fully permitted. The expansion of the plant when the infrastructure associated with the increased throughput is constructed could be dealt with in a periodic update of the ESIA or an environmental notice to the authorities. The following list identifies the ESIAs and EISA updates completed for Loulo since 2010:

- An ESIA was completed in April 2022 (Digby Wells, 2022) for the Loulo TSF southern extension project. The ESIA was validated by the ITC in November 2022 and the environmental permit is expected in Q1 2023
- An Environmental Notice study was completed in 2022 by (Digby Wells, 2022), for the Yalea OC project. The environmental permit was granted in December 2022 by DRACPN

- An Environmental Notice study was completed in August 2022 (LEGES SARL, 2022), for the new refrigeration projects of Gara and Yalea. The environmental permit was granted in September 2022 by DRACPN
- An Environmental Notice study was completed in September 2022 (LEGES SARL, 2022), for the Loulo solar farm extension project: The environmental permit was granted in October 2022 by DRACPN
- An ESIA was completed in April 2021 (Digby Wells, 2021) for the buttressing road upgrading project. The environmental permit was granted in May 2021 by DRACPN
- An Environmental Notice study was completed in August 2021 (LEGES, 2021) to develop the Gara West operations. The environmental permit was granted in October 2021 by DNACPN
- An Environmental Notice study was completed in May 2019 (Magenta SARL, 2019) to develop the Loulo Solar farm project. The environmental permit was granted in June 2019 by DNACPN
- An ESIA was completed in August 2018 (Digby Wells, 2018) for the Loulo TSF extension project. The environmental permit was granted in November 2018 by DNACPN
- An Environmental Notice study was completed in November 2014 (Groupement d'Experts pour la Recherche en Environnement et le Développement (GERED), 2014) for the Loulo power plant extension. The environmental permit was granted in December 2014 by DRACPN
- An ESIA was completed in February 2012 (Digby Wells, 2012) for the Loulo Gold Mine. The environmental permit was granted in May 2012 by DNACPN
- An ESIA was completed in December 2012 (GERED, 2012) for the Loulo Gold Mine. The environmental permit was granted in Nov 2012 by DNACPN
- An ESIA was completed in September 2009 (Digby Wells, 2009) for the Loulo Gold Mine. The environmental permit was granted in September 2009 by Environment and sanitation ministry

The following list identifies the ESIAs and EISA updates completed for Gounkoto since 2010:

- An Environmental Notice study was completed in July 2020 (Digby Wells, 2020) for the operation of Gounkoto UG. The environmental permit was granted in December 2020 by DRACPN
- The Gounkoto Super Pit is fully permitted. ESIA was completed in November 2016 (Digby Wells, 2016). The environmental permit was granted in August 2017 by DNACPN
- An ESIA was completed in March 2015 (Digby Wells, 2015) for the Gounkoto Underground project. The environmental permit was granted in June 2015 by DNACPN
- An ESIA was completed in November 2010 (Digby Wells, 2010) for the Gounkoto Gold Mine. The environmental permit was granted in March 2011 by the Environment and Sanitation Ministry

Environmental and Social Management and Monitoring

The Complex's Environmental and Social Department develops budgets and programmes in consultation with the GM and the Head of Sustainability for AME. Departments are responsible for performance, and compliance/conformance through carrying out audits, inspections, and monitoring. Loulo has been certified against the ICMC in 2021, relating to cyanide management during transportation, handling, storage, operations, decommissioning, worker safety, emergency response, and community dialogue.

A consolidated ESMP is in place which covers all aspects of the operation and was updated as part of the 2021 ESIA extension. The ESMP includes management measures, targets, and compliance against relevant legislation relating to current, planned, and proposed activities, as well as a rehabilitation plan. The ESMP includes an Environmental and Social Monitoring Plan as approved by the regulators and comprises monitoring the following parameters:

- Air quality and dust
- Water sampling and analysis of:
    - TSF seepage water and tails streams (with a particular focus on arsenic, WAD, and free cyanide which are analysed on site)
    - Potable water
    - Groundwater
    - Surface water
- Terrestrial and aquatic biodiversity/habitats
- Noise and vibrations
- Soil
- Community relations and grievances
- Energy use

Waste is segregated and managed by adopting the Reduce-Reuse-Recycle principle. In 2021, a total of 389 tonnes of waste was incinerated on site, 10,885 tonnes reused or recycled, and a further 405 tonnes sent to landfill.

Environmental performance objectives are established by senior management, including the GM and the Head of Sustainability for AME, and communicated within the operations. All strategic inputs are formalised, and close tracking is carried out through the EMS.

Environmental incidents are recorded in a register which forms part of the EMS. Investigations are undertaken in a timely manner to identify root causes and corrective actions are implemented. A total of 28 environmental incidents were recorded in each of 2021 and 2022, compared with 29 in 2020; all of these were Class 3 incidents, which are defined as minor incidents that do not pose any adverse impacts or risks to human health or the environment. Most incidents were minor oil and fuel spills. Corrective actions were implemented to clean these up and lessons learnt recorded to reduce the risk of recurrence.

An annual Environmental and Social Report is submitted to the Malian authorities, compiled in a format aligned with the Global Reporting Initiative (GRI) requirements. These reports describe environmental incidents, biodiversity and soils, water quantity, quality of water discharges, surface water and groundwater quality and trends, energy and GHG emissions, cyanide management, noise, dust management, water management, implementation of the EMS, and updated closure costs accounting for concurrent rehabilitation. The report also contains a section on community development which includes grievances, received stakeholder dialogue and meetings, artisanal mining management, education and training provision, community health, drinking water, food security, and economic development.

All environmental issues which are known at the time of issuing the report, and which are significant, have been described in this report.

20.2 Environmental Considerations

Water Management

The site is characterised by a higher annual evaporation rate (1,618 mm/yr) which is higher than the annual precipitation (1,200 mm/yr). The wet season is between June and September. Therefore, water management is critical to ensure sufficient water availability for the operation during the dry season while managing excess water during the wet season to prevent unplanned and unmanaged discharges. To ensure the effectiveness of water management, the Complex has developed and implemented a water balance tool is updated annually or more regularly as operations expand or change.

The Complex reports all water usage and consumption metrics to be consistent with the International Council of Mining and Minerals (ICMM) water accounting framework.

The mine water management strategy is focused on recycling to reduce freshwater consumption; 85% of slurry water sent to the TSF is recycled back to the processing plant as shown in Figure 20-3 and Figure 20-4.

Post Closure Water Management

Post-closure, the TSF could be a potential source of neutral mine drainage which might result in soil degradation, and contamination of groundwater and surface water. The risk of a contamination plume migrating from the TSF is of concern and management options relating to management and mitigation of potential contamination should be implemented.

It has been found that there is a groundwater plume which can be managed by pumping the shallow contaminated water back onto the TSF for a period of time and allowing it to evaporate. The cost has been included in the closure cost estimate. This cost needs to be revised once a detailed management plan has been developed.

To ensure the tailings material is stabilised and protected from erosion at closure, the following activities must take place for rehabilitation of the TSF:

- Cover the TSF with a layer of 300 mm saprolite and/or suitable materials to reduce the infiltration of water.

- Deposit and spread 300 mm of soil over the saprolite layer.
- Vegetate the TSF surface area.
- Allow surface water to exit the TSF surface without causing erosion;

It is recommended that at closure the tailings pond area be allowed to be free draining and filled with material to eliminate water ponding (no water should pond on the surface of the TSF post-closure). This can be achieved by depositing the final tailings in the middle of the facility so as to greatly reduce the final pond size and shape the area level or into a dome. There could then be infilling with additional saprolite to ensure a free-draining surface and allowing surface water to run off in a controlled manner. The final tailings deposition will be done during the final stages of the mine's operation and hence is not accounted for in the closure costs. An estimated cost for constructing a down drain to achieve the TSF free draining has been included in the assessment.

The inactive pits are in the process of recharging with water, and the water qualities vary per pit. The Loulo 3 pit water is being pumped and treated operationally, since TSF seepage is discharged into this pit and the water is therefore contaminated with arsenic.

Water treatment is required at the Loulo 3 pit and the TSF prior to discharge into the natural environment. The water treatment approach differs for PER and LOM. Based on current volumes received from Loulo in October 2022, 1,493,149 m^3 still requires treatment.

Water treatment costs at Gounkoto are excluded from the closure cost estimate as more detailed studies are required to determine whether this will be needed. It is recommended that these studies be undertaken to inform the estimation of potential water treatment costs required post-closure.

Geochemical modelling, acid base accounting (ABA), and waste characterisation studies should be updated in the remaining operational period to further refine the required closure measures. Hydrogeological studies should be conducted to define the post-closure influence of mining on the groundwater quality in the surrounding areas and to determine if water treatment will be required at closure.

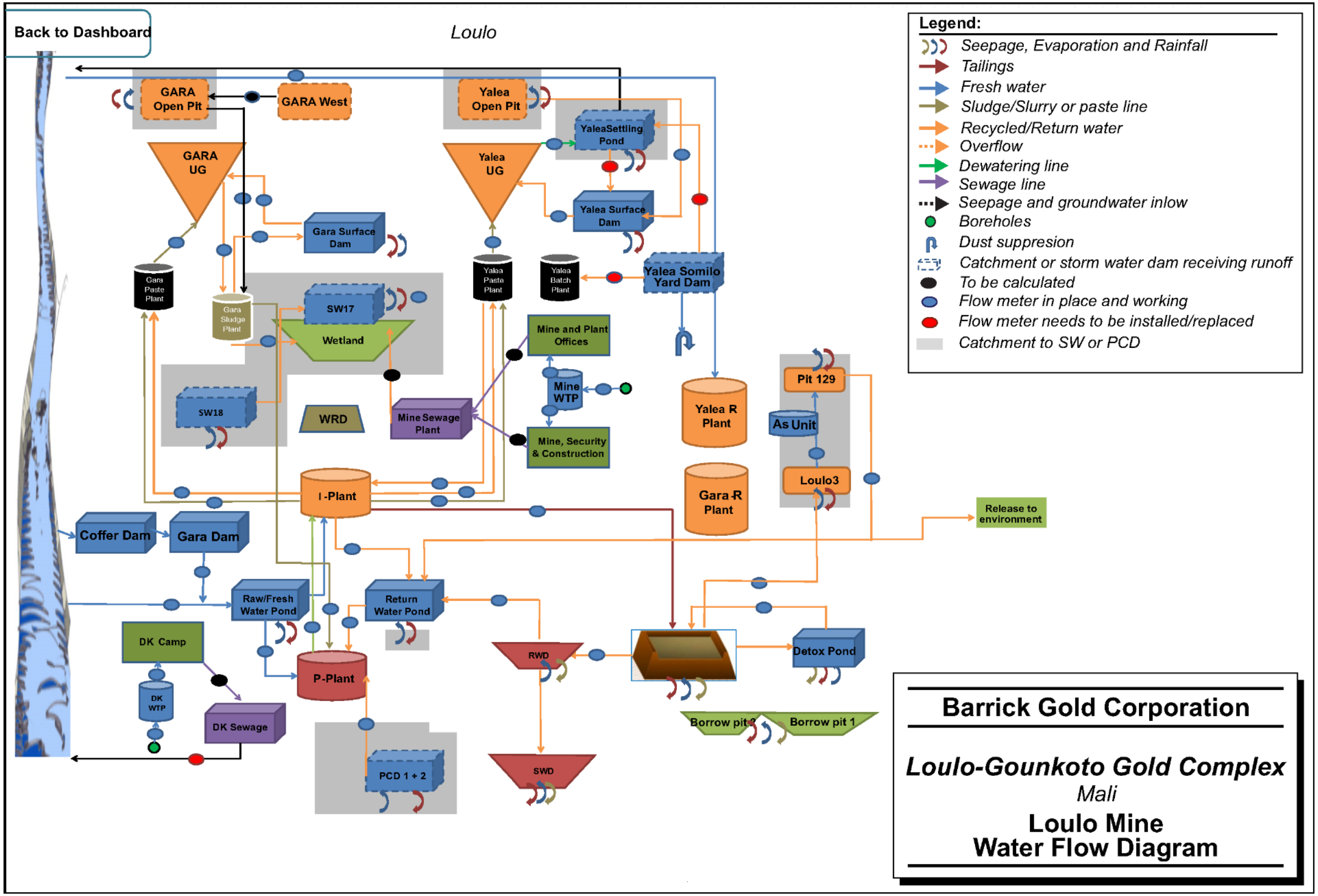


Figure 20-3 Loulo Mine Water Flow Diagram

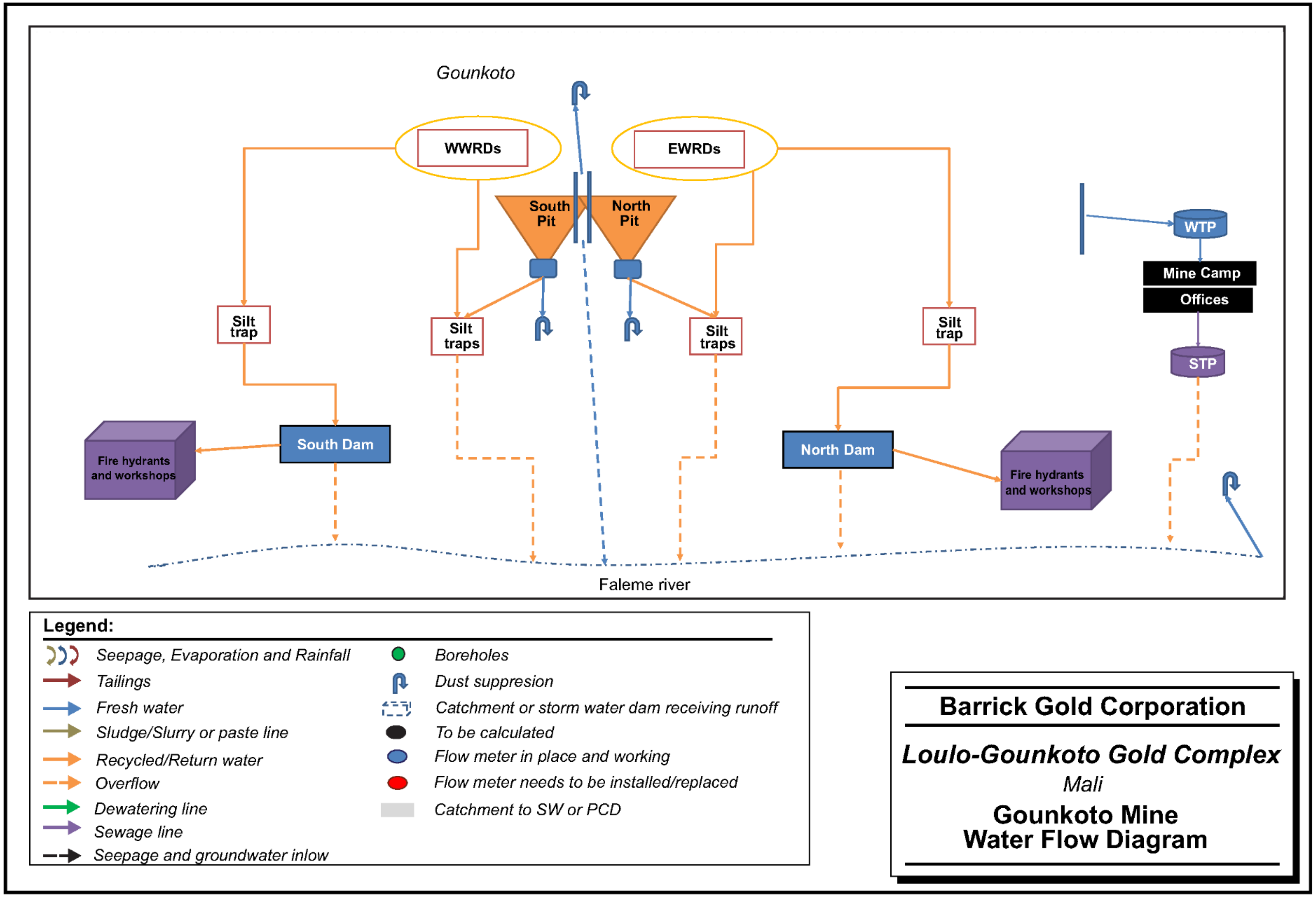


Figure 20-4 Gounkoto Mine Water Flow Diagram

Freshwater

The Falémé River is the natural border between Mali and Senegal and provides the majority of Loulo's freshwater requirements. Freshwater is also abstracted from the Gara Dam, and this could be used for processing requirements, but the main consistent use is for gardening and firehouse water. A main pumping station with two transfer pumps is situated in the river basin upstream of a weir on the Falémé River. Water is pumped to the raw water dam at Loulo from where water is delivered to the processing plant. The mine has a water withdrawal authorisation permit from the Organisation for Senegal River Development (OMVS) to abstract 3,024,000 m^3/year of water from the Falémé River.

The Gara Dam is a built water retention system designed to divert the Gara River around the mining pit and is used by the mine as a supply point and by the community for fishing and gardens. Water for the accommodation camp, gardens, and fire hydrants is pumped from the Gara Dam, which is also used to feed the plant during the dry season.

Gounkoto has a very low requirement for river water as dust suppression water is sourced from pit water and dewatering wells. Rainfall and pit dewatering provide sufficient water for the operation as no ore is processed there. Water is used for crushing of the ROM material before loading and for dust suppression.

Process Water

The majority of mine water is consumed by the processing plant and associated activities. Wet tails are pumped to the TSF after the CIL process and cyanide destruction at the intermediate plant, where peroxide is used. After settlement at the TSF pool, water is pumped back to the processing plant to be reused. Recycled water from the process water pond makes up 90% of total water consumption at the Loulo processing plant and the remaining 10% is made up of freshwater. The decantation water is either pumped directly to the processing plant process water pond, to the RWD or to Loulo Pit 3, where water can be stored for reuse in the processing plant or for treatment for arsenic and then discharged. Freshwater is used in the processing plant for gland service water, for the elution circuit, and for chemical mixing.

Arsenic and cyanide are the main elements of concern in the TSF water. The mine installed a plant in 2020 to treat both elements. This allows the mine to discharge excess water during the wet season that meets discharge guidelines. Cyanide destruction occurs on the whole tailings stream going out to the TSF. The plant to treat arsenic in the whole tailings stream by the addition of ferrous sulphate is being constructed.

Potable Water

Potable water is sourced from boreholes and stored in the water treatment plant. All borehole lines are installed with flowmeters to monitor water abstraction and collected data to be recorded in the water balance tool.

Sewerage Water

Sewage water produced at the mine village is piped to the sewage treatment plant. Water goes through an anaerobic section, then filtered sewage water passes through several biological rotating discs for further treatment. Once this process is complete, the water is placed through a second series of settling ponds and is treated with chlorine before entering the settling dam. Water then flows from the final maturation dam, from where the water is pumped into the artificial wetland to remove the remaining nitrate and phosphate, after which it enters the Gara Dam. There are other various septic tank systems and sewage treatment plants for different offices, workshops, and the senior village in Djidian Kenieba.

Geochemistry

The Chemistry Department of the University of Bamako undertake periodic geochemical characterisation sampling of the pits and underground water, waste rock, sediments, and tailings. More than 50 samples are collected every year. ABA and leachate tests are carried out. Waste rock is made up of many different lithologies and contains metals such as arsenic, zinc, copper, chromium, and manganese.

Although, there is sulphur in some lithologies, the neutralising potential is high due to the carbonate rock overprint, so leachate is generally neutral to basics and most lithologies are non-acid forming (NAF). There are some lithologies which produce soluble arsenic in the neutral solution. This requires treatment of water in the TSF circuit and some of the pits. The water is treated if it is to be discharged and still be within IFC and Malian guidelines.

Mine water from the Gara and Yalea pits is pumped up from the underground working and the pits, and the suspended solids settle in mechanical settlers and then in wetlands. Most of this water is then recycled for use back underground or at the metallurgical plant for Gara.

Waste Management

A Waste Management Plan (WMP) has been developed to provide an overview of waste management practices on site as well as the guidelines and requirements for effective waste management to be implemented. The WMP includes the following aspects:

- Description of waste types and associated waste streams
- Storage, handling, and transfer of each waste type

- Documenting and monitoring waste management

Biodegradable domestic, recyclable, industrial, and hazardous wastes are the different types of wastes generated on site. The mine's wastes streams are presented in Figure 20-5.

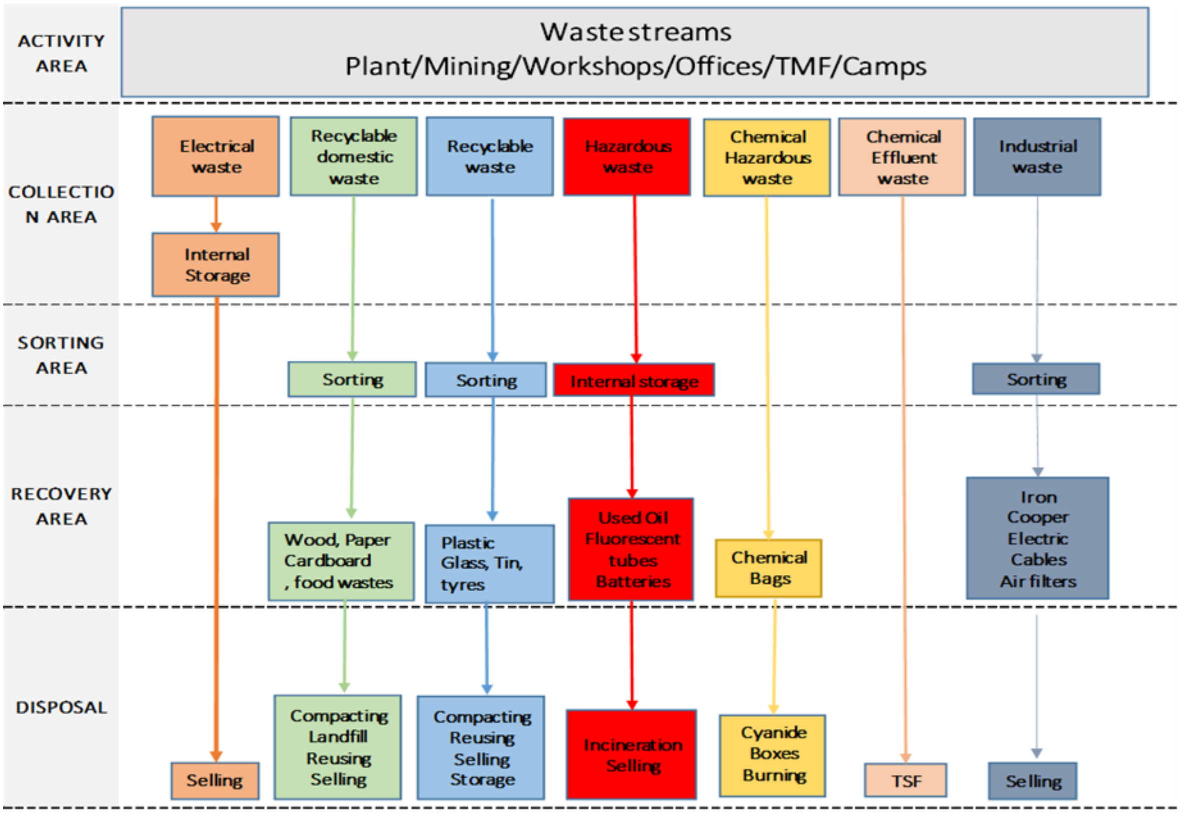


Figure 20-5 Waste Streams

Regular communication is undertaken on site to ensure good waste management, including sorting and disposal of waste into corresponding bins. Waste bins are trucked to the waste yard, where a team conducts additional waste sorting, disposal, and treatment before final disposal. Table 20-1 provides an overview of the waste management and separation undertaken at the Complex. Plastic, cardboard, steel, aluminium, and oil are recycled. Hydrocarbon contaminated soils are treated on site using biological treatment methods. Community organisations participate in the waste recycling programmes.

Table 20-1 Mine Wastes Separation and Management (Digby Wells, 2011)

Waste Type	Description	Waste Included	Handling At Activity Area	Waste Collection	Recovery/Reuse	Final Disposal
Biodegradable domestic waste	All potential biodegradable waste generated form all activity areas	• Paper • Cardboard • Wood • Organic Waste • Etc.	Biodegradable waste must be disposed of in the **GREEN** waste separation bin. This bin must be provided to all activity areas which produce this waste type in a convenient location which is designated.	Collection contractor – Truck	Wood is removed in the sorting area for reuse. The wood is sold to the local community for further use.	Biodegradable waste is to be disposed of at the landfill-organic matter trench.
Recyclable Waste	Waste which has been identified which can be recycled/reused	• Plastic bottles • Tin cans • Glass • Polystyrene • Rubber • Aerosol cans • Ammonium nitrate and other non-hazardous bulk bags	The current recyclable waste must be disposed of in the **BLUE** waste separation bin which is available at all activity areas within the designated area.	Collection contractor – Trucks	All recyclable wasted is sorted within the sorting and storage yard. The waste is separated into type and placed in designated areas.	Contractors must be identified for all waste types for removal off site for reuse. Contractors must be recorded as well as volumes and type of waste collected.
Industrial Waste	Industrial waste which has been identified for reuse	• Copper • Scrap metal • Scrap iron • Electric cables • Aluminium • Air filters	The identified industrial waste must be placed in the **BROWN** waste separation bin available in the designated waste collection area	Collection contractor – Trucks	The industrial waste is separated in the scrap yard into the designated areas. No contaminated waste must be stored within the scrap yard area.	Volumes of waste leaving the scrap yard and their destination for further use but be recorded.

Waste Type	Description	Waste Included	Handling At Activity Area	Waste Collection	Recovery/Reuse	Final Disposal
Hazardous Waste	Waste contaminated with hydrocarbons	• Oil filters • Used oil • Contaminated waste (rags/PPE)	Hydrocarbon contaminated waste must be disposed of in the **RED** waste separation bin. Oil filters must be drained prior to disposal. Used oil must be collected within drums which must be sealed prior to transfer. Used oil/grease collection areas must be bunded and impermeable.	The waste bins will be collected by the waste collection contractors. The activity area is responsible for the transfer of the used oil to the hydrocarbon storage area.	Used oil/grease is transferred to the hydrocarbon storage area if sufficient storage facilities are not available in the operational area. All such waste must be placed within the non-permeable bunded area while awaiting collection. Used oil can be stored within above ground storage tanks if available which must be emptied by the supplier Volumes and origin must be recorded on delivery to the storage area.	Used oil and grease must be removed off site by the supplies. The volumes collected must be recorded. Contaminated waste is disposed of in the landfill trench for burning.
	Florescent tubes containing mercury	• Florescent tubes	Florescent tubes can be placed in the **RED** waste separation bin.	Collection contractor – Trucks	The florescent tubes are crushed and stored in the waste scrap yard area with the use of appropriately designed drums.	
	Chemical containers	• Any container which is used to store a classified chemical. • Cyanide boxes.	All chemical containers must be thoroughly cleaned and neutralised within the activity area and stored within in the activity area while awaiting collection. The plant will transfer all empty cyanide boxes to the cyanide burning area.	On request all containers will be collected.	Chemical containers are inspected for potential re use and placed in the sorting yard for potential sale.	Cyanide boxes are burnt within the cyanide burning site.

Waste Type	Description	Waste Included	Handling At Activity Area	Waste Collection	Recovery/Reuse	Final Disposal
	Chemical effluent which is a result of any use of chemicals during laboratory testing.	• Assay chemical effluent. • Clinic chemical effluent.	The chemical effluent is stored within the laboratory conditions until such a volume which requires disposal.	On request the SHE department will collect for disposal.	N/A	All chemical effluent is disposed of into the TSF.
	Medical bio hazardous waste		Medical waste is collected within the clinic area and handled within this activity area.	N/A	All medical waste is incinerated.	The Ash from the incinerator is disposed in a concrete lined landfill cell.

Biodiversity

The Loulo and Gounkoto Permits fall within the Sudanian Regional Centre of Endemism, a belt which extends from the coast of Senegal to the foothills of Ethiopia. This area is known to support approximately 2,750 species of plants, of which one third are endemic to the region. The main vegetation type is Sudanian woodland, but trees of the Sudanian woodland have wide geographic ranges, which often makes it difficult to determine distinct zones or vegetation types.

In 2021, a fauna and flora assessment was completed on site as part of the development of the Complex's Biodiversity Management Plan (BMP) and Biodiversity Action Plan (BAP). The vegetation units of the area are grouped into seven delineated vegetation communities as presented in Table 20-2.

Table 20-2 Vegetation Units and their Sizes

Vegetation Unit	Loulo Area (ha)	Gounkoto Area (ha)	Total (ha)
Gallery Forest	191	-	191.0 (3.3%)
Riverine Habitat	434	27.1	461.1 (8.0%)
Woodland Savannah	1,405.0	99	1,504 (26.2%)
Shrub Savannah	293.7	268.3	562 (9.8%)
Grassland Savannah	413.6	303.1	716.7 (12.5%)
Dams	40.2	62.7	102.9 (1.8%)
Disturbed Areas	1,492.0	718.1	2,210.1 (38.5%)
Total	**4,269.6**	**1,478.3**	**5,747.9 (100%)**

During the biodiversity assessment, 74 flora species were identified on site, including three species classified as vulnerable (VU) by the International Union for Conservation of Nature (IUCN). These vulnerable species included *Vitellaria paradoxa, Afzelia africana* and *Khaya senegalensis.* In addition, 16 species were identified as per National Decree No. 10 - 387/P-RM of 26 July 2010, as being Fully Protected (FP), Partially Protected (PP), and of Economic Value (EV) as shown in Table 20-3.

Table 20-3 Protected Flora Identified Onsite

Scientific Name	Common Name	IUCN Status	Mali Protection
Adansonia digitata	African Baobab	-	FP
Detarium microcarpum	Tallow Tree	LC	FP
Vitellaria paradoxa	Shea	VU	FP
Cordyla pinnata	Bush Mango	LC	FP
Senegalia senegal	Gum Acacia	-	FP
Tamarindus indica	Tamarind	LC	FP
Pterocarpus erinaceous	African Kino African Rosewood	EN	PP
Afzelia africana	African Mahogany	VU	-
Anogeissus leiocarpa	African Birch	LC	PP
Bombax costatum	Silk Cotton Tree	LC	PP
Borassus aethiopum	Palm	LC	PP
Oxytenanthera abyssinica	Bamboo	PP	-
Ceiba pentandra	Kapok	LC	PP

Scientific Name	Common Name	IUCN Status	Mali Protection
Khaya senegalensis	Senegalese Mahogany	VU	PP
Diospyros mespiliformis	Jackalberry	EV	-
Daniella oliveri	Balsam tree	LC	EV

Note: LC: Least Concern; EN: Endangered, VU: Vulnerable.

The fauna expected to occur within the Complex consists predominantly of the grey duiker, the common warthog, the hippopotamus, the oribi, the bushbuck, and the red flanked duiker. The side-striped jackal, caracal, striped polecat, small-spotted genet, Haussa genet, African sand fox, honey badger, and serval are some of the carnivora species that could occur within the mine footprint. Primates with high probabilities of occurrence include the patas monkey, olive baboon, Guinea baboon, lesser galago, and vervet monkey. The Guinea baboon is listed as Near Threatened and should be conserved if observed in the area.

More than 53 bird species have been identified inside the mine footprint, including Falconidae, Accipitridae, Alcedinidae, Ardeidae, Anatidae, and Bucerotidaie. The high species richness observed can be attributable to the diversity of habitats including wetland and terrestrial habitats present in the area.

The mine's implementation of its BAP is currently at 82% with a target to achieve 100% by the end of the first quarter of 2023.

Mine Rehabilitation and Closure

The Complex undertakes concurrent rehabilitation within its footprint, including revegetation of this area with 21,295 indigenous trees. Species used for revegetation include *Khaya senegalensis, Daniellia oliveri, Saba senegalensis, Balanites aegyptiaca, Vitellaria paradoxa, Tamarindus indica, Oxynanthera abyssinica, Moringa oleifera, and Cola cordifo*lia. Rehabilitation measures are evaluated after the first year of establishment and have been evaluated at being 92% successful. Loulo and Gounkoto have fully functioning nurseries that produce several local species of tree that are used for rehabilitation, to promote the initial state of the vegetation restauration.

The Complex reports against rehabilitation targets regularly and is monitored on their progress.

Mine closure costs are updated annually to include concurrent rehabilitation measures as well as any changes in activities and disturbance areas. Closure cost calculations do not account for any value recovered from the sale of plant, steel, or other material; infrastructure (i.e., brick buildings) at the mine camp and mine offices, as well as access and haul roads, which will be left as part of any agribusiness or other social economic projects after the mine closes. Contractor laydown areas will be rehabilitated by the contractor as per their contractor agreement; rehabilitation of the administration and certain workshop areas assumes that topsoil will be spread over 50% of the area; and 50% of the areas will be ripped and the entire area vegetated. Other assumptions include reshaping WRDs to angles less than 27°. A 300 mm layer of topsoil will be used to cap and cover side-slopes of the TSF which will be placed on a 300 mm breaker layer of saprolite to be utilised as a capping layer.

All open pit edges will be shaped to approximately 27° to a level of 20 m below ground surface and a berm constructed around the perimeter of the pits to prevent inadvertent access. These areas will be vegetated. Post-closure ground and surface water monitoring is assumed to continue for ten years, with sampling taking place on a quarterly basis, while vegetation monitoring and maintenance will take place for three years.

The PER cost for Loulo amounts to $33.3 M and the LOM closure cost is $29.0 M as of 31 December 2022, which includes a contingency of 10%. In 2022, the cost for rehabilitation and closure of the Gounkoto Mine according to the Digby Wells calculation model is estimated at $8.80 M. Local contractor rates for on-site earth moving machinery were used to calculate these closure costs. All costs are updated annually using actual contractor rates.

The QP considers the extent of all environmental liabilities, including the need for rehabilitation and reclamation, to which the property is subject to, have been appropriately met.

Statutory Permits in Place at the Operations

The statutory permits in place at Gounkoto and Loulo are shown in Table 20-4 and Table 20-5, respectively.

Table 20-4 Permits in Place for Gounkoto

No	Reference of Permit	Description	Issued By	Issue Date
1	N°10-271/PCK DOM	Approval for 5 hectares allocation for Faraba hamlet resettlement	PCK	1-Dec-10
2	N°0610/MEA-DNACPN	Special derogation request to start Gounkoto gold mine construction	MEA-DNACPN	6-Dec-10
3	N°10-0027/MEA-SG	Environmental permit for Haul Road construction between Loulo and Gounkoto	MEA-SG	12-Jul-10
4	N°001/ DRACPN-K	Approval for environmental and health compliance authorization for Waste Yard construction for work-class city of GKT SA. Kayes region	DRACPN	7-Jan-11
5	N°002/ DRACPN-K	Approval for environmental and health compliance authorization for wastewater treatment plant construction for work-class city at Gounkoto. (Gounkoto SA mining company) Kayes region.	DRACPN	7-Jan-11
6	N°003/ DRACPN-K	Approval for the implementation of the biomedical wastes incinerator	DRACPN	15-Jan-11

No	Reference of Permit	Description	Issued By	Issue Date
7	N°011-0024/MEA-SG	Environmental permit for Gounkoto Gold Mine operation	MEA-SG	22-Mar-11
8	N°0066/ DRACPN-K	Authorization for Gounkoto pit water release	DRACPN	2-Apr-12
9	N°0067/ DRACPN-K	Technical advice on the disposal of empty drums (oil and engine grease packaging	DRACPN	2-Apr-12
10	N°0195/ DRACPN-K	Approval for a new incineration of hazardous wastes installation	DRACPN	18-Oct-12
11	Decree N°2012-431/PM-RM of 03 August 2012	Gold exploitation permit for Gounkoto	PM	3-Aug-12
12	N°2015-0049/MEADD-SG	Randgold Resources Limited Environmental permit	MEADD-SG	23-Jun-15
13	N° 0479 MEADD-DNACPN	Environmental notice approval for Gounkoto underground operations	MEADD-DNACPN	17-Dec-20

Table 20-5 Permits in Place for Loulo

o	Reference of Permit	Description	Issued By	Issue Date
1	N°09-0091/MEA-SG	Environmental permit approving the Updated ESIA of Loulo gold mine exploitation project	MEA-SG	28-Sep-09
2	N°0018/ DRACPN-K	According to environmental and health compliance authorization of Loulo gold mine municipality of Kenieba Kayes region for compacted waste yard extension	DRACPN	16-Jun-10
3	N°10-3678/MIIC-SG	The investment code approval of the company "Food and Events Africa" FEA	MIIC	29-Oct-10
4	N°0016/ DRACPN-K	Approval for a Biomedical waste incinerator installation for clinic	DRACPN	23-Nov-10
5	N°0017/ DRACPN-K	Approval for environmental and health compliance authorization of Loulo gold mine (SOMILO) Kayes region for empty cyanide drums incineration	DRACPN	30-Nov-10
6	N°0067/ DRACPN-K	Technical advice on the disposal of empty drums (oil and engine grease packaging)	DRACPN	2-Apr-12
7	N°2012-0076/MEA-SG	SOMILO environmental permit	MEA-SG	26-Dec-12
8	N°0072/ DRACPN-K	Environmental Notice approval for Loulo infrastructure building material production of Yalea and Gara Underground Mine Backfilling Project in Loulo in the municipality of Sitakily and Kenieba circle	DRACPN	20-Mar-13

o	Reference of Permit	Description	Issued By	Issue Date
9	N°0121/MEA-DNACPN	Environmental Notice approval of Loulo central thermal plant extension	MEA-DNACPN	25-Mar-13
10	N°0436/ DRACPN-K	Approval letter relating to the report of Environmental Notice of Loulo gold mine power plant expansion project introducing four (o4) generator (CMg, CMto, CMu and CMtz) and the construction of related infrastructure	DRACPN	11-Dec-14
11	N°0437/ DRACPN-K	Approval letter relating to the report of Environmental and Social Impact Notice of industrial incinerator installation and utilisation in Loulo gold mine.	DRACPN	11-Dec-14
12	N°2014-0081/MIPI-SG	Provisional authorization for explosives factory opening and operating by civilian usage of Maxam	MIPI	19-Dec-14
13	Resolution N°00388/CM/ML/BKO/53eme/SO/2003	Authorization to withdrawal water from Senegal river for the benefit of the Republic of Mali	OMVS/ Ministers Council	16-Dec-03
14	N° 009941 MMP/DNGM	Explosives products and accessories depot opening authorization	DNGM	27-Mars-2020
15	N°2018 -0061/MEADD-SG	Environmental permit for the TSF extension in the west and related infrastructure (RWD, SWD)	DNACPN	18-Nov-18
16	N° 009941 MMP/DNGM	Explosives products and accessories depot opening authorization	DNGM	27-Mars-2020
17	N° 0117/DRACPN-K	Approval of Environmental and Social Impact Notice for the transport road development project linking the PQ10 road to the intersection of the TSF and Baboto roads over a distance of 2,300 km, Kenieba circle, Kayes Region.	DRACPN-K	28-Mai-2021
18	N° 0019/MEADD-DNACPN	Approval of the Environmental and Social impact notice for the Loulo Gold Mine solar extension project	DRACPN	18-Oct-22
19	N° 0163/DRACPN-k	Approval of the Environmental and Social Impact Notice for Yalea open pit Extension Project of Loulo Gold Mine	DRACPN	27-Dec-22

20.3 Social or Community Impact Assessment

Employment and Procurement

The Complex is a significant employer in the local community. Gounkoto underground mining and Gara West open pit operations contributed by extending the original LOM, which resulted in additional employment of local Malians, and contribution to the growth of the Malian economy. Barrick's policy is to promote nationals of the host country into key management positions and current 96% of the workforce are Malian nationals. Where locally qualified and experienced staff are not available, recruitment from elsewhere is undertaken, with the clear understanding that local personnel are given the training and experience required to allow them to replace the expatriates as soon as possible.

Barrick's policy of promoting local employment also extends to its contractors. Malian nationals employed by contractors in 2022 accounted for 4,005 employees out of 4,220 at Loulo and 1,603 out of 1,663 for Gounkoto. Unskilled labour is typically sourced from the local area while more skilled posts are filled by staff from elsewhere in Mali, including Bamako.

Barrick's local procurement policy also extends to the supply and purchase of local goods and services including buying produce from the agribusiness which is for use in the mine canteens. Loulo has been successful in developing contract businesses for mining, drilling, fuel and oil supply, and transportation. In 2021, 68% of all procurement spend from Loulo-Gounkoto was with national suppliers.

Resettlement

Phases of economic displacement (loss of crops and trees) and the physical resettlement of households has occurred as the Complex has expanded throughout the LOM. Crops and trees are compensated at published rates stipulated by Malian regulations. Resettlement Action Plans (RAP) have been developed for the implementation of physical resettlement which has resulted in the construction of replacement houses to people affected by the Complex as opposed to cash compensation. The RAPs were developed in accordance with IFC Performance Standard 5. The last physical resettlement to be conducted at Gounkoto was completed in 2012. This resettlement affected twelve households and approximately 300 ha of land, including 1,700 economic trees and two artisanal mining (orpaillage) sites. A post resettlement audit was undertaken in 2015, in line with good international industry practice and this audit found that the implementation of the RAP was satisfactory.

Recent compensation payments have been paid as a result of disturbance to economically active land and crops. Affected individuals have been compensated in accordance with Malian regulations.

Stakeholder Engagement

Stakeholder engagement is a continuous process, and the Complex has a Stakeholder Engagement Plan (SEP), which is continually updated as new stakeholders are identified and mapped. The Complex's senior management personnel are actively involved in the engagement and interaction with stakeholders.

The Complex has also established a community development committee (CDC), which is a forum of representatives of the community and key stakeholders. The CDC meets regularly to agree on development projects to be implemented in the surrounding area with budget assigned to these projects as stipulated by the Complex's Community Development Plan. The CDC is composed of representatives from all sections of the community including village chiefs, women, youth, mayor, and a prefect, who is the chairman of the CDC. Community grievances, concerns, incidents, and Corporate Social Responsibility (CSR) projects are discussed during regular monthly meetings of the CDC.

A grievance mechanism is in place to receive and respond to community grievances and this mechanism is widely disseminated throughout the Complex area. Ten grievances were received in 2022, which is the same as the number of grievances received in 2021. The grievance mechanism stipulates a strict time frame by when grievances must be responded to and the process to escalate any grievances not closed out. All grievances to date have been closed and the aggrieved signed that they are satisfied with the response/result. The main concerns registered in 2022 were around the generation of dust in the villages and the employability of young people in the community, both of which are recurrent themes discussed during the CDC meetings. The issue of dust generation is being mitigated through the application of molasses, which acts as a binder, on roads used by mine vehicles. To meet the employment needs of youth in the community, strategies have been identified through the implementation of economic development projects which are standalone from the Complex. These economic development projects introduce young people to entrepreneurship skills and opportunities that will allow them to set up businesses and programmes other than in the mining industry.

Community Development/Corporate Social Responsibility

Barrick's community development strategy focuses on the provision of potable water, education (including building schools, education improvement, training), health care (i.e., investment in medical supply, clinics), and implementation of local economic development projects. Sub-committees of the CDC have been established to increase awareness and perform better monitoring and evaluation of projects to ensure their effectiveness and sustainability beyond the LOM. To date, Barrick has built 97 school classrooms, 88 water supply systems, seven health centres, and established an agribusiness college, amongst other such initiatives.

Subsistence agriculture is a primary livelihood activity for many residents in the villages surrounding the operations and therefore many programmes have been implemented to help improve agricultural yields. These programmes have included the provision of 16 tractors and the establishment of an agribusiness training centre. To date, 248 community youth have been trained to acquire agricultural entrepreneurship skills and provided training to take these skills back to their own farms. These skills include use of improved seeds, proper use of fertilisers and other inputs, as well as financial literacy. A community cooperative group supplies the mine caterer with fresh produce.

Since 2007, Loulo and Gounkoto have continuously contributed to the economic development of the communities surrounding the operations with community investment totalling $20.1 M. Investment in community development projects was $430,000 in 2022, $2.9 M in 2021, and $1.9 M in 2020. During the COVID-19 pandemic, the Complex provided support to the community and the Malian government, totalling more than $1.4 M in materials and equipment to help combat the pandemic.

The Complex pays a Patent Tax, which is designed for local economic development, with 60% of this tax supposed to be coming back to the Sitakily commune, 25% to the Kenieba Cercle, and 15% to the Kayes region.

The government has also decreed that 0.25% of profits need to go into a community development fund but has not given details as to how this fund needs to be managed or disbursed. Until clarity on this is obtained, the Complex has not been disbursing funds.

Artisanal and Small-Scale Mining

There has always been an ongoing presence of artisanal miners (orpailleurs) operating within the Loulo and Gounkoto Permit area. However, since 2020, the major issues are related to illegal operations within the Complex's permits by Chinese-owned companies, and specifically the occupation of the Baboto pit by illegal miners. As part of Barrick's ASM strategy, which is the peaceful management of illegal mining, the mine relies heavily on local and national government to provide communication platforms to resolve these conflicts and application of the small-scale mining legislation, which only allows for non-mechanised mining in open permits.

The government of Mali, as part owners of the Complex, also provide security. Although the key exploration targets remain free of ASM activity, the risk of incursion remains as many people are involved in ASM. A proposed mitigation strategy is the formation of dedicated ASM corridors/permits to allow artisanal miners to exploit resources in specific areas away from active industrial mining. The World Bank has recently been involved in proposing and negotiating some of these solutions. In the meantime, Barrick is reinforcing its relationship with the community to manage the issue and continues to invest in alternative livelihood opportunities, where possible. The mining industry in Mali has also established a committee to manage ASM in liaison with the government.

The dredging and washing operations of ASM that allow silt and sand to be released and thus cause erosion have an impact on the water quality in the Gara and the Falémé rivers. This has affected the water quality of the freshwater intake and plans are in place to construct a water treatment plant to remove the suspended solids. The impact of this erosion and the dredging operations on water availability in the Falémé River needs to be investigated.

21 Capital and Operating Costs

Capital and operating costs for the Loulo-Gounkoto Complex are based on extensive experience gained from operating this mine since 2005 and a large number of years operating other gold mines situated within Africa. Sustaining (replacement) capital costs reflect current price trends. Operating costs are in line with historical averages.

21.1 Capital Costs

Basis of Estimate

The Complex is an ongoing combined open pit and underground mining operation with the necessary facilities, equipment, and manpower in place to produce gold.

The basis for the combined LOM plan is the Proven and Probable Mineral Reserves estimate described in Section 15 of this Technical Report.

In the QP's opinion, the open pit and underground LOM and cost estimates have been completed in sufficient detail to be satisfied that economic extraction of the Proven and Probable Mineral Reserves is justified.

The majority of the capital cost estimates contained in this report are based on quantities generated from the open pit and underground development requirements and data derived from the Loulo-Gounkoto Complex operating budget.

Capital expenditure over the remaining LOM is estimated to be $1,636 M (from 2023) based on Mineral Reserves. A summary of capital requirements anticipated over the LOM based on Mineral Reserves (from 2023) is summarised in Table 21-1 and the breakdown of costs is explained in the following sections.

Table 21-1 LOM Capital Expenditure Based on Mineral Reserves

Description	Value ($M)
Grade Control Drilling	50
Capitalised Deferred Stripping	404
Underground Capital Development and Drilling	371
TSF Extension Capital	143
Plant Expansion Capital	150
Capitalised Drilling	15
Power Capital	43
Other Sustaining Capital	460
Total LOM Capital Expenditure	**1,636**

Grade Control Capital

Grade control capital cost is related to resource conversion and reserve replacement.

Capitalised Deferred Stripping

Capitalised deferred stripping covers open pit waste stripping.

Underground Capital Development and Drilling

This category covers the cost of ongoing LOM capital ore and waste development. Capital development costs are based on a calculated average cost per metre for development including development of declines, inclines, stockpiles, ventilation drives, grade control platforms, level access drives, and ventilation raises.

TSF Extension Capital

TSF extension capital includes the cost of buttressing the existing TSF and the extension of the facility to the South. Apart from the buttressing work on the existing TSF and western extension, capital provisions have been made to develop and build the southern extension footprint of the TSF, that takes the tailings facilities LOM to 2037. The work streams for this capital expenditure, include geotechnical and foundation studies, construction of the main starter wall on the southeastern section of the new extension facility and progressive rock buttressing over the LOM.

Plant Expansion Capital

Plant expansion capital includes the cost related to increasing the throughput rate at the Loulo-Gounkoto Complex processing plant. The main objective of this work is to increase the current plant capacity from 5 Mtpa to 6.2 Mtpa. As at the time of publication of this report, pre-feasibility and an order of magnitude capital budget estimate have been completed. The main expansion works, in parallel to the current flow sheet, will build an independent flow sheet processing plant of 4,200 tpd that includes:

- A complete secondary and tertiary crushing circuit in closed circuit with the screening plant to produce a sub-12 mm product
- A closed-circuit single stage milling circuit, comprising a 4.5 MW ball mill and a hydrocyclones cluster producing a P80 of minus 75 micron
- A high-rate thickener capable of handling the combined streams from the existing and new processing plant streams prior to feeding CIL at a total of 18,400 tph throughput
- Additional 3 x 2,500 m^3 CIL tanks
- An upgrade of the current CIL circuit ancillary equipment as well as the tailings handling facilities

The project definitive feasibility studies and construction are planned to be completed prior to full commissioning in 2029. Key to the execution of the project is to ensure that zero to minimal interruptions will be experienced in the current operations and make sure the planned ounce profiles during the construction period is delivered.

Power Capital

Power capital includes the cost related to increasing the solar plant capacity and the introduction of battery electric storage systems (BESS) and other power infrastructure.

Other Sustaining Capital

Sustaining capital costs include all sustaining capital, mainly the underground sustaining capital (mobile fleet & infrastructure) and plant sustaining capital. The QPs note that all material contracts discussed above are currently in place and the terms contained within the sales contracts are typical and consistent with standard industry practice and are similar to contracts for the supply of capital equipment elsewhere in the world. All contract terms, rates and charges are within the norms of Barrick's regional benchmarks, which are generally within the lower half of industry wide standards.

In the opinion of the QPs, the projected capital costs at the Loulo-Gounkoto Complex are reasonable and are comparable with those of other operations within the Africa & Middle East region.

21.2 Operating Costs

Basis of Estimate

The open pit mining operation is contractor-run by GMS, Etasi, and EGTF, while underground mining has been owner-operated by the Complex since 2017.

The basis for the combined LOM plan is the Proven and Probable Mineral Reserves estimate described in Section 15 of this Technical Report.

In the QP's opinion, the open pit and underground LOM and cost estimates have been completed in sufficient detail to be satisfied that economic extraction of the Proven and Probable Mineral Reserves is justified.

The mining costs used for the 2022 pit optimisations were derived from the Contractor 2021 budget unit plan (BUP) and long-term review (LTR) pricing for the Loulo-Gounkoto Complex open pit operations. Owner's costs were also added.

Labour costs for national employees were based on actual costs. Local labour laws regarding hours of work etc. were also considered and overtime costs included.

The actual processing costs for 2022 were $24.68/t, compared to a planned cost of $17.49/t. The higher costs are mainly driven by inflationary pressures on the reagents and fuel prices. The main aim remains focused on implementing efficiencies to offset the impact of these price increases. A longer term processing cost that is lower than the 2022 cost was used for the LoM estimate as reagent and fuel costs are expected to be lower in the near term.

During 2022, costs for processing and G&A were updated based on actuals adjusted for the latest forward estimates, production profiles and personnel levels. Customs duties, taxes, charges, and logistics costs are included.

LOM Operating Costs

Unit costs used to estimate LOM operating costs based on Mineral Reserves (from 2023) are summarised in Table 21-2. The annual fluctuation in production levels is relatively low, such that the effect of fixed versus variable expenses is minimised.

Table 21-2 LOM Operating Unit Costs Based on Mineral Reserves

Activity	Units	Value
Open Pit Mining – Loulo-Gounkoto Complex	$/t mined	2.84
Open Pit Mining – Loulo-Gounkoto Complex	$/t ore mined	38.42
Underground Mining	$/t mined	50.73
Underground Mining	$/t ore mined	52.86
Processing	$/t milled	19.63
G&A	$/t milled	7.81
Mining Total (including Over the Road Ore Transport)	$/t milled	48.55
Total LOM Net Operating Cost	**$/t milled**	**75.99**

Notes:

1. Total LOM Net Operating Cost in this table, represents the total amount, before capitalised cost and royalty costs of 6.0% based on the total revenue

The Loulo-Gounkoto Complex has used the unit costs to estimate LOM operating costs based on Mineral Reserves (from 2022).

Cost inputs have been priced in real Q4 2022 dollars, without any allowance for inflation or consideration for changes in foreign exchange rates.

The QPs consider the operating cost estimates in the LOM plan to be reasonable and consistent with historical performance.

22 Economic Analysis

This section is not required as Barrick, the producing issuer and operator of Loulo-Gounkoto for both exploration and mining, the property is currently in production, and there is no material expansion of the current annual production planned.

23 Adjacent Properties

There are no adjacent properties which are considered by the QP to be material to the Complex.

24 Other Relevant Data and Information

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.

25 Interpretation and Conclusions

25.1 Geology and Mineral Resources

Loulo and Gounkoto have documented standard operating procedures (SOP) for the drilling, logging, and sampling processes, which meet industry standards. The geological and mineralisation modelling are based on visibly identifiable geological contacts, which support a geologically robust interpretation.

Loulo and Gounkoto have a QA/QC programme in place to ensure the accuracy and precision of the assay results from the analytical laboratory. Checks conducted on the quality control database indicated that the results are of acceptable precision and accuracy for use in Mineral Resource estimation.

Geological models and subsequent Mineral Resource estimates have evolved with successive model updates incorporating additional data within both the open pit and underground. Significant grade control drill programmes and mapping of exposures in mine developments have been completed to increase the confidence in the resulting Mineral Resources and Mineral Reserves.

In the QP's opinion, the Loulo and Gounkoto Mineral Resources top cutting, domaining, and estimation approach are appropriate, and reflect industry best practice. Furthermore, the constraint of underground Mineral Resources within mineable stope optimised shapes has been deemed to reflect best practice by external audits. The QP considers the Mineral Resources at Loulo and Gounkoto to be appropriately estimated and classified.

The QP is not aware of any environmental, permitting, legal, title, taxation socioeconomic, marketing, political, metallurgical, fiscal, or other relevant factors, that could materially affect the Mineral Resource estimate.

The strategic focus of Loulo and Gounkoto exploration is to prioritise higher-grade underground resource definition targets, particularly with down plunge extension drilling at depth, thereby continuing to replace annual depletion and adding successive years of production to the LOM with complimentary underground and open pit sources.

25.2 Mining and Mineral Reserves

Loulo-Gounkoto is a mature operation consisting of underground mines and open pits. Mining methods for both the open pits and the underground areas have been consistently applied for several years. As such, familiarity with the orebody and mining methods reduces uncertainty in the mining plan.

The underground mines have consistently produced a higher-grade ore that is blended with the ore from the open pits. The underground mines produce within their constraints while the open pit production varies as required to supplement any changes in the plan, with stockpiles used to blend different types of ore material into the plant, which eliminates any major risk to achieving planned production.

The current LOM is based on underground and open pit Mineral Reserves only and is scheduled to process 67 Mt of ore at 3.87 g/t Au.

The targeted production is based on the total LOM ounces, rather than a tonnage, so while the plant is expected to operate at full capacity, grade selection is a key component of the mine plan to ensure that production remains above 500 koz per annum for at least 10 years. Accordingly, a processing plant expansion is scheduled to commence in 2027, which will expand the annual processing plant capacity to 6.2 Mtpa from 2029 onwards.

The risk of water ingress is higher when mining below an open pit, however, this risk has been considered and planned for, with significant pump capacity installed in open pit and underground mines.

Barrick, as the owner operator of the Project, has significant experience in other mining operations within Africa and these production rates, modifying factors, and costs are benchmarked against other African operations to ensure they are suitable.

The QPs consider the parameters used in the Mineral Resource to Mineral Reserve conversion process to be appropriate.

The QPs are not aware of any environmental, legal, title, socioeconomic, marketing, mining, metallurgical, fiscal, infrastructure, permitting, that could materially affect the Mineral Reserve estimate.

25.3 Mineral Processing

Based upon both extensive metallurgical test work data and actual operational evidence, the QP is satisfied that Loulo-Gounkoto is able to maintain production, gold recovery, and reagent consumptions as forecasted.

Loulo-Gounkoto has demonstrated successful operation both in terms of processing throughput and gold recovery.

Gold recovery from Yalea ore is impacted by the presence of arsenic and copper. Consequently, arsenic and copper estimation is completed as part of the Mineral Resource update, in order to identify potentially low recovery areas. The current LOM has an average recovery of 89.5%. Gold recovery is maintained at these levels by blending ore from the various sources (Yalea/Gara/Gounkoto) to control copper and arsenic grades in the mill feed.

The planned processing plant expansion is scheduled to be completed in 2029, with the aim of increasing the capacity from 5 Mtpa to 6.2 Mtpa and maintaining the current levels of annual gold production. As at the time of publication of this report, pre-feasibility and an order of magnitude capital budget estimate have been completed in support of the expansion.

The QP considers the modelled recoveries for all ore sources and the processing plant and engineering unit costs applied to the Mineral Resource and Mineral Reserve estimation process to be acceptable.

25.4 Infrastructure

As a result of the long-established open pit mining operation at Loulo-Gounkoto, substantial infrastructure exists to support the ongoing mining and processing operations.

In comparison to much of the country, road access for staff and materials is excellent via the recently constructed Millennium Highway that crosses the Loulo to Gounkoto haul road approximately 6 km north of Gounkoto.

There is sufficient power supply capacity available from the on-site light and heavy fuel oil generators, as well as solar farm, to meet the power demands of the operations.

An adequate water supply is available for the operation, sourced from the Gara and Falémé rivers which run through the Complex site.

25.5 Environment and Social Aspects

Loulo-Gounkoto has a mature ESMP and an accredited ISO14001 Environmental Management System in place which addresses current operational needs and can readily be adapted to meet future activities. Mine closure costs are reviewed and revised annually in line with good industry practice.

All permits are in place, and an annual Environmental and Social Report compiled in a format aligned with Global Reporting Initiative (GRI) requirements is submitted to the Malian authorities.

Stakeholder engagement is ongoing, and senior management are involved in regular meetings with the community. The Complex prioritises local employment and regularly achieves in excess of 95% Malian employment across the Barrick and contractor workforces.

Barrick continues to invest in community development initiatives, focussing on potable water supplies, primary school education, health care education, investment in medical clinics and local economic development projects, and livelihood projects, such as the programme to improve the agricultural yield of the area. The Complex is a significant employer for members of the local communities and Malian's and a key economic engine within the Malian economy. Barrick's policy is to promote nationals to manage the Complex.

The ongoing presence of ASM operations within the Loulo Permit poses a risk of incursion into exploration or operations areas remains because of the increasing number of people participating in the ASM. In response to this dedicated corridors for ASM in specific areas away from active industrial mining have been proposed by SOMILO as a mitigation strategy, but are yet to be implemented. In the meantime, Barrick is reinforcing its relationship with the community to manage the issue and continues to invest in alternative livelihood opportunities, where possible.

The QP considers the extent of all environmental liabilities, to which the property is subject, to have been appropriately met.

25.6 Risks

Barrick has undertaken an analysis of the Project risks. Table 25-1 summarises the Project risks and the QP's assessment of the risk degrees and consequences, as well as ongoing/required mitigation measures. The QPs, however, note that the degree of risk refers to our subjective assessment as to how the identified risk could affect the achievement of the Project objectives.

In the QP's opinion, there are no significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information, Mineral Resource or Mineral Reserve estimates.

Risk Analysis Definitions

The following definitions have been employed by the QPs in assigning risk factors to the various aspects and components of the Complex:

- **Low** – Risks that are considered to be average or typical for a deposit of this nature and could have a relatively insignificant impact on the economics. These generally can be mitigated by normal management processes combined with minor cost adjustments or schedule allowances.
- **Minor** – Risks that have a measurable impact on the quality of the estimate but not sufficient to have a significant impact on the economics. These generally can be mitigated by normal management processes combined with minor cost adjustments or schedule allowances.
- **Moderate** – Risks that are considered to be average or typical for a deposit of this nature but could have a more significant impact on the economics. These risks are generally recognisable and, through good planning and technical practices, can be minimised so that the impact on the deposit or its economics is manageable.
- **Major** – Risks that have a definite, significant, and measurable impact on the economics. This may include basic errors or substandard quality in the basis of estimate studies or project definition. These risks can be mitigated through further study and expenditure that may be significant. Included in this category may be environmental/social non-compliance, particularly regarding Equator Principles and IFC Performance Standards.
- **High** – Risks that are largely uncontrollable, unpredictable, unusual, or are considered not to be typical for a deposit of a particular type. Good technical practices and quality planning are no guarantee of successful exploitation. These risks can have a major impact

on the economics of the deposit including significant disruption of schedule, significant cost increases, and degradation of physical performance. These risks cannot likely be mitigated through further study or expenditure.

In addition to assigning risk factors, the QPs provided their opinions on the probability of the risk occurring during the LOM. The following definitions have been employed by the QPs in assigning probability of the risk occurring:

- **Rare** – The risk is very unlikely to occur during the Complex life.
- **Unlikely** – The risk is more likely not to occur than occur during the Complex life.
- **Possible** – There is an increased probability that the risk will occur during the Complex life.
- **Likely** – The risk is likely to occur during the Complex life.
- **Almost Certain** – The risk is expected to occur during the Complex life.

Risk Analysis Table

Table 25-1 details the Loulo-Gounkoto Risk Analysis as determined by the QPs.

Table 25-1 Loulo-Gounkoto Risk Analysis

Issue	Likelihood	Consequence Rating	Risk Rating	Mitigation
Geology and Mineral Resources – Confidence in Mineral Resource Models	Unlikely	Moderate	Low	Additional scheduled infill drilling maintaining two years of full grade control coverage ahead of mining. Resource model updated on a regular basis using production reconciliation results.
Mining and Mineral Reserves – Open Pit Slope Stability	Unlikely	Moderate	Low	Continued 24 hour in-pit monitoring with radar, geotechnical drilling well ahead in advance, instrumentation, and continued updating of geotechnical and hydrology models.
Mining and Mineral Reserves – Underground Recovery and Dilution	Possible	Moderate	Low	Change in drilling and blasting practices and paste filling binder to reduce dilution and increase recovery.
Mining and Mineral Reserves – Underground Flooding	Possible	Moderate	Moderate	Water inflow physical controls, hydrological models and sufficient pumping
Processing - Salts build-up in the process water - leading to carbon fouling in the CIL and elution circuits	Possible	Moderate	Moderate	A full salt and water balance has been completed and tracked in the plant to ensure that correct water dilution into the critical streams of elution is managed with minimum impact on carbon fouling and gold recovery.
Environmental – Tailings failure	Unlikely	Major	Moderate	Proper water management at the TSF. TSF buttressing.
Environmental – Hydrocarbon spillage	Possible	Moderate	Moderate	Hydrocarbon management on site.
Environmental – Commercial and Reputational Issues due to GHG Emissions	Possible	Moderate	Moderate	Continue transition to renewable energy sources. Continue identifying opportunities through the climate committee.

Issue	Likelihood	Consequence Rating	Risk Rating	Mitigation
Social – Community unrest	Possible	Moderate	Moderate	Dedicated community engagement by SOMILO company social and sustainability department. Accessible Grievance Mechanism. Community development project.
Country & Political – Security – Governmental	Possible	Major	Moderate	Dedicated government liaison team in Bamako/Engagement with local authorities. Government participation/ownership.
Financial - increase in Capital and Operating Costs	Possible	Moderate	Moderate	Continue to track actual costs and LOM forecast costs, including considerations for inflation and foreign exchange.
Fiscal Stability	Possible	Moderate	Moderate	Re-enforce the application of the tax, customs and stability provisions of the Complex's conventions in all government engagements. Continue to work closely with the tax authorities in this regard.

26 Recommendations

The QPs make the following recommendations:

26.1 Geology and Mineral Resources

- Address all outstanding recommendations from the RSC Ltd (RSC) 2022 independent audit.
- Investigate the potential to transfer from explicit wireframing of lithological models to implicit modelling.
- Continue the current exploration strategy of targeting extensions of existing brownfields targets and evaluating new greenfield targets to extend the Loulo-Gounkoto LOM and replace depleted reserves.

26.2 Mining and Mineral Reserves

- The open pit dilution and mining losses should be reviewed with a view to establishing a more accurate record of these across the various open pits.

26.3 Processing

- Continuous process improvement and geometallurgical work on new satellite orebodies must remain in place to ensure that the plant performance remains optimal for both sulphide and free milling ores.

26.4 Infrastructure

- Further decrease the Complex's reliance on thermal power; increase grid stability, and potentially reduce operating costs in the dry season, by increasing current battery storage capacity integration with the current power model; and commence a feasibility study on the expansion of the existing solar power capacity.

26.5 Environment and Social Aspects

- Continued stakeholder engagement and re-enforcement of the accessibility of the grievance mechanism.
- An ASM strategy should be sought with the Malian government, and dedicated ASM corridors implemented and managed.

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28 Date and Signature Page

This report titled “Technical Report on the Loulo-Gounkoto Gold Mine Complex, Mali” with an effective date of 31 December 2022 and dated 17 March 2023 was prepared and signed by the following authors:

(Signed) ***Simon P. Bottoms***

Dated at London, UK
17 March 2023

Simon P. Bottoms, CGeol, MGeol, FGS, FAusIMM
Mineral Resource Management and Evaluation Executive
Barrick Gold Corporation

(Signed) ***Richard Peattie***

Dated at London, UK
17 March 2023

Richard Peattie, M.Phil, FAusIMM
Africa and Middle East, Mineral Resource Manager
Barrick Gold Corporation

(Signed) ***Graham E. Trusler***

Dated at Johannesburg, ZA
17 March 2023

Graham E. Trusler, MSc, Pr Eng, MIChE, MSAIChE
CEO
Digby Wells and Associates Pty Ltd.

(Signed) ***Thamsanqa Mahlangu***

Dated at St. Helier, UK
17 March 2023

Thamsanqa Mahlangu, Pr. Eng, PhD
Head of Metallurgy, Africa and Middle East,
Barrick Gold Corporation

	(Signed) ***Derek Holm***
Dated at London, UK 17 March 2023	Derek Holm, BSc, FSAIMM AME Planning Lead Barrick Gold Corporation
	(Signed) ***Ismail Traore***
Dated at St. Helier, UK 17 March 2023	Ismail Traore, MSc, FAusIMM(CP), M.B. Law, DES Group Underground Planning Manager, Africa and Middle East, Barrick Gold Corporation

29 Certificate of Qualified Person

29.1 Simon P. Bottoms

I, Simon P. Bottoms, CGeol, MGeol, FGS, FAusIMM, as an author of this report entitled "Technical Report on the Loulo-Gounkoto Gold Mine Complex, Mali" (the Technical Report) with an effective date of 31 December 2022 and dated 17 March 2023 prepared for Barrick Gold Corporation, do hereby certify that:

1. I am Mineral Resource Management and Evaluation Executive, with Barrick Gold Corporation, of the 1st Floor, 2 Savoy Court, Strand, London, WC2R 0EZ, United Kingdom.
2. I am a graduate of the University of Southampton, UK in 2009 with a Masters of Geology degree.
3. I am registered as a Chartered Geologist registered (1023769) with the Geological Society of London. I am a current Fellow of the Australasian Institute of Mining and Metallurgy (313276). I have worked as a geologist continuously for 14 years since my graduation from University My relevant experience for the purpose of the Technical Report is:
   - Leading Mineral Resource estimation, mine geology Mineral Reserve estimation and mine planning for all operations within the Barrick Africa & Middle East Region since 2019. Including evaluation of mine projects from preliminary economic assessments to pre-feasibility and feasibility studies across multi-commodity operations, spanning both underground and open pit production. Practical experience in development, construction and operational management of mine operations. Previously, held positions in exploration and mine geology across Africa, Central Asia, Russia and Australia.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Loulo-Gounkoto Gold Mine Complex most recently on 28-29 October 2022.
6. I am responsible for Sections 6, 11, 12, 14, 19, 21, 22 and share responsibility for Section 1, 2, 3, 25 to 27.
7. I am not independent of the Issuer applying the test set out in Section 1.5 of NI 43-101, as I have been a full-time employee of Barrick Gold Corporation (previously Randgold Resources Limited) since 2013.
8. I have had prior involvement with the property that is the subject of the Technical Report, as Senior Vice President, Africa and Middle East, Mineral Resource Manager of Barrick Gold Corporation, as a Competent Person for Competent Person's Reports on the Loulo and Gounkoto properties both dated 15 January 2019, and as a Qualified Person for a NI 43-101 Technical Report on the property dated 18 September 2018.
9. I have read NI 43-101, and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 17th day of March, 2023

(Signed) ***Simon P. Bottoms***

Simon P. Bottoms, CGeol, MGeol, FGS, FAusIMM

29.2 Richard Peattie

I, Richard Peattie, M.Phil, FAusIMM, as an author of this report entitled "Technical Report on the Loulo-Gounkoto Complex, Mali" with an effective date of 31 December 2022 and dated 17 March 2023 prepared for Barrick Gold Corporation, do hereby certify that:

1. I am the AME Mineral Resource Manager with Barrick Gold Corporation, of the 1st Floor, 2 Savoy Court, Strand, London, WC2R 0EZ, United Kingdom.
2. I am a graduate of University of Queensland in 2007 with a Master of Philosophy.
3. I am a Fellow of the Australasian Institute of Mining and Metallurgy (301029). I have worked as a geologist for a total of 27 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Leading Mineral Resource estimation, mine geology Mineral Reserve estimation and mine planning for all operations within the Barrick Africa & Middle East Region since 2019. Including evaluation of mine projects from preliminary economic assessments to pre-feasibility and feasibility studies across multi-commodity operations, spanning both underground and open pit production. Practical experience in development, construction and operational management of mine operations.
   - Previously, held positions in exploration and mine geology across Africa.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Loulo-Gounkoto Complex most recently on 28-29 October 2022.
6. I am responsible for Sections 4, 5, 7 to 10, 23, 24 and share responsibility for Sections 1, 2, 3, and 25 to 27 of the Technical Report.
7. I am not independent of the Issuer applying the test set out in Section 1.5 of NI 43-101, as I am a full-time employee of Barrick Gold Corporation.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 17th day of March, 2023

(Signed) *Richard Peattie*

Richard Peattie, M.Phil, FAusIMM

29.3 Graham E. Trusler

I, Graham E. Trusler, MSc, Pr. Eng, MIChE, MSAIChE, as an author of this report entitled "Technical Report on the Loulo Gold Mine, Mali" (the Technical Report) with an effective date of 31 December 2022 and dated 17 March 2023 prepared for Barrick Gold Corporation, do hereby certify that:

1. I am CEO of Digby Wells and Associates Pty Ltd. of Turnberry Office Pk, 48 Grosvenor Rd, Bryanston, Johannesburg, South Africa 2191.
2. I am a graduate of the University of KwaZulu-Natal, South Africa in 1988 with a Master of Chemical Engineering degree.
3. I am registered as a Professional Engineer (No. 920088) with the Engineering Council of South Africa. I am also registered as a Member of the Institution of Chemical Engineers (SAIChE) since1994. I am also registered as a Chartered Chemical Engineer with the Institution of Chemical Engineers, as a Fellow of the Water Institute of South Africa, and a lifetime member of the American Society of Mining and Reclamation. I have worked as an engineer for a total of 30 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Over 30 years of experience within the mining industry in metallurgical production, research and environmental issues.
   - Working on environmental matters affecting the mining industry for more than 29 years.
   - Having conducted numerous projects and managed processes related to the needs of Loulo Gold Mine.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Loulo Gold Mine most recently on 18 to 23 November 2022.
6. I am responsible for Section 20 and share responsibility for Sections 1, 2, 3, and 25 to 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had prior involvement with the property that is the subject of the Technical Report as a Qualified Person for a NI 43-101 Technical Report on the property dated 18 September 2018.
9. I have read NI 43-101, and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 17th day of March, 2023

(Signed) ***Graham E. Trusler***

Graham E. Trusler, MSc, Pr. Eng, MIChE, MSAIChE

29.4 Thamsanqa Mahlangu

I, Thamsanqa Mahlangu, Pr. Eng, PhD, as an author of this report entitled "Technical Report on the Loulo Gold Mine, Mali" (the Technical Report) with an effective date of 31 December 2022 and dated 17 March 2023 prepared for Barrick Gold Corporation, do hereby certify that:

I am Head of Metallurgy, Africa and Middle East, with Barrick Gold Corporation, of the 3rd floor, Unity Chambers, 28 Halkett Street, St. Helier, Jersey, Channel Islands, UK, OJE2.

1. I am a graduate of the University of Zimbabwe in 1993 with a Bachelor of Science (Honours) degree in Metallurgical Engineering and in 2002 with a PhD in Metallurgical Engineering.
2. I am registered as a Professional Engineer (Pr. Eng) with the Engineering Council of South Africa (ECSA) (Reg. F20070233). I have worked as both a Researcher and Operations/Projects Metallurgist for a total of 29 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Experience as a Projects and Operations Metallurgist on various gold plant feasibility, commissioning, and optimisation projects. Experience leading metallurgical studies for preliminary economic assessments, pre-feasibility and feasibility studies for geo-metallurgically complex ore sources in support of operations.
3. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
4. I visited the Loulo-Gounkoto Gold Mine Complex most recently on 12 to 16 December 2022.
5. I am responsible for Sections 13, 17, 18 and share responsibility for Section 1, 2, 3, and 25 to 27 of the Technical Report.
6. I am not independent of the Issuer applying the test set out in Section 1.5 of NI 43-101, as I have been a full-time employee of Barrick Gold Corporation (previously Randgold Resources Limited) since 2011.
7. I have had prior involvement with the property that is the subject of the Technical Report, as the Head of Metallurgy, Africa and Middle East for Barrick Gold Corporation.
8. I have read NI 43-101, and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101 and Form 43-101F1.
9. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 17th day of March, 2023

(Signed) ***Thamsanqa Mahlangu***

Thamsanqa Mahlangu, Pr. Eng, PhD

29.5 Derek Holm

I, Derek Holm, FSAIMM, as an author of this report entitled "Technical Report on the Loulo-Gounkoto Complex, Mali" with an effective date of 31 December 2022 and dated 17 March 2023 prepared for Barrick Gold Corporation, do hereby certify that:

1. I am AME Planning Lead with Barrick Gold Corporation, 1st Floor Savoy Court, Strand, London, WC2R 0EZ, United Kingdom.
2. I am a graduate of the University of Witwatersrand, South Africa, in 2000, with a B.Sc. (Honours) degree in Mining Engineering.
3. I am a Fellow of the Southern African Institute of Mining and Metallurgy (Reg.# 402974). I have worked as a mining engineer for a total of 22 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Mine design and scheduling for open pit and underground gold mines, Mineral Reserve estimation in accordance with regulatory requirements, and various gold mine production positions.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Loulo-Gounkoto Gold Mine Complex most recently 28-29 October 2023.
6. I am responsible for the open pit portions of Sections 15, 16 and share responsibility for Section 1, 2, 3, and 25 to 27 of the Technical Report.
7. I am not independent of the Issuer applying the test set out in Section 1.5 of NI 43-101, as I have been a full-time employee of Barrick Gold Corporation since October 2022.
8. I have had prior involvement with the property that is the subject of the Technical Report as a Qualified Person for a NI 43-101 Technical Report on the property dated 18 September 2018.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 17th day of March, 2023

(Signed) ***Derek Holm***

Derek Holm, FSAIMM

29.6 Ismail Traore

I, Ismail Traore, MSc, FAusIMM(CP), M.B. Law, DES Management, as an author of this report entitled “Technical Report on the Loulo-Gounkoto Gold Mine Complex, Mali” (the Technical Report) with an effective date of 31 December 2022 and dated 17 March 2023 prepared for Barrick Gold Corporation, do hereby certify that:

1. I am Group Underground Planning Manager, Africa and Middle East with Barrick Gold Corporation of the 3rd floor, Unity Chambers, 28 Halkett Street, St. Helier, Jersey, Channel Islands, UK, OJE2.
2. I am a graduate of the Colorado School of Mines, USA in 2013 with a Master of Science in Mining and Earth Systems Engineering.
3. I am registered as a Fellow and a Chartered Professional of the Australian Institute of Mining and Metallurgy (334992) and have worked as a mining engineer for a total of 13 years. My relevant experience for the purpose of the Technical Report is:
   - Multiple mine planning, mine operations and mine management roles. This includes over nine years’ experience in mine planning of underground gold mines. Underground Mine planning manager for Barrick Africa and Middle East, Technical services manager at Kibali Gold Mine, Project Manager, Senior Mine planning and Technical Services Engineer at Loulo-Gounkoto Gold Mine Complex.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Loulo-Gounkoto Gold Mine Complex most recently from 27 June to 4 July 2022.
6. I am responsible for the underground portions of Sections 15, 16 and share responsibility for Section 1, 2, 3, and 25 to 27 of the Technical Report.
7. I am not independent of the Issuer applying the test set out in Section 1.5 of NI 43-101, as I have been a full-time employee of Barrick Gold Corporation (previously Randgold Resources Limited) since 2014.
8. I have had prior involvement with the property that is the subject of the Technical Report, as the Group Underground Planning Manager, Africa and Middle East for Barrick Gold Corporation.
9. I have read NI 43-101, and the sections of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 17th day of March, 2023

(Signed) ***Ismail Traore***

Ismail Traore, MSc, FAusIMM (CP), M.B. Law, DES