Merian Operations

Republic of Suriname
NI 43-101 Technical Report

Prepared For
Newmont Mining Corporation

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I, Donald Charles Doe, am employed as Group Executive, Reserves with Newmont Mining Corporation (Newmont).

This certificate applies to the technical report titled "Merian Operations, Republic of Suriname" with an effective date of December 31st, 2018 (the "technical report").

I am a Registered Member of the Society for Mining, Metallurgy and Exploration, 4044636 and a Professional Engineer in Alberta, 44399. I graduated from Mining Engineering at the University of Alberta in 1986 (B.Sc.) and in 1991 (M.Sc.).

I have practiced my profession for over 31 years. I have been directly involved in mine engineering, mine operations, mine design, mineral reserve estimation, mineral reserve audits, in consulting and corporate positions within the mining industry in Canada, the United States, Peru, Australia, Ghana, Suriname, New Zealand and Indonesia. In my current senior technical management role at Newmont, I am accountable for Newmont's governance system for Mineral Resources and Mineral Reserves, including the multi-discipline inputs to those estimates, and I approve the annual estimates for Mineral Resources and Mineral Reserves provided by Newmont sites and projects, along with their compliance to Newmont's internal policies and the required controls, standards and guidelines for the Securities Regulatory requirements under which Newmont reports.

As a result of my experience and qualifications, I am a Qualified Person for the content in the technical report, as the term Qualified Person is defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* (NI 43–101).

I visited the Merian site most recently from September 17th to 21st, 2018.

I am responsible for all sections of the technical report.

I am not independent of Newmont as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Merian property in a corporate technical support role from 2012 to 2013 and in a reserves governance role since 2014.

I have read NI 43–101 and all sections of the technical report have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, all sections of the technical report contain all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated: March 04, 2019

"Signed and sealed"

Donald Charles Doe, SME Registered Member 4044636

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1.0 SUMMARY

1.1 Introduction

Newmont Mining Corporation (Newmont) has prepared this Technical Report (the Report) on the Merian Operations (Merian Operations or the Project) in the Republic of Suriname (Suriname).

Mr. Donald Doe, Registered Member of the Society for Mining, Metallurgy and Exploration (RM SME), Group Executive, Reserves at Newmont, is the Qualified Person (QP) for the Report, as defined in National Instrument (NI) 43-101 Standards of Disclosure for Mineral Projects.

The Merian Operations are owned 75% by Newmont Suriname, LLC (Newmont Suriname; formerly known as Suriname Gold Company LLC or Surgold, and 100% indirectly owned by Newmont) and 25% by Staatsolie Maatschappij Suriname N.V. (Staatsolie; a company wholly owned by the Republic of Suriname). Newmont is operator.

1.2 Terms of Reference

This Report supports disclosure of Mineral Resources and Mineral Reserves and summarizes the Project development and current operations. Newmont will use this Report in support of disclosure and filing requirements with the Canadian securities regulators as specified in Section 4.2 (1) (c) of NI 43-101. This Report will be filed under Newmont's System for Electronic Document Analysis and Retrieval (SEDAR) profile.

All measurement units used in this Report are metric unless otherwise noted, and currency is expressed in American (US$) dollars as identified in the text. The Surinamese currency is the Surinamese dollar.

Mineral Resources and Mineral Reserves are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2003; 2003 CIM Best Practice Guidelines). The Mineral Reserves are forward-looking information and actual results may vary. The risks regarding Mineral Reserves are summarized in the Report (see Section 15.3 and Section 25). The assumptions used in the Mineral Reserve estimates are summarized in the footnotes of the Mineral Reserve table, and outlined in Section 15 and Section 16 of the Report.

1.3 Project Setting

The Merian Operations are located in the northeastern part of Suriname, approximately 66 km south of the town of Moengo, which is approximately 98 km east of the capital city of Paramaribo.

The mine is accessed via an all-weather road from the capital city of Paramaribo to Moengo, then by a private, 16 km long, mine access road. The port for the operation is the rehabilitated Nieuwe Haven Wharf in Paramaribo. An airstrip was constructed on site for mine usage.

The climate in the Project area is tropical with two distinct wet and dry seasons. Mining operations are conducted on a year-round basis.

The Project site is located at the ridge between the Marowijne and the Commewijne watersheds in a largely undeveloped part of the country. The Marowijne River forms the border between Suriname and French Guiana. The Project area is at an elevation of approximately 100 m, with undulating hills interspersed with deeply incised streams and creeks. Localized site topography has been significantly disturbed by artisanal mining activities that have distributed tailings piles in valleys and has radically altered stream hydrology and geomorphology. The original groundcover, where undisturbed by human activity, consists of rain forest.

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

Newmont has a Right of Exploitation for the Merian Operations and has contributed the use of this right to the partnership with Staatsolie. The Right of Exploitation for Merian is governed by the Mineral Agreement approved by the Surinamese National Assembly in November 2013 and signed by Newmont and the Surinamese government in August 2014. The Mineral Agreement has therefore force of law. The Right of Exploitation is for an area of 41,484 acres (16,788 ha), for a period of 25 years, and was recorded on November 7, 2014.

The holder of a Right of Exploitation is entitled to use the surface to conduct mining operations. Newmont holds sufficient surface rights to allow mining activities at Merian.

There are no specific applicable water rights pertaining to water use or abstraction for use at Merian. Permission to abstract, use and discharge water is authorized under the Mineral Agreement as part of approval for the development of Merian gold mine. The surface water quality criteria which Newmont must meet at compliance points downstream of discharge from Merian are specified in the ESIA.

Newmont is subject to a 6% net smelter return royalty to the Republic of Suriname payable in gold bullion or cash at the election of the government. According to the terms of the Partnership Agreement with Staatsolie, Staatsolie will receive metal in kind for its 25% interest. On October 14, 2016, Staatsolie and Newmont signed a letter of intent to amend the distribution model outlined in the partnership agreement, which would allow Newmont to sell 100% of the gold produced and make cash distributions in lieu of in-kind distributions to Staatsolie.

1.5 Geology and Mineralization

The Merian Operations lie within Lower Proterozoic-aged rocks of the Guiana Shield. The northeast portion of Suriname is dominated by rocks of the Marowijne Supergroup which comprise the Rosebel Formation and the underlying Armina Formation. Mineralization discovered to date is consistent with an orogenic gold deposit model.

The deposits are structurally-controlled by a northwest-trending, southeast-plunging antiform (the Merian antiform) that has been interpreted from mapping and geophysical data. Northwest-striking, moderate- to steeply-dipping faults and shear zones occur along the axial trace and limbs of the Merian antiform. Gold mineralization occurs in association with quartz veins, stockworks and breccias along these northwest-trending structural zones. Minor disseminated mineralization can occur adjacent to the quartz vein zones. A set of low-angle veins also occurs throughout the Project area and is interpreted to occupy low-angle imbricate thrust fault zones. The veins may be cross-cut by later, mineralized, quartz breccia bodies. Northeast and east–west-trending faults, which are also interpreted to have pre- and post-mineral displacement, cross-cut the Merian antiform and may, in part, bound or localize mineralization along the northwest-striking structural fabric.

At both Merian II and Maraba, gold mineralization is associated with quartz veins and breccias. Higher gold values are associated with higher vein density at both deposits. At Merian II, the highest gold values correlate with quartz breccias. Quartz veins range from several percent to 60–80% of the rock volume. Mineralization at Merian I is associated with quartz veins, but the breccias that are common in Merian II and Maraba do not occur.

In fresh rock, trace-to-several percent pyrite, pyrrhotite, and magnetite locally occur in, and adjacent to, quartz veins and breccias. Trace amounts of chalcopyrite, bornite, and molybdenite have been identified in fresh rock and in drill core.

In core and thin sections, gold has been observed in quartz veins, late fractures in quartz, in quartz vein selvages, and along mineral grain boundaries such as quartz/ankerite and quartz/pyrite. Gold appears to be late in the paragenetic sequence. Gold also occurs disseminated in the wall rock associated with pyrite and/or chlorite–carbonate–ankerite forming lower grade halos which can extend from a few to tens of meters around zones of higher vein densities. Intense white clay (kaolinite) alteration is indicative of some of these disseminated zones or halos in the saprolite or saprock.

1.6 History

Prior to 1999, there were multiple small-scale mines operating in the Merian Creek area. Gold production was primarily from alluvial material.

Modern exploration has been conducted by the Suriname Geological Mining Services Organization, Suriname Aluminum Company LLC (Suralco), and Newmont. Exploration activities have included rock chip, stream sediment and auger geochemical sampling, geological and reconnaissance mapping, airborne and ground geophysical surveys, reverse circulation (RC) and core drilling, Mineral Resource and Mineral Reserve estimates, and pre-feasibility and feasibility studies.

Newmont elected to fund mine construction in 2014 and Newmont declared commercial production on October 1, 2016.

1.7 Drilling and Sampling

Drilling totals 2,837 core holes (491,479.12 m), 542 RC holes (34,341.0 m) and 424 auger holes (10,385 m). RC drilling was employed early in the Project and was found to be prone to contamination. RC data are not used in Mineral Resource estimation. PQ-size core (85 mm core diameter) is used to maximize recovery in near-surface because of poor ground conditions; HQ (63.5 mm core diameter) is used to drill though saprolite and is the most common core size, and NQ (47.6 mm core diameter) is used for drilling fresh rock after penetrating the saprolite. A small number of hollow stem auger holes were drilled by Suralco at Merian II (129 holes, 3,819 m). Because this procedure results in an intact core in the center of the auger, data from these holes are used for Mineral Resource estimation.

Geological and geotechnical logs are entered in Visual Logger, a proprietary Newmont computer program, which is then uploaded directly to Newmont's Global Exploration Database (GED). The geological logs of drill core identify regolith, structures, veining, mineralization and alteration. Geotechnical logging typically records core recovery and rock quality designation (RQD). Core is photographed. Core recovery averages about 93% for Merian II, Merian I, and Maraba. Approximately 53% of the recoveries are in the 95–100% range. All drill collars have been surveyed. Down hole surveys have been performed using Tropari™ (detects magnetic azimuth), Flexit™, and Reflex™ instruments. Currently Reflex EZ-Shot™ instruments are used. Downhole surveys are performed every 50 m and at the bottom of each drill hole.

In the opinion of the Qualified Person (QP), the quantity and quality of the logging, geotechnical, collar and downhole survey data collected in the exploration and infill drill programs are sufficient to support Mineral Resource and Mineral Reserve estimation, and mine planning.

Hollow stem auger holes at Merian II averaged about 29 m depth. Samples were recovered on 5 ft (1.52 m) intervals. Core to be used in resource estimation is sampled continuously on nominal 1 m intervals from top to bottom, with sample intervals broken at geological breaks (vein intervals, alteration zones, etc.). As a result of breaking sample intervals at geological breaks, NQ diameter core can have sample lengths from 0.5 m to 1.5 m; HQ from 0.3 to 1.5 m; and PQ from 0.2 to 1.0 m. Grade control drill holes are sampled using a pie sampler with a target sample size of 6 kg. This is a standard procedure in the industry and is adequate to provide reliable samples to support short-term mine planning.

Analytical laboratories used over the Project duration include ALS, The Assay Office (TAOS), FILAB, and SGS. ALS in Lima is the primary laboratory for the Project. ALS holds ISO9001, ISO14001, and OHSAS 18001 accreditations as well as ISO 17025 accreditation for selected analytical techniques. SGS in Lima is used as the check laboratory. SGS holds ISO17025 accreditation for selected analytical techniques. TAOS is not certified. FILAB is ISO9001 certified and acts as ALS' representative in Suriname. The mine laboratory has been in operation since late 2016. It analyzes only production samples and is not accredited.

Sample preparation has differed slightly depending on the laboratory. All materials were crushed and ground. The current Merian sampling programs follow the ALS PREP-31B procedure, which includes crushing to 70% <2 mm and pulverizing to 85% passing 200 mesh (75 µm); this method is used by the on-site preparation laboratory, mine laboratory, FILAB, and the ALS Lima laboratory. TAOS uses the same crushing size but pulverizes to 95% passing 140 mesh (105 µm). Fire and screen assay methods for gold have been used; screen assays are the preferred analytical method. Both ALS Lima and TAOS use the same fire assay protocol. All samples returning more than 2 g/t Au in the initial assay are reassayed using a gravimetric finish. Samples with more than 0.4 g/t Au within significant intervals are screen fire assayed at ALS in Lima. Multi-element ICP (ME-ICP41 m) assays are done only if requested by the geologist responsible. Grade control samples are analyzed at the mine laboratory by LeachWELL™ cyanide leach. Every 10th residue is analyzed by fire assay to determine the efficiency of the LeachWELL™ process.

Dry bulk densities were measured on site using water displacement methods by Newmont staff as well as by Zonge Laboratory in Tucson, Arizona or the Laboratory at the University of Anton de Kom. Where multiple facilities made measurements for the same interval, a preferred value is selected. There is a total of 6,813 density determinations in the Merian II area, 2,348 density determinations at Merian I, and 1,319 density determinations at Maraba. Values range from 1.29 g/cm^3 in saprolite to 3.34 g/cm^3 in fresh rock (including fresh rock with ≥5% quartz veins).

Sample security at the Project has not historically been monitored. Sample collection from drill point to laboratory relies upon the fact that samples are either always attended by operations personnel, are stored in a locked on-site preparation facility or are stored in a secure area prior to shipment to the external laboratory. Chain-of-custody procedures consist of sample submittal forms sent to the laboratory with sample shipments to ensure that all samples are received by the laboratory.

Current sample storage procedures and storage areas are consistent with industry standards.

In the opinion of the QP, sample preparation, analysis, and security are acceptable, meet industry-standard practice, and are adequate for use in Mineral Resource and Mineral Reserve estimation and for mine planning purposes. Grade control sample preparation and analysis is adequate to support short-term mine planning.

1.8 Data Verification

Newmont staff regularly visit the laboratories to inspect sample preparation and analytical procedures. All analytical, logging, and location data are verified by Merian personnel prior to entry into the project database. Newmont has a strict policy of annual reviews of all aspects of the Mineral Resource estimates. Those reviews include reviews of the database, geological models, and Mineral Resource estimates. Reviews were performed in 2013, 2014, 2016, 2017 and 2018.

Third-party database and geology model audits have been conducted by Geostats Pty Ltd, AMEC E&C Services Inc, Amec Foster Wheeler E&C Services Inc, and Mine Technical Services Ltd. between 2012 and 2018.

Based on the checks, audits, and laboratory inspections completed to date, the QP considers the data and database to be suitable to support Mineral Resource and Mineral Reserve estimation.

1.9 Metallurgical Testwork

Interpretation of the metallurgical test work was performed by Newmont Technical Services in Denver with additional analysis by metallurgical personnel from Newmont's Yanacocha Gold Mine in Peru. Work completed in support of the feasibility study included head assaying, X-ray diffraction (XRD), Bond ball mill grinding work index, Bond abrasion index, Steve Morrell comminution (SMC) drop weight tests, gravity gold recovery, leach optimization testwork, slurry rheology, thickening and vacuum filtration, and cyanide detoxification.

Samples selected for metallurgical testing during feasibility and development studies are considered to be representative of the various types and styles of mineralization within the different deposits. Samples were selected from a range of locations within the deposit zones. Sufficient samples were taken so that tests were performed on sufficient sample mass.

There are no elements identified in sufficient concentrations that are expected to adversely affect recoveries in the proposed process. Low density saprolite exhibited difficult rheology issues and had a high flocculant consumption; this material is blended in the plant to minimize its impact on thickening, pumping and leach density.

Recovery factors estimated are based on appropriate metallurgical testwork and are appropriate to the mineralization types and the selected process route. Average metallurgical recoveries for the life-of-mine (LOM) plan (LOMP) range from 91.2–95.8%.

1.10 Mineral Resource Estimation

Mineral Resources were estimated for Merian II, Maraba (Kupari), and Merian I. The database closeout date for the estimates is 20 July 2018 (Merian II, Merian I), and 12 March 2018 (Maraba, Kupari).

Block models were created using Vulcan™ software. The Merian II deposit model consists of 10 x 10 x 10 m blocks inside a saprolite shell, and sub-blocking to 10 x 10 x 5 m in saprolite and fresh rock. The block models for Merian I and Maraba consist of 10 x 10 x 5 m blocks. Geological models included gold grade, vein density, regolith, geometallurgy, density, and confidence category models. All geological models except confidence category models were constructed as wireframe models in Leapfrog™ and the wireframes were transferred to Vulcan™ for estimation.

Six domains were identified at Merian II, as follows:

- Quartz breccia inside northwest zone and inside a 0.15 g/t Au cut-off gold shape (Dom1);
- Quartz breccia inside southeast zone and inside the gold shape (Dom2);
- Outside quartz breccia northwest zone and inside the gold shape (Dom3);
- Outside quartz breccia southeast zone and inside the gold shape (Dom4);
- Area 15 zone inside the gold shape (Dom5);
- Outside gold shape (Dom6).

Two domains were created at Maraba and Merian I, one domain is inside a 0.15 g/t Au gold grade shell and the other is outside that shell.

Samples were composited to 5 m intervals. A series of histograms and probability plots were generated using 5 m gold composites to characterize each deposit domain. Boxplots were created to facilitate comparisons between domains. Contact profiles or plots of average grades at increasing distances from a boundary were created to investigate changes in grade across geological boundaries.

Assignment of density values was based on either use of equations derived for specific weathering horizons, or direct assignment of a constant density value.

Grade caps were established using cumulative frequency plots, and those values were compared to values obtained using a combination of Parrish or indicator correlation methods. Not all domains were capped.

For all three deposits, three-dimensional gold grade correlograms were computed by domain with commercially available Sage 2001™ software.

Interpolation methods included inverse distance weighting to the second (ID2) and third (ID3) powers, and ordinary kriging (OK). The choice of OK, ID2 or ID3 depended on the number of composites, the data distribution, the variogram quality and the model validation result checks for global and local bias. A nearest neighbor (NN) model was produced and used for validation purposes. Validation included visual inspection of plans and sections, generation of contact plots to verify appropriate domain contact restrictions, and Hermitian correction (Herco) plots for Measured and Indicated blocks.

The Mineral Resource models were classified as Measured, Indicated, and Inferred Mineral Resources according to the levels of confidence in the estimate and considering the continuity of mineralization as demonstrated by the number of drill holes used in the estimation and geological confidence. The criteria for this classification were based on the number of samples and drill holes used in the estimation, the distance between composites and blocks being estimated, and the geological confidence zone. Only gold data within the gold shapes were used to define these average distances.

Mineral Resources are reported within conceptual Lerchs–Grossmann (LG) pit shells using the cut-off criteria outlined in Table 1-1. In this table, the metallurgical recoveries specified are those used to derive the cut-off grade and are not those projected as the LOMP recoveries.

1.11 Mineral Resource Statement

Mineral Resources are reported in Table 1-2, using the 2014 CIM Definition Standards, and have an effective date of 31 December 2018.

Mineral Resource estimates were prepared by Mr. Kazuhiro Kawahata, RM SME, and Mr. Syaiful Islam RM SME, who are Newmont employees. The QP responsible for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.

Mineral Resources are reported exclusive of Mineral Reserves and on a 100% basis. Newmont holds a 75% interest in the Merian Operations and Staatsolie Maatschappij Suriname N.V. holds the remaining 25% interest. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability but do have reasonable prospects for eventual economic extraction.

Table 1-1: Cut-off Grades, Mineral Resource Estimation

	Unit	Merian II			Maraba			Merian I		
		SAP	Trans	Rock	SAP	Trans	Rock	SAP	Trans	Rock
Metallurgical recovery at cut-off grade	%	88.2	90.3	89.4	86.5	89.2	89.9	88.4	90.4	89.5
Process operating cost (without re-handle)	$/t	4.99	9.81	10.71	4.99	9.81	10.71	4.99	9.81	10.71
Re-handle costs	$/t	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
G&A cost	$/t	4.20	5.04	6.30	4.20	5.04	6.30	4.20	5.04	6.30
Mill & tails sustaining capital x CRF	$/t	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Incremental expit	$/t	0	0	0	0.25	0.24	0.23	0.33	0.31	0.29
Total	***$/t***	***10.92***	***16.58***	***18.74***	***11.17***	***16.81***	***18.96***	***11.25***	***16.88***	***19.03***
Assumed mining dilution	%	6.2	12.9	10.9	3.8	7.4	5.3	5	12.9	10.9
Cutoff Grades	***g/t Au***	***0.31***	***0.49***	***0.55***	***0.32***	***0.48***	***0.53***	***0.32***	***0.50***	***0.56***

Note: SAP = saprolite, Trans = transitional material or saprock, Rock = fresh rock or primary material. CRF = capital recovery factor; G&A = general and administrative.

Table 1-2: Mineral Resource Statement

Deposit/ Stockpile	Measured Mineral Resource			Indicated Mineral Resource			Measured and Indicated Mineral Resource			Inferred Mineral Resource		
	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)
Merian open pits	4,700	0.96	140	34,300	0.96	1,050	39,000	0.96	1,190	50,100	1.20	1,920
Totals	***4,700***	***0.96***	***140***	***34,300***	***0.96***	***1,050***	***39,000***	***0.96***	***1,190***	***50,100***	***1.20***	***1,920***

Notes to Accompany Mineral Resource Table:

1. Mineral Resources are reported with an effective date of 31 December 2018, using the 2014 CIM Definition Standards. The Qualified Person for the estimate is Mr Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.
2. Mineral Resources are reported on a 100% basis. Newmont holds a 75% interest in the Merian Operations and Staatsolie Maatschappij Suriname N.V. holds the remaining 25% interest.
3. Mineral Resources are reported exclusive of Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources that are amenable to open pit mining methods are constrained within a Lerchs–Grossmann pit shell. Parameters used include a gold price of US$1,400/oz, 6% royalty rate, refinery and carbon handling charges of US$2.71/oz Au, a mining cost of US$2.51/t mined, process cost of US$9.65/t processed, general and administrative cost of US$5.37/t processed; variable metallurgical recoveries based on mineralization type that range from 91.2–95.8%, pit slope bench face angles that range from 56–80º, and internal dilution assumptions that range from 3.8–12.9%.
5. Mineral Resources that are amenable to open pit mining methods are reported at variable cutoff grades to accommodate different metallurgical recoveries. These cut-off grades range from 0.31–0.56 g/t Au.
6. Tonnages are metric tonnes rounded to the nearest 100,000. Gold grade is rounded to the nearest 0.01 gold grams per tonne. Gold ounces are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained (cont.) gold ounces are reported as troy ounces, rounded to the nearest 10,000.
7. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content.

Factors that may affect the Mineral Resource estimate include: changes to long-term metal price assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological and grade shape and geological and grade continuity assumptions; changes to input parameters used in the pit shells constraining the Mineral Resources; changes to the cut-off grades applied to the estimates; variations in geotechnical, mining, and processing recovery assumptions; and changes to environmental, permitting and social license assumptions.

1.12 Mineral Reserve Estimation

Mineral Reserves were estimated assuming open pit mining methods with conventional methods for drilling, blasting, loading with hydraulic shovels and haulage by large trucks. Open pit limits were determined using LG pit limit analysis. The ultimate pit limit delineation process uses various costs, metallurgical recovery data, sustained capital costs, and product metal prices to create a dollar value block model. With the dollar model and geotechnical constraints, an LG algorithm is used to generate breakeven pit shells. In order to account for the cost of in-pit haul roads, pit wall slopes are adjusted from the geotechnical design criteria. A 9% discount rate was used to compute discount factors. Mining assumptions are based on the 2019 Business Plan (BP19) LOMP. The average mining dilution is estimated at 10.0% for Merian II, 5.2% for Maraba, and 3.6% for Merian I. Cut-off grade calculations followed the Newmont corporate guidelines for incremental cut-off. The cut-off calculation is dependent on gold price, cost and recovery.

1.13 Mineral Reserve Statement

Mineral Reserves are reported on a 100% basis in Table 1-3 using the 2014 CIM Definition Standards and have an effective date of 31 December 2018. Mineral Reserves are reported using variable cut-off grades, that vary by deposit and by material type. Mineral Reserve estimates were prepared by Mr. Kazuhiro Kawahata, RM SME, and Mr. Syaiful Islam RM SME, who are Newmont employees. The QP responsible for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.

Factors that may affect the Mineral Reserve estimates include: changes to the metal price assumptions; changes in the metallurgical recovery factors; changes to the operating cut-off assumptions for mill feed or stockpile feed; changes to the input assumptions used to derive the open pit outlines and the mine plan that is based on those open pit designs; forecast dilution; ability to maintain mining permits and/or surface rights; ability to maintain social and environmental license to operate; and changes to the assumed permitting and regulatory environment under which the mine plan was developed.

Table 1-3: Mineral Reserve Statement

Deposit/ Stockpile	Proven Reserve			Probable Reserve			Proven and Probable Reserve		
	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)
Merian open pits	41,500	1.61	2,150	76,700	1.09	2,680	118,200	1.27	4,830
Stockpiles	5,800	0.74	140	—	—	—	5,800	0.74	140
Totals	***47,300***	***1.50***	***2,290***	***76,700***	***1.09***	***2,680***	***124,000***	***1.25***	***4,970***

Notes to Accompany Mineral Reserves Table:

1. The Mineral Reserves are reported with an effective date of 31 December 2018. The Qualified Person for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.
2. Mineral Reserves are reported within optimized Lerchs–Grossmann pit shells. Input parameters include the following: gold price of US$1,200/oz; a 6% royalty rate; average life-of-mine (LOM) mining cost of US$2.51/t mined, average LOM processing cost of US$9.65/t processed, average LOM general and administrative (G&A) costs of US$5.37/t processed; bench face angles that range from 56–80º; average metallurgical recoveries that range from 91.2–95.8%; and incremental cut-off grades that range from 0.36–0.65 g/t Au. The average mining dilution was estimated at 10.0% for Merian II, 5.2% for Maraba and 3.6% for Merian I.
3. Mineral Reserves are presented on a 100% basis. Newmont holds a 75% interest in the Merian Operations and Staatsolie Maatschappij Suriname N.V. holds the remaining 25% interest.
4. Tonnages are metric tonnes rounded to the nearest 100,000. Gold grade is rounded to the nearest 0.01 gold grams per tonne. Gold ounces are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained (cont.) gold ounces are reported as troy ounces, rounded to the nearest 10,000.
5. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content.

1.14 Mining Methods

The mine plan assumes conventional open pit mining methods using a truck and shovel operation. Mining and maintenance are Owner-performed.

Pit slope design sectors are defined for the saprolite, saprock (transition), and fresh rock; and separate bench configurations are specified for each sector. Design parameters are the same for the Merian II, Maraba and Merian I pits. Bench face slope angles vary from 56–80º. All benches are assumed at 10 m heights.

The general dewatering strategy used at Merian is to collect as much run-off from upper benches as possible. Water is collected in a sump and pumped to a near-by sediment pond and then discharged to the environment.

There are five mining phases planned for the Merian II deposit. A starter phase in the main pit is planned within the final phase of the main pit with a small section of the west wall being common between the starter and main pits for a section of the pit wall. A minimum mining width of 50 m was targeted between the two phases and narrows to about 40 m for certain sections of the pit. The proposed Merian II main pit measures 2,800 m along strike and is roughly 1,000 m wide with a maximum depth of 390 m from 590 to 200 m elevation.

There are three mining phases planned for the Maraba deposit. A starter phase in the main pit is entirely centered within the final phase of the main pit allowing for at least 50 m between the two mining limits. The initial phase has shallower overall slopes than the final phase as it is only in saprolite. The proposed Maraba main pit measures 1,230 m along strike and is 860 m wide with a maximum depth of 300 m from 580 to 280 m elevation.

Merian I will consist of four small pits. The largest pit measures 600 m along strike and is 500 m wide with a maximum depth of 85 m from 590 to 505 m elevation.

The double lane ramp width is designed to be 34 m wide and the single lane ramp width is designed to be 19 m wide. Ramp gradients are established at 10%.

The current fleet of major mining equipment in 19BP will be sufficient to mine the remaining reserve laybacks at Merian. Once the mine life approaches the end, the equipment fleet will be reduced in number. The primary loading equipment consists of six hydraulic excavators. A fleet of CAT 785D rigid haul trucks with a 136 t payload was selected to provide a good pass-match with the primary loading units. During the peak of operations, starting in 2019, approximately 33 trucks are required. The waste haul is influenced by the waste rock storage facility (WRSF) development strategy. WRSF operations will tactically vary between the dry season and the wet season. During the wet season haul cycles will be kept short to minimize travel on the WRSF and minimize road maintenance.

Support equipment requirements were developed based on typical open pit mine operation and maintenance requirements to safely support the loading, hauling and drilling fleets. Given the relatively short duration of mining operations, no replacement units are planned for loading units and haulers. Replacement units are planned for support equipment such as track-type tractors, pick-ups, small excavators, service trucks and fuel/lube trucks.

As part of day-to-day operations, Newmont will continue to review the mine plan and consider alternatives to and variations within the plan. Alternative scenarios and reviews may be based on ongoing or future mining considerations, evaluation of different potential input factors and assumptions, and corporate directives.

1.15 Recovery Methods

The Merian process plant is designed to treat a range of 8–12 Mt/a of ore depending on the ore mix from mining operations. The process plant flowsheet design was based on testwork results, previous study designs and industry standard practices for handling combinations of fresh rock and saprolite.

The process flowsheet is based on process units which are well proven in the minerals and gold processing industries. Material handling of the saprolite ore is simplistic in order to avoid mass flow problems with this material; conventional industry engineering practices were incorporated in the design and sizing of equipment.

Crushed ore passes through a grinding circuit comprising a semi-autogenous (SAG) mill, a pebble-crusher and a ball mill. Fine ore particles are delivered to a trash screen and thickened prior to leaching, whereas the coarser material is re-circulated through the grinding circuit. Coarse gold is recovered from the grinding circuit through a gravity concentrator and sent directly to the refinery. Cyanide and lime are mixed with the ore slurry to dissolve the gold. The slurry is then transferred from the leaching circuit to the carbon in pulp (CIP) where it is mixed with activated carbon which adsorbs the gold from solution. The slurry then goes to the tailings processing facility and the carbon is delivered to the elution circuit where gold is recovered using an electrowinning process.

Tailings produced from the plant are treated using a combination of tailings washing and thickening and an air/sulfur dioxide (air/SO_2) cyanide detoxification system before disposal.

Consumables used include reagents, and high- and low-pressure air. Energy requirements for the SAG and ball mills vary by domain and deposit. Raw water is supplied by rain water recovered from process plant, power plant and administration building rainwater runoff, and augmented in the dry season by a groundwater well field.

1.16 Project Infrastructure

Road access to the operations is from Paramaribo using the east–west highway to Moengo, a distance of about 98 km, then turning south on the Moengo–Langa Tabiki road to approximately km 60, and then 16 km west to the mine site. The final access road is a combination of 7 km of newly-built road and upgrade of an existing forestry (timber) road. The site has a light aircraft strip and a helipad. The Nieuwe Haven Wharf in Paramaribo is used as the shipping hub.

All key infrastructure is built, and the mine is operating. The infrastructure includes: mine maintenance facilities and warehouse; process workshop and warehouse; reagents storage facilities; administration building; mine office building; mill office building; mill search house; gate houses; Moengo and Nieuwe Haven port terminal; accommodations camp; airstrip; and the assay/metallurgical laboratory. The electrical power supply for the Merian Operation is from a site-based heavy fuel oil (HFO) power plant.

The mine design uses two stockpiles, one is low-grade, and the other is high-grade. The stockpiles are located just north of the plant site. There are three WRSFs, collectively able to store about 269 Mt of waste. Additional WRSFs will be required to support the LOMP.

Development of the tailings storage facility (TSF) required construction of a series of dams. The TSF also included a series of seepage collection drains and wells to capture possible groundwater flow from the TSF. Tailings deposition uses the sub-aerial method. The design ultimate capacity for the TSF is 132 Mt, which is about 94 Mm^3. Storage of accumulated water for a dry period of two months has been included in the design. A second stage to the TSF will need to be constructed to support the LOMP after 2028.

A series of sediment control structures are in place to control the level of total suspended solids in the runoff of disturbed areas. Additional sediment control structures will be required to support the LOMP.

1.17 Environmental, Permitting and Social Considerations

1.17.1 Environmental Considerations

Much of the Merian site has been previously disturbed by timber cutting and artisanal and small-scale mining activities.

Baseline studies completed in support of mine design and permitting included climate, soil, air, and water quality, characterization of hydrogeological units, biological resources and landscape studies.

Environmental and social management plans developed in support of operations include: air quality management plan (includes noise and vibration); traffic and transportation; safety management plan; hazardous materials management plan; closure and reclamation plan; waste management plan (hazardous and nonhazardous); social management plan; water management plan (includes TSF, storm water, and sediment control); construction environmental management program; biodiversity management plan; vegetation disposal plan; cyanide management plan; waste rock management plan; and wildlife management plan.

1.17.2 Closure and Reclamation Planning

A Closure and Reclamation Management Plan outlines closure and reclamation activities that are planned to occur during the operational life of the Merian gold mine and into mine closure. Closure and reclamation activities at Merian are performed with the aim of minimizing the long-term impact of mining and mineral processing activities on the local environment and communities, by adopting and continuously improving best management practices (BMPs).

The projected LOM closure liability estimate at the end of 2018 is US$76.3 M.

1.17.3 Permitting Considerations

The Mineral Agreement between the Government of Suriname and Surgold was ratified in November 2013, signed in August 2014, and has a 25-year term.

The Merian Mining Act granted permission to the government to enter into the Mineral Agreement on behalf of the Republic of Suriname. The Mineral Agreement is an attachment to the Merian Gold Mining Act, which was published in the Official Gazette of the Republic of Suriname (S.B. 2013 no. 162), and therefore the Mineral Agreement has force of law.

The grant of the exploitation permit, Mineral Agreement signing, and the ESIA approval are the key permits supporting operations. The only other major operational permits required are a permit from the Civil Aviation Authority to allow the operation of the mine site airstrip and a permit to import explosives.

1.17.4 Social Considerations

Operations at the Merian Operation have limited local impacts, as the closest village, at Langa Tabiki, is 17 km from the mine site.

Newmont developed a communities' relations plan to identify and ensure an understanding of the needs of the surrounding communities and to determine appropriate programs for filling those needs. Community consultation and participation were part of the preliminary planning and scoping phase for the ESIA and during environmental and social baseline data collection. Additional stakeholder engagement activities including disclosure and public comment on the draft ESIA were conducted in June 2012. During 2018, an update to the ESIA was conducted in the form of an additional Historical Narrative on traditional landowners; this resulted in the identification of an additional stakeholder group.

As part of its recruitment policy, Newmont has a commitment to favor employees within the Pamaka area (local to the project) and then elsewhere in Suriname, leading to increased incomes and potentially improving standards of living for the workforce. A Cultural Heritage Management Plan will be developed in 2019. Newmont provides Cultural Awareness Training and has established a Worker Code of Conduct for the site.

A co-operation agreement with the Pamaka community was signed in 2016 and focused on commitments such as a Community Development Fund, communication, complaints and grievances, local procurement and employment, artisanal and small-scale mining, participatory monitoring, safety, road maintenance, and trips. These steps provide a forum to ensure formal, documented agreement on mitigation measures and community development programs.

1.18 Markets and Contracts

Newmont has an operative refining agreement with Argor-Heraeus SA, a Swiss refining house, for refining of doré produced from the Project. Newmont's bullion is sold on the spot market, by marketing experts retained in-house by Newmont. 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.

Metal price assumptions are provided by Newmont management and are based on three-year trailing average prices applicable at the time the Mineral Reserves are estimated. Gold prices used for the 2018 Mineral Resource estimation are US$1,400/oz Au for Mineral Resources and US$1,200/oz Au for Mineral Reserve estimation.

There are 14 major contracts currently in place to support the Merian operations, in addition to the refining contract. These contracts cover items such as bulk commodities, operational and technical services, mining and process equipment, administrative support services, and transport and logistics. Contracts are negotiated and renewed on an annual or biannual basis. Contract terms are typical of similar contracts in Suriname.

1.19 Capital Cost Estimates

Capital cost estimates were developed by Newmont, based on BP19, and factored as appropriate. Mining sustaining capital includes equipment purchase and major components.

The major sustaining capital cost items are built up from the following key input areas:

- Mining: Equipment replacement and purchasing capital, freight, assembly, tires, buckets, machine shop and tools, medical equipment, aggregate and emulsion plants, light towers, sediment ponds, haul roads, geotechnical instruments;
- Process: General, direct and indirect crusher costs, milling tailings and water;
- Tails: TSF lift;
- Support: Town and camp, environmental, information technology, supply chain, human resources, finance;
- Exploration: conversion of Mineral Resources to Mineral Reserves.

The sustaining capital estimate is provided in Table 1-4, and totals approximately US$217 M. There is an additional US$76.3 M provision for closure/reclamation. Total sustaining capital costs, including closure, are anticipated to be about US$293 M.

1.20 Operating Cost Estimates

Operating costs were developed by Newmont, based on BP19, and factored as appropriate. These costs were used to establish costs for pit limit analysis and ore cut-offs.

Mining costs were unitized by pit and by material type to establish the base mining cost. Each pit has different distances from the pit exit to the crusher and to the WRSF. Each pit also has different incremental distances between ore and waste. The haul distances and material density define the base haul cost for each pit by material type. The incremental mine cost used for elevations below 550L is the truck haul cost traveling through every 1 m vertical distance of the in-pit ramp that has a 10% slope.

Mining costs are variable and range from US$2.30–US$2.92/t mined. Mining costs average US$2.51/t over the LOM. The LOM average unit process cost in BP19 is US$9.65/t processed, and the LOM average unit G&A cost is US$5.37/t processed.

Table 1-4: Sustaining Capital Estimate

Area	US$ M
Mining	93.21
Process	42.53
Tails	44.41
Support	19.01
Exploration	18.03
Total sustaining capital	***217.19***
Closure cost	76.3

1.21 Economic Analysis

Newmont is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration is supported by a positive cashflow.

1.22 Interpretation and Conclusions

With the assumptions in this Report, the Merian Operations show a positive cash flow over the life-of-mine and support Mineral Reserves. The mine plan is achievable with the assumptions and parameters used.

1.23 Recommendations

Recommendations have been broken into two phases.

Phase 1 recommendations are made in relation to drilling activities and reviews of sample preparation protocols. Three separate core drill programs are proposed.

- Exploration drilling along structural trends that are similar to the northwest-oriented structural corridors that host the known mineralization. About 60,000 m of drilling is proposed;
- Mineralization at depth under the Merian II open pit may, with additional drilling, support underground mining studies. About 12,000 m of drilling is recommended;
- Infill drilling in support of potential conversion of Mineral Resources to Mineral Reserves is planned in the pit areas. About 20,000 m of drilling per year is suggested.

- Exploration sample preparation precision should be investigated by submitting both halves of ½ core splits every 50th sample for screen fire assay to confirm the sample preparation protocol delivers precision ≤20% and therefore meets Newmont's internal standard.

The exploration and sample preparation precision should be investigated to see if it can be brought into line with Newmont's internal standard expectations. Likewise, current blasthole sampling and sample preparation procedure results should be reviewed to determine what changes are necessary to bring the sample preparation precision into line with corporate standards.

Recommendations proposed in Phase 2 are suggestions for additional data collection and data support for metallurgical assumptions. A program of geometallurgical characterization of fresh rock material in the Merian II and Maraba open pits is recommended. Investigations should be conducted to better improve gravity circuit utilization.

An element of the metallurgical testwork proposed in Phase 2 may use drill core generated by Phase 1; however, existing core could also be used for the program. The remainder of the Phase 2 work program is independent of Phase 1 and could be conducted concurrently.

Phase 1 is estimated at about US$39.6 M. Phase 2 is budgeted at approximately US$150,000.

2.0 INTRODUCTION

2.1 Introduction

Newmont Mining Corporation (Newmont) has prepared this Technical Report (the Report) on the Merian Operations (Merian Operations or the Project) in the Republic of Suriname (Suriname). The Project location is shown in Figure 2-1.

The Merian Operations are owned 75% by Newmont Suriname, LLC (Newmont Suriname; formerly known as Suriname Gold Company LLC or Surgold, and 100% indirectly owned by Newmont) and 25% by Staatsolie Maatschappij Suriname N.V. (Staatsolie; a company wholly owned by the Republic of Suriname). Newmont is operator.

2.2 Terms of Reference

This Report supports disclosure of Mineral Resources and Mineral Reserves and summarizes the Project development and current operations. Newmont will use this Report in support of disclosure and filing requirements with the Canadian securities regulators as specified in Section 4.2 (1) (c) of NI 43-101. This Report will be filed under Newmont's System for Electronic Document Analysis and Retrieval (SEDAR) profile.

All measurement units used in this Report are metric unless otherwise noted, and currency is expressed in American (US$) dollars as identified in the text. The Surinamese currency is the Surinamese dollar.

Mineral Resources and Mineral Reserves are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2003; 2003 CIM Best Practice Guidelines). The Mineral Reserves are forward-looking information and actual results may vary. The risks regarding Mineral Reserves are summarized in the Report (see Section 15.3 and Section 25). The assumptions used in the Mineral Reserve estimates are summarized in the footnotes of the Mineral Reserve table, and outlined in Section 15 and Section 16 of the Report.

2.3 Qualified Persons

This Report has been prepared by the following Newmont Qualified Person (QP):

- Mr. Donald Doe, RM SME, Group Executive Reserves, Newmont.

Mr. Doe's position requires oversight of Newmont's Mineral Resource and Mineral Reserve estimation processes and mine operational forecasts, and the internal controls on those processes.

Figure 2-1: Project Location Plan

Note: Figure prepared by Mine Technical Services, figure backdrop from Google Maps.

2.4 Site Visits and Scope of Personal Inspection

Mr. Doe visited the Merian Operations most recently from September 17–21, 2018. During this site visit, he inspected the operating open pits at Maraba and Merian II, and viewed the general locations planned for the additional pits in the mine plan. Mr. Doe also viewed the Merian process plant and associated general site infrastructure, including the current tailings storage facility (TSF) operations.

While on site, he discussed aspects of the operation with site-based staff. These discussions included the overall approach to the mine plan, anticipated mining conditions, selection of the production target and potential options for improvement, as well as reconciliation study results. Other areas of discussion included plant operation and recovery forecasts. Mr. Doe reviewed capital and operating forecasts with site staff.

Mr. Doe also reviewed Newmont's processes and the internal controls on those processes at the mine site with operational staff on the work flow for determining Mineral Resource and Mineral Reserve estimates, mineral process performance, production forecasts, mining costs, and waste management.

2.5 Effective Dates

The Report has a number of effective dates as follows:

- The effective date for drill information included in the report is 20 July 2018;
- The closeout date for the Merian II and Merian I databases used in the estimation is 20 July 2018;
- The closeout date for the Kupari/Maraba database used in the estimation is 12 March 2018;
- The effective date for the Mineral Resource estimate is 31 December 2018;
- The effective date of the Mineral Reserve estimate is 31 December 2018.

The overall effective date of this Report is the effective date of the Mineral Reserves and is 31 December 2018.

2.6 Information Sources and References

This Report is based, in part, on internal company reports, maps, published government reports and public information, as listed in Section 27 of this Report.

The following Newmont employees contributed to various aspects of the Report under the supervision of the QP;

- Santjitsing Radjkoemar, Merian Exploration Superintendent; 14 years of experience with the Project;
- Dr. Ted Eggleston, Consulting Geologist, Registered Member, Society of Mining, Metallurgy and Exploration (RM SME); six years of experience with the Project;
- Mario Loayza, RM SME, South America Regional Manager Resource Modeling; seven years of experience with the Project;
- Syaiful Islam, RM SME, Senior Long-Term Planning Engineer, Merian; one year of experience with the Project;

- Kazuhiro Kawahata, RM SME, Chief Mine Engineer, Merian; three years of experience with the Project;
- Scot Davies, Member of the Australasian Institute of Mining and Metallurgy (MAusIMM), Process Manager, Merian; three years of experience with the Project;
- Matthew Jeffery, Qualified Professional, Mining and Metallurgical Society of America (MMSA (QP)), Process Manager (Corporate); six years of experience with the Project.

All figures were prepared by Newmont personnel for the Report unless otherwise noted.

2.7 Previous Technical Reports

Newmont has not previously filed technical reports on the Merian Operations.

3.0 RELIANCE ON OTHER EXPERTS

The QP has relied upon Newmont experts for the information included in this Report on mineral tenure, surface rights, permitting, political, environmental and social considerations, taxation and markets.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Introduction

The Merian Operations are located in the northeastern part of Suriname, approximately 66 km south of the town of Moengo, which is approximately 98 km east of the capital city of Paramaribo. The mine is about 30 km north of the Nassau Mountains, close to the French Guiana border.

The approximate centroid co-ordinates for the Project are 5.125056º N, 54.544688º W or 21 N 772000 E; 567000 N (WGS 84).

4.2 Property and Title in Suriname

Mineral rights and surface rights are held separately in the Republic of Suriname (the Government). Mineral rights are vested in the state. Details of the mineral tenure regime are contained in the Surinamese Mining Decree dated 8 May 1986 (the Mining Decree).

The Mining Decree applies to the Merian Operation, with the exception of the provisions in the Mining Decree that are not aligned with provisions in the Mineral Agreement that was signed between Newmont Suriname and the Government of Suriname (refer to Section 20.4). In the cases that the provisions in the Mineral Agreement derogate from the Mining Decree, the provisions of the Mineral Agreement prevail over the provisions laid down in the Mining Decree. The Mineral Agreement with the Government was approved by the Surinamese parliament, and has therefore force of law.

Information in this subsection on the Mining Decree is derived from public domain sources, including The World Bank (2018), IGF (2017) and the Mining Decree itself and has not been independently verified by the QP.

4.2.1 Mineral Titles under the Mining Decree

4.2.1.1 Reconnaissance Rights

A reconnaissance right is granted for a two-year period, with the possibility of a one-year extension of term. The maximum area that can be applied for is 200,000 ha. A work program must be submitted to the Government for approval and reports covering the work completed on an annual basis. A final report must be submitted at the end of the tenure term.

Reconnaissance rights allow the holder to establish exploration camps and conduct surface exploration activities. The Government must be apprised of any mineral discovery.

Reconnaissance rights can be converted to exploration rights.

4.2.1.2 Exploration Rights (Right of Exploration)

Exploration rights are granted for an initial three-year term and can cover an area no larger than 40,000 ha. Two terms of renewal can be granted, each of two years duration. Each renewal must be accompanied by a 25% reduction in size of the exploration right. A work program must be supplied in general terms for the first three years and a detailed program for the first 12 months of tenure. Annual reports on activities completed must be provided, as must quarterly updates.

Exploration rights give the holder the right to drill, construct exploration camps and perform detailed surface and underground exploration but not commercial production. Half-core must be retained for the Government.

The holder must begin exploration activities within three months following extension of the exploration rights and to continue these activities without interruption of more than four months unless a longer period of interruption is granted by the minister.

From Year 1, there is an annual payment requirement to the Government in the form of a land tax of US$0.50 per hectare.

The Government must be apprised of any mineral discovery.

Application for an exploitation right must be made six months or earlier prior to the expiry of the exploration right. Applications need to be accompanied by an extensive report containing the particulars of all shown minerals, proven, estimated and probable reserves according to acceptable international norms as well as a technological report covering mining and handling options.

4.2.1.3 Exploitation Rights (Right of Exploitation)

Exploitation rights are typically granted as 10,000 ha areas and have a 25-year term. The mining code has provision for the exploitation right to be extended under conditions to be negotiated with the Government at the time of renewal. Renewal applications must be submitted no later than two years prior to the expiry of the right.

The Mining Decree states that the Government has the right to acquire an interest in any exploitation right.

Annual land payments are required. For the first five years, the required sum is five guilders per year per hectare. From Years 6 to 10, the amount increases by 120% from the five-year payment; from Years 11 to 15, the amount is 150% of the five-year payment; and from Year 15 onward, the payment is 200% of the five-year payment amount.

Exploitation rights are granted for specific minerals. Exploitation rights holders can work on, process, transport and market the mined minerals, construct mine facilities, continue reconnaissance and exploration activities and use and process standing timber and building materials within the rights boundary.

The holder must provide annual Mineral Resource and Mineral Reserve statements, information on planned annual work programs and quarterly and annual reports on production.

Exploitation rights can only be transferred to a party other than the original holder with approval from the authorities authorized to grant those rights. The Mining Decree states that:

"The executor can only transfer exploitation rights to a third party who fully meets the requirements which the applicant of the rights concerned must fulfill."

4.2.2 Surface Rights

Holders of Rights of Exploitation must pay appropriate compensation to surface rights holders for any damage caused by mining activities, whether or not the damage is caused by the exploitation rights holder. Alternatively, the Rights of Exploitation holder must perform remedial work to restore the land to its pre-mining state. However, if the cost of restoration to the former condition exceeds the compensation amount in cash, the rights possessors and interested third parties must settle for the paid compensation amount.

There is provision for judicial arbitration in the event of dispute over mining activities. No compensation is required if it can be proven that buildings and plants were obviously created with the object of receiving compensation. The mining rights holder can also ask the judge to set the amount of any security deposit to be paid for the compensation to be determined.

The Rights of Exploitation holder who uses private land, wholly or partially, for a long time will, at the request of the surface rights possessors, rent the terrain wholly or partially for a rental agreed upon by the parties. After more than seven years or, if after relinquishment by the surface rights possessors, the land is in a state which is no longer suitable for the purpose the surface rights possessor formerly used it for then the surface rights possessor has the right to demand that the Rights of Exploitation holder take over the rights to this terrain for a price to be agreed upon by the parties.

If the parties concerned cannot agree on the amount of rent or the price, a judicial judgement can be requested. The cost of this lawsuit is borne by the exploitation rights holder so long as it is not decided otherwise by the judge.

4.2.3 Royalties

Royalties payable are set by Governmental decree and vary by deposit and commodity.

4.2.4 Environmental

Before any exploitation permit is approved, an applicant must determine if an Environmental Assessment (EA) is needed. Applications are divided into three project types:

- Category A: EA is compulsory. Category A projects are projects that are likely to have adverse impacts that may be extensive, irreversible and diverse. The extent and scale of the environmental impacts can only be determined after thorough environmental assessment. Mitigation measures can only be formulated after the results of the assessment are known;

- Category B: An EA or another type of environmental assessment document will be required. Category B projects are those whose impact depends on the sensitivity of the location, scale and predictability. Projects in this category must undergo a checklist after which the decision can then be taken whether a standard EA or lesser form is required. The information will be obtained from the environmental information required from the applicant. Three paths (subcategories) are acknowledged. For projects that follow under category B, it is necessary to further assess whether (a) The adverse impacts are likely to be relevant, significant and complex and therefore an EA will be required; (b) The adverse impacts are not complex, easy to assess and therefore mitigation measures can be designed without the need for a full EA. Projects that fall under this sub-category will be required to present partial subjects of the recommended structure of a full EA or some other form of environmental statement.
- Category C: no EA is required. Category C Projects are projects having no impacts or the impacts are well known, predictable, mitigatable and miniscule in scale.

The Nationaal Instituut voor Milieu en Ontwikkeling in Suriname (NIMOS) requires that an applicant submits a Term of References (TOR) for the EA to be conducted for the proposed project. After assessing the TOR, NIMOS issues project-specific guidelines for the content of the required Environmental Impact Statement (EIS). The adequacy, accuracy and completeness of the EIS are assessed through a number of criteria compiled through questions into a review checklist. The EA review team reports to NIMOS the results of the review of the EIS in the form of a Review Report.

During the review process, information regarding the major positive and negative impacts of the project and the proposed mitigation measures are expected to be disclosed in the media, via radio, newspaper, and television by the proponent. NIMOS will receive public comments and concerns regarding the project and forward them to be addressed by the applicant or by the EA team.

After the Review Committee has recommended approval, the permitting agency is responsible for issuing a permit for the process of the proposed project.

The applicant is obligated to implement the Environmental Management Plan (EMP, guidelines NIMOS), which was included in the proposed project EIS. The EMP includes the proposed mitigation measures for direct and cumulative impacts as well as for impacts which remain after mitigation measures have been taken, the so-called residual impacts. Applicants may also be required to conduct mandatory monitoring if required by the EA. The Permitting agency and NIMOS will review the monitoring results and post-decision evaluation every calendar year, taking into account the implementation of the EMP. On the basis of the monitoring results, the permitting agency and NIMOS may require additional mitigation measures and/or requirements to the permit.

4.2.5 Fraser Institute Survey

The QP has used the 2017 Fraser Institute Annual Survey of Mining Companies report (the 2017 Fraser Institute Survey) as a credible source for the assessment of the overall political risk facing an exploration or mining project in Suriname. Each year, the Fraser Institute sends a questionnaire to selected mining and exploration companies globally. The Fraser Institute survey is an attempt to assess how mineral endowments and public policy factors such as taxation and regulatory uncertainty affect exploration investment.

The QP has relied on the 2017 Fraser Institute survey because it is globally regarded as an independent report-card style assessment to governments on how attractive their policies are from the point of view of an exploration manager or mining company and forms a proxy for the assessment by industry of political risk in specific political jurisdictions from the mining industry's perspective.

Of the 91 jurisdictions surveyed in the 2017 Fraser Institute survey, Suriname ranks 61st for investment attractiveness, 63rd for policy perception and 53rd for best practices mineral potential.

4.3 Project Ownership

The mine is owned 75% by Newmont and 25% by Staatsolie.

4.4 Mineral Tenure

4.4.1 Right of Exploitation

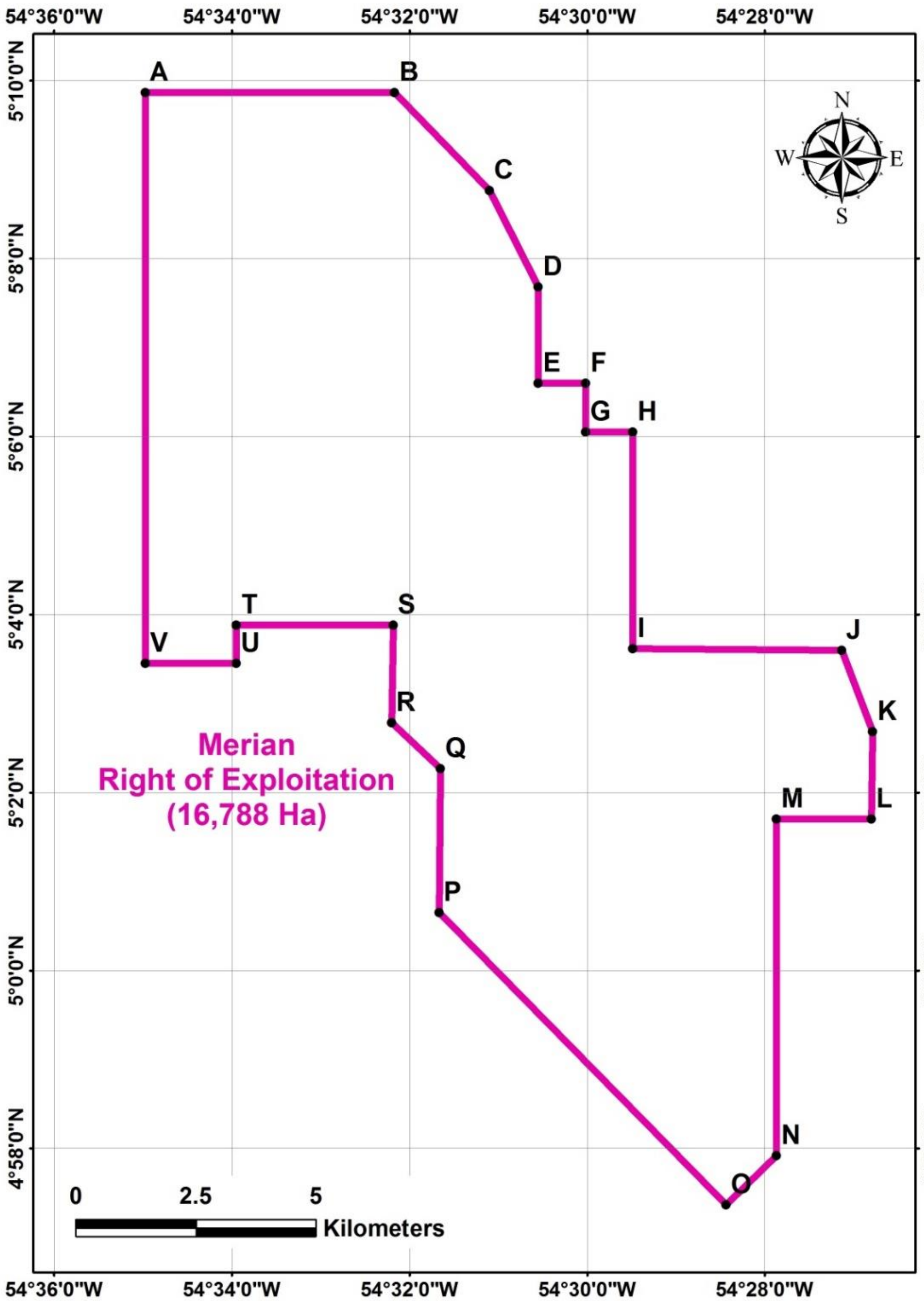
Newmont has a Right of Exploitation for Merian governed by a Mineral Agreement approved by the Surinamese National Assembly in November 2013 and signed by the parties in August 2014. This Mineral Agreement has therefore force of law. The Right of Exploitation has been contributed by Newmont to the partnership with Staatsolie, and is for an area of 41,484 acres (16,788 ha), for a period of 25 years and was recorded on November 7, 2014.

The lease outline is provided in Figure 4-1 and the boundary coordinates in Table 4-1. The locations of the known deposits within the Right of Exploitation are provided in Figure 4-2. An annual payment is required to maintain the Right of Exploitation in good standing. The 2018 fees were US$5,372.26, and have been paid.

4.4.2 Right of Exploration

Newmont has a Right of Exploration adjacent to Merian (Figure 4-3; Table 4-2), which has also been contributed to the partnership with Staatsolie.

Figure 4-1: Right of Exploitation Outline Plan

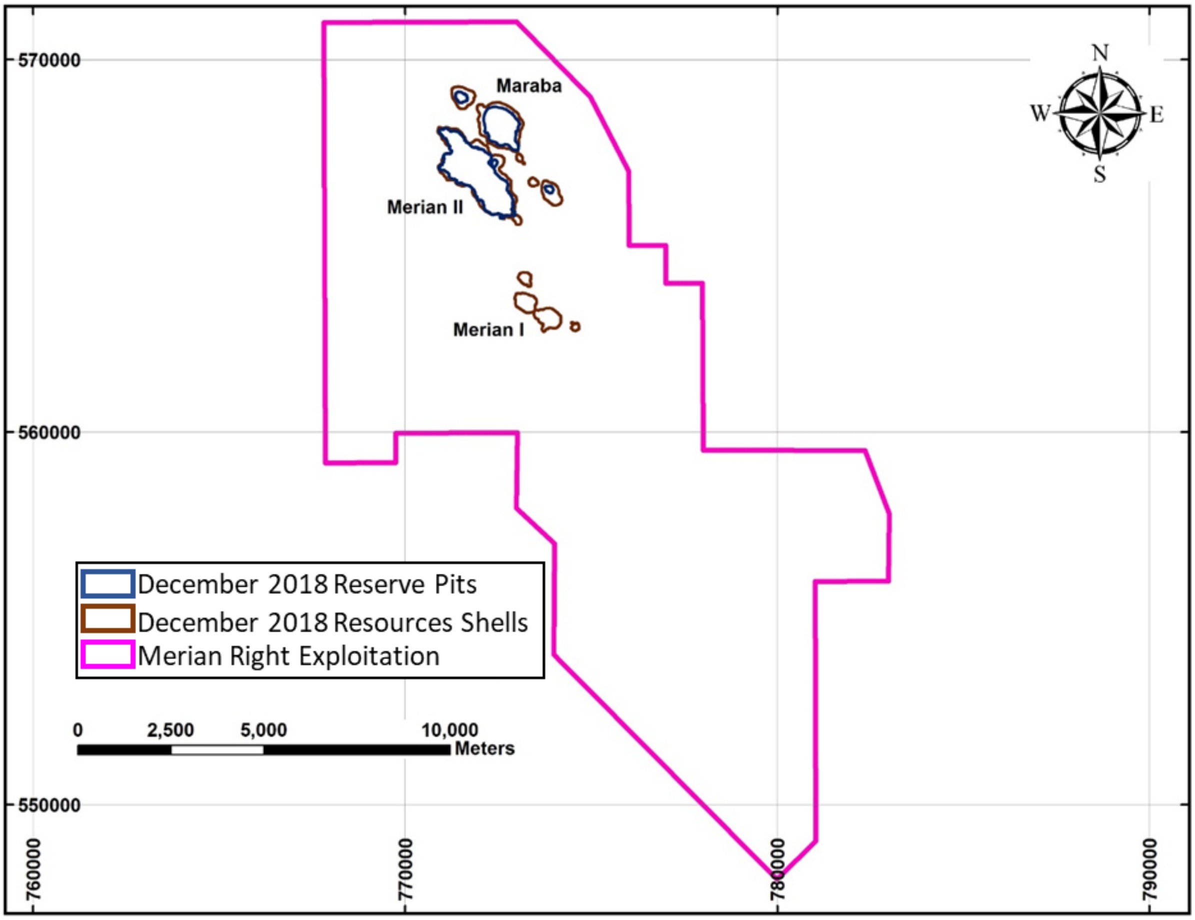


Note: Figure prepared by Newmont, 2018.

Table 4-1: Right of Exploitation Boundary Coordinates

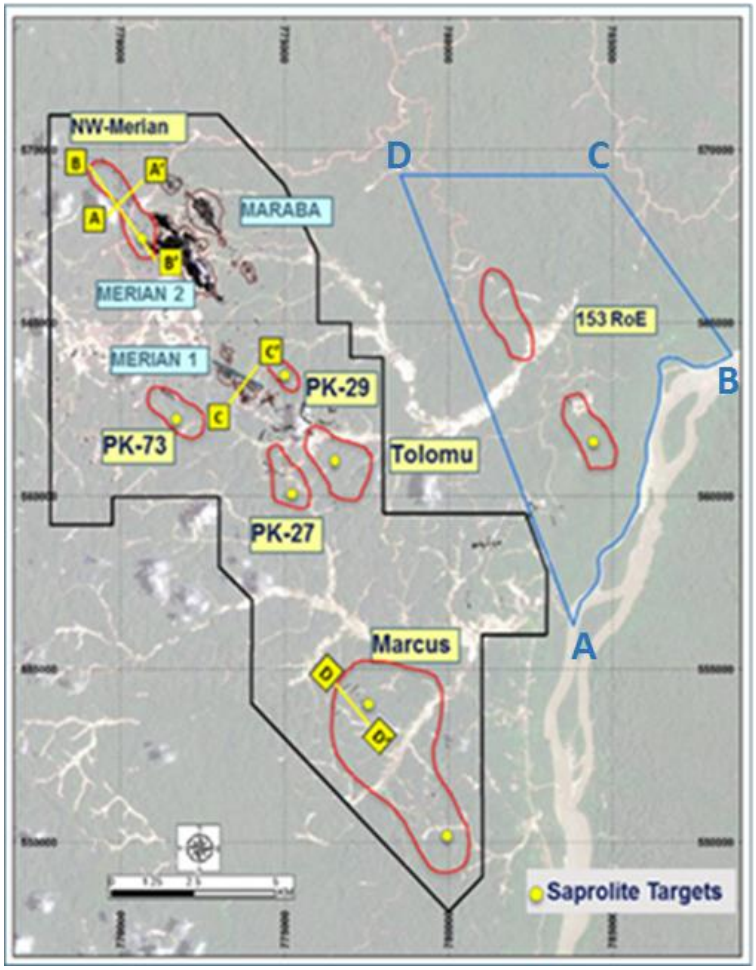
Point	Longitude (west)	Latitude (north)
A	54° 34' 58.4"	5° 09' 52"
B	54° 32' 10"	5° 09' 52"
C	54° 31' 06"	5° 08' 46"
D	54° 30' 33"	5° 07' 41"
E	54° 30' 33"	5° 06' 36"
F	54° 30' 01"	5° 06' 36"
G	54° 30' 01"	5° 06' 36"
H	54° 29' 29"	5° 06' 03"
I	54° 29' 29"	5° 03' 37"
J	54° 27' 08"	5° 03' 36"
K	54° 26' 47"	5° 02' 41"
L	54° 26' 48"	5° 01' 42"
M	54° 27' 52"	5° 01' 42"
N	54° 27' 52"	4° 57' 55"
O	54° 28' 26"	4° 57' 22"
P	54° 31' 40"	5° 00' 39"
Q	54° 31' 39"	5° 02' 16"
R	54° 32' 12"	5° 02' 47"
S	54° 31' 07"	5° 03' 53"
T	54° 33' 57"	5° 03' 53"
U	54° 33' 57"	5° 03' 27"
V	54° 34' 58.4"	5° 03' 27"

Figure 4-2: Deposit Location Plan



Note: Figure prepared by Newmont, 2019.

Figure 4-3: Right of Exploration Location Plan



Note: Figure prepared by Newmont, 2019.

Table 4-2: Right of Exploration 153 Boundary Coordinates

Point	Latitude North	Longitude West
A	05º 01' 50.80"	54º 26' 21.10"
B	05º 06' 04.15"	54º 23' 43.43"
C	05º 08' 53.91"	54º 25' 49.34"
D	05º 08' 54.50"	54º 29' 10.70"

The license, referred to as 153 RoE, encompasses 6,317 ha and expires 22 November 2019. Newmont must submit a work plan that includes a budget and timeframe to complete the proposed work and submit quarterly reports on program findings. The proposed two-year work plan is results based, and could include soil auger sampling, field mapping and channel sampling. Drilling may be conducted if results warrant. In order to retain 153 RoE, Newmont is required to pay an annual fee of US$1,010 per year to the Government of Suriname, which is due on November 22 of each year. Progress reports are sent to the Government of Suriname at the end of every quarter. An annual report is required to be submitted each year-end. All reporting requirements and payments for 2018 have been met.

4.5 Surface Rights

The holder of a Right of Exploitation is entitled to use the surface to conduct mining operations. Newmont holds sufficient surface rights to allow mining activities at Merian. The current life-of-mine (LOM) plan (LOMP) infrastructure including pits, waste rock storage facilities (WRSFs), TSF and process facilities are inside the granted Right of Exploitation boundary.

4.6 Water Rights

There are no specific applicable water rights pertaining to water use or abstraction for use at Merian. Permission to abstract, use and discharge water is authorized under the Mineral Agreement as part of approval for the development of Merian gold mine. The surface water quality criteria that Newmont must meet at compliance points downstream of discharge from Merian are specified in the ESIA. Water is governed in Suriname via the laws and decrees noted in Table 4-3.

4.7 Royalties and Encumbrances

Newmont is subject to a 6% net smelter return royalty to the Republic of Suriname payable in gold bullion or cash at the election of the government. On August 6, 2014 the government of Suriname elected to receive these royalty payments in cash.

According to the terms of the partnership agreement, Staatsolie will receive metal in kind for its 25% interest. On October 14, 2016, Staatsolie and Newmont signed a letter of intent to amend the distribution model outlined in the partnership agreement, which would allow Merian to sell 100% of the gold produced and make cash distributions in lieu of in-kind distributions to Staatsolie.

4.8 Property Agreements

The over-arching agreement for the Project is the Mineral Agreement (refer to discussion in Section 20.4).

Table 4-3: Water Legislation

Title	Objective(s)	Implementing Agency	Applicability
Water Supply Law G.B. 1938 no. 33	Contains prohibitions with respect to water wells, etc. that serve as water supply sources.	Ministry of Public Health.	Several creeks are occasional sources of potable water for local communities.
Water Board Law G.B. 1932 no. 32 as amended	To establish water boards in charge of maintenance of waterways and waterworks within designated areas.	Execution by the water boards, on behalf of the Ministry of Regional Development.	Newmont requires the use of public waterways (the Suriname River) to received supplies by ship.
Harbors Decree 1981 S.B. 1981 no. 86	Provisions for harbor activities.	Maritime Authority Suriname and District Commissioners, assisted by the Prosecutors office, the Police and the Ministry of Trade and Industry.	Newmont requires the use of public waterways (the Suriname River) to received supplies by ship.
Maritime Safety Law SB. 2004 No. 90	Provisions for safety of ships and harbors.	Maritime Authority Suriname, Ministry of Trade and Industry, Maritime Safety Council.	Newmont requires the use of public waterways (the Suriname River) to received supplies by ship.

4.9 Permitting Considerations

Permitting considerations are discussed in Section 20.

4.10 Environmental Considerations

Environmental considerations are discussed in Section 20.

4.11 Social License Considerations

Social license considerations are discussed in Section 20.

There is an expectation of environmental damage as a result of artisanal mining activity. Such operations occur extensively in the southern and central portion of the Project area and to the south and along the Marowijne River. Much of the artisanal activity has historically involved alluvial extraction of gold-bearing soils throughout the network of creeks in the area, though some simple pits have also been excavated. Typically, the artisans have distributed tailings piles in valleys, locally radically altered stream hydrology and geomorphology and substantially increased sediment loads in the streams.

4.12 QP Comments on "Item 4; Property Description and Location"

In the opinion of the QP:

- Information provided by Newmont's legal and tenure experts on the mining tenure held by Newmont in the Project area supports that the company has valid title that is sufficient to support declaration of Mineral Resources and Mineral Reserves;
- The holder of a Right of Exploitation is entitled to use the surface to conduct mining operations. Newmont holds sufficient surface rights to allow mining activities at Merian;
- There are no specific applicable water rights pertaining to water use or abstraction for use at Merian;
- Royalties are payable to the Government of Suriname;
- Environmental liabilities for the operation are typical of those that would be expected to be associated with an operating gold mine with a number of open pits, including roads, site infrastructure, waste and tailings disposal facilities;
- Artisanal mining has occurred within the Newmont ground holdings, and there is an expectation that environmental damage has resulted from these activities.

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

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

5.1 Accessibility

The mining operations are accessed via an all-weather road from the capital city of Paramaribo to Moengo, then by a private, 16 km long, mine access road.

The port for the operation is the rehabilitated Nieuwe Haven Wharf in Paramaribo.

An airstrip was constructed on site for mine usage. A second small airstrip is located at Langa Tabiki and can be used by charter companies to land small aircraft.

5.2 Climate

About 2.3 m of precipitation falls in the Project area annually. This is spread through two rainy seasons. The long rainy season typically extends from April to July and the short rainy season from December to January. Two dry seasons occur, the long dry season is generally from August to November and the short dry season from February to March. The occurrence of hurricanes in Suriname is very rare.

The average temperature is approximately 27º C (81º F) and the average humidity is 80%.

Mining operations are conducted on a year-round basis.

5.3 Local Resources and Infrastructure

The mine site is in a remote area. Supplies to support mining and exploration activities are typically sourced from Paramaribo.

Infrastructure supporting the Project and the availability of local resources is discussed in Section 18.

5.4 Physiography

The Project site is located at the ridge between the Marowijne and the Commewijne watersheds in a largely undeveloped part of the country. The Marowijne River forms the border between Suriname and French Guiana.

The Project area is at an elevation of approximately 100 m, with undulating hills interspersed with deeply incised streams and creeks. Localized site topography has been significantly disturbed by artisanal mining activities that have distributed tailings piles in creek valleys and radically altered stream hydrology and geomorphology.

The original vegetation, where undisturbed by human activity, consists of rain forest.

5.5 QP Comments on "Item 5; Accessibility, Climate, Local Resources, Infrastructure, And Physiography"

In the opinion of the QP:

- The existing local infrastructure, availability of staff, and methods whereby goods could be transported to the Project area are well-established and well understood by Newmont and can support the declaration of Mineral Resources and Mineral Reserves;
- The Merian Operations cover an operating mine and all required infrastructure for the LOMP discussed in this Report are in place;
- Within Newmont's ground holdings, there is sufficient area to allow construction of any Project infrastructure that may be required in the future;
- Newmont holds sufficient surface rights to support operations (refer to discussion in Section 4.5).

Operations are conducted year-round.

6.0 HISTORY

6.1 Exploration History

Prior to 1999, there were multiple small-scale mines operating in the Merian Creek area. Gold production was primarily from alluvial material.

Between 1976 and 1983, the Suriname Geological Mining Services Organization (GMD) tested the gold content of gravels in the area of Jorka Creek. Results were uniformly low.

In early 1999, Suralco targeted the Project area for gold exploration, based on the artisanal mining activity. Initial work comprised reconnaissance evaluation and geochemical soil sampling in the Jorka, Marcus and Toematoe Creek areas and the vicinity of placer mining sites. Areas of anomalous geochemical results were further tested by deep-auger sampling. Deep auger drilling was used extensively throughout the concession. A regional airborne magnetic survey was completed between February and May 2000, which included the Merian right of exploitation, comprising 5,800 line-km at a line spacing of 150 m.

During 2002, an area of placer mining along a northern branch of Merian Creek, the Merian II area, was targeted for exploration. A grid was set up on the Gowtu Bergi (Gold Mountain) pit and extended in 2003. Detailed mapping of the Gowtu Bergi pit at a scale of 1:200 and reconnaissance mapping of artisanal mining sites throughout the Merian II project area at 1:5,000 was conducted.

Core drilling commenced in August 2002 to test for the bedrock source of the gold excavated from the Gowtu Bergi pit and was completed in September 2003, with 72 holes (10,093 m) drilled. This work supported an initial Mineral Resource estimate in 2003.

Newmont assumed Project operatorship in 2004. To date, Newmont has completed rock chip, stream sediment and auger geochemical sampling, geological and reconnaissance mapping, geophysical surveys, reverse circulation (RC) and core drilling, updated Mineral Resource estimates, Mineral Reserve estimates and pre-feasibility and feasibility studies.

Mining operations commenced in 2016.

6.2 Production

Production since start-up in 2016 is summarized in Table 6-1.

Table 6-1: Production History

Year	Expit (t x 1,000)	Ore Processed (t x 1,000)	Gold Produced (Oz Au)
2015	5,177	0	0
2016	25,508	3,573	104,199
2017	38,386	13,623	512,678
2018	42,230	14,184	534,177
Totals	***111,302***	***31,380***	***1,151,055***

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

Merian lies within Lower Proterozoic-aged rocks of the Guiana Shield (Figure 7-1) where Guiana Shield comprises distinct, east–west-trending belts of low-grade metamorphic rocks that are separated by large areas of granitic rocks and gneisses. The northeast portion of Suriname is dominated by rocks of the Marowijne Supergroup which is composed of the Rosebel Formation and the underlying Armina Formation. Figure 7-2 is a stratigraphic column showing the regional geology and relationships between the various formations. The basal Paramaca Formation, a thick sequence of volcanic rocks, is not exposed in the Merian area.

7.2 Project Geology

The bedrock geology consists of folded and faulted, inter-bedded graywackes, mudstones, siltstones, sandstones and minor volcaniclastic rocks of the Armina Formation. These rocks have been subjected to weak to moderate, low-grade, greenschist facies regional metamorphism. To date, no intrusive rocks have been identified within the exploitation license.

A generalized geologic map of the Project based on drilling data, mapping and geophysical interpretation is shown in Figure 7-3.

Prolonged chemical weathering from a semi-arid, tropical paleo-climate has produced a laterite/saprolite profile that extends on average 80–100 m below the surface. The upper lateritic horizon is generally 2–3 m thick covered by 0.3–0.5 m of soil.

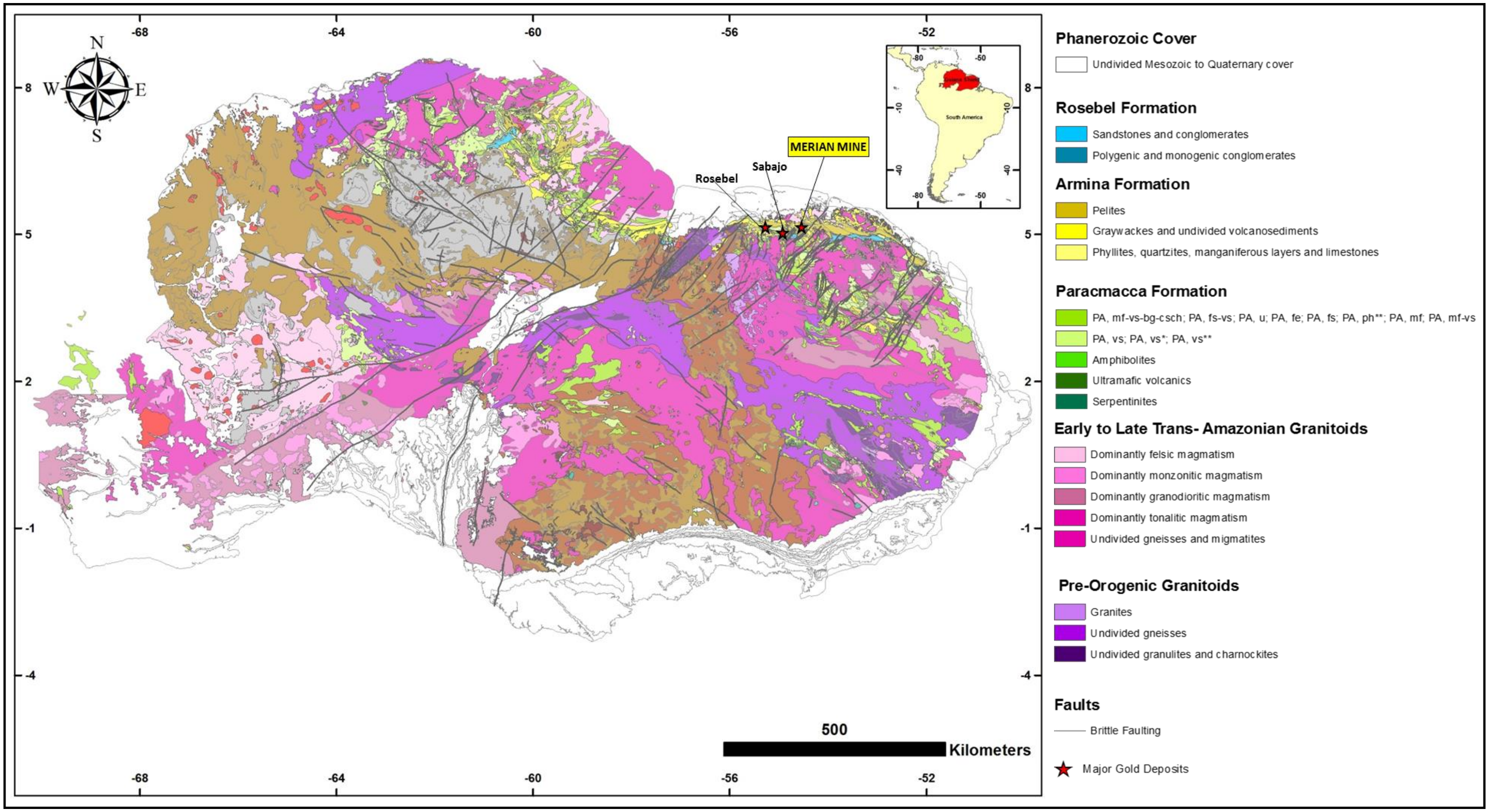
Sedimentary rocks of the Armina Formation in the saprolite zone are weathered and oxidized to a mixture of clays such as kaolinite and iron oxides. Primary rock texture is fairly well preserved, although in the mineralized zones textures may be difficult to distinguish where quartz and quartz veining remain intact.

A transition zone of partially weathered or oxidized rock, referred to as saprock, occurs below the saprolite. The transition zone is highly irregular and ranges in thickness from 0 to 20 m. Primary rock fabric such as bedding and folding, as well as partially oxidized pyrite can be readily seen in this zone.

Fresh rock underlies the transition zone. Primary rock texture, structure and mineralization are easily recognized in the fresh rock. All of the mineralization referred to in this Report occurs within saprolite, saprock or fresh rock. Most of the known deposits and prospects show evidence of recent and historical mining primarily from laterite and alluvial sources.

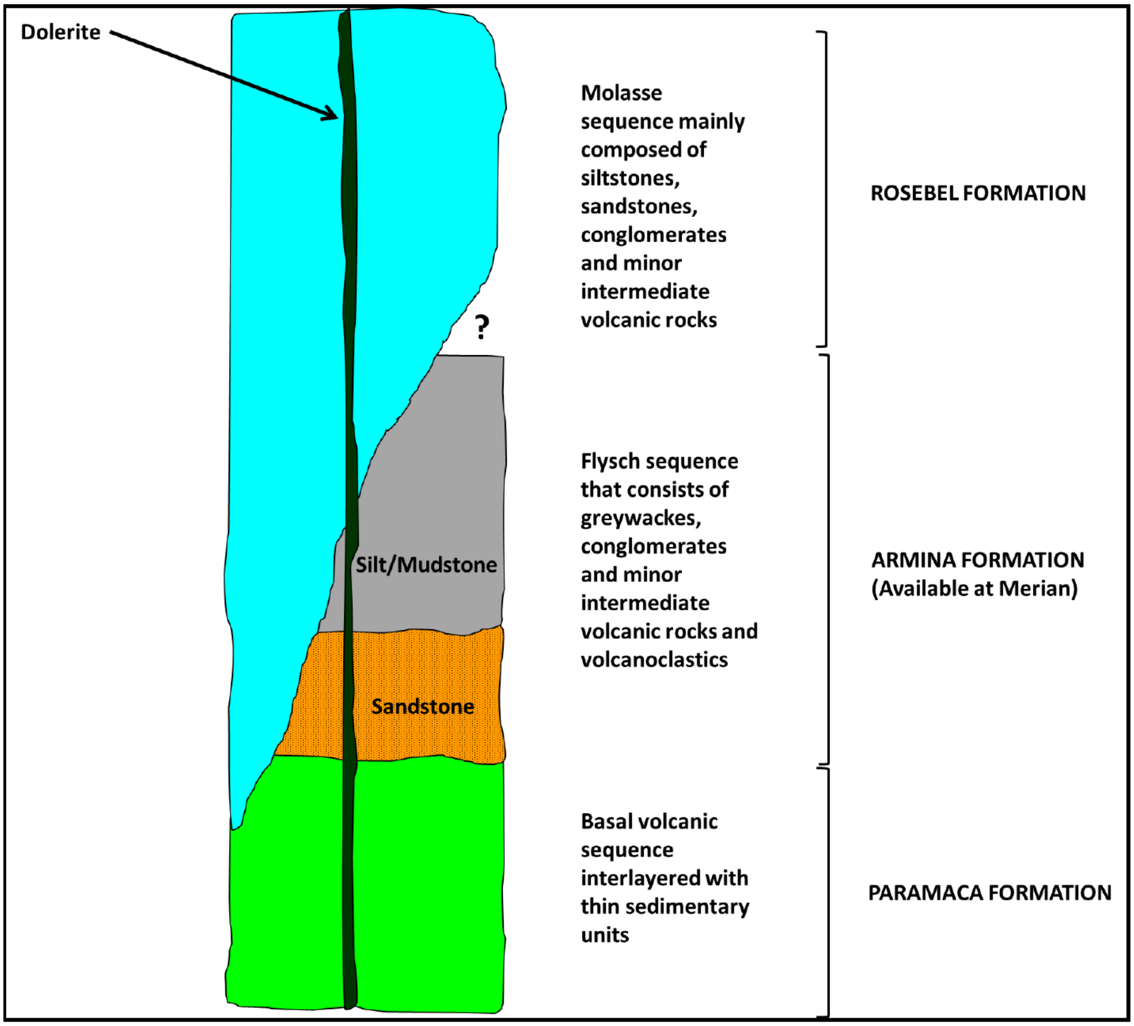
A northwest-trending, southeast-plunging antiform (the Merian antiform), interpreted from mapping and geophysics, dominates the Project structural geology. Second order "parasitic" folds occur in both limbs of the fold and generally have a northwest axial trace and wave lengths from a few centimeters to several hundreds of meters.

Figure 7-1: Regional Geology Plan



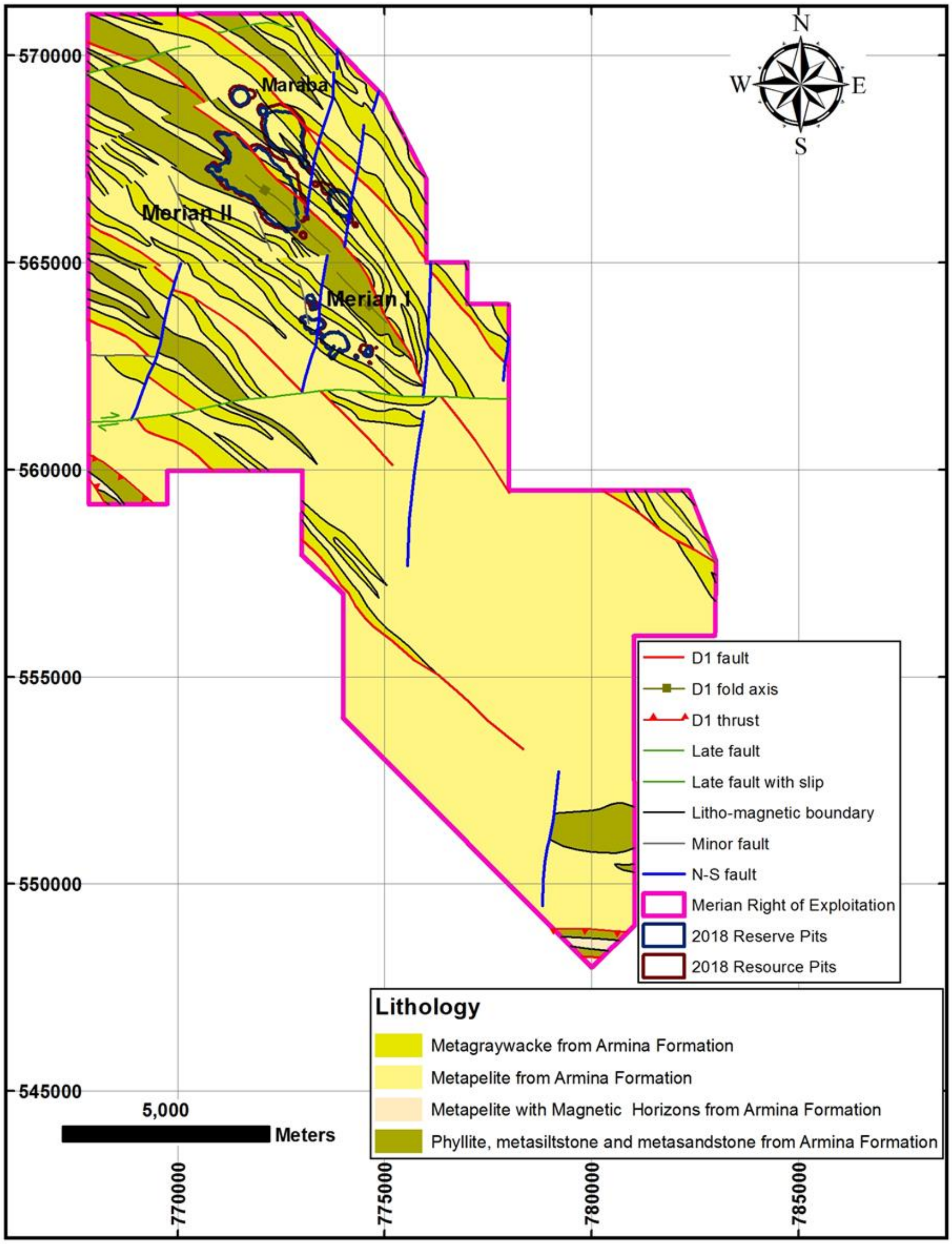
Note: Figure prepared by Newmont, 2018. Rosebel is held by third-parties. Sabajo is a Newmont-held exploration-stage property.

Figure 7-2: Regional Stratigraphic Column



Note: Figure prepared by Newmont, 2016.

Figure 7-3: Project Geology Plan



Note: Figure prepared by Newmont, 2019.

Northwest-striking, moderate- to steeply-dipping faults and shear zones occur along the axial trace and limbs of the Merian antiform. Gold mineralization occurs in association with quartz veins, stockworks and breccias along these northwest-trending structural zones. Minor disseminated mineralization locally occurs adjacent to the quartz vein zones. A set of low-angle veins interpreted to occupy low-angle imbricate thrust fault zones occurs throughout the Project area. The veins may be cross-cut by later, mineralized, quartz breccia bodies.

Northeast and east–west-trending faults interpreted to have pre- and post-mineral displacement, cross-cut the Merian antiform and may, in part, bound or localize mineralization along the northwest-striking structural fabric.

7.3 Local Geology

Gold mineralization within the Merian II and Maraba deposits occurs within, and immediately adjacent to, quartz veins, quartz stockworks and irregular quartz breccia bodies. Host rocks comprise highly-folded sandstones and siltstones. Although the host rocks, alteration and mineralogy of both deposits are similar, they differ in geometry and structural controls on the mineralization.

At both Merian II and Maraba, gold mineralization is associated with quartz veins and breccias. Higher gold values are associated with higher vein density at both deposits. At Merian II, the highest gold values correlate with quartz breccias. Quartz veins range from several percent to 60–80% of the rock volume.

Quartz veins and quartz breccia bodies at both deposits consist primarily of quartz, albite and ankerite. Breccia bodies exhibit multi-episodic brecciation and annealing of the quartz and locally contain clasts of the sedimentary wall rocks. In fresh rock trace-to-several percent pyrite, pyrrhotite and magnetite may occur in, and adjacent to, quartz veins and breccias. Trace amounts of chalcopyrite, bornite and molybdenite have been identified in fresh rock and in drill core.

The Merian I deposit is located approximately 3 km to the southeast of Merian II. The geology of host rocks and mineralization is similar in style to Merian II but not as well understood. Three small deposits have been drilled fairly extensively. Mineralization at Merian I is not fully delineated and remains open in several directions. Mineralization occurs with quartz veins but there are no obvious breccias like those that are typical of Merian II and Maraba.

In core and thin sections from all deposits, gold has been observed in quartz veins, late fractures in quartz, in quartz vein selvages and along mineral grain boundaries such as quartz/ankerite and quartz/pyrite. Gold appears to be late in the paragenetic sequence. Gold also occurs disseminated in the wall rock associated with pyrite and/or chlorite–carbonate–ankerite forming lower grade halos which can extend a few to tens of meters around zones of higher vein densities. Intense white clay (kaolinite) alteration is indicative of some of these disseminated zones or halos in the saprolite or saprock.

7.4 Deposit Descriptions

7.4.1 Merian II

Merian II is currently in production and is mining above and below the saprolite–fresh rock interface.

Gold mineralization at Merian II occurs over a strike length of approximately 3.5 km, is elongate in a northwest–southeast direction, is 200–600 m wide and has been drill-tested to a depth of 675 m. The deposit is interpreted to occur along the axial trace of the Merian antiform.

Two distinct structural styles of mineralization are identified:

- Gold mineralization associated with northwest striking, shallow- to moderately-northeast-dipping sheeted and/or tabular quartz vein zones and quartz stockworks;
- Gold mineralization associated with higher-angle, northeast-dipping veins and irregular quartz breccia bodies.

A northwest-striking, northeast-dipping quartz breccia body referred to as the “92 shoot” forms the core or central portion of the deposit. The “92 shoot” quartz breccia consists primarily of white to gray quartz, albite, ankerite, wall rock clasts and clasts of earlier-formed quartz veins; it is irregular in geometry and ranges in thickness locally from meters to tens of meters. Higher gold grades are associated with the “92 shoot” and quartz breccias. Overall, gold grade increases predictably with increasing quartz vein density and quartz breccias (>90% quartz veins) tend to correlate with higher gold grades.

Moderately dipping sheeted and irregular quartz veins and stockwork zones and minor quartz breccia occur in the footwall and hanging wall of the “92 shoot”. These sheeted and irregular quartz veins may be massive, banded, or have a sugary texture. Individual veins range in thickness from millimeters to 1–2 m thickness and generally occur as mappable zones of veining ranging in thickness from several meters to ±50 m.

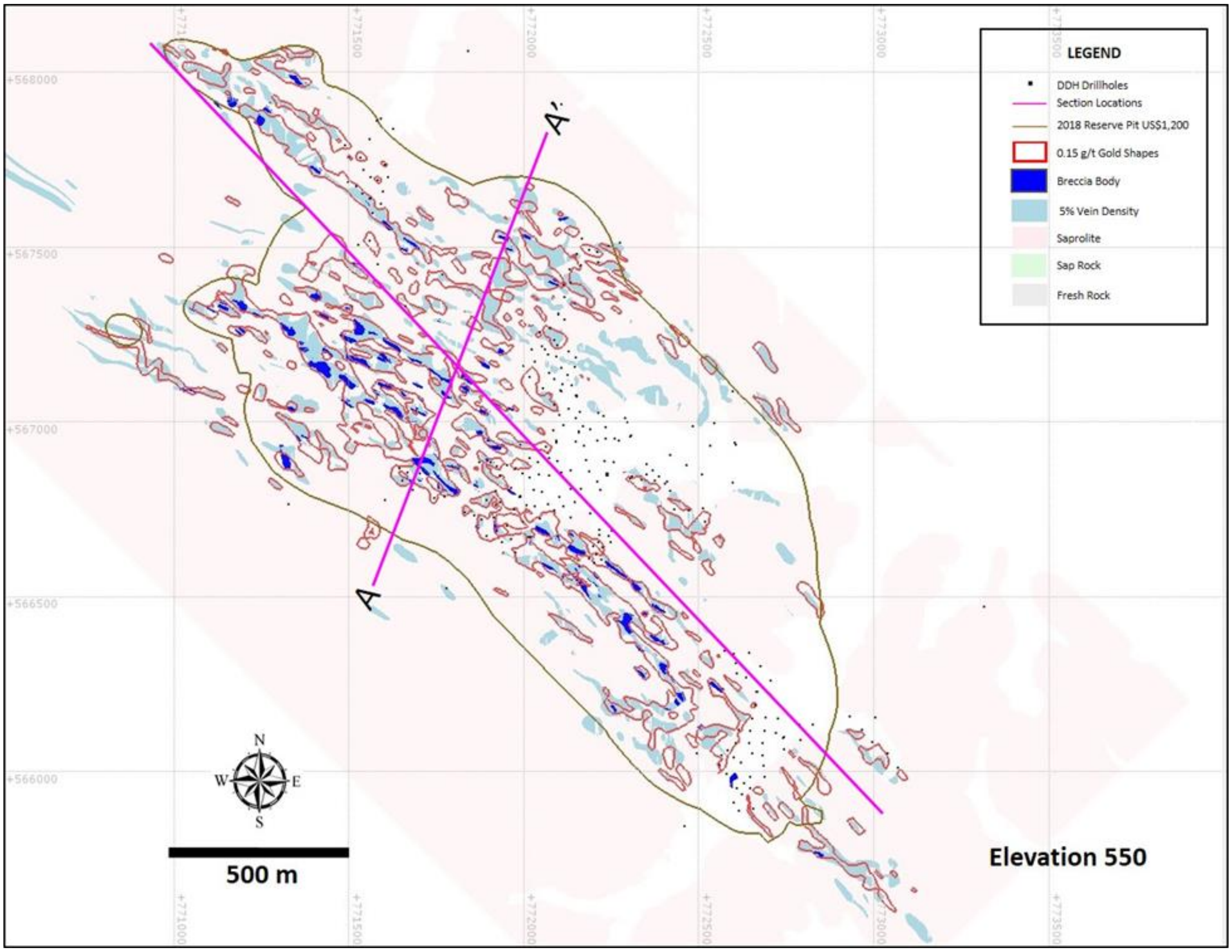
All veins and quartz breccias may be locally folded and faulted. Observations made from core logging and mapping of field exposures show that the “92 shoot” quartz breccia is a later event that cross-cuts the earlier-formed sheeted and irregular quartz veins that occur in the footwall and hanging wall of the “92 shoot”.

Saprolite thickness ranges from 20 m to as deep as 140 m (50% ranging from 60–90 m). Deep oxidation or saprolite development occurs both within and adjacent to zones of more intense quartz veins.

Saprock ranges in thickness from zero to tens of meters. Fresh rock occurs below the saprock.

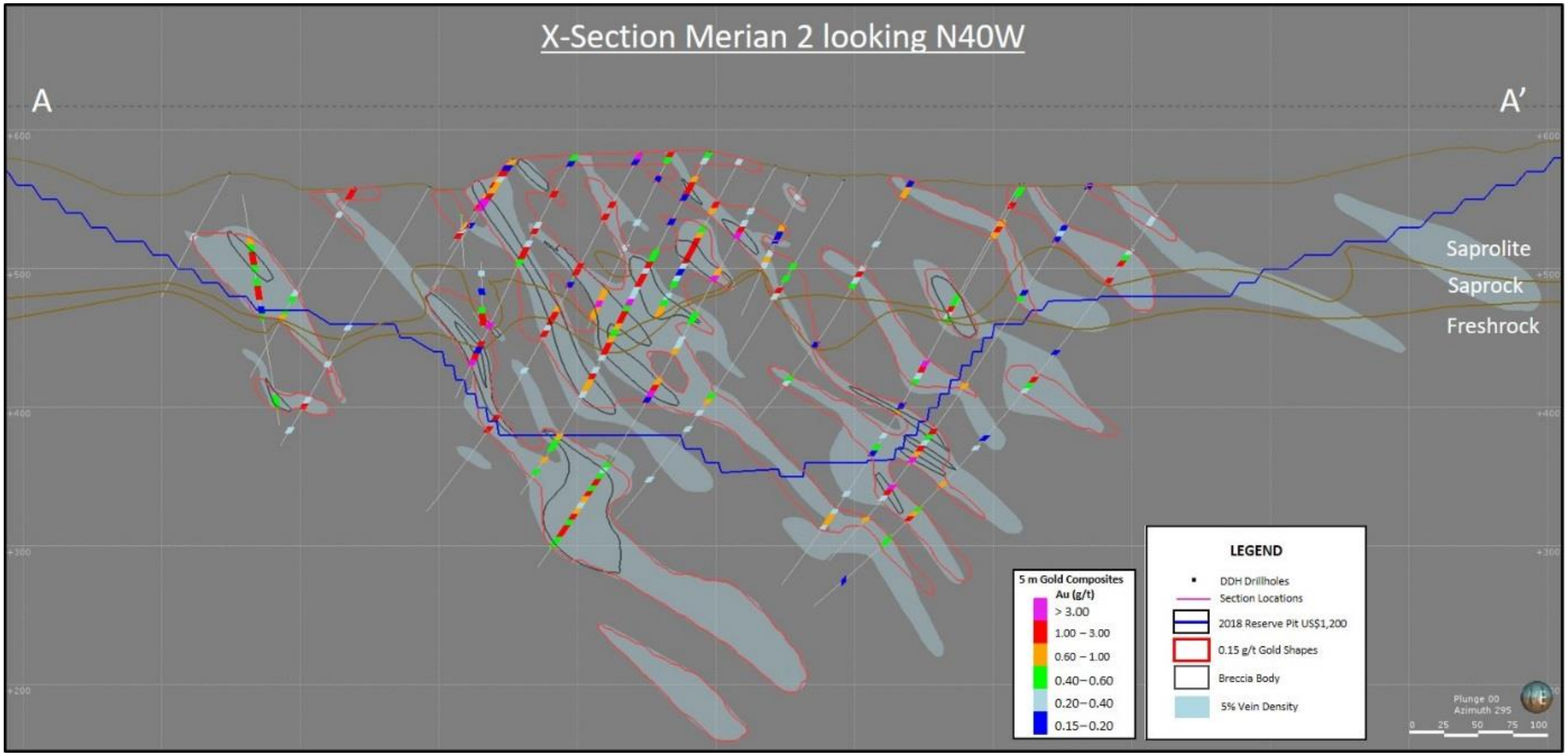
Figure 7-4 is a geology plan for Merian II and Figure 7-5 is a cross-section through the Merian II open pit.

Figure 7-4: Merian II Geology Plan



Note: Figure prepared by Newmont, 2019. Section line A–A' is the location of Figure 7-5.

Figure 7-5: Merian II Cross Section



Note: Figure prepared by Newmont, 2019.

7.4.2 Maraba

Gold mineralization occurs over a strike length of 1.5 km, is elongate in a northwest direction, ranges in width from 50–200 m and has been drill-tested to about 560 m depth. Mineralization at Maraba is interpreted to be located on the east limb of the Merian antiform. The Maraba deposit includes the Kupari sector that is along strike from Maraba and interpreted to be hosted in the same structure but with a non-mineralized gap between the two areas. The Maraba deposit also includes the Maraba South zone to the south of Maraba Main.

Gold mineralization at Maraba occurs with a relatively continuous zone of steeply-dipping sheeted quartz veins with a lenticular core of increased vein density and higher gold grades. Individual veins range in thickness from millimeters to 2-3 m thickness. Vein textures are massive or sugary.

Maraba exhibits the same oxidation states as Merian II: saprolite, saprock and fresh rock. Saprolite thicknesses range from 25 m to as much as 150 m (50% between 60 m to 100 m), saprock thicknesses from zero to tens of meters. In general, the saprolite/saprock and/or saprolite/fresh rock contacts are irregular, but these can be fairly uniform in areas with weathering profiles undisturbed by veins or significant structures.

The Maraba vein zone and gold mineralization is open at depth but narrows along strike to the northeast and southeast.

Figure 7-6 is a geology plan for the Maraba area and Figure 7-7 is a cross-section through the Maraba Main deposit.

7.4.3 Merian I

The Merian I deposit is located approximately 3 km to the southeast of Merian II. The geology of host rocks and mineralization is similar in style to Merian II but not as well understood. Three small deposits have been drilled fairly extensively. Mineralization at Merian I is not fully delineated and remains open in several directions.

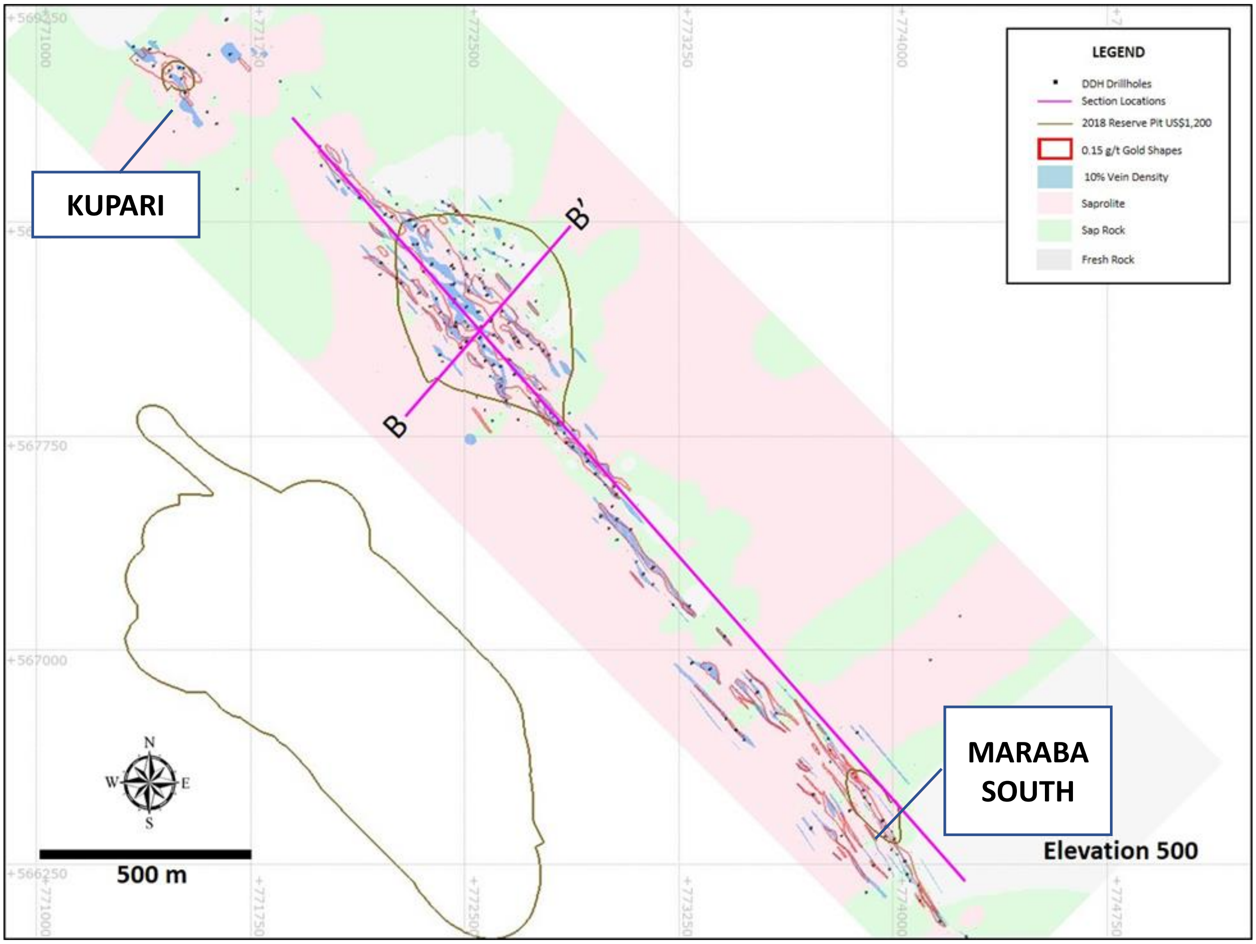
Mineralization at Merian I has a northwest–southeast strike over a known distance of 2.1 km. Mineralization ranges in width from 25 to 200 m and has been drill tested to a depth of approximately 270 m. Based on geophysical interpretation, a northwest-trending fault may run parallel to, and possibly bound, the mineralization on the southwest side of the deposit but the structural control of mineralization is not well understood.

Mineralization is characterized by irregular quartz stockwork zones and moderate to strong white clay development. Unlike Merian II, there are very few breccia bodies. Oxidation and saprolite development are deeper at Merian I than at either Merian II or Maraba; this may be due to more fractured rock and stockwork veins at Merian I. A plan showing the mineralized zone is provided as Figure 7-8. Figure 7-9 is an illustrative grade section for the Merian I deposit.

7.5 Prospects/Exploration Targets

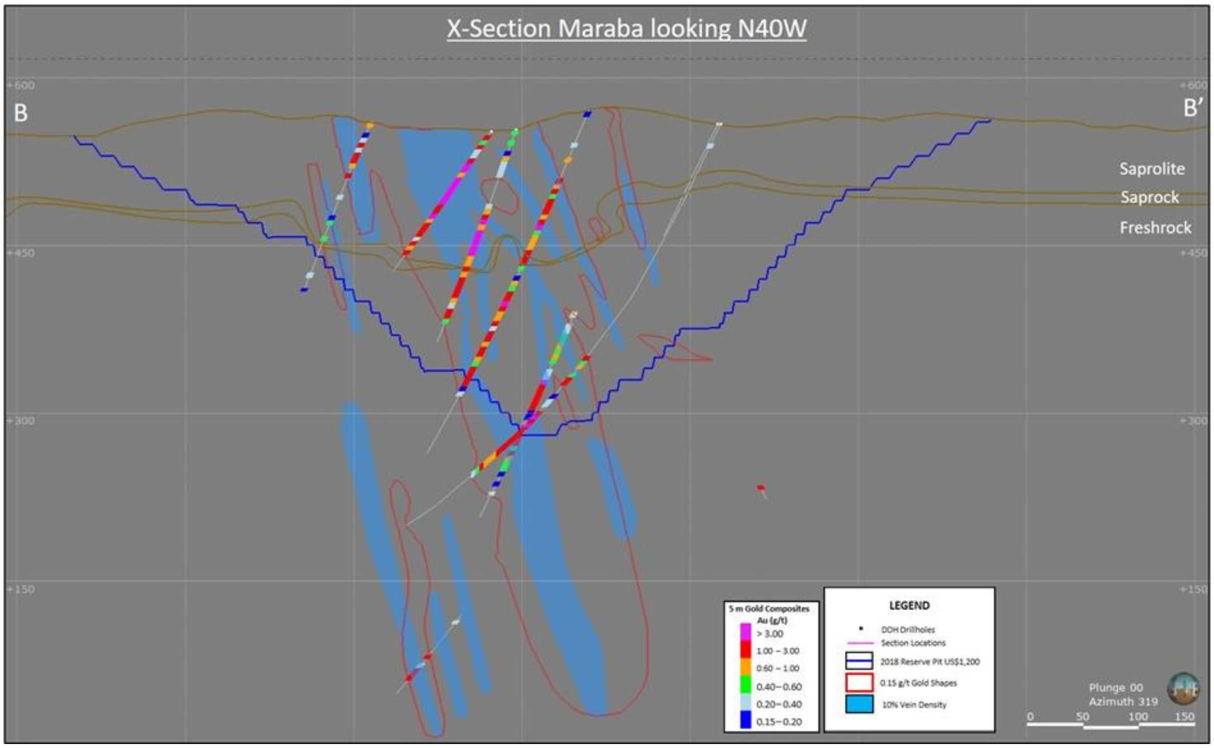
Exploration potential for the Project area is discussed in Section 9.8.

Figure 7-6: Maraba Geology Plan, Elevation 500



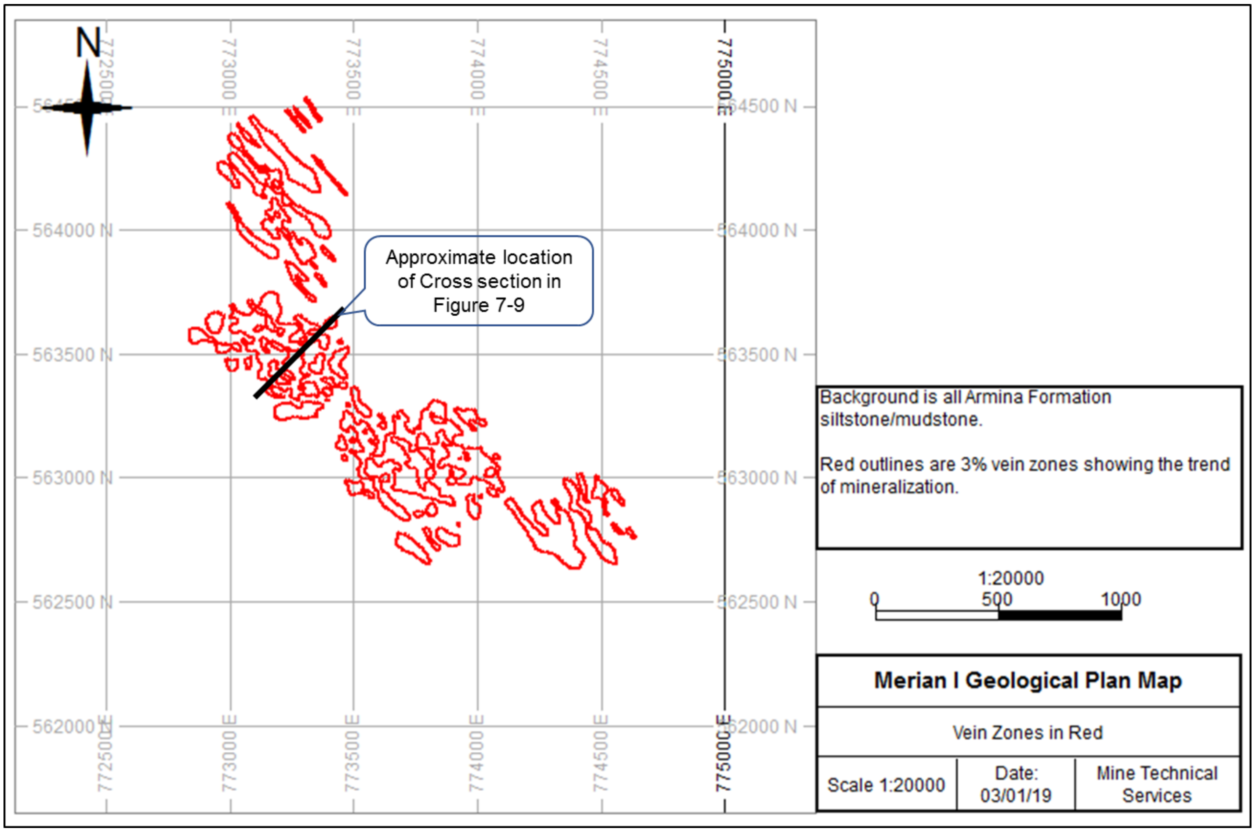
Note: Figure prepared by Newmont, 2019. Section B–B' is the location of Figure 7-7

Figure 7-7: Maraba Cross Section



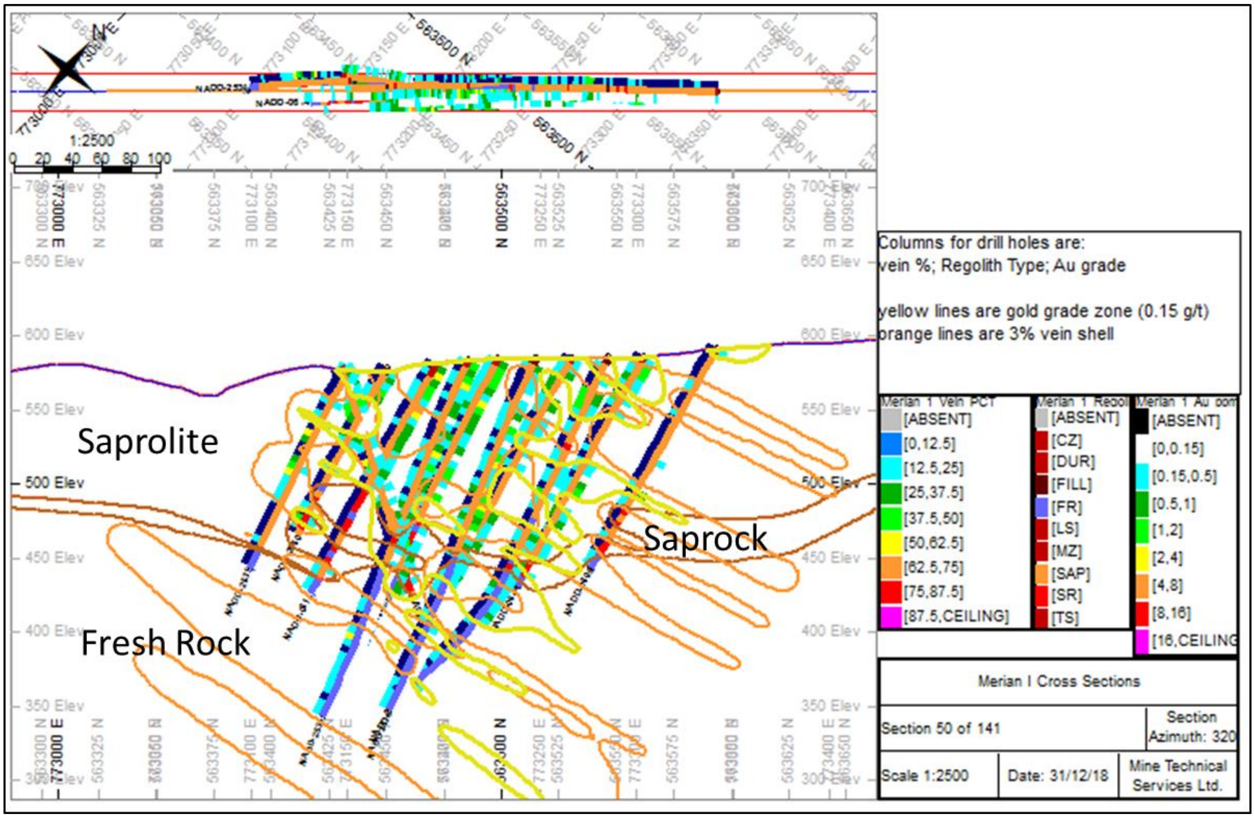
Note: Figure prepared by Newmont, 2019.

Figure 7-8: Merian I Geological Map



Note: Figure prepared by Mine Technical Services, 2019.

Figure 7-9: Merian I Grade Cross-Section



Note: Figure prepared by Mine Technical Services, 2019.

7.6 QP Comments on "Item 7: Geological Setting and Mineralization"

The QP notes that:

- The knowledge of the deposit setting, lithologies, mineralization style and setting and structural and alteration controls on mineralization is sufficient to support Mineral Resource and Mineral Reserve estimation.

8.0 DEPOSIT TYPES

8.1 Overview

The Merian deposits are interpreted to be examples of orogenic gold deposits.

The discussion below is sourced from Moritz (2000), Goldfarb et al., (2005) and Groves et al., (1998; 2003). Orogenic deposits have many synonyms, including mesozonal and hypozonal deposits, lode gold, shear zone-related quartz–carbonate deposits, or gold-only deposits.

Orogenic gold deposits occur in variably deformed metamorphic terranes formed during Middle Archaean to younger Precambrian and continuously throughout the Phanerozoic. The host geological environments are typically volcano-plutonic or clastic sedimentary terranes, but gold deposits can be hosted by any rock type. There is a consistent spatial and temporal association with granitoids of a variety of compositions. Host rocks are metamorphosed to greenschist facies but locally can achieve amphibolite or granulite facies conditions.

Global examples of these deposits include Muruntau (Uzbekistan), Golden Mile (Australia), Hollinger-McIntyre-Moneta (Canada), Jamestown (USA) and Obuasi (Ghana).

Gold deposition occurs adjacent to first-order, deep-crustal fault zones. These first-order faults, which can be hundreds of kilometers long and kilometers wide, show complex structural histories. Economic mineralization typically formed as vein fill of second- and third-order shears and faults, particularly at jogs or changes in strike along the crustal fault zones. Mineralization styles vary from stockworks and breccias in shallow, brittle regimes, through laminated crack-seal veins and sigmoidal vein arrays in brittle-ductile crustal regions, to replacement- and disseminated-type mineralization in deeper, ductile environments.

Mineralization can be disseminated, or vein hosted and displays a timing that is structurally late and is syn- to post-peak metamorphic. Quartz is the primary constituent of veins, with lesser carbonate and sulfide minerals. Minor accessory albite, chlorite, white mica (fuchsite in ultramafic host rocks), tourmaline and scheelite can accompany the veins. Carbonates include calcite, dolomite and ankerite. Sulfide minerals include pyrite, pyrrhotite chalcopyrite, galena, sphalerite and arsenopyrite. Gold is usually associated with sulfide minerals but typically occurs as free gold. In volcano-plutonic settings, pyrite and pyrrhotite are the most common sulfide minerals in greenschist and amphibolite grade host rocks, respectively. Arsenopyrite can be the predominant sulfide mineral in mineralization hosted by sedimentary rocks. Gold to silver ratios typically range from 5:1 to 10:1 and, less commonly, the ratios can reach 1:1. Most orogenic gold deposits contain 2% to 5% sulfide minerals and gold fineness >900.

Alteration intensity is related to distance from the hydrothermal fluid source and typically displays a zoned pattern. Scale, intensity and mineralogy of the alteration are functions of wall rock composition and crustal level. The main alteration minerals include carbonate (calcite, dolomite and ankerite), sulfides (pyrite, pyrrhotite or arsenopyrite), alkali-rich silicate minerals (sericite, fuchsite, albite, and less commonly, K-feldspar, biotite, paragonite), chlorite and quartz.

The larger examples of orogenic deposits are generally 2 km to 10 km long, about 1 km wide and can persist over 1 km to 2 km vertical extents.

8.2 QP Comments on "Item 8: Deposit Types"

Features that the Merian deposits display that are typical of orogenic deposits include:

- Regional greenschist to lower amphibolite grade metamorphism;
- Mineralization typically hosted in later-stage structures;
- Strong structural control on mineralization, related to jogs and rheology contrasts;
- Better grades associated with areas of strong veining or breccias;
- Vein-style mineralization;
- Veins typically consist of quartz and carbonate;
- Gold mineralization in association with pyrite; gold can occur as free grains; silver values are low compared with silver grades in other orogenic deposits;
- Alteration is zoned, from distal to proximal to the hydrothermal fluid source. Alteration typically includes silicification, albitization and pyritization.

The QP is of the opinion that an orogenic-gold deposit model is appropriate for guiding Project exploration programs.

9.0 EXPLORATION

9.1 Introduction

Table 9-1 summarizes the exploration programs completed within the Project area to 31 November 2018.

9.2 Grids and Surveys

From the beginning of the project until 2006 drill hole surveying was done by two companies: Geosurvey of Suriname and Horizons of Peru. Due to incongruities between their data and field verifications of their surveyed points, this service was suspended.

In 2007, Surgold acquired survey equipment and now conducts all surveys in-house. After the base point in Police Camp was located, Surgold proceeded to survey holes drilled during 2007 and also re-check old holes surveyed by Geosurvey and Horizons.

In 2011, a light detection and ranging (LiDAR) topographic survey was conducted by DigitalWorld Mapping. CM Engineering was commissioned to calibrate ground survey data with the data collected using LiDAR (Martel, 2015). This work confirmed that the accuracy of the LiDAR survey was within acceptable limits for purposes such as excavation works and road profiles; however, for work requiring higher levels of accuracy, new site surveys were recommended. An adjustment of +500 m was made to the LiDAR topography in 2012 to eliminate negative values in elevation for mining purposes.

9.3 Geological Mapping

Regolith mapping by Newmont personnel (Mashburn, 2007) resulted in the identification of the most relevant soil horizons to use for different styles of geochemical sampling and the necessary understanding of the influence of transport of elements to successfully determine drill target locations based on the geochemical results. Consistent identification of regolith during mapping and core logging is also important to exploration and resource development.

Structural mapping was done in the field and from drill core as well as structural interpretations from layering geophysical data and QuickBird™ images. These efforts helped identify potentially significant structural features that could be followed up with mapping at exposures and drilling.

Artisanal pit mapping and prospecting was completed by Newmont exploration personnel (Figure 9-1). This program helped to establish well-targeted drill plans and provided a better understanding of mineralization controls.

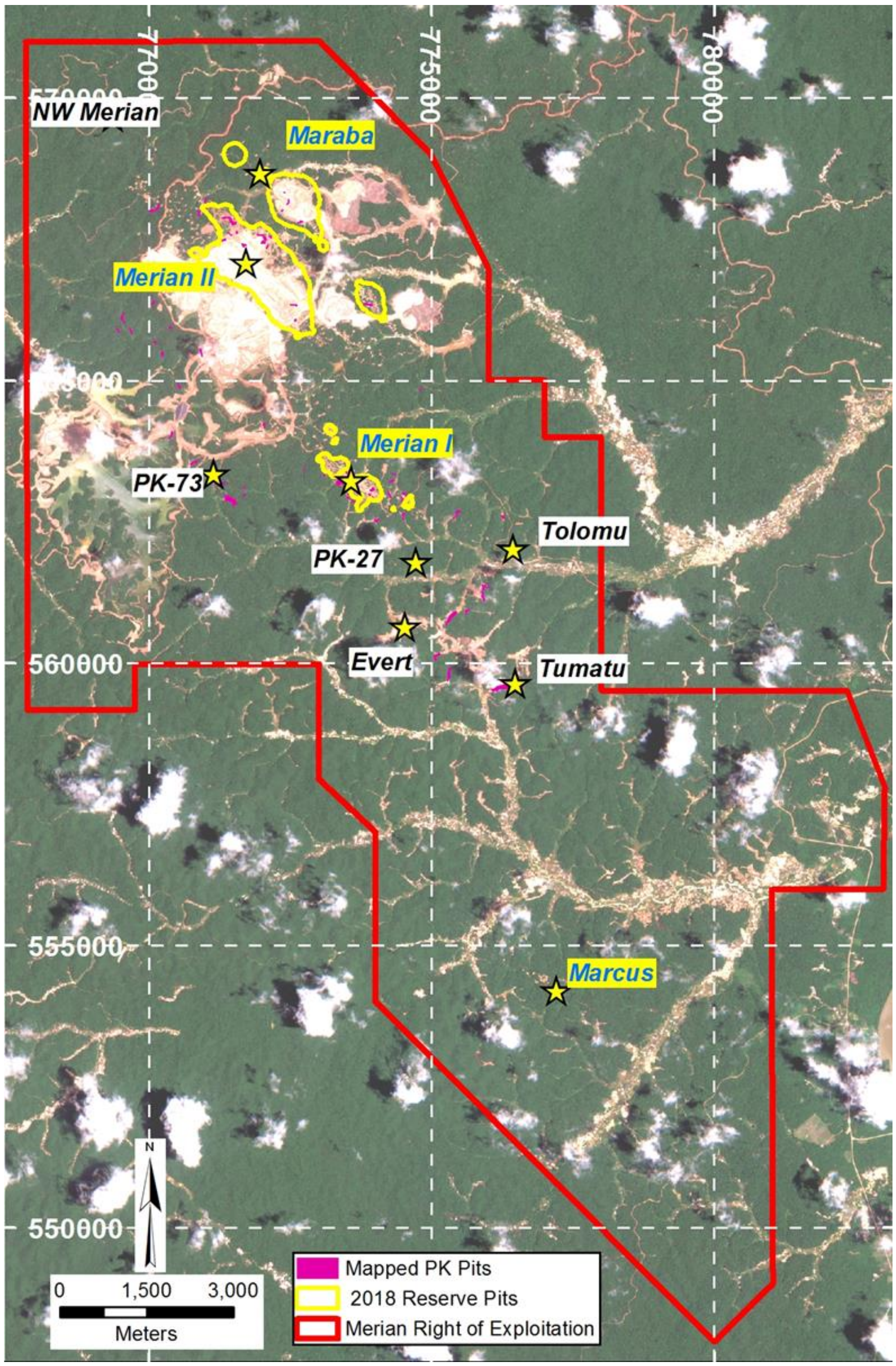
Table 9-1: Exploration Summary Table

	Suralco	Surgold/Newmont								
		2004	2005	2006	2007	2008	2009	2010	2011	2012
Rock samples	2,311	1,329	6,055	4,202	2,570	86			97	781
Auger samples	6,765	1,768	8,147	5,156	5,630	4,513	31			158
BLEG* samples			2	41	10					
Gradient (line km)		13.2	219.25	170.17	56.45					
Dipole-dipole (line km)			24.3	93.97	66.2					
NEWTEM II (line km)					2,238					
Core drill holes (m)	10,059	1,456	20,611	20,625	41,378	24,995	10,096	9,170	30,481	80,628
# Core holes	72	10	110	137	242	187	74	51	208	488
RC drill holes (m)			17,751	16,590						
# RC holes			292	250						

	Newmont						Total
	2013	2014	2015	2016	2017	2018	
Rock samples	3,478	2,276	1,149	30	172	663	***25,199***
Auger samples	113	284	1,262	220			***34,047***
BLEG* samples				2			***55***
Gradient (line km)							***459***
Dipole–dipole (line km)							***184***
NEWTEM II (line km)							***2,238***
Core drill holes (m)	45,369	34,058	50,381	36,449	53,303	55,106	***524,165***
# Core holes	272	207	249	129	255	216	***2,837***
RC drill holes (m)						1,440	***34,341***
# RC holes						28	***570***

Note: * BLEG = bulk leach extractable gold

Figure 9-1: Artisanal Workings Location Plan



Note: Figure prepared by Newmont, 2019.

9.4 Geochemical Sampling

First-pass geochemistry included bulk leach extractable gold (BLEG) sampling and ridge-and-spur rock chip and shallow soil sampling. BLEG sampling identified broad drainage areas with elevated gold values and prompted more focused ridge sampling. Anomalous areas were followed up with soil auger sampling.

Ridge-and-spur sampling was done at 50 m intervals early in the program but was changed to 25 m intervals for better continuity of gold anomalies. Grid lines for auger sampling were cut at 200 m spacings with sample spacing every 25 m along the lines. If grades warranted, additional grid lines were inserted at 100 m spacing.

Geochemical sampling in 2004 was focused perpendicular to the main geophysical anomaly and encompassed the Merian I prospect.

The 2005 program covered the Merian trend from NW Merian to the south extent of the Evert prospect, in the area of the PK 82 and 92 anomalies, with closer-spaced sampling at Merian II and Maraba.

The 2006–2008 sampling continued follow up of geochemical anomalies with a number of BLEG samples in 2006, exploring drainages to the southwest of the main Merian trend, some of which were followed up by ridge-and-spur sampling in subsequent seasons.

Figure 9-2 shows the locations of the soil and rock chip samples. Figure 9-3 shows the locations of the auger samples. Figure 9-4 is the resulting gold anomaly map from both sampling types.

9.5 Geophysics

Airborne surveys consisted of magnetic, radiometric and time domain electromagnetic (TDEM) methods. The TDEM survey included a Newmont-developed NEWTEM II survey flown in 2007.

Ground-based geophysics performed on site consisted of gradient and dipole–dipole surveys, on 25 m station spacings.

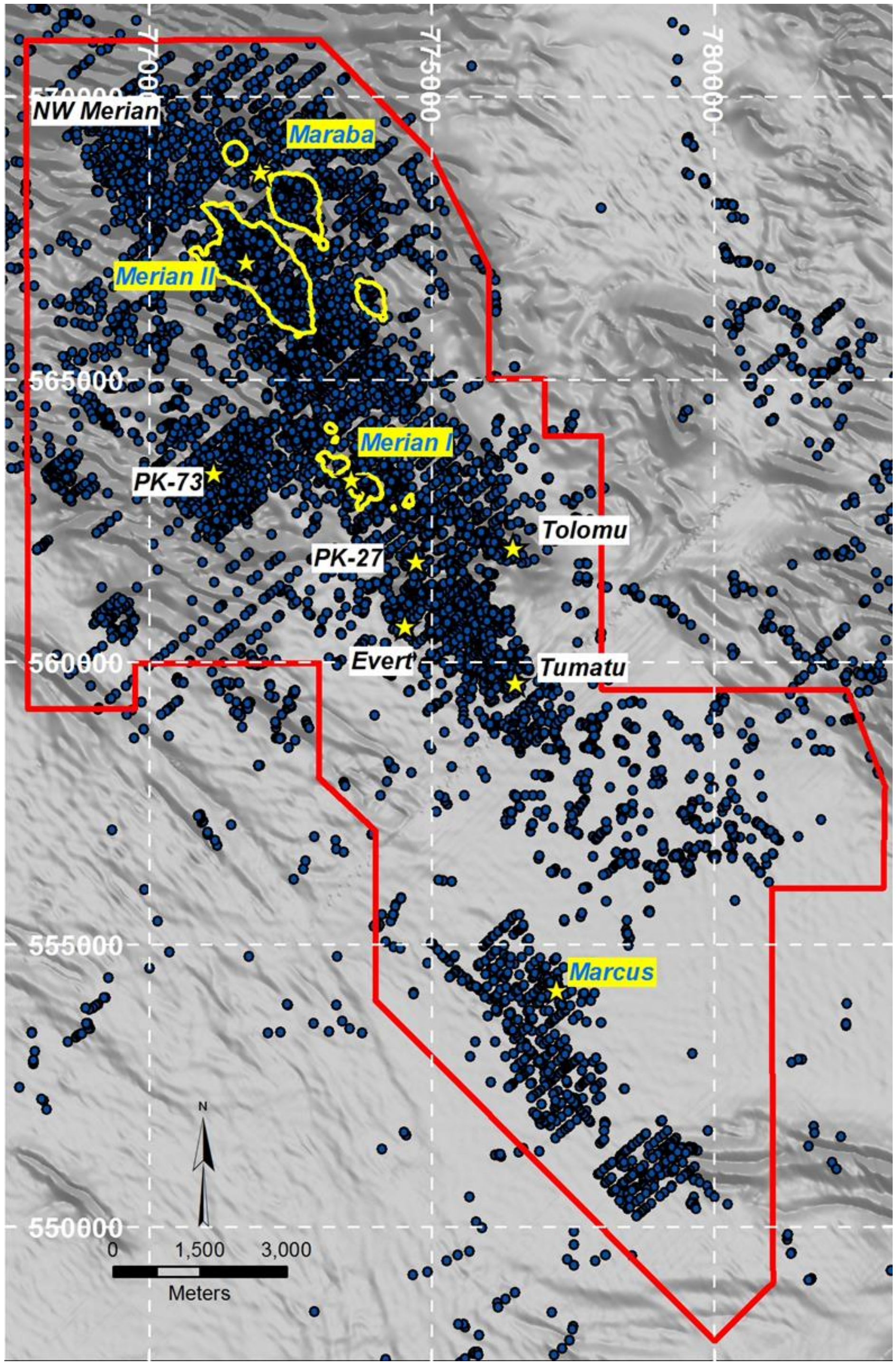
Airborne surveys revealed broad linear anomalies running approximately northwest–southeast. The ground surveys were oriented to the northeast–southwest, at right angles to the airborne anomalies, with the locations for individual surveys depending on both the airborne data and geochemical anomalies.

In 2005, the geophysical surveys were completed over an area from Merian II southeast to the Hoefyster (Tumatu) prospect, following up on aeromagnetic surveys and geochemical sampling as well as drilling performed by Suralco at Merian II.

In 2006–2007, follow-up of the extensive 2005–2007 geochemical sampling programs used grids surveying the length of the known Merian trend while also including Maraba to the east of the main trend and the PK73 anomaly to the west.

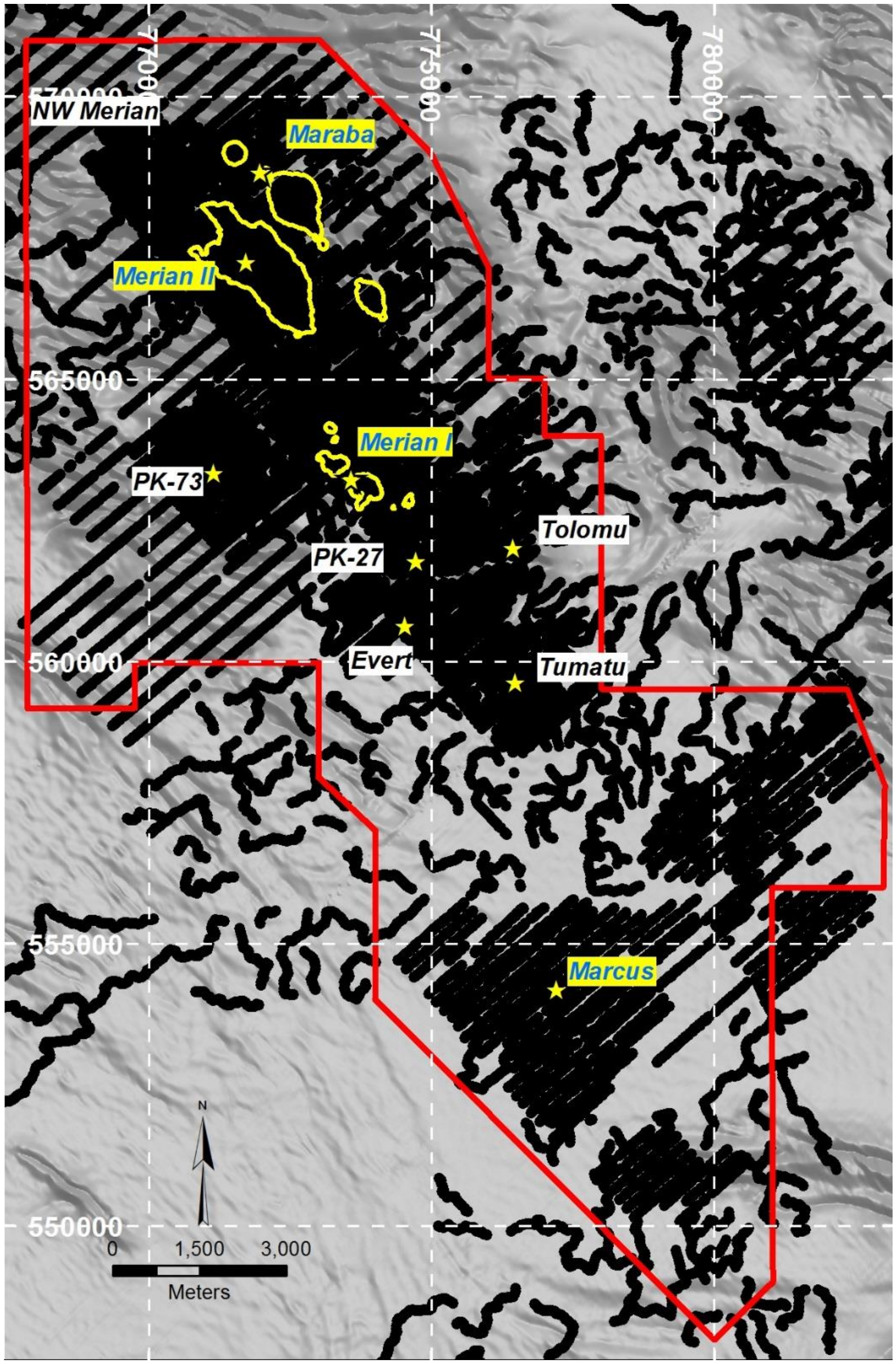
Figure 9-5 shows the location of the dipole–dipole survey. Figure 9-6 and Figure 9-7 show the gradient gravity and resistivity survey areas, respectively.

Figure 9-2: Rock Chip and Channel Sample Locations



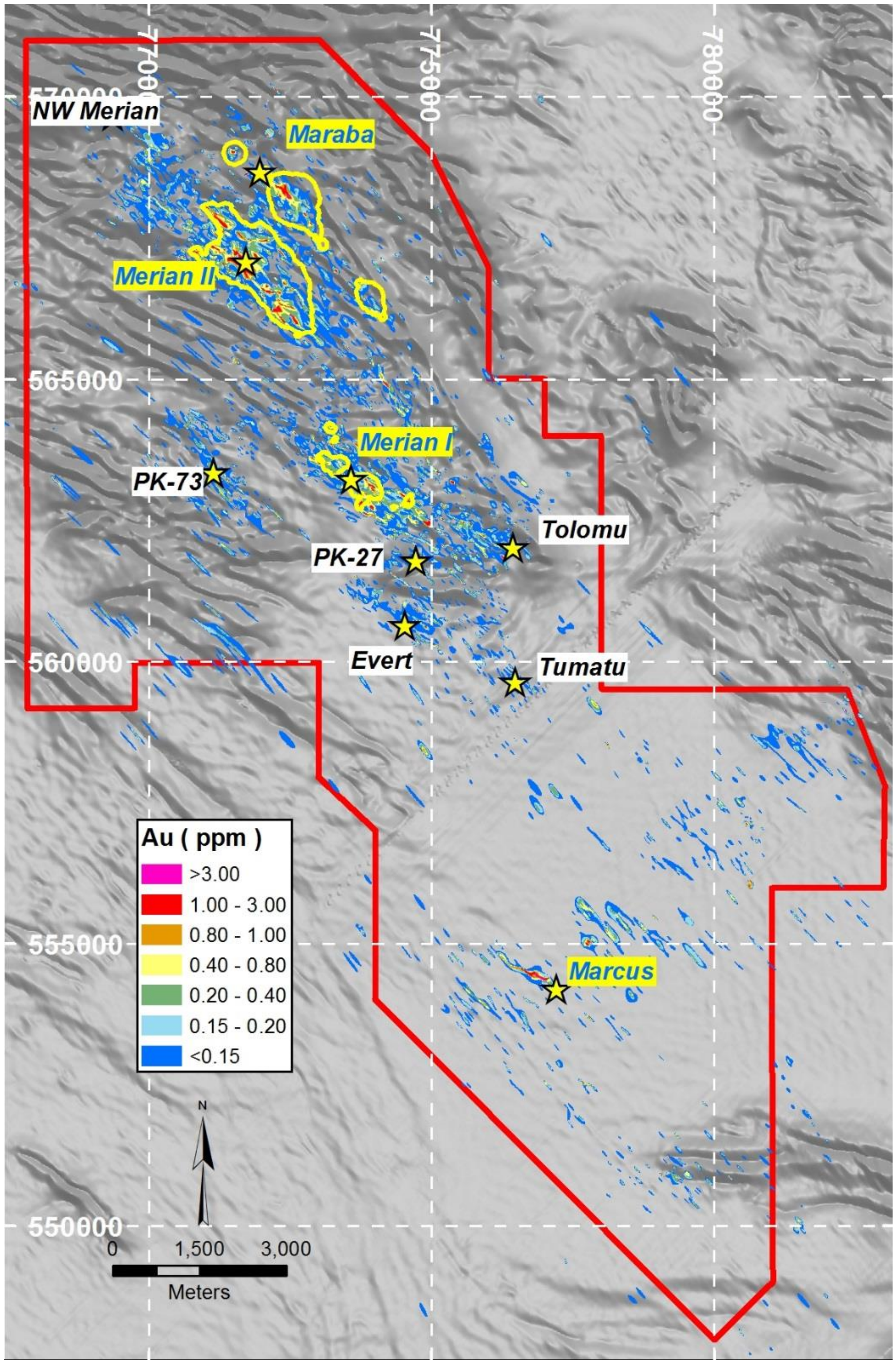
Note: Figure prepared by Newmont, 2019.

Figure 9-3: Auger Sample Locations



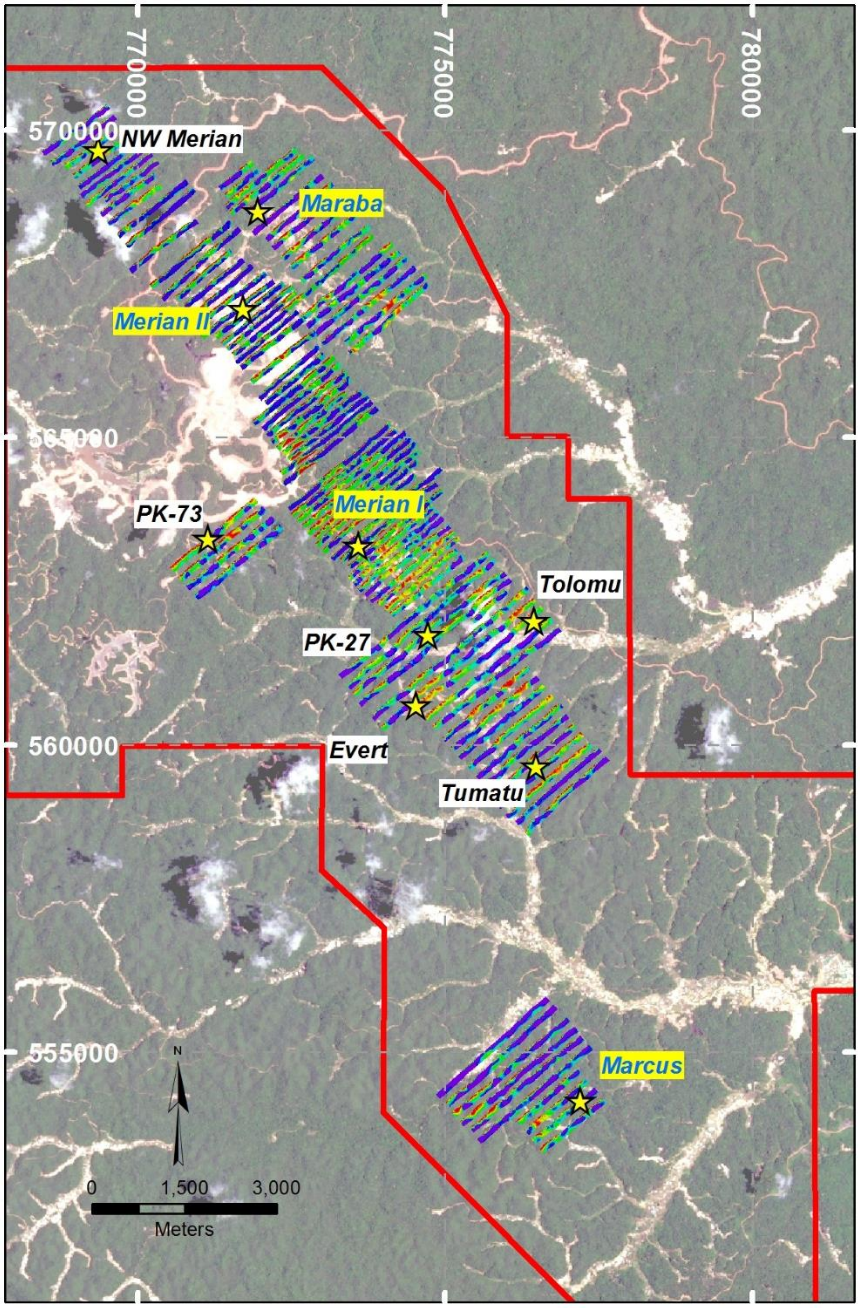
Note: Figure prepared by Newmont, 2019.

Figure 9-4: Geochemical Anomaly Map – Contoured Auger Sample Assays



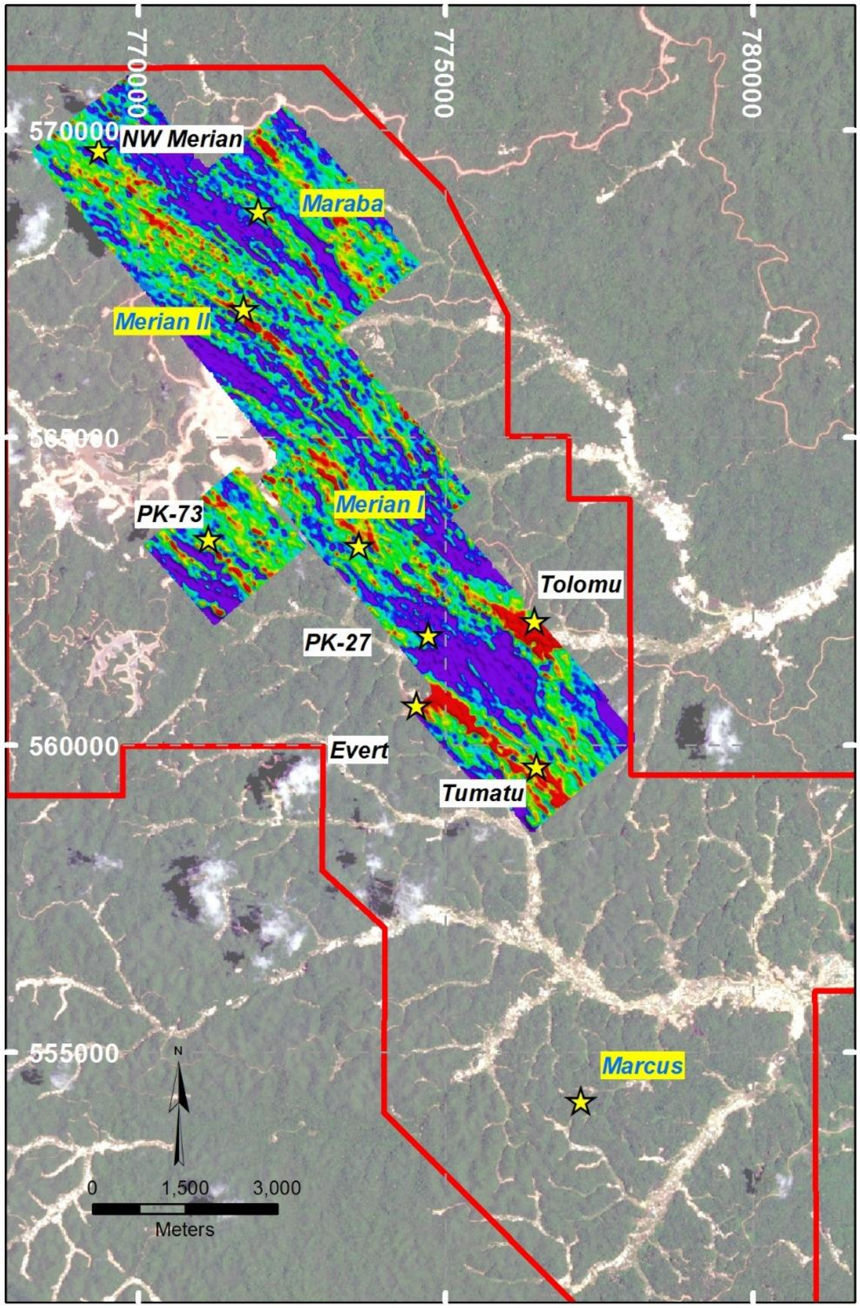
Note: Figure prepared by Newmont, 2019.

Figure 9-5: Location Map, Dipole–Dipole Ground Geophysical Surveys



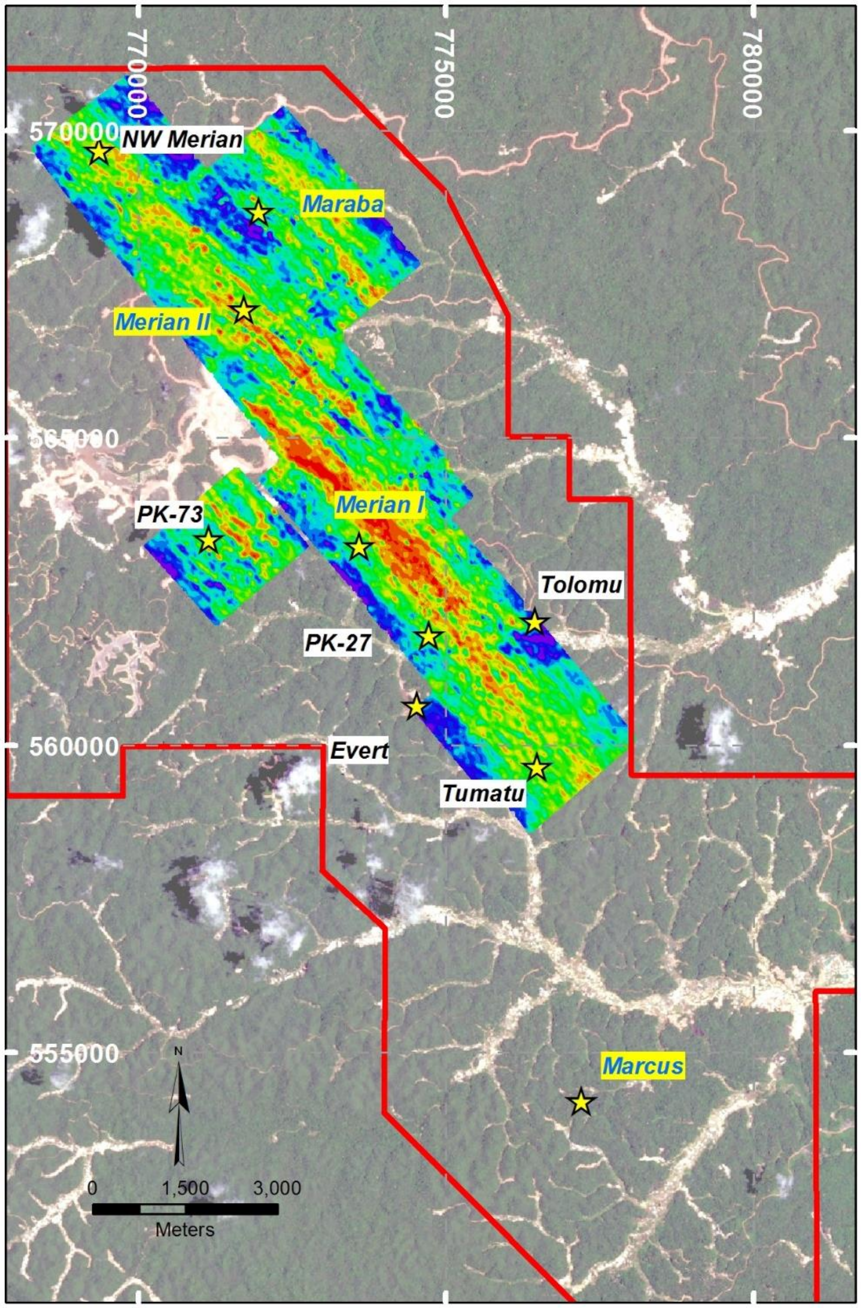
Note: Figure prepared by Newmont, 2019.

Figure 9-6: Gradient Chargeability Survey Area



Note: Figure prepared by Newmont, 2019.

Figure 9-7: Gradient Resistivity Survey Area



Note: Figure prepared by Newmont, 2019.

9.6 Pits and Trenches

No trench sampling was conducted on site. Large exposures created from artisanal mining were sampled following the procedures in place for geochemical sampling.

9.7 Petrology, Mineralogy, and Research Studies

Between 2007 and 2010, students from Natuurtechnisch Instituut (Institute for Natural Resource and Engineering Studies), completed third-year internships under the supervision of geology staff. Each student would spend a summer assisting with various technical functions such as surveys and geochemical sampling and was expected to complete a report summarizing their experience at the end of the season.

In 2010, a geology student produced a thesis as a component of the BSc. program requirements at the Anton de Kom University (Cruden, 2010). The focus of the research project was to describe the behavior of a set of elements and their relationship to gold.

9.8 Exploration Potential

9.8.1 Mine Extension

Mineralization at depth under the Merian II pit may, with additional drilling, support underground mining studies. Figure 9-8 shows example drill holes completed in 2017–2018 investigating this potential target.

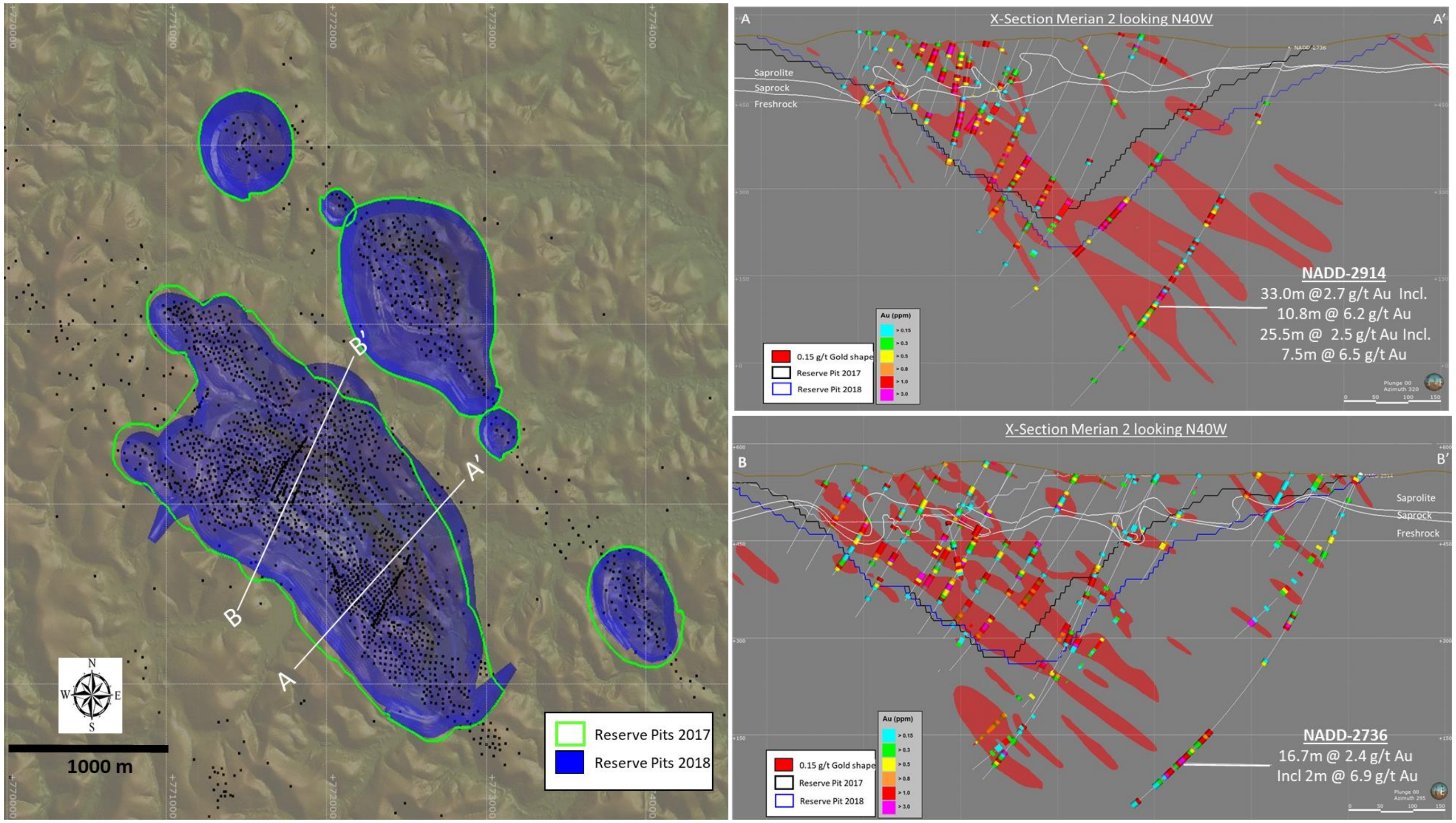
9.8.2 Prospects

Continuing exploration has identified several areas with interesting mineralization within the concession boundaries (Figure 9-9). These are being evaluated for potential to provide supplemental mill feed. Most of these areas have seen limited exploration drilling (

Table 9-2) after discovery by following up geochemical and geophysical anomalies; however, some are geochemical and/or geophysical anomalies similar to known mineralization that have not yet been drilled. None of the exploration targets have estimated Mineral Resources.

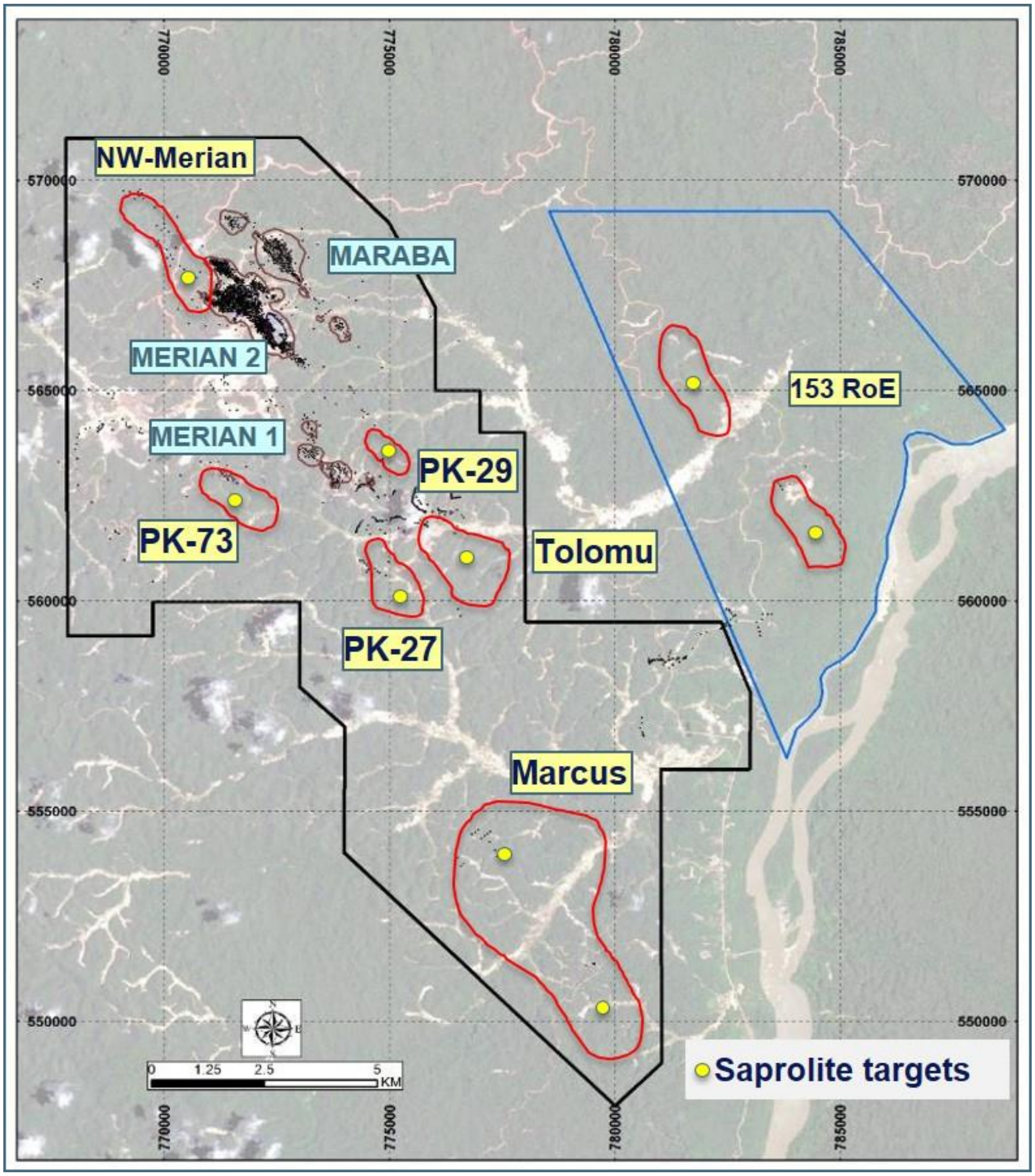
NW Merian is the most advanced target and is possibly a north-western extension of the mineralization at Merian II. Gold mineralization at NW Merian is concentrated in the upper weathered, strongly oxidized saprolite and laterite and may have a component of supergene enrichment. Dimensions of NW Merian are approximately 2 km long x 200–400 m wide x 100 m depth.

Figure 9-8: Merian II Exploration Potential



Note: Figure prepared by Newmont, 2017. Drill intercepts shown in this figure are included in Table 10-3.

Figure 9-9: Exploration Prospects



Note: Figure prepared by Newmont, 2019.

Table 9-2: Summary of Drilling at Exploration Targets on Figure 9-9

Area	Holes	Meters
Marcus	36	3,759.20
NW-Merian	64	8,618.30
PK-27	15	2,336.90
PK-29	8	859.5
Tolomu	34	4,919.60
PK-73	22	2,788.10
153 RoE	5	629.80

9.9 QP Comments on "Item 9: Exploration"

In the QP's opinion:

- The exploration programs completed to date are appropriate to the style of the deposit and prospects;
- Additional exploration has a likelihood of generating further exploration successes particularly down-dip of known zones.

10.0 DRILLING

10.1 Introduction

Drilling totals 2,837 core holes (491,479.12 m), 542 RC holes (34,341.0 m) and 424 auger holes (10,385 m). Drilling in the Merian area is summarized by year in Table 10-1. Drill hole collar locations are shown in Figure 10-1. Figure 10-2 shows the drill collar locations for Merian II, Figure 10-3 shows the Maraba drill collar locations and Figure 10-4 show the drill collar locations for Merian I.

Table 10-2 shows the breakdown of the drilling by program purpose. Note that the totals here may not be the same as in Table 10-1 because this table includes some exploration and condemnation holes that were not included in the Table 10-1 totals. The auger holes used hollow-stem augers which returned an intact sample, so those results are used for Mineral Resource estimation at Merian II. RC holes were intended for Mineral Resource estimation when they were drilled but comparison of RC and core twin holes indicated significant contamination and possible biases in the RC data. RC data were subsequently excluded from use in Mineral Resource estimation.

The condemnation program for the Project included drilling at the planned mine camp site, the temporary construction camp site, fences across the planned WRSF south of Maraba and the north end of the planned TSF. Some anomalous gold values were identified in a planned WRSF site, just south of and along trend with, the Maraba deposit mineralization. The facility location was modified to allow future exploration of this area.

10.2 Drill Methods

The following drilling companies have been used on the Merian Project: Orbit, Major, Bradley, Geotech and Sure Core. The various companies utilized several different types of drill equipment. All of the drill equipment was capable of drilling the holes required at Merian.

PQ-size core (85 mm core diameter) is used to maximize recovery in near-surface poor ground conditions; HQ (63.5 mm core diameter) is used to drill though saprolite and is the most common core size and NQ (47.6 mm core diameter) is used for drilling fresh rock after penetrating the saprolite.

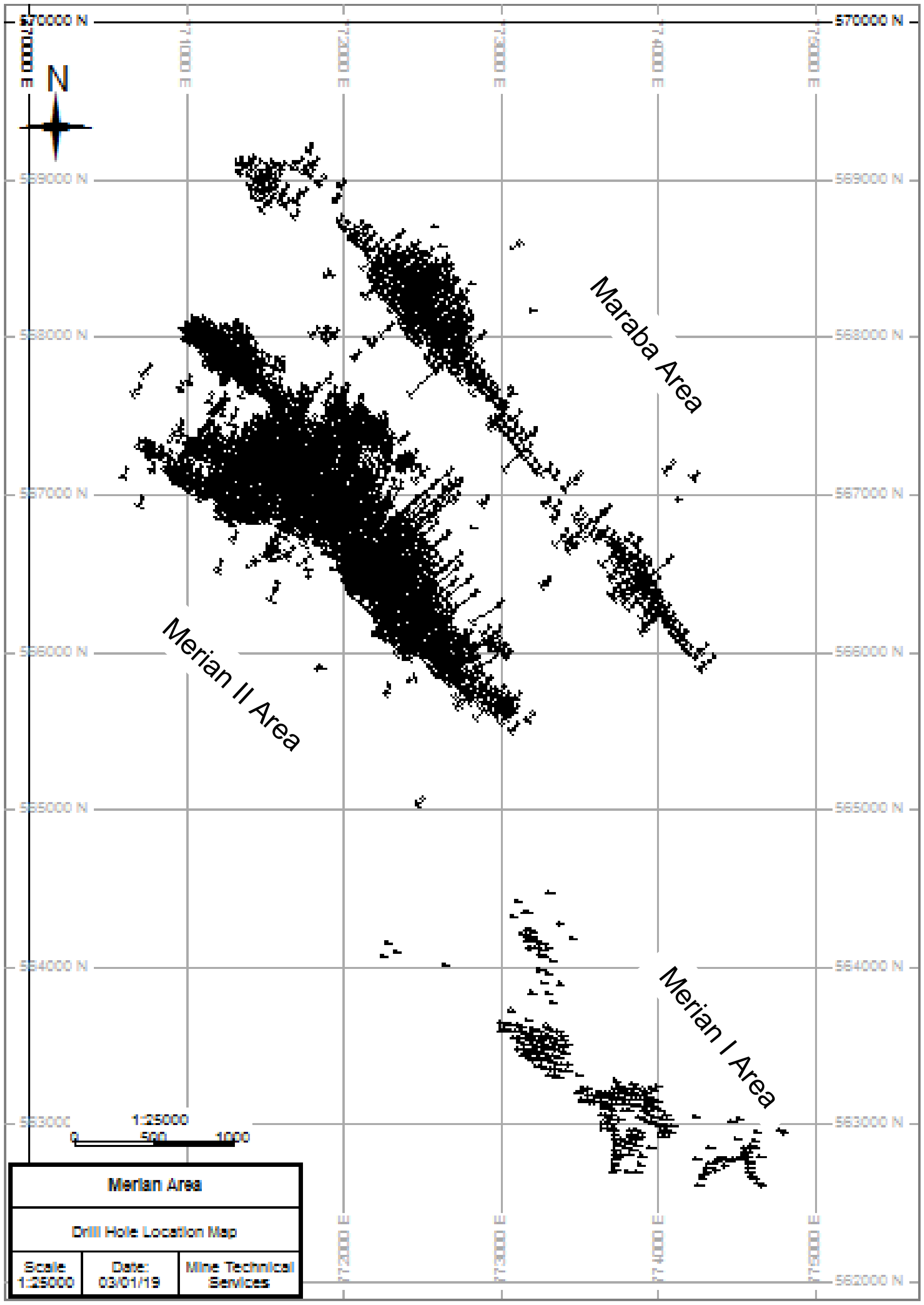
RC drilling was employed early in the Project and was found to be prone to contamination. As a result, it was primarily employed as a geochemical sampling tool and the results were used only for exploration guidance. None of the RC data have been used for Mineral Resource estimation.

A small number of hollow stem auger holes were drilled by Suralco at Merian II (129 holes, 3,819 m). Those holes averaged about 29 m depth. Because this procedure results in an intact core in the center of the auger, data from these holes are used for Mineral Resource estimation.

Table 10-1: Drill Summary Table

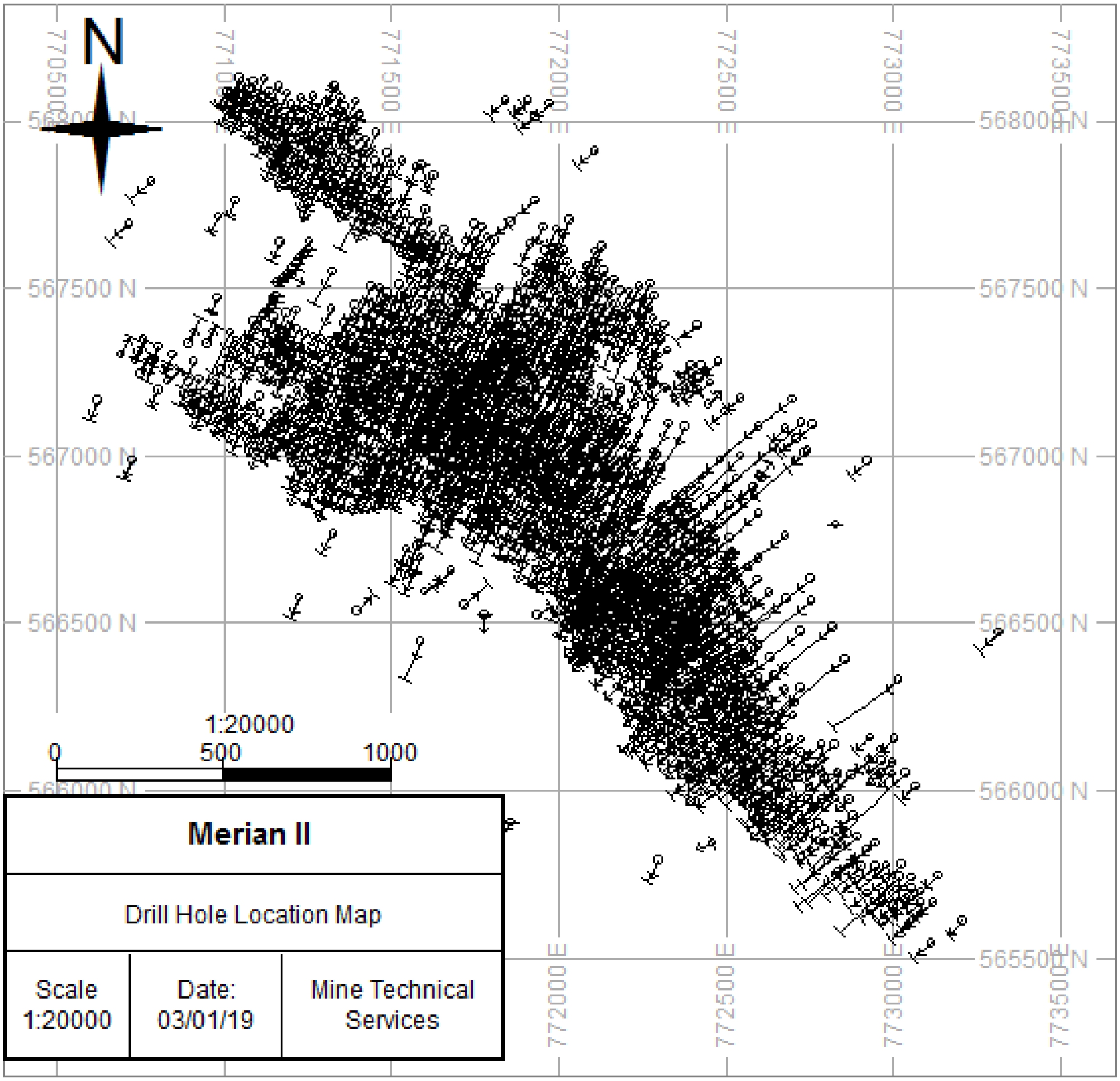
Year	Operator	Total Number of Drill Holes	Total Meters Drilled	Total Number of RC Drill Holes	Total RC Meters Drilled	Total Number of Drill Core Holes	Total Meters Core Drilled	Total Number of Drill Auger Holes	Total Meters Auger Drilled
2002	Suralco	27	2,992.25			27	2,992.25		
2003	Suralco	225	12,425.77			45	7,066.77	180	5,359
2004	Surgold	254	6,482.10			10	1,456.10	244	5,026
2005	Surgold	402	38,362.29	292	17,751.00	110	20,611.29		
2006	Surgold	387	37,212.00	250	16,590.00	137	20,622.00		
2007	Surgold	242	41,378.50			242	41,378.50		
2008	Surgold	187	24,995.00			187	24,995.00		
2009	Surgold	74	10,096.20			74	10,096.20		
2010	Surgold	51	9,170.80			51	9,170.80		
2011	Surgold	208	30,481.15			208	30,481.15		
2012	Surgold	488	80,628.36			488	80,628.36		
2013	Surgold	272	34,057.90			272	34,057.90		
2014	Surgold	207	34,057.90			207	34,057.90		
2015	Surgold	249	50,380.80			249	50,380.80		
2016	Newmont	129	36,449.10			129	36,449.10		
2017	Newmont	255	53,303.00			255	53,303.00		
2018	Newmont	146	33,732.00			146	33,732.00		
Total		***3,803***	***536,205.12***	***542***	***34,341.00***	***2,837***	***491,479.12***	***424***	***10,385***

Figure 10-1: Project Drill Collar Location Map



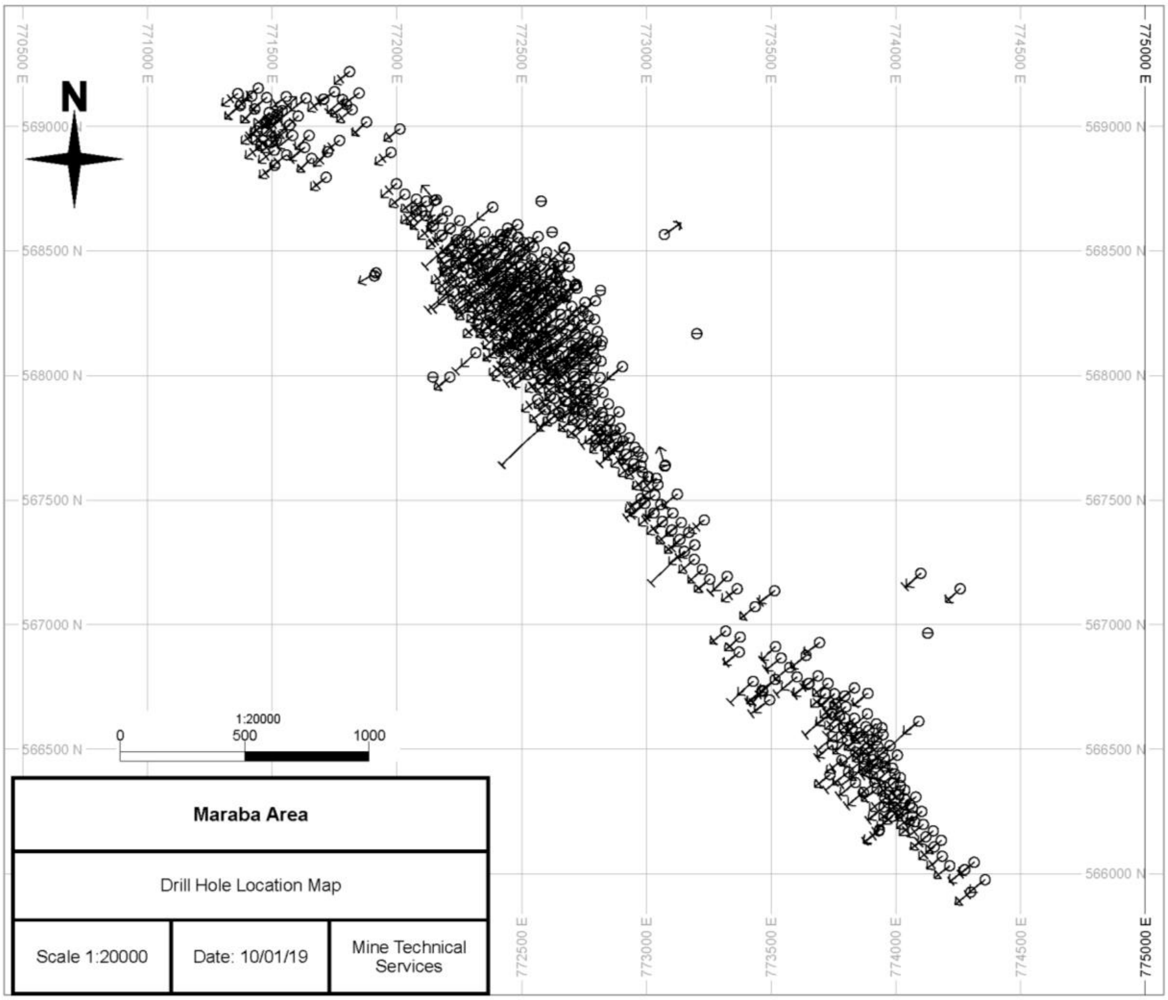
Note: Figure prepared by Mine Technical Services, 2019.

Figure 10-2: Drill Collar Location Map, Merian II



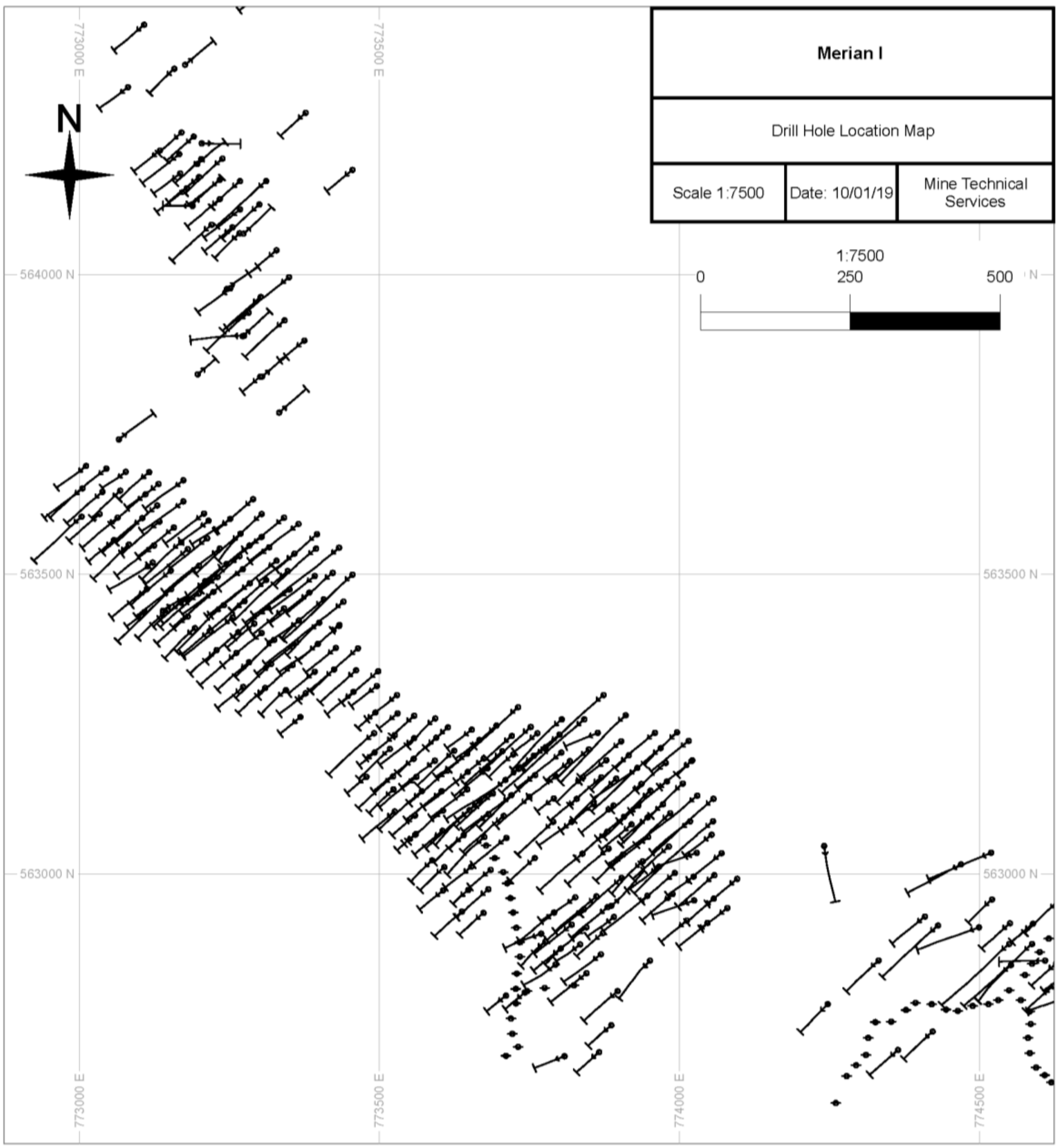
Note: Figure prepared by Mine Technical Services, 2019.

Figure 10-3: Drill Collar Location Map, Maraba



Note: Figure prepared by Mine Technical Services, 2019.

Figure 10-4: Drill Collar Location Map, Merian I



Note: Figure prepared by Mine Technical Services, 2019.

Table 10-2: Drill Program Purpose Summary Table

Area and Purpose	Core Holes		Auger Holes		RC Holes	
	Number of Holes	Meters Drilled	Number of Holes	Meters Drilled	Number of Holes	Meters Drilled
Merian II	1,845	335,102.6	129	3,819.0	542	34,341.0
Merian II metallurgical	14	1,032.3				
Maraba	426	83,120.2				
Maraba metallurgical	6	473.9				
Merian I	385	56,431.1				
Exploration drilling outside model extents	235	32,145.9	244	5,026.4		
Condemnation, infrastructure, hydrological	121	10,021.4				
Total	***3,032***	***518,327.4***	***373.0***	***8,845.4***	***542***	***34,341.0***

10.3 Logging Procedures

Geological and geotechnical logs are entered in Visual Logger, a proprietary Newmont computer program, which is then uploaded directly to Newmont's Global Exploration Database (GED). The geological logs of drill core identify regolith, structures, veining, mineralization and alteration. Significant emphasis is placed on regolith definition as well as the type and quantity of veining. A digital rock library is available for geology staff to refer to, which contains photos of rocks types and numerous features along with written descriptions.

All core has at least a minimum geotechnical log that records core recovery and rock quality designation (RQD) by the core shed technicians. In addition to basic geotechnical data collected at the core shed, detailed geotechnical drilling programs were designed and completed by Golder, with logging being completed by Surgold geology department staff.

The project initially logged into an Access™ database. Since 2007, Visual Logger was used as the logging platform. Drop-down lists are used to maintain database consistency between different logs. Drill data are uploaded to the GED from the digital logs. All historical logs have been digitized and migrated to the GED and can be viewed in Visual Logger.

A comprehensive re-logging program was completed in 2007 to better define a package of gold-bearing material, referred to as the gray breccia body (GBxV). An "interpreted units" column was added to Visual Logger and any new core being logged noted this feature in logs immediately. Historical core was reviewed, and the breccia was entered whenever identified.

All core is photographed, usually after, but in some cases before, geological logging. The core is photographed wet, labelled with hole identifier (ID) and depths and includes a color plate in each photograph in case color calibration is needed at a later date. A metric scale is also included in the photographs.

10.4 Recovery

Core recovery at the Merian Project averages about 93% for Merian II, Merian I and Maraba. Approximately 53% of the recoveries are in the range of 95–100%. Recovery is typically lower in fault zones.

10.5 Collar Surveys

In late 2005, collar surveys were performed by Geosurvey, a local company. In late 2006, Horizons South America SAC surveyed collar locations. In 2007, total station Trimble equipment was purchased for the Project and Surgold surveyors were responsible for all collar surveys.

Incursions of illegal miners in 2010–2011 resulted in significant topographic disturbances and the loss of many of the drill collar locations.

Digital topography was generated by Digital World Mapping Inc. in 2011, using light detection and ranging (LiDAR) instrumentation. This topography was checked by CM-Engineering late in 2011 using ground data they collected. The conclusion of this work is that the LiDAR shows reasonable accuracy with the ground survey data taken by CM-Engineering. An adjustment of +500 m was made to the LiDAR topography in 2012 to eliminate negative values in elevation for mining purposes.

Collar surveys are currently performed with either a Trimble R8 Model 2 or a Trimble R10 Rover differential global positioning system (DGPS) instrument. One R8 GPS unit is located in the base point in Police Camp and the other GPS unit is used as a rover moving between collars. The survey style is real time kinematic (RTK) using Trimble Geomatics Office (TGO) software. The datum used is World Geodetic System (WGS) 1984.

10.6 Downhole Surveys

Early in the Project, trajectories of core holes were surveyed using either a Tropari™ (detects magnetic azimuth) or a Flexit™ survey instrument. From 2006 onwards, surveys were completed using Reflex™ Instruments single shot surveys. Downhole surveys were performed by the driller as the hole was completed from the top of the hole down, with surveys completed every 50 m. Downhole survey data were collected by the driller and reported to the geology department on a daily basis. The 0 m survey, or top of hole survey was performed by a trained staff member using a compass with a clinometer. Currently, downhole surveys are performed by the drilling contractor using Reflex EZ-Shot™ instruments. Downhole surveys are performed every 50 m and at the bottom of each hole.

All survey instruments are checked prior to use by inserting the instrument into test pits near the office. The instrument must check within 2% of the actual test pit orientation.

Magnetic declination for the Merian project is currently 17.5º west and change is estimated at 2 minutes or 0.033º west per annum (Hayes and Angeloni, 2012). Prior to 2006, a conversion from magnetic north to true north of 17º west was used. From 2006 onwards, 17.5º has been used.

All downhole survey data are checked for inconsistencies before being included in the geology drill hole database. Downhole survey data supplied by geology for resource estimation are then spatially viewed to remove any remaining questionable surveys before being used in resource estimation.

10.7 Geotechnical and Hydrological Drilling

Figure 10-5 shows the locations of geotechnical and hydrogeological holes. Geotechnical drilling was completed to provide data to confirm final slope designs for the planned Merian II and Maraba pits. In addition to pit slope design data, 32 holes were drilled at the proposed plant site to provide data for the foundation designs of the different facilities. In the TSF area, 33 holes were drilled to provide geotechnical data for embankment and basin foundation.

Hydrogeological drilling was performed to assess the nature and occurrence of groundwater in the vicinity of the planned pits (Merian I, Merian II and Maraba) and in the areas planned for the WRSF and the TSF to develop a conceptual hydrogeologic model. Hydrogeologic data were collected to support pit slope designs.

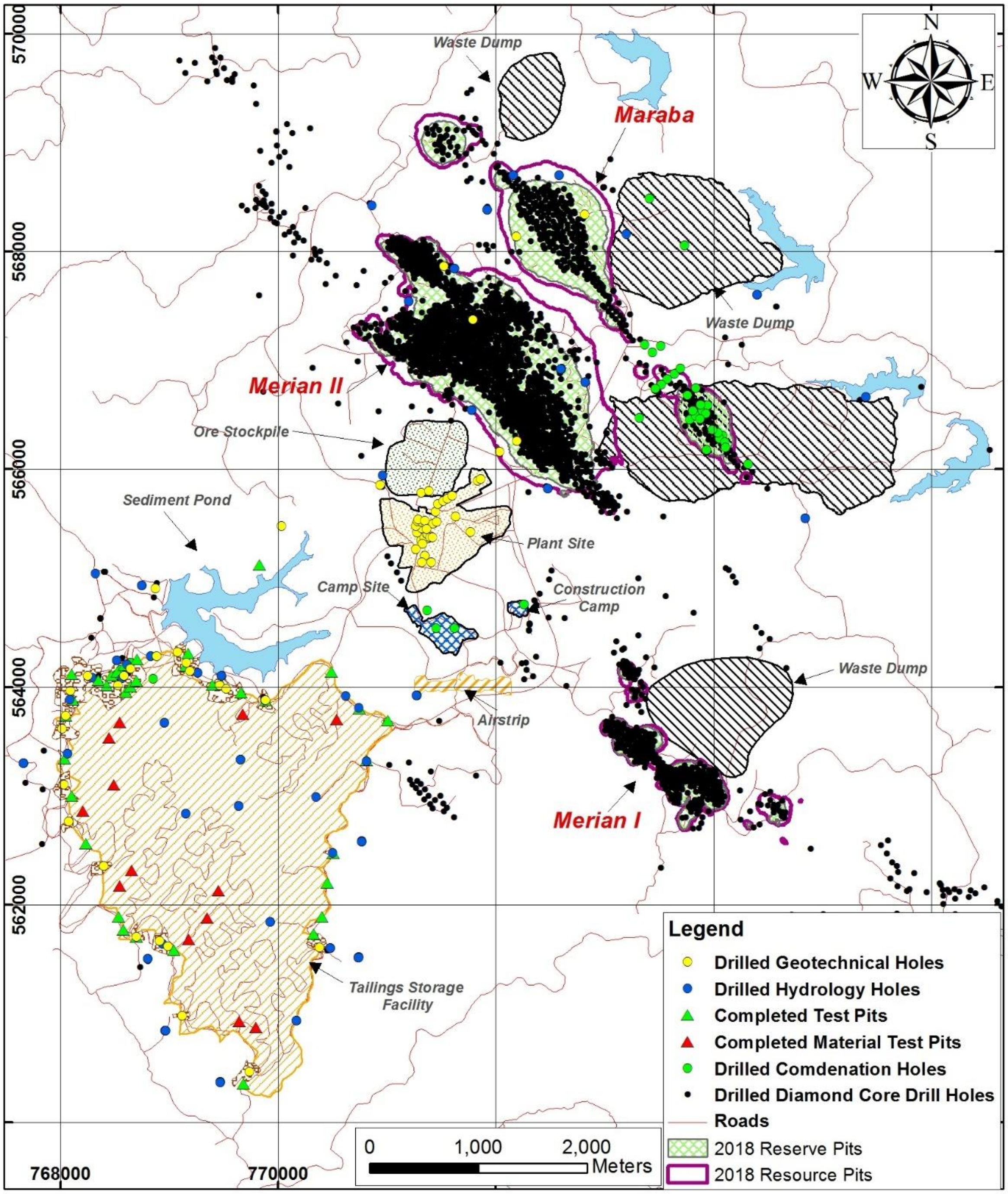
10.8 Metallurgical Drilling

Figure 10-6 shows the locations of drill holes specifically drilled for metallurgical testing. Metallurgical drilling was typically not planned as a separate drill program; rather intervals from exploration and infill drill campaigns were selected to provide the appropriate characterization of all forms of material that will be processed during the mine life. A few specific holes were drilled to collect material for metallurgical testing.

10.9 Grade Control

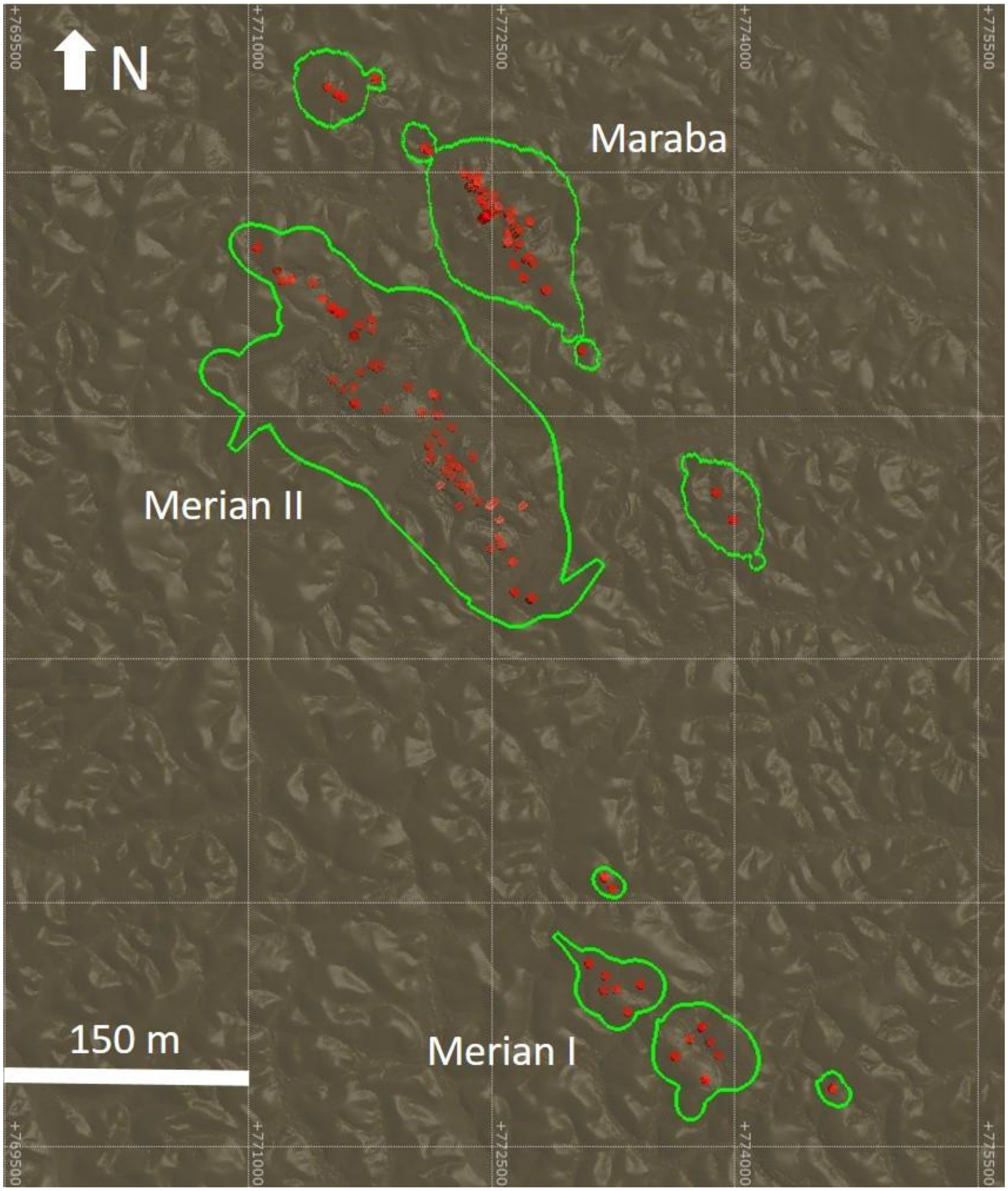
Grade control samples in saprolite are drilled with a blasthole drill using a tricone bit to 5 m with no sub-drill depth on a 5 x 7 m grid with the 7 m spacing parallel to strike of the deposit. Grade control samples in saprock and fresh rock are drilled using downhole hammers. Where blasting is necessary, a 1 m subdrill is completed. The grid spacing is the same for all regolith types.

Figure 10-5: Collar Location Plan, Geotechnical, Hydrogeological and Condemnation Drill Holes



Note: Figure prepared by Surgold, 2019.

Figure 10-6: Location Plan, Metallurgical Drilling



Note: Figure prepared by Newmont, 2018.

10.10 Sample Length/True Thickness

Core holes range in depth from 6 m to a maximum of 943 m. The majority of drill holes are 150 m or more in length.

Drill holes at Merian II are oriented at between 205–230° or the reverse of 25–50° azimuth and between -50° to -80° dip. Some vertical holes were drilled, as well as a few holes at 115° azimuth to test for mineralization that is perpendicular to the normal grid. Maraba and Merian I are similarly drilled at either 230° or 50° azimuth and -50° to -75° dip with a few vertical holes.

In all cases the goal of the drilling was to intersect target mineralization as close to right angles as possible, while minimizing or eliminating the difference between sample length and true thickness.

10.11 Summary of Drill Intercepts

Table 10-3 provides examples of drill intercepts in the Merian II, Maraba and Merian I deposit areas, together with example intercepts from some of the prospect areas that have exploration potential. These examples include drill holes with low-grade intercepts, with high-grade intercepts and with higher-grade intercepts within lower-grade widths. Figure 7-5, Figure 7-7, Figure 7-9, and Figure 9-8 are representative cross-sections through the deposits.

10.12 QP Comments on "Item 10: Drilling"

In the opinion of the QP, the quantity and quality of the logging, geotechnical, collar and downhole survey data collected in the exploration and infill drill programs are sufficient to support Mineral Resource and Mineral Reserve estimation and mine planning, as follows:

- Core logging meets industry standards for exploration on gold deposits;
- Core logging performed prior to Newmont acquiring 100% Project ownership met industry standards at the time of logging;
- Newmont's collar surveys have been performed using industry-standard instrumentation. Collar surveys for legacy drill holes were performed using methods that were industry-standard for the time;
- Downhole surveys performed after 2006 were performed using industry-standard instrumentation. Prior to 2006, downhole surveys were performed using acceptable but dated instrumentation;
- Drilling practices, logging, collar surveys and downhole surveys have been periodically reviewed by Newmont and independent auditors (refer to Section 12);

.

Table 10-3: Example Drill Intercepts Table

Deposit/Area	Hole ID	UTM East (m)	UTM North (m)	Elevation (m)	Azimuth (º)	Dip (º)	From (m)	To (m)	Thickness (m)	Au (g/t)
Merian II	NADD-006	771624.59	567062.60	578.66	208	-55	11.70	15.00	3.30	1.60
							28.50	43.70	15.20	2.83
	NADD-0171	771527.05	566888.94	571.28	50	-80	52.50	74.00	22.00	1.55
							84.50	94.00	9.50	2.06
							164.20	174.00	9.80	0.06
	NADD-1045	771598.87	567007.13	559.00	205	-60	179.00	182.00	3.00	3.63
	NADD-2736	772580.6	566906	544.07	205	-60	278.4	289	10.6	1.97
							302	316	14	1.55
							326	329.5	3.5	2.03
							380	383.7	3.7	3.63
							413.5	417.5	4	1.21
							438	441.5	3.5	4.39
							465.5	478.5	13	3.68
							497	501	4	3.71
							522.5	528	5.5	0.81
							551	559	8	1.86
	NADD-2914	772222.2	567516.67	551.641	205	-65	105	118.5	13.5	0.64
							130.5	138	7.5	0.52
							237	262.5	25.5	2.46
							323	326.7	3.7	0.93
							460.5	493.5	33	1.04

Deposit/Area	Hole ID	UTM East (m)	UTM North (m)	Elevation (m)	Azimuth (º)	Dip (º)	From (m)	To (m)	Thickness (m)	Au (g/t)
							504	537	33	2.71
							544.5	561	16.5	2.65
							571.3	585	13.7	0.45
							618	621	3	1.35
Maraba	NADD-0193	772586.83	568156.50	566.94	230	-60	28.50	37.00	8.50	1.52
							39.00	60.00	21.00	0.93
							72.00	115.50	43.50	2.15
							157.50	163.50	6.00	0.91
	NADD-0220	772504.47	568085.62	570.02	50	-55	22.00	26.00	4.00	1.70
							91.00	105.00	14.00	0.80
							117.00	153.00	36.00	1.96
							161.20	183.00	21.80	2.05
	NADD-0338	772658.22	568205.06	574.54	230	-65	159.90	263.00	103.10	0.87
							285.50	290.50	103.10	0.87
							393.00	400.00	7.00	0.75
	NADD-1272	772544.90	568150.13	563.38	230	-60	0.00	4.50	4.50	3.40
							25.50	33.00	7.50	0.94
							54.00	66.00	12.00	1.34
							151.50	163.50	12.00	1.62
	NADD-1281	772657.00	568245.62	578.04	230	-70	145.00	152.50	7.50	1.21
							158.50	352.00	193.50	2.11
Merian I	NADD-0239	773140.28	563467.85	579.18	50	-70	6.50	15.50	9.00	0.91
							26.50	31.00	4.50	1.87

Deposit/Area	Hole ID	UTM East (m)	UTM North (m)	Elevation (m)	Azimuth (º)	Dip (º)	From (m)	To (m)	Thickness (m)	Au (g/t)
							120.00	134.00	14.00	0.93
	NADD-0614	773199.57	563467.85	580.56	230	-60	1.00	12.00	11.00	2.17
							15.50	29.00	13.50	1.42
							32.50	38.50	6.00	5.41
							44.50	62.00	17.50	0.71
							81.00	91.50	10.50	0.47
	NADD-0623	773231.12	563494.97	583.80	230	-60	1.50	54.00	52.50	1.13
							78.00	93.00	15.00	0.97
							120.00	121.50	1.50	13.65
							138.00	174.50	36.50	0.52
	NADD-0687	773267.75	563529.52	584.74	230	-60	1.30	14.50	13.20	0.45
							31.00	38.40	7.40	0.75
							117,40	124.00	6.60	0.93
							138.10	143.70	5.60	0.97
	NADD-0694	773304.60	563561.67	585.16	230	-60	2.60	18.20	15.60	1.04
							96.00	104.50	8.50	1.19
Northwest Merian	NADD-0814	769821.92	568440.87	576.35	230	-60	45.00	70.00	25.00	0.70
	NADD-2674	769796.48	568475.09	584.97	230	-55	100.00	130.00	30.00	5.10
	NADD-2703	769579.35	569555.07	545.41	230	-60	20.00	50.00	30.00	1.00
	NADD-2740	770338.42	567992.07	599.97	230	-50	52.00	77.30	25.30	0.42
	NADD-2689	770231.29	568095.74	575.15	230	-60	115.70	123.00	7.30	8.45
PK-73	NADD- 0252	771343.59	562965.18	558.37	235	-60	0.00	35.00	35.00	0.45
							55.00	65.00	10.00	1.83

Deposit/Area	Hole ID	UTM East (m)	UTM North (m)	Elevation (m)	Azimuth (º)	Dip (º)	From (m)	To (m)	Thickness (m)	Au (g/t)
	NADD- 0685	563066.54	563066.54	586.19	230	-60	20.00	40.00	20.00	0.67
	NADD- 0686	771310.98	563106.78	583.48	230	-60	90.00	110.00	20.00	0.74
	NADD-2278	771416.84	562884.31	559.12	230	-55	20.00	40.00	20.00	0.52
TOLOMU	NADD-0299	776103.00	562132.19	576.25	235	-60	30.00	75.00	45.00	0.92
	NADD-0315	775778.57	562123.87	554.92	180	-60	10.00	30.00	20.00	1.05
	NADD-0548	776605.00	562030.00	574.08	200	-60	25.00	35.00	10.00	1.46
							120.00	145.00	25.00	0.77
	NADD-2301	775589.95	562470.39	582.47	230	-50	0.00	30.00	30.00	0.58
Tumatu	NADD-0553	774484.52	560848.05	572.41	225	-60	20.00	55.00	35.00	2.13
	NADD-0565	774724.24	560705.34	596.45	225	-60	0.00	20.00	20.00	0.45
	NADD-0596	774322.30	561769.93	584.96	215	-60	70.00	100.00	30.00	1.00
	NADD-0747	774444.89	560901.33	578.49	230	-60	115.00	130.00	15.00	0.62
Marcus	NADD-0657	777040.00	554345.00	573.00	230	-60	0.00	25.00	25.00	1.30
	NADD-2470	777006.13	554407.46	562.01	230	-55	0.00	38.00	38.00	0.86
	NADD-2471	776956.01	554435.78	563.99	230	-55	0.00	21.00	21.00	2.50
	NADD-2477	777798.59	555026.61	544.27	230	-55	0.00	20.00	20.00	0.76
153	NADD-2286	783616.35	562825.22	545.57	230	-50	20.00	50.00	30.00	0.73
	NADD-2287	783672.65	562740.66	539.67	230	-50	65.00	75.00	10.00	0.83
	NADD-2288	783718.22	562665.62	543.94	230	-50	80.00	100.00	20.00	0.51

- Recovery data from core drill programs are acceptable;
- Geotechnical logging of drill core meets industry standards for open pit operations;
- The drilling pattern provides adequate sampling of the gold mineralization for the purpose of estimating Mineral Resources and Mineral Reserves;
- Drilling is normally perpendicular to the strike of the mineralization. Depending on the dip of the drill hole and the dip of the mineralization, drill intercept widths are typically approximately true widths;
- Drill orientations are generally appropriate for the mineralization style and have been drilled at orientations that are optimal for the orientation of mineralization for the bulk of the deposit areas. Drill orientations are shown in the example cross-section included in Section 7 as Figure 7-5, Figure 7-7 and Figure 7-9 and can be seen to appropriately test the mineralization;
- Drill hole intercepts included in Table 10-3 demonstrate that sampling is representative of the gold grades in the deposit area, reflecting areas of higher and lower grades;
- No factors were identified with the data collection from the drill programs that could significantly affect Mineral Resource or Mineral Reserve estimation.

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Introduction

Newmont, Surgold and Suralco staff have been involved with, or responsible for, throughout the duration of the Project, for the following:

- Sample collection;
- Sample preparation of BLEG, soil and rock chip samples;
- Core splitting;
- Delivery of samples to the analytical laboratory;
- Sample storage;
- Sample security.

All analytical procedures that support Mineral Resource and Mineral Reserve estimation, including sample preparation and analysis, were performed by independent analytical laboratories without company involvement.

11.2 Sampling Methods

11.2.1 Geochemical Sampling

BLEG samples were collected in tributaries, avoiding heavy mineral traps and areas of single-event deposition. Ridge crest soil samples were originally sampled every 50 m but were reduced to 25 m intervals, with samples taken from the soil layer at depths of about 25–50 cm.

One-kilogram samples were collected in both shallow soil and deep auger sampling, after removing clasts and organics. Field duplicates were collected at a frequency of 5% and numbered sequentially. Duplicate sites were planned in advance to cover areas expected to give both high and low assay values.

11.2.2 Auger Sampling

Hollow stem auger holes at Merian II averaged about 29 m depth. Samples were collected on five-foot (1.52 m) intervals.

11.2.3 RC Sampling

RC samples were collected on 1.5 m or 3.0 m intervals. The possibility of inaccurate assay data due to RC-related sampling issues such as downhole contamination resulted in the exclusion of all RC sampling from the geology model and resource estimate.

11.2.4 Core Sampling

Core to be used in resource estimation is sampled continuously on nominal 1 m intervals from top to bottom, with sample intervals broken at geological breaks (e.g. vein intervals, alteration zones). As a result of breaking sample intervals at geological breaks, NQ diameter core can have sample lengths from 0.5 m to 1.5 m; HQ from 0.3 to 1.5 m; and PQ from 0.2 to 1.0 m. Exploration drill holes are sampled by taking half of each interval split lengthways using a putty knife in saprolite and saprock and a core saw in fresh rock, leaving half in the core box as a record. Infill drill holes are whole-core sampled when in saprolite and saprock, leaving no core in boxes after sampling. Fresh-rock core from infill drilling is half-core sampled.

11.2.5 Grade Control

Grade control drill holes are sampled using a pie sampler with a target sample size of 6 kg. This is a standard procedure in the industry and is adequate to support short-term mine planning.

11.3 Metallurgical Sampling

Newmont in-house specialists studied cross-sections of the Merian deposits and chose the locations for metallurgical analysis. Five-kilogram composites across a zone of interest were taken from either coarse rejects, pulps or whole core samples that had not yet been otherwise assayed. For some of the metallurgical studies, pulps from ALS for intervals of interest were also sent for inclusion in the composites.

11.4 Density Determinations

Dry bulk densities were measured on site by geology staff as well as by Zonge Laboratory in Tucson, Arizona or the Laboratory at the University of Anton de Kom. Where multiple facilities made measurements for the same interval, a preferred value is selected. Normally, external laboratory values were used preferentially where available. Density measurements made on site were compared to the laboratory values for the same sample to validate the accuracy of on-site procedures.

Generally, a single piece of core, about 15–20 cm in length, is selected and measured in selected core boxes prior to removal. Samples measured on-site are dried and measurements of diameter and length are taken at least four times. The volume is then calculated, and the dry mass is divided by the calculated volume to calculate dry bulk density.

Samples being sent to external laboratories are wrapped in polyvinyl chloride (PVC) film as soon as possible to preserve sample integrity and shipped in PVC piping to prevent damage. The buoyancy method is used to determine bulk rock densities, after saturating the samples with tap water. Subsequently, the samples are dried in an oven at 250ºF for a minimum of 12 hours. Dry bulk densities are determined by dry weight divided by the buoyancy-determined volume of each sample.

After mining began, density within the pit has been determined two ways, first using a drive cylinder method (ASTM D2937) and the second was by collection of blocks of material in the pit and determining density using a wax-coat method (ASTM C914-95). Both methods are widely used in civil engineering and the mining industry.

There is a total of 6,813 density determinations in the Merian II area, 2,348 density determinations at Merian I and 1,319 density determinations at Maraba. Values range from 1.29 g/cm^3 in saprolite to 3.34 g/cm^3 in fresh rock (including fresh rock with ≥5% quartz veins). Table 11-1 summarizes density in the three main deposits at Merian. Density is assigned by regolith type for Mineral Resource estimation.

11.5 Analytical and Test Laboratories

Prior to mine construction, ALS Global (ALS) operated an on-site sample preparation facility. That sample preparation laboratory was operated by ALS personnel but was not formally accredited.

Depending on sample load and analytical requirements, samples were also prepared at The Assay Office (TAOS) or at FILAB in Paramaribo, in Suriname. Samples were prepared at these laboratories only when the on-site sample preparation laboratory was unable to prepare samples because of backlogs or where preparation of special samples was required.

British Standards Institution (BSI) purchased the Rocky Mountain Geochemical Company in 1998-1999 and operated that laboratory as BSI until 2010 as part of BSI's Inspectorate division. In 2010, Inspectorate was purchased by Bureau Veritas. The laboratory was located in Sparks, Nevada. The QP is not aware of any accreditations for BSI. In 2004 and 2005 BSI was used for fire assay analysis of samples that were prepared at TAOS in Suriname.

In 2006 samples were prepared on site by the ALS Global (ALS) preparation lab and the pulps were sent to ALS-Lima for fire assay analysis. This preparation laboratory was operated by ALS personnel but was not formally accredited. ALS in Lima was the primary laboratory for the Project. ALS holds ISO 9001, ISO 14001 and OHSAS 18001 accreditations as well as ISO 17025 accreditation for selected analytical techniques.

From 2012, all samples were submitted to TAOS and FILAB which are located in Paramaribo Suriname. Here the samples are prepared and fire assayed. TAOS is not certified. FILAB was ISO 9001 certified in December 2014. This certification (ISO 9001: 2015) was renewed in December 2018. FILAB acts as ALS Global's representative in Suriname.

When fire assays are received significant mineralized zones are estimated and samples within these mineralized zones are submitted to ALS-LIMA for screen fire assay analysis. The results from the screen fire assay analysis are the preferred value over TAOS and FILAB original assays and used for resource model calculations.

SGS in Lima is used as the check laboratory. SGS holds ISO 17025 accreditation for selected analytical techniques.

ALS, FILAB, TAOS and SGS are independent of Newmont/Surgold. The mine laboratory has been in operation since late 2016. It only analyzes production samples and is not accredited.

Table 11-1: Merian Density Summary by Regolith Type

Merian I			**Merian II**			**Maraba**		
Regolith Type	**No Samples**	**Mean Density (g/cm³)**	**Regolith Type**	**No Samples**	**Mean Density (g/cm³)**	**Regolith Type**	**No Samples**	**Mean Density (g/cm³)**
CZ	17	1.62	CZ	7	1.44	CZ	1	1.57
FR	704	2.68	FR	4,326	2.75	FR	737	2.73
LS	2	1.71	LS	-	-	LS	2	1.74
MZ	17	1.55	MZ	4	1.42	MZ	2	1.49
SAP	1,409	1.82	SAP	2,056	1.81	SAP	508	1.83
SR	199	2.28	SR	420	2.30	SR	69	2.30
VN	—	—	VN	284	2.62	VN	—	—
Total	***2,348***		***Total***	***6,813***		***Total***	***1,319***	

Note: The total for Merian II is for regolith type which includes the veins (VN). CZ = clay zone; FR = fresh rock; LS = lateritic soil; MZ = mottled zone; SAP = saprolite; SR = saprock; VN = vein.

11.6 Sample Preparation and Analysis

11.6.1 Sample Preparation

Suralco conducted the initial exploration activities in the project between 1999 and mid-2004; during this period Suralco used the facilities of Paranam for sample preparation and probably for assays and the laboratory at Rosebel that at that time was managed by Cambior. Later, the pulps of these samples were re-assayed by ALS in Reno, Nevada (Béjar, 2015a).

From 2004 and 2005, Surgold used TAOS for sample preparation. The TAOS sample preparation procedure consisted of:

- Crush to 80% passing 10 mesh (2 mm);
- Riffle split to get 250 g sample;
- Pulverize to 90% passing 150 mesh (105 µm);
- Split (pick) 100–150 g to pulp envelope to be submitted to BSI.

Pulp samples were submitted to BSI located in Sparks, Nevada for 30 g Au FA AA finish (FA/AAS) and gravimetric finish (FA/GRAV) when the AA result was over 5 g/t Au. Due to the long turnaround of the assays since the pulps had to travel from Paramaribo to Nevada, TAOS was doing preliminary assays on the core and RC samples that at the end were replaced by the BSI results which were the preferred values. The TAOS assay procedure was 30 g Au FA AA finish (1AT/AA) and gravimetric finish (1AT/GRAV) when the AA result was 5 g/t Au or more.

Due to the presence of coarse gold in the samples, 1 kg samples were selected from the coarse reject at TAOS and submitted to ALS for screen fire assay (Au-SCR21). The assays were reported between December 2005 and January 2006. These, and the future screen fire assay results, became the preferred gold assay values in the database.

In 2006, Surgold started using ALS in Lima instead of BSI. Initially, samples were prepared and assayed at TAOS. Core pulp samples (100–150 g) were submitted to ALS for 30 g Au FA AA finish (AuAA23) and gravimetric finish (Au-GRA21) when the AA result was over 2 g/t Au. ALS results were considered to be the preferred values.

After mid-2006, ALS started a sample preparation laboratory in Paranam, Suriname to prepare samples from the Merian Project. This laboratory worked at Paranam until the end of 2008. The sample preparation procedure followed at ALS Paranam was PREP-31B:

- Crush to 70% passing 10 mesh (2 mm);
- Riffle split to get 1000g sample;
- Pulverize to 85% passing 200 mesh (75 µm);
- Split (pick) 200-300g to pulp envelope to be submitted to ALS.

In 2013, Surgold attempted to standardize the sample preparation protocol in the local laboratories (TAOS and FILAB) with the Merian sample preparation laboratory managed by ALS by requiring these laboratories to be able to split and pulverize 1 kg samples. At that time, only TAOS was able to make those changes. Surgold decided to use ALS and TAOS only for sample preparation and assaying. TAOS modified their sample preparation procedure as below:

- Crush to 70% passing 10 mesh (2 mm);
- Riffle split to get 1000 g sample;
- Pulverize to 95% passing 150 mesh (105 µm);
- Split (pick) 250 g to pulp envelope to get the 30 g samples for fusion.

In 2014, FILAB improved their laboratory to change the sample preparation protocol and fire assay procedures. Sample preparation was improved in order to split/pulverize a 1 kg sample and the fire assay procedures were improved to provide for gravimetric finish of fire assays. Prior to that, if Au FA AA finish contained more than 3 ppm Au, the solution was diluted and reanalyzed. FILAB modified their sample preparation procedure as below (PSTB2):

- Crush to 75% passing 8 mesh (2.36 mm).
- Riffle split to get 1000 g sample.
- Pulverize to 90% passing 170 mesh (90 µm)
- Split (pick) 250 g to pulp envelope to get the 30 g samples for fusion.

FILAB modified their fire assay procedure to a 30 g Au FA AA finish (FA30A1) and gravimetric finish (FA30GV) when the Au FA AA procedure reported more than 2 g/t Au in a sample. Due to these changes, FILAB was again considered with TAOS and ALS as laboratories suitable for preparation and analysis and analysis of Merian samples.

Currently, sample preparation for all Merian sampling programs follow the ALS PREP-31B procedure, which includes crushing to 70% <2 mm and pulverizing 1,000 g to 85% passing 200 mesh (75 µm) with an analytical pulp of about 300 g. This includes the on-site preparation laboratory, mine laboratory, FILAB and the ALS Lima laboratory. TAOS uses the same crushing size but pulverizes to 95% passing 140 mesh (105 µm).

11.6.2 Sample Analysis

The standard assay requests sent to ALS for exploration samples are as follows (Table 11-2):

- Rock and soil are assayed using ALS fire-assay method Au-AA23 for gold and multi-element inductively-coupled plasma assays using ME-ICP41, with gravimetric assay using method Au-GRA21 for samples with a fire assay value of more than 2 g/t Au;
- Core and RC samples within the Merian area are fire assayed (Au-AA23) with gravimetric assay (Au-GRA21) for samples with a fire assay value of more than 2 g/t Au;
- Since 2009, fire assay results within the Merian and Maraba areas have been grade zoned and all samples within a 0.4 g/t Au grade shell (classed as a significant interval) have been screen fire assayed;
- Core samples from holes outside the Merian claim area as well as deep drill holes undergo fire (Au-AA23) assay routinely. Multi-element inductively coupled plasma (ME-ICP41 m) assays (aqua regia digestion) are done only if requested by the geologist responsible.

Both ALS Lima and TAOS as well as FILAB and SGS use the same fire assay protocol for gold. Only ALS does multielement (ME-ICP41) analyses. All samples returning more than 2 g/t Au in the initial assay are re-assayed using a gravimetric finish. Samples with more than 0.4 g/t Au within significant intervals are screen fire assayed at ALS in Lima (Table 11-3).

In 2012, ALS, TAOS and FILAB were all used for analysis of exploration samples due to the large number of core samples. Samples assayed at ALS were prepared at Merian and samples assayed at TAOS and FILAB were prepared at those laboratories, the sample preparation procedures followed by ALS, TAOS and FILAB were the same. ALS and TAOS used the same fire assay procedures explained above and FILAB used only a 30g Au FA AA finish (FA30). The coarse core rejects for samples inside the significant intervals fire assayed at TAOS and FILAB have been routinely used to prepare a 1 kg split sample for screen fire assay.

Table 11-2: Assays Methods Used on the Merian Project with Detection Limits

Method Code	Element	Symbol	Units	Charge Wt. (g)	Lower Detection Limit	Upper Detection Limit	Default Overlimit Method
Au-AA23	Gold	Au	ppm	30	0.005	10	Au-GRA21
Au-AA24	Gold	Au	ppm	50	0.005	10	Au-GRA22
Au-GRA21	Gold	Au	ppm	30	0.05	1000	
Au-GRA22	Gold	Au	ppm	50	0.05	1000	
ME-ICP41	Silver	Ag	ppm	0.5	0.2	100	Ag-OG46
ME-ICP41	Aluminum	Al	%	0.5	0.01	25	
ME-ICP41	Arsenic	As	ppm	0.5	2	10,000	
ME-ICP41	Boron	B	ppm	0.5	10	10,000	
ME-ICP41	Barium	Ba	ppm	0.5	10	10,000	
ME-ICP41	Beryllium	Be	ppm	0.5	0.5	1,000	
ME-ICP41	Bismuth	Bi	ppm	0.5	2	10,000	
ME-ICP41	Calcium	Ca	%	0.5	0.01	25	
ME-ICP41	Cadmium	Cd	ppm	0.5	0.5	1,000	
ME-ICP41	Cobalt	Co	ppm	0.5	1	10,000	
ME-ICP41	Chromium	Cr	ppm	0.5	1	10,000	
ME-ICP41	Copper	Cu	ppm	0.5	1	10,000	Cu-OG46
ME-ICP41	Iron	Fe	%	0.5	0.01	50	
ME-ICP41	Gallium	Ga	ppm	0.5	10	10,000	
ME-ICP41	Mercury	Hg	ppm	0.5	1	10,000	
ME-ICP41	Potassium	K	%	0.5	0.01	10	
ME-ICP41	Lanthanum	La	ppm	0.5	10	10,000	
ME-ICP41	Magnesium	Mg	%	0.5	0.01	25	
ME-ICP41	Manganese	Mn	ppm	0.5	5	50,000	
ME-ICP41	Molybdenum	Mo	ppm	0.5	1	10,000	
ME-ICP41	Sodium	Na	%	0.5	0.01	10	
ME-ICP41	Nickel	Ni	ppm	0.5	1	1,000	
ME-ICP41	Phosphorus	P	ppm	0.5	10	1,000	
ME-ICP41	Lead	Pb	ppm	0.5	2	1,000	Pb-OG46

Method Code	Element	Symbol	Units	Charge Wt. (g)	Lower Detection Limit	Upper Detection Limit	Default Overlimit Method
ME-ICP41	Sulfur	S	%	0.5	0.01	10	
ME-ICP41	Antimony	Sb	ppm	0.5	2	1,000	
ME-ICP41	Scandium	Sc	ppm	0.5	1	1,000	
ME-ICP41	Strontium	Sr	ppm	0.5	1	1,000	
ME-ICP41	Thorium	Th	ppm	0.5	20	1,000	
ME-ICP41	Titanium	Ti	%	0.5	0.01	10	
ME-ICP41	Thallium	Tl	ppm	0.5	10	1,000	
ME-ICP41	Uranium	U	ppm	0.5	10	1,000	
ME-ICP41	Vanadium	V	ppm	0.5	1	1,000	
ME-ICP41	Tungsten	W	ppm	0.5	10	1,000	
ME-ICP41	Zinc	Zn	ppm	0.5	2	1,000	Zn-OG46

Table 11-3: Descriptions and Detection Limits for Screen Fire Assays (Au-SCR21)

Determination Reported	Description	Units	Lower Limit	Upper Limit
Au total(+)(-) combined	Total gold content of sample as determined by metallics calculation.	ppm	0.05	100,000
Au(+) fraction	Gold content of plus fraction determined by Au-GRA21.	ppm	0.05	100,000
Au(-) fraction	Gold content of minus fraction. Reported as average of two sub-samples.	ppm	0.05	1000
Au-AA25	Gold content of first minus fraction subsample.	ppm	0.05	1000
Au-AA25D	Gold content of second minus fraction subsample.	ppm	0.05	1000
Au(+)	Weight of gold in plus fraction.	mg	0.001	1000
WT. (+) fraction entire	Weight of plus fraction.	g	0.01	1000
WT. (-) fraction entire	Weight of minus fraction.	g	0.1	100,000

After the gold results are reported for core samples, significant intervals are selected. Coarse rejects for samples inside those significant intervals are selected to prepare 1 kg split samples that are then submitted to the laboratory for screen fire assay using ALS method Au-SCR21. All samples in a drill hole within the significant interval are screen fire assayed.

All samples (rocks, soils, RCD and core) containing more than 2 g/t Au are reassayed using a gravimetric finish. This analysis replaces the value from the AA23 finish. In core holes that have significant intervals, the screen fire assay value replaces the results from both the gravimetric and fire assay methods. Since the infill drilling program in 2007, an effort to screen fire assay all core samples inside the significant intervals was made but was not successful. The same difficulties occurred in 2008 because the preparation laboratory was located at Paranam and coarse rejects were being lost in the process because of the lack of proper storage for rejects. Since 2009, when the preparation laboratory was moved to Merian, screen fire assays have been done for all samples inside the significant intervals.

Pulps created at ALS Chemex in Lima are stored at the laboratory warehouse for three months and then stored in a warehouse rented by Newmont. Excess pulp prepared at the Merian (ALS) sample preparation facility is stored at the laboratory at Merian. Core coarse reject samples are stored in barrels. Fine rejects and coarse rejects for soil and rock samples (not core) are stored until fire assays and standards return with acceptable values, then are destroyed.

11.6.3 Grade Control

Early in the mine life, prepared samples were sent to TAOS in Paramaribo for analysis by cyanide leach and fire assay. Upon completion of the mine laboratory, samples were analyzed at the mine laboratory by LeachWELL™ cyanide leach. Every 10th residue is analyzed by fire assay to determine the efficiency of the LeachWELL™ process. Sample preparation and assaying are adequate to support short-term mine planning.

11.7 Quality Assurance and Quality Control

11.7.1 Exploration Samples

11.7.1.1 Introduction

In January 2012, the quality assurance and quality control (QA/QC) procedure changed to include field, preparation and pulp duplicates (one field, preparation and pulp duplicate every 50 samples) as per recommendation of Newmont. Prior to that date, gold standards or blanks were inserted every 25 samples. All sample submissions from Merian exploration activities use the same QA/QC procedures.

Quality control measures consist of training and standard procedures implemented on site for all sampling and geology-based work; Project oversight by senior geology staff; and regular review of data validity and completeness by senior database staff, including setting access rules for staff interaction with the database.

Analytical quality assurance measures include: third party audits (database and geology model audits), twin hole comparison studies, the insertion of standards, blanks and coarse reject duplicates and a check sample program using coarse and pulp rejects. QC data for assay data are reviewed as soon as those data are received from the laboratory and summarized in annual QA/QC reports.

Because of the nuggety nature of mineralization at all of the deposits in the Merian area, analytical processes and procedures have been the focus of scrutiny and quality control by Newmont to minimize variances in the data.

Minimal requirements for the insertion of QC materials is as follows (Doherty, 2013; Béjar, 2015b):

- Field duplicates: 1 in 50 (i.e. the other half of core, RC split at rig, second sample from a blast cone);
- Preparation duplicates: 1 in 50 (second sample from 2 mm crusher at laboratory);
- Pulp duplicates: 1 in 50 (second sample from pulverizer at laboratory);
- Standards or certified reference materials at a frequency to obtain at least one standard per assay batch;
- Coarse (preferred) or pulp blanks: 1 in 100;
- Sizing at each laboratory sample reduction stage: 1 in 20 (i.e. % passing screen size at crusher and pulverizer);
- Umpire assay laboratory duplicates: 1% of samples;
- Random laboratory visits must be conducted and documented (minimum requirement is annual).

11.7.1.2 Quality Control Measures

QC measures consist of:

- Training and standard procedures implemented on site for all sampling and geology-based work;
- Project oversight by senior geology staff;
- Regular review of data validity and completeness by senior database staff, including setting access rules for staff interaction with the database.

QA measures include:

- Third-party audits (database and geology model audits);
- Internal corporate audits;
- Twin hole comparison studies;

- Insertion of standards, blanks and coarse reject duplicates;
- Check sample program using coarse and pulp rejects.

Grade control uses similar QC procedures to exploration.

11.7.1.3 Standard Reference Materials

Standard reference materials (SRMs) are utilized to evaluate accuracy of the analytical data and performance of the analytical laboratory which is a function of the precision at the laboratory. The SRMs have been sourced solely from Geostats since 2008. Prior to 2008, Rocklabs standards were used.

At least one SRM is inserted into each analytical batch sent to the laboratory. Standard results are evaluated using industry standard procedures. Review of the results indicates that analyses performed at the various laboratories are of sufficient quality to support Mineral Resource estimation and mine planning.

11.7.1.4 Blank Samples

Blank samples were inserted to monitor contamination. Blank materials were sourced from Geostats and Rocklabs as well as local sources. No indications of significant contamination were noted in the data although there were some outliers. Those outliers typically were mislabeled samples and are rare.

11.7.1.5 Duplicate Assays

Duplicate assays are used to estimate precision in the analytical procedures. Surgold has submitted three types of duplicate samples: field, preparation and pulp duplicates. Field duplicates are quarter or half core. Preparation duplicates were collected after the initial 2 mm crushing step. Pulp duplicates were collected after pulverization of the samples. Because of the nuggety nature of the Merian mineralization, the estimated precision is in the range anticipated by the QP. Improvements to precision would require analysis of significantly larger samples which may not be cost effective.

11.7.1.6 Check Assays

Check assays consist of samples sent to a second laboratory for analysis and are used to evaluate accuracy of the primary laboratory.

In March 2012, 1,400 pulp samples assayed between 2006 and 2011 by ALS were submitted to SGS for a second check assay. A random selection of these pulps was made from assay reports from 2006 to 2011. A total of 49 gold standards and nine blanks (AuBlank23) were submitted to SGS together with the pulp samples. Results indicate no significant bias between the two laboratories although there is a small conditional bias.

In 2013 and 2014, 10% of the samples analyzed at TAOS were submitted to ALS for check analysis. This required TAOS to produce two 250 g pulps for analysis. A total of 4,430 samples were submitted. Results indicate a constant bias of about 10% which was addressed by Surgold.

Other check assay results include 356 FILAB samples sent to ALS in 2016 and 118 TAOS samples sent to ALS in 2016.

To improve the sampling, preparation and analysis procedures to meet Newmont's standards of achieving 95% of samples with a relative error or RE <37% for field duplicates, RE<22% for preparation duplicates and RE<10% for pulp duplicates, a more suitable sample preparation protocol is being investigated, with a focus on the coarse crush and splitting stage.

Previous studies have determined that there is high analytical variance in fire assays and screen fire assays at Merian; however, this is most likely due to nuggety gold and the inherent heterogeneity of the deposit. Results do not indicate a bias.

Some biases between the primary laboratories were identified and appropriate adjustments were recommended, implemented and confirmed by Surgold. The QP considers the data from all three primary laboratories to be sufficiently accurate to support Mineral Resource estimation and mine planning.

11.7.2 Grade Control Samples

11.7.2.1 Introduction

Grade control uses much the same QC procedures as exploration, but the insertion rates are somewhat different. Early on, when samples were sent to FILAB and/or TAOS for fire assay, the insertion rates were one in 25 for field duplicates and one in 50 for pulp and preparation duplicates. Standard insertion rates were the same as for exploration. Once the on-site laboratory was completed and tested, insertion rates for field duplicates was one in 25 and the insertion rate for preparation duplicates was four in 52 samples.

11.7.2.2 Standards

Grade control samples were initially analyzed by FA with an AA finish. Once the mine laboratory was completed and tested, grade control samples were analyzed by cyanide leach using the pulverize and leach (PAL 1000 (PAL)) system which utilizes the LeachWELL™ accelerator. SRMs were inserted into both sample streams. Fire assay SRM results at ALS, FILAB, TAOS and the mine laboratory indicate that biases are generally acceptable (<5%). Those biases that are >5% are, with one exception related to samples with very few analyses. The exception, at FILAB, is unexplained. Other laboratories had no obvious difficulties with that SRM.

PAL SRM best values were recalculated, where necessary, to reflect the cyanide leach procedure. All of the results show acceptable bias (<5%) except two SRMs which have only three assays each and the bias estimate is thus not reliable.

11.7.2.3 Blank Samples

Blank samples were inserted into the grade control fire assay and PAL sample steams. Three failures were noted (>5 x lower detection limit), two of which are likely mislabeled samples. No significant contamination is indicated in either sample stream.

11.7.2.4 Duplicate Samples

Results for TAOS and FILAB are consistent with results for exploration samples. Results for the mine laboratory are similar to the results for the other laboratories. These results are considered to be acceptable considering the nuggety nature of the mineralization.

11.7.2.5 Check Assays

In June 2016, 83 samples were sent from FILAB to ALS for check assays. Results show that FILAB was biased low relative to ALS. The origin of that bias was investigated and corrected.

11.7.3 Collar Survey

QC for collar locations consists of duplicate surveys by the mine survey team and external checks by a second survey contractor. As an example, in 2018, a total of 39 drill holes were completed for the Maraba model update. As part of the internal and external QA/QC collar survey, respectively, 25.6% of the drill holes were resurveyed by Newmont's survey department. An additional 30.8% of the drill holes were check-surveyed by a third-party survey contractor, Sahit Surveying Services (SSS).

For the internal QA/QC, survey measurements performed by the Newmont survey department were compared with their QA/QC resurveys. In the case of the external QA/QC, the original survey measurements performed by the Newmont survey department were compared with the measurements performed by SSS. Differences ≤1.5 m between the measurements are considered by Newmont to be acceptable and >1.5 m potentially indicate an error during measurement. Collar surveys with a difference greater than 1.5 m are removed from the data supporting resource estimation.

11.7.4 Downhole Survey

In order to ensure that the survey equipment is capable of achieving the required accuracy under project conditions, calibration of all survey equipment against verification stations (test pits) is performed on a daily basis. Duplicate surveys then form the basis QC analysis of data. To ensure reliability of the downhole survey data for all drill holes, a different downhole survey instrument was used to conduct the QA/QC surveys.

In 2018, the required 5% QA/QC downhole survey coverage at Merian II was not accomplished with the Reflex EZ-Shot™ instrument, due to functionality issues with the instrument. This survey method was conducted on four drill holes. For the remainder of the Merian II drill program, 87 of

89 drill holes were downhole surveyed using a single-shot survey instrument (Reflex EZ-Trac™ in single-shot mode) as the primary instrument and a multi-shot instrument for the resurvey instrument. This provided 97% duplicate survey coverage.

As a criterion to accept and reject single-shot and multi-shot readings based on the deviation, the dog-leg severity at each survey point was calculated. Only seven drill holes had dog-leg severity values for the single-shot readings that exceeded the required corporate limit of 5°.

Comparison of both multi-shot and single-shot techniques show that there is a good correlation between the azimuth and the inclination; however, the inclination indicated a better correlation than the azimuth. Both are considered to be adequate to support Mineral Resource estimation.

11.7.5 Density

Using 2018 Merian II data as an example, a total of 1,906 density samples were collected and processed according to regolith type and density determined by the wax coat method. In order to improve the integrity of the density data. To maintain compliance with Newmont standards and guidelines a 5% variance is the maximum deviation allowed for both internal and external density QA/QC in all regolith types over all the collected density samples.

Duplicate analyses were performed on 108 internal QA/QC samples, including 26 saprolite, 10 saprock and 72 fresh rock samples. The volume of these samples was determined using the caliper method. This resulted in a QA/QC coverage of 6% for saprolite, 11% for saprock and 5% for fresh rock. The internal QA/QC density values for saprolite are all slightly lower than the regular samples. For both saprolite and fresh rock, the two methods agree reasonably well but there are some outliers.

A total of 95 samples were packed carefully in PVC pipes for shipment to ALS for external density QA/QC. These were analyzed using the wax coat method. The samples were also analyzed at the Merian density laboratory using the wax coat method, so the coat was first removed using a ‘hot water bath’ and then packed for shipment to ALS. This resulted in a QA/QC coverage of 0% for saprolite, 8% for saprolite and 6% for fresh rock. The ALS samples returned slightly higher density values than the Merian density values.

11.7.6 Geological Logging

Geological logging QA/QC is done for every tenth drill hole, which consists of logging by two different geologists separately in order to check consistency of logging. One geologist will log the hole in detail, finalize and validate all the data related to that drill hole. The second geologist will do a quick log and focus on components that are modelled for resource and reserve estimation purposes. These components consist of the regolith and vein percentage and interpretative units (gray and white breccia veining). These quality checks were introduced to check the consistency and repeatability of logging procedures between geologists.

11.8 Databases

Drilling data (logs, assays, collars, down-hole surveys) are stored in the GED database.

Geological and geotechnical logging is performed by the geologist using Visual Logger format. The Visual Logger templates used for core logging use drop-down boxes that offer fixed selections for logged features in order to avoid human error when entering the codes manually. The database manager is the single point of contact to the final geology database and loads the Visual Logger cache files into the GED after the final check for data consistency.

Assay reports are received in a Newmont format and loaded into the GED using the Newmont tool known as "AssayImport"; this tool allows the database staff to check the standard assay values before loading the assay report into the GED. A second check of standards is made once a month in the monthly report.

Consistency checking of the logging data is performed using Visual Logger prior to loading logs to the database. The standard and duplicate values are checked using "Assay Import" before importing the assays into the database.

The backup of the database happens automatically with a daily backup of the files and folders stored at the GED Server being performed; weekly, daily and hourly backups are done for all the SQL databases.

Hard copy backups of core logs and associated drilling/sampling data are stored in binders and folders at the Geology Office.

11.9 Sample Security

Core is transported from the drills by Surgold personnel and securely stored until it is logged and sampled. When the on-site sample preparation laboratory was working, samples were immediately sent to the on-site sample preparation laboratory where they were sorted, logged in and then immediately put in drying ovens. As soon as the samples were dry, they were prepared. After sample preparation was complete, samples were securely stored in a locked room on site until sufficient samples were accumulated to warrant transport to Paramaribo.

Samples bound for ALS are sent to the Newmont office in Paramaribo where they are consolidated and boxed. The boxed samples are then consigned to Cambridge International Transport N.V. (Cambridge) in Paramaribo. Cambridge acquires permission from the Geological Mining Department of Suriname (GMD) to ship the samples from Suriname then consigns to KLM. The samples are transported to the Netherlands and then to Lima. Newmont is provided with a tracking number for each shipment. Once a shipment arrives in Lima, Newmont personnel transport the samples to ALS in Lima where they are logged into the ALS system.

Samples to be analyzed at either FILAB or TAOS are completed at those laboratories and the results are emailed to site.

Sample security at the Project has not historically been monitored. Sample collection from drill point to laboratory relies upon the fact that samples are either always attended by Project personnel, or are stored the locked on-site preparation facility, or are stored in a secure area prior to shipment to the external laboratory. Chain-of-custody procedures consist of sample submittal forms to be sent to the laboratory with sample shipments to ensure that all samples are received by the laboratory.

RC drill chips are stored in catalogued chip trays. Drill core is retained and either palletized or stored in vertical racks. All core is catalogued. Some core has been exhausted in metallurgical testwork; these core intervals are marked in the database.

Post assaying, all pulps and rejects are retained and stored in inventoried kraft bags in designated storage within the Project area.

11.10 QP Comments on "Item 11: Sample Preparation, Analyses, and Security"

In the opinion of the QP, sample preparation, analysis and security are acceptable, meet industry-standard practice and are adequate for Mineral Resource and Mineral Reserve estimation and mine planning purposes, based on the following:

- Drill sampling has been adequately spaced to first define, then infill, gold anomalies to produce prospect-scale and deposit-scale drill data;
- Historically, samples in saprolite were sampled as half-core. The procedure for infill drilling has been to whole-core sample the saprolite and half-core sample in fresh rock;
- Sample preparation for core samples has followed a similar procedure since Newmont's involvement in the Project. The preparation procedure is in line with industry-standard methods
- Newmont has used a QA/QC program comprising blank, standard and duplicate samples. Newmont's QA/QC submission rates meet industry-accepted standards of insertion rates;
- SRM and blank programs provide a high level of confidence in ALS' analytical accuracy. It is unlikely that any significant analytical variance is due to laboratory procedures at ALS;
- Both ALS and SGS perform accurately on standard assays. Inter-laboratory comparisons reveal only slightly less correlation between laboratories than that of comparing internal duplicates done by ALS. Homogeneity issues are more likely the source of the poor correlation;
- While variability for individual samples is a reality, there is no evidence for bias from the QA/QC analysis. There is an opportunity to improve the sample preparation procedure, which may result in improved grade control estimates and reduced misclassification of mineralized material and waste;

- The QP considers the assay data to be adequately accurate, precise and contamination-free for use in Mineral Resource estimates;
- Verification is performed on all digitally-collected data on upload to the main database and includes checks on surveys, collar co-ordinates, lithology and assay data. The checks are appropriate and consistent with industry standards;
- Sample security has relied upon the fact that the samples were always attended or locked in the on-site sample preparation facility. Chain-of-custody procedures consist of sample submittal forms sent with sample shipments to the laboratory to make certain that all samples are received by the laboratory;
- Current sample storage procedures and storage areas are consistent with industry standards.

12.0 DATA VERIFICATION

12.1 Internal Data Verification

12.1.1 Laboratory Visits

Newmont staff regularly visit the laboratories to inspect sample preparation and analytical procedures. Observed actions and procedures that are not in conformity with Newmont procedures are recorded in project files and communicated to the laboratory for corrective action to be taken.

12.1.2 Verification/Validation

All analytical, logging and location data are verified by Newmont personnel prior to entry into the Project database. Many of those verification/validation routines are part of the GED software data management program and are integral to data entry.

QA/QC reviews were performed in 2018 to verify new drill data that was to be used in model updates for Merian II, Maraba and Merian I (Béjar, 2018a, 2018b, 2018c). The data were found to be acceptable for use in resource estimation.

QA/QC reviews were also performed during 2018 on collar and downhole survey data, density data and geological logging (Osman, 2018a to 2018f; Patadien, 2018a to 2018e) that would support the resource estimates. Results are discussed in Section 11.7.

12.1.3 Geology and Mineral Resource Reviews

Newmont has a policy of peer reviews of all aspects of the Mineral Resource estimates. Those reviews include evaluations of the database, geological models and the Mineral Resource estimates. Reviews were performed in 2013, 2014, 2016, 2017 and 2018.

The 2018 geology and database review covered Merian I and Maraba (Lipten, 2018a, 2018b). The Merian I and Maraba geology models and supporting data were found to be acceptable for resource estimation and project evaluation.

The 2018 resource model review covered Merian II, Maraba South and Merian I. No material issues were noted in the peer review reports (Jewbali, 2018a, 2018b, 2018c).

12.1.4 Reserve and Resource Review

An internal audit of the 2017 Mineral Resource and Mineral Reserve estimates was completed by Newmont corporate staff at the end of 2017. The “3R” review examined:

- Geological models: grade control estimation and polygon delineation, grade control field practices, data quality and integrity, geological interpretation and modelling;

- Geostatistics: estimation, risk model;
- Geotechnical and hydrological: pit slope designs, pit slope performance, WRSFs, TSF and water management;
- Processing: metallurgical accounting; business plan inputs; risk and opportunity management;
- Mine engineering: equipment productivity, costs, unitized costs for pit optimization and cut-off, Whittle inputs, pit optimization, pit designs, cut-off grades, reserves test.

No significant issues were noted.

12.1.5 Reconciliation

The QP receives and reviews monthly reconciliation reports from the mine site. These reports include the industry standard reconciliation factors for tonnage, grade and metal; F1 (reserve model compared to ore control model), F2 (mine delivered compared to mill received) and F3 (F1 x F2) along with other measures such as compliance of actual production to mine plan and polygon mining accuracy. The reconciliation factors are recorded monthly and reported in a quarterly control document. Through the review of these reconciliation factors the QP is able to ascertain the quality and accuracy of the data and its suitability for use in the assumptions underlying the Mineral Resource and Mineral Reserve estimates.

12.2 External Data Verification

External data verification has been performed from 2012 to 2018 as summarized in Table 12-1.

12.3 QP Comments on “Item 12: Data Verification”

The process of data verification for the Project has been performed by Newmont personnel and external consultancies contracted by Newmont.

Based on the laboratory inspections, internal data verification procedures and checks by independent third parties from 2012–2018, data are considered acceptable to support Mineral Resource and Mineral Reserve estimation. Changes to the sample preparation procedure were recommended for future drill programs.

The QP, who relies upon this work, has reviewed the reports and is of the opinion that the data verification programs completed on the data collected from the Project are consistent with industry best practices and that the database is sufficiently error-free to support the geological interpretations and Mineral Resource and Mineral Reserve estimation, and mine planning.

Table 12-1: External Data Verification

Company	Year	Verification Type	Comment
Geostats Pty Ltd	2012	Database audit	At the time of the audit, the database contained 860 completed drill-holes made up of 129 auger holes and 731 diamond drill holes. A random selection representing approximately 5% of the total drill-holes was examined for consistency from raw data to the GED for collar and downhole surveys, density measurements, sample tracking, assay data, geological logging. The key finding was that 30 g samples were not adequate for an analysis of gold within Merian ores.
AMEC	2013	Database audit	Evaluate the integrity of the database and the processes involved with database construction. Database construction and management were found to be adequate to support resource estimation and mine planning.
AMEC	2014	Database audit	The data audited were only those data collected since the last audit in 2013 and selected data not audited in 2013 (281 of 2,476 drill holes; 11.3% of the available drill holes). Collar, downhole survey, assay, recovery, density, regolith and vein density tables in the database were reviewed. AMEC concluded that the database was sufficiently error free to support Mineral Resource estimation and mine planning.
AMEC	2014	QA/QC review	Review of SRMs, blanks, duplicate and check samples submitted to ALS, TAOS and FILAB during 2013. No significant issues that would impact estimation were noted. SRM results at TAOS were noted to have significant biases for most standards but the biases were not consistent.
Amec Foster Wheeler	2015	Geological model audit	Completed an audit of the geological model for the deposit, reviewed density assignments for saprolite, sample collection, preparation and analysis, geological logging and compositing. Data and interpretations were considered acceptable to support Mineral Resource estimation and mine planning.
Amec Foster Wheeler	2016	Geological model audit	Review of Merian II and Maraba geological models, density and reconciliation data. The models honored the data well and the geological models were considered adequate to support Mineral Resource estimation and mine planning. Density models were acceptable. By mid-2016, start-up issues had been overcome and the F1

Company	Year	Verification Type	Comment
			(mine to model) reconciliation was tracking very well. F2 (mine to mill) and F3 (mill to model) reconciliations were not considered during this review because the mill achieved commercial production in early October 2016 and insufficient data had been collected to confidently determine those reconciliations
Mine Technical Services	2017	Geological model audit	Review of the geological models for Merian I and Merian II and reconciliation for Merian II. Geological models were considered adequate to support Mineral Resource estimation and mine planning. Generally, F1 data were acceptable. Overall, tons are about 95% of predicted, grade is about 100% of predicted and ounces are about 93% of predicted. The F2 reconciliation is within ±10% for the duration of the mine except for the first month of operation. For much of the mine history, reconciliation was found to be slightly negative and that negative bias was recommended to be investigated.
Mine Technical Services	2018	Geological model audit	Review of the geological models for Maraba, Merian I and Merian II and reconciliation for Merian II. MTS performed a high-level review of the data supporting those models, including collar locations, downhole surveys, assays, lithology tables and density. Data and the geological models are acceptable to support the 12-month F1 rolling average shows a trend for tonnes that is distinctly upward, and grade is mildly upward which causes a marked upward trend in ounces. This should be investigated, and the trends brought under control as soon as possible.

The QP performed a site visit in September 2018 (refer to Section 2.4). Observations made during the visit, in conjunction with discussions with site-based technical staff also support the geological interpretations, and analytical and database quality. The QP's personal inspection supports the use of the data in Mineral Resource and Mineral Reserve estimation, and in mine planning.

The QP also receives and reviews monthly reconciliation reports (refer to Section 12.1.5). These reports support use of the underlying data in the Mineral Resource and Mineral Reserve estimates.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Metallurgical Testwork

The test work reports summarized in Table 13-1 have been completed on the Project.

13.1.1 Initial Testwork

Interpretation of the metallurgical test work was performed by Newmont Technical Services in Denver with additional analysis by metallurgical personnel from Newmont's Yanacocha Gold Mine in Peru. Metallurgical test work for the Merian Gold Project, including estimation of gold recovery and reagents consumption, was completed at the Newmont Metallurgical Services (NMS) Laboratory in Denver, Colorado. Grinding test work to estimate power consumption was completed by Hazen Laboratories in Denver, Colorado, under the direction of NMS.

In the second quarter of 2005, NMS received 30 samples from the Merian II deposit. The samples were classified as saprolite, saprock and fresh rock. The samples were pulverized to approximately 80% passing 75 µm (200 mesh) then cyanide leached with recoveries exceeding 97% for saprolite and 93% for fresh rock. The test work was repeated in April 2007 noting the "as received" particle size distribution of the material and attempting to minimize the grind times to produce a 150 µm (100 mesh) and a 106 µm (150 mesh) product size. The bottle roll tests at 75 µm (200 mesh) were not repeated due to the lack of sample available.

In the first quarter of 2006 NMS received 38 samples from the Maraba deposit. These samples were saprolite, saprock and fresh rock. The samples were pulverized in a laboratory mill to an average of 172 µm (80 mesh), 108 µm (150 mesh) and 75 µm (200 mesh) then cyanide leached. Testwork on saprolite samples was completed in 2006. As expected, the saprolite was very soft requiring an average of 6.1 kWh per ton of mineralization. However, as the geologic model developed during the course of the test work it was noted that the amount of quartz vein in the saprolite could affect the power required for grinding. Mineralogical information indicated that the gold in some samples was tied up in an iron oxide coating that required some grinding for removal.

Initial testwork results are summarized in Table 13-2.

Following meetings at the site in December 2007, a new sample protocol was determined to test the variability of the deposit in terms of location in the pit and as well as quartz vein content. A total of 50 saprolite samples were sent to NMS for testing.

In parallel with these material characterization programs, waste samples (both mine waste and cyanided mill tailings composites) were tested for acid rock drainage and metals liberation. The results show that none of the 25 samples tested would produce significant quantities of acidity in a natural weathering and oxidizing environment.

Table 13-1: Metallurgical Testwork Summary

Report Name	Issue Date	Chemical and Mineralogical Testing	Grind Variability	Conventional Crushing and Grinding	HPGR Crushing and Grinding	Heap/Column Leach Recovery	GRG *	Gravity & Carbon Leach Recovery	Gravity & Leach Recovery	Carbon Leach Recovery	Leach Recovery
Metallurgical Study Results for 30 Nassau Composites	2007-04-24	x		x					x		
Comminution Testing Hazen Project 10608 Report and Appendix	2007-06-19			x							
Metallurgical Study Results for 38 Maraba-Nassau Samples	2007-08-13	x	x	x				x			x
Metallurgical Test Report	2007-08-15						x				
Memorandum Estimating the Grinding Power Required for Nassau Saprolite Ores	2007-08-17		x	x							
Memorandum Nassau Metallurgical Report for Ore Composites – Maraba & Merian II	2007-09-11	Review of previous testwork only									
Memorandum Suriname HPGR vs. Conventional Crushing Column Leach and Gravity/Tails Cyanidation Test Results	2008-02-15	x	x	x	x	x			x		
Memorandum Nassau Primary Heap Leach Operating Cost	2008-05-16					x					
Maraba, Area-112 and Gowtu Bergi Comminution Composites Metallurgical Study	2008-06-24	x	x					x			
Maraba and Merian II Variability Composites Metallurgical Study	2008-07-31	x	x					x			
Estimating the Grinding Power Required for Nassau Saprolite Ores – Part 2	2008-08-11		x	x							
Merian I Metallurgical Study	2008-10-07	x						x			

Report Name	Issue Date	Chemical and Mineralogical Testing	Grind Variability	Conventional Crushing and Grinding	HPGR Crushing and Grinding	Heap/Column Leach Recovery	GRG *	Gravity & Carbon Leach Recovery	Gravity & Leach Recovery	Carbon Leach Recovery	Leach Recovery
Merian II and Maraba Fresh Rock Composites Metallurgical Study Progress Report	2008-10-07	x				x		x		x	x
Maraba and Merian II Stage 2 Environmental Studies for Ore and Waste Composites	2008-10-13										
Memorandum Merian Gold Project – Stage 2 Metallurgical Report	2008-11-14	Review of previous testwork only									
Memorandum Merian Stage 2D Study – M001 (Process Development Testwork Report, Rev A)	2010-09-10	Review of previous testwork only									
2011/2012 Feasibility Testwork Report	November 2012		x	x			x		x		x

Note: GRG = gravity-recoverable gold

Table 13-2: Initial Testwork Results

Material Type	Gold Recov. @75 µm (%)	Cyanide Consumption (kg/t)	Lime Consumption (kg/t)	Grinding Media (kg/t)	Grinding Power (kWh/t)
Merian II					
Saprolite with 0–10% vein density	96	0.35	1.20	0.16	2.9
Saprolite with >10% vein density	96	0.35	1.20	0.30	6.2
Quartz Breccia (GBX)	96	0.35	1.20	0.48	10.2
Saprock	90	0.30	0.98	0.78	15.2
Fresh Rock	90	0.30	0.55	0.98	19.0
Maraba					
Saprolite with 0–0% vein density	96	0.36	1.10	0.16	2.9
Saprolite with 10–25% vein density	96	0.36	1.10	0.24	4.8
Saprolite with >25% vein density	96	0.36	1.10	0.41	8.6
Saprock	92.8	0.36	0.97	0.78	15.2
Fresh Rock	92	0.27	0.69	0.98	19.0
Merian I					
Saprolite with 0–5% vein density	96	0.36	1.15	0.13	2.3
Saprolite with >5% vein density	96	0.36	1.15	0.23	4.6

13.1.2 Feasibility Study

The feasibility study testwork program included the following, conducted at the laboratories indicated:

- Head assays and X-ray diffraction (XRD) mineralogy (NMS);
- Bond ball mill grinding work index (NMS);
- Bond abrasion index (Hazen);
- SMC drop weight tests (NMS);
- Gravity gold recovery (NMS);
- Leach optimization testwork (NMS);
- Slurry rheology (Pocock Industrial);
- Thickening and vacuum filtration (Pocock Industrial);
- Cyanide detoxification (Elbow Creek Engineering).

The material flow characteristics testwork was removed from the test program during the metallurgical planning session at the start of the program because the project team had significant experience with similar projects in Suriname that would be adequate to set the design criteria for material handling systems.

13.1.2.1 Composites Tested

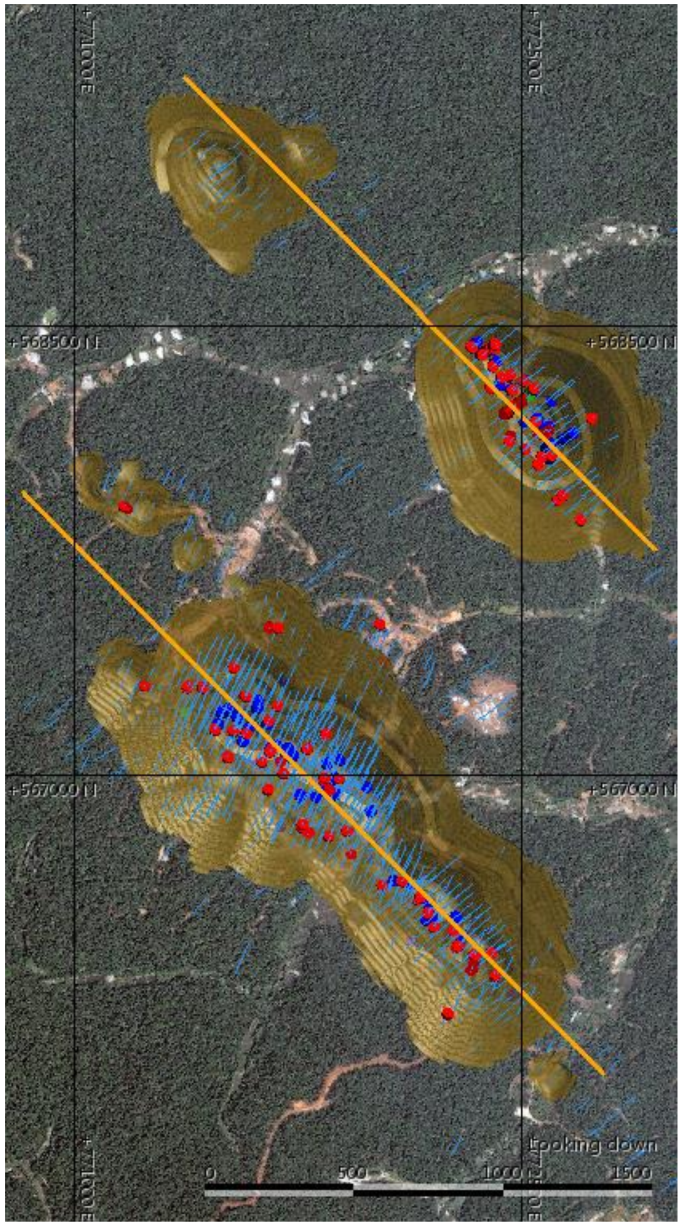
Core samples (half or quarter core and in some cases full core) were selected from the various mineralized zones to be assembled into domain composites representing each zone. Figure 13-1 is a plan showing the cross-section locations of composite samples for Merian II in Figure 13-2 and for Maraba in Figure 13-3.

These same samples were used individually for variability testing to provide an understanding of the change in ore characteristics spatially within each domain and determine any potential impact on the metallurgical response of these ores.

Domain composites were built to represent one of the ore domains identified as significant in the mine plan. After each domain composite was formed, a sub-sample was split out for comprehensive head analysis prior to chemical and mineralogical analysis. Comminution and abrasion index testwork were performed on master composites assembled to represent saprolite and fresh rock ores.

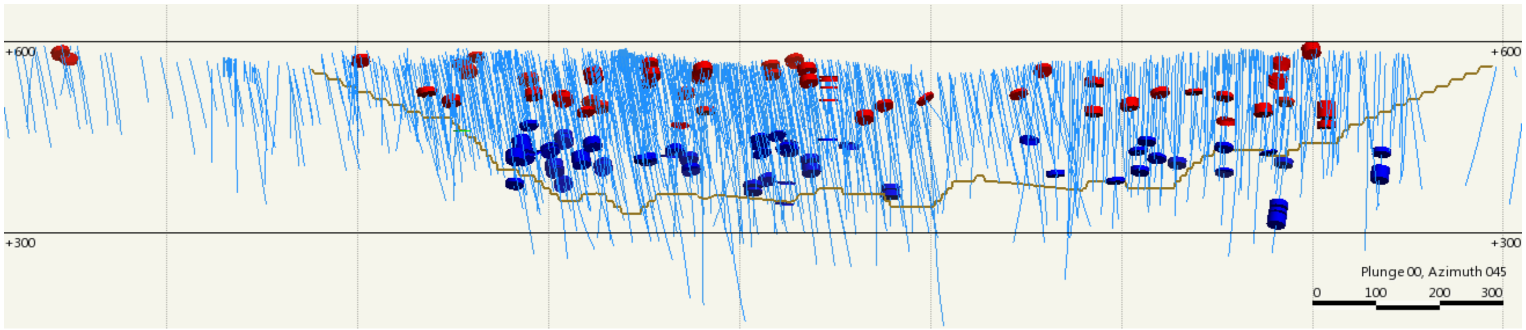
Samples selected for use in the feasibility testwork were assayed for gold content by fire assay. Metallurgical testwork results showed generally good gold accountability on average but with a relatively high variance (Figure 13-4), which pointed to a significant nugget effect in all ore types.

Figure 13-1: Metallurgical Composite Sample Locations



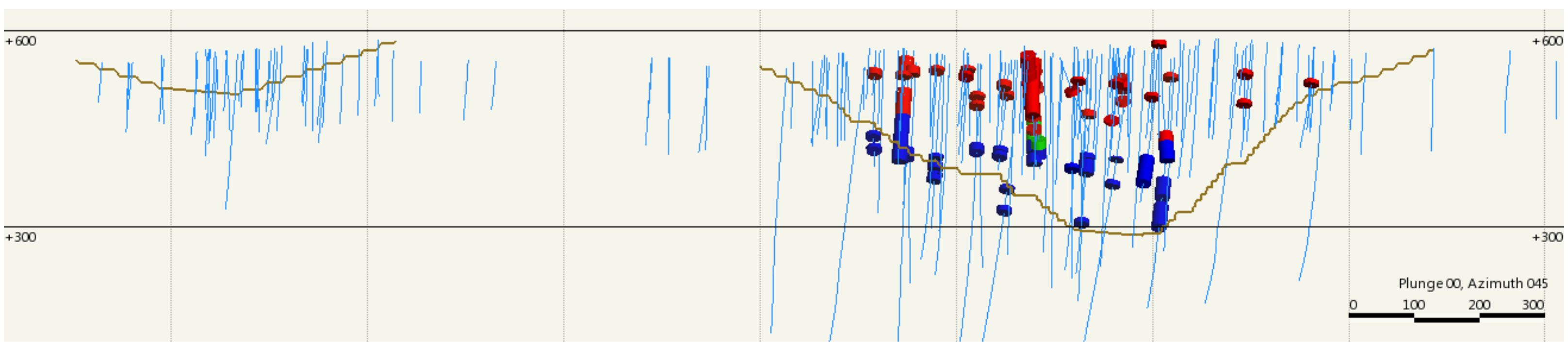
Note: Figure prepared by Surgold, 2012. The red markers indicate saprolite sample locations, the green markers indicate saprock (transition) samples and the blue markers indicate fresh rock samples.

Figure 13-2: Metallurgical Sample Distribution, Merian II



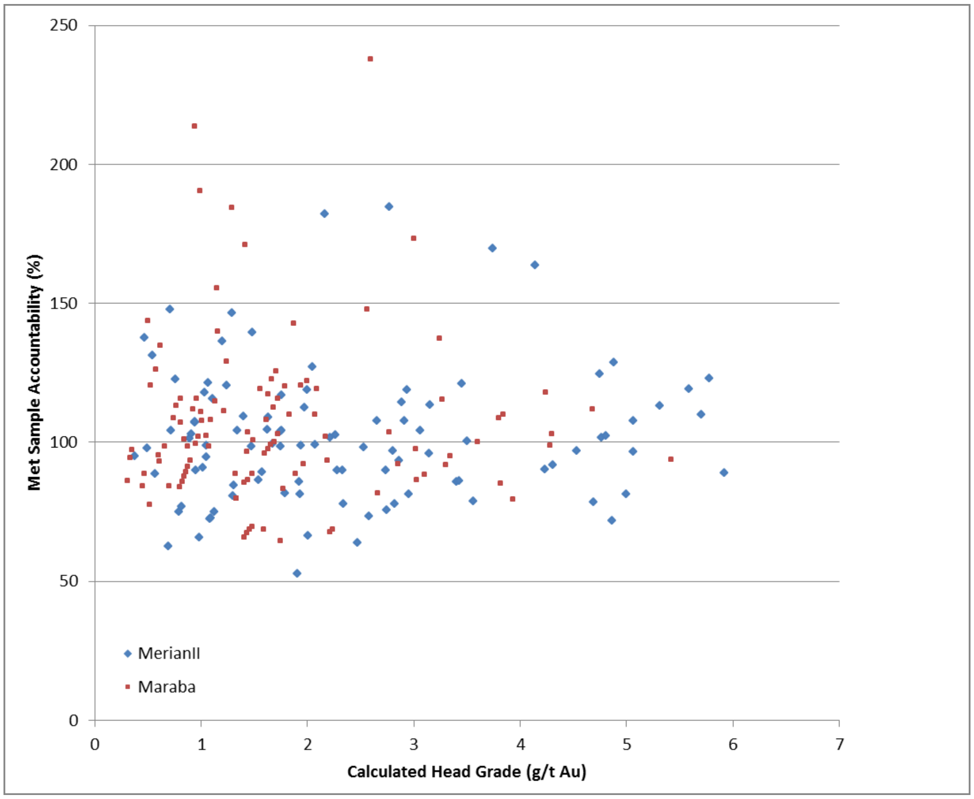
Note: Figure prepared by Surgold, 2012. The red markers indicate saprolite sample locations, the green markers indicate saprock (transition) samples and the blue markers indicate fresh rock samples.

Figure 13-3: Metallurgical Sample Distribution, Maraba



Note: Figure prepared by Surgold, 2012. The red markers indicate saprolite sample locations, the green markers indicate saprock (transition) samples and the blue markers indicate fresh rock samples.

Figure 13-4: Metallurgical Sample Accountability Scatter Plot – Merian II and Maraba



Note: Figure prepared by Surgold, 2012

Merian II accountability was slightly better on average than Maraba testwork and that variance tended to deteriorate with increasing vein density.

A total of 60 drill core intervals were selected for feasibility testwork. Once received, the samples were crushed to -35 mm and a portion was split out for elemental analysis by ICP and fire assay. The remaining samples were subjected to Steve Morrell comminution (SMC) grind variability testing. The SMC samples were crushed to 10 mesh, a portion was set aside for leach variability testwork and the remainder were used to form the domain composites. The domain samples were further split to provide 500 g subsamples for use in gravity, leach optimization, settling and rheology and detoxification testwork programs.

13.1.2.2 Mineralogy

The major minerals in saprolite are quartz, muscovite and kaolin with smaller but consistent amounts of iron oxides and siderite. Fresh rock and saprock contains mainly quartz, muscovite, albite and chlorite with smaller portions of ankerite and pyrite. The Maraba deposit differs from Merian II in that it also contains a significant amount of plagioclase in both saprolite and fresh rock ore.

Samples were hand panned to estimate the quantity and size distribution of the gold particles present in the gravity concentrates. Native gold was found to occur in a wide range of particle sizes, from 25 µm to 850 µm.

13.1.2.3 Abrasion Testing

Four saprolite samples were tested for abrasion index (Ai) testing, two each from Merian II and Maraba. These were composited so that each deposit was represented by a high vein density sample (thick vein or TKV) and a low vein density sample (thin vein or TNV), the early definition of vein densities used at that time. These abrasion index determinations were used in grinding media and liner consumption calculations. The Ai values for Merian II averaged 0.37, whereas the Ai values ranged from 0.07 to 0.46 at Maraba.

Abrasion index testing for fresh rock was conducted by Hazen Research in 2011. On average, fresh rock Ai values were 0.19 but significant variations by domain were noted.

13.1.2.4 Comminution Testwork

Due to the fine nature of much of the saprolite, a methodology was developed to correlate grind time to achieve a P80 of 75 µm in laboratory samples with samples that fit the standard Bond Ball mill work index (BWi) for grinding power determinations. This information was then correlated to the SMC M_{ia} and M_{ib} (coarse and fine ore properties respectively) to determine semi-autogenous grind (SAG) and ball mill power requirements, respectively, for all saprolite samples.

Coarse or M_{ia} material is defined as spanning the size range from a P80 of 750 µm up to the P80 of the product of the last stage of crushing or high-pressure grind roll (HPGR) size reduction prior to grinding. Fine or M_{ib} covers the size range from a P80 of 750 µm down to P80 sizes typically reached by conventional ball milling, at approximately 45 µm.

This correlation indicated that SAG specific energy for saprolite from Maraba and Merian II to be 3.0 kWh/t and 2.3 kWh/t, respectively. Ball mill specific energy for Maraba and for Merian II saprolite was expected to be 4.0 kWh/t and 2.2 kWh/t, respectively.

Additional follow-up testwork in 2008 on 23 saprolite samples from both deposits suggested that the total grinding power required was 6.8 kWh/t; however, grind requirements were not differentiated by deposit.

Comminution testing was completed on 22 saprolite samples in the 2011 test program. Fresh rock samples received in 2011 were subjected to SMC drop weight testing, Bond Ball mill work index tests to determine BWi and abrasion testing to evaluate the grind parameter variability of the rock types. The results of the testwork were used to develop the SAG and ball mill specific energy requirements and the grind index for each ore type using the 85th percentile of the individual rock/vein type test results.

The 2012 feasibility study testwork program tested the effect of grind size on leach recovery using saprolite samples with a P80 of 75 and 106 µm and fresh rock samples with a P80 of 53, 75, 106 and 150 µm. There was a positive impact on recovery with finer grind as the grind size is decreased to P80 -75 µm. Testwork that was completed prior to 2011 had been conducted at grind sizes ranging from 75, 106 and 150 µm in order to determine the optimal grind size. Results of this work showed that tests at 75 µm grind size consistently produced extractions averaging 2 to 3% higher than 106 µm tests.

13.1.2.5 Gravity Concentration

Coarse gold observed in the hand panning concentrates during pre-feasibility mineralogical analysis indicated that gravity extraction might be required for acceptable recovery due to the coarse nature of some gold particles. Gravity recoverable gold (GRG) amenability testwork performed by Knelson Research and Technology Centre indicated that a portion of the gold in the Merian deposits was amenable to recovery by gravity methods. Mineralogical testwork indicated that the GRG was in the moderate to coarse size range.

The decision to include gravity equipment in the flowsheet was driven by the large gold particles observed in the hand panning testwork and the results of leaching residue grades with and without gravity steps prior to leaching. Early leaching testwork indicated that gravity extraction before leaching yielded a reduction in final residue averaging 0.25 g/t Au. Each composite tested as part of the Feasibility Study testwork program had two leach kinetic tests conducted, one with and the other without gravity recovery prior to leaching. The results of this testing showed that gravity extraction is important to the overall performance of any recovery scheme.

13.1.2.6 Leaching

Comparison of the leach test results from the 2012 feasibility study testwork with those results from earlier studies indicated some differences in recoveries and reagent consumptions. The differences were attributed to most historical leach recovery work being performed using carbon bottle roll tests, while the 2012 feasibility study testwork was based on standard bottle roll tests with regular solution assays in order to generate more detailed leach recovery curves. In addition, most historical carbon bottle roll testwork was only tested to 24 hours of recovery time, 2012 feasibility study testwork was tested to 30 hours and differences could be expected in final residue grades.

Historical metallurgical testwork sample descriptions were reviewed carefully and ore types and vein density classifications were updated based on drill core interpretations and reviews by the Surgold geology team. Repeat test results were studied and test selections were updated to remove duplicate tests and those tests that were felt to not properly represent the ore body or process conditions. This effort tended to improve the head grade / residue grade relationships for total recovery and for gravity corrected recovery calculations.

The data were then sorted by grind size and gravity testing to further differentiate the data set for each ore type. Feed grade versus residue curves were plotted for each ore domain and equations were developed to predict the residue gold content for a given leach feed grade. These equations were then used to develop average recovery curves for each ore type.

A study was performed to evaluate the economics of extending the leach retention time from 24 to 30 hours for both saprolite and fresh rock. In the laboratory, 30-hour leach tests were performed to evaluate the effect of extended leaching times on final residue grades. The typical 30-hour leach residue versus time curves for fresh rock and saprolite at 75 µm grind size show that leaching continues after 24 hours and that lower residue grades are possible with extended leach times.

From these curves, equations were developed for each rock type to be used to evaluate the economic benefit of leaching for the additional six hours. From these equations, incremental residue reductions for fresh rock ranged from 0.015 to 0.035 g/t Au with a weighted average of 0.025 g/t Au. Incremental residue reductions for saprolite ranged from 0.012 to 0.042 g/t Au with a weighted average of 0.021 g/t Au. The leaching rate was found to slow down after eight to 10 hours and then remain fairly constant through 24 and even 30 hours of residence time.

13.1.2.7 Filtration and Thickening

Five composites were generated based on resource distribution and typical blends as indicated by the mine plan and were sent to Pocock for settling and rheological properties testwork.

The settling test composites were ground to 75 µm and agitation leached with cyanide in carbon for 30 hours prior to the start of the settling tests. Testwork included flocculent screening as well as settling tests for thickener sizing recommendations.

Flocculent consumption was 20–25 g/t for saprolite and 12–15 for saprolite/fresh rock blends or fresh rock. The low vein density saprolite sample showed higher flocculent consumption of 45–55 g/t. The likelihood of feeding 100% low density saprolite for any length of time is low due to the mixed distribution of vein material throughout the deposit. This material exhibited difficult rheology issues as well and to minimize its impact on thickening, pumping and leach density, it should be blended with other ore types.

Pocock conducted rheology testing on the same five composites submitted for thickening and filtration testwork. A target viscosity of 10 Pascals was used for determining maximum solids density for both leaching and carbon adsorption. The saprolite composites were limited to 48% solids while the fresh rock and saprolite/fresh rock blend reached solids densities of 62% and 54% respectively at the target viscosity. The 100% low vein density saprolite reached 13 Pascals at 38.4% solids so it was projected that 35% solids would be required to reach a viscosity of 10 Pascals with this material.

13.1.2.8 Cyanide Destruction

SO_2/Air cyanide destruction testing was performed by Elbow Creek, on four of the five rheology/thickening sample composites, excluding M2-MB-SAP-S/L low vein density saprolite. In preparation for the testwork, Elbow Creek was provided with circuit feed data in the form of a model of the tailings wash thickener predicting the weakly acid dissociable cyanide (CN_{wad})

concentration in the diluted thickener overflow. This model predicted CN_{wad} feed concentrations of 39 mg/L for fresh rock and 55 mg/L of saprolite based on 100 mg/l feeding the tailings wash thickener.

Target cyanide residual values at less than 5 ppm and less than1 ppm were achieved in the test program without excessive retention time or reagents. Oxygen consumption is proportional to the concentration of WAD cyanide in the slurry being treated. Theoretical oxygen consumption is 1 mole O_2 per mole of cyanide (CN) oxidized, or about 1.23 g O_2 per gram of cyanide (CN) oxidized.

13.1.3 Merian I Testwork

In 2017, gravity and leach recovery testwork were performed by SGS Canada on 15 saprolite and three fresh rock composites from Merian I.

Samples were selected from a range of locations within the deposit and reflected the types of mineralization encountered.

The test program was conducted using comparable conditions to the testwork assessed on the Merian II deposit during the Feasibility Study and indicated saprolite recoveries between 94–98%. One sample returned a lower recovery of 86.9% and analysis of this test indicates that poor initial conditions inhibited the results and that it is not reflective of the wider mineralization response.

Due to mineralogical similarities to the Merian II saprolite, comminution parameters from this deposit have currently been adopted for Merian I in future mill throughput assessments.

13.2 Recovery Estimates

With benchmarking from similar projects, the final gold recovery model for each ore type was adjusted by adding 0.01 g/t Au to the residue value to account for fine carbon losses. Solution losses of 0.01 mg/L are typical for most carbon adsorption circuits, so solution losses were accounted for by adding 0.015 g/t Au for saprolite ore based on 40% solids and 0.012 g/t Au for fresh rock ore based on 45% solids. These minor losses were added, as constant terms, to the head grade–residue grade leach equations to form the gold recovery models used to calculate gold recovery curves for each ore type with varying head grades. These gold recovery models are the standard recovery curves with no adjustment to allow for gravity recovery scale up issues from laboratory to plant operation. As such they are considered to be the upper limit of recoveries to be achieved in the plant.

In order to estimate gold recoveries that more closely reflect expected plant conditions, the average laboratory gravity recovery by rock type was reduced by 50%. If the resultant gravity recovery still did not fall in the expected range, the number was adjusted further to be within this range, otherwise 50% of the laboratory gravity recovery was used. Maraba saprolite gravity recovery was raised from 18% to 20% and Merian II fresh rock was raised from 17% to 20% to fall within the range expected.

The gold quantity removed by gravity recovery was transferred to leach feed for an increased head grade and an increased residue value is calculated from the standard leach curves to produce a reduced final recovery, modified for scale-up. In general, these adjustments produced lower overall gold recovery values as the gold removed from gravity recovery, which normally returns near total recoveries, was transferred to leaching which produces recoveries in the 88% to 94% range. As such, “adjusted” gold recovery models based on these scale-up assumptions are considered as the lower estimate of recoveries to be achieved in the plant. The mill schedule gold production estimate used the average of the “standard” and “adjusted” gold recovery models for each ore type.

Observations in leach testing of saprolite ore showed that extraction of gold was reduced if the sample was not subjected to minimal grinding even though the particle size distribution was already satisfactory for optimum leaching. This indicated that just slurrying the saprolite would not suffice and that some scrubbing action is necessary to remove surface oxidation and achieve optimal gold extractions. This may be caused by a layer of oxidization that interferes with leaching. Since all material is planned to pass through the SAG mill prior to cyclone separation and leaching, this phenomenon is not considered to be an issue during operations.

Limited sample data were available for Merian II saprolite below 10% vein density; consequently, all saprolite data except saprolite with breccia were combined to obtain the equation for Merian II saprolite. The head grade-residue grade equation with added constant terms for the minor losses discussed earlier was used to generate the gold recovery models for quartz breccia saprolite and all other Merian II saprolites. An overall combined model was not used as it would overemphasize the quartz breccia results due to this classification being over-represented in the testwork. All saprolite with less than 50% breccia was treated as not breccia (<>QB) while intervals with more than 50% breccia were classified as breccia (QB). The “adjusted” model was based on the gravity recoveries of 20.0% and 28.1% for non <>QB and QB saprolite respectively. These models were also adjusted to take into account 30 hours of leach residence time, since most of the underlying metallurgical tails residues were at 24 hours of residence time.

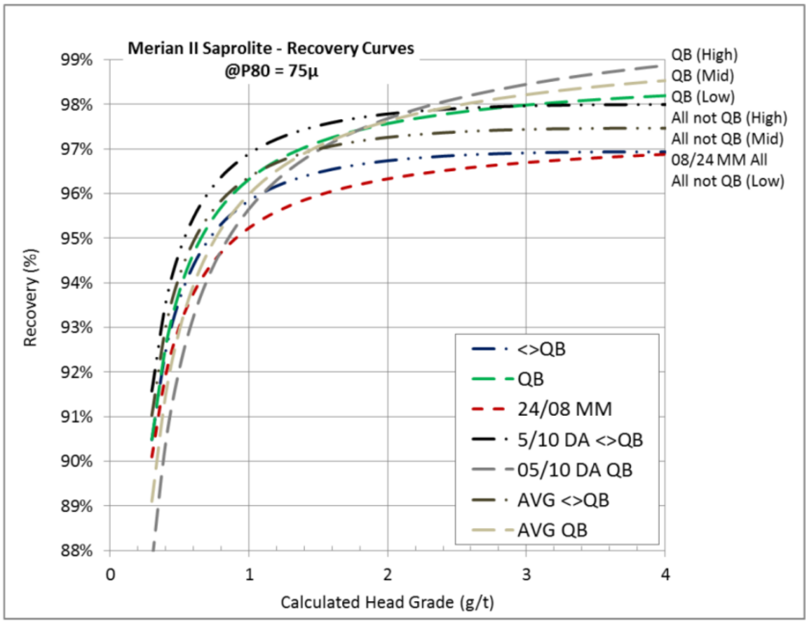
Because saprolite and fresh rock with different vein densities responded differently in gravity and leaching testwork, the Maraba material was differentiated by vein density for recovery estimates. After analysis, two classes were selected, a first one regrouping all saprolite ore with less than 25% vein density (<25 VD) and a second one with saprolite ore with more than 25% vein density (>25 VD). A similar re-grouping was performed for fresh rock. The trend line equations for each class, with constant terms added for the minor losses, were used to calculate recoveries for given head grades. Saprolite old recovery models were then adjusted for gravity scale-up by reducing the gravity recoveries to 20% for both classes. Fresh rock recovery models were modified for gravity scale-up by reducing the gravity recoveries to 21.7% for both classes. The models were also adjusted to take into account 30 hours of leach residence time, where most of the underlying metallurgical tails residues were at 24 hours of residence time.

Figure 13-5 to Figure 13-9 show the final recovery curves developed.

Minimal tests were run on saprock. Based on experience at similar operations, it was decided that saprock recovery models would be estimated using the average of saprolite and fresh rock recovery models for each deposit.

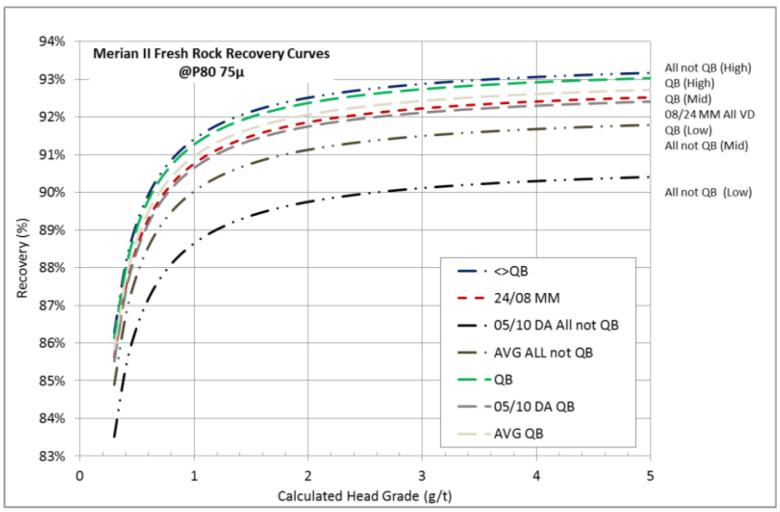
Table 13-3 summarizes the average LOM recoveries by deposit and oxidation domain.

Figure 13-5: Merian II Saprolite Recovery Curves



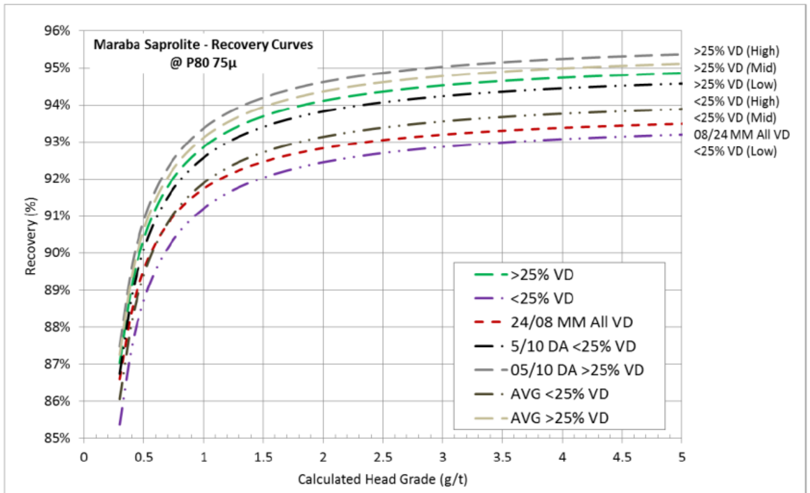
Note: Figure prepared by Surgold, 2012

Figure 13-6: Merian II Fresh Rock Recovery Curves



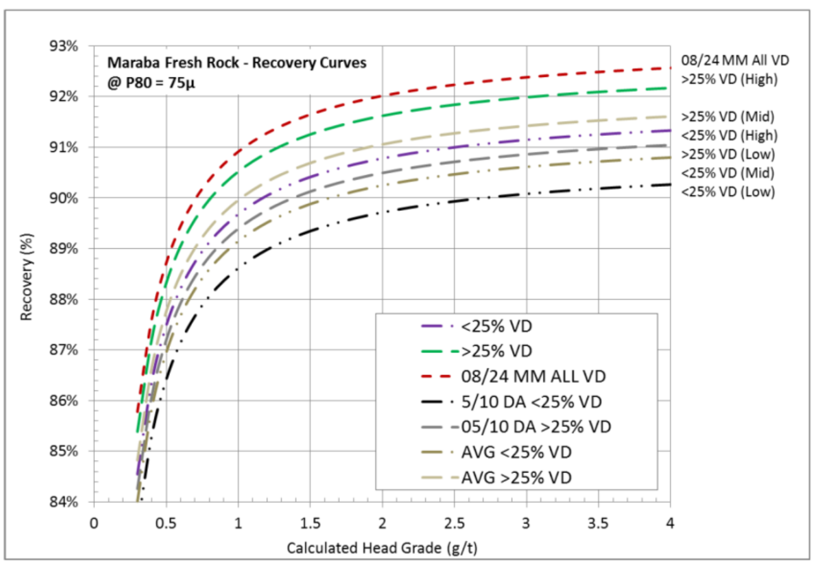
Note: Figure prepared by Surgold, 2012

Figure 13-7: Maraba Saprolite Recovery Curves



Note: Figure prepared by Surgold, 2012

Figure 13-8: Maraba Fresh Rock Recovery Curves



Note: Figure prepared by Surgold, 2012

Figure 13-9: Merian I – Saprolite Recovery Curve

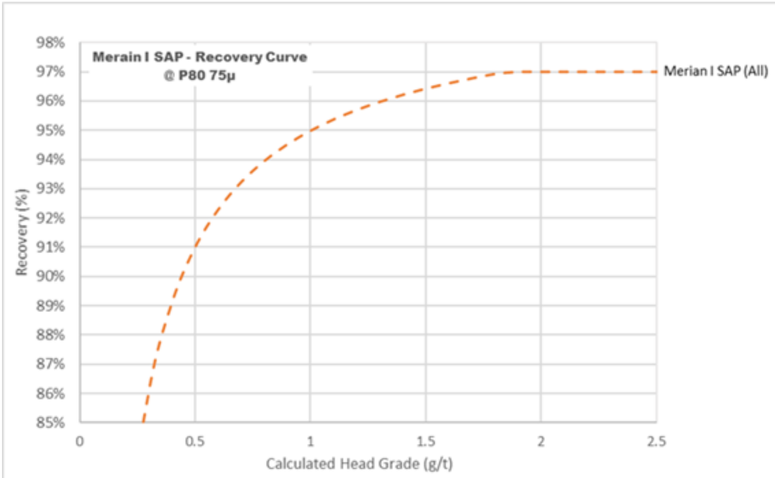


Table 13-3: LOMP Forecast Metallurgical Recoveries

Merian II		Maraba		Merian I	
SAP (recovery %)	Trans + Rock (recovery %)	SAP (recovery %)	Trans + Rock (recovery %)	SAP (recovery %)	Trans + Rock (recovery %)
95.8	91.6	91.6	92.3	93.6	91.2

13.3 Metallurgical Variability

Samples selected for metallurgical testing during feasibility and development studies were representative of the various types and styles of mineralization within the different deposits. Samples were selected from a range of locations within the deposit zones. Sufficient samples were taken so that tests were performed on sufficient sample mass.

Recent samples tested at Merian I were selected from a range of locations within the deposit and reflected the types of mineralization encountered.

13.4 Deleterious Elements

There are no elements identified in sufficient concentrations that are expected to adversely affect recoveries within the current LOMP.

13.5 QP Comments on "Item 13: Mineral Processing and Metallurgical Testwork"

In the opinion of the QP, the metallurgical test work and reconciliation and production data support the declaration of Mineral Resources and Mineral Reserves:

- The metallurgical test work completed on the Project has been appropriate for optimizing processing conditions and routes for proper process operation;
- Tests were performed on samples that are considered to be representative of deposits and mineralogy;
- Recovery factors estimated are based on appropriate metallurgical testwork and are appropriate to the mineralization types and the selected process route;
- The plant will produce variations in recovery due to the day-to-day changes in ore type or combinations of ore type being processed. These variations are expected to trend to the forecast recovery value for monthly or longer reporting periods;
- Low density saprolite exhibited difficult rheology issues and had a high flocculant consumption; this material will need to be blended into the plant to minimize its impact on thickening, pumping and leach density;
- There are no elements identified in sufficient concentrations that are expected to adversely affect recoveries in the LOMP.

14.0 MINERAL RESOURCE ESTIMATES

14.1 Introduction

Mineral Resources have been estimated for the Merian II, Maraba and Merian I zones. Database closeout dates are as follows:

- Merian II: 20 July 2018;
- Maraba (including Kupari and Maraba South): 12 March 2018;
- Merian I: 20 July 2018.

14.2 Merian II

14.2.1 Geological Models

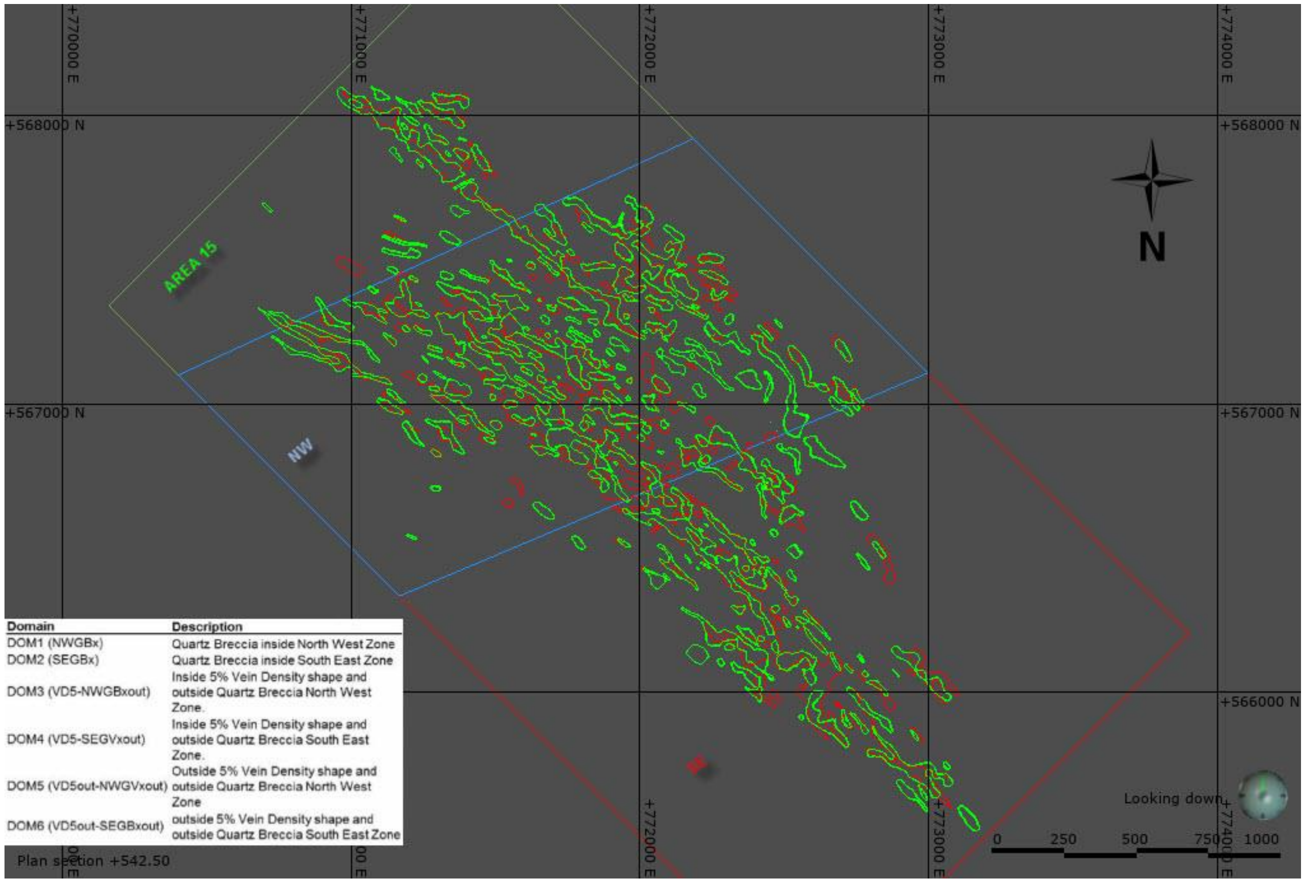
The geological model is based on 1,832 drill holes (327,208.101 m) and 261,473 assays. Block models were created using Vulcan™ software. The Merian I and Merian II deposit models consisted of 10 x 10 x 5 m blocks that were reblocked to 10 x 10 x 10 m to approximate a 10 m bench height. The 10 x 10 x 10 m model was re-split to 10 x 10 x 5 m blocks (where two 5 m blocks contained inside a 10 m block have the same grade) to better represent the volumes inside the breccia and grade shells.

Geological models include gold grade, quartz breccia, vein density, regolith, ore type (geometallurgy), density and confidence category models. All geological models except confidence category models were constructed as wireframe models in Leapfrog™ and the wireframes were transferred to Vulcan™ for estimation.

A Leapfrog™ gold model was constructed using a 0.15 g/t Au cut-off. That wireframe also used geological evidence from vein density and structural geological mapping to control the shape of the gold model. Once the wireframe model was completed, it was transferred to Vulcan™ where blocks were tagged using the wireframes.

Quartz vein percent and quartz breccias have long been recognized as primary controls on the geometry and grade of gold mineralization. Sullivan (2012) reviewed composite grades and vein percentages and identified 5% vein density as appropriate for defining separate vein density estimation domains (Figure 14-1). Models were constructed using the attributes collected from drill core logging including stratigraphy, faults and folds, oxidation states (saprolite, transition or saprock and fresh rock), >5% quartz vein density and quartz breccia.

Figure 14-1: Merian II Gold Estimation Domains



Note: Figure prepared by Newmont, 2018. Green outlines are vein density shapes, red outlines are gold grade shapes.

Drill hole data were coded and a 5% quartz vein model wireframe was generated in Leapfrog™. The model was then sent to Vulcan™ where blocks within the wireframe were tagged with the model information. Vein density was then estimated within and outside the 5% vein density model using inverse distance weighting to the third power (ID3) and inverse distance weighting to the fifth power (ID5) estimation procedures by domains. The domains were defined based on quartz breccia and vein density shape >5%. The estimation domains defined are summarized in Table 14-1.

Metallurgical recovery is dependent on the type of material available for processing. Based on the modeled regolith, quartz breccia and vein density model, different metallurgical types have been defined for Merian II and their corresponding codes assigned to the blocks are given in Table 14-2.

14.2.2 Exploratory Data Analysis

A series of histograms and probability plots were generated using 5 m gold composites to characterize each domain. Only composites longer than 2.5 m that had gold grades, were used in exploratory data analysis (EDA). Composites with missing gold values were not used. The overall gold grade distribution at Merian II has a mean of 0.324 g/t Au with a minimum of 0.001 g/t Au, maximum of 175.5 g/t Au, variance of 1.593 and coefficient of variation (CV) of 3.90. Boxplots were created to facilitate comparisons between domains.

Contact profiles or plots of average grades at increasing distances from a boundary were created to investigate changes in grade across geological boundaries. These profiles were used in estimation to provide hard, firm, or soft (SFH) contacts between domains. A mix of hard and soft boundaries were used.

14.2.3 Density Assignment

Within saprolite, density at Merian II is based on a formula derived from the raw density data which indicates that the density of saprolite increases from about 1.4 at the surface to 2.4 at the base. Density was adjusted for vein density using equations (Table 14-3). Density for saprock and fresh rock was assigned constant values based on the mean of the raw data for those regolith types.

14.2.4 Grade Capping/Outlier Restrictions

The decision to cap grades during estimation was based on the interpretation of cumulative frequency plots. The capping values were checked using indicator correlation and Parrish methods. Generally, the cap grades defined by the use of the cumulative frequency plots were higher than suggested by indicator correlation and Parrish. Visual inspection of the grades affected by the suggested indicator correlation and Parrish capping showed that the composites were mostly clustered, indicating some high-grade continuity within the domain and that the gold distribution should not be capped at that cut-off grade. Caps imposed at Merian II are summarized in Table 14-4.

Table 14-1: Merian II Estimation Domain Descriptions

Domain	Code	Description	Comments
Dom1	NWGBx	Quartz breccia inside northwest zone and inside the gold shape	Higher Au grades; relatively higher CV due to outlier values
Dom2	SEGBx	Quartz breccia inside southeast zone and inside the gold shape	Higher Au grades
Dom3	NWGBxout	Outside quartz breccia, inside northwest zone and inside the gold shape	Medium to lower Au grades
Dom4	SEGBxout	Outside quartz breccia, inside southeast zone and inside the gold shape	Medium to lower Au grades
Dom5	Area 15	Area 15 zone inside the gold shape	Medium to lower Au grades; relatively higher CV due to outlier values
Dom6		Outside the gold shape	Outside gold shape; has a higher CV due to outlier values

Table 14-2: Merian II Metallurgical Model Codes

Code	Material	Metallurgical Type Description
211	Saprolite	Merian II saprolite 0–10% vein density
212	Saprolite	Merian II saprolite >10% vein density
214	Saprolite	Merian II saprolite quartz breccia
225	Transition	Saprock
236	Fresh rock	Merian II fresh rock 0–10% vein density
237	Fresh rock	Merian II fresh rock >10% vein density
239	Fresh rock	Merian II fresh rock quartz breccia

Table 14-3: Merian II Density

	Saprolite	Transition	Fresh Rock
Density (no vein)	$Y = 0.7245x^3 - 1.6397x^2 + 1.3799x + 1.4133$	2.31	2.75
Vein adjustment within 10% vein	Density vein = 2.65*0.15 + Y * 0.85	None	None
Breccia	2.1	None	None
Saprolite pocket	1.84	None	None

Note: x = distance from surface / (distance from surface+ distance from saprolite bottom). "Saprolite pocket "means samples located in complex zones where distance to saprolite returns positive value (instead of negative). Y = density value (no vein).

Table 14-4: Merian II Capping Results by Domain

Domain	Cap from Cumulative Frequency Plot (g/t Au)	Cap from Parrish (g/t Au)	Cap Used (g/t Au)
Dom1	10	10	20
Dom2	30	none	20
Dom3	12	5	15
Dom4	none	none	none
Dom5	15	9	15
Dom6	2	0.24	2

Outside Quartz Breccia South East Zone (Dom4) domain was not capped in the estimation. Capping reduced the overall mean grade of the estimates by 1% in the Outside Quartz Breccia North West Zone (Dom3) and Quartz Breccia inside South East (Dom2) domains. Quartz Breccia inside North West Zone (Dom1) and Area 15 (Dom5) domains contain higher outliers and higher coefficients of variation. Capping of these outliers caused differences of about 4% between the capped and uncapped models, which are considered by the QP to be reasonable.

14.2.5 Composites

Down-hole composites were generated over a nominal composite length of 5 m.

14.2.6 Variography

Three-dimensional gold grade correlograms were computed by domain with commercially available Sage 2001™ software. Correlograms were calculated every 30º in azimuth, using a tolerance angle of 30º and dips varying every 30º, up to the vertical direction (90º). Lags were set at 20 m intervals by visually looking at the average sample spacing.

Before computing any 3D correlograms, a downhole correlogram was first computed to determine the nugget effect. The nugget effect (C_0) obtained from the downhole correlogram model was used to fit the 3D correlograms. Vulcan™ variogram rotation conventions (ZXY, LRL) were used.

Correlograms for domains were calculated from the data for only that domain in all deposits. The Quartz Breccia inside South East Zone (Dom2), Quartz Breccia inside North West Zone (Dom1) and Area 15 (Dom5) domains do not have sufficient well-spaced data to generate robust variograms; thus, Dom4 variography was used for Dom2 and Dom3 variography was used for Dom1 and Dom5 as they have similar orientations.

14.2.7 Estimation/Interpolation Methods

Estimation for gold used either inverse distance weighting to the second power (ID2) or ID3 interpolation, performed by estimation domain. The choice of ID2 or ID3 depended on the number of composites, the data distribution, the variogram quality and the model validation result checks for global and local bias. A nearest-neighbor (NN) model was also produced and was used for validation purposes.

The estimation method, search parameters and the minimum and maximum number of composites used to estimate a block for each domain is given in Table 14-5.

Two searches were defined according to the second structure of the fitted variogram with a maximum range of 60 m for the first pass and a maximum range of 300 m for the second pass. About 1.44% of the blocks (Measured plus Indicated confidence categories) were estimated in the second pass of a total 267,015 blocks. To quantify the quality of the estimates, the number of samples used to estimate a block was tabulated. About 26.15% of the blocks were estimated using seven to 12 samples, 69.92% using three to six samples and 3.93% of the blocks with two samples. This result reflects confidence in the estimation.

Variogram data were not used in the inverse distance estimates. Orientations and anisotropy of the search ellipse were based on the variogram modeling results, adjusted by the geologist based on the principal direction of mineralization.

Nearest neighbor estimations were performed using 5 m composites (capped). Vulcan™ was used to run anisotropic NN models. The anisotropic NN models used the same domains and search ranges as applied to the ID blocks and were used for model validation.

Table 14-5: Merian II Estimation Parameters

Domain	Orientation(º)			First Pass (m)			Second Pass (m)			No. Samples Used		No. Samples per Drill Hole	Interpolation Method
	Bearing	Plunge	Dip	Major	Semi	Minor	Major	Semi	Minor	Min	Max		
Dom1	-65	8	-53	64	44	20	250	172	78	4	12	3	ID2
Dom2	-53	5	-51	52	36	18	300	208	104	4	12	3	ID2
Dom3	-65	8	-53	64	44	20	250	172	78	3	6	2	ID3
Dom4	-53	5	-51	52	36	18	300	208	104	3	6	2	ID3
Dom5	-55	7	-51	33	27	13	250	203	100	2	10	2	ID3
Dom6	-55	7	-51	33	27	13	200	163	80	4	10	2	ID3

14.2.8 Block Model Validation

Visual inspection of plan and sections confirmed that the block model honors the drill hole composites used in the estimation. The block model shows most of the higher gold grades are distributed in the northwest part of the deposit which was anticipated. Visually, the model reconciles well with the exploration composites. However, the model has higher uncertainty at the margins and at depth in the deposit where estimates are based on fewer composites.

Swath plots were plotted in east–west, north–south and vertical directions for each domain for Measured and Indicated blocks. Swath increments in X, Y and Z directions are 30 m, 30 m and 15 m respectively. Swath plots for gold show good correlation between inverse distance and NN estimates for all domains indicating that local bias is not an issue. The differences between ID2/ID3 and NN estimated means for all domains are within ±5% tolerance and are considered reasonable.

Contact plots generated from ID blocks were plotted on top of the contact plots created from the 5 m composites to evaluate how well the modeling strategy reproduced the SFH contact matrix. The contacts derived from estimated blocks at Merian II reasonably match the contact profile obtained from the composites. There are some differences that are best attributed to the cap grades used and smoothing effect of ID estimation.

Hermitian correction (Herco) validation was performed for Measured and Indicated blocks only. Block dispersion variances were calculated for all domains. A unit sill correlogram model was calculated using SAGE2001™ for each domain. The ID2/ID3 estimates provide slightly lower tonnes at slightly higher grades than the Herco prediction for the intended SMU.

These differences are considered to be acceptable and account for selectivity and other potential ore handling issues that commonly occur during the mining process. For all domains at a cut-off of between 0.2–1.0 g/t Au, the differences are within 5% for proportion/grade and metal and are considered acceptable.

At Merian II, the gold model (ID2 and ID3) was calibrated against information from production data (blastholes).

14.2.9 Classification of Mineral Resources

The Merian II Mineral Resource model was classified as Measured, Indicated and Inferred Mineral Resources according to the levels of confidence in the estimate and considering the continuity of mineralization as demonstrated by the number of drill holes used in the estimation and geological confidence. The criteria for this classification were based on the number of samples, number of drill holes used in the estimation, distance between composites and blocks being estimated, and the geological confidence zone. The geological confidence zone was created using a combination of geological continuity and probability mapping. It correlates with the relatively continuous quartz breccia that runs the length of the Merian II open pit. The gold data used to define these average distances were sourced only inside the gold shape.

The classification criteria are included in Table 14-6. Example plans showing areas referred to when classifying Measured are provided in Figure 14-2 and Figure 14-3. Two "priority areas" are shown in Figure 14-3, and refer to two portions of the deposit that are outside the geological confidence zone, but where the drill spacing is sufficient to support the Measured classification.

The final classifications were smoothed to remove isolated blocks of one confidence category that were surrounded by blocks of a different confidence level.

14.3 Maraba

14.3.1 Geological Models

The block models for Maraba consist of 10 x 10 x 5 m blocks.

A gold shape at 0.15 g/t Au was constructed. Domains include Dom1 inside the gold shape and Dom2 which is all the material outside the gold shape.

A vein density model was constructed and used to constrain the gold grade shell. Quartz vein percent has long been recognized to be a primary control on the geometry and grade of gold mineralization. A model at >10% vein density was constructed in Leapfrog™ and exported to Vulcan™.

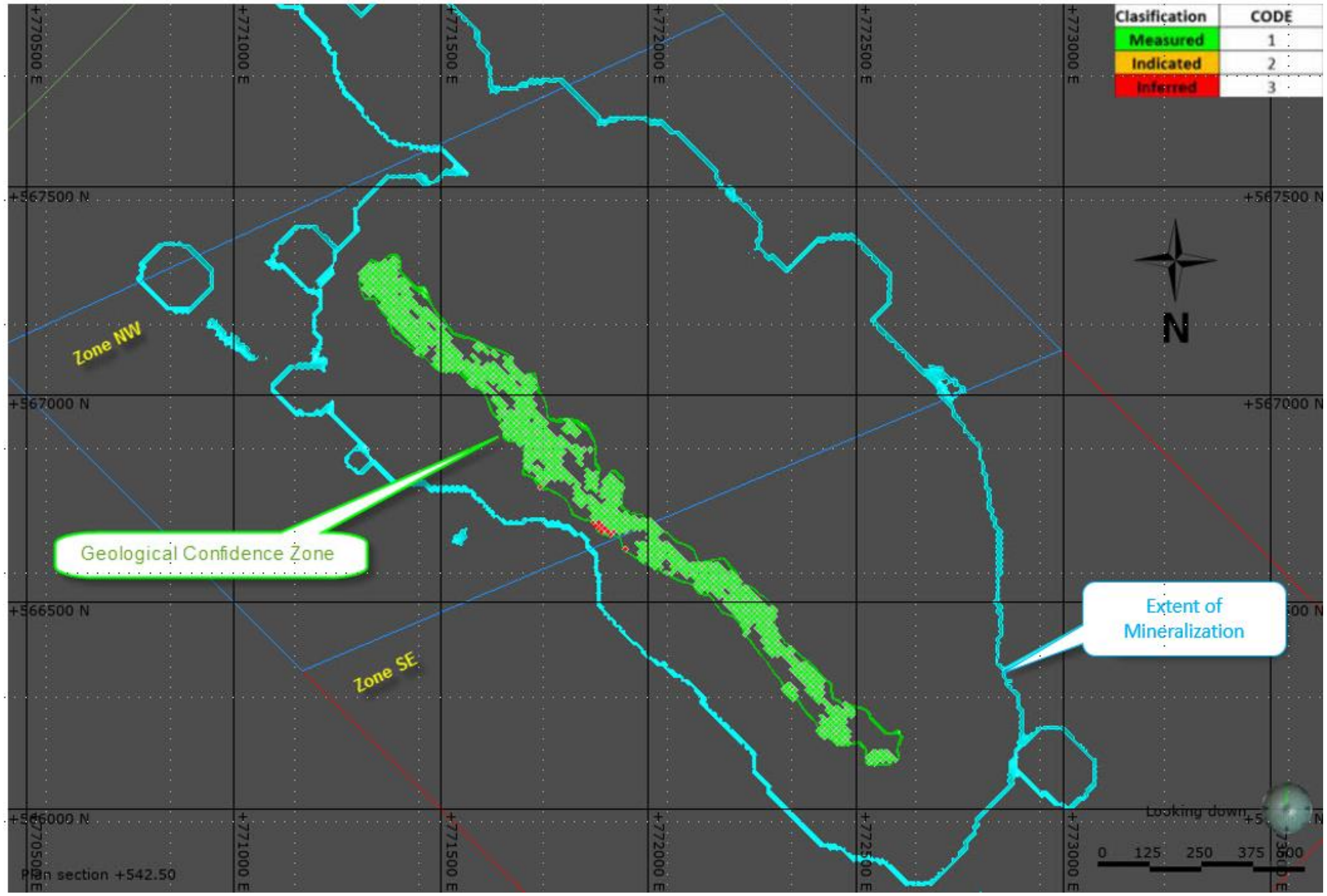
A regolith model was constructed in Leapfrog™ using the logged regolith codes. Those models (saprolite, saprock, fresh rock and fill) were transferred to Vulcan™ where the 10 x 10 x 5 m blocks were tagged with the appropriate regolith type from the wireframe models.

A metallurgical model was constructed based on the regolith and vein density models (Table 14-7).

Table 14-6: Confidence Classification, Merian II

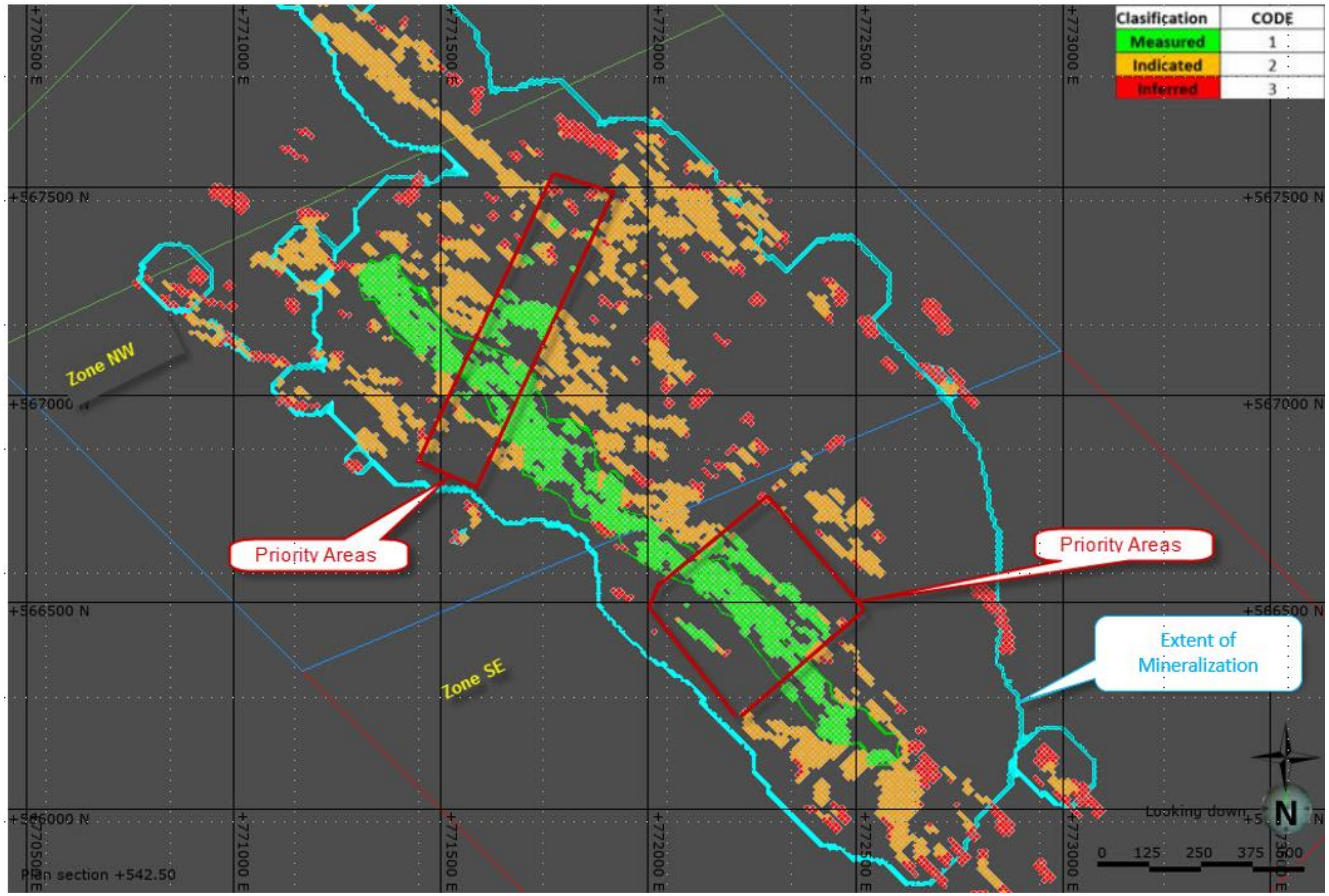
Category	Criteria
Measured	Inside the gold shape, blocks were classified Measured with different criteria inside and outside the high-geological confidence zone (High_Conf_2018.00t) (see Figure 14-2; this comprises the 89 shoot for the most part). Inside the geological confidence zone, a block was considered Measured when eight drill holes and eight composites (one composite per drill hole) were found inside the isotropic search of 800 m x 800 m x 800 m with an average distance of <50 m while estimating with ordinary kriging. Outside the geological confidence zone, a block was considered to be Measured when three drill holes and three composites (one composite per drill hole) were found within an isotropic 800 m x 800 m x 800 m search with an average distance between composites of <20 m. Measured Mineral Resources are restricted to the area inside the two priority areas (refer to Figure 14-3) determined to have sufficient drilling to support Measured Mineral Resources.
Indicated	Inside the gold shape and outside the Measured Mineral resources, blocks were classified as Indicated Mineral Resources when three drill holes and three composites (one composite per drill hole) were found inside the isotropic 800 m x 800 m x 800 m search with an average distance of <30 m while estimating with ordinary kriging.
Inferred	Within the gold shape and outside the Measured and Indicated Mineral Resource zones, blocks were classified Inferred Mineral Resources when two drill holes and two composites (one composite per drill hole) were found inside the isotropic search of 800 m x 800 m x 800 m with an average distance of <70 m while estimating with ordinary kriging.

Figure 14-2: Merian II Geological Confidence Zone, Mid Bench 542.5



Note: Figure prepared by Newmont, 2018.

Figure 14-3: Merian II Priority Areas, Mid Bench 542.5



Note: Figure prepared by Newmont, 2018.

Table 14-7: Maraba Metallurgical Model Codes

Code	Material	Metallurgical Type Description
311	Saprolite	Saprolite vein density 0–10%
312	Saprolite	Saprolite vein density 10–25%
312	Saprolite	Saprolite vein density >25%
325	Transition	Saprock
336	Fresh rock	Fresh rock vein density 0–10%
337	Fresh rock	Fresh rock vein density 10–25%
338	Fresh rock	Fresh rock vein density >25%

14.3.2 Exploratory Data Analysis

A series of histograms and probability plots were generated using 5 m gold composites to characterize each domain. Only composites longer than 2.5 m that had gold grades, were used in EDA. Composites with missing gold values were not used. The plots indicated relatively consistent lognormal gold grade distributions. The gold grade distribution inside the gold shape at Maraba has a mean of 0.137 g/t Au with a minimum of 0.003 g/t Au, maximum of 7.25 g/t Au, variance of 0.166 and CV of 2.98.

Boxplots were created to facilitate comparisons between domains.

Contact profiles or plots of average grades at increasing distances from a boundary were created to investigate changes in grade across geological boundaries. All boundaries were treated as hard.

14.3.3 Density Assignment

Density within saprolite was assigned based on an equation derived from raw density data. The estimated saprolite density was adjusted for the vein density by the equation in Table 14-8. Transition and fresh rock densities were assigned based on the mean of the raw data for those regolith types.

14.3.4 Grade Capping/Outlier Restrictions

The decision to cap grades during estimation was based on the interpretation of cumulative frequency plots and indicator correlation. The cumulative frequency plot capping values were validated against the Parrish method. Dom1 was not capped. Dom2 was capped at 0.2 g/t Au but that cap had no real impact on the Mineral Resource totals at Maraba.

Table 14-8: Maraba Density Model Criteria

	Saprolite	Transition	Fresh Rock
Density (no vein)	$Y = 1.3154x^3 - 2.3564x^2 + 1.4879x + 1.4762$	2.29	2.74
Vein adjustment	Density vein = (2.65 * 0.17) + (Y * 0.83)	none	none

x = distance from surface / (distance from surface+ distance from saprolite bottom). Y = density value (no vein).

14.3.5 Composites

Downhole composites were generated over a nominal composite length of 5 m.

14.3.6 Variography

The same methodology outlined in Section 14.2.6 was used at Maraba. Correlograms for domains were calculated from the data for only that domain.

14.3.7 Estimation/Interpolation Methods

Ordinary kriging (OK) was used for interpolation.

Composites used to estimate a domain were selected within the modeled domain shapes using hard contacts, as determined by the contact analysis results. The estimation method, search parameters and the minimum and maximum number of composites used to estimate a block for each domain is given in Table 14-9. Anisotropy searches were defined according to the first structure of the fitted variogram search with a maximum range of about 144 m.

A NN model using 5 m composites was produced and used for validation purposes. NN estimation used two passes, the first pass with a short search and high yield restrictions and a second pass used a lower capping value of 0.5 g/t Au, to ensure that no high-grade smearing occurred.

14.3.8 Block Model Validation

As with Merian II, data validation consisted of visual inspection, swath and contact plots and change of support analysis. No significant biases were noted with the estimation.

14.3.9 Classification of Mineral Resources

The Mineral Resources at Maraba were classified as Indicated and Inferred Mineral Resources using the approach summarized in Table 14-10.

Table 14-9: Maraba Estimation Parameters

Domain	Orientation (º)			First Pass (m)			Second Pass (m)			No. Samples Used		No. Samples per Drill Hole	Interpolation Method
	Bearing	Plunge	Dip	Major	Semi	Minor	Major	Semi	Minor	Min	Max		
Dom1	-30	-17	14	43	20	75	144	67	250	2	6	2	OK

Table 14-10: Confidence Classification, Maraba

Category	Criteria
Indicated	Inside gold shape; blocks were classified Indicated Mineral Resources when three drill holes and three composites (one composite per drill hole) were inside the isotropic search of 800 m x 800 m x 800 m with an average distance of <40 m
Inferred	Inside the gold shape; blocks were classified Inferred Mineral Resources when two drill holes and two composites (one composite per drill hole) were inside the isotropic search of 800 m x 800 m x 800 m with an average distance of <70 m

The final classifications were smoothed to remove isolated blocks of one confidence category that were surrounded by blocks of a different confidence level.

14.4 Merian I

14.4.1 Geological Models

The block models for Merian I consist of 10 x 10 x 5 m blocks.

A regolith model (saprolite, transition, fresh rock) consisting of three wireframes was generated in Leapfrog™. Those models were used to tag blocks in the block model.

The vein density model was estimated within the >3% vein density wireframes. ID2 was used to estimate vein density into blocks.

The metallurgical model zones are summarized in Table 14-11.

14.4.2 Exploratory Data Analysis

A series of histograms and probability plots were generated using 5 m gold composites to characterize each domain. Only composites longer than 2.5 m that had gold grades, were used in EDA. Composites with missing gold values were not used. The plots indicated relatively consistent lognormal gold grade distributions. Overall, the gold grade distribution at Merian I inside the gold shape has a mean of 0.57 g/t Au, with a minimum of 0.005 g/t Au, maximum of 366 g/t Au, variance of 29.744 and CV of 9.56.

Table 14-11: Merian I Metallurgical Model Codes

Code	Material	Metallurgical Type Description
111	Saprolite	Merian 1 saprolite 0–10% VD
112	Saprolite	Merian 1 saprolite >10% VD
125	Saprock	Merian 1 transition
136	Rock	Merian 1 rock 0–10% VD
137	Rock	Merian 1 rock >10% VD
139	Rock	Merian 1 rock QB

Boxplots were created to facilitate comparisons between domains.

Contact profiles or plots of average grades at increasing distances from a boundary were created to investigate changes in grade across geological boundaries. All boundaries were considered to be hard.

14.4.3 Density Assignment

Density within saprolite was assigned based on an equation derived from raw density data. The estimated saprolite density was adjusted for the vein density by the equation in Table 14-12. Transition and fresh rock densities were assigned based on the mean of the raw data for those regolith types.

14.4.4 Grade Capping/Outlier Restrictions

Two domains are defined, one, Dom1, is within the grade shell, the second, Dom2, is outside the shape.

Dom1 was capped at 5 g/t Au based on interpretation of cumulative frequency plots. The cumulative frequency plot capping values were checked against indicator correlation and Parrish methods. Generally, the cap grades defined by the cumulative frequency plots were higher than suggested by indicator correlation and Parrish.

Visual inspection of the grades affected by the suggested indicator and Parrish capping methods showed that the composites were mostly clustered, indicating some high-grade continuity within the domain and that the gold distribution should not be capped at that cut-off grade. Approximately 2.75% of the metal was removed from Dom1. Outside the gold grade shell, capping reduced the mean grade by about 3%. These reductions are considered to be appropriate.

14.4.5 Composites

Downhole composites were generated over a nominal composite length of 5 m.

Table 14-12: Merian I Density Model Criteria

	Saprolite	Transition	Fresh Rock
Density (no vein)	$Y = 1.1510x^3 - 2.0983x^2 + 1.4800x + 1.4121$	2.28	2.67
Density adjustment	density = (2.65 * 0.13) + (Y * 0.87)	none	none

Note: x = distance from surface / (distance from surface+ distance from saprolite bottom). Y= density value (no vein).

14.4.6 Variography

The same methodology outlined in Section 14.2.6 was used at Merian I. Correlograms for domains were calculated from the data for only that domain.

14.4.7 Estimation/Interpolation Methods

ID2 was used for gold estimation. Composites used to estimate a domain were selected within the modeled domain shapes using hard contacts as determined by contact analysis results. The estimation method, search parameters and the minimum and maximum number of composites used to estimate a block for each domain is given in Table 14-13. Two searches were defined according to the second structure of the fitted variogram with a maximum range of 75 m for the first pass and a maximum range of 300 m for the second pass. Pass 1 estimated 70–80% of the blocks.

A NN model was produced and used for validation purposes.

14.4.8 Block Model Validation

Data validation consisted of visual inspection, swath and contact plots and change of support analysis. No significant biases were noted with the estimate.

14.4.9 Classification of Mineral Resources

The Mineral Resources at Merian I were classified as Measured, Indicated and Inferred Mineral Resources using the approach summarized in Table 14-14. The final classifications were smoothed to remove isolated blocks of one confidence category that were surrounded by blocks of a different confidence level.

Table 14-13: Merian I Estimation Parameters

Domain	Orientation (º)			First Pass (m)			Second Pass (m)			No. Samples Used		No. Samples per Drill Hole	Interpolation Method
	Bearing	Plunge	Dip	Major	Semi	Minor	Major	Semi	Minor	Min	Max		
Dom1	46	-40	-1	41	55	13	224	300	71	2	8	3	ID2
Dom2	46	-40	-1	112	150	35	—	—	—	2	8	3	ID2

14.5 Reasonable Prospects of Eventual Economic Extraction

Reasonable prospects of eventual economic extraction were addressed by applying a resource pit shell defined using a pit optimization tool (Maptek Vulcan™) to identify mineralization that could reasonably be economically extracted, using a cut-off value based on a net smelter return (NSR approach).

Mineral Resources use the same input criteria as Mineral Reserves with the exception of higher gold price and no discounting. Key input parameters used to define Lerchs–Grossmann (LG) pit shells at a US$1,400/oz gold price for design of potentially mineable increments are summarized in Table 14-15. Resource pits or pushbacks use a higher gold price for calculation of the cut-off grade. These are variable by deposit (Figure 14-4).

Mineral Resources are reported within conceptual Lerchs–Grossmann (LG) pit shells. Key input parameters are summarized in Table 14-15. Figure 14-4 shows the outlines of the resource pits in relation to the Mineral Reserve pits discussed in Section 15. A final consideration when estimating the Mineral Resources was the cut-off grade. Cut-off grades are variable by deposit and weathering state (Table 14-16).

14.6 Mineral Resource Statement

Mineral Resources are reported in Table 14-17, using the 2014 CIM Definition Standards, and have an effective date of 31 December 2018.

Mineral Resource estimates were prepared by Mr. Kazuhiro Kawahata, RM SME, and Mr. Syaiful Islam RM SME, who are Newmont employees. The QP responsible for the Mineral Resource estimates is Mr. Donald Doe, RM SME, Group Executive, Reserves, an employee of Newmont.

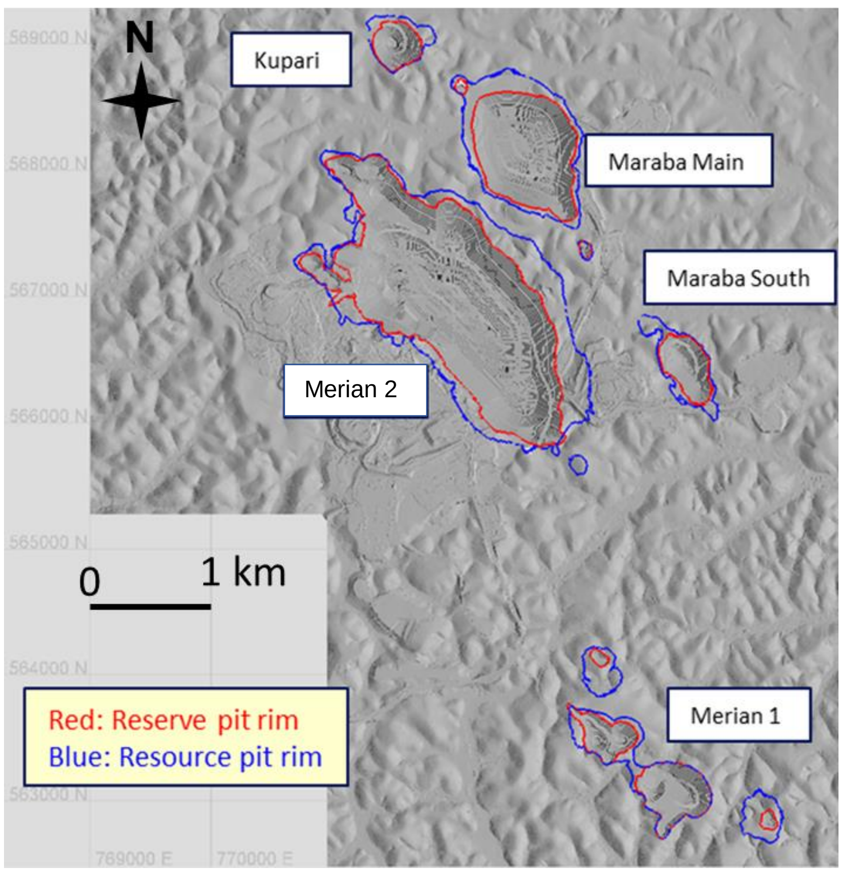
Mineral Resources are reported exclusive of Mineral Reserves and on a 100% basis. Newmont holds a 75% interest in the Merian Operations and Staatsolie holds the remaining 25% interest.

Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.

Table 14-14: Confidence Classification, Merian I

Category	Criteria
Measured	Inside the gold shape, blocks were classified as Measured when three drill holes and three composites (one composite per drill hole) were inside the isotropic search of 800 m x 800 m x 800 m with an average distance of <16 m while estimating using OK
Indicated	Inside the gold shape, blocks were classified as Indicated when three drill holes and three composites (one composite per drill hole) were inside the isotropic search of 800 m x 800 m x 800 m with an average distance of <27 m
Inferred	Within the gold shape and outside Indicated Mineral Resources, blocks were classified as Inferred three drill holes and three composites (one composite per drill hole) were inside the isotropic search of 800 m x 800 m x 800 m with an average distance of <70 m

Figure 14-4: Merian Mineral Conceptual Pit Shell Outlines



Note: Figure prepared by Newmont, 2018. Merian 2 = Merian II; Merian 1 = Merian I.

Table 14-15: Pit Shell Input Parameters

Parameters		Units	Values
Gold price		US$/oz	1,400
Oil price (WTI)		US$/bbl	65
Oil price (Brent)		US$/bbl	75
Site diesel price		US$/liter	0.63
Site heavy fuel oil price		US$/liter	0.49
Power cost		US$/kWh	0.10
Royalty rate		%	6.0
Royalty (6%)		US$/oz	84.00
Refinery and carbon handling		US$/oz	2.71
Discount rate		%	0
Mining cost		US$/t mined	2.51
Process cost		US$/t processed	9.65
G&A cost	saprolite	US$/t processed	4.20
	transition	US$/t processed	5.04
	fresh rock	US$/t processed	6.30
Metallurgical recovery Merian II	saprolite	%	95.2
	transition + fresh rock	%	91.6
Metallurgical recovery Maraba	saprolite	%	92.0
	transition + fresh rock	%	92.3
Metallurgical recovery Merian I	saprolite	%	93.3
	transition + fresh rock	%	91.0

Table 14-16: Cut-off Grades, Mineral Resource Estimation

	Unit	Merian II			Maraba			Merian I		
		SAP	Trans	Rock	SAP	Trans	Rock	SAP	Trans	Rock
Metallurgical recovery at cut-off grade	%	88.2	90.3	89.4	86.5	89.2	89.9	88.4	90.4	89.5
Process operating cost (without re-handle)	$/t	4.99	9.81	10.71	4.99	9.81	10.71	4.99	9.81	10.71
Re-handle costs	$/t	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
G&A cost	$/t	4.20	5.04	6.30	4.20	5.04	6.30	4.20	5.04	6.30
Mill & tails sustaining capital x CRF	$/t	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.35	0.65
Incremental expit	$/t	0	0	0	0.25	0.24	0.23	0.33	0.31	0.29
Total	***$/t***	***10.92***	***16.58***	***18.74***	***11.17***	***16.81***	***18.96***	***11.25***	***16.88***	***19.03***
Assumed mining dilution	%	6.2	12.9	10.9	3.8	7.4	5.3	5	12.9	10.9
Cutoff Grades	***g/t Au***	***0.31***	***0.49***	***0.55***	***0.32***	***0.48***	***0.53***	***0.32***	***0.50***	***0.56***

Note: SAP = saprolite, Trans = transitional material or saprock, Rock = fresh rock or primary material. CRF = capital recovery factor; G&A = general and administrative.

Table 14-17: Mineral Resource Statement

Deposit/ Stockpile	Measured Mineral Resource			Indicated Mineral Resource			Measured and Indicated Mineral Resource			Inferred Mineral Resource		
	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 t)	Grade (g/t Au)	Gold (x 1,000 oz Au)
Merian open pits	4,700	0.96	140	34,300	0.96	1,050	39,000	0.96	1,190	50,100	1.20	1,920
Totals	***4,700***	***0.96***	***140***	***34,300***	***0.96***	***1,050***	***39,000***	***0.96***	***1,190***	***50,100***	***1.20***	***1,920***

Notes to Accompany Mineral Resource Table:

1. Mineral Resources are reported with an effective date of 31 December 2018, using the 2014 CIM Definition Standards. The Qualified Person responsible for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.
2. Mineral Resources are reported on a 100% basis. Newmont holds a 75% interest in the Merian Operations and Staatsolie Maatschappij Suriname N.V. holds the remaining 25% interest.
3. Mineral Resources are reported exclusive of Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources that are amenable to open pit mining methods are constrained within a Lerchs–Grossmann pit shell. Parameters used include a gold price of US$1,400/oz, 6% royalty rate, refinery and carbon handling charges of US$2.71/oz Au, a mining cost of US$2.51/t mined, process cost of US$9.65/t processed, general and administrative cost of US$5.37/t processed; variable metallurgical recoveries based on mineralization type that range from 91.2–95.8%, pit slope bench face angles that range from 56–80º, and internal dilution assumptions that range from 3.8–12.9%.
5. Mineral Resources that are amenable to open pit mining methods are reported at variable cutoff grades to accommodate different metallurgical recoveries. These cut-off grades range from 0.31–0.56 g/t Au.
6. Tonnages are metric tonnes rounded to the nearest 100,000. Gold grade is rounded to the nearest 0.01 gold grams per tonne. Gold ounces are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained (cont.) gold ounces are reported as troy ounces, rounded to the nearest 10,000.
7. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content.

14.7 Factors That May Affect the Mineral Resource Estimate

Areas of uncertainty that may materially impact the Mineral Resource estimates include:

- Changes to long-term gold price assumptions;
- Changes in local interpretations of mineralization geometry and continuity of mineralized zones;
- Changes to geological and grade shape and geological and grade continuity assumptions;
- Changes to metallurgical recovery assumptions;
- Changes to the input assumptions used to derive the conceptual open pit used to constrain the estimate;
- Changes to the cut-off grades applied to the estimates;
- Variations in geotechnical, hydrogeological and mining assumptions;
- Forecast dilution;
- Changes to environmental, permitting and social license assumptions.

14.8 QP Comments on "Item 14: Mineral Resource Estimates"

The QP is of the opinion that Mineral Resources have been performed using industry-accepted practices and conform to the 2014 CIM Definition Standards. Mineral Resources are based on open pit mining assumptions.

There are no other known environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors that would materially affect the estimation of Mineral Resources that are not discussed in this Report.

15.0 MINERAL RESERVE ESTIMATES

15.1 Introduction

Mineral Reserves have been estimated for the Merian II, Maraba and Merian I areas, assuming open pit methods with conventional methods for drilling, blasting, loading with hydraulic shovels and haulage by large trucks. Stockpiles have been included in the estimate.

The Mineral Reserves are forward-looking information and actual results may vary. The risks regarding Mineral Reserves are summarized in Section 15.3 and in Section 25. The assumptions used in the Mineral Reserve estimates are summarized in the footnotes of the Mineral Reserve table and are discussed in the following sub-sections and in Section 16.

15.2 Mineral Reserves Statement

Mineral Reserves are reported on a 100% basis in Table 15-1 using the 2014 CIM Definition Standards and have an effective date of 31 December 2018. Newmont holds a 75% interest in the Merian Operations and Staatsolie Maatschappij Suriname N.V. holds the remaining 25% interest. Mineral Reserves are reported using variable cut-off grades, that vary by deposit and by material type.

Mineral Reserve estimates were prepared by Mr. Kazuhiro Kawahata, RM SME, and Mr. Syaiful Islam RM SME, who are Newmont employees. The QP responsible for the Mineral Reserves estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.

15.3 Factors that May Affect the Mineral Reserves

Areas of uncertainty that may materially impact the Mineral Reserve estimates include:

- Changes to long-term metal price assumptions;
- Changes to metallurgical recovery assumptions;
- Changes to the operating cut-off assumptions for mill feed or stockpile feed;
- Changes to the input assumptions used to derive the open pit outlines and the mine plan that is based on those open pit designs;
- Changes to include operating and capital assumptions used, including changes to input cost assumptions such as consumables, labor costs, royalty and taxation rates;
- Variations in geotechnical, mining, dilution, and processing recovery assumptions; including changes to pit phase designs as a result of changes to geotechnical, hydrogeological and engineering data used;

Table 15-1: Mineral Reserve Statement

Deposit/ Stockpile	Proven Reserve			Probable Reserve			Proven and Probable Reserve		
	Tonnage (x 1,000 tonnes)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 tonnes)	Grade (g/t Au)	Gold (x 1,000 oz Au)	Tonnage (x 1,000 tonnes)	Grade (g/t Au)	Gold (x 1,000 oz Au)
Merian open pits	41,500	1.61	2,150	76,700	1.09	2,680	118,200	1.27	4,830
Stockpiles	5,800	0.74	140	—	—	—	5,800	0.74	140
Totals	***47,300***	***1.50***	***2,290***	***76,700***	***1.09***	***2,680***	***124,000***	***1.25***	***4,970***

Notes to Accompany Mineral Reserves Table:

1. The Mineral Reserves have an effective date of 31 December 2018. The Qualified Person responsible for the estimate is Mr. Donald Doe, RM SME, Group Executive, Reserves, a Newmont employee.
2. Mineral Reserves are reported within optimized Lerchs–Grossmann pit shells. Input parameters include the following: gold price of US$1,200/oz; a 6% royalty rate; average life-of-mine (LOM) mining cost of US$2.51/t mined, average LOM processing cost of US$9.65/t processed, average LOM general and administrative (G&A) costs of US$5.37/t processed; bench face angles that range from 56–80º; average metallurgical recoveries that range from 91.2–95.8%; and incremental cut-off grades that range from 0.36–0.65 g/t Au. The average mining dilution was estimated at 10.0% for Merian II, 5.2% for Maraba and 3.6% for Merian I.
3. Mineral Reserves are presented on a 100% basis. Newmont holds a 75% interest in the Merian Operations and Staatsolie Maatschappij Suriname N.V. holds the remaining 25% interest.
4. Tonnages are metric tonnes rounded to the nearest 100,000. Gold grade is rounded to the nearest 0.01 gold grams per tonne. Gold ounces are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained (cont.) gold ounces are reported as troy ounces, rounded to the nearest 10,000.
5. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content.

- Changes to the cut-off grades used to constrain the estimates;
- Changes to the assumed permitting and regulatory environment under which the mine plan was developed;
- Ability to maintain mining permits and/or surface rights;
- Ability to maintain social and environmental license to operate.

15.4 Pit Optimization

The ultimate pit limit process uses various costs, metallurgical recovery data, sustained capital costs and product metal prices to create a dollar value block model. With the dollar model and geotechnical constraints, a LG algorithm is used to generate pit breakeven shells. In order to account for the cost of in-pit haul roads, pit wall slopes are adjusted from the geotechnical design criteria.

Maptek Vulcan™ software was used for the pit limit analysis and cross-validated with Geovia Whittle™.

For the Merian II pit limit analysis, discount factors are applied to the dollar value block model to account for the fact that a pit will be mined over a period of years and that the cost of waste stripping in the early years must bear the time value of money. A 9% discount rate was used to compute discount factors. Because the pit is discounted, the pit shell with revenue factor 1 was selected to guide the pit design.

For the Merian I, Kupari and Maraba South pit limit analysis, discount factors are not applied in generating pit limits. Because pit sizes are small enough that pits will be mined out in a given year, a revenue factor of 1 ($1,200/oz Au) was selected to guide the pit design.

For the Maraba pit limit analysis, discount factors are applied to the dollar value block model to account for the time value of money due to the multiple year mining. A 9% discount rate was used to compute discount factors. Since the pit is discounted, the pit shell with revenue factor 1 was selected to guide the pit design.

15.5 Optimization Inputs

All reserves are planned assuming costs and recoveries based on an un-escalated version of the 2019 Business Plan (BP19).

Pit slope design sectors are defined for the saprolite, saprock and fresh rock; and separate bench configurations are specified for each sector. Design parameters are the same for the Merian II, Maraba and Merian I pits.

Operating and capital costs were developed by Newmont, based on BP19, and factored as appropriate. These costs were used to establish costs for pit limit analysis and ore cut-offs.

Mining costs were unitized by pit and by material type to establish the base mining cost. Each pit has different distances from the pit exit to the crusher and to the WRSF. Each pit also has different incremental distances between ore and waste. The haul distances and material density define the base haul cost for each pit by material type. The incremental mine cost below 550L is the truck haul cost traveling through every 1 m vertical distance of the in-pit ramp that has a 10% slope.

Mining sustaining capital includes equipment purchase and major components. The capital recovery factor (CRF) is applied to ensure a minimum return on investment by considering time value of money based on a 9% discount rate.

The average LOM mining cost assumption is US$2.51/t mined, process costs are US$9.65/t processed and the average annual general and administrative (G&A) cost is US$57 M/a but is variable by oxidation state. The allocated G&A costs per tonne processed are: US$4.20/t for saprolite, US$5.04/t for transition and US$6.30/t for fresh rock.

Grade–recovery equations were established for the various material types for each deposit. These equations were used to create a recovered grade attribute in the resource model and were the basis for predicting the gold production and average metallurgical recovery for each planning period in the mine plan.

The major LG input parameters are summarized in Table 15-2 and the optimized pit outlines are shown in Figure 15-1. Cut-off grades are discussed in Section 16.5.

15.6 Ore Loss and Dilution

Mining dilution was evaluated by analyzing the number of contact edges with mineralized blocks above the cut-off grade established and applying a 0.5 m dilution envelope around saprolite and 1 m envelope around transition and fresh rock. This evaluation was performed separately for the Merian II, Maraba and Merian I deposits.

The average mining dilution was estimated at 10.0% for Merian II, 5.2% for Maraba and 3.6% for Merian I. Dilution factors for saprolite are lower, due to the reduced dilution envelope. The dilution in rock is less in Maraba than in Merian II due to the more massive nature of the ore envelopes. No mining ore loss was included.

There is a risk that the dilution assumed for Merian II, when using 10 m benches and mining in transition and fresh rock material, may be underestimated.

15.7 QP Comments on “Item 15: Mineral Reserve Estimates”

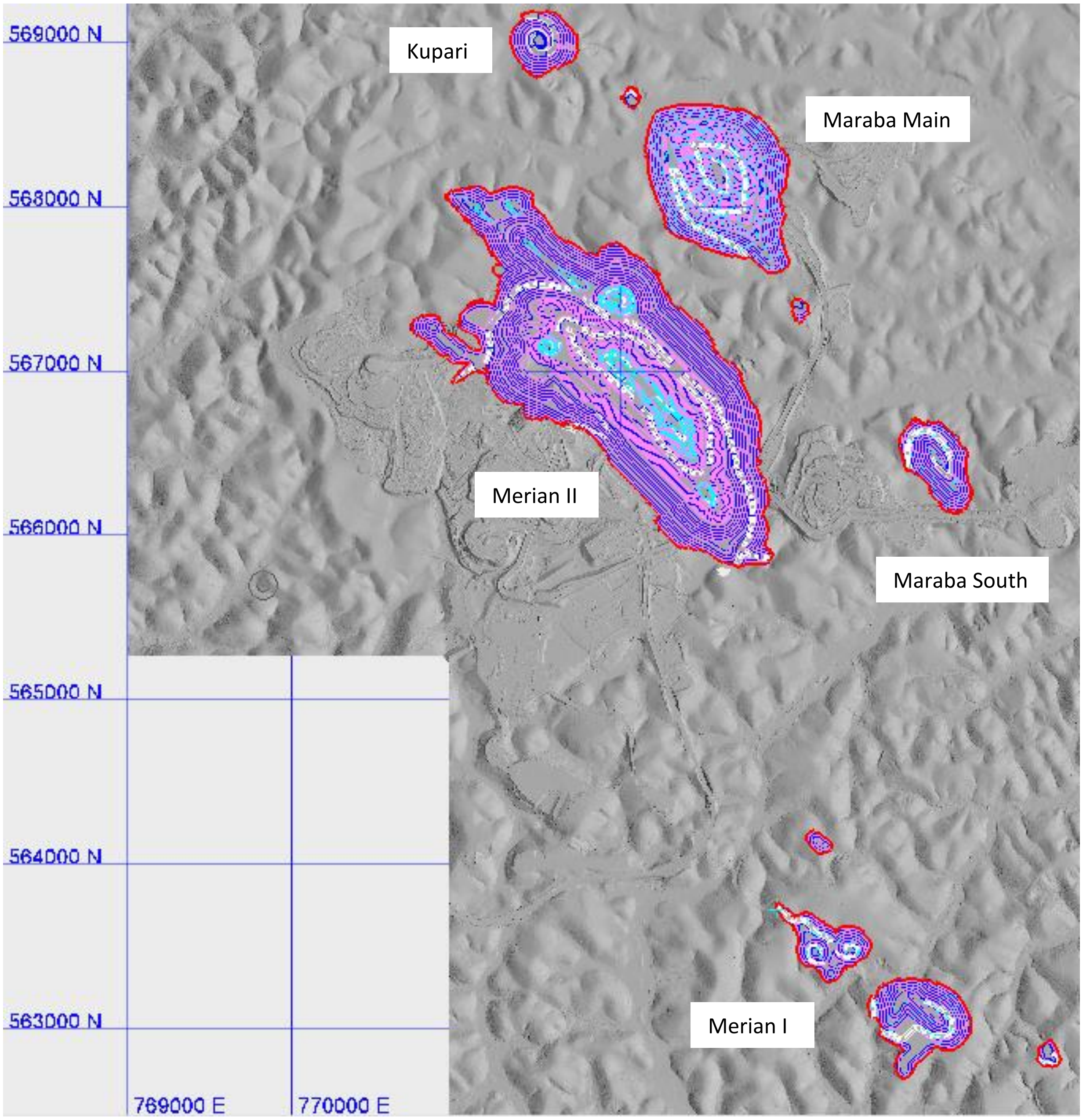
The QP is of the opinion that Mineral Reserves have been performed using industry-accepted practices and conform to the 2014 CIM Definition Standards. Mineral Reserves are based on open pit mining assumptions. The Mineral Reserves are adequate to support mine planning.

There are no other known environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors that would materially affect the estimation of Mineral Reserves that are not discussed in this Report.

Table 15-2: LG Input Parameters

Economic Parameters		Units	Values
Gold price (*P*)		US$/oz	1,200
Oil price (WTI)		US$/bbl	65
Oil price (Brent)		US$/bbl	75
Site diesel price		US$/liter	0.63
Site heavy fuel oil price		US$/liter	0.49
Power cost		US$/kWh	0.10
Royalty rate		%	6.0
Royalty (6%)		US$/oz	72.00
Refinery and carbon handling		US$/oz	2.71
Discount rate		%	9
Mining cost		US$/t mined	2.51
Process cost		US$/t processed	9.65
G&A cost	saprolite	US$/t processed	4.20
	transition	US$/t processed	5.04
	fresh rock	US$/t processed	6.30
Metallurgical recovery Merian II	saprolite	%	95.8
	transition + fresh rock	%	91.6
Metallurgical recovery Maraba	saprolite	%	91.6
	transition + fresh rock	%	92.3
Metallurgical recovery Merian I	saprolite	%	92.3
	transition + fresh rock	%	91.2

Figure 15-1: Final Pit Limit Outlines



Note: Figure prepared by Newmont, 2018.

16.0 MINING METHODS

16.1 Overview

Open pit mining is conducted at Merian using conventional techniques and an Owner-operated conventional truck and shovel fleet. Currently, two open pits, Merian II and Maraba are being mined. Three smaller pits, Maraba South, Kupari, and Merian I are planned. Stockpiles and waste rock storage facilities are discussed in Section 18.

16.2 Geotechnical Considerations

Golder Associates are the engineer of record for the slope assessments.

For the saprolite and saprock, the design criterion used is a minimum acceptable static Factor of Safety (FOS) of 1.2. A series of generic stability models were analyzed to determine slope heights and angles to achieve a minimum FOS of 1.2. For each model, both total stress analyses and effective stress analysis were performed to evaluate stability of saprolite slopes under the short-term condition and end-of-mining conditions.

Rock mass strength is high in the fresh rock and slope stability analyses focused on potential kinematic controls of bench configurations; and potential kinematic controls of stability for larger-scale slopes.

Table 16-1 summarizes the slope design configurations for all regolith types.

A review of geotechnical parameters in August 2018 suggested changing the face angle in saprolite and saprock to 56º. This change will be incorporated into future Mineral Reserve updates.

The mining geotechnical monitoring program focuses on ground displacements and groundwater levels. Monitoring includes assessment of:

- Potential for deformation in the saprolite, given maximum overall thicknesses in the 100–120 m range; and current saturated thickness from about 50 m below ground surface;
- High rainfall and the potential for surface water to affect slope stability;
- Pore pressure development and responses in the saprolite to mining;
- Distribution of regolith types (saprolite, saprock, fresh rock), locations and orientations of large-scale structures and rock fabric orientations.

Table 16-1: Summary Slope Design Configurations

Material	Slope Height (m)	Bench Face Angle (deg.)	Catch Bench Width (m)	Vertical Bench Height (m)	Inter Ramp Angle (deg.)
Saprolite	0–70	56	11	10	30
Saprolite	Geotechnical catch bench	56	20	10	30
Saprolite	70–120	56	11	10	30
Saprock	<40	56	11	10	30
Fresh rock	<300	80	6	10	52
Fresh rock	Geotechnical catch bench	80	12	10	Not applicable

Note: Merian II: geotechnical catch bench of 20 m at 520 elev. and 480 elev. Maraba: geotechnical catch bench of 20 m at 510 elev. and 12 m at 470 elev., 400 elev., 330 elev. and 260 elev.

Visual inspections of pit slopes are completed for signs of displacement. Newmont has recently upgraded its monitoring capabilities with two robotic total stations (RTS) and plans to have a slope radar operational by end of April 2019. Additional RTSs and radar units may be added in the future as additional pits come on-line. Fresh cracks are surveyed and monitored for expansion. Failures are documented, and the controlling failure mechanism evaluated.

Vibrating wire transducers (VW piezometers) are installed outside final pit limits. For each hole location, transducers are installed at three depths in each hole: near the base of the saturated saprolite; near the base of the saprock; and in the underlying fresh rock.

16.3 Hydrogeological Considerations

The general dewatering strategy used at Merian is to collect as much run-off from upper benches as possible. This water is then pumped from sumps to sedimentation ponds. A 25-year storm event of 185 mm is used for long-term sump design capacity. Storm events of 50–70 mm are used for temporary sump design capacity.

Water is collected in a sump and pumped to a near-by sediment pond and then discharged to the environment. Water released from the sediment control ponds meets effluent limits at the point of discharge and ambient water quality criteria for protection of human health and the environment at a downgradient compliance point.

16.4 Operations

Operations use a standard drill-and-blast, truck-and-shovel configuration.

There are five mining phases planned for the Merian II deposit. A starter phase in the main pit commenced within the final phase of the main pit with the southwest wall being common between the starter and main pits for a section of the pit wall. A minimum mining width of 50 m was targeted between the two phases and narrows to about 40 m for certain sections of the pit. To the north and south along strike are small satellite pits detached from the main pit referred to as the south satellite pit and north satellite pit. The Merian II main pit will measure 2,450 m along strike and is roughly 900 m wide with a maximum depth of 330 m from 590 to 260 m elevation. The Merian II double lane ramp access enters from the southeast corner at elevation 555 m and spirals down counter clockwise to elevation 310 m where a switchback continues with a single lane ramp to elevation 260 m. The pit will be in production from 2019 to 2033.

There are three mining phases for the Maraba deposit. A starter phase in the Maraba main pit is entirely centered within the final phase of the main pit allowing for at least 50 m between the two mining limits. The initial phase has shallower slopes than the final phase as the weathering profile is deeper towards the center of the deposit. The saprolite bench configuration was maintained for a greater vertical depth in the Phase 1 Maraba main pit. The Maraba main pit measures 1,300 m along strike and is 850 m wide with a maximum depth of 360 m from 580 to 220 m elevation. Pit access is in the southeast corner at elevation 560 m and spirals down counter clockwise to elevation 270 m and continues with a single lane ramp down to elevation 220 m. There are two double lane ramp segments and a single lane ramp segment located in the final pit wall thereby breaking the overall slope. Maraba will be in production from 2019 to 2022 and then again from 2030 to 2033.

The Kupari pit will be mined as a single phase. The mine plan has Kupari in operation from 2023–2024.

Four pit phases are planned for Merian I. Production will occur from 2021 to 2025.

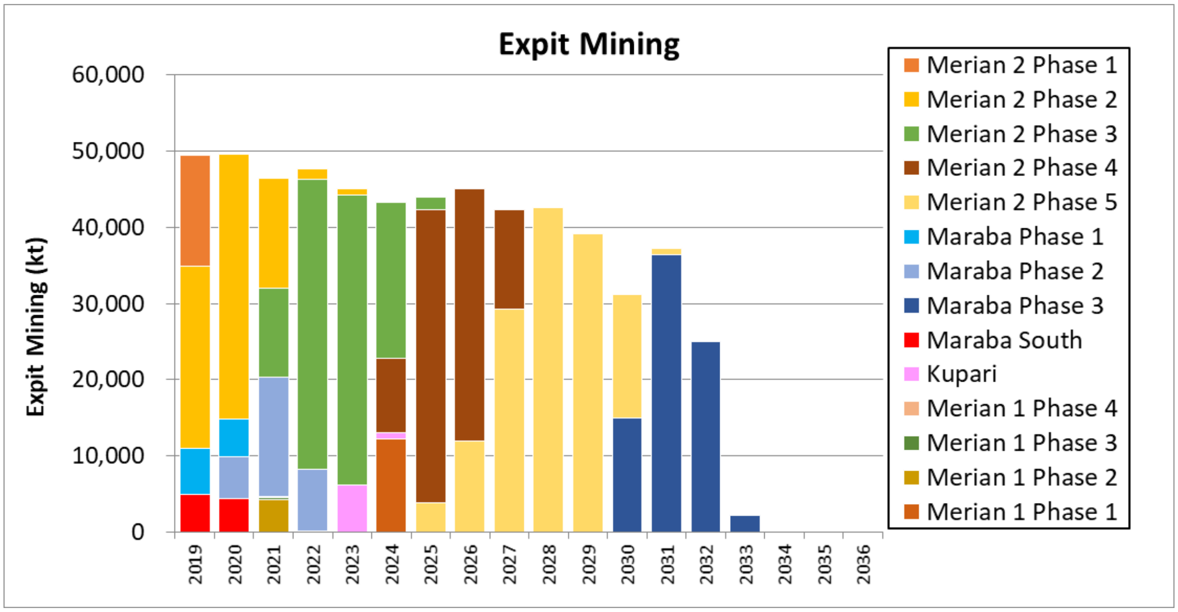
Ramp gradients are established at 10%. The haul road width is 34 m. The final pit phases as designed were shown in Figure 15-1.

The pit sequencing started with the Merian II phase 1 pit followed shortly after with the Merian II phase 2 pit. Mining was initiated in Merian II due to its better grade. Mining in the Maraba main pit phase 1 was initiated in 2018 and the pit will be mined for three years. The Maraba main pit phase 2 will be initiated in 2021. The Maraba South pit is planned to be mined in 2019 and 2020 to create space for the east WRSF. The Kupari pit is planned to be mined in 2023 and 2024. The Merian I Phase 2, Phase 3 and Phase 4 pits are planned to be mined in 2021, and the Merian I Phase 1 will be mined in 2024.

The mine will operate until 2033 (14 years, with the last year as a partial year) on the current Mineral Reserve estimates and proposed production profile. Figure 16-1 shows the planned production by open pit and phase.

The maximum mill throughput is 13 Mt/a when processing saprolite ore. By 2021, the proportion of hard rock will increase, with the power consumption of the ball mill limiting the throughput to about 9.5 Mt/a.

Figure 16-1: Open Pit Production Plan



Note: Figure prepared by Newmont, 2018.

The average annual gold production forecast is approximately 425,000 oz/a for the next five years. When the proportion of fresh rock in the ore feed increases, the average mill throughput decreases to 7.7 Mt/a in 2029 and gold production will average about 324,000 oz/a during that period.

Stockpiles are available for ore stockpiling to balance out the mine and mill capacities and optimize the mill feed. The high-grade stockpile is currently available from 2018 mining and was first drawn on in January 2019. The low-grade stockpile will continue to grow until 2021 and reaches a peak of 6 Mt. Figure 16-2 shows the contribution to the mine plan from stockpiled material.

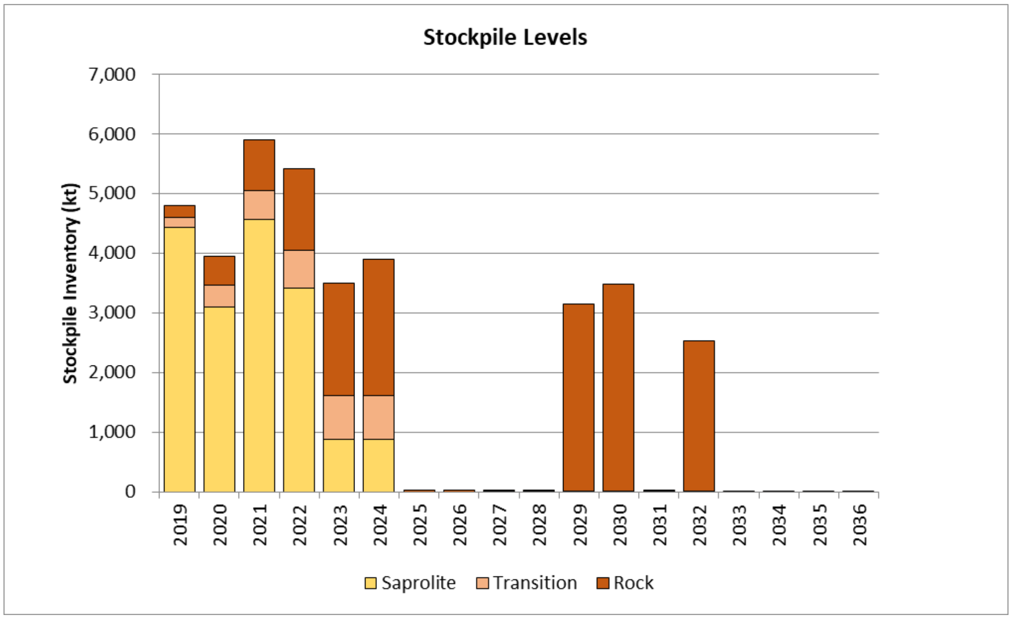
16.5 Cut-off Grades

The cut-off calculation is dependent on gold price, cost and recovery. Cut-off grades used to constrain the Mineral Reserves estimate are based on the assumptions summarized in Table 16-2. Cut-off grades vary by the material being mined and the open pit source.

16.6 Blasting and Explosives

The grade control program consists of establishing ore/waste boundaries in the field to guide shovel operators. Drilling and blasting of 10 m benches is performed with 8½ in (216 mm) holes in Maraba and 6¾ in (171 mm) holes in Merian II.

Figure 16-2:Stockpile Production Plan



Note: Figure prepared by Newmont, 2018.

Table 16-2: Cut-off Grade Input Parameters

Item	Unit	Merian II			Maraba			Merian I		
		SAP	Trans	Rock	SAP	Trans	Rock	SAP	Trans	Rock
Metallurgical recovery	%	89.4	91.1	90	87.5	89.9	90.5	89.6	91.1	90
Mining costs	US$/t mined	2.45	2.71	2.71	2.30	2.57	2.58	2.64	2.91	2.92
Costs (process, re-handle, G&A, expit)	US$/t processed	10.92	16.58	18.74	11.17	16.81	18.96	11.25	16.88	19.03
Mining dilution	%	6.2	12.9	10.9	3.8	7.4	5.3	5.0	12.9	10.9
Incremental cut-off grade	g/t Au	0.36	0.57	0.64	0.37	0.56	0.61	0.36	0.58	0.65

Saprolite is classified as a free-digging material and is drilled for sampling purposes only.

Blasting is required for all saprock and fresh rock material. Some saprolite will require some blasting to maintain high loading productivity. As such, a provision to blast 25% of saprolite has been included.

A high-energy bulk emulsion explosive specifically developed for surface mines will be used in wet or dry conditions.

16.7 Equipment

The current fleet of major mining equipment in BP19 will be sufficient to mine the remaining reserve laybacks at Merian. Once the mine life approaches the end, the equipment fleet will be reduced in number.

The primary loading equipment consists of six hydraulic excavators.

A fleet of CAT 785D rigid haul trucks with a 136 t payload was selected to provide a good pass-match with the primary loading units. During the peak, starting in 2019, approximately 33 trucks are required.

The waste haul is influenced by the WRSF development strategy. WRSF operations will tactically vary between the dry season and the wet season. In the wet season haul cycles will be kept short to minimize travel on the WRSF and road maintenance.

Support equipment requirements were developed based on typical open pit mine operation and maintenance requirements to safely support the loading, hauling and drilling fleets.

Fleet productivity and unit requirements were estimated by using RPMGlobal's TALPAC™ software. Haulage profiles and fleet productivities were estimated by year.

Given the relatively short duration of mining operations, no replacement units are planned for loading units and haulers. Replacement units are planned for support equipment such as track-type tractors, pick-ups, small excavators, service trucks and fuel/lube trucks.

Newmont Owner-performs maintenance.

Equipment requirements for the LOM are summarized in Table 16-3.

16.8 QP Comments on "Item 16: Mining Methods"

The mine plan uses conventional open pit mining and conventional mining equipment.

There may be an upside opportunity for the mine plan to be further refined in particular for 2023. This could include a combination of mine productivity improvements, phase re-designs and feeding sub-grade material.

There is potential risk around pit dewatering, which is related to ground water controls (structure and alteration), and the resulting potential challenge of slope depressurization in saprock and saprolite.

Table 16-3: Equipment Fleet

Equipment	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Hitachi EX3600-6BE	3	3	3	3	3	3	2	2	2	2	2	2	1	1	0	0
Hitachi EX3600-6FS	3	3	3	3	3	3	3	3	3	3	3	3	3	2	1	0
Atlas Copco DML-Drill	4	4	4	4	4	5	5	5	5	4	4	4	2	1	0	0
Atlas Copco SmartROC D65	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
785 Water Trucks	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
785 Haul Trucks	35	36	36	36	36	36	35	33	33	33	33	31	17	10	2	0
740B-Water Trucks	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
740B-Dump Trucks	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	0
740B-Fuel & Lube	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	0
730C2 MMU	1	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
FEL950-SD-Stemming	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
D10 Dozers	8	10	10	10	10	10	10	10	10	10	10	10	8	4	2	0
D6 Dozers	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 950H FEL	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
16M Grader	4	4	4	4	4	4	4	4	4	4	4	4	3	2	0	0
18M Grader	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Backhoes (x 349D)	5	5	5	5	5	5	5	5	5	5	5	5	4	3	2	0
Backhoes (x 320F)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Backhoes (x 330D2L-W/Hammer & QC)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Compactors	3	3	3	3	3	3	3	3	3	3	3	3	2	1	0	0
CAT 980H	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
CAT 834 Wheel Dozer	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

Since the effective date of the mine plan, Newmont has regularly performed, and will continue to perform, as part of its normal course of business operations, reviews of the mine plan and consideration of alternatives to and variations within the plan. Alternative scenarios and reviews are based on ongoing or future mining considerations, evaluation of different potential input factors and assumptions and requests made of Project staff by Newmont Corporate. Such iterations can include where appropriate but are not limited to:

- Changes to Mineral Resource/Mineral Reserve estimation methodologies;
- Changes to dilution and reconciliation strategies;
- Changes to metal price assumptions;
- Changes in allocations of planned drilling, or drilling locations, that can be used to support conversion of Mineral Resources to Mineral Reserves;
- Changes to deposit sequencing;
- Changes to production rates;
- Changes in mining equipment strategies;
- Alternate pit configurations, including laybacks or pit wall slope changes;
- Changes to geotechnical or hydrological assumptions;
- Changes in short-term production;
- Mill throughput reviews and potential mill modifications;
- Process flowsheet modifications and potential recovery improvements;
- Stockpile throughput, allocations and planned depletion rates;
- Optimization of cash flows and review of different cash flow scenarios;
- Changes to allocations of capital expenditures to different years within the mine plan;
- Modifications to sustaining capital and operating cost assumptions;
- Changes to accounting and taxation assumptions.

17.0 RECOVERY METHODS

17.1 Process Flow Sheet

The Merian process plant is designed to treat a range of 8–12 Mt/a of ore depending on the ore mix from mining operations. The process plant flowsheet design was based on testwork results, previous study designs and industry standard practices for handling combinations of fresh rock and saprolite and is included as Figure 17-1.

17.2 Plant Design

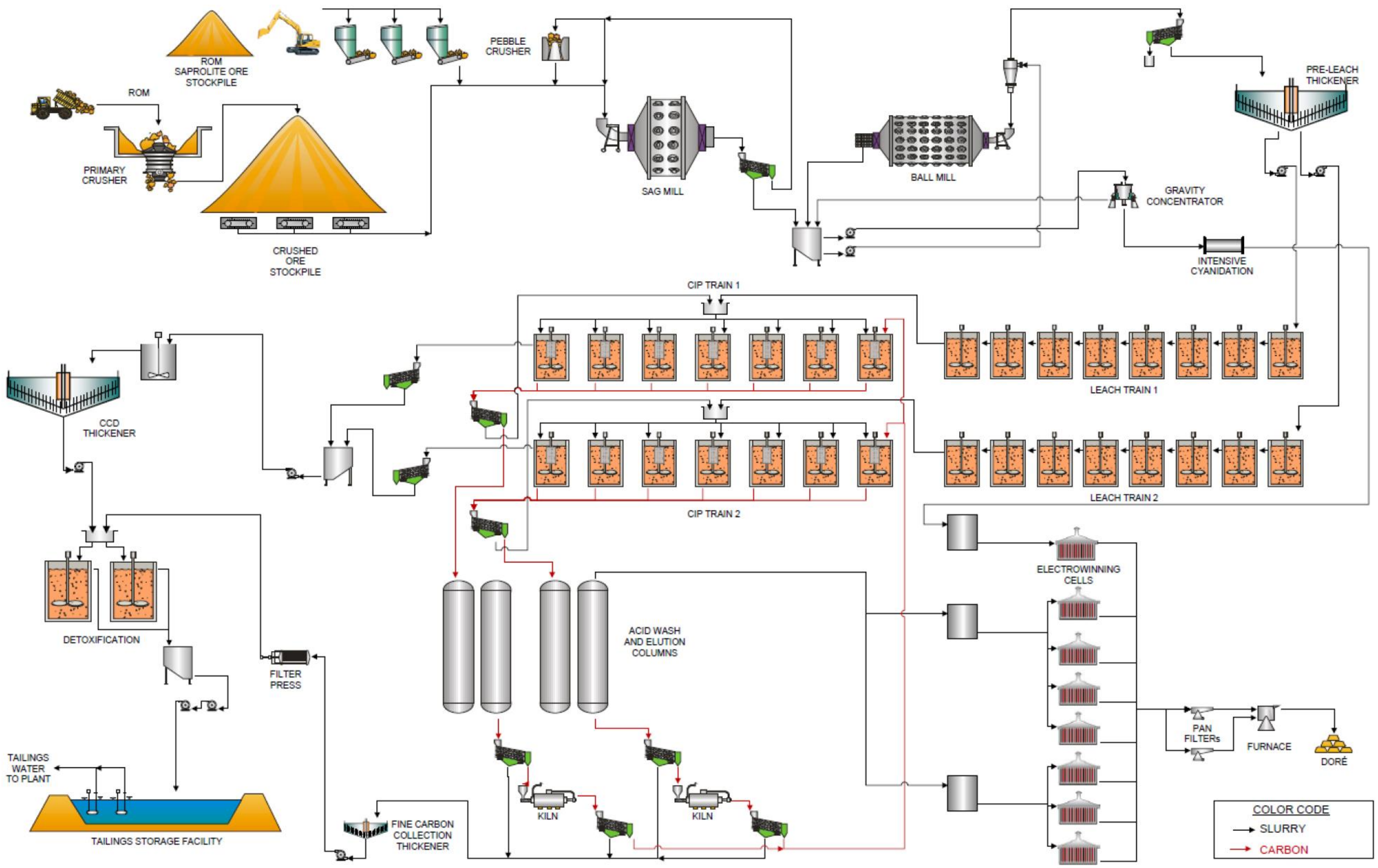
The plant design is based on the following parameters:

- A throughput rate of 877–1,725 t/h depending on ore mixture;
- Design availability of 91%, which equates to 7,983 operating hours per year, with standby equipment in critical areas;
- Sufficient plant design flexibility for treatment of a blend of ore types. When fed 100% fresh rock, throughput will be reduced to the processing rate of the grinding area, approximately 7–8 Mt/a, or 992 t/h. If only saprolite is fed to the circuit, the throughput is capped from operational experience, at 1,725 t/h;
- The process flowsheet is based on process units which are well proven in the minerals and gold processing industries. Material handling of the saprolite ore is simplistic in order to avoid mass flow problems with this material; conventional industry engineering practices were incorporated in the design and sizing of equipment;
- The process plant design feed grade is 1.6 g/t Au, with an average LOM grade of 1.22 g/t Au.

Fresh rock from the open pits is crushed using a primary gyratory crusher to a product size of nominally 80% passing (P_{80}) 150 mm. The crushed ore is fed onto a transfer conveyor, equipped with a self-cleaning magnet to remove steel and transferred to a stacking conveyor feeding a crushed ore conical stockpile with a live capacity of 16 hours. Ore from the stockpile is reclaimed using three apron feeders, each capable of feeding 75% of the peak fresh rock mill feed (750 t/h).

Three additional saprolite feeding stations, each comprising a static grizzly, a small bin and an apron feeder, are continuously fed using hydraulic excavators. The feeding stations supply a 13 MW SAG mill with dimensions of 10.36 m (34 ft) diameter by 5.33 m (17.5 ft) effective grinding length (EGL). Discharge from the mill is fed over a vibrating screen for classification and oversize is transferred to the pebble crushing circuit.

Figure 17-1: Process Flowsheet



Note: Figure prepared by Newmont, 2016.

The ball mill is 7.32 m (24 ft) diameter with 12.65 m (41.5 ft) EGL and is operated in closed circuit with 650 mm hydro-cyclones. The nominal product size from the grinding circuit is a P80 of 75 µm.

After ball milling, a portion of the material is sent through a gravity gold recovery circuit comprising three centrifugal gravity concentrators, with provision for a future fourth concentrator if needed, and is followed by an intensive cyanidation reactor (ICR). The ICR pregnant solution is pumped to the gold room for electrowinning.

Pre-leach thickening of cyclone overflow occurs in a 55 m diameter high rate thickener to an underflow density ranging between 40 and 50% solids depending on saprolite content in feed. This material feeds a leach circuit comprising seven agitated leach tanks, averaging 5,250 m^3 of live volume and providing 12 hrs of leach residence time during the treatment of saprolite (12 Mt/a treatment rates at 42% solids).

A carbon-in-pulp (CIP) circuit, comprising seven tanks, averaging 5,250 m^3, is used to recover leached gold onto activated carbon. The 20 t carbon elution circuit (consisting of two 10 t circuits) operates with separate acid wash and elution columns. Diesel-fired strip solution heaters and heat exchangers provide the required heating needed to reach the design strip temperature of 115^o C.

All of the eluted carbon is regenerated using a diesel-fired horizontal kiln with fine carbon recovery (provision made for 100% carbon regeneration if needed).

An electrowinning circuit is used to recover gold from pregnant solutions from both elution circuits and the ICR. This includes a gold refinery (gold room) to recover and smelt electrowinning sludge to produce doré bars.

The TSF supernatant water is reclaimed using floating barge pumps and reticulated to the process operations. A tailings washing circuit, consisting of a single 55 m high rate thickener and conditioning tank, uses the TSF reclaim water to wash/dilute the carbon-in-pulp (CIP) tailings slurry and recover cyanide-containing process water for immediate reuse in the process plant.

An air/SO_2 cyanide detoxification circuit is employed to reduce the weak acid dissociable (CN_{WAD}) cyanide levels in the leach tails prior to discharging to the TSF.

Process water supply is from a combination of rain water collection and TSF reclaim. Potable water is generated using a potable water treatment system located at the main camp.

Low pressure air is supplied by individual blower installations for each leach train and the cyanide detoxification circuit.

Table 17-1 summarizes the design parameter assumptions used. Table 17-2 lists the key equipment in the process plant.

Table 17-1: Process Plant Design Parameters

Criteria		Units	Design	
			Saprolite	Rock
Crushing	Availability	%	70	
	Throughput	t/h	1,631	
	Crush size (P_{80})	mm	125	
	Size	m	1.37 x 3.35	
Milling	Throughput	Mt/a	12	8
	Availability	%	92	
	Throughput (nominal)	t/h	1,489	992
	Grind size (P_{80})	µm	75	
	Head grade (design)	g/t Au	1.6	
	Gold recovery	%	94.3	90.8
Ore physical characteristics	Bond ball work index (BWi)	kWh/t	14	15
	SMC (A x b)	kWh/m^3	87	27
	Specific gravity	t/m^3	2.60	2.75
	Abrasion index (Ai)	g	0.35	0.19
Pre-leach thickening	Rate	$m^3/m^2/h$	3.10	5.00
	Underflow density	% w/w	42	50
Leaching	Type	-	Leach/CIP	
	Residence time	h	30	30
	Leach tanks	-	2 x 8	
	CIP tanks	-	2 x 7	
Tails thickening	Rate	$m^3/m^2/h$	3.10	5.00
	Underflow density	% w/w	45	65
Detoxification	Process	-	Air/SO_2	
	Residence time	h	1.5	
	Target CN_{WAD}	ppm	<5	

Criteria		Units	Design	
			Saprolite	Rock
Reagent consumptions	Lime (as quicklime)	kg/t	1.8	0.8
	Cyanide (as NaCN)	kg/t	0.3	0.25
	Caustic soda	kg/t	0.06	0.06
	Flocculant	g/t	40	10
	Copper sulfate	kg/t	0.067	0.032
	Sodium metabisulfite	kg/t	0.57	0.33

Table 17-2: Key Equipment

Number/Qty	Details of Specification
1	62-inch x 75-inch gyratory crusher with 600 hp installed motor power
6	6.7 m x 1.8 m apron feeder with 75 kW motor
1	10.40 m x 5.33 m EGL dual pinion SAG mill with 13 MW installed motor power
2	3.6 m x 8.5 m single deck pebble dewatering screen with 12 mm x 16 mm panels, one duty, one standby
1	HP4 pebble crusher with 300 kW installed motor power
1	7.3 m x 12.65 m EGL dual pinion ball mill with 13 MW installed motor power
16	26" Krebs Cyclones, 12 operating, 4 spares
3	1.5 m x 3.6 m gravity scalping screen
3	48" centrifugal concentrators
1	9t capacity intensive concentrate leach reactor
2	7.5 m x 4.5 m linear belt trash screens with 0.7 mm screen aperture
1	55 m pre-leach thickener
14	5,250 m^3 leach and adsorption tanks
16	Ekato agitators
1	1.1 m x 3.4 m carbon recovery screen, screen aperture; 1.0 mm
2	1.4 m x 4.7 m carbon safety screen, screen aperture, 0.7 mm
1	55 m tailings wash thickeners
2	3,004 m^3 detoxification tanks
1	1.1 m x 2.4 m carbon dewatering screen, screen aperture 0.7 mm
2	10 t acid wash column

Number/Qty	Details of Specification
2	10 t elution column
11	2,000 amp electrowinning cells
1	150 kW electric induction furnace
1	1700 kg/hr diesel-fired carbon regeneration kiln

17.3 Energy, Water, and Process Materials Requirements

17.3.1 Energy Requirements

Energy requirements for the SAG and ball mills vary by domain and deposit:

- SAG mill energy requirements range from 3.75 kWh/t in the Merian II saprolite zero quartz vein material to 13.17 kWh/t in the Maraba fresh rock 0–10 v domain;
- Ball mill requirements range from 3.17 kWh/t in the Merian II saprolite zero quartz vein domain to 13.50 kWh/t in the Merian II saprolite breccia domain.

The estimated average annual mill power requirement to support the LOMP is 165,000 MWh.

17.3.2 Water Requirements

Raw water is supplied by rain water recovered from process plant, power plant and administration building runoff, as well as collected from rain water catchment within the treated water storage facility. These sources are supplemented by treated water from the effluent treatment plant.

The process water requirements are sourced as follows:

- TSF supernatant water (reclaim water) is recycled to the plant;
- Water requirements for large demand items (tailings wash thickener wash water, cyanide detoxification dilution water) is delivered directly by the TSF barge pumps;
- Process water is supplied from the tailings wash thickener overflow and is used for grinding dilution, gravity concentrator fluidization water and some reagent mixing;
- Pre-leach thickener overflow water is used mainly for grinding dilution with a small amount going to the leach tanks for emergency dilution when needed;
- Potable water is supplied to the plant from the camp potable water system. Potable water is also provided for plant site ablutions as needed.

17.3.3 Air

High-pressure air is provided by three rotary screw type air compressors and supply both plant and instrument air requirements.

Low pressure air, used in the leaching and cyanide detoxification areas, is provided by multistage centrifugal compressors.

17.3.4 Reagents

Reagents required for operations include:

- Sodium cyanide (NaCN);
- Quicklime (calcium oxide) and hydrated lime (calcium hydroxide);
- Activated carbon;
- Sodium metabisulfite (SMBS);
- Copper sulfate;
- Sodium hydroxide (caustic soda);
- Nitric acid;
- Hydrogen peroxide;
- Sodium borate, silica flour, soda ash and potassium nitrate;
- Forged carbon steel grinding media.

17.4 QP Comments on “Item 17: Recovery Methods”

The process method is conventional to the industry. The comminution and recovery processes are widely used in the industry with no significant elements of technological innovation.

As the mining operations trend deeper, there is potential to increase plant wear-and-tear due to hard rock. Harder material may also result in increased power costs. Blending of fresh rock and transitional material will need to be monitored to ensure that LOMP forecasts from these materials are met.

There is an opportunity to optimize grind and recovery for harder materials to possibly increase the mill throughput rate.

18.0 PROJECT INFRASTRUCTURE

18.1 Introduction

Infrastructure currently supporting, or planned to support the Merian Operations includes:

- Two active open pits (Merian II and Maraba,) and three satellite planned open pits (Kupari, Maraba South and Merian I), and a number of smaller pitlets;
- Six WRSFs (West Merian II, East Merian II, Maraba, Kupari, MSC and Merian 1); three active, three planned;
- Low- and high-grade saprolite and fresh rock stockpiles;
- Process plant, assay/metallurgical laboratory, chemical storage facilities, maintenance facilities and warehouse;
- Primary crusher and associated conveyors;
- Administration buildings and offices, gate house, reagent storage facility;
- TSF Phase 1;
- Phase 2 TSF and associated seepage collection system;
- Effluent treatment plant;
- Water storage and sediment control structures (treated water storage reservoir, seven main dams, six saddle dams, five berms and seepage collection drains and wells);
- Emulsion plant;
- Borrow facilities;
- Accommodations camp;
- Airstrip;
- Power plant and fuel farm;
- Potable water treatment plant;
- Haul roads and other access roads;
- Waste management facilities;
- Plant nursery.

The infrastructure layout for the Merian operations is shown in Figure 18-1 as at the end of the mine life. Phases indicated on the figure correspond to the open pit mining phases discussed in Section 15 and Section 16.

18.2 Road and Logistics

Road access to the operation is from Paramaribo using the east–west highway to Moengo, a distance of about 98 km, then south on the Moengo–Langa Tabiki road to approximately km 60 and then 16 km west to the mine site (refer to Figure 2-1). The final access road is a combination of 7 km of new road and an upgrade of an existing forestry (timber) road.

The site has a light aircraft strip and a helipad.

The Nieuwe Haven Wharf in Paramaribo is used as the shipping hub.

18.3 Stockpiles

The mine design uses two stockpiles:

- Saprolite: Material that has a grade >0.36 g/t Au with a maximum projected tonnage of 4.6 Mt in 2021. The overall stockpile capacity is 5.0 Mt;
- High-grade: Material consists both of transition and fresh rock, grades >0.56 g/t Au. The maximum stockpile tonnage is 3.5 Mt in 2030. The stockpile capacity overall is 4 Mt.

The stockpiles are located just north of the plant site.

18.4 Waste Rock Storage Facilities

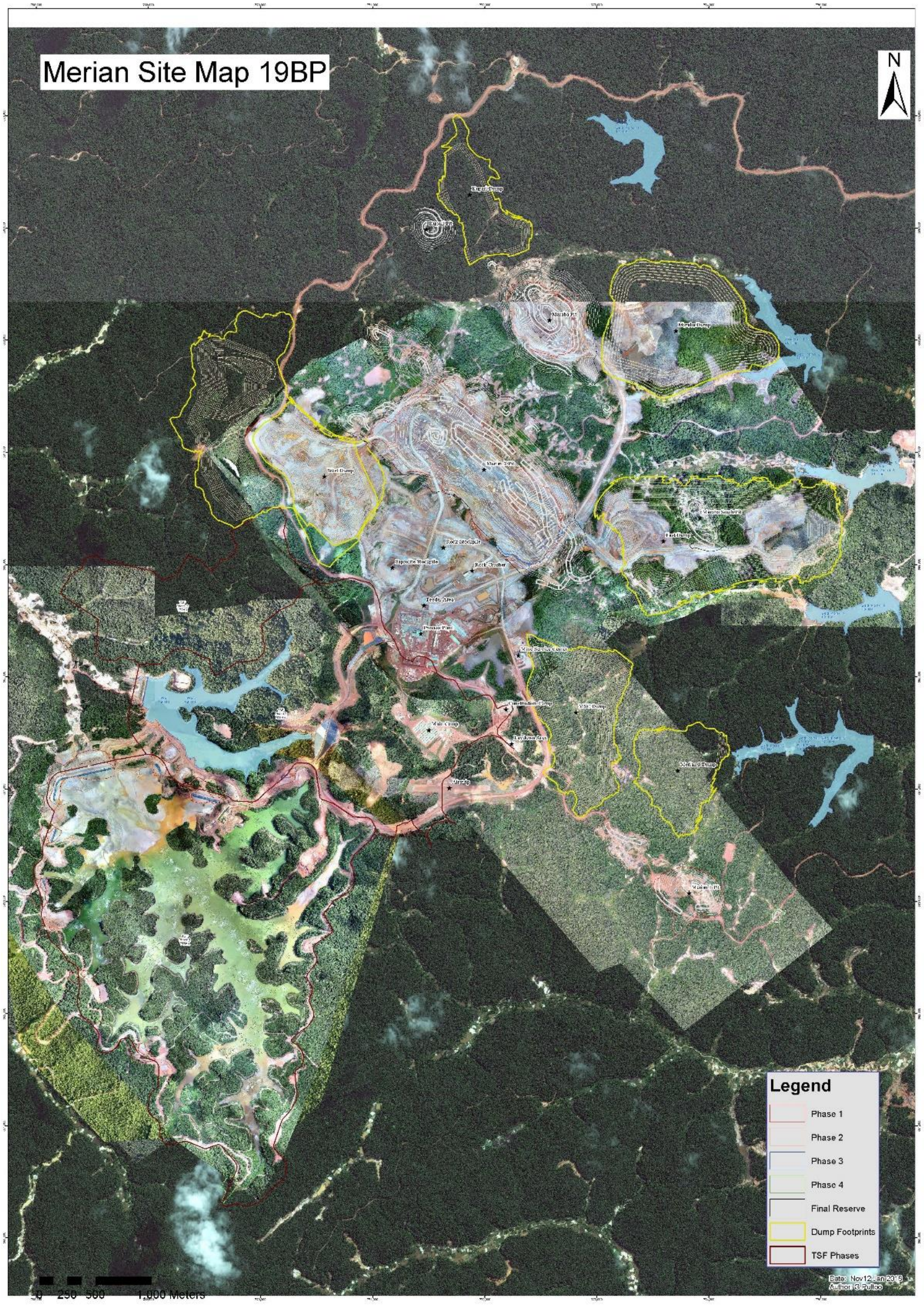
There will be six WRSFs at mine completion, with locations as shown in Figure 18-1.

The WRSFs are positioned to avoid any major impacts with the local drainage system. Water run-off from the dump surface is collected and diverted to sediment control ponds to capture particulate matter prior to discharge into the environment.

Design considerations include 10 m lifts with lift offsets of 5 m to establish an overall slope angle of 2.5H:1V and deposition on 10 to 20 m benches. Bench heights may vary to facilitate drainage toward the working crest while avoiding ponding of water on top of the WRSF.

There is sufficient capacity within the WRSFs to store about 467 Mt of waste material from all of the Mineral Reserve pits. The mine engineering group is analyzing specific locations and optimizing sites that can support shorter truck cycle times with condemnation drilling. The site evaluation study is ongoing. No additional permits are required for any of these WRSF locations.

Figure 18-1: Project Layout Plan



Note: Figure prepared by Newmont, 2018

Testing shows that the acid generating potential for the waste rock is low, with the lowest potential associated with saprolite and the highest potential (although still low) in fresh rock. This is supported by acid-base accounting (ABA) results indicating that there is sufficient neutralization potential (primarily the carbonate mineral ankerite) available to counteract any limited acid generation from sulfide oxidation.

The sulfide–sulfur content of the ore and waste is low, ranging from below detectable limits (<0.01 wt.%) to 0.2 wt.%. Most of the sulfur is present as sulfide. The material exhibiting the highest potential to generate acid is mineralized fresh rock.

WRSF operations will tactically vary between the dry season and the wet season. In the wet season, haul cycles will be kept short to minimize travel on the WRSF and road maintenance.

18.5 Tailings Storage Facilities

The TSF location is included in Figure 18-1. A layout plan for the facility is provided in Figure 18-2.

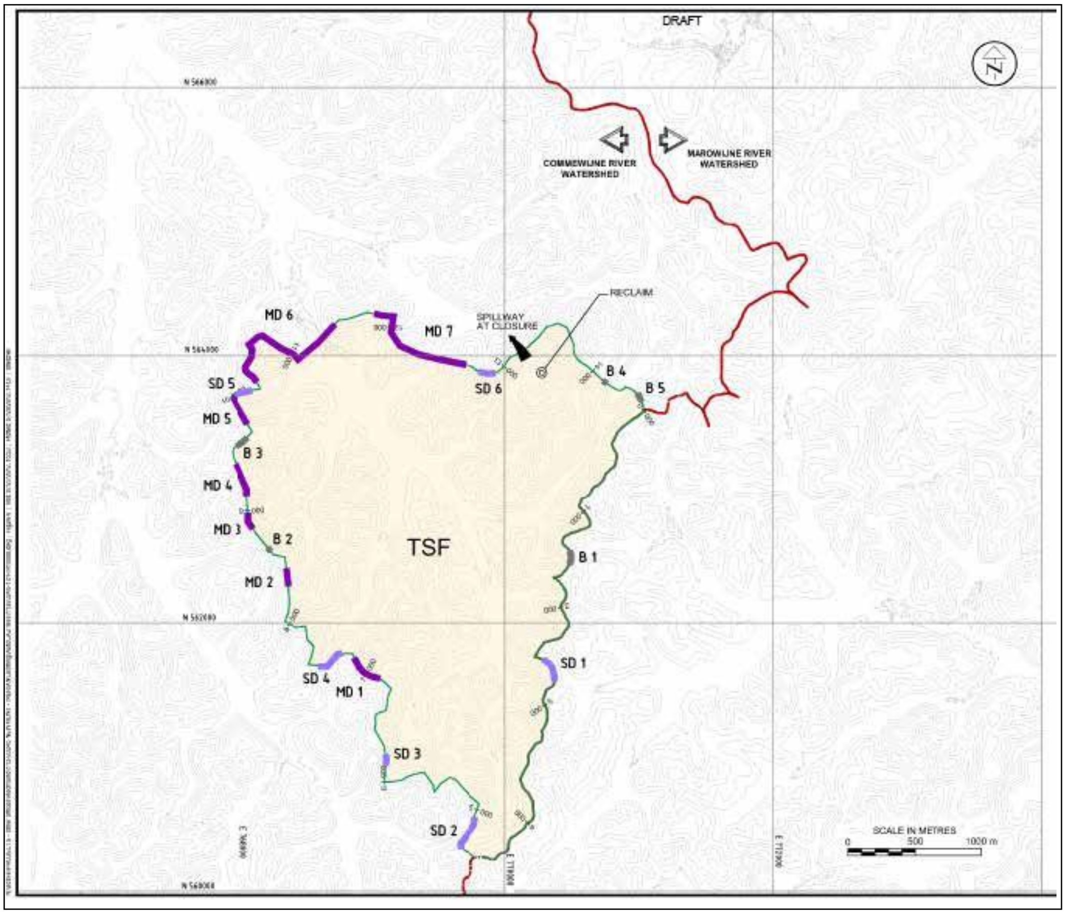
The original design capacity for the Phase 1 Tailings facility is 132 Mt, which is about 94 Mm^3. Storage of accumulated water for a dry period of two months has been included in the design. The maximum dam crest elevation for the Phase 1 TSF will not exceed elevation 578 m. During operation, the TSF will have a minimum decant water pond volume of about 2.0 Mm^3 and a maximum of 5 Mm^3.

Based on current Mineral Reserves future TSF design capacity of 133 Mt is required for the remaining LOM. The Phase 1 TSF design has an ultimate capacity is 132 Mt, with approximately 31 Mt of this design capacity used to date. Hence, the construction of the Phase 2 TSF is required prior to 2028 to hold the remainder of the projected LOM production. The Phase 2 TSF will be constructed adjacent to Phase 1 and will be implemented in a similar manner. Both Phase 1 and Phase 2 TSFs were included in the Merian ESIA.

Development of the Phase 1 TSF required the incremental construction of a series of dams. This includes seven larger main dams (1 through 7), six smaller saddle dams (S1 through S6) and five berms (B1 through B5); refer to locations in Figure 18-1. There is also a series of seepage collection drains and wells to capture possible groundwater flow from the TSF.

Tailings deposition uses the sub-aerial method, with cyclic deposition at various locations to allow consolidation and drying of the deposited material. The initial tailings deposition was in the northwest corner of the TSF. As the project progresses, deposition will continue along the remainder of the TSF perimeter such that the open water pond is forced towards the reclaim location. Water reclaim will be accomplished using pumps on a floating barge.

Figure 18-2: Phase 1 Tailings Storage Facility Layout Plan



Note: Figure prepared by Golder Associates, 2012.

There is significant saprolite beneath the TSF basin which serves as a barrier to seepage from the TSF; however, some seepage is expected to occur both through the saprolite and some isolated quartz vein structures within the saprolite. To effectively manage possible seepage, the design of the TSF included both upstream drainage systems and downstream drains and collection wells. These systems are used to collect seepage so that it can be returned to the TSF and used for process make-up water or treated by the effluent treatment plant prior to discharge to the environment.

An effluent treatment plant treats excess decant water in the tailings pond before discharging to the environment. Treated water is discharged to the treated water storage reservoir (sedimentation pond No.6). The effluent treatment plant normally operates at 1,200 m^3/hr but is capable of handling 1,800 m^3/hr during years where above-normal precipitation occurs.

Additional information on the TSF and LOMP requirements is included in Section 20.5.

18.6 Water Management

The open pits and WRSFs are located in the Marowijne Basin and drain into Merian Creek. The TSF is located in the Commewijne Basin draining into the Commewijne River. The site access road is located on the watershed between the Commewijne basin and the Marowijne basin and has no impact on the watershed. A few northwestern tributary streams of the Merian Creek area flow through the Merian II and Maraba pits; however, the catchment areas draining into the pits are very small.

Channels were excavated to re-route water away from the open pits. Sediment ponds were constructed to control the level of total suspended solids in the runoff of disturbed areas. Discharges from sediment control structures will not be formally treated, although flocculants may be added to help precipitate fine clays and reduce retention time needed for solids removal in the ponds.

Source waters that will be directed to the sediment control ponds are:

- Surface water run-off from areas that have been disturbed by mine operations;
- Seepage and run-off from WRSF areas;
- Water removed from the pits to allow safe mining conditions (pit dewatering).

There is a contingency plan for biological nitrate reduction treatment of nitrate in lagoons if monitoring indicates the need for treatment due to blasting residue in saprock and fresh rock. Water to be released from the sediment control ponds meets water quality criteria for protection of human health and the environment at a down-gradient compliance point.

During operations, the primary source of process make-up flows is from the decant pond within the TSF as well as the treated water storage pond. The TSF is managed to always maintain at least 2 Mm^3 of water in the decant water pond. The water management approach for the Project includes an effluent treatment plant to treat excess water in the TSF so that it can be discharged to the environment.

The only other water needs for the Project are for smaller volumes for fire water, truck shop and camp water supply.

18.7 Built Infrastructure

18.7.1 Camps and Accommodation

In January 2012, construction started for a new temporary construction camp, located about 1 km southeast of the future process plant site. Two 20-person modular staff dormitories were built, with an option to install a third dormitory. Four 88-person bunk houses made of wood with sheet metal roofing were also constructed.

The current main camp to support mine operations and exploration can house 1,400 people. This camp consists of about 29 accommodation buildings, a kitchen, administration office, welcome center, laundry facilities, sport complex and recreation center.

18.7.2 Mine Facilities

The main mine facilities include the process plant, power plant (see Section 18.8), crusher, airstrip, borrow pits, fuel tank farm, water treatment facilities, mine maintenance workshop, mine service center, administration buildings, the accommodations camp, sediment ponds, the first phase of the TSF and the treated water storage facility.

The open pits and WRSFs are located in the Marowijne River watershed whereas the processing plant and TSF are located in the Commewijne River watershed.

The LOMP will require additional infrastructure. This includes:

- Phase 2 of the TSF;
- Additional WRSFs
- Fifth sediment pond to contain contact water from mining activities at Merian I;
- Camp expansion to accommodate additional personnel.

18.8 Power and Electrical

The electrical power supply for the Merian Operation is from a site-based heavy fuel oil (HFO) power plant. It currently operates using seven 8.9 megawatt electrical (MWe) generators, based on an N+2 operational philosophy (with 100% power plant availability), for a total installed generating capacity of 62.3 MWe.

Power distribution for the Merian Project is implemented at 13.8 kV, 60 Hz and power is distributed to:

- Process plant and primary crusher;
- Permanent camp and communication tower (Telesur);
- Administration building, assay laboratory and gate house;
- Mine maintenance shop, warehouse, diesel fuel storage, explosive plant;
- Sediment ponds;
- TSF, reclaim water and seepage control;
- Effluent treatment plant.

A small diesel power plant provides backup power in case of a blackout at the main power plant.

18.9 Water Supply

The water supply for the Merian Operations is sourced from a combination of fresh water, ground water and storm water (rainfall).

The majority of water used for mining and processing activities is derived from surface water, which Newmont sources from large water-holding facilities around the site such as open pits, the TSF, and the treated water storage reservoir.

Potable water is sourced from direct stormwater capture (i.e. at the accommodations camp) and is supplemented by groundwater abstraction if required.

18.10 QP Comments on "Item 18: Project Infrastructure"

The infrastructure required to support mining operations has been constructed and is in use. An expansion to the TSF is required to support LOMP requirements.

19.0 MARKET STUDIES AND CONTRACTS

19.1 Market Studies

Newmont has an operative refining agreement with Argor-Heraeus SA, a Swiss refining house, for refining of doré produced from the Project.

Newmont's bullion is sold on the spot market, by marketing experts retained in-house by Newmont. 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.

19.2 Commodity Price Projections

Metal price assumptions are provided by Newmont management and are based on three-year trailing average prices applicable at the time the Mineral Reserves are estimated.

Metal price assumptions used for the 2018 Mineral Resource and Mineral Reserve estimates are as follows:

Mineral Reserves: US$1,200/oz Au;

Mineral Resources: US$1,400/oz Au.

19.3 Contracts

There are 14 major contracts currently in place to support the Merian Mine operations, in addition to the refining contracts discussed in Section 19.1. These contracts cover items such as bulk commodities, operational and technical services, mining and process equipment, earthworks projects, security, transportation and logistics, and administrative support services, and. Contracts are negotiated and renewed on an annual or biannual basis. Contract terms are typical of similar contracts in Suriname.

19.4 QP Comments on "Item 19: Market Studies and Contracts"

The QP notes:

- 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;
- Metal prices are set by Newmont management and are appropriate to the commodity and mine life projections.
- Contracts other than the refining contracts are typical of similar contracts in Suriname. These contracts are negotiated and renewed as needed.

The QP is of the opinion that the marketing and commodity price information is suitable to be used in cashflow evaluations supporting Mineral Reserve estimates.

Silver is not estimated in the Mineral Resources or Mineral Reserves. Mine production has shown that a silver credit is payable in the doré. If such silver credits are payable in the future, there is a minor economic upside potential from the silver content in the doré.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Baseline Studies

Baseline studies completed in support of mine design and permitting included the following:

- Climate: rainfall, wind directions, storm event durations and frequencies, temperatures;
- Air quality: total suspended particulate matter (TSP); particulate matter less than 10 µm aerodynamic diameter (PM10); particulate matter less than 2.5 µm aerodynamic diameter (PM2.5); arsenic (As); total chromium (Cr); nickel (Ni); nitrogen dioxide (NO_2); sulfur dioxide (SO_2); carbon monoxide (CO);
- Water quality: surface waters and ground waters;
- Characterization of hydrogeological units;
- Soil quality;
- Biological resources: flora, fauna;
- Visual landscape.

Environmental and social management plans developed in support of operations include:

- Air quality management plan (includes noise and vibration);
- Traffic and transportation;
- Safety management plan;
- Spill prevention, control and countermeasures plan (SPCC);
- Closure and reclamation plan;
- Waste management plan (hazardous and nonhazardous);
- Social management plan;
- Water management plan (includes TSF, storm water and sediment control);
- Construction environmental management program;
- Biodiversity management plan;
- Vegetation disposal plan;
- Cyanide management plan;

- Waste rock management plan;
- Wildlife management plan;
- Chemical management plan.

These plans are routinely reviewed and updated as operations evolve at Merian. Plans are administered under the change management and document control procedures implemented. No significant changes to the impacts quantified in the baseline studies completed for the ESIA are expected as a result of the current LOMP.

20.2 Environmental Considerations/Monitoring Programs

A comprehensive environmental monitoring program is implemented at Merian to ensure compliance with the requirements of the ESIA. An overview of the monitoring program is as follows:

- Climate: Two weather stations are installed at Merian and continuously record meteorological data;
- Air quality: Ambient air is monitored at the primary air quality station and at the north and south mine gates on a continuous basis; point-source monitoring is completed annually at the power plant stacks
- Noise monitoring: Due to modelling showing that noise levels will be well within international standards at the nearest community, noise pollution is not considered to be a risk at Merian. Noise monitoring is completed twice per year to confirm this;
- Surface and groundwater: Monitoring takes place on all water discharges from the internal water management system, and on ambient water quality for surface and groundwater. Potential discharge points to water sources in and around Merian include mine impacted water (runoff and pit dewatering), treated effluent (sewage treatment plant or effluent treatment plant), unrecovered seepage (TSF), and treated water (treated water storage reservoir);
- Geochemistry: monitoring of the geochemistry of waste rock, and key aspects of soil management, and monitoring operational performance and compliance and in preparation for closure;
- Biodiversity: Preventing hunting, fishing and collection of plants and animals; reducing wildlife mortalities and relocating low-mobility wildlife; revegetation of disturbed areas; and freshwater aquatic life assessments.

Newmont is required to provide an Annual Environmental Report (AER) to NIMOS providing the data and an interpretation and assessment of the environmental monitoring and management programs at Merian.

20.3 Closure Plan

Newmont has a Closure and Reclamation Management Plan that outlines closure and reclamation activities planned during the operational life of the Merian gold mine. Closure and reclamation activities at Merian are performed with the aim of minimizing the long-term impact of mining and mineral processing activities on the local environment and communities, by adopting and continuously improving best management practices (BMPs).

The general objectives of closure and reclamation planning at Merian include:

- Protect human health, safety and the environment;
- Ensure that the reclamation and closure design will provide long-term physical and chemical stability;
- Ensure the long-term aim of returning the site to a forested habitat consistent with the surrounding forest is considered and accounted for in the planning process;
- Implement progressive reclamation where it is practicable, efficient and cost-effective;
- Incorporate social input into reclamation planning;
- Provide opportunities for social development and long-term productive land use throughout the reclamation process; and,
- Comply with Mineral Agreement, ESIA and other commitments.

Closure activities will include those required to return the site as much as possible to pre-mining conditions with the exception of improvements in areas currently impacted by artisanal mining activity:

- Regrading of waste rock disposal area and re-vegetation;
- Pit lake management if necessary;
- Any required site grading to ensure long-term site drainage conditions;
- Stabilization of all slopes through re-grading and re-vegetation;
- Establishment of a long-term water management system at the TSF if necessary;
- Environmental monitoring

The Closure and Reclamation Management Plan is aligned with the objectives in the Newmont Closure and Reclamation Management Standard. One of the requirements in this standard is the annual review and update of a detailed closure liability cost estimate under both LOM and Financial Accounting Standards Board (FASB, or “current situation”) scenarios. The 2018 LOM closure cost estimate for Merian is estimated to be US$76.3 M.

20.4 Permitting

Suriname is governed according to the 1987 Constitution of the Republic of Suriname. To date, Suriname does not have an approved environmental policy and there is no legislation dealing specifically with environmental management. There are several government policies that concern sustainable development and biological resources, including the Government Declaration, the Multi-Annual Development Plan, and the National Biodiversity Strategy. The Merian gold mine complies with relevant existing legislation, including government policy documents.

The National Council for the Environment (NMR) was established in 1997 with a mandate to advise the government of Suriname on the development and implementation of national environmental policies. The NMR consists of a chairperson and 5–10 members representing government, private sector, Amerindian and Maroon communities, labor unions, consumer rights, and other non-governmental organizations (NGOs).

Executive support for the NMR is provided by NIMOS. NIMOS was originally established in 1998 by Presidential Decree as an entity subordinate to the President's office and was later ordered by the President to report to the Ministry of Labor, Technological and Environment (ATM) as its technical division in 2001. NIMOS is the main environmental management policy and advisory body and acts as a research institute. Among other accountabilities, NIMOS is also responsible for advising the Ministry in their review and approval of Environmental and Social Impact Assessments (ESIA).

A final ESIA was prepared in January 2013 and approved in December 2013. The Mineral Agreement between the Government of Suriname and Surgold was ratified in November 2013, signed in August 2014 and has a 25-year term.

The Merian Mining Act granted permission to the government to enter into the Mineral Agreement on behalf of the Republic of Suriname. The Mineral Agreement is an attachment to the Merian Gold Mining Act, which was published in the Official Gazette of the Republic of Suriname (S.B. 2013 no. 162) and therefore the Mineral Agreement has force of law.

The grant of the exploitation permit, Mineral Agreement signing and the ESIA approval are the key permits supporting operations. The only other major operational permits required are a permit from the Civil Aviation Authority to allow the operation of the mine site airstrip, and a permit to import explosives.

20.5 Considerations of Social and Community Impacts

Community consultation and participation were begun in the preliminary planning and scoping phase for the ESIA and during environmental and social baseline data collection. Further stakeholder engagement activities including disclosure and public comment on the draft ESIA were conducted in June 2012:

- Socio-economic surveys;
- Focus group discussions with different interested groups;

- Community meetings and key informant interviews with key local, regional and national stakeholders (e.g., government and local administration, NGOs, women's groups and health specialists).

Efforts were made to identify marginalized or vulnerable groups (e.g., according to livelihood, gender, age, ethnicity, religion) and to develop a fully inclusive and participatory engagement process allowing all stakeholders a 'voice'. During 2018, an update to the ESIA was conducted in the form of an additional Historical Narrative on traditional landowners that resulted in the identification of an additional stakeholder group.

The Project has limited local impacts, as the closest village, at Langa Tabiki is 17 km from the mine site.

As part of its recruitment policy, Newmont has a commitment to favor employees within the Pamaka area (local to the project) and then elsewhere in Suriname, leading to increased incomes and potentially improving standards of living for the workforce.

A Cultural Heritage Management Plan will be developed in 2019 that will address the following:

- Chance Finds Policy for archeological finds;
- Means to collect and preserve Pamaka history and heritage.

Newmont provides Cultural Awareness Training and has established a Worker Code of Conduct for the site.

A cooperation agreement with the Pamaka community was signed in 2016. That agreement focused on commitments such as a Community Development Fund, communication, complaints and grievances, local procurement and employment, artisanal and small-scale mining, participatory monitoring, safety, road maintenance, and trips. These steps provide a forum to ensure formal, documented agreement on mitigation measures and community development programs.

Newmont has implemented measures to mitigate Project impact including:

- Engaging regularly with project stakeholders;
- Establishing a feedback mechanism (i.e. grievance process) for employees and community members;
- Prioritizing local hiring and procurement of goods and services;
- Developing an Emergency Response Plan that includes community engagement;
- Working with local and national health authorities to mitigate the project's contribution to the transmission of communicable diseases.

20.6 QP Comments on "Item 20: Environmental Studies, Permitting, and Social or Community Impacts"

The QP was provided with information from Newmont legal and permitting staff that the Merian operations hold the necessary permits to operate or have applied for renewals of the necessary permits, that social and community impacts have been addressed for LOM open pit requirements, and that all needed reclamation and closure plans and sureties are in place.

21.0 CAPITAL AND OPERATING COSTS

21.1 Capital Cost Estimates

21.1.1 Basis of Estimate

Cost estimates were developed by Newmont, based on BP19, and factored as appropriate. Mining sustaining capital includes equipment purchase and major components.

The major sustaining capital cost items are built up from the following key input areas:

- Mining: Equipment replacement and purchasing capital, freight, assembly, tires, buckets, machine shop and tools, medical equipment, aggregate and emulsion plants, light towers, sediment ponds, haul roads, geotechnical instruments;
- Process: General, direct and indirect crusher costs, milling tailings and water;
- Tails: TSF lift;
- Support: Town and camp, environmental, information technology, supply chain, human resources, finance;
- Exploration: conversion of Mineral Resources to Mineral Reserves.

21.1.2 Capital Cost Summary

The sustaining capital estimate is provided in Table 21-1, and totals approximately US$217 M. There is an additional US$76.3 M provision for closure/reclamation. Total sustaining capital costs, including closure, are anticipated to be about US$293 M.

Closure is shown separate from the other sustaining capital costs in Table 21-1 as these are viewed as discretionary expenditures. Newmont applies a capital recovery factor to the other costs, but not to closure costs.

Table 21-1: Sustaining Capital Estimate

Area	US$ M
Mining	93.21
Process	42.53
Tails	44.41
Support	19.01
Exploration	18.03
Total sustaining capital	***217.19***
Closure cost	76.3

21.2 Operating Cost Estimates

21.2.1 Basis of Estimate

Operating costs were developed by Newmont, based on BP19, factored as appropriate. These costs were used to establish costs for pit limit analysis and ore cut-offs.

Base mine operating costs are summarized in Table 21-2. These costs are used for input into the LG shells, and into the mine plans. They are adjusted based on haul distance and depth into the pit. Mining costs were unitized by pit and by material type to establish the base mining cost. Each pit has different distances from the pit exit to the crusher and to the WRSF. Each pit also has different incremental distances between ore and waste. The haul distances and material density define the base haul cost for each pit by material type. The incremental mine cost used for elevations below 550L is the truck haul cost traveling through every 1 m vertical distance of the in-pit ramp that has a 10% slope.

Process and G&A costs are included in Table 21-3.

21.2.2 Operating Cost Summary

Mining costs range from US$2.30–US$2.92/t mined depending on which mine is considered and the depth of the pit. Over the LOM, the costs average US$2.51/t mined (excluding sustaining capital and closure costs).

The LOM average unit process cost in BP19 is US$9.65/t processed, and the LOM average unit G&A cost is US$5.37/t processed.

Table 21-2: Base Mine Operating Costs

Item	Unit	Merian II			Maraba			Merian I		
		SAP	Trans	Rock	SAP	Trans	Rock	SAP	Trans	Rock
Fixed mine cost	US$/t	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Drill/blast/load	US$/t	0.46	0.77	0.80	0.46	0.77	0.80	0.46	0.77	0.80
Base Haul Costs	US$/t	0.62	0.58	0.56	0.47	0.44	0.42	0.50	0.47	0.45
Mine sustaining capital x CRF	US$/t	0.26	0.26	0.26	0.26	0.26	0.26	0.57	0.57	0.57
Closure cost	US$/t	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Base mine cost	***US$/t***	***2.45***	***2.71***	***2.71***	***2.30***	***2.57***	***2.58***	***2.64***	***2.91***	***2.92***
Incremental mine cost below 550	US$/t/m	0.002	0.0018	0.0018	0.002	0.0018	0.0018	0.002	0.0018	0.0018

21.3 QP Comments on "Item 21: Capital and Operating Costs"

Capital and operating cost estimates are based on BP19 assumptions.

LOMP sustaining capital costs, including closure, are estimated at approximately US$293 M.

Mining costs range from US$2.30–US$2.92/t mined, and average US$2.51/t over the LOM. The LOM average unit process cost in BP19 is US$9.65/t processed, and the LOM average unit G&A cost is US$5.37/t processed.

Table 21-3: Process and G&A Costs

Item	Unit	Merian II			Maraba			Merian I		
		SAP	Trans	Rock	SAP	Trans	Rock	SAP	Trans	Rock
Process (including re-handle)	$/t	6.06	10.88	11.78	6.06	10.88	11.78	6.06	10.88	11.78
G&A	$/t	4.20	5.04	6.30	4.20	5.04	6.30	4.20	5.04	6.30
Mill and sustaining capital including CRF	$/t	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Incremental ex-pit	$/t	0	0	0	0.25	0.24	0.23	0.33	0.31	0.29
Total	***$/t***	***10.92***	***16.58***	***18.74***	***11.17***	***16.81***	***18.96***	***11.25***	***16.88***	***19.03***

22.0 ECONOMIC ANALYSIS

22.1 Cashflow Analysis

Newmont is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration for the Merian Operations is supported by a positive cashflow.

22.2 Comments on Section 22

An economic analysis was performed in support of estimation of Mineral Reserves; this indicated a positive cashflow using the assumptions detailed in this Report.

23.0 ADJACENT PROPERTIES

This section is not relevant to this Report, as there are no adjacent properties that must be considered for the Project presented.

24.0 OTHER RELEVANT DATA AND INFORMATION

This section is not relevant to this Report as there is no other relevant data or information on the Merian Operations that has not been summarized and presented in the Report.

25.0 INTERPRETATION AND CONCLUSIONS

25.1 Introduction

The QP notes the following interpretations and conclusions, based on the review of data available for this Report:

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

- Information from legal experts and Newmont's in-house experts indicate that the mining tenure is valid and sufficient to support a declaration of Mineral Resources and Mineral Reserves;
- A 25-year Mining Agreement is in place;
- Newmont holds sufficient surface rights to allow mining activities at Merian
- There are no specific applicable water rights pertaining to water use or abstraction for use at Merian;
- Newmont is subject to a 6% net smelter return royalty to the Republic of Suriname that the government has elected to have payable in cash;
- There is an expectation of environmental damage as a result of artisanal mining activity.

25.3 Geology and Mineralization

- The Merian deposits are interpreted to be examples of orogenic gold deposits;
- Understanding of geological controls on mineralization, i.e., lithology, structure and alteration in the different zones is adequate to support Mineral Resource and Mineral Reserve estimation and mine planning;
- Mineralization style and setting are well understood and can support declaration of Mineral Resources and Mineral Reserves.

25.4 Exploration, Drilling and Analytical Data Collection in Support of Mineral Resource Estimation

- The exploration programs completed to date are appropriate for the style of the deposits on the Project;

- Sampling methods are acceptable for Mineral Resource and Mineral Reserve estimation;
- Sample preparation, analysis and security are performed in accordance with exploration best practices and industry standards;
- The quantity and quality of the lithological, geotechnical, collar and downhole survey data collected during the exploration and delineation drilling programs are sufficient to support Mineral Resource and Mineral Reserve estimation. The collected data adequately reflect deposit dimensions, true widths of mineralization, and the style of the deposits. Sampling is representative of the gold grades in the deposits, reflecting areas of higher and lower grades;
- QA/QC programs adequately address issues of precision, accuracy and contamination. Drilling programs typically included blanks, duplicates and SRM samples. QA/QC submission rates meet industry-accepted standards. The QA/QC programs did not detect any material sample biases;
- The data verification programs concluded that data collected from the Project are securely stored and are sufficiently error-free to support the geological interpretations and Mineral Resource and Mineral Reserve estimation.

25.5 Metallurgical Testwork

- Metallurgical testwork and associated analytical procedures were appropriate to the mineralization type, appropriate to establish the optimal processing routes, and were performed using samples that are typical of the mineralization styles found within the Project;
- Samples selected for testing were representative of the various types and styles of mineralization. Samples were selected from a range of depths within the deposits. Sufficient samples were taken so that tests were performed on sufficient sample mass;
- Recovery factors estimated are based on appropriate metallurgical testwork and are appropriate to the mineralization types and the selected process route. There are no elements identified in sufficient concentrations that are expected to adversely affect recoveries in the LOMP;
- The plant will produce variations in recovery due to the day-to-day changes in ore type or combinations of ore type being processed. These variations are expected to trend to the forecast recovery value for monthly or longer reporting periods.

25.6 Mineral Resource Estimates

- Mineral Resource estimates for the Project conform to industry best practices and are reported using the 2014 CIM Definition Standards;
- Factors that may affect the Mineral Resource estimate include: changes to long-term metal price assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological shape and continuity assumptions; changes to input parameters used in the pit shells constraining the Mineral Resources; changes to the cut-off grades applied to the estimates; variations in geotechnical, mining, and processing recovery assumptions; and changes to environmental, permitting and social license assumptions;
- There is upside potential for the estimates if mineralization that is currently classified as Inferred can be upgraded to higher-confidence Mineral Resource categories.

25.7 Mineral Reserve Estimates

- Mineral Reserve estimation for the Project incorporates industry best practices and meets requirements of the 2014 CIM Definition Standards;
- The Mineral Reserves are forward-looking information and actual results may vary. The risks regarding Mineral Reserves are summarized in Section 15.3 and in this sub-section. The assumptions used in the Mineral Reserve estimates are summarized in the footnotes of the Mineral Reserve table, and in Sections 15 and 16 of the Report;
- Mineral Reserves were estimated for the Merian II, Maraba, Merian I, and Kupari areas, assuming open pit methods with conventional methods for drilling, blasting, loading with hydraulic shovels and haulage by large trucks. Stockpiles were included in the estimate;
- Conversion of Mineral Resources to Mineral Reserves was supported by a detailed mine plan, an engineering analysis, and consideration of appropriate modifying factors. These included the consideration of dilution and ore losses, open pit mining methods, metallurgical recoveries, permitting and infrastructure requirements;
- Areas of uncertainty that may materially impact the Mineral Reserve estimates include changes to long-term metal price assumptions; changes to include operating, and capital assumptions used, including changes to input cost assumptions such as consumables, labor costs, royalty and taxation rates; variations in geotechnical, mining, dilution, and processing recovery assumptions; including changes to pit phase designs as a result of changes to geotechnical, hydrogeological, and engineering data used; changes to the cut-off grades used to

constrain the estimates; and changes to environmental, permitting and social license assumptions.

25.8 Mine Plan

- Mining operations can be conducted year-round;
- The open pit mine plans are appropriately developed to maximize mining efficiencies, based on the current knowledge of geotechnical, hydrological, mining and processing information on the Project;
- Operations use a standard drill-and-blast, truck-and-shovel configuration;
- The mine will operate until 2033. The last year of operations is a partial year. The predicted 14-year mine life is achievable based on the projected annual production rate and the Mineral Reserves estimated;
- Production forecasts are achievable with the existing equipment and plant;
- There is a risk that the dilution assumed for Merian II, when using 10 m benches and mining in transition and fresh rock material, may be underestimated;
- There is potential risk around pit dewatering, which is related to ground water controls (structure and alteration), and the resulting potential challenge of slope depressurization in saprock and saprolite;
- There may be an upside opportunity for the mine plan in 2023 that may include a combination of mine productivity improvements, phase re-designs and feeding sub-grade material;
- As part of day-to-day operations, Newmont will continue to review the mine plan and consider alternatives to, and variations within, the plan. Alternative scenarios and reviews may be based on ongoing or future mining considerations, evaluation of different potential input factors and assumptions, and corporate directives.

25.9 Recovery Plan

- The process plant is designed to treat a range of 8–12 Mt/a of ore depending on the ore mix from mining operations. The process plant flowsheet design was based on testwork results, previous study designs and industry standard practices for handling combinations of fresh rock and saprolite. The process facilities are appropriate to the mineralization styles;
- The process method is conventional to the industry. The comminution and recovery processes are widely used in the industry with no significant elements of technological innovation;

- Increasing ore hardness, as a result of transition and fresh rock mill feed materials becoming more predominant, has the potential to increase plant wear-and-tear due to hard rock. Harder material may also result in increased power costs. Blending of fresh rock and transitional material will need to be monitored to ensure that LOMP forecasts from these materials are met;
- There is an opportunity to optimize grind and recovery for harder materials to possibly increase the mill throughput rate;
- The plant will produce variations in recovery due to the day-to-day changes in ore type or combinations of ore type being processed. These variations are expected to trend to the forecast recovery value for monthly or longer reporting periods.

25.10 Infrastructure

- All key infrastructure is built, and the mine is operating. The infrastructure includes mine maintenance facilities and warehouse; process workshop and warehouse; reagents storage facilities; administration building; mine office building; mill office building; mill search house; gate houses; Moengo terminal; mining lunchrooms; main camp; and the assay/metallurgical laboratory. The electrical power supply for the Merian Operation is from a site-based heavy fuel oil (HFO) power plant;
- An expansion to the existing TSF is required to support LOMP tailings disposal requirements beyond 2028. The TSF (Phase 2) expansion area is adjacent to TSF Phase 1 and will be implemented in a similar manner. Both Phase 1 and Phase 2 TSFs were included in the Merian ESIA;
- The existing infrastructure, staff availability, existing power, water, and communications facilities, and the methods whereby goods are transported to the mine are all in place and well-established and can support the estimation of Mineral Resources and Mineral Reserves.

25.11 Environmental, Permitting and Social Considerations

- Much of the Merian site has been previously disturbed by timber cutting and artisanal and small-scale mining activities;
- Baseline studies completed in support of mine design and permitting included climate, soil, air, and water quality, characterization of hydrogeological units, biological resources and landscape studies;
- Environmental and social management plans have been developed in support of operations;
- The projected LOM closure liability estimate is US$76.3 M;

- The grant of the exploitation permit, Mineral Agreement signing, and the ESIA approval are the key permits supporting operations. The only other major operational permit required is a permit from the Civil Aviation Authority to allow the operation of the mine site airstrip;
- The Project has limited local impacts, as the closest village, at Langa Tabiki is 17 km from the mine site;
- Newmont has ongoing interactions with local stakeholders. In 2018, as a result of an updated Historical Narrative on traditional landowners, a new stakeholder was added to the ESIA. A Cultural Heritage Management Plan will be developed in 2019.

25.12 Markets and Contracts

- 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;
- Metal prices are set by Newmont management and are appropriate to the commodity and mine life projections;
- Contracts other than the refining contracts are typical of similar contracts in Suriname. These contracts are negotiated and renewed as needed.
- Mine production has shown that a silver credit is payable in the doré. If such silver credits are payable in the future, there is a minor economic upside potential from the silver content in the doré;

25.13 Capital Cost Estimates

- Sustaining capital costs were developed by Newmont, based on BP19, factored as appropriate;
- LOMP sustaining capital costs, including closure, are estimated at approximately US$293 M.

25.14 Operating Cost Estimates

- Operating costs were developed by Newmont, based on BP19, factored as appropriate. These costs were used to establish costs for pit limit analysis and ore cut-offs;
- Mining costs are variable and range from US$2.30–US$2.92/t mined. The average LOM mining cost is US$2.51/t mined. The LOM average unit process cost in BP19

is US$9.65/t processed, and the LOM average unit G&A cost is US$5.37/t processed.

25.15 Economic Analysis

- Under the assumptions in this Report, the Merian Operations show a positive cash flow over the life-of-mine and support Mineral Reserves. The mine plan is achievable under the set of assumptions and parameters used.

26.0 RECOMMENDATIONS

26.1 Introduction

Recommendations have been broken into two phases. Phase 1 recommendations are related to drilling activities and sample preparation protocols.

Recommendations proposed in Phase 2 are suggestions for additional data collection and data support for metallurgical assumptions.

An element of the metallurgical testwork proposed in Phase 2 may use drill core generated by Phase 1; however, existing core could also be used for the program. The remainder of the Phase 2 work program is independent of Phase 1 and could be conducted concurrently.

Phase 1 is estimated at about US$39.6 M. Phase 2 is budgeted at approximately US$150,000.

26.2 Phase 1

26.2.1 Drilling

Three separate core drill programs are proposed.

- Exploration drilling is planned along structural trends that are similar to the northwest-oriented structural corridors that host the known mineralization. The initial drill programs will follow-up on geochemical and early drill programs in the NW Merian, Tolumu, PK29, and Marcus areas (refer to locations in Figure 9-9). About 60,000 m of drilling is proposed for the initial work. Additional drilling will be required if this program successfully discovers significant mineralization;
- Mineralization at depth under the Merian II open pit may, with additional drilling, support underground mining studies. About 12,000 m of drilling is recommended;
- Infill drilling in support of potential conversion of Mineral Resources to Mineral Reserves is planned in the pit areas; this drilling would be conducted on an annual basis. About 20,000 m of drilling per year is suggested;

The all-in drilling cost for these programs is estimated at about US$300/m. All-in costs include drill pad preparation, access road construction, drilling, mobilization/demobilization, assay, labor, and remediation costs.

The budget arising from the drilling recommendations is therefore US$18 M for district exploration, US$3.6 M for investigation at depth under the Merian II open pit, and at least US$18 M to cover conversion support drilling for a three-year period for mining.

The overall program budget for the contemplated three core drill programs is US$39.6 M.

26.2.2 Sample Preparation

Exploration sample preparation precision should be investigated by submitting both halves of ½ core splits every 50th sample for screen fire assay to confirm that the sample preparation protocol delivers precision ≤20% and therefore meets Newmont's internal standard.

The current blasthole sampling and sample preparation procedure results in preparation and pulp duplicate precision that is >20%, and therefore outside Newmont internal guidelines. The sampling procedures for fresh rock in the pits and the sample preparation protocols for fresh and transition rock should be reviewed to determine what changes are necessary to bring the sample preparation precision into line with corporate standards.

These programs are budgeted at US$15,000–$20,000.

26.3 Phase 2

Mill throughput assumptions on fresh rock ore types are a risk due to the high variability in drop weight index values, primarily within the Maraba rock types. For Merian II fresh rock, the small number of data points similarly presents a degree of risk. A program of geometallurgical characterization of fresh rock material in both pits is recommended.

Depending on the view of the metallurgical team involved in the testwork, the program could use existing core, or use a portion of the core from the recommended Merian II deeps or resource/reserve conversion drilling suggested in Section 26.2.1.

This program is estimated at about US$100,000.

The operation continues to experience high levels of gold concentration in the grinding circuit due to underutilization of the gravity circuit. This represents an exposure to gold accumulation and loss, with potential impacts on gold security, metallurgical accounting, mine to mill reconciliation and metal recovery.

Remediation activities are underway and should continue. This program is estimated at about US$50,000.

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