LOLA GRAPHITE PROJECT

Technical Report – Preliminary Economic Assessment

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1 SUMMARY

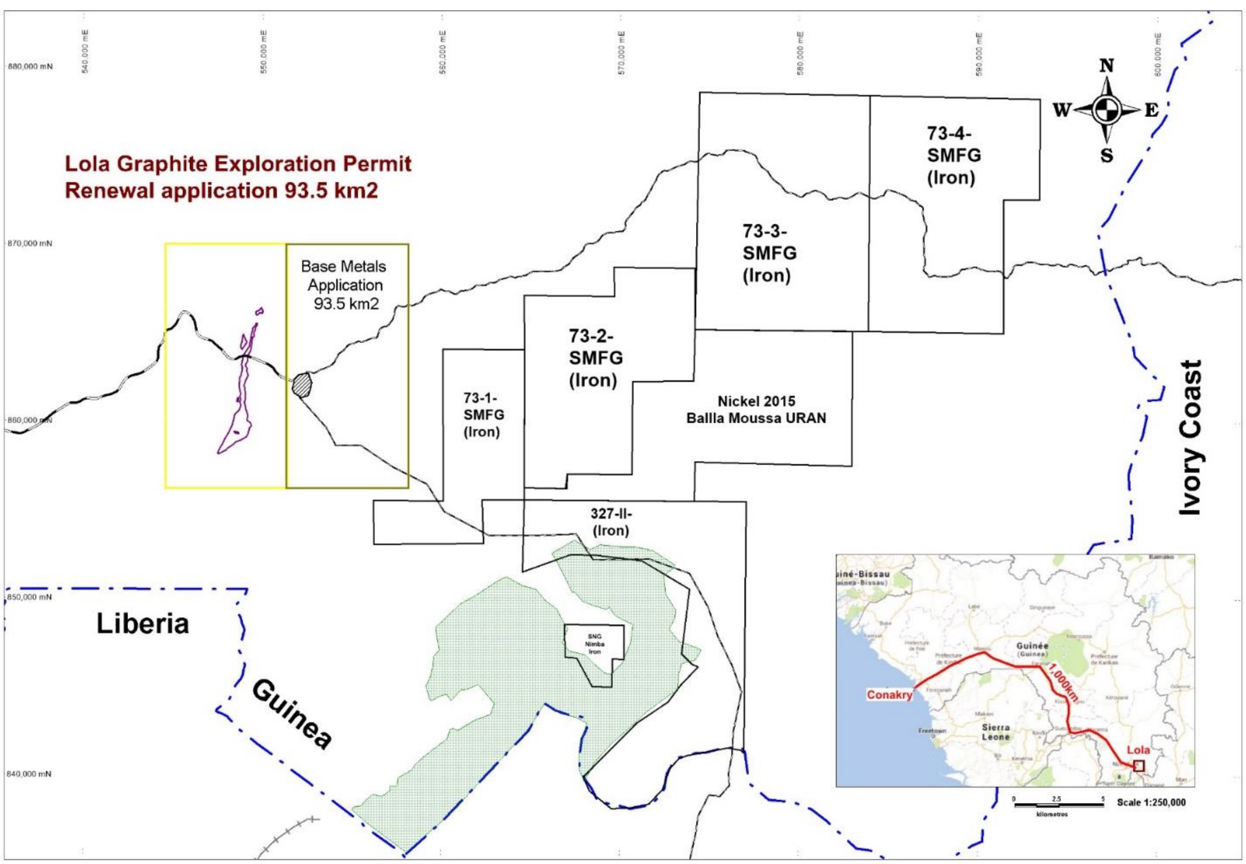
SRG Graphite Inc. ("**The Company/SRG**") is a listed company trading on the Toronto Stock Exchange under the symbol SRG. The Lola Graphite Project is 100% owned by SRG Graphite Inc. ("**SRG**"). The Lola Graphite occurrence is located near the town of Lola in southeastern Guinea, 1,000 kilometres (km) from Conakry, the capital of the Republic of Guinea.

SRG has mandated DRA/Met Chem, a division of DRA Americas Inc. ("**DRA/Met-Chem**") to complete this Technical Report on the Preliminary Economic Assessment ("**PEA**"), following National Instruments 43 101 ("NI 43 101") rules and guidelines, regarding the Lola Deposit in order to advance the Project.

1.1 Property Description and Location

The Lola Graphite occurrence is located near the town of Lola in south-eastern Guinea. The occurrence is within 50 km of the border with Côte d'Ivoire and it is located 3.5 km west of the town of Lola (Figure 1.1).

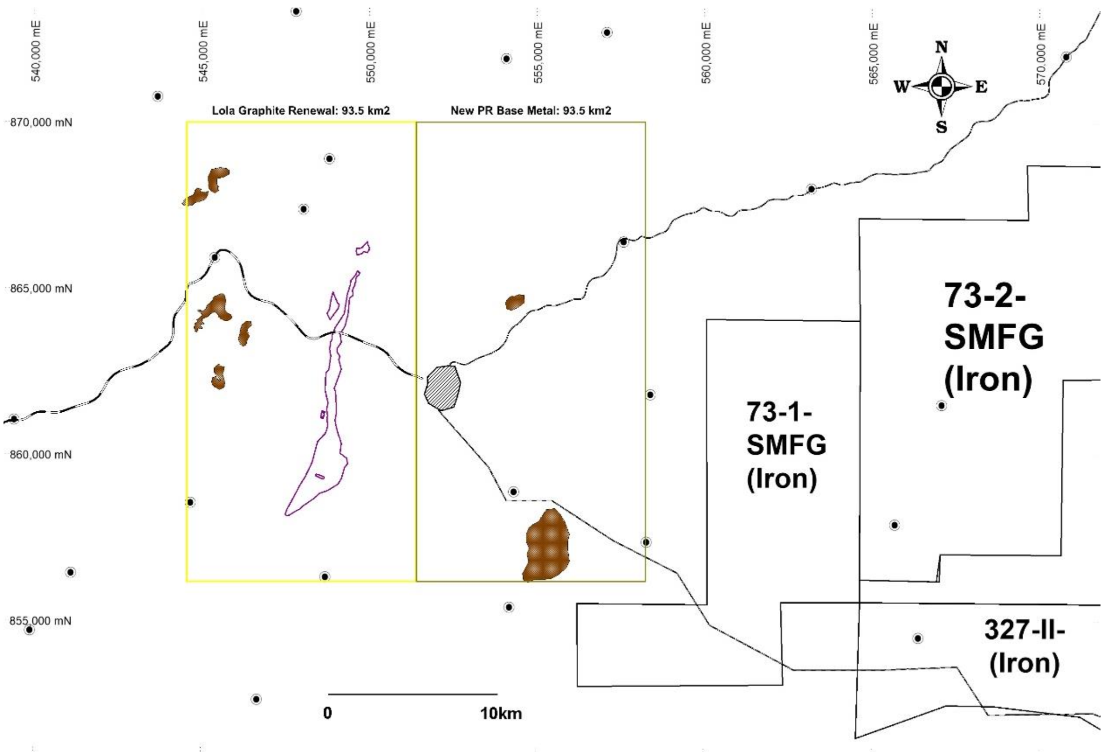
Figure 1.1 – Lola Graphite PR 4543 Location



The Property, located within the department of Lola, was initially formed by four (4) exploration licenses, (*Permis de Recherches Minières*) globally named *Permis de Recherches 4543*, shaping a rectangular form of 27.9 km by 13.7 km in size for a cumulative total of 380 km^2. The Permit was renewed on August 29, 2016 for two (2) years and according to legislation, the surface area was reduced by approximately 50 % from 380 km^2 to 187 km^2. (Figure 1.2)

SRG filed a second renewal application for the Lola graphite exploration license on May 29, 2018. As per the current legislation, the surface area has been reduced by 50% to 93.5 km^2. The exploration permit is still to be granted.

Figure 1.2 – Lola Graphite Exploration Renewal Permit



1.2 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

Guinea is divided into four (4) main regions: Maritime Guinea, also known as Lower Guinea or the Basse-Côte lowlands, populated mainly by the Susu ethnic group; the cooler, mountainous Fouta Djallon that runs roughly North-South through the middle of the country, populated by Fulas, the Sahelian Upper-Guinea to the Northeast, populated by Malinké, and the forested jungle regions in the southeast (Forested Guinea), where the Lola Project is located, with several ethnic groups. Guinea's mountains are the source for the Niger, Gambia, and Senegal rivers, as well as the numerous rivers flowing to the sea on the west side in Sierra Leone and Côte d'Ivoire.

Guinea's economy is largely dependent on agriculture and mineral production. It is the world's second largest producer of bauxite and has rich deposits of diamonds and gold.

The Property can be accessed from the town of Lola (see Section 5.3) via a paved road and a network of bush tracks.

The terrain can be described as a gently undulating plain with one isolated topographic high reaching 75 m above the surrounding area. The elevation of the area varies from 485 m to 520 m above sea level.

The Project area falls within the Guineo-Soudanian climatic condition, which is a transition zone between equatorial and tropical climates. The area has distinct rainy and dry seasons. There is an average of 1,600 mm of rain per annum.

1.3 History

The Lola Graphite occurrence was discovered during the construction of the Conakry-Lola road in 1951. Between 1951 and 1955 the *Bureau Minier de la France Outremer* (“**BUMIFOM**”) carried out 309 shallow pits in order to further investigate its potential. At that time, BUMIFOM outlined a graphite rich occurrence of four (4) km long by 100 to 200 m wide.

Following the independence of Guinea, the Project was abandoned and subsequently forgotten until Sama Resources Guinée SARL (“**SRG Guinée**”), a fully-owned SRG subsidiary “re-discovered” the occurrence in 2012.

1.4 Geological Setting and Mineralization

The graphite-rich paragneiss is present at surface over 8.7 km with an average width of 370 m and is up to 1,000 m wide. The first 32 m or so of the deposit are well weathered (lateritized), freeing graphite flakes from the silicate gangue and allowing for easy grinding with an optimal recovery of large and jumbo flakes. The graphite mineralization continues at depth within the non-weathered paragneiss.

Graphite mineralization is well exposed at surface on its entire strike length with visible mineralisation ranging from traces to 20 % graphitic carbon (“Cg”) and often seen in higher concentration agglomerates.

1.5 Deposit Type

Graphite is one of the three (3) familiar, naturally-occurring forms of the chemical element Carbon (“**C**”). The other two (2) varieties are amorphous carbon (not to be confused with amorphous graphite) and diamond. Graphite may be synthetically produced. Graphite is widely distributed throughout the world, occurring in many types of igneous, sedimentary, and metamorphic rocks.

Natural graphite generally occurs in one of three (3) forms:

- Microcrystalline or amorphous;
- Crystalline lump or vein;
- Crystalline flake.

The Lola Graphite occurrence is a paragneiss-hosted, crystalline, flake-type occurrence.

1.6 Exploration Work and Drilling

1.6.1 Exploration

Since 2012, SRG Guinée has embarked in detailed prospecting programs aimed at delineating and characterizing the graphite occurrence. A grid with cut-lines on 200 m spacing was established in the field for a total of 44 line km. A Max-Min electro-magnetic survey (32.5 line km) completed over the length of the occurrence was successful in outlining the boundaries with the surrounding country rock and identifying sectors with high graphite flakes concentration.

Mineralogical and petrological investigations were performed at the University of Franche-Comté, France, and several metallurgical tests were completed in 2014, 2015 and 2016.

Several mineralogical and petrological studies were also performed by Actlabs and through a graduate study at the University of Franche-Comté, France (Section 7).

ProGraphite GmbH and Dorfner/Anzaplan both from Germany performed additional detailed metallurgical investigations in 2017.

1.6.2 Drilling

DRA/Met-Chem believes that the drilling programs were successful in defining the graphite mineralization in sufficient detail to support the present resource estimation. The survey of all the hole collars provides accurate location of the holes in the deposits. The hole deviation path was not measured as it was unnecessary considering the short length of the holes, the majority of which reached depths of 20 to 40 m.

It is the opinion of DRA/Met-Chem that the previous drilling campaign was conducted according to current industry best practices. No drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results were observed by DRA/Met-Chem in the drilling programs. The data provided by the drilling and interpretation therefore are adequate for the purposes of the resource estimate presented in this Report.

1.7 Mineral Processing and Metallurgical Testing

The purpose of the test work program was to characterize the Lola Project deposit and to produce a flow sheet that would allow producing high quality graphite concentrate while maximizing graphite recovery and graphite flake size.

The scoping test work completed by SGS and reported in May 2018 provides a level of knowledge on the metallurgical response of the ore sufficient for the preliminary economic assessment study.

The major findings of the programme were the following:

- Mineralogical analysis showed that the major gangue minerals were quartz, aluminum/iron silicates and oxides, feldspars, micas, and iron oxides;
- The best cleaner flotation tests on the master composite produced concentrates above 96.3% C(t) at 78.7% C(t) recovery, and similar concentrate grades at 83.2% C(t) recovery. It was noted that if the rougher concentrate polishing time increased to 30 minutes, the grade of the concentrate for -100 mesh fraction will decrease to 93.5% C(t) as opposed to 97 % C(t) for the test with 10 minutes polishing time for rougher concentrate;
- Bulk flotation tests produced high concentrate grades of 98.9% C(t) for the +48 mesh fraction, 96.1% C(t) for the +80 mesh fraction, 94.6% for the +100 mesh fraction, and 97.9% C(t) for the - 100 mesh fraction. An overall recovery of 75.3% was obtained for the processing of 150 kg of feed material;
- Variability composite cleaner flotation showed promise in all samples with final coarse concentrates all grading greater than 93.2% C(t); and
- All fine concentrates achieved grades higher than 90 % C(t). However, most samples required longer attrition time to achieve grades above 95% C(t).

1.8 Mineral Resources Estimate

Dr. Marc-Antoine Audet, P.Geo., Lead Geologist, SRG was responsible for estimating the mineral resources and has reviewed and approved the contents of this press release. Dr. Audet is a non-independent Qualified Person ("QP") within the meaning of NI 43-101 – Standards of Disclosure for Mineral Projects of the Canadian Securities Administrators. Under subsection 5.3(1) paragraph (c), as the mineral resources have changed by less than 100 % from the previous filing, an independent QP is not required for the filing of this mineral resource update.

The resource classification follows the Canadian Institute of Mining, Metallurgy, and Petroleum's ("**CIM**") definition for classification of Indicated, Indicated and Measured Mineral Resources.

The criteria used for classifying the estimated resources are based on confidence in and continuity of geology and grades. The base case classified Mineral Resource Estimate is summarized in the following table at a cut-off grade of 3.0 % Cg per tonne (Table 1.1) together with estimate sensitivities at 1.46 % Cg/t and 5.0 % Cg/t. The Resource Estimate and sensitivities scenarios are established with data from boreholes drilled by June 14th, 2018.

A surface map with the outlines of classified mineral resources is presented in Figure 1.3.

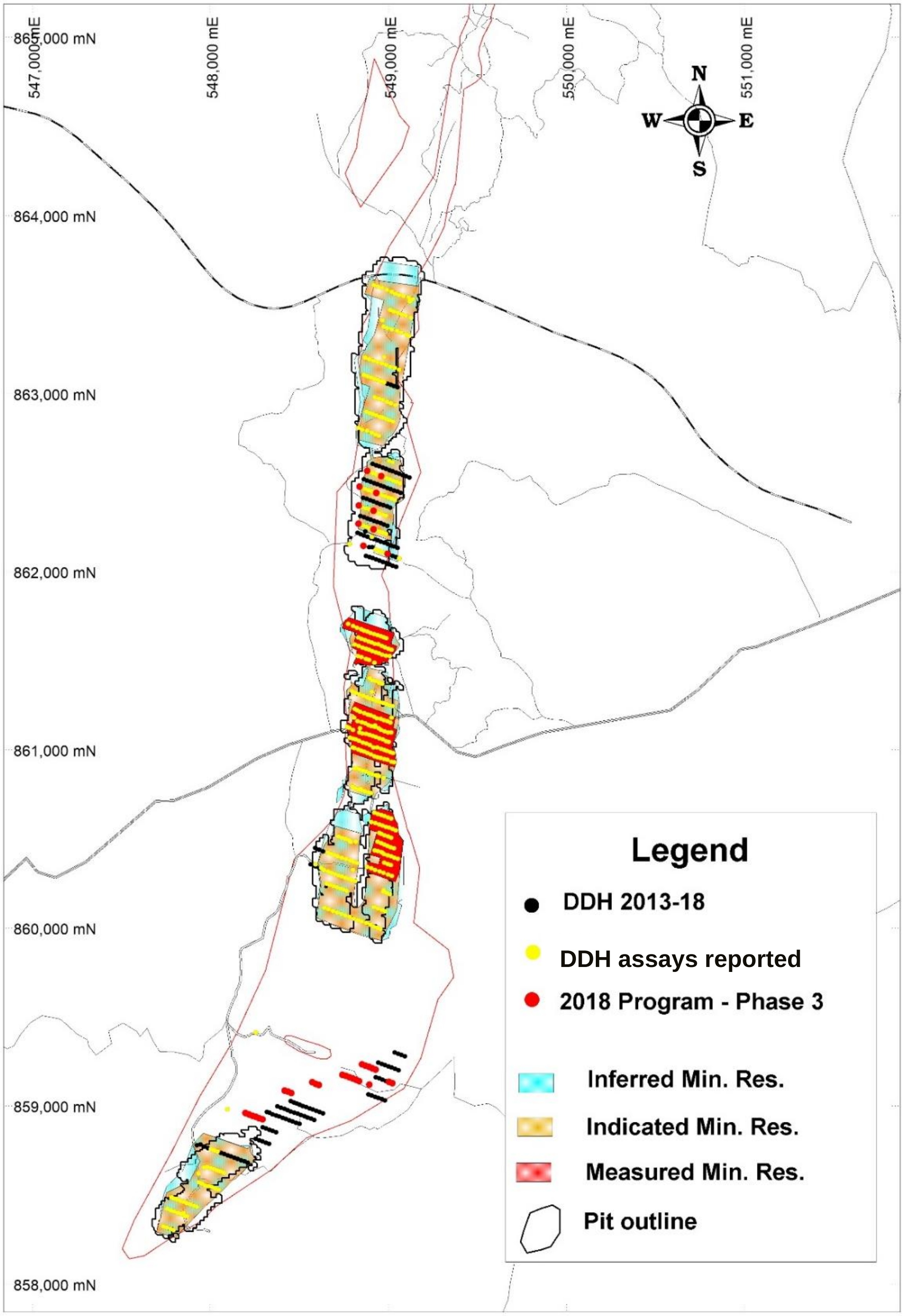
Table 1.1 – Mineral Resources – Cut-off Grade of 3.0 % Cg and Sensitivity Analysis

Base Case Mineral Resources				
Cut-off grade	**Classification**	**Tonnes**	**Cg**	**In-situ Cg**
Cg %		**Mt**	**%**	**t**
3%	Measured	1.40	5.32	74,700
	Indicated	10.79	5.58	602,200
	Total M&I	**12.20**	**5.55**	**676,900**
	Inferred	2.06	6.07	125,200
Sensitivities				
Cut-off grade	**Classification**	**Tonnes**	**Cg**	**In-situ Cg**
Cg %		**Mt**	**%**	**t**
1.64%	Measured	2.13	4.31	91,900
	Indicated	17.00	4.39	746,400
	Total M&I	**19.14**	**4.38**	**838,400**
	Inferred	2.82	5.07	143,000
Cut-off grade	**Classification**	**Tonnes**	**Cg**	**In situ Cg**
Cg %		**Mt**	**%**	**t**
5%	Measured	0.60	7.14	42,700
	Indicated	5.02	7.46	374,800
	Total M&I	**5.62**	**7.43**	**417,500**
	Inferred	1.18	7.54	88,700

Note:

1) CIM definitions (May 10, 2014) observed for classification of mineral resources.
2) Block bulk density interpolated from specific gravity measurements taken from core samples.
3) Resources are constrained by a Lerchs-Grossman (LG) optimized pit shell using MineSight software.
4) Pit shell defined using 30-degree pit slope, $1,300/t of concentrate (94.6% Cg grade, 79.25% Cg plant recovery), $2.00/t mining costs, $10.00/t processing costs, and $3.50/t G&A and $175/t of concentrate for transportation costs.
5) Mineral resources are not mineral reserves and have no demonstrated economic viability. The estimate of mineral resources may be materially affected by mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors ("Modifying Factors").
6) Numbers may not add due to rounding.
7) Effective Date of Resource Estimate is June 14th, 2018.

Figure 1.3 – Lola Graphite Deposit – Classified Mineral Resources Within Pit Outline



1.9 Mining Method

The current mine plan is to mine Lola mineral resources contained within three (3) areas via open pit mining. It is estimated that approximately 20.7 Mt of ore is extractable by conventional surface mining operations, using articulated haul trucks and loading shovels, over a 16 year mine life.

The proposed mining sequence is as follows: Approximately nine (9) years at the North area, followed by four (4) years in the Central area and then three (3) years in the South area.

A production schedule (mine plan) was developed for the Project to produce 50,000 tonnes of graphite concentrate per year. Using the mill recovery of 79.25 % and a target concentrate grade of 94.6 % results in an average run of mine feed of 1.3 Mt per year (3,650 t/d) at an average diluted grade of 4.43 % Cg.

1.10 Recovery Methods

The graphite concentrate will be recovered by a conventional flotation process. The beneficiation process has an average graphite overall recovery of 79.25 % producing an average graphite concentrate grade of 94.23 % Cg.

The processing plant consists of a crushing area and a concentrator where material beneficiation and concentrate dewatering, screening, and packaging takes place. The plant is designed for a production of 50,000 dry tonnes per year of saleable graphite concentrate divided in four (4) standard size fractions: +48 mesh, –48+80 mesh, –80+100 mesh and –100 mesh.

1.11 Project Infrastructure

Power for the Lola Graphite Project will be supplied by three (3) Heavy Fuel Oil (“HFO”) Generator units. The total power requirement is estimated at four (4) megawatts (“MW”).

The tailings management plan developed uses three (3) tailings sites sequentially through the life of the Project.

Based on the water balance performed, the water volume pumped into the tailings ponds is expected to be 2,197 m^3 per day at 55 % solids. It is estimated that 1,750 m^3 per day will be reclaimed and pumped back to the process water tank for use in the plant.

More detailed water balance estimates will be prepared during the next phase of the Project to include the impact of precipitation/evaporation and water released to the environment.

Provision has been made for ancillary buildings and facilities such as maintenance garage and storage, administration and mine office areas and an emergency concentrate warehouse.

1.12 Market Studies and Contracts

At this early stage, no independent analysis of the market for graphite concentrate has been conducted for the Lola Project. Similarly, no sales contract has been secured. As the Project moves on to during the next phase, an independent market study should be carried out.

Lola's graphite concentrate selling price was determined based on pricing information from Benchmark Mineral Intelligence, as well as comparable concentrates pricing. The graphite concentrate basket sale price used in this study was established at $1,328 US/tonne. This price was estimated taking into account the purity and size fractions obtained during the metallurgical test work campaign detailed in Section 13 of this Report.

1.13 Environmental Studies, Permitting and Social or Community Impact

As per the Guinean regulation, all exploration permits ("**PR**": *Permis de recherches*) have to follow the regulatory approach established in Guinea for assessing the environmental impact of mining projects.

The environmental approval process consists of conducting a preliminary environmental assessment, followed by two (2) cycles of consultation with the stakeholders and communities concerned with the project, and environmental baseline and social characterization studies, as well as issuing an environmental and social impact study report.

The preliminary environment assessment of the Lola Project was conducted in Spring 2017 following a site visit to the Project area. The visit focused on meeting the various national and local stakeholders involved in the Project. The first consultation cycle was completed during this visit. The second consultation cycle started was held from July 23rd to August 3rd, 2017, together with the first part of the socio-economic survey. Another round of consultation was held from May 31st to June 14th, 2018 to complete the socio-economic survey. A public enquiry will be organized in Lola, by the BGEEE following the submission of the preliminary environmental and social impact assessment ("**ESIA**") study report.

Furthermore, fieldwork for the characterization of the biophysical environment was initiated on site in Fall 2017 to collect baseline data and was completed in June 2018.

The preliminary environmental and social assessment and consultations helped in the identification of the components of the biophysical and human environments that could be impacted by the Project, as well as to collect expectations and concerns of the communities affected by the Project. This activity also helped the preparation of the Terms of Reference ("**ToR**") for the Environmental and Social Impact Assessment Study submitted and approved by the agency responsible for reviewing environmental impact studies in Guinea.

The preliminary results suggest that the different stakeholders consulted are favourable to the realization of the Project. They are concerned mainly by:

- The future of the N'Zérékoré-Lola road, which cuts the deposit in two (2);

- The loss of properties and the loss of income from the activities currently carried out on the site (agriculture, livestock breeding, etc.);
- Compensation mechanisms and transparency of the hiring process and importance of giving priority to the young people in the communities;
- Preliminary environmental impact related mainly to the Project site area: water quality degradation, loss of terrestrial and aquatic habitats, and nuisance's due to mining activities (noise, dust, traffic, etc.).

The environmental and social impact study is underway and will be completed in 2018. The mitigation measures and environmental management plans will be prepared and discussed during the public inquiry, as well as a mine closure and rehabilitation plans.

Overall, the local communities around Lola are looking forward to the beginning of the Project and for the employment opportunities that will be created in the region.

1.14 Capital and Operating Costs

1.14.1 Capital Cost Estimate (Capex)

The capital cost estimate of SRG's Lola project is based on DRA/Met-Chem's standard methods applicable for a Preliminary Economic Assessment study to achieve an accuracy level of ±35 % for initial capital costs and of ±50 % for sustaining capital costs.

The initial capital cost for the scope of work is estimated at $105.1 M USD including $68.2 M USD for direct costs, $22.0 M USD for indirect costs and $15.0 M USD for contingency. The total life of mine capital cost is estimated at $163.1 M USD of which, $105.1 M USD is initial capital and $58.0 M USD is sustaining capital. Sustaining capital cost covers replacement of mine fleet equipment as well as costs related to the construction of the tailings storage facility and waste rock stockpiling area. The capital cost estimate is summarized in Table 1.2.

Table 1.2 – Summary of Life of Mine Costs Estimate

Area #	Area Description	Initial Capital ('000 USD)	Sustaining Capital ('000 USD)	Total Capital ('000 USD)
	Direct Costs			
0000	Mining	9,192	12,652	21,844
1000	Concentrator	37,808	0	37,808
2000	Tailings	5,464	34,206	39,669
3000	General Site Infrastructure	6,134	0	6,134
4000	Electric Power Plant	9,564	0	9,564
	Sub-total – Direct costs	68,161	46,857	115,019
	Indirect Costs			
9000	Indirect Costs	21,987	2,096	24,084
9000	Contingency	14,968	9,075	24,043
	Sub-total – Indirect costs	36,955	11,172	48,127
	TOTAL:	**105,116**	**58,029**	**163,146**

Numbers may not add due to rounding.

Closure and rehabilitation costs were estimated at $4.5 M USD.

1.14.2 OPERATING COST ESTIMATE (OPEX)

Operating costs have been developed for Mining, Processing, General and Administration (including site services), and Concentrate Transportation.

The life of mine average operating cost estimate is evaluated at $502 /tonne of concentrate (Table 1.3)

Table 1.3 – Operating Costs Summary

Description	Cost per Year ($)	Cost /tonne of concentrate ($/t concentrate) [1]	Total Costs (%)
Mining	3,375,481	67.51	13.5%
Processing	12,490,843	249.82	49.8%
Concentrate Transportation	6,500,000	130.00	25.9%
General and Administration	2,722,273	54.45	10.9%
Total Opex	**25,088,597**	**501.77**	**100.0%**

1. Based on production of 50,000 t/y of graphite concentrate
2. Figures may not add up due to rounding

1.15 Economic Analysis

The economic assessment of the Lola Project has been generated in USD currency and assuming 100 % equity. In addition, current Guinean tax regulations were applied to assess corporate tax liabilities. Table 1.4 summarizes the base case economic/financial results of the Project.

Table 1.4 – Base Case Financial Results

Financial Results	Unit	Pre-tax	After-tax
NPV @ 8%	M USD	204.2	120.6
IRR	%	34.8	24.9
Payback Period	Year	2.6	3.5

It is to be noted that given the early stage of the Project, the economic analysis that has been done is based entirely on mineral resources that are not mineral reserves. Thus, the following analysis is limited to the potential viability of the project and serves only as a decision tool to proceed or not with additional field work and studies.

The main macro-economic assumptions used are given in Table 1.5.

Table 1.5 – Macro-Economic Assumptions for Base Case

Item	Unit	Value (Base Case)
Average Graphite Concentrate Price	USD/tonne	1,328
Discount Rate	%	8

The main technical assumptions used in the economic analysis are given in Table 1.6.

Table 1.6 – Technical Assumptions

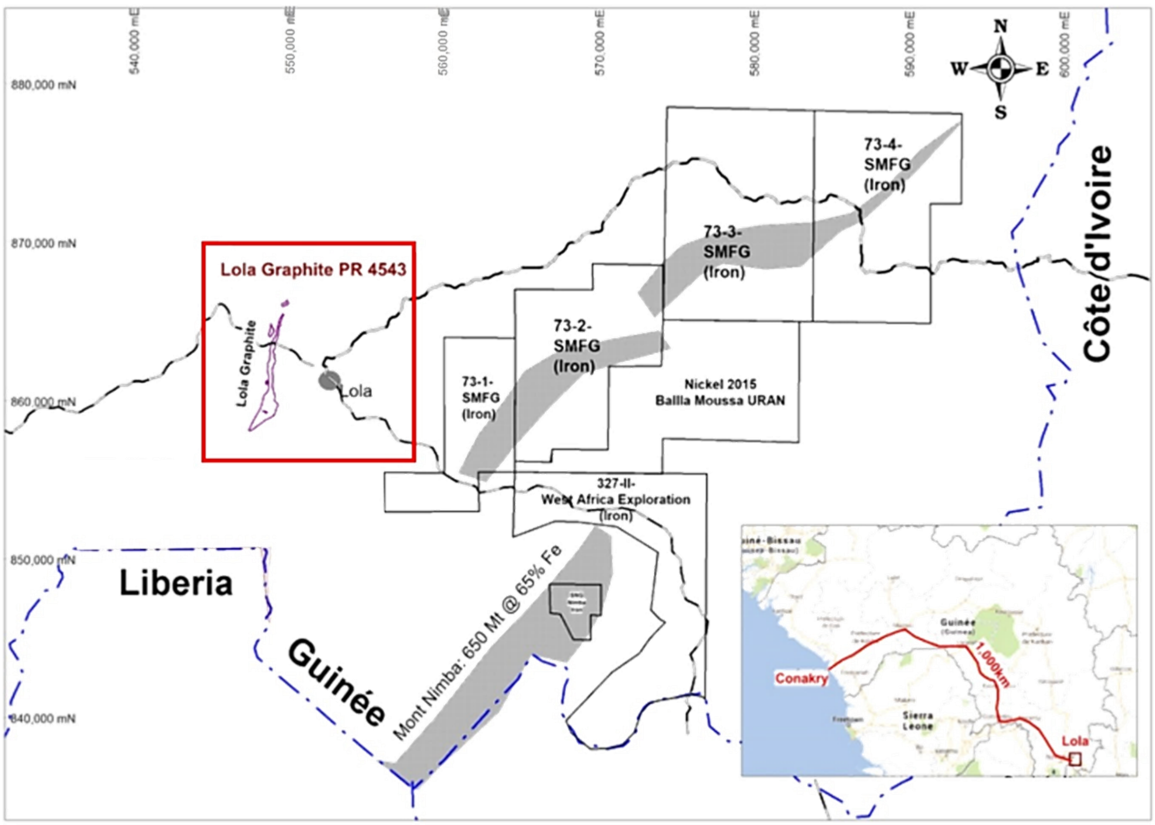
Item	Units	Value
Total Mineral Resources Mined (LOM)	M tonnes	28.9
Mine Life	Years	16
Process Recovery	%	79.25
Concentrate Grade	%	94.23
Average Concentrate Production (Excludes Year 16)	M tonnes	50.2
Average Mining Costs	USD/tonne mined	1.90
Average Processing Costs	USD/tonne milled	9.24
Average General & Administration Costs	USD/tonne milled	2.02
Average Concentrate Transport Costs	USD/tonne conc.	130

1.16 Adjacent Properties

Lola Graphite Exploration Licenses stand alone with no other adjacent exploration permits for graphite. However, since the Guinean mining code allows the superposition of exploration permits, as long as they are not for the same commodities, there are other exploration permits in the surrounding area for iron and base metals (Figure 1.4).

Until December 2015, the Lola Graphite Exploration Licenses were partially included within SRG Guinée's Base Metal Exploration Permit PR 379-2 (Figure 1.4); however, in December 2015, SRG Guinée decided not to renew the Base Metals Exploration Permits (PR 379-1 to 3), retaining only the Graphite Exploration Permits.

Figure 1.4 – Adjacent Properties with Exploration Permits



1.17 Interpretation and Conclusions

This Report was prepared and compiled by DRA/Met-Chem, by or under the supervision of the QPs, at the request of SRG. This Report has been prepared in accordance with the provisions of National Instrument 43-101 Standards of Disclosure for Mineral Projects.

1.17.1 Conclusions

The Mineral Resource Estimate includes a pit-constrained measured and indicated resource of 12.2 million tonnes (“Mt”) grading 5.6% Cg and an inferred resource of 2.1 Mt grading 6.1% Cg, using a cut-off grade of 3.0% Cg.

The processing plant is designed to process 1.3 M tonnes per year of run of mine to produce approximately 50,192 tonnes per year of graphite concentrate grading at about 94.23 % Cg based on a concentrate recovery of 79.25 %. A suitable process flowsheet including crushing, scrubbing and grinding, rougher flotation, polishing and cleaner flotation, concentrate thickening, filtering, and drying. Mining equipment, tailings storage facility, concentrate warehouse, and power generation facilities as well as infrastructure and services have been added to complete the investment cost of the Project.

The pre-production initial capital cost, at an accuracy level of ±35 %, is evaluated at $105.1M USD while the sustaining capital requirement, at an accuracy level of ±50 %, is $58.0M USD.

The life of mine average operating cost estimate is evaluated at $502 USD/tonne of concentrate.

Mine closure and rehabilitation cost have been estimated at $4.5 M USD.

The economic analysis of the project has demonstrated the potential viability of the Project over its 16 years life of mine expectancy with recommendations to proceed to next level of Feasibility studies. At an average sale price of graphite concentrate of $1,328/tonne, the financial results indicate a before-tax Net Present Values (“NPV”) of $204.2 M USD at discount rates of 8 %. The before-tax Internal Rate of Return (“IRR”) is 34.8 % with a payback period of 2.6 years. The after-tax NPV is $120.6 M USD at discount rates of 8 %. The after-tax IRR is 24.9 % and the payback period is 3.5 years.

1.17.2 Risk Evaluation

The risks affecting the economic and technical viability of the Project will be reduced as geotechnical and hydrogeological studies, metallurgical testing, and engineering are undertaken during the next phase.

As for all mining projects, external risks beyond the control of the project owner such as the political situation in the project region, product prices, exchange rates and government legislations are much more difficult to anticipate and mitigate. Negative variance to these risks from the assumptions used to build the block model may introduce Modifying Factors to the Mineral Resource Estimate and reduce the confidence level in the resource.

1.18 Recommendations

1.18.1 Mining and Geology

It is recommended to continue with additional work to further define the deposit, as outlined below:

- DRA/Met-Chem recommends geotechnical or hydrogeological investigations for surface infrastructure to be carried out if the Project advances to the next phase;
- DRA/Met-Chem recommends a complete pit slope analysis if the Project advances to the next phase; and
- DRA/Met-Chem recommends that a hydrogeological study be carried out if the Project advances to the next phase. This study will provide an estimate of the quantity of water that is expected to be encountered during mining operation.

1.18.2 Process

It is recommended to continue the follow test work programs:

- Further grindability tests on larger samples, such as UCS, RWi, and Ai;
- Repeat tests on the variability composites to achieve better rougher and bulk cleaner recoveries as well as optimizing polishing mill and attrition mill grinding times;
- Further optimization bench scale test work to optimize the final flowsheet based on both typical plant feed head grade and extremes in head grade;
- Pilot plant processing of feed material for both design and concentrate generation purposes;
- Vendor testing to increase the project Owner’s confidence in the process equipment selection; and
- Continuation of the final concentrate purification studies to develop an optimal process route for production of high purity graphite products from the Lola concentrate.

1.18.3 Environment

It is recommended to perform the following work in connection with environmental activities:

- Extend soil and surface water surveys to select the best location for the tailing ponds, waste rock, and overburden piles;
- Study options for water management strategy to take into consideration the future graphite plant process water requirement and site water management;
- Carry out a hydrogeological study to collect field data in order to estimate from groundwater flow modelling dewatering rates and impacts;

- Continue ongoing consulting and environmental studies required to support permitting requirements and to optimize the site layout;
- Identify environmental requirements for site closure and estimate its cost.

1.18.4 Proposed Work Program

To ensure the potential viability of the mineral resources, proposed activities to be undertaken in the next phase have been identified. These activities along with estimated costs, are shown in Table 1.7.

Table 1.7 – Estimated Budget for Next Phase

Activities	**Estimated Budget $ (CAD)**
Definition Drilling Campaign	100,000
Geotechnical and Hydrogeology Studies	490,000
Metallurgical Test Work Program	260,000
Environmental Studies	1,000,000
Feasibility Study	1,400,000
Sub-Total	*3,250,000*
Contingency (20 %)	650,000
Total	**3,900,000**

2 INTRODUCTION

The purpose of this Report is to provide scientific and technical information concerning the mineral potential of the Lola Graphite Project in eastern Guinea.

The Republic of Guinea (French: *République de Guinée*) is a country in West Africa bordered by Liberia and Sierra Leone to the South, Côte d'Ivoire and Mali to the East, and Senegal and Guinea-Bissau to the North and West (Figure 5.1).

Formerly known as French Guinea (French: *Guinée française*), the modern country is sometimes referred to as Guinea-Conakry in order to distinguish it from other parts of the wider region of the same name, such as Guinea-Bissau and Equatorial Guinea. Guinea has a population of 10.5 million and an area of 245,860 km^2.

Guinea gained its independence from France in 1958.

This Report has been prepared by DRA/Met-Chem for SRG Graphite Inc ("**SRG**") from Montreal, Quebec, Canada. The information, conclusions and opinions contained herein are based on:

1. Data obtained from historical documents from BUMIFOM;
2. The 1998 *Bundesanstalt für Geowissenschaften und Rohstoffe* ("**BGR**") report on mineral resources of Guinea;
3. In 1999, *Bureau de recherches géologiques et minières* ("**BRGM**") published a set of geological maps at a scale of 1:200 000 and description notice for the map 34-33 N'Zérékoré-Tinsou;
4. Work performed by Sama Resources Guinée SARL ("**SRG Guinée**");
5. Reports from Mr. Laforest from his first site visit in April 2013;
6. Mineralogical study by Sekou Oumar Sow, University of Franche-Comté, France;
7. Petrological and mineralogical study of the paragneiss and graphite mineralization by Professor Picard, University of Franche-Comté, France;
8. Reports from Activation Laboratories Ltd (Actlabs) on analytical results;
9. Reports from ProGraphite GmbH;
10. Reports from Dorfner/Anzaplan.

2.1 Terms of Reference Scope of Study

The following Technical Report (herein after "**the Report**") is a review and compilation of the exploration and metallurgical works performed by SRG on the Lola Graphite Property.

This Report was prepared by Met-Chem, a division of DRA Americas Inc. ("**DRA/Met-Chem**") to support the Preliminary Economic Assessment ("**PEA**") on the Lola Graphite Property.

2.2 Source of Information

This Report is based in part on SRG's internal technical reports, maps, published government reports, company letters and memoranda, and public information, as listed in Section 27 "References" of this Report. The sections from reports authored by other consultants may have been directly quoted or summarized in this Report, and are so indicated, where appropriate.

The information, conclusions and opinions contained herein are based on:

1. Data obtained from BUMIFOM documentation in 50s;
2. Review of the available literature;
3. SRG Guinée exploration work, including geological compilation, geophysical data and drilling results;
4. Extracts from an under graduate study (TER Mai 2014) by Sekou Oumar Sow, Guinean student at the University of Franche-Comté, France;
5. Metallurgical test work performed by Centre de Technologie Minérale et de Plasturgie (CTMP), ALS Chemex, and Actlabs;
6. Information from the SRG Guinée staff and internal reports in areas such as previous exploration, infrastructure and environmental, and legal matters in preparing other parts of this Technical Report.

2.2.1 Qualified Persons

The responsibilities for the preparation of the different sections of this Report are shown in Table 2.1.

Table 2.1 – Qualified Persons and their Respective Sections of Responsibilities

Section	Title of Section	Qualified Persons
1	Summary	Silvia Del Carpio and related QPs
2	Introduction	Silvia Del Carpio
3	Reliance on Other Experts	Silvia Del Carpio
4	Property Description and Location	Yves Buro
5	Accessibility, Climate, Local Resources, Infrastructure and Physiography	Yves Buro
6	History	Yves Buro
7	Geological Setting and Mineralization	Yves Buro
8	Deposit Types	Yves Buro
9	Exploration	Yves Buro
10	Drilling	Yves Buro
11	Sample Preparation, Analysis and Security	Yves Buro

Section	Title of Section	Qualified Persons
12	Data Verification	Yves Buro
13	Mineral Processing and Metallurgical Testing	Volodymyr Liskovych
14	Mineral Resources Estimates	Marc-Antoine Audet
15	Mineral Reserve Estimates	N/A
16	Mining Methods	Patrick Pérez
17	Recovery Methods	Volodymyr Liskovych
18	Project Infrastructure	Silvia Del Carpio
19	Market Studies and Contracts	Silvia Del Carpio
20	Environmental Studies, Permitting and Social or Community Impact	Martin Stapinsky
21	Capital and Operating Costs	Martin St-Amour and related QPs
22	Economic Analysis	Silvia Del Carpio
23	Adjacent Properties	Yves Buro
24	Other Relevant Data and Information	Silvia Del Carpio
25	Interpretation and Conclusions	Silvia Del Carpio and related QPs
26	Recommendations	Silvia Del Carpio and related QPs
27	References	Silvia Del Carpio and related QPs

2.3 Effective Date and Declaration

The effective date of this Technical Report is June 14th, 2018. The Authors believe that the basic assumptions contained in the information above are factual and accurate, and that the interpretations are reasonable. The Authors have relied on this data and have no reason to believe that any material facts have been withheld. The Authors also have no reason to doubt the reliability of the information presented herein.

2.4 Site Visit

This Section provides details of the personal inspection on the Property by some of the Qualified Persons.

Mr. Yves Buro, P. Eng., DRA/Met-Chem's Consultant, visited the Property in April 2018. Mr. Buro visited the Lola deposit and the site location.

Mr. Jean Laforest, P. Eng. visited the Property four (4) times, in April 2013, in January 2014 and in April and October 2017. Mr. Laforest had the opportunity to review the exploration work performed by SRG, including line-cutting, geological mapping, sampling and drilling. BUMIFOM's historical pits were located and photographed.

2.5 Units and Currency

In this Report, all currency amounts are Canadian Dollars ("**CAD**" or "**$**") unless otherwise stated, with commodity prices typically expressed in US Dollars ("**USD**"). Quantities are generally stated in *Système international d'unités* ("**SI**") metrics units, the standard Canadian and international practices, including metric tonne ("**tonne**", "**t**") for weight, and kilometre ("**km**") or metre ("**m**") for distances. Abbreviations used in this Report are listed in Section 28.

3 RELIANCE ON OTHER EXPERTS

Any statements and opinions expressed in this Report are given in good faith and in the belief that such statements and opinions are not false or misleading at the date of this Report.

Independent legal reports supplied by SRG all concluded that the Lola Graphite Project (as defined in Section 4) through SRG's wholly owned subsidiary Sama Resource Guinée SARL, was in good standing at the time of review.

The aforementioned independent legal reports include Avis juridique Lola Graphite Maitre Yansanné, dated January 6^{th}, 2016.

This disclaimer applies to part of sections 1.1 Property Location, Description, Ownership and 4.2 Property Agreements and Ownership of this Report.

In all such cases, the Authors have reviewed the documents and results, and have agreed that the work was done correctly and professionally.

4 PROPERTY DESCRIPTION AND LOCATION

The Lola Graphite Deposit is 100 % owned by Sama Resource Guinée SARL, a wholly-owned subsidiary of SRG Graphite Inc. (“**SRG**”).

4.1 Location and Access

The Lola Graphite occurrence is located near the town of Lola in south-eastern Guinea, 1,000 km from Conakry, the capital of the Republic of Guinea. The occurrence is within 50 km of the border with Côte d’Ivoire and it is located 3.5 km west of the town of Lola (Figure 4.1). An Exploration license gives the applicant the right to explore for minerals for a certain period, as prescribed by the Mining law and regulation.

Global positioning system (“GPS”) coordinates for the Lola Graphite Project is zone 29 north, WGS 84 Datum and latitude/longitude system; maps are either in Universal Transverse Mercator (UTM) coordinates or in the latitude/longitude system.

The Property is centered on UTM WGS 84 zone 29N latitude 7° 48’ 00" (UTM 863,000 N) and longitude 8° 32’ 00’ (UTM 551,000 E), as shown in Figure 4.1. The area includes the communities of Lola and several small villages. Within the license area, and in the immediate vicinity of the Lola Graphite occurrence, the terrain is gently undulating, providing good access to any part of the Property.

4.2 Property Ownership and Agreements

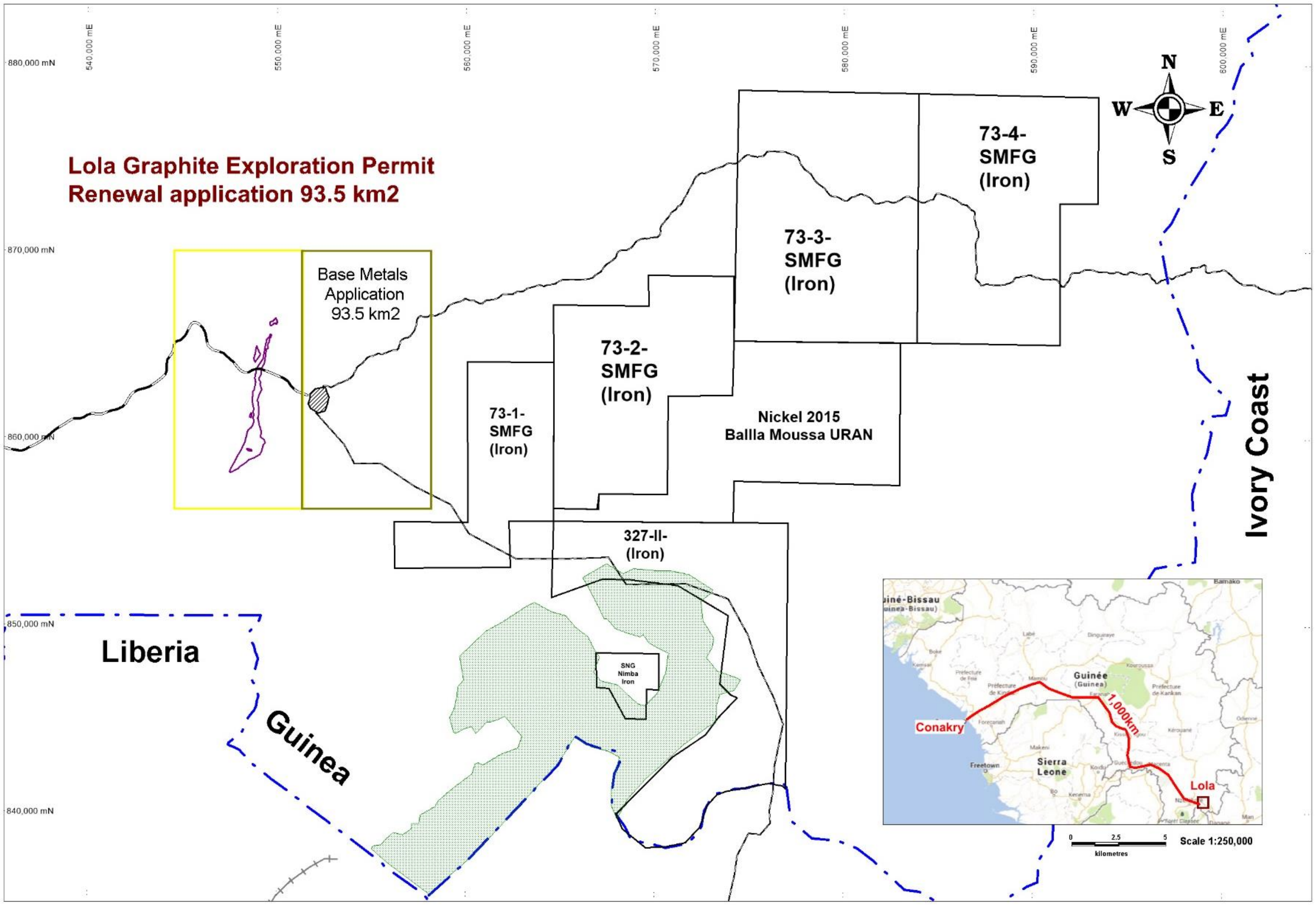
Exploration licenses in Guinea are applied for and granted amongst applicants by the Department of Mines and Energy based on the proposed work program. The Exploration licenses are issued for an initial three-year (3) period, with two (2) renewal periods of two (2) years each. For each of these steps, a work program with a budget commitment is presented to the Guinean Department of Mines and Geology in Conakry.

An Exploration Permit confers on its holder the exclusive right to prospect for the type of mineral substance(s) for which the Permit is issued, within the limits of its area and without limitation as to depth. It does not give surface rights or access rights, as these rights are required to be negotiated with landowners.

The term of an Exploration Permit may be renewed two (2) times, for a maximum period of two (2) years each time, at the request of the holder and on the same conditions as those on which the Permit was initially granted. Each of these renewals will occur automatically if the holder has met all of the obligations contained in the granting order and in this Code.

If the owner applies for renewal, a minimum work program adapted to the results of the preceding period and representing a financial outlay at least equal to that set out in the granting order has to be proposed.

Figure 4.1 – Lola Graphite PR 4543 Location



The renewal documentation was filed with the Department of Mines and Energy on June 20th, 2016 and was issued to SRG Guinée on August 29th, 2016.

The Project was renewed for two (2) years on August 29th, 2016, by Decree Nº 442 MMG/CAB/CPDM/2016.

As per the requirement of the mining code, SRG filed the documentation for the second renewal for 2 years on May 29, 2018 with the Department of Mines in Conakry.

The property boundaries have not been surveyed in the field, and are expressed only by latitude and longitude coordinates.

4.3 Royalties Obligations

The grant by the State of a Mining Operation Title immediately gives the State a free-carried interest of up to a maximum of 15 %, in the capital of the company holding the Title. The State has the right to acquire a supplementary participation, in cash, according to the terms agreed upon with each relevant mining company within the scope of the Mining Agreement. This acquisition option may be scheduled over time, but may be exercised only once. The total participation held by the State may not exceed 20 %.

A Mineral Royalty of three percent (3 %) is applied to iron and base metals, but the current code is silent on royalties applicable to graphite; however, it is stipulated that royalties for any mineral substance not specified in the code will be determined by regulation.

4.4 Permits and Environmental Liabilities

The Property located within the department of Lola, was initially formed by four (4) explorations licenses, (*Permis de Recherches*) globally named *Permis de Recherches 4543*, shaping a rectangular form of 27.9 km by 13.7 km in size for a cumulative total of 380 km^2. The Permit was renewed on August 29th, 2016 for two (2) years and according to legislation, the surface area was reduced by approximately 50% from 380 km^2 to 187 km^2 (Figure 4.1).

SRG filed a second renewal application for the Lola graphite exploration license on May 29, 2018. As per the current legislation, the surface area has been reduced by 50% to 93.5 km^2. The exploration permit is still to be granted.

In Guinea, the land is under federal jurisdiction and, as such, application to the government, through the Mine and Energy Department, is required to obtain an Exploration license. In 2012, the Republic of Guinea awarded SRG Guinée, through *Arrêté* No A2013/4543/MMG/SGG dated September 2nd, 2013, the Lola Graphite Exploration licenses for a first period of three (3) years, renewable for two (2) additional periods of two (2) years each.

To the extent known by the Authors and SRG's team, there are no environmental liabilities associated with the Exploration Permit, and there are no surface right agreements in place or being negotiated.

There are no other permits required to perform exploration work on the Property. Drilling has been carried out on the Property and the proposed additional drilling can be completed under the same permits.

To the extent known by the Authors and SRG's team, there are no factors or risks that may affect access, title or the right or ability to perform exploration work on the Property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

This Section has been updated from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018."

Guinea is a predominantly Islamic country, with Muslims representing 85 % of the population. Guinea's people belong to 24 ethnic groups. However, the dominant religion in the Project area is Christianism. French, the official language of Guinea, is the main language of communication in schools, in government administration, and in the media, but more than 24 indigenous languages are also spoken.

Guinea is divided into four (4) main regions: Maritime Guinea, also known as Lower Guinea or the Basse-Cote lowlands, populated mainly by the Susu ethnic group; the cooler, mountainous Fouta Djallon that run roughly North-South through the middle of the country, populated by Fulas; the Sahelian Haute-Guinea to the northeast, populated by Malinké; and the forested jungle regions in the southeast (Forested Guinea), with several ethnic groups. Guinea's mountains are the source for the Niger, the Gambia, and Senegal Rivers, as well as the numerous rivers flowing to the sea on the West side of the range in Sierra Leone and Côte d'Ivoire.

Guinea's economy is largely dependent on agriculture and mineral production. It is the world's second largest producer of bauxite, and has rich deposits of diamonds and gold.

Figure 5.1 – Republic of Guinea, West Africa, Location of Lola Graphite Project

5.1 Physiography

The terrain can be described as a gently undulating plain with one isolated topographic high reaching 75 m above the surrounding area. The elevation of the area varies from 485 m to 520 m above sea level.

5.2 Climate

The Project area falls within the Guineo-Soudanian climatic condition, which is a transition zone between equatorial and tropical climates. The area has distinct rainy and dry seasons. The dry season extends from November to March, while the wet season covers the period from March to October. There is an average of 1,600 mm of rain per annum. Some characteristics of the local climate are presented in Table 5.1.

Table 5.1 - Historical Climate Condition at the Lola Weather Station[1]

Month	Temperature (°C)			Precipitations (mm)			Wind Speed
	Average	Min.	Max.	Average	Min.	Max.	(km/h)
January	23.3	10.8	33.7	17.6	0.0	86.6	4.3
February	24.7	13.2	34.7	55.8	0.0	189.3	4.7
March	25.6	16.5	34.4	121.7	47.9	223.4	5.0
April	25.8	18.4	33.1	167.0	85.6	273.5	5.0
May	25.4	18.4	32.1	179.5	80.5	295.0	5.0
June	24.4	18.1	31.1	199.9	92.1	374.1	6.5
July	23.5	18.0	29.5	234.3	112.0	476.9	6.8
August	23.5	18.6	29.4	294.6	183.5	400.4	6.5
September	24.1	18.3	30.0	271.7	155.2	417.3	5.4
October	24.5	17.8	30.9	164.2	74.5	348.7	4.7
November	24.5	16.0	31.3	61.0	11.8	166.3	5.0
December	23.3	12.4	31.5	13.6	0.0	75.1	4.0

The Project area is located at the transition zone between the tropical forest area and the northern savannah, where grassy woodland and occasional dry scrub are predominant.

The vegetation communities observed in the Project area are of the grassland type, with scattered trees and shrubs and moderate to open canopy.

[1] *(Sources: Temperatures: WMO; data for the period 1961-1990; Precipitations Etude Climatologique des Sites de Lola Et De N'zerekore 2017; Mamadou Tounkara; Direction Nationale de la Météorologie; Décembre 2017, data collected in 1979-2009; Wind speed: www.weatherbase.com; Years on Record: 112)*

5.3 Local Resources and Infrastructure

The population of Guinea is estimated at 10.5 million. Conakry, the capital and largest city, is the hub of Guinea's economy, commerce, education, and culture. In 2014, the total fertility rate (TFR) of Guinea was estimated at 4.93 children born per woman.

The official language of Guinea is French. Other significant languages spoken are Pular (Fulfulde or Fulani), Maninka (Malinke), Susu, Kissi, Kpelle and Loma.

The economy of the study area is primarily agricultural, and much of it is on a subsistence basis. Small family-run plots of land are cultivated on a shifting agriculture basis. A cash economy exists in the region and is fuelled by cash crops, logging, ranching, and roadside vendors servicing vehicular traffic.

Guinea possesses one of the world's largest resource of bauxite and high-grade iron resources together with significant diamond and gold deposits, and undetermined quantities of uranium. Guinea appears to have an underdeveloped potential for growth in agricultural and fishing sectors.

Joint venture bauxite mining and alumina operations in northwest Guinea historically provide about 80 % of Guinea's foreign exchange. The *Compagnie des Bauxites de Guinea* ("**CBG**") annually exports about 14 million tonnes of high-grade bauxite.

The *Compagnie des Bauxites de Kindia* ("**CBK**"), a joint venture between the Government of Guinea and United Company RUSAL ("**RUSAL**"), produces some 2.5 million tonnes annually, nearly all of which is exported to Russia and Eastern Europe. Dian, a Guinean/Ukrainian joint bauxite venture, has a projected production rate of 1,000,000 tonnes per year, but is not expected to begin operations for several more years. The *Alumina Compagnie de Guinée* ("**ACG**"), which took over the former Friguia Consortium, produced about 2.4 million tonnes in 2004 as raw material for its alumina refinery. The refinery exports about 750,000 tonnes of alumina. Both Global Alumina and Alcoa-Alcan have signed conventions with the Government of Guinea to build large alumina refineries with a combined capacity of about 4 million tonnes per year.

Diamonds and gold are also mined and exported on a large scale. AREDOR, a joint diamond-mining venture between the Guinean Government (50%) and an Australian, British, and Swiss consortium, began production in 1984, mining diamonds that are 90% gem quality. Production stopped from 1993 to 1996, when First City Mining, of Canada, purchased the international portion of the consortium. The bulk of diamonds comes from artisanal production.

The largest gold mining operation in Guinea is a joint venture between the government and Ashanti Goldfields of Ghana. *Société Minière de Dinguiraye* ("**SMD**") also has a large gold mining facility in Lero, near the Malian border.

Guinea has large reserves of high grade iron ore, including the Simandou iron ore project located approximately 700 km east of Conakry and roughly 300 km west of Lola.

In September 2011, Guinea adopted a new mining code.

The Lola sector falls within the Guinean Department of N'Zérékoré, at the southeast end of the country, near the Ivorian border. The Lola Graphite occurrence gained its name from the small town called Lola, located just a few kilometres east of the occurrence.

Lola municipality is the head of the regional prefecture with a population of 130,000 inhabitants. Despite its importance, the municipality is not electrified; the population needs to use privately-owned generators for their energy consumption.

5.4 Surface Rights

To the extent known by the Author and the SRG's team, there are no surface right agreements in place or being negotiated. SRG has confirmed that surface rights are independent of Mineral rights, and will be acquired on time when they will be required.

6 HISTORY

This Section has not been modified from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018."

The Lola Graphite occurrence was discovered during the construction of the Conakry-Lola road in 1951. Between 1951 and 1955 the *Bureau Minier de la France Outremer* ("**BUMIFOM**") carried out 309 shallow pits in order to further investigate its potential. At that time, BUMIFOM outlined a graphite rich occurrence of four (4) km long by 100 to 200 m wide. According to a historical document titled "*Rapport sur le gisement de graphite de Lola*, 1952" prepared by BUMIFOM, not all pits were analyzed; consequently, BUMIFOM used pits from only three (3) lines (N1, S1, and S33) totalling 19 pits out of the 309 shallow pits, from which BUMIFOM reported a historical estimate of 170,000 m^3 at 8 % Cg.

6.1 Regional Government Surveys

In 1998, BGR, a German federal agency, produced an inventory of the mineral resources of Guinea. The study made reference to the BUMIFOM note concerning the Lola Graphite occurrence.

In 1999, BRGM published a set of geological maps at a scale of 1:200,000. Description notice for the map 34-33 N'Zérékoré-Tinsou mentioned the Lola Graphite occurrence by referencing the BGR report.

6.2 Mineral Exploration Work

SRG's team had access to BUMIFOM's historical filed documents at the Department of Mines in Conakry. BUMIFOM's available documents are listed below:

1. October 1951: BUMIFOM – Essais de concentration de schistes graphitique par flottation;
2. January 1952: BUMIFOM – Rapport sur le gisement de graphite;
3. March 1952: BUMIFOM – *Rapport prospection*;
4. December 1953: BUMIFOM – Concentration par flottation;
5. December 1953: BUMIFOM – Laboratoire et station d'essai;
6. January 1955: BUMIFOM – Laboratoire et station essais.

The Author was not able to review assumptions, parameters, and methods used by BUMIFOM in 1952 for preparing the historical estimate as the estimate was not classified using the current CIM definitions. Consequently, the Author considers the historical estimate as irrelevant and unreliable. The Author was not able to classify the historical estimate as current mineral resources and the issuers are not treating the historical estimate as current mineral resources.

7 GEOLOGICAL SETTING AND MINERALIZATION

The information in this section of this Report, under Y.A. Buro's responsibility is largely drawn or summarized from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018."

7.1 Regional Geology

Review of the available literature suggests that the rock assemblages in the vicinity of the Project site are of Upper Archean age. Rock assemblages are predominantly composed of biotite-rich gneiss, showing locally magmatic texture, sillimanite-rich micaschist and orthogneiss, quartzite, quartzite with pyroxene ± magnetite and a graphite-rich paragneiss.

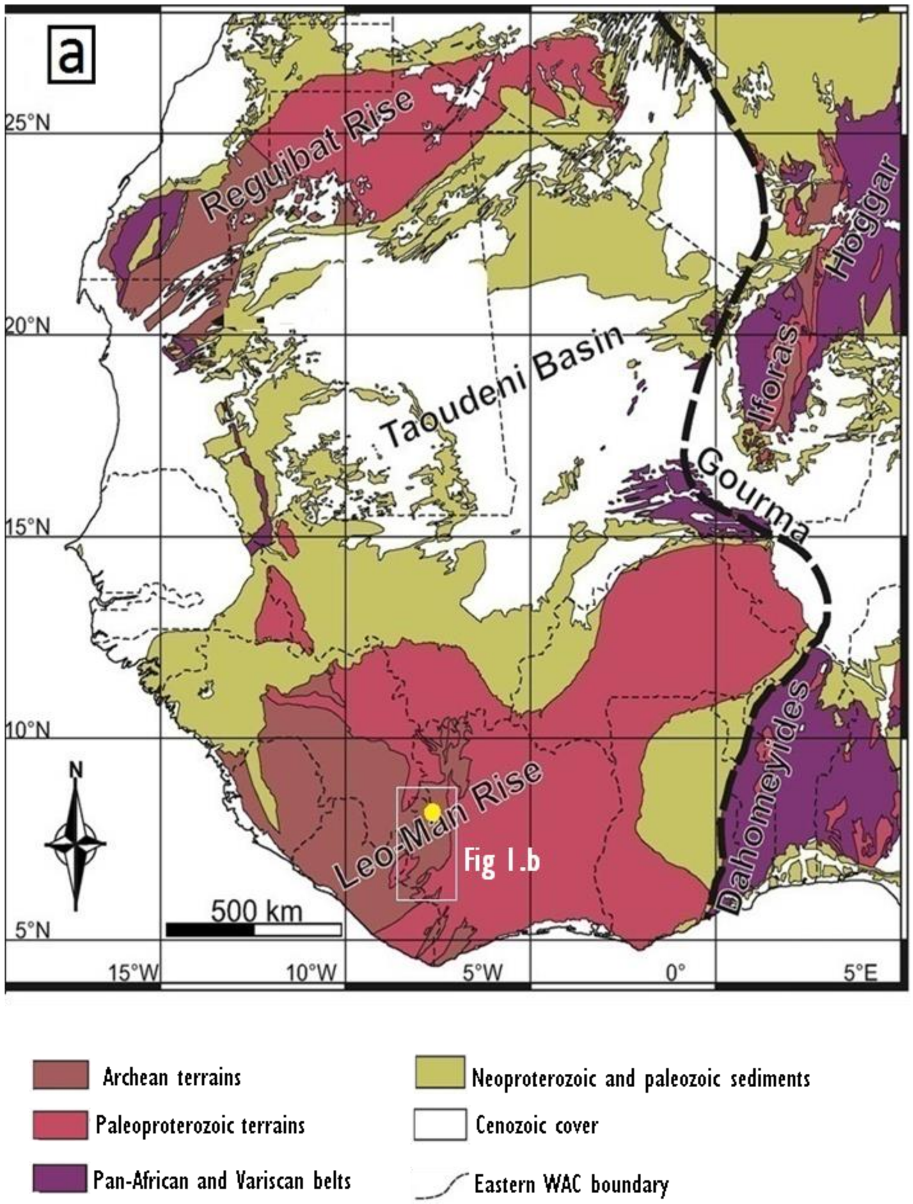
Younger Paleoprotozoic (Birimian) intrusive, biotite-rich granite and gneiss were observed. Mesozoic gabbro and dolerite dykes appear to be part of the most recent event and cross cut the entire sequence (Figure 4.1). Detailed studies by Mr. Sow (2014) and Professor Picard (2017) at the University of Franche-Comté, France, further enhance the knowledge of the regional geology.

The Project area is located in eastern Guinea, which constitutes the eastern limit of the WAC (Figure 7.1). The Project area is located within the known Kénéma-Man domain, which consists chiefly of Archean granulitic and migmatitic gneiss with subordinate granitoids and relic supracrustal belts, which are metamorphosed to granulitic facies. The Archean rocks were affected by three (3) major but poorly constrained tectono-thermal events: the earlier Leonian orogeny (3500-2900 Ma) and the subsequent Liberian orogeny (2900-2500 Ma), then the Eburnean orogeny (2.5 et 1.8 Ga), following which the WAC stabilized.

The Archean succession in the Project area was first mapped by Obermüller (1941), then revised in 1998 under the BGR compilation (Bering and al. 1998) and re-mapped by the BRGM at a scale of 1:200,000 (P*rojet de cartographie géologique du Sud-Est de la République de Guinée*), specifically sheet n°34-33 N'ZEREKORE - TINSOU (Thiéblemont et al., 1999).

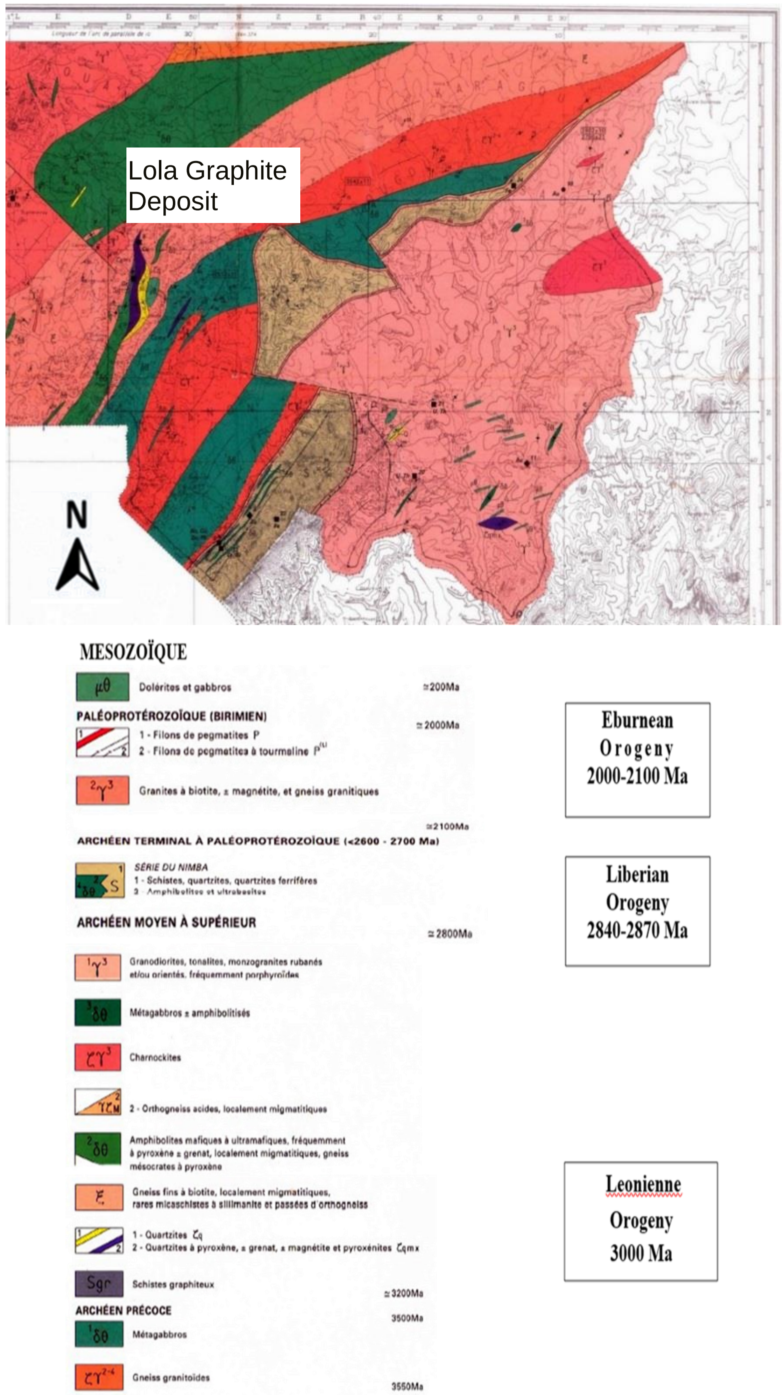
The main geological feature of the N'Zérékoré-Lola area is the contrast between the Archaean gneissic field of N'Zerekore, which include the Simandou ridge and Mont Nimba, and the more granitic domain, also called «*pays de Manahan*», toward the east and extending to nearby Côte d'Ivoire.

Figure 7.1 – West African Shield – Schematic Geological Map[2]



2 From Berger et al., 2013

Figure 7.2 – Geological Map of the Area of Interest[3]



3 From: BRGM 1 :200000 scale n°34-33 N'ZEREKORE - TINSOU (Thiéblemont et al., 1999)

The Lola region's rock assemblage is of mid-Archean age (3.5-2.8 Ga). Work by Obermüller (1941), Bering and al., (1998), and Thieblemont et al. (1999, 2001, 2004) helped to differentiate between various geological assemblages in the Lola region:

1. An early-Archean assemblage (3550 to 3500 Ma) made up mainly of gneiss – granitoid and amphibolites centred near the town of Lola (cf. ages U-Pb on zircons of 3512 + / 11 and 3542 + / 11 Ma – Thieblemont et al, 2001, Figure 7.2);
2. A mid-Archean assemblage in the NE and SW of Lola (3200 and 3000 Ma) made up mainly of grey paragneiss with biotite ± sillimanite, orthogneiss and amphibolites;
3. The vast Archean Tounkarata batholith (2900 to 2800 Ma) (1γ3) formed of granitoid and charnockites east of Mount Nimba and extending into Côte d'Ivoire (see ages U-Pb on zircons of 3750 + / 21 and 2862 +/-10 Ma – Thieblemont and al. 1999, 2001; Figure 7.2);
4. The Mount Nimba series (2600 Ma), which is a paleo-Proterozoic volcano-sedimentary sequence in discordance with the previous Archean series, and including bottom up: conglomerates, and quartzites, of meta-volcanics and the *quartzites rubanés ferrifères* ("Banded Iron Formations" or "**BIF**");
5. The Paleoproterozoic (Birimian) is represented by biotite-rich granitoids and granitic gneiss (2γ3 in Figure 7.2), seen NW of Lola;
6. Dolerite Mesozoic dykes cross-cutting the above series.

The Lola Graphite occurrence is located within an early-Archean paragneiss sequence.

7.2 Property Geology

The graphite-rich paragneiss is present at surface over 8.7 km with an average width of 370 m and is up to 1,000 m wide. The graphite-rich paragneiss is hosted within the Archean Kénéma-Man domain, consisting of granulitic and migmatitic gneiss with subordinate granitoids and relic supracrustal belts, which are metamorphosed to granulitic facies.

The graphite mineralization is located within the strongly sheared paragneiss; the shearing mechanism may have played a role in containing and constraining the graphite mineralization within the paragneiss.

The first 32 m or so of the deposit are well-weathered (lateritized), freeing graphite flakes from the silicate gangue and allowing for easy grinding with an optimal recovery of large and jumbo flakes. The graphite mineralization continues at depth within the non-weathered paragneiss.

Graphite mineralization is well-exposed at surface on its entire strike length, with sample grades ranging from traces to as much as 20% of large flakes, and is often seen in higher concentration in agglomerates.

7.2.1 Academic Studies on Lola Graphite

In 2013, SRG supported Mr. Sékou Oumar Sow, a Guinean geological student at the University of Franche--Comté, France, with his undergraduate study. The study aimed at the mineralogical and petrological characterizations of the mineralization, as well as of the host rock. The study was under the supervision of Professor Christian Picard.

Since Mr. Sow's study, several investigations have been completed at the University Grenoble-Alpes to further clarify the mineralogical characteristics of the graphite mineralization, with an attempt at dating the graphite mineralization:

1. Studies using Multiple Objective Linear Programming ("MOLP") in transmitted light and reflected light to characterize the rocks assemblage and the graphite mineralization;
2. Studies using a Scanning Electronic Microscope ("SEM") to establish the morphology and relationships between the graphite flakes and other minerals. Study on the pressure - temperature crystallization / recrystallization conditions of various minerals;
3. Studies using a microprobe to establish the chemical composition of various mineral phases, and to attempt at determining the age of the rocks assemblage by a method being tested at the Grenoble ISTerre (work with Emilie Janot's and Valérie Magnin, method based on the U-Th-Ce-Y and Pb chemical composition determined using the electronic microprobe).

High-resolution morphological study on two (2) graphite concentrates supplied by SRG was done using a SEM-FEG at the *Consortium des Moyens Technologiques Communs de l'Université de Grenoble* in May 2017.

7.2.2 Paragneiss Petrography and Graphite Mineralogy

MOLP and SEM observations show that the main paragenesis is made up of a grano-lepidoblatic assemblage dominated by quartz, andesine plagioclase (An30-45), orthoclase and biotite. Leucocratic bands are rich in granoblastic quartz (25-45 %), plagioclase (15-20 %) and orthoclase (up 15 %) with 10-15 % biotite.

The ferromagnesian banding displays a grano-lepidoblastic texture with biotite (30-35 %) in the form of lamellae parallel to foliation, graphite (up 20 %) and some sulphides (mainly pyrite up to 15 % ± chalcopyrite - galena - sphalerite). Sulphides are absent in the surface graphite-rich weathered paragneiss.

In the fresh rock, (i.e. non-weathered), the accessory minerals are zircon, apatite, rutile, monazite and rare garnet crystals.

Opaque minerals are mainly sulphide (2-15 %), graphite flakes (1-20 %), and a few rutile needles. Sulphides are mainly made up of xenomorphic crystals of pyrite and chalcopyrite with rarer covellite (CuS), galena (PbS), and sphalerite (ZnS).

Graphite flakes are elongated, more or less stocky, and sometimes flexuous, varying in size between 10 x 100 µm and 0.3 x 2.3 mm. Over 70% of the flakes have a length greater than 300 µm. They are often shoddy at their ends and made up of slats (1 to 5 µm of thickness by 100 to 500 µm).

Microscopically, graphite flakes are aligned parallel to foliation planes as defined by biotite crystals. Biotite and graphite intergrowth is often observed, indicating that graphite crystallization or recrystallization is contemporary with the crystallization of the biotite.

Investigations by Energy Dispersive X-ray Spectroscopy and microprobe show that graphite flakes are made of pure carbon with no trace of other chemical elements.

Details as well as images on petrology and mineralogy discussed in this section can be found in the previously filed NI 43-101 report dated February 2018. Electron scans of thin sections, photomicrographs of thin sections, Energy Dispersive X-ray Spectroscopy (X-Ray spectra) for Cg and microprobe images illustrate the mineral association, as well as the distribution of the chemical elements in the Cg and in the other minerals,

7.2.3 Metamorphism

Data from the MOLP, the *Microscopie électronique à balayage*, and the electron microprobe show that the paragneiss is made from the following arrangement: quartz - orthoclase - plagioclase type andesine - biotite - sillimanite ± muscovite - graphite - pyrite- chalcopyrite - zircon – rutile. This paragenesis is typical of aluminous rich metasedimentary rocks, suggesting that the protolith for the paragneiss was a pelite.

7.3 Summary

The mineral paragenesis of the Lola's paragneiss consists of an assemblage dominated by quartz, plagioclase [andesine (An30-45)], orthoclase, biotite, and, to a lesser extent, sillimanite. Leucocratic bandings are made of granoblastic quartz (25-45 %), plagioclase (15-20 %) and orthoclase (up 15 %) with 10-15 % biotite. Ferromagnesian bands are made of biotite (30-35 %) in the form of lamellae in the foliation and graphite (up 20 %) and sulphides [up to 15 %: mainly pyrite and chalcopyrite ± covellite (CuS), Galena (PbS) and sphalerite (ZnS)].

Accessory minerals are composed of zircon, apatite, rutile and rare crystals of garnet and monazite. Apatite is in partial inclusion within the quartzo-feldspar phases, as well as rutile and monazite.

The rocks for the entire area were affected by an S1 foliation with subparallel primary stratification S0 still recognizable. General orientation S0 - S1 is N03° with a subvertical dip. The presence of syn-schistose isocline microfolds together with larger folds indicate that the rocks were affected by at least two (2) phases of folding (isoclinal P1) and P2 (training folds that deform S0 and S1).

Sigmoid structure observed in quartz and quartzite assemblages suggest that the area was affected by a dextral shearing oriented N10°. The metamorphic paragenesis and observed structures appear to be the product of at least three (3) phases of metamorphism and deformation between 3.2 and 2.1 Ga:

1. The first phase metamorphic event is characterized by the crystallization of quartz-feldspar-biotite-muscovite-sillimanite paragenesis, and is synchronous to the S1 foliation under pressure-temperature (**P-T**) conditions of granulitic facies (P = 5-6 kbars; T = 750-800 °C). Graphite and pyrite crystallized at that time. By analogy with the U-Pb age obtained on zircon by Thieblemont et al. (1999), the P1 is contemporary with the Leonian orogeny to 3.2 Ga;
2. The S1 foliation has then been affected by a second metamorphic event (P2);
3. Monazite was formed at the expense of the biotite, suggesting a more recent event at lower P-T conditions (T < 700 °C) around 2.1 Ga (Birimian time);
4. Finally, the muscovite-sillimanite association filling monazite fractures suggests a younger episode of prograde P-T conditions (4-5 kbars at 650-700 °C). It is likely that the graphite may have been partially recrystallized by this late metamorphic phase.

Thus, these observations suggest that the Lola paragneiss is the result of the recrystallization of Archean quartz-rich pelites and greywackes of at least 3.2 Ga in age, in a sedimentary basin proximal to volcanic activities. These sediments were deformed and metamorphosed during the Leonian (3.2 Ga), Liberian (2.8 Ga), and Birimian (2.1 Ga) orogenies. The primary crystallization of graphite appears to be contemporary, with the first phase of metamorphism at 3.2 Ga.

Graphite flakes can be found from one (1) to up to 20% within the paragneiss. In the non-weathered (fresh rock) paragneiss, graphite flakes are aligned in the main direction of foliation. Graphite flakes are elongated, more or less stocky, and sometimes flexuous. They range from 10 x 100 µm to 0.3 x 2.3 mm. More than 70% of the flakes are greater than 300 µm. They are often made up of bundles of flakes (1 to 5 µm in thickness for 100 to 500 µm). In many cases, biotite crystals are interbedded between graphite flakes or vice versa. Sulphides (mainly pyrite) are also present, and are seen between graphite flakes.

8 DEPOSIT TYPES

This Section has not been modified from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018."

8.1 Graphite Mineralization Models

Graphite is one of the three (3) familiar, naturally-occurring forms of the chemical element Carbon ("**C**"). The other two (2) varieties are amorphous carbon (not to be confused with amorphous graphite) and diamond. Graphite may be synthetically produced or derived from natural sources. Graphite is widely distributed throughout the world, occurring in many types of igneous, sedimentary, and metamorphic rocks.

Natural graphite generally occurs in one of three (3) forms:

- Microcrystalline or amorphous;
- Crystalline lump or vein;
- Crystalline flake.

Microcrystalline or amorphous type graphite is made up of aggregates of fine graphite crystals, which give the material a soft, black, earthy appearance. Quartzites, phyllites, metagreywackes and conglomerates usually host this material. Amorphous graphite is defined as being finer than 40 µm in diameter, but some trade statistics define the upper limit at 70 µm. Generally, the 40 – 70 µm is the limit of resolution of the human eye.

Crystalline lump or vein-type graphite is found as interlocking aggregates of coarse and/or microcrystalline platy or, less commonly, acicular graphite. Igneous and metamorphic rocks, such as anorthosite, gneisses, schists, quartzite, and marble, are common hosts of the veins.

Crystalline flake-type graphite occurs as flat, plate-like crystals, with angular, rounded or irregular edges. Flakes are disseminated throughout paragneiss derived from carbon-rich sediments. Flake graphite size can vary considerably. For commercial purposes, flakes are classified in four (4) or five (5) categories:

- Small: <150 mesh or <0.1 mm;
- Medium: 80 to 150 mesh or 0.177 to 0.1 mm;
- Large: 48 to 80 mesh or 0.30 to 0.177 mm;
- Jumbo: >48 mesh or >0.30 mm.

Jumbo flakes may be further subdivided into jumbo and super-jumbo flakes (+1 mm).

Flake size has a strong impact on the value of an occurrence as larger flakes are more valuable than smaller ones.

From an economic viewpoint, the most significant deposit types are the crystalline flake type and the lump/vein type.

The Lola Graphite occurrence is a paragneiss-hosted, crystalline, flake-type occurrence.

9 EXPLORATION

The information in this section of this Report under Y.A. Buro's responsibility is largely drawn or summarized from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018."

9.1 Lola Graphite

The Lola Graphite occurrence is present at surface over 8.7 km with an average width of 370 m and is up to 1,000 m wide. The first 32 m or so from surface are well weathered (lateritized), freeing graphite flakes from the silicate gangue and allowing for an easy grinding with optimal recovery of the flakes. The graphite mineralization continues at depth within the non-weathered paragneiss.

Since 2012, SRG Guinée has embarked in detailed prospecting programs aimed at delineating and characterizing the graphite occurrence. A grid with cut-lines on 200 m spacing was established in the field for a total of 44 line km. A Max-Min electro-magnetic survey (32.5 line km) completed over the length of the occurrence was successful in outlining the boundaries with the surrounding country rock and identifying sectors with high graphite flakes concentration.

Mineralogical and petrological investigations were performed at the University of Franche-Comté, France, and several metallurgical tests were completed in 2014, 2015 and 2016.

Metallurgical tests were performed by Actlabs on surface oxide material from the Lola Graphite occurrence. Metallurgical testing indicates excellent recovery of super-jumbo, jumbo and large flake sizes.

Several mineralogical and petrological studies were also performed by Actlabs and through a graduate study at the University of Franche-Comté, France (Section 7).

ProGraphite GmbH and Dorfner/Anzaplan both from Germany performed additional detailed metallurgical investigations in 2017.

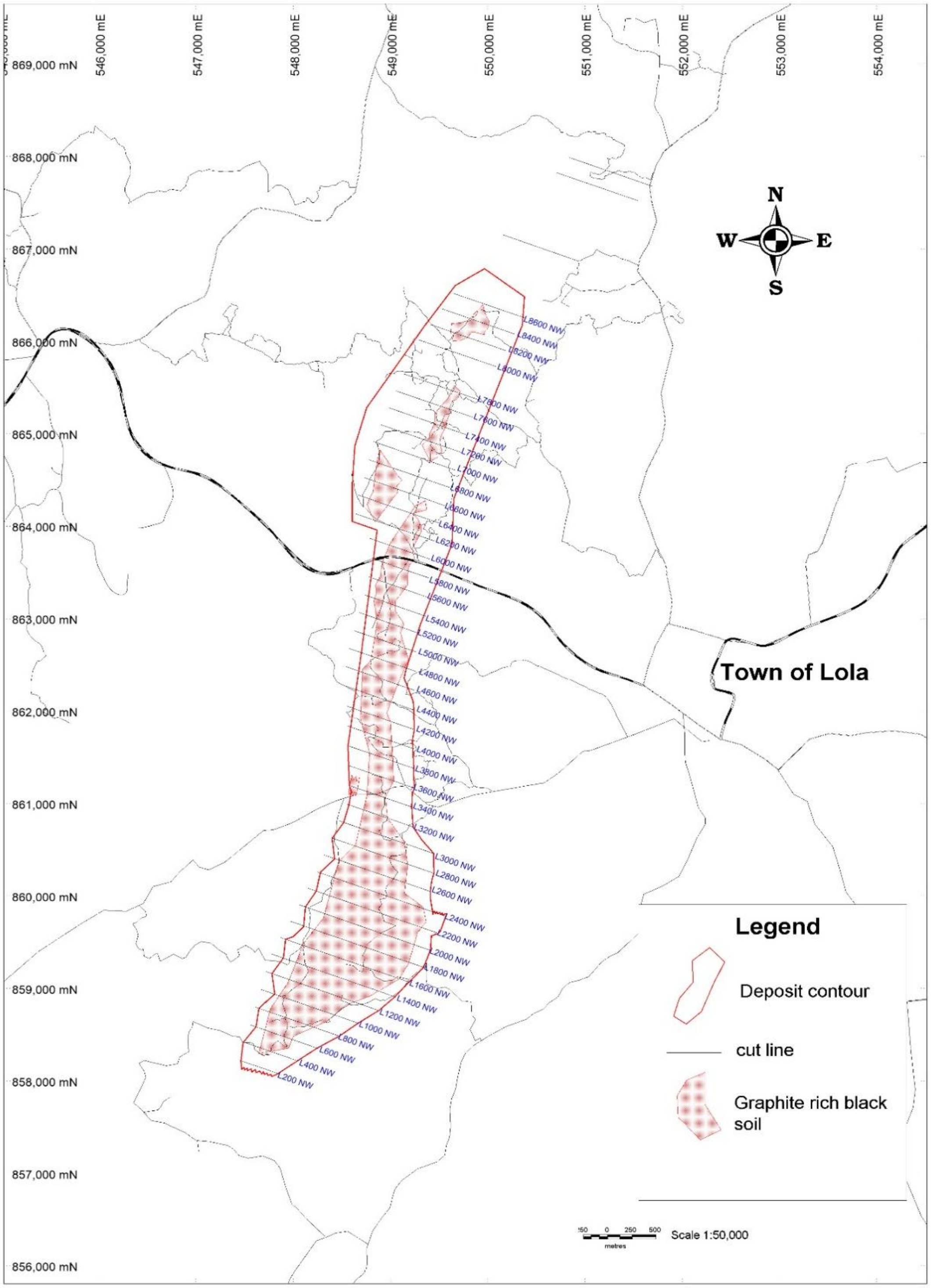
9.2 Line Cutting

A total of 44 lines for 39 line-km were cut in 2013-2014 and maintained over the entire length of the occurrence. NW-SE oriented cut-lines were set at an equal distance of 200 m with stations on 50 m spacing (Figure 9.1).

9.3 Geological Mapping and Sampling

SRG Guinée's team has geologically mapped the entire occurrence with emphasis on defining the geological contact between the graphite-bearing paragneiss and the surrounding country gneiss.

Figure 9.1 – Lola Graphite – Cut Grid



Geological mapping was performed by SRG Guinée's well-trained geologists and geological technicians. The mapping was made easier by the use of the soil color. Effectively, the intense weathering affecting the entire region produced soils with specific colors and textures depending of the original rock (protore). Granitoid and gneiss show a residual soil with beige to light orange colour, an ultramafic will show a dark red laterite, and the graphite-rich paragneiss will develop a dark grey to pitch black oxide material, with graphite flakes still concentrated within the oxide material.

Furthermore, the absence of thick organic layer allows for the observation of the graphite-rich paragneiss at surface. Figure 9.1 shows the outline of the graphite-rich paragneiss as mapped by SRG Guinée's team.

9.4 Max-Min Geophysical Survey

In 2014, a total of 32.5 line-km of Max-Min electromagnetic (EM) survey was completed by SRG Guinée's team, totalling 1,300 readings, every 25 m on 36 cut lines. The Max-Min survey was in the frequency domain with a co-planar horizontal loop configuration. Mr. Laforest trained SRG Guinée's team in February 2014 with the use of the Max-Min apparatus.

Numerous Max-Min EM conductor axes, defined using the 222 Hz frequency, are present on an almost continuous manner between Lines 200 and 8600, a strike length of 8.4 km, with a gap between lines 3600 and 4200 that was not surveyed

9.5 Detailed Aerial Photos and Topographic Survey

In April 2017, a photogrammetric drone survey was performed on the deposit. The survey was performed using a SenseFly's Ebee drone with a 10 cm/pixel resolution. The resulting Digital Elevation Model ("**DEM**") was then filtered in four (4) stages to remove vegetation and buildings from the data and produce a Digital Terrain Model ("**DTM**") representing "bare earth" elevations.

The model was calibrated using nine surveyed Ground Control Points ("**GCP**") visible from the air. The expected horizontal and vertical precisions are sub-metric. Figure 14.1 illustrates the topo contours generated using the SenseFly's Ebee data.

A detailed topographic survey was completed in May 2018. The survey was performed by Effigis Geo-Solutions Inc. and measured data at 250 cm contours.

9.6 Trenching and Pitting

Between 2012 and the end of 2016, SRG Guinée dug 34 vertical pits, for a total of 396 m in all Sectors, but Sector 4. The purpose of the pits was to characterize the short scale variability of the graphite mineralization within the surface-weathered portion of the deposit.

In 2016-2017, 11 shallow trenches, for a total length of 1,452 m were dug at right angles to the strike of the deposit to add near-surface information. The trenches were excavated in Sectors 4, 6, and 7.

The exploration work performed by SRG Guinée's team confirmed the extent and continuity of the graphite-rich paragneiss. The work also confirmed that the mineralization is near-surface.

10 DRILLING

The information in this section of this Report under Y.A. Buro's responsibility is largely drawn or summarized from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018". This Section has been further updated with the work completed on the property since the date of issue of the Mineral Resource Estimate Report dated February 5th, 2018.

10.1 Pionjar Drilling

SRG Guinée's team has developed a drilling technique for rapid investigation of any laterite facies using portable, gas-powered Pionjar jackhammer/drills. This drilling technique was developed primarily to test lateritic faces for nickel and cobalt, but can also be very efficient at collecting samples at various depths for graphite investigation.

The technique involves drilling using steel rods equipped with a sampling tube of 15 cm long by about 2.5 cm in diameter rimmed by tungsten teeth. During drilling, the material (soil, weathered material) goes through the sampler with the overflow discharged through a side port located 15 cm behind the sampler head. During drilling, the sampler is recovered after every metre drilled and the sampled material is collected and bagged. The sample collected represents the last 15 cm of every metre drilled.

This methodology, although qualitative, is suitable for regional target definition.

A total of 21 Pionjar holes totalling 176 m were drilled by SRG Guinée. The holes ranged from a depth of 2.0 m to 15.0 m, with the majority of them reaching depths of 5.0 to 10.0 m.

10.2 Diamond Drilling

SRG Guinée's first drilling program started in October 2013 with 20 boreholes using their two (2) self-owned Jacro diamond drill rigs. An additional 16 boreholes were drilled in June and July 2014. Jacro drill rigs are made to be man-portable, and are designed to reach a depth of approximately 30 to 40 m in the oxide material (weathered material).

Thirty-six (36) boreholes were drilled for a total of 800.5 m. The holes were spread over the strike length of the occurrence in order to characterize the graphite-rich oxide zone. The first 20 holes were vertical holes and the subsequent 16 holes were inclined at -60 degrees to test at the best possible angle the graphitic succession within the capacities of the rigs.

SRG Guinée's second drilling program started in April 2017 with the mobilization of a track-mounted Coretech CSD 1300G drill rig contracted from Sama Nickel Côte d'Ivoire SARL ("**Sama Nickel**").

The objectives of the 4,500 m drilling program were to delineate the mineral resources within the weathered profile over approximately 18 % of the surface expression of the graphite rich paragneiss.

On March 2018, the drilling contractor Foraco Côte d'Ivoire ("Foraco") mobilised two (2) drilling rigs to the Lola Graphite project (Figure 10.6). As of June 14th, 2018, Foraco completed 557 boreholes for approximately 17,954 m.

The on-going drilling program aims at delineating mineral resources within the weathered profile over approximately 50 % of the surface expression of the graphite rich paragneiss.

As of June 14th, 2018, a total of 557 boreholes for 17,954 m and 10 trenches for 1,326 m were completed. A total of 395 boreholes are available with completed analytical results, totalling 12,086 m and have been used in determining the resource estimate for this Report. The area drilled and accounted for in this updated Mineral Resource represents roughly 33 % of the 3.22 km^2 surface area of the entire deposit, as defined by geological mapping and geophysical means.

Figure 10.1 illustrates a compilation of boreholes drilled to date and the planned boreholes to be drilled per sector.

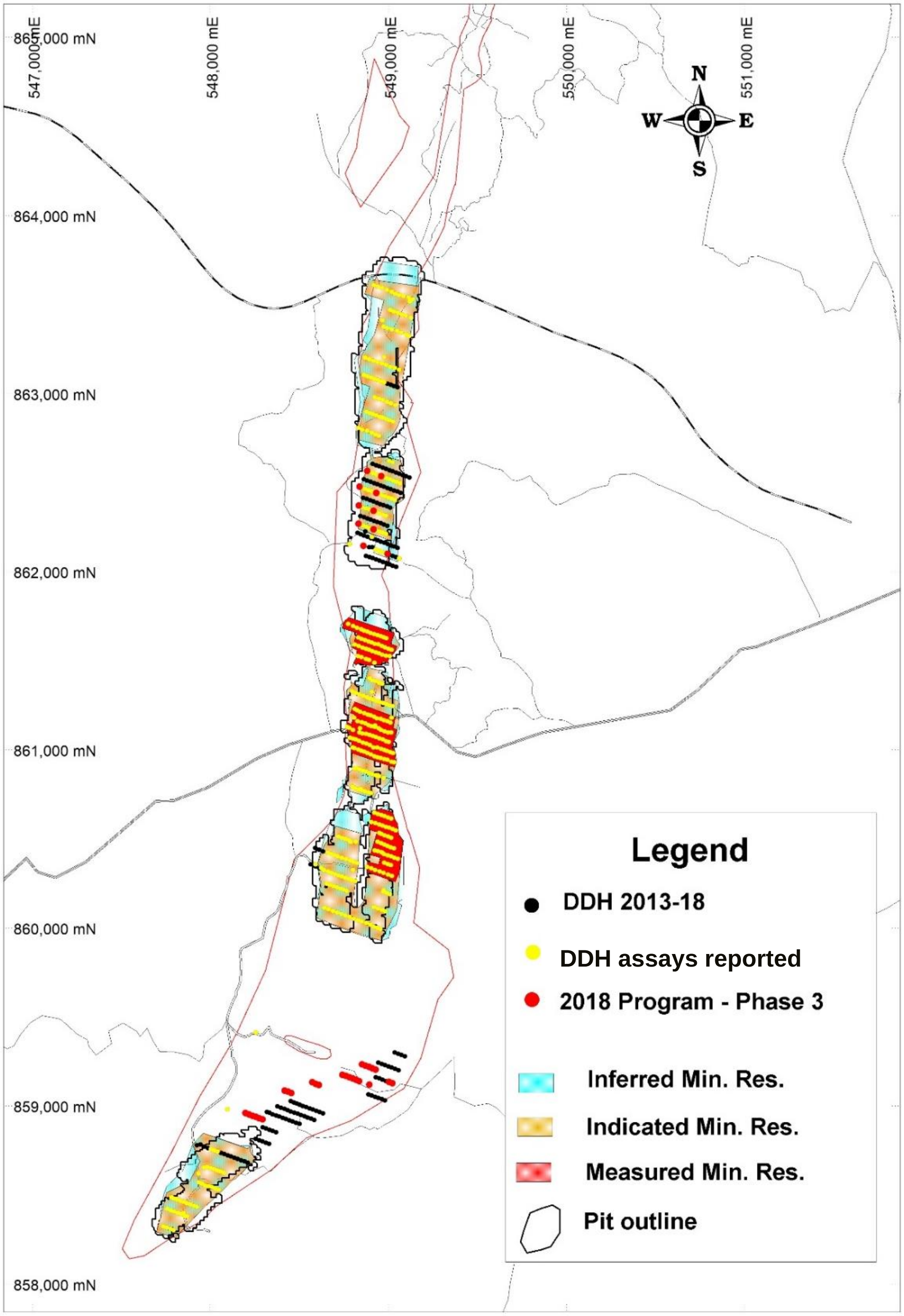
Table 10.1 is summary of drilling on the Property as of June 14th, 2018.

Table 10.1 - Summary Drilling of the Property

YEAR	Number of Drill Holes	Cumulative Depth (m)
2013-2014	36	800
2017	236	6,442
2018 (April 4)	123	4,844
2018 (June 14)	162	5,868
Total	557	17,954

Drilling on-site was ongoing at the time of preparing this Report and an additional 3,000 m of drilling is scheduled to take place in the second half of 2018.

Figure 10.1 – Compilation of Drill Holes as per June 14th, 2018



10.2.1 Methodology

For every hole, the drill rigs were positioned on prepared drill pads using a global positioning system (hand-held GPS, ± 5 m accuracy). In addition to site leveling, drill pad preparation also involved the completion of hand-dug, unlined sumps to store and capture return waters.

The rig was equipped to retrieve HQ sized core (63.5 mm in diameter) through the entire length of the boreholes. The core was extracted in runs of a maximum of 1.5 m. The depth of weathering typically reaches between 15 m and 35 m from surface.

Upon completion of the holes, all rods and casings were extracted.

The drill holes are marked with a PVC casing marked with the drill hole number. These markers were then upgraded to permanent, concrete monuments. The final location of each drill hole is then surveyed with surveyor-grade instruments. Upon completion of the drilling, the drill site is reclaimed. Any refuse or surplus material is removed, and all water sumps are filled in and the site leveled. The site is then inspected by a geologist/technician and the drill foreman. A detailed environmental inspection checklist is completed, and a photo is taken to provide a record of the reclamation of the site.

10.2.2 Borehole Naming Convention

The adopted system for naming the drill holes primarily consists of a subdivision of the entire area in blocks of 800 m x 800 m dimensions, based on UTM coordinates. All boreholes fall within the 800 m x 800 m block naming system. The borehole names are formed using a sequence of ten (10) digits, as per the following template: LLWW XXXYYY. The first two (2) digits, 'LL', represent the Lola prospect area; 'WW' represents the block number; and 'XXX' and 'YYY' represent the distance going East from the specific block's top left corner and the measure going South from the block's top left corner.

This system links the hole name to its exact position in the field to the closest metre. For instance, Hole LL42 156287 is located in Block 42, 156 m East and 287 m south of the upper left corner (Figure 10.2).

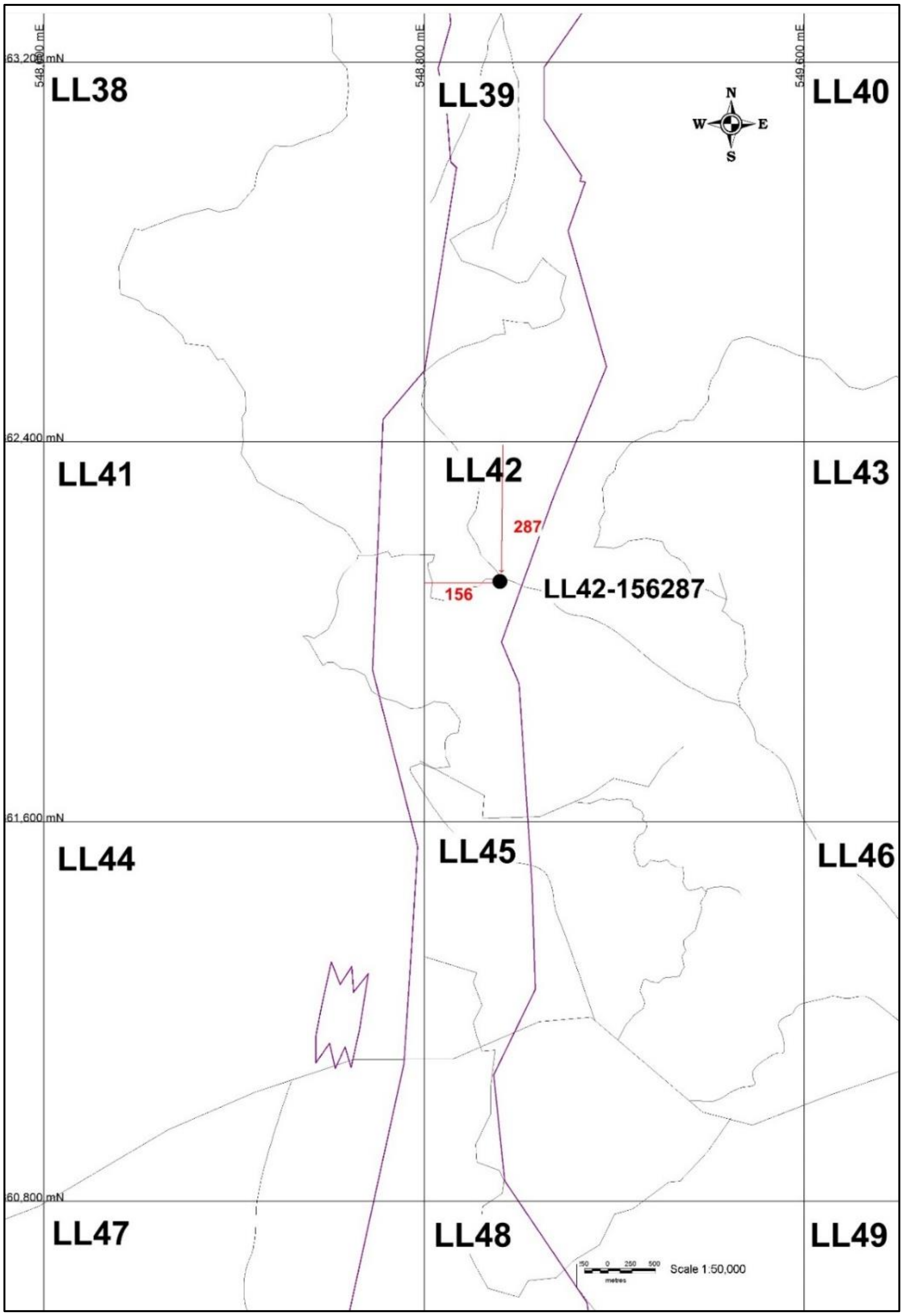
10.2.3 Collar Survey

Boreholes sites were first positioned in the field using a hand held, consumer grade GPS (± 5 m accuracy).

On April 5, 2018, 187 drilled hole collars and trenches were surveyed by *Société Géodésique-Topographie et de Travaux publics* of Abidjan, Côte d'Ivoire.

Each collar was surveyed using dual-frequencies LEICA 1230 differential GPS with a precision of five (5) mm on the X and Y coordinates and between one (1) and five (5) cm for the elevation (Z coordinates).

Figure 10.2 – Borehole Naming Convention (SRG Guinée)



10.3 Summary

DRA/Met-Chem believes that the drilling programs were successful in defining the graphite mineralization in sufficient detail to support the present resource estimation. The survey of all the hole collars provides accurate location of the holes in the deposits. The hole deviation path was not measured as it was unnecessary considering the short length of the holes, the majority of which reached depths of 20 to 40 m.

It is the opinion of DRA/Met-Chem that the previous drilling campaign was conducted according to current industry best practices. No drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results were observed by DRA/Met-Chem in the drilling programs. The data provided by the drilling and interpretation therefore are adequate for the purposes of the resource estimate presented in this Report.

11 SAMPLE PREPARATION, ANALYSIS AND SECURITY

The information in this section of this Report under Y.A. Buro's responsibility is largely drawn or summarized from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018". This Section has been further updated with the work completed on the property since the date of issue of the Mineral Resource Estimate Report dated February 5th, 2018.

11.1 Sample Procedure and Sample Security

11.1.1 Logging and Sampling Procedure

Preliminary core logging was done at the drill by the geologist supervising the drilling operations. Detailed core logging and sampling were performed at SRG Guinea's facility at the Lola village. The observations were recorded manually on a paper form and transferred onto Excel sheets. This method implies transcription of the data, with possible errors introduced, but leaves a better trail of the logging activities and a dual record of the data. The sample methodology and approach employed by SRG Guinea's geologists were based on standard, internationally accepted procedures and are described below. More details on the entire procedure are provided in a document under Appendix A - *Protocoles des activités géologiques majeures*.

Core handling and processing involved the following steps:

1. The core is placed in clearly marked four metre (4 m) wooden boxes at the drill;
2. The core is secured and transported to the Lola base camp;
3. The core is photographed;
4. Geological logging;
5. Bulk density measurements are taken;
6. The core is marked and sampled; and
7. Retained core is stored in on site core storage facility.

Standard and accepted industry practices were employed for the sampling of drill core. Sample intervals ranged from less than 1.0 m to a maximum of 1.5 m, but with a nominal 1.0 m in keeping with geological logging. The entire holes were sampled without leaving any gap. The wider sample interval lengths were taken within the same or similarly wider lithological units to compensate for any variations in core recoveries between runs.

In the non-weathered material, the geologists marked a reference line on the drill core prior to sampling to ensure sampling consistency and that sampling would be perpendicular to structures and observed fabrics.

Bulk density samples mostly consisted of 10 cm to 15 cm lengths of the whole core. The rest of the core was sampled taking a half-core split for analysis and placing it tagged plastic bags with a sample ticket inserted and the sample number written in permanent marker pen. Upon the completion of density measurements, the bulk density samples were returned to the core box with half of a sample included in the corresponding sample bag. The bags were secured by stapling the folded end.

A half-split of drill core was retained and stored in the core box for future reference, with sample intervals marked on the core box with the use of metal tags.

By September 30th, 2017, a total of 3,932 samples were taken and sent for preparation and analysis from the SRG Guinée's diamond drill holes (DDH) and surface trenches (figures exclude quality control samples). The sample preparation was performed at the facility of *Société Véritas* of Abidjan, Côte d'Ivoire.

These pulp samples were sent to Actlabs and assayed by infrared methods for Graphitic Carbon ("**Cg**").

The Cg by infrared methodology consists of assaying a 0.5 g sub-sample using a multistage furnace treatment to remove all forms of carbon with the exception of graphitic carbon. Carbon in a sample can present as graphitic carbon, carbon in carbonate minerals, humic carbon and other less common forms. Each one of these forms combusts at a different temperature so the staged heating of the sample can discriminate between the different forms. Either a resistance or induction furnace is used for analysis.

The inductive elements of the sample and accelerator couple with the high frequency field of the induction furnace. The pure oxygen environment and the heat generated by this coupling cause the sample to combust. During combustion, carbon-bearing elements are reduced, releasing the carbon, which immediately binds with the oxygen to form carbon monoxide ("**CO**") and carbon dioxide ("**CO_2**"), the majority being CO_2.

Carbon is measured as carbon dioxide in the Infrared Radiation ("**IR**") cell as gases flow through the IR cells. Carbon dioxide absorbs IR energy at a precise wavelength within the IR spectrum. Energy from the IR source is absorbed as the gas passes through the cell, preventing it from reaching the IR detector. All other IR energy is prevented from reaching the IR detector by a narrow bandpass filter. Because of the filter, the absorption of IR energy can be attributed only to CO_2. The concentration of CO_2 is detected as a reduction in the level of energy at the detector.

11.1.2 Sample Preparation and Analysis

11.1.2.1 Samples from the Drilling Campaigns of 2013-2014

For boreholes drilled in 2013 and 2014 (borehole sequence 1 to 36 for 687 samples), all sample preparations were performed at *Société de Développement de Gouessosso*'s ("**SODEGO**") sample preparation facility in the village of Gouessosso in Côte d'Ivoire (90 km from Lola), under

SRG Guinée's supervision. For each core sample, two (2) pulverized pulps (-100 microns) were prepared: one (1) sent to the laboratory for assaying and one (1) kept as reference. The pulp kept as reference could then be used at a later stage as a "check sample" with a second laboratory, or else for metallurgical testing.

11.1.2.2 Samples from the Drilling Campaign of 2017-2018

For all subsequent boreholes and trenches material, the sample preparations were performed at the laboratory of Bureau Veritas ("**Veritas**") in their facility in Abidjan, Côte d'Ivoire. Following the core logging and sampling at the Lola facility, each sample was given a sample tag following a predefined and recorded sequence. The numbering sequencing included provisions for duplicates, blanks and standard to be inserted into the flow of samples.

One (1) duplicate sample is produced on every 40 samples, one (1) blank sample is introduced every 60 samples and one (1) standard on every 30 samples. The selected sample bag with core material identified for producing a duplicate has the two (2) consecutive tags attached to the bag. Veritas was instructed to produce a duplicate sample from the pulverized material for each bag that has two (2) consecutive sample tags.

11.1.2.3 Sample Preparation

Sample preparation at SODEGO and Veritas followed the same procedures:

a. Reception of the samples

b. Drying at 105 °C, the time depending on the sample moisture.

c. Crushing to 70 % passing two (2) mm; verification of the particle size distribution.

d. Quartering homogenization, preparation of a representative sub-sample.

e. Pulverizing to 85 % passing 75 µm. Verification of the grind size. When applicable, preparation of duplicates samples and introduction of blank and standard material pouches into the flow of samples.

For each core sample, two (2) pulverized pulps (-100 microns) were prepared: one (1) sent to the laboratory for assaying and one (1) kept as reference. The pulp kept as reference could then be used at a later stage as a "check sample" with a second laboratory, or else for metallurgical testing's.

Sample pulps were delivered to Actlabs in Canada for Cg assaying. Actlabs is ISO 17025 accredited (Lab 266) for specific registered tests, and operates a quality management system that complies with the requirements of ISO 9001:2008.

11.1.3 Core and Pulp/Reject Storage

All half-core (HQ size) splits from the logging tables were placed in sequence in four (4) rows in core boxes built onsite by Sama Guinea's carpenters. They were built to contain up to 4 m of core.

Prior to using, the core boxes had been soaked in a solution to protect them from wood-eating termites. The core boxes are clearly identified by an embossed aluminum strip stapled on the end plate of the boxes.

The core boxes are stored in order by hole/box number in an enclosed and secured concrete floored shed located at Lola village. Access to Lola site is secured and manned with a watchman on a full-time basis. Pulp and reject samples were placed in bags and stored at SODEGO's location in Gouessesso village in Côte d'Ivoire.

11.1.4 Bulk Density Analysis

Bulk Density Factors ("**BDF**") were determined by SRG Guinée at its facility at the Lola camp. A total of 271 representative samples of 10-15 cm lengths of core from both the oxide zone and the fresh material were collected. Representative samples were taken from boreholes drilled at the Property in 2013-2014 and 2017-2018.

The density was measured using a standard procedure described below and results are presented in Table 11.1.

1. The wet sample weight was measured in air;
2. The sample was placed on a platform suspended from the scale in a bath of water, and weighed under water;
3. The volume of the core sample was calculated;
4. The wet bulk density was calculated by dividing the weight of the wet sample in grams by its volume in cubic centimetre;
5. The sample was dried for approximately two to three (2 to 3) hours at ~100 °C;
6. The dry sample was weighed in air;
7. The free moisture content was calculated using the weight of contained water divided by the weight of the wet sample expressed as a percentage; and
8. The dry bulk density was calculated using the wet bulk density and the free moisture content.

Table 11.1 – Density Factors

Rock Code	Facies	Nb Sample	Wet Specific Gravity	Dry Specific Gravity	Humidity
50	Fresh Earth	24	1.97	1.59	19.58
100	Laterite	11	1.80	1.49	17.33
100	Alterite	148	1.89	1.50	20.73
150	Saprolite	1075	2.01	1.66	17.46
200	Hard Saprolite	96	1.93	1.68	12.90
600	Gneiss	109	2.15	2.09	3.11
600	Quartzite	6	1.33	1.31	1.68
700	Silicified Zone	(assigned)	1.90	1.80	10.00
	Total	**1,469**			

11.1.5 Security and Chain of Custody

All sample and data collection was handled by SRG Guinée's personnel on site. The core boxes were covered and secured at the drill site, ensuring every measure was taken to eliminate any contamination and security breach during the transfer of core from the drill site to SRG Guinée's core logging facility in Lola. The samples collected by SRG Guinée were then bagged, placed into rice bags and kept in a guarded room until sufficient material was accumulated for proper shipping.

Regular sample shipments were sent to a sample preparation facility (SODEGO (2013-2014) / Veritas (2017-2018), Abidjan, Côte d'Ivoire. Once processed from the facility, the pulps were shipped to Actlabs, which is an independent laboratory and has no relationship with SRG Guinée.

Dispatch sheets were used and signed to confirm dispatch and receipt of sample batches. Data security was ensured by the immediate transfer of hard copy logs and records into Microsoft Excel software at the Lola site. Upon receipt of the digital files containing the assay results, all data was validated through a Quality Assurance and Quality Control ("**QA/QC**") process and subsequently exported to Gemcom software for further processing. Hard copy logs and sample record sheets are retained for reference.

11.2 Quality Assurance and Quality Control Procedure

SRG Guinée used thorough QA/QC procedures during the 2013, 2014, and 2017-2018 drilling campaigns. Several control samples were inserted by SRG Guinée during the flow of regular core sampling:

- Six (6) commercial Certified Reference Materials (CRMs, also referred to as Standards) (Table 11.2);

- One (1) sample of coarse blank material; and
- One (1) pulp duplicate sample.

Table 11.2 – List of CRMs Used by Sama (Standards)

Supplier	CRM ID	Graphitic Carbon (%)	Total Carbon (%)
Geostats	GGC-5	8.60	9.20
Geostats	GGC-10	4.79	5.22
OREAS		3.30	
OREAS	722	2.03	
OREAS	723	5.87	
OREAS	724	12.06	

The CRM from OREAS, Australia, was prepared from vein graphite from a mine in Sri-Lanka blended with granodiorite from Australia. Certified values for carbon and a suite of elements and oxides are provided. The CRMs prepared by Geostats Pty Ltd, Australia, were made up of flake graphite from Western Australia.

11.2.1 Drilling Campaign 2013-2014

During the 2013 and 2014 drilling programs, a total of 30 control samples (15 standards, 4 blanks, and 11 duplicates) were inserted, representing 7 % of the batch total. In addition, Actlabs used a total of 45 internal graphite control samples, 43 internal duplicate assays and 18 blank materials for internal controls.

11.2.1.1 Blanks

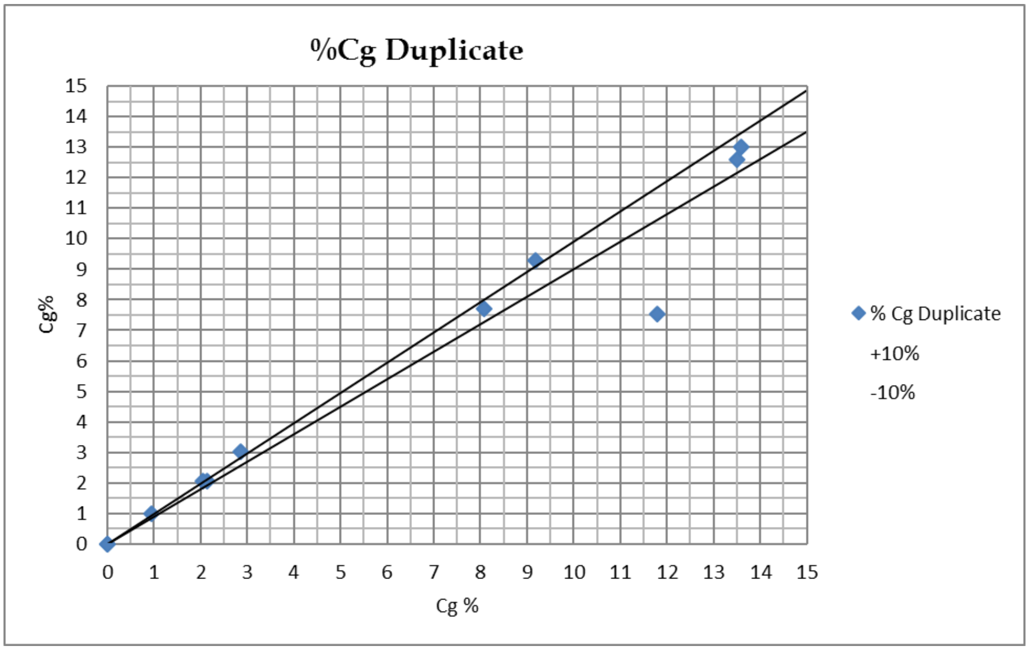
Four (4) prepared blank samples (prepared by Veritas) were used by SRG Guinée.

The assay results from the blank samples were considered to be satisfactory as all returned Cg values below the detection limit of 0.05%.

11.2.1.2 Duplicate Samples

Eleven (11) duplicate samples were inserted through the flow of samples sent to Actlabs for assaying. The results from each pair of samples are presented in Figure 11.1. The results were acceptable, though not outstanding, as all but one pair was within a variance of ±10%. However, the original versus duplicate analysis, as plotted around a one (1) to one (1) line, are reasonably close, except for one pair.

Figure 11.1 – Graph of Graphitic Carbon Assays for the Pairs of Duplicate Samples



11.2.1.3 CRMs (Standards)

Two (2) commercial CRMs (pulps) purchased from Geostats (GGC-05 and GGC-10), Perth, Australia, were used and inserted in every 30 samples of the sample flow. Table 11.2 summarizes the composition for each standard used. Figures 11.2 and 11.3 show the Cg value variations for the GGC standards. Both exhibit some high bias, but remain within acceptable limits.

Figure 11.2 – Standard Geostats GGC-05 Variation – Cg%

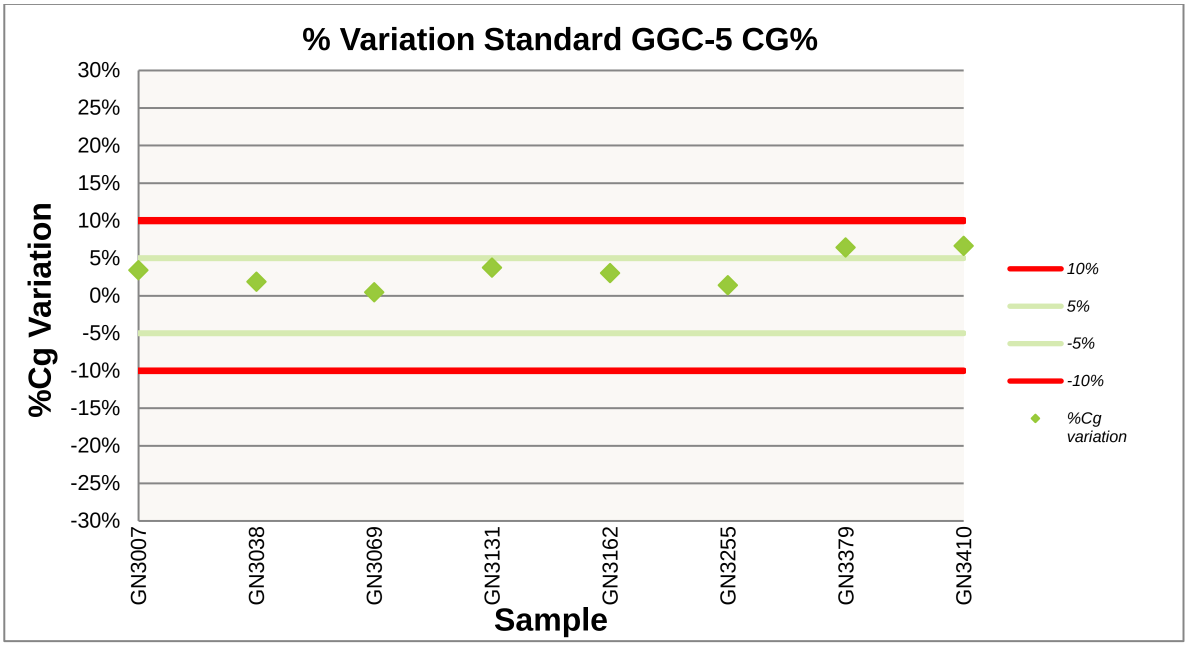
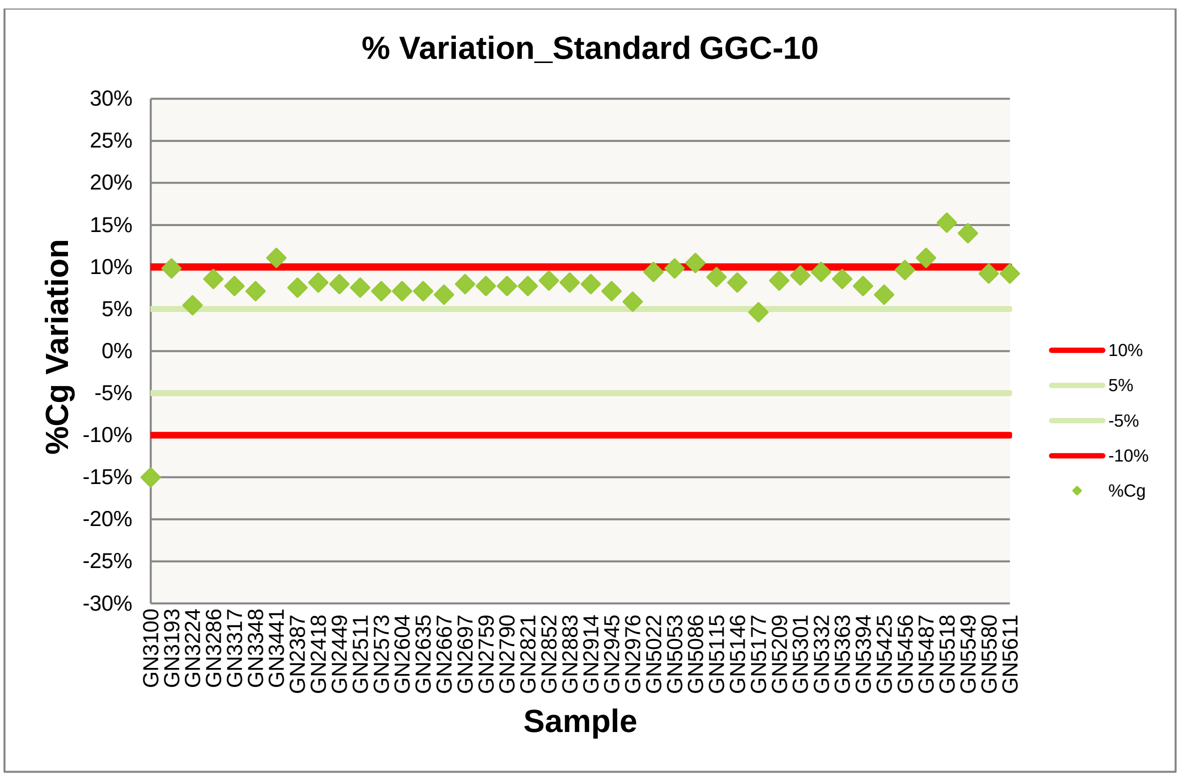


Figure 11.3 – Standard Geostats GGC-10 Variation – Cg%



11.2.1.4 Check Samples

Check assays were conducted on 35 selected samples with Veritas in Rustenburg, RSA, in 2016.

A total of 35 samples taken during the 2013 drilling campaign were sent to Veritas in 2016 (including six (6) standards and four (4) blanks samples).

At Veritas, all samples were acidified and roasted to remove carbonate and organic carbon. The residual carbon has been determined using a total combustion analyzer, and Cg % has been determined by total combustion analysis. Table 11.3 illustrates assay results for the blank samples.

In addition to assay for Cg, Veritas performed assaying for the following elements: SiO_2, Fe_2O_3, MgO, MnO, P_2O_5, Al_2O_3, CaO, K_2O, TiO_2, Ag, Cu, Zn, V, Pd, Th, U, S, C and LOI.

Statistical studies on assay results from Veritas Rustenburg versus Actlabs indicate that Veritas Rustenburg returned higher Cg values for check samples than Actlabs (Figures 11.4 and 11.5). Furthermore, Veritas returned higher Cg values for five (5) of the six (6) standards inserted. Assay results on duplicates are acceptable as shown in Figure 11.6.

Figure 11.4 – Check Samples: Actlabs vs. Veritas

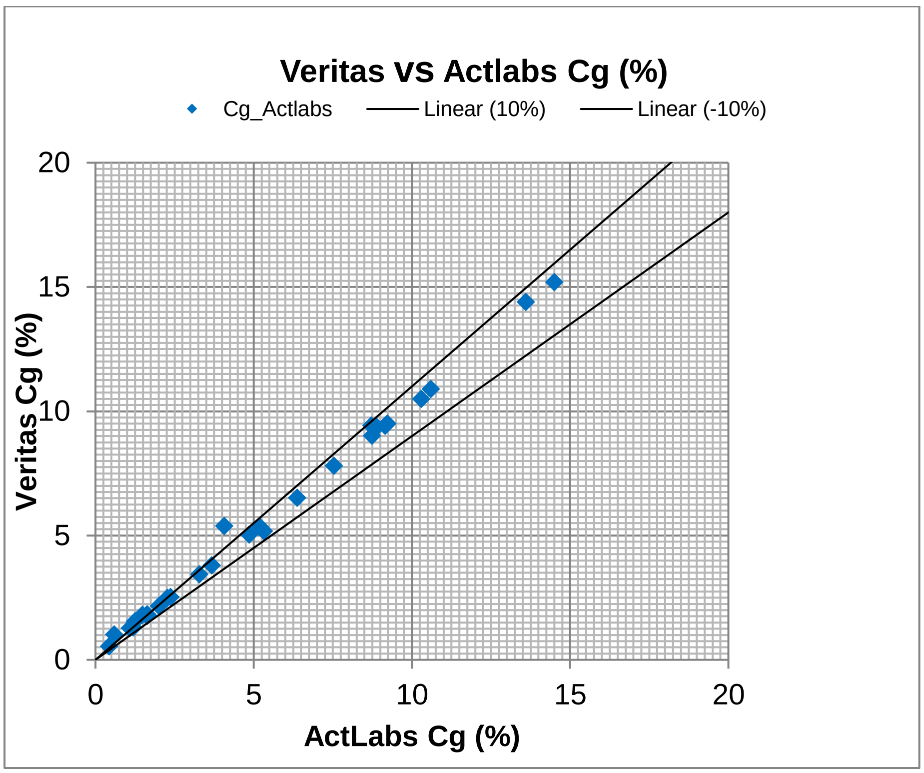


Table 11.3 – Veritas Assay Results on Blank Samples

Sample ID	Cg (%)
GN4209	0.02
GN4270	0.02
GN4331	0.02
GN4453	0.0288

Figure 11.5 – Veritas Assay Results on Standards (GGC-5 and GGC-10) – Cg (%)

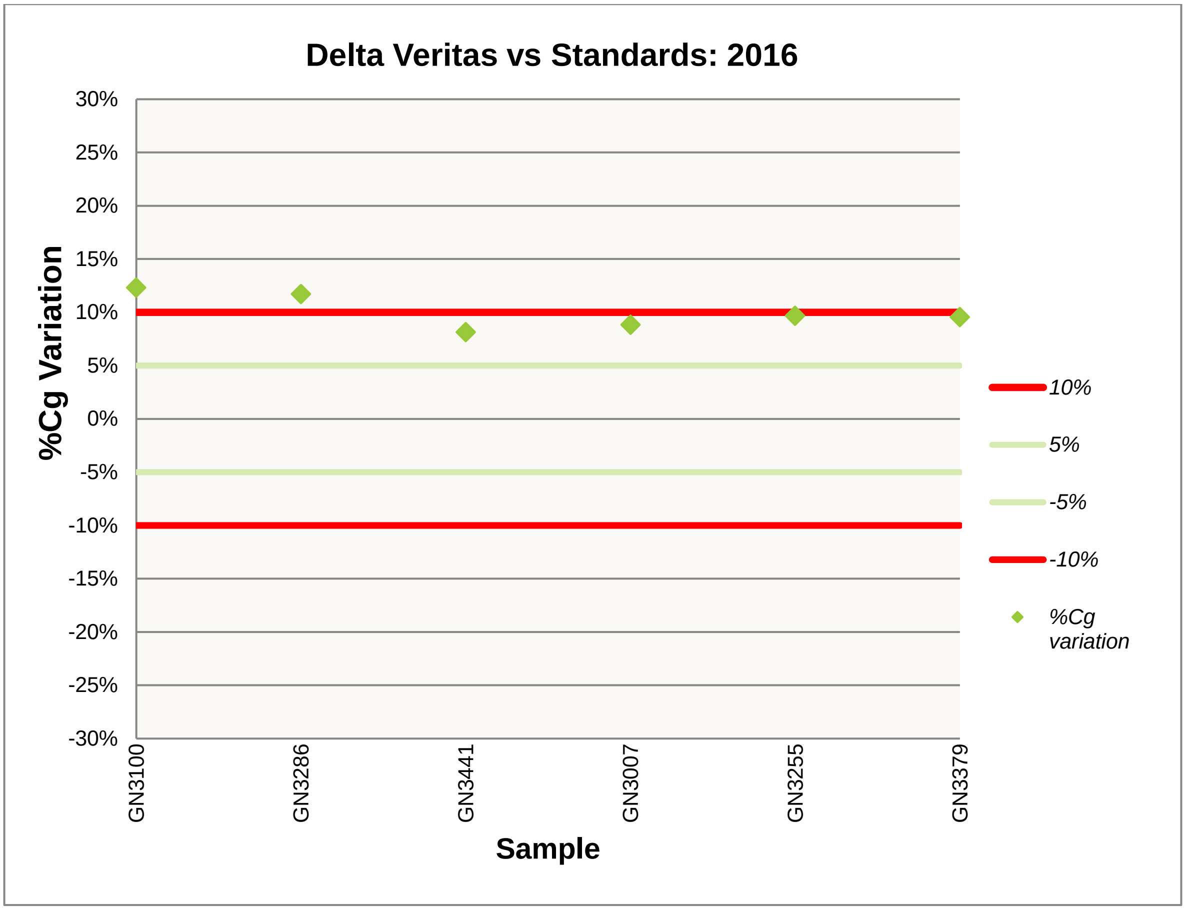
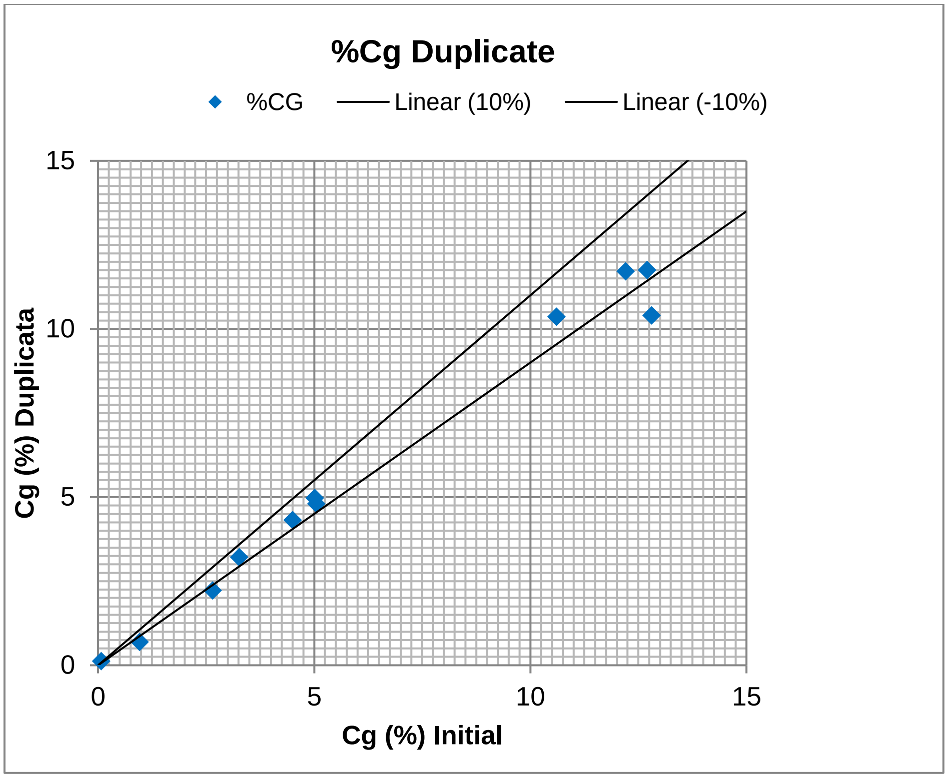


Figure 11.6 – Veritas Rustenberg Assay Results on Duplicate – Cg (%)



11.2.2 DRILLING CAMPAIGN 2017-2018

A total of 595 control samples (256 standards, 137 blanks and 202 duplicates) were inserted, representing 5.0 % of all samples collected.

A total of 549 check samples representing 5.0 % of the batch total, were sent to Veritas in Rustenburg, RSA, Veritas in Vancouver, Canada and SGS Lakefield in Canada.

11.2.2.1 Blanks

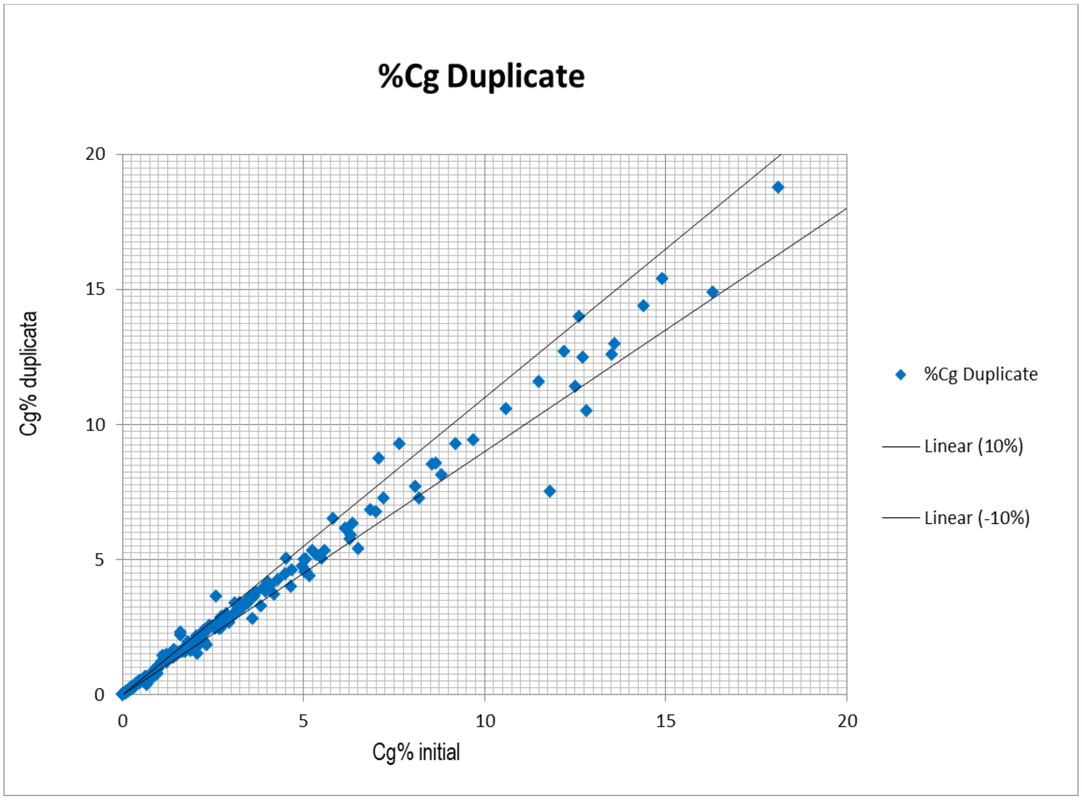
A total of 137 prepared blanks was used by SRG Guinée. The assay results from blank samples were considered to be satisfactory. Four (4) prepared blank samples (prepared by Veritas) were used by SRG Guinée.

Only three (3) out of the 137 blanks returned values above the detection limits, that is 0.17, 0.41 and 0.63% Cg.

11.2.2.2 Duplicate Samples

Two hundred two (202) duplicate samples were inserted through the flow of samples sent to Actlabs for assaying (Figure 11.7).

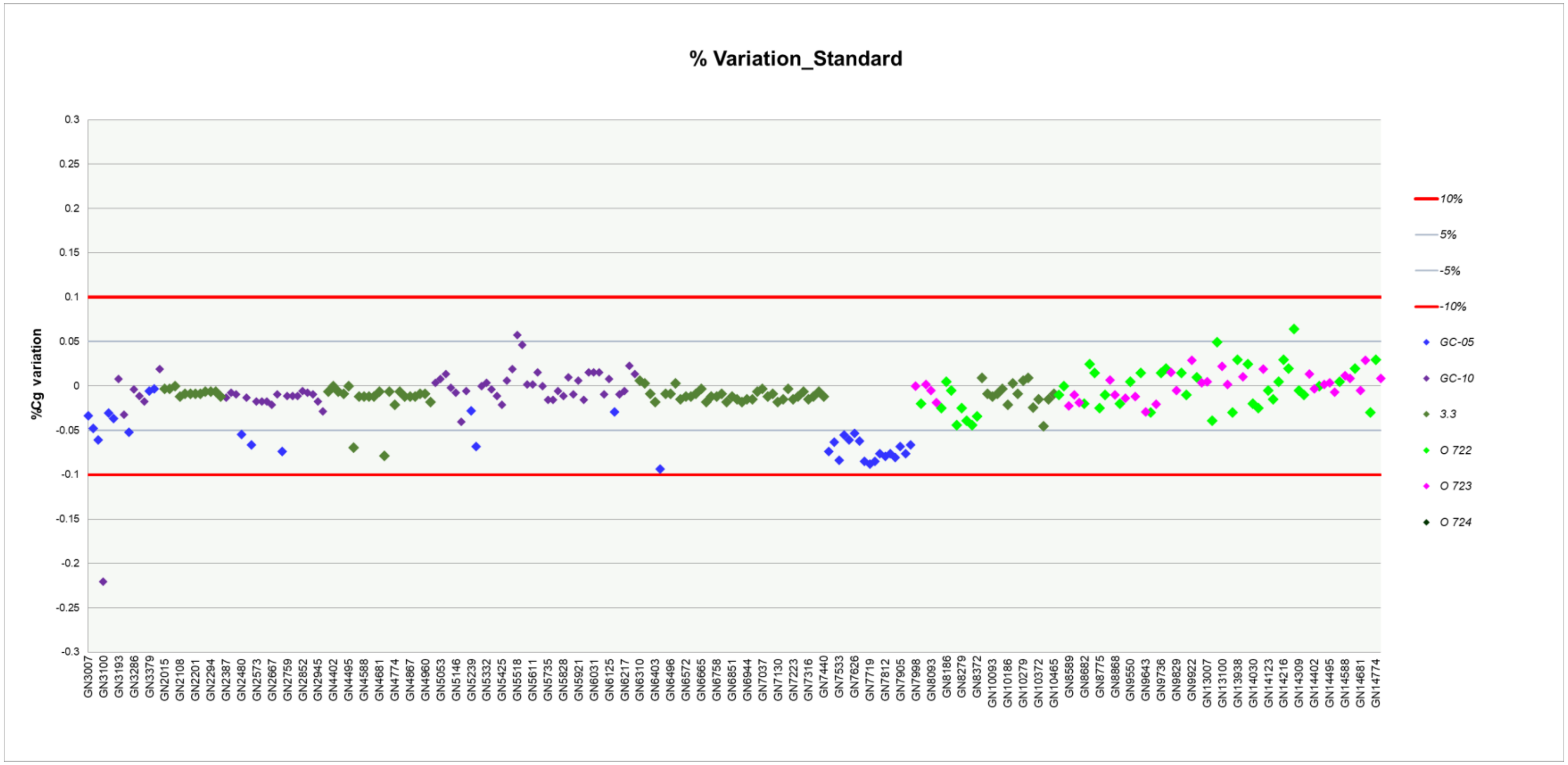
Figure 11.7 – Graph of Graphitic Carbon Assays for Duplicate Samples



11.2.2.3 Standards

Six (6) pre-prepared pulp standard materials were used and inserted on every 30 sample of the sample flow (Table 11.2). Figure 11.8 shows percentage (%) variations for all Standards combined.

Figure 11.8 – Combined Standard % Variation



11.2.2.4 Check Samples

In April 2017, 365 samples were sent to Veritas in Vancouver, Canada.

Due to sub-optimal results obtained from Veritas in 2016 and 2017, only the SGS Laboratory in Canada was used for subsequent check samples. Consequently, a total of 155 samples were sent to SGS Lakefield in Canada for the 2017-2018 drilling campaign.

a. Check Samples Veritas (Canada) April 2017

A total of 365 samples were sent to Veritas in Vancouver, Canada, in March 2017 (including 12 standards and six (6) blanks samples). At Veritas, all samples were acidified and roasted to remove carbonate and organic carbon. The residual carbon has been determined using a total combustion analyzer, and the Cg percentage has been determined by total combustion analysis. Table 11.4 illustrates assay results for the blank samples.

Table 11.4 – Veritas Canada Assay Results on Blank Samples

Sample No	Cg (%)
GN4026	<0.02
GN4087	<0.02
GN4148	<0.02
GN4209	<0.02
GN4270	<0.02
GN4331	<0.02

Statistical studies on assay results from Veritas versus Actlabs indicate that Veritas Canada returned lower Cg values for check samples than Actlabs (Figures 11.9 and 11.10). Veritas failed at returning acceptable Cg results on most of the 12-standard material inserted. Assay results on duplicates were acceptable (Figure 11.11).

Figure 11.9 – Check Samples: Actlabs vs. Veritas Canada, April 2017

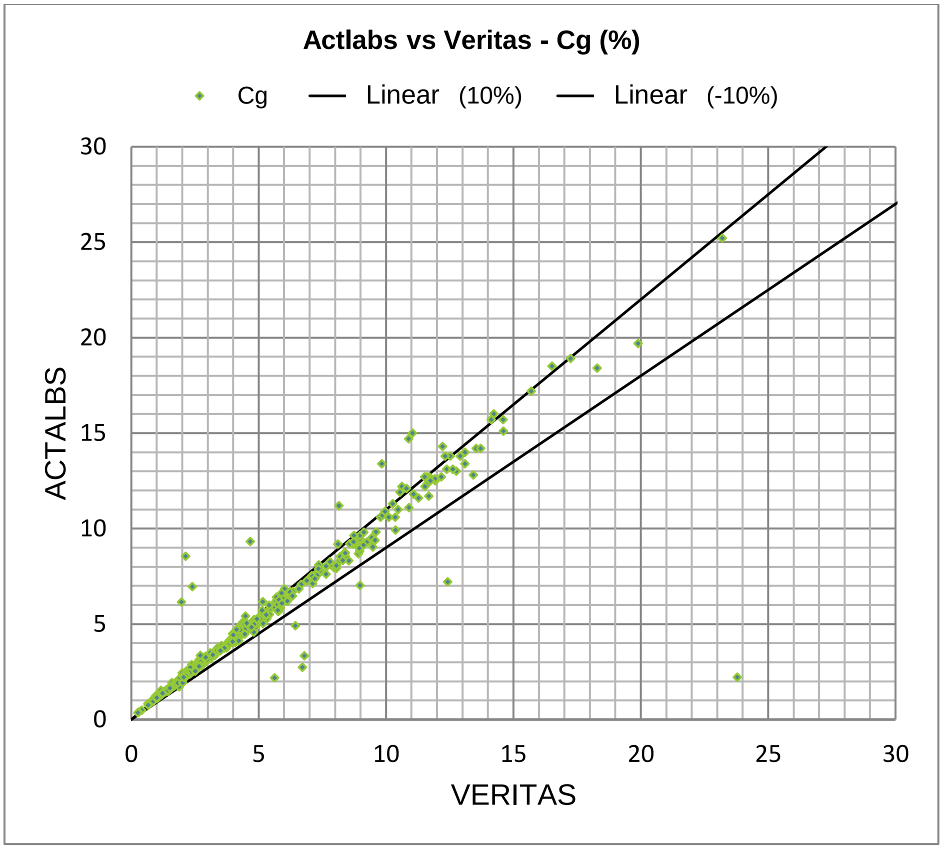


Figure 11.10 – Veritas Assay Results on Standards OREAS

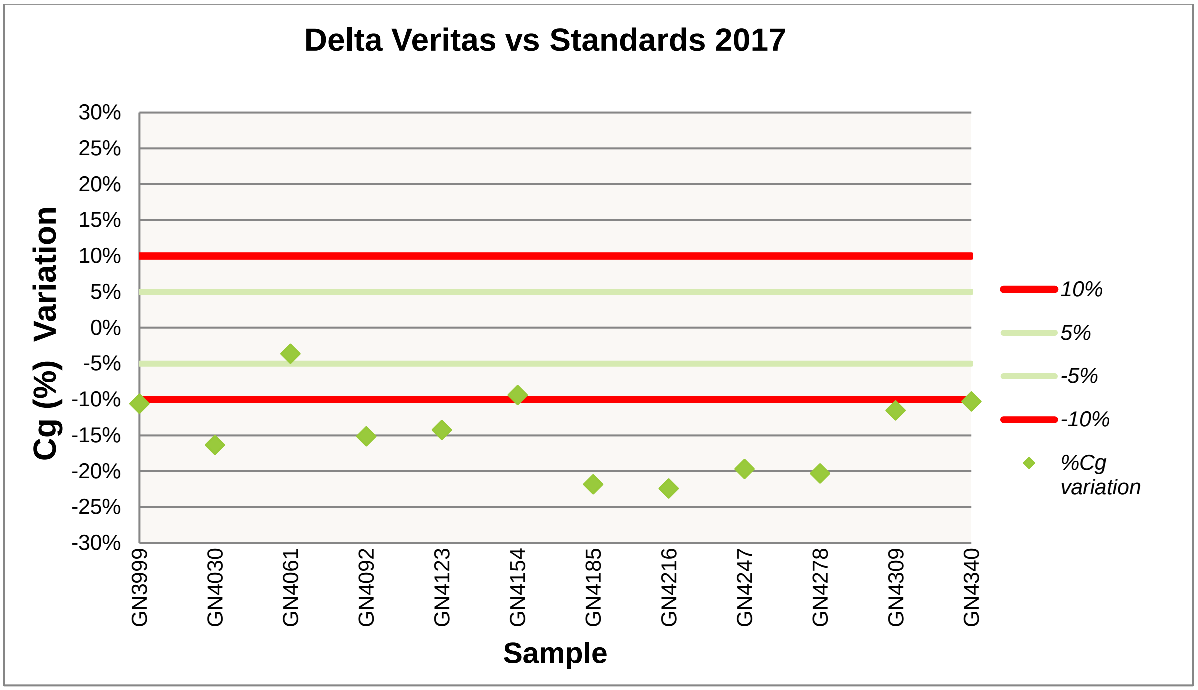
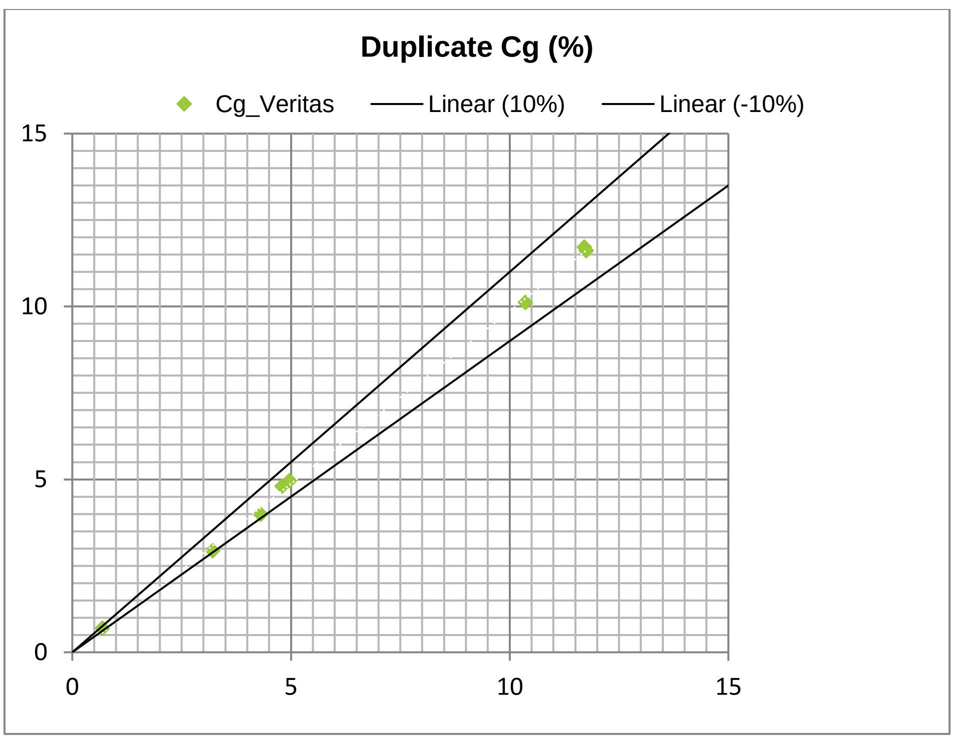


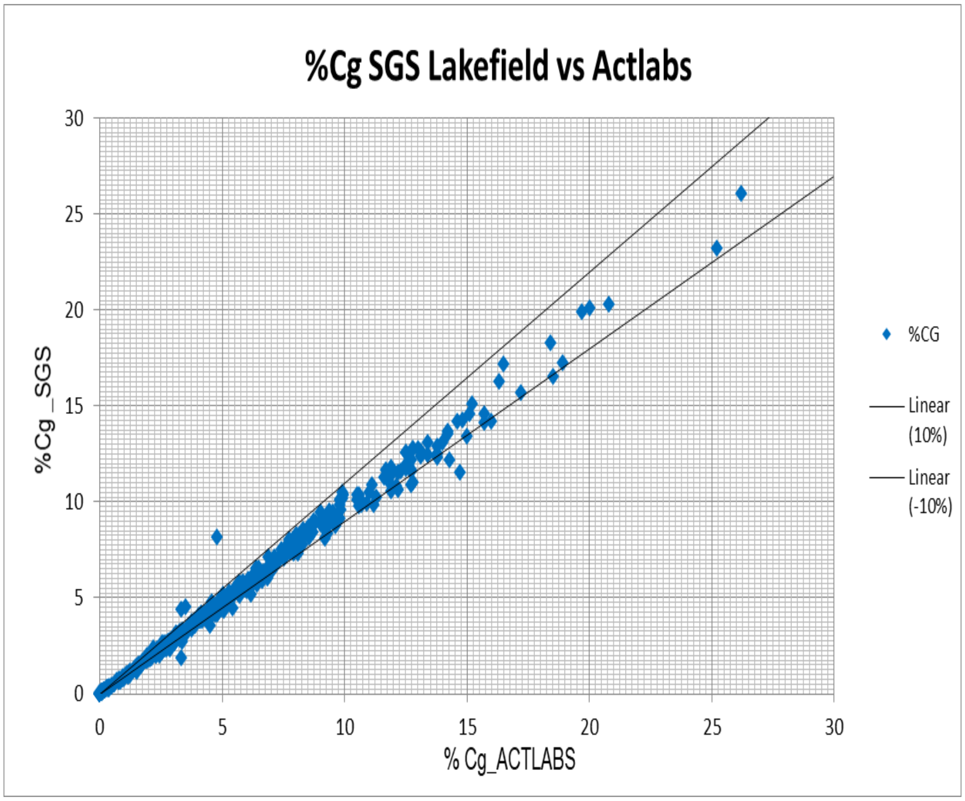
Figure 11.11 – Veritas Canada Assay Results on Duplicate



b. Check Samples SGS Lakefield 2017-2018

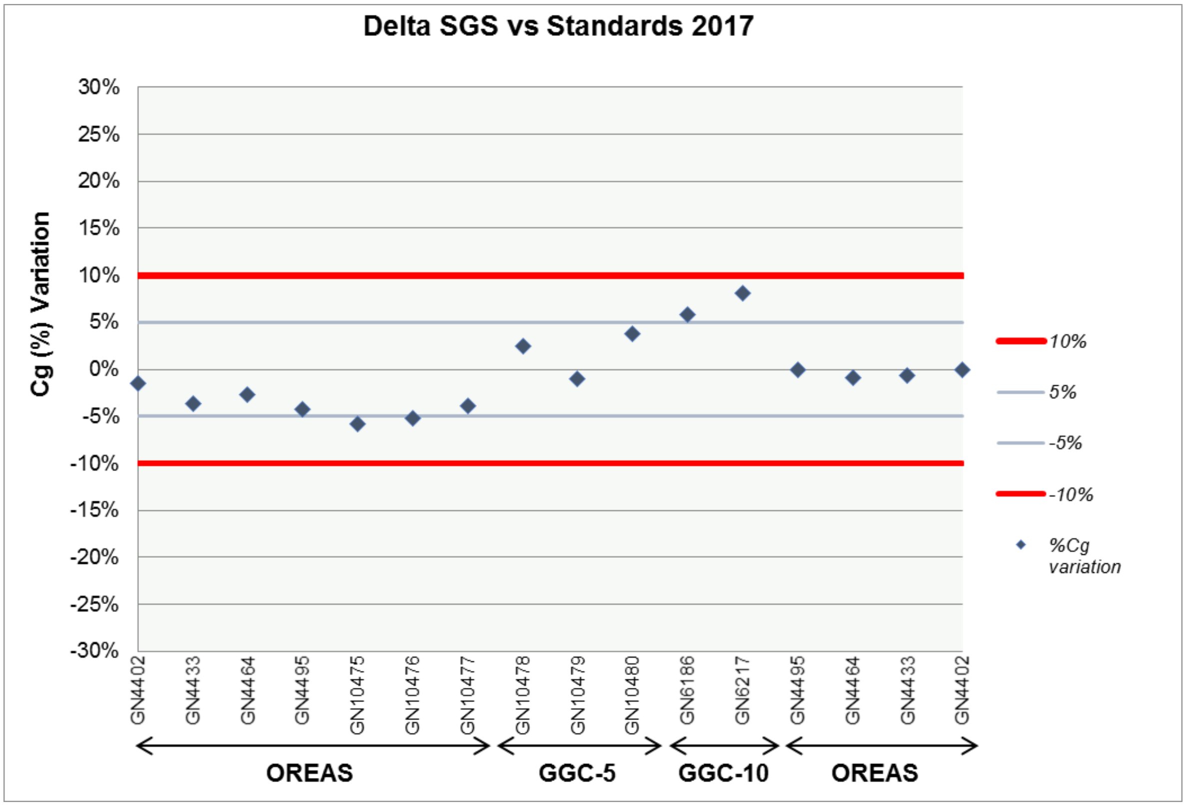
From April 2017 to June 2018, SGS Canada re-analyzed 155 pulp samples (including 16 standards) from drill holes performed in 2017. A correlation graph (Figure 11.12) indicates almost a perfect match between SGS and Actlabs analysis.

Figure 11.12 – Check Samples: SGS vs. Actlabs, Cg % Values



SGS assay results on standards show a variation within acceptable limits (Figure 11.13).

Figure 11.13 – SGS Assay Results on Standards (OREAS, GGC-10, GGC-05)



11.3 Conclusions

Actlabs was used for both drilling campaigns. The assays reported on the CRMs for both campaigns show a moderate positive bias on one (1) of the standard materials (GGC-10) but not on the two (2) other standards (GGC-05 and OREAS). The composition of both GGC standards shows the same relative percentage of graphitic carbon versus total carbon so the discrepancy is not dependent on the presence of other carbon forms. However, the GGC-10 standard contains 4.40 % sulfur while the sulfur content of GGC-05 is 0.05 %.

It is hypothesized that sulfur might have a certain influence on sample combustion during the multistage furnace assay process used by Actlabs. However, as this Report is only concerned with the saprolite portion of the Lola Graphite occurrence, which is sulfur-free, standard GGC-10 should not be considered as having a representative matrix for Lola, and should therefore be discarded.

In the course of both drilling campaigns, check samples were sent to three (3) different laboratories: Veritas Rustenburg (RSA), Veritas Canada, and SGS Lakefield in Canada.

It is evident that both Veritas laboratories yielded inconsistent and biased results. The South African laboratory reported a strong positive bias on standards, while it was the opposite for the

Canadian laboratories. Assay inconsistences and data scattering showed sub-standard quality for both Veritas laboratories.

Starting in 2017, check samples were sent to SGS Lakefield. Assay results correlation with Actlabs is excellent and assay results on standards are acceptable.

It is the opinion of DRA/Met-Chem that the QA/QC process demonstrates that Actlabs returned acceptable assay results that are adequate for the purposes of the resource estimation provided in this Report.

12 DATA VERIFICATION

The information in this section of this Report, under Y.A. Buro's responsibility is largely drawn or summarized from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018". This Section has been further updated with the work completed on the property since the date of issue of the Mineral Resource Estimate Report dated February 5th, 2018.

12.1 Introduction – QP Visit

Consulting geologist Mr. Laforest, P. Eng., visited the Lola Graphite Project four (4) times between April 2013 and October 2017.

In 2013, SRG invited Mr. Laforest for the purpose of obtaining an independent opinion on the potential of the newly defined graphite occurrence. In 2014, Mr. Laforest was invited to train SRG Guinée's team on the use of the Max-Min geophysical equipment and to review the exploration completed since his last visit including logging, QA/QC, densities and sampling procedures as well as assay results and the drilling database.

In April 2017, Mr. Laforest returned to the site for four (4) days, during which he performed an internal audit of the current drilling program along with additional QA/QC controls. Mr. Laforest made a last visit on site from October 8th to 12th, 2017 for an overall review of the graphite occurrence.

12.2 Qualified Person Check Samples

During the 2013 site visit, Mr. Laforest collected four (4) representative surface samples in the vicinity of an access dirt road through the central portion of the deposit, near line L3450W. The samples were assayed at ALS Chemex Laboratory in Val d'Or, Quebec, Canada. The samples graded from 2.7 % to 18.10 % Cg.

Following the first visit in 2013, Mr. Laforest sent nine (9) samples to the ALS Chemex Laboratory for control checks. The results are described in Table 12.1.

Mr. Laforest visited the southern part of the occurrence, travelling along a 9.4 km-long path, which gave the opportunity to gain a good overview of the surface distribution in this part of the occurrence. Access was made easier by numerous existing walking trails.

Numerous mineralized boulders, similar to the material observed along the road, were found. High concentration of boulders was found on the flank of a small hill located 2,100 m south of the dirt road. Several boulders showed up visually as 15 % graphite flakes.

Several old pits dug, by BUMIFOM between 1959 and 1961, are still visible and in relatively good condition. A total of 109 old pits were identified and positioned by the SRG Guinée's team.

Mr. Laforest examined samples collected using the Pionjar at SRG Guinée's field office in the town of Lola. Most samples showed visible graphite flakes. None of samples were previously analyzed. Mr. Laforest collected all samples (nine (9) samples) from the Pionjar hole GR-14, carried them to Canada, and then submitted them to ALS Chemex Laboratory for graphitic carbon analysis.

Chemical analysis performed on the nine (9) samples, collected from the surface down to a depth of 8.4 m, returned Cg assays ranging from 3.7 % to 11.6 %. Samples were assayed for graphitic carbon using C-IR18 methodology (LECO following acid digestion and sorting).

Table 12.1 shows assay results for those nine (9) samples.

Table 12.1 – Chemical Analysis for Cg from GR-14 Borehole

Borehole	Depth	Cg (%)
GR-14	-1 m	3.69
GR-14	-2 m	7.02
GR-14	-3 m	10.15
GR-14	-4 m	11.55
GR-14	-5 m	9.71
GR-14	-6 m	11.20
GR-14	-7 m	8.56
GR-14	-8 m	12.85
GR-14	-8.4 m	10.25

Although these samples represent only 15 cm for each metre drilled, they are good indicators of the vertical continuity at the GR-14 (549,110 UtmE, 863,570 UtmN) of the graphite mineralization within the laterite facies.

In April 2017, an internal audit of the current drilling campaign was performed. Logging, density measurements, core sampling, QA/QC, storage, and sample chain of custody procedures were reviewed.

In October 2017, the re-visit was aimed at verifying that all field work done to date conformed to NI 43-101 standards. Mr. Laforest visited the core logging facility for logging and sampling conformity, and verified locations of trenches, pits, and drill hole collars in the field. He also rechecked the databases and the QA/QC procedures.

It is Mr. Laforest's opinion that the work performed to date is of high quality and has been conducted according to current industry best practices. Quality of the data is adequate for the purpose of this Technical Report.

12.3 Data Verification by DRA/Met-Chem

12.3.1 Introduction

As required by NI 43-101 (the "Instrument"), a Qualified Person must take responsibility for each section of a Technical Report, including any information prepared by another Qualified Person for previously-filed Technical Reports. That Qualified Person should make whatever investigations necessary to reasonably rely on the information and confirm that it is still reliable and current.

In order to comply with this requirement while taking responsibility for the sections of the present report listed under Table 2.1 , "*QPs and their Respective Sections of Responsibilities*", Y.A. Buro visited the Lola Graphite Project site and the core logging and sampling facilities, reviewed the geology and general procedures with SRG's technical team, and reviewed the initial resources estimate published in the previous Technical Report *("Resource Estimate, DRA/Met-Chem, February 5th, 2018").*

The visit by Y.A. Buro did not constitute a QP's Current Personal Inspection of the property as this had been completed by another QP, Mr. J. Laforest, P. Eng., who visited the site on several occasions and collected samples to serve as QP check samples.

12.3.2 Field Trip

Y.A. Buro visited the site of the Lola Graphite Project on April 10, 2018 with Michel Koffi, Project Geologist, SRG Graphite, Guinea.

The field trip took Mr. Buro and Mr. Koffi through the ridges and low ground areas, and past several trenches and streams crossing the deposit, as well as through the road cut of paved highway N2. Two drill rigs were active at the time of the visit. The large outcrops of graphite mineralization in the paragneiss exposed on the access road were examined.

The core extracted at the two drill rigs and the core being logged and sampled at SRG's facilities were briefly reviewed. The rooms dedicated to the density determination and the core sawing operations were visited.

Y.A. Buro very clearly saw the graphite mineralization in the long outcrop exposed by the access road near line L3450W, in the core at both drill sites and at the core logging and sampling facility and in the roadcut of the N2 highway.

12.3.3 Resource Estimate

The initial in-pit mineral resources estimate presented in the technical eport of February 2018 was performed by Dr. Marc-Antoine Audet, P. Geo., Ph.D., a QP and Founder, Director, and Lead Geologist of SRG Graphite Inc.

Mr. Ghislain Deschenes, P. Geo. and QP from DRA/Met-Chem, reviewed the resource estimation methodology, confirmed the validity of the Mineral Resource Estimate initially developed by SRG for the Lola Graphite deposit, and took responsibility for the Mineral Resource.

Although Y.A. Buro is not responsible for the current resources estimate, the parameters and methodology used for the initial estimate were reviewed in detail with Dr. M.A. Audet and Mr. G. Deschenes to gain a better understanding of the Lola Graphite mineralization. Y.A. Buro agreed that the parameters selected for the initial resource estimate were reasonable, and that the methodology applied to the three-dimensional (3D) modelling adhered to best practices for resource estimation. Y.A. Buro believes the results are valid and based on reliable data, and he agreed with the resource classification.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

This Section has been updated in order to be complete and current from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018."

13.1 Mineral Characterisation

13.1.1 CENTRE DE TECHNOLOGIE MINÉRALE ET DE PLASTURGIE

Preliminary metallurgical tests performed at the *Centre de Technologie Minérale et de Plasturgie* ("**CTMP**") in Thetford-Mines, Québec, Canada at the end of 2012 on four (4) representative saprolite ore samples, grading from 2.8 % to 16.8 % carbon, showed that 80 % of graphite flakes are sized greater than 0.25 mm and 50% greater than 1.0 mm. Table 13.1 presents the head ore samples assay results.

Table 13.1 – Head Ore Samples Submitted to CTMP

Sample	Cg by Loss of Ignition (%)	Cg by Leco Measurement (%)
L-GR-28	2.97	2.77
L-GR-29	8.53	7.95
L-GR-30	16.7	16.8
L-GR-31	15.3	15.3

13.1.2 ACTIVATION LABORATORIES

In 2014, Actlabs performed mineralogical characterization (Table 13.2) of an ore sample from the Lola region, where it found that the main minerals were quartz, muscovite, and andalusite.

The particle size distribution of the graphite contained in the mineral sample was also characterized, after crushing, and screened at 850 µm (Table 13.3). Graphite flakes coarser than + 32 mesh (>500µm) were observed (Figure 13.1).

**Table 13.2 – Modal Mineralogy (Wt %)
as Determined by Mineral Liberation Analyzer**

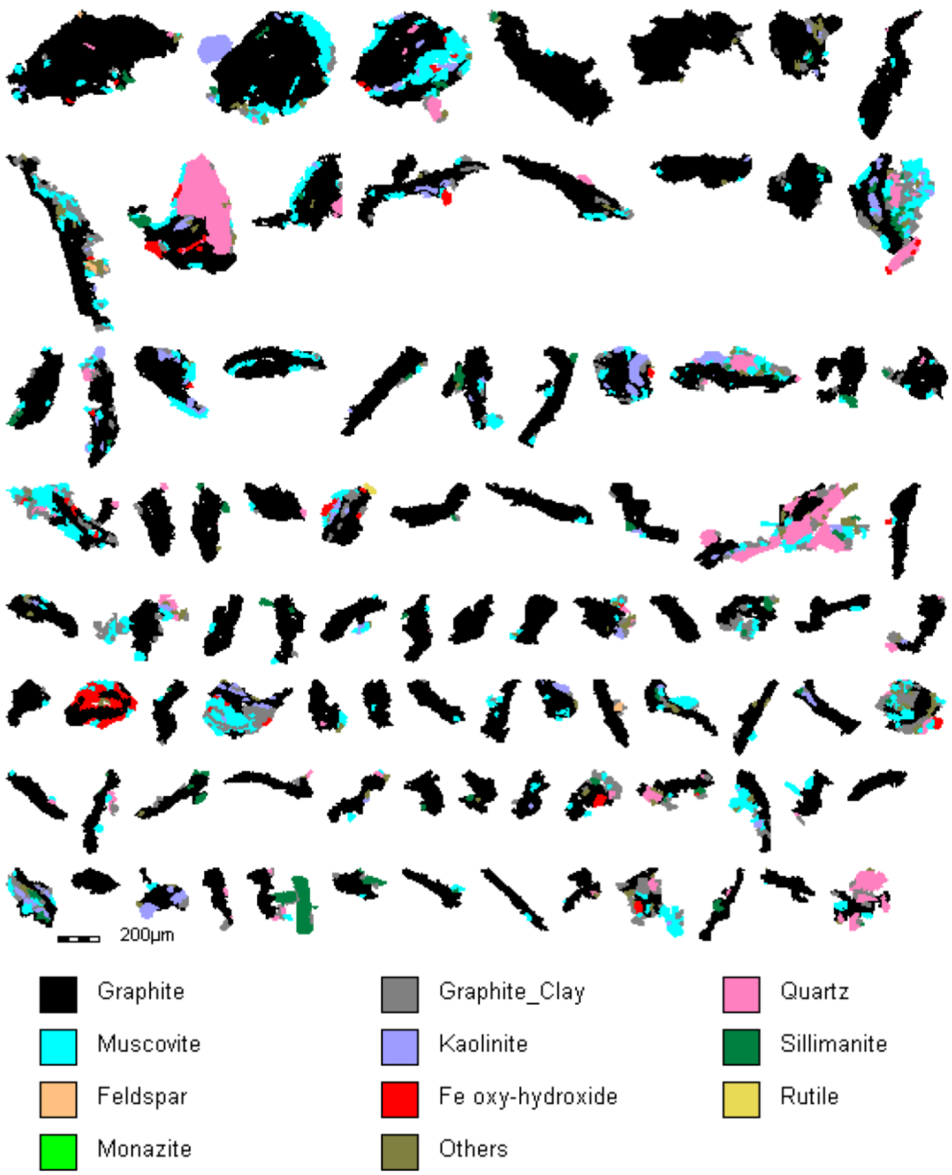
Mineral	Quantity (%)
Graphite	6.97
Graphite_Clay*	7.14
Quartz	50.89
Muscovite/Illite	15.80
Kaolinite	2.28
Sillimanite/Andalusite	6.82
Feldspar	0.42
Fe oxy-hydroxide	5.09
Rutile/Anatase	3.14
Monazite	0.24
Others	1.22
Total	**100.00**

Note: Numbers may not add due to rounding.
*Graphite_Clay is a mixture of graphite with muscovite and kaolinite; Others include mixed spectra of minerals; Fe oxy-hydroxide includes mixture of Fe oxy-hydroxide and clay.

Table 13.3 – Passing Values (P-Values) of Graphite

P-Value	Equivalent Circle (µm)	Maximum Diameter (µm)
P_{50}	117	241
P_{80}	224	445
P_{90}	364	578

Figure 13.1 – Classified Images of Graphite Flakes Showing Size, Morphology, and Mineral Associations



13.2 Mineral Processing

13.2.1 Activation Laboratories Ltd.

Three (3) metallurgical tests were performed in 2014, 2015, and 2016 at Actlabs. In 2014, the first test was performed on two (2) of Lola's prominent mineralized facies, the oxide material and the underlying non-oxide material (below 20 m) while tests performed in 2015 and 2016 focused exclusively on the oxide material.

In 2016, Actlabs achieved preliminary mineral processing test work to evaluate the beneficiation potential of the Lola material. Concentrate grades up to 95.6 % Cg were achieved, with an average of 89.4 % Cg, with flake size up to 28 mesh (> 600 um) (Table 13.4). Rougher/Scavenger recovery was 94.3 % Cg, with a global open circuit recovery of 83.3 % Cg.

Table 13.4 – Concentrate Flake Size Distribution

Flake Size		**Distribution**
Mesh	Micron	% Mass
+28	+600	9.30
+35	+425	15.30
+48	+300	23.30
+80	+180	22.70
+150	+106	20.00
-150	-106	9.50
Total		**100.00**
Note: Numbers may not add due to rounding		

Graphite concentrate produced had 70 % of large-, jumbo- and super-jumbo sized flakes (Table 13.4). Super-jumbo flake size accounted for 24 % of the concentrate with 95.5 % Cg and 92.7 % Cg grade respectively.

In addition to the metallurgical tests, Actlabs completed a series of mineralogical studies on the graphite-rich material. Petrological investigation showed that muscovite and other silicate minerals remained attached to the graphite flakes, thereby affecting the purity of the concentrate. However, as later confirmed by metallurgical tests, the saprolitic material was suitable for flotation, as 95% of the graphite flakes were substantially liberated to be floated after coarse grinding.

Later, in 2017, Actlabs and ProGraphite continued test work, and both reported that further concentrate attrition was beneficial for the concentrate upgrade while having a limited impact on flake size distribution. These results will be further investigated during the tests planned for implementation at SGS Canada.

13.3 Characterization of the Graphite Concentrate

13.3.1 Tests by Actlabs

In 2014, SRG Guinée requested Actlabs to analyze the graphite concentrate obtained from the first flotation test for a suite of minor and trace elements. Table 13.4 presents assay results for all minor and trace elements analyzed by Actlabs.

Table 13.5 – Minor and Trace Elements Analysis

Report Number: A 14-02540
Report Date: 16/5/2014

Analyte Symbol Unit Symbol Detection Limit	Cg (%) 0.05	Ba (ppm) 1	Be (ppm) 0.1	Bi (ppm) 0.1	Cd (ppm) 0.1	Ce (ppm) 0.1	Cs (ppm) 0.1	Cr (ppm) 1	Co (ppm) 0.02	Cu (ppm) 0.1	Dy (ppm) 0.02	Er (ppm) 0.02	Eu (ppm) 0.02	Gd (ppm) 0.1	Ga (ppm) 0.1	Hf (ppm) 0.1	Ho (ppm) 0.02	La (ppm) 1	Pb (ppm) 0.02
Oxide Table -106 Conc.	72.2	224	0.4	0.5	< 0.1	18	0.3	62	13.8	140	2.47	1.26	0.83	3	7	0.2	0.48	10	7.25
Oxide Table 106 Conc.	75.3	189	0.4	0.4	0.1	16.2	0.3	49	12.3	118	1.8	0.91	0.62	2.2	6.6	0.2	0.35	7	6.24
Oxide Table 150 Conc.	82	149	0.3	0.3	< 0.1	10.7	0.3	34	11	85.7	1.43	0.74	0.48	1.6	5.4	0.1	0.29	4	4.2
Oxide Table 180 Conc.	86	129	0.3	0.7	< 0.1	9.7	0.3	32	9.8	81	1.29	0.67	0.45	1.4	5.1	0.2	0.25	3	4
Oxide Table 300 Conc.	92.1	31	0.2	0.1	< 0.1	5	0.2	20	6.4	52	0.71	0.41	0.28	0.8	3.8	0.2	0.15	2	2.54
Non-Oxide Table Tails	11.5																		
Non-Oxide Table -106 Conc.	75.8	221	0.2	1.8	0.8	23.9	1	60	21	596	1.07	0.37	0.35	2	3.6	0.6	0.18	12	22.9
Non-Oxide Table 106 Conc.	68.8	403	0.3	1.4	0.8	20.9	1.5	76	19.3	218	0.97	0.33	0.41	1.8	5	0.4	0.16	11	17.7
Non-Oxide Table 150 Conc.	74.2	383	0.2	1.3	0.7	16.3	1.5	72	15	135	0.77	0.26	0.34	1.4	4.2	0.4	0.13	9	9.7
Non-Oxide Table 180 Conc.	69.7	425	0.3	1.1	0.7	18.4	1.9	85	15.2	125	0.84	0.28	0.35	1.6	4.9	0.4	0.13	10	8.64
Non-Oxide Table 300 Conc.	83.8	215	0.2	1.1	0.4	18.1	1.6	69	5.28	77	0.7	0.23	0.23	1.4	3.9	0.5	0.11	10	9.11

Analyte Symbol Unit Symbol Detection Limit	Mo (ppm) 0.02	Nd (ppm) 0.1	Ni (ppm) 0.1	Nb (ppm) 0.1	Pr (ppm) 0.1	Rb (ppm) 0.1	Sm (ppm) 0.1	Sc (ppm) 0.1	Ag (ppm) 0.02	Ta (ppm) 0.1	Tb (ppm) 0.02	Th (ppm) 0.02	Sn (ppm) 0.02	W (ppm) 0.1	U (ppm) 0.02	V (ppm) 0.1	Yb (ppm) 0.02	Y ppm 0.1	Zn (ppm) 1
Oxide Table -106 Conc.	6.05	12.6	40.4	1.1	3.1	8.4	2.7	2.5	0.25	< 0.1	0.42	1.57	0.65	1.3	1.07	54.9	0.82	10.5	27
Oxide Table 106 Conc.	4.33	8.9	32.4	0.7	2.2	8.7	2	2.7	0.15	< 0.1	0.32	1.38	0.39	8	0.77	41.9	0.65	7.3	24
Oxide Table 150 Conc.	3.04	5.9	22.7	0.4	1.4	7.6	1.4	2.1	0.09	< 0.1	0.24	1.16	0.6	7	0.82	26.9	0.53	6.1	19
Oxide Table 180 Conc.	2.97	4.9	17.9	0.3	1.1	6.7	1.2	2.2	0.09	0.1	0.22	1.05	0.31	1.6	0.4	25.8	0.49	5.6	17
Oxide Table 300 Conc.	1.63	2.9	10.5	< 0.1	0.7	3.8	0.7	1.3	0.13	< 0.1	0.13	0.82	0.16	2.7	0.89	5.9	0.28	3.3	11
Non-Oxide Table Tails																			
Non-Oxide Table -106 Conc.	198	11.7	122	0.4	3.2	16.1	2.2	4.1	2.21	< 0.1	0.23	3.62	1.36	11	1.35	127	0.19	3.6	153
Non-Oxide Table 106 Conc.	126	10.6	106	0.5	2.9	25.3	2	6.2	1.72	< 0.1	0.22	3.16	0.77	22.4	0.9	211	0.16	3.4	127
Non-Oxide Table 150 Conc.	81.4	8.1	87	0.5	2.2	25.6	1.6	5.8	1.5	< 0.1	0.17	2.67	0.58	4.3	1.23	201	0.14	2.6	110
Non-Oxide Table 180 Conc.	44	9.3	88.5	0.7	2.5	33.4	1.8	7.9	1.41	< 0.1	0.18	2.81	0.6	4.9	0.85	232	0.13	2.8	114
Non-Oxide Table 300 Conc.	16.6	8.7	55.2	0.4	2.4	27	1.7	6.7	1.19	< 0.1	0.16	2.77	0.41	46.2	0.72	209	0.09	2.3	74

The graphite concentrate appears to have a low concentration of the major contaminants (Cu, Mo, V, etc.) that are often seen in higher concentrations in graphite concentrates from numerous other graphite deposits around the world.

It is evident from Table 13.4 that the concentrate from oxide facies ((weathered, near-surface material) shows a much lower level of contaminants than the non-weathered material. Mineralogical studies show that all the sulfide minerals have been naturally leached from the oxide facies, leading to a chemically cleaner concentrate. The tailings are also expected to be non-acid-generating (NAG) for the same reason.

13.3.2 Tests by ProGraphite GmbH and Dorfner/Anzaplan

The test work campaign was completed in 2017 by the ProGraphite GmbH ("**PG**") and Dorfner Anzaplan ("**Anzaplan**") laboratories, both based in Germany.

Flotation tests conducted by PG in August 2017 produced graphite concentrates of up to 93.3 % and 95.4 % purity for the large and jumbo size flakes respectively. Laboratory work and analysis conducted by PG in April 2017 on the Lola Graphite concentrate included concentrate morphology studies by means of Brunauer-Emett-Teller ("**BET**") specific surface area analysis, SEM, X-Ray fluorescence, differential thermal analysis, determinations of the bulk density and particle size, and assaying of various concentrate fractions and test products.

The campaign also included acid and alkaline purification tests and expandable graphite production tests. Results of the work indicated that graphite from the Lola deposit was suitable for a wide range of graphite applications, including the important traditional markets, such as refractories, crucibles, friction products, carbon brushes, and sealants. In addition, the combination of very favourable ash composition, high crystallinity, high oxidation resistance, and good results obtained during the purification tests makes the Lola Graphite concentrate valuable for demanding new technology applications, including energy applications and particularly with regard to spherical graphite for lithium-ion batteries.

Anzaplan's laboratory work, completed in August 2017, was aimed at identifying the optimal procedure for shaping and purification process to produce a high-purity spherical graphite suitable for use in lithium-ion batteries and technology-grade graphite applications. Anzaplan reported that bulk density and tapped density, morphology, chemical purity, and specific surface area of spherical graphite product produced from Lola Graphite deposit was similar to typical spherical graphite products currently available on the market. Anzaplan confirmed that the Lola Graphite concentrate was well suited for producing the anode material used to manufacture lithium-ion batteries. Results from the Lola Graphite tests indicated that a spherical graphite production yield of 46% was comparable to typical yields of 30% to 50%.

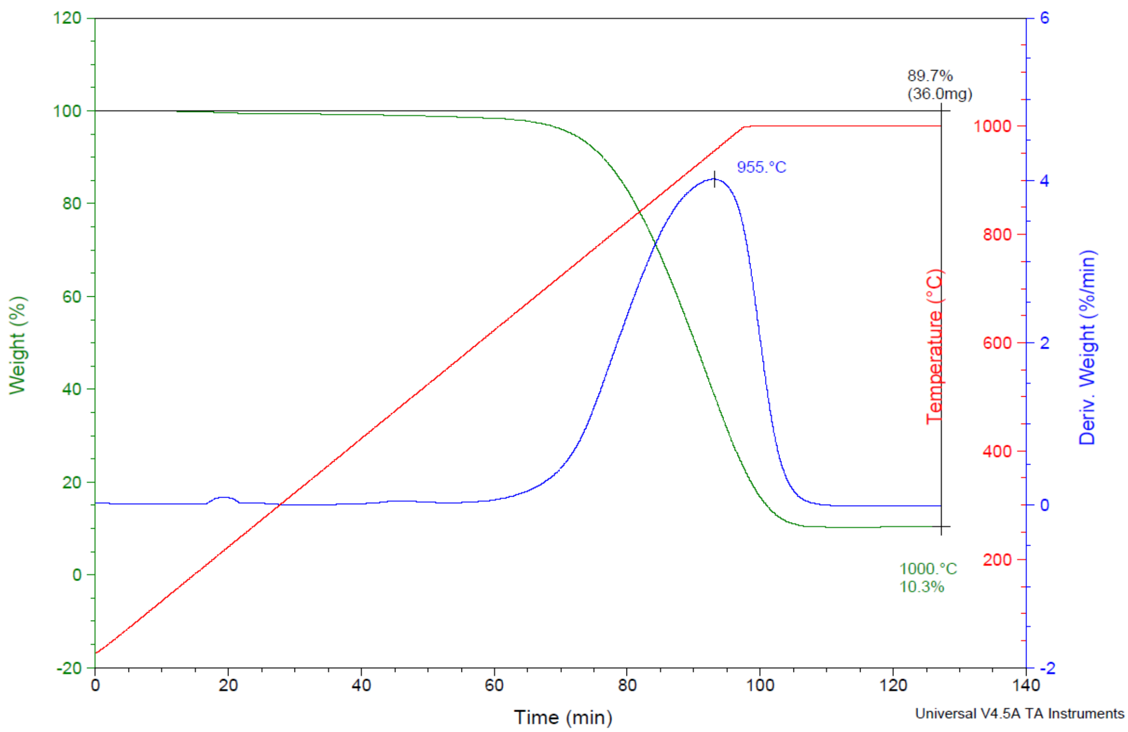
Bulk densities were measured at 716 g/ml for the whole concentrate, while Specific Surface Analysis ("**SSA**"), using the BET, was measured to be 1.60 m^2/g. Finally, X-Ray diffraction (XRD) analysis for interlayer spacing (d002 value) was measured on both the +50 mesh and +80 mesh concentrate at 3.356 Å, a measure of crystallinity (Table 13.6).

Table 13.6 – Graphite Concentrate Parameters

Sample Lola Concentrate	Bulk Density (g/ml)	SSA (BET)(m^2/g)	d002 (Å)
Total Conc.	716	1.60	-
+80mesh	678	-	3.356
+50mesh	646	-	3.356

To evaluate the Lola graphite concentrate for its potential application in refractory bricks, Thermogravimetric Analysis ("**TGA**") was used to evaluate the oxidation behavior of graphite. At a temperature of 200 – 250 °C, some amounts of volatiles were released. Significant graphite oxidation started only above 600 °C, and oxidation peaked above 950 °C (Figure 13.2), which was considered as promising oxidation performance.

Figure 13.2 – TGA of Graphite Concentrate Obtained from Lola Property



In 2017, Anzaplan performed micronation, spheroidization, and purification of the Lola Graphite concentrate to evaluate its potential to be processed in anode material. Using three (3) stages of acid leaching, a graphite grade of 99.95% Cg was achieved, and impurities were reported in their most common oxide form (Table 13.7). Finally, Anzaplan compared the processed graphite from SRG to other anode materials as Ref 10 and Ref 26 (Table 13.8).

Table 13.7 – Impurities Contained in Graphite Concentrate After 3-Step Acid Wash

Impurity	Grade	Unit
SiO_2	123	ppm
Al_2O_3	120	ppm
Fe_2O_3	67	ppm
TiO_2	30	ppm
K_2O	<10	ppm
Na_2O	27	ppm
CaO	<10	ppm
MgO	<10	ppm
P_2O_5	40	ppm
BaO	23	ppm
PbO	<10	ppm
ZrO_2	38	ppm
MnO	<10	ppm
SO_3	<0.01	%wt
LOI	99.95	%wt
Ash content	0.05	%wt

Table 13.8 – SRG Graphite Compared with Reference Material

Product	Tap Density (g/cm^3)	D50 (µm)	Ratio D90/D10	BET (m^2/g)	Yield (wt.-%)
SRG	0.96	16.3	2.6	6.9	46
Ref 10	0.88	12.1	2.6	7.0	
Ref 26	1.01	23.4	2.8	3.8	

13.4 SGS Test Work Program

The test work program was planned in 2017 and completed in May 2018 at the SGS Lakefield mineral processing lab. The objective of the program was to provide scoping-level metallurgical data for a master composite from the Lola deposit. The metallurgical test work included grindability testing, laboratory scrubber testing, flotation, and solid/liquid separation tests. Several variability samples were tested on the final test work flowsheet.

Three (3) separate consignments comprising individually-bagged samples of diamond core drill holes, supplied by SRG Graphite, were received at the SGS Lakefield site in November and December 2017. The shipments contained material from seven (7) different ore zones. Five (5) of the softer ore zones were used to produce a master composite for head characterization, grindability, flotation, and solid/liquid separation test work. The hard rock samples were not used during the current test work program.

A subsample of the master composite was submitted for head characterisation. The carbon speciation and sulphur analysis results are presented in Table 13.9.

Table 13.9 – Carbon Speciation and Sulphur Assay Results on Master Composite

Element		Master Composite
Ct	%	7.28
Cg	%	5.98
TOC	%	0.07
CO_3	%	<0.05
S	%	0.19

XRD analysis showed that the master composite was composed of major occurrences of quartz with minor sillimanite, illite, and kaolinite present. There were also trace occurrences of K-feldspar, hematite, plagioclase-feldspar, and chlorite. The modal analysis (Table 13.10) showed the material contained 39.5% quartz, 31.2% aluminium / iron based silicates and clays, 9.64% feldspars, 9.38% micas, and 3.05% iron oxides.

Table 13.10 – Modal Analysis of Master Composite

Mineral	Mass (%)
Carbon Graphitic	5.98
Quartz	39.5
Feldspars	9.64
Amphibole/Pyroxene	0.71
Al-Fe-Silicates/Clays	31.2
Micas	9.38
Fe-Oxides	3.05
Rutile	0.34
Ilmenite	0.10
Pyrite	0.24
Mn-Oxides	0.06
Apatite	0.02
Other	0.05
Total	**100**

13.4.1 GRINDABILITY

A representative sample of the master composite was submitted for Bond Ball Mill Work Index (BWi) testing. The results are shown in Table 13.11. The sample returned a BWi value of 10.7 kWh/t, and can be defined as soft.

Table 13.11 – BWi Results

Sample Name	Mesh of Grind	F_{80} (µm)	P_{80} (µm)	Gram per Revolution	Work Index (kWh/t)	Hardness Percentile
Mater Composite	100	1,353	130	1.90	10.7	14

13.4.2 Scrubbing

A series of scrubbing tests was performed on the as-received master composite. After three (3) minutes of scrubbing in a steel mill with lifters and no media, the P_{80} of the material was reduced from 6,143 µm to 470 µm. This result demonstrates that the feed material can be efficiently reduced in size without media addition and with three (3) minutes scrubbing time. This is advantageous in preserving graphite flake size.

Table 13.12 – Scrubber Test Work Sizing Results

Size	% Passing Cumulative			
Mesh	µm	Feed	3 Min Scrub	10 Min Scrub
1 1/2"	37,500	100.0	-	-
1"	25,000	90.5	90.9	-
1/2"	12,500	83.7	90.7	100.0
3/8"	9,500	82.1	90.7	98.4
3	6,700	80.5	90.6	96.0
4	4,750	78.4	90.6	94.5
6	3,350	77.6	90.6	93.5
8	2,360	76.7	90.6	92.4
10	1,700	74.9	90.6	91.6
14	1,180	70.3	90.6	91.1
20	850	65.6	90.3	90.6
28	600	60.1	87.5	88.3
35	425	53.7	77.1	79.5
48	300	47.0	60.6	64.5
65	212	41.1	48.1	51.2
100	150	35.6	38.1	40.1
150	106	31.8	30.0	32.5
200	75	27.2	23.3	25.5
270	53	24.9	21.6	22.8
400	38	23.6	20.7	21.0

13.4.3 Flotation

A series of rougher and cleaner flotation tests was undertaken on the master composite to develop the process flowsheet. The major parameters tested were primary and secondary grinding, polishing, and attrition regrinding, and the use of diesel versus kerosene as the graphite collector. The results of the two (2) best cleaner flotation tests are shown in Table

13.13. Test F11 used an attrition mill to process the rougher concentrate, while Test F13 used a ceramic media polishing mill.

Table 13.13 – Best Cleaner Flotation Results

Test	Product	Weight %	Assays % C(t)	% Distribution C(t)
F11	**Combined 3rd Cl Con**	**5.4**	**96.6**	**78.7**
	3rd Cl Con +100 mesh	3.0	96.3	44.1
	3rd Cl Tail +100 mesh	0.0	65.7	0.4
	2nd Cl Tail +100 mesh	0.1	48.5	0.5
	1st Cl Tail +100 mesh	0.4	10.7	0.6
	3rd Cl Con -100 mesh	2.4	97.0	34.6
	3rd Cl Tail -100 mesh	0.1	86.7	1.1
	2nd Cl Tail -100 mesh	0.1	70.7	1.2
	1st Cl Tail -100 mesh	0.2	23.0	0.8
	3rd Cl Tail	0.4	18.8	1.0
	2nd Cl tail	1.3	8.9	1.8
	1st Cl Tail	6.4	2.29	2.2
	Ro Tail	63.6	0.48	4.6
	-400 Mesh	22.0	2.16	7.1
	Head (calc.)	**100.0**	**6.66**	**100.0**
	Head (dir.)		**6.63**	
F13	**Combined 3rd Cl Con**	**5.7**	**95.9**	**83.2**
	3rd Cl Con +48 mesh	1.2	96.0	17.0
	3rd Cl Con +80 mesh	1.4	95.5	20.4
	3rd Cl Con +100 mesh	0.5	96.6	6.7
	3rd Cl Con -100 mesh	0.9	96.0	12.6
	3rd Cl Tail +100 mesh	0.0	89.5	0.5
	2nd Cl Tail +100 mesh	0.1	64.9	1.2
	1st Cl Tail +100 mesh	0.3	19.4	1.0
	3rd Cl Con -100 mesh	1.9	93.5	26.6
	3rd Cl Tail -100 mesh	0.0	43.4	0.2
	2nd Cl Tail -100 mesh	0.2	26.1	0.6
	1st Cl Tail -100 mesh	0.6	8.03	0.7
	3rd Cl Tail	0.4	2.80	0.2
	2nd Cl tail	1.3	1.27	0.2
	1st Cl Tail	5.5	0.74	0.6
	Ro Tail	62.8	0.42	4.0
	-400 Mesh	23.0	2.13	7.4
	Head (calc.)	**100.0**	**6.57**	**100.0**
	Head (dir.)		**6.63**	

Test F13 produced the best results, with a higher proportion of +100 mesh material when compared to Test F11. The -100 mesh material grade could likely be improved with a slightly higher attrition time. Test F13 also produced a higher C(t) recovery of 83.2% when compared to Test F11 at 78.7%.

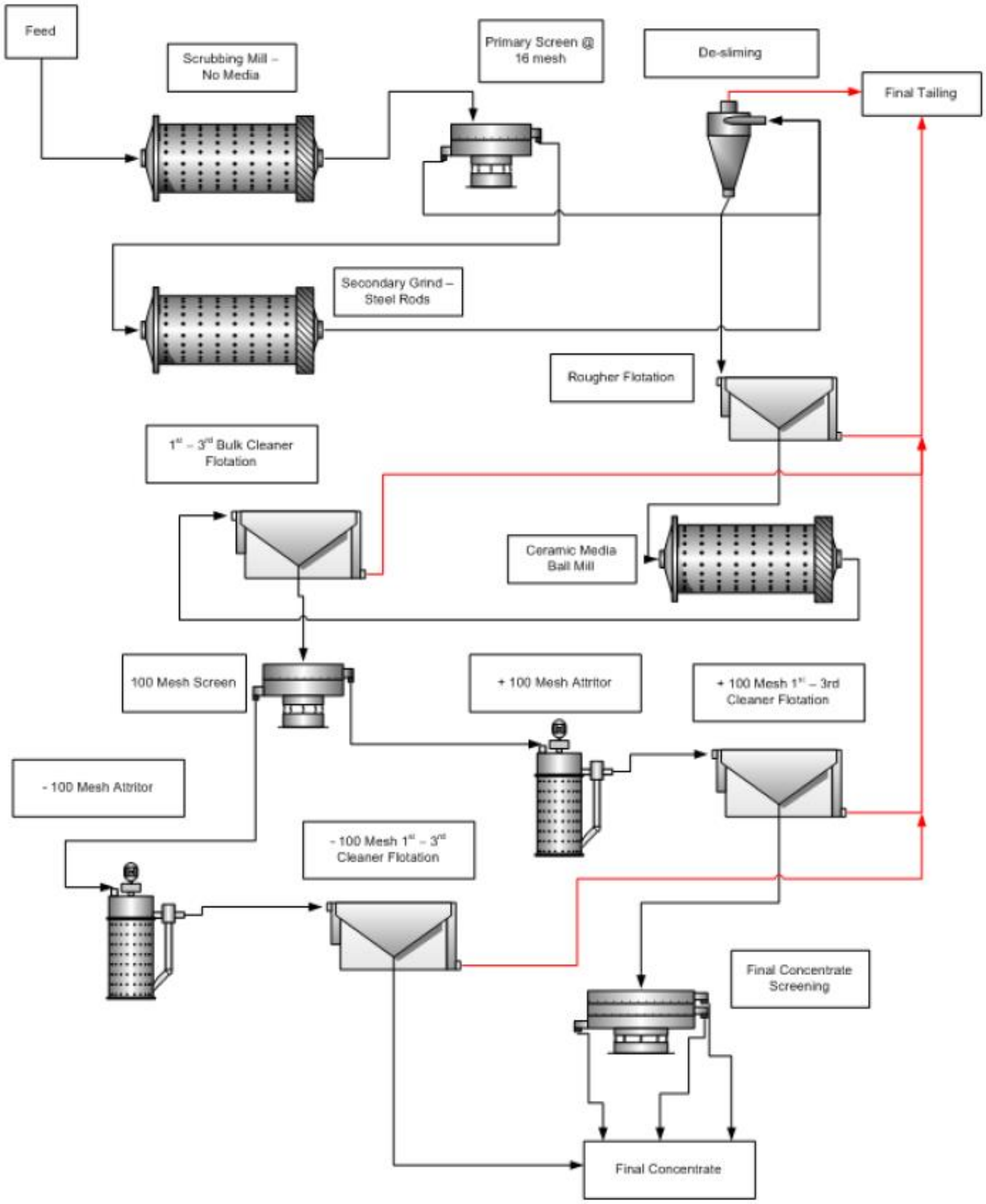
Table 13.14 shows the final graphite concentrate sizing results and grade for Test F11 and Test F13.

Table 13.14 – Final Concentrate Sizing Results

Test	Product	Weight %	Assays % C(t)	% Distribution C(t)
F11	3rd Cl Con +48m	10.9	95.0	10.7
	3rd Cl Con +80m	20.2	97.0	20.3
	3rd Cl Con +100m	8.3	97.1	8.3
	3rd Cl Con -100m	60.5	97.2	60.7
	Head (calc.)	**100.0**	**96.9**	**100.0**
F13	3rd Cl Con +48m	20.2	96.0	20.4
	3rd Cl Con +80m	24.4	95.5	24.5
	3rd Cl Con +100m	7.9	96.6	8.0
	3rd Cl Con -100m	47.5	94.3	47.1
	Head (calc.)	**100.0**	**95.1**	**100.0**

The final proposed test work flow sheet is shown in Figure 13.3.

Figure 13.3 – Proposed Process Flow Sheet



Approximately 150 kg of material were subjected to bulk flotation to produce a typical concentrate for vendor evaluation by SRG Graphite. The final concentrate was screened into +48 mesh, +80 mesh, +100 mesh, and -100 mesh fractions. The results obtained for the bulk flotation tests are shown in Table 13.15.

Table 13.15 – Bulk Flotation Results

Product	Weight %	Assays, % C(t)	% Distr. C(t)	Concentrate % Distr. C(t)
4th Cl Con +48 mesh	2.8	98.9	30.2	40.1
4th Cl Con +80 mesh	1.4	96.1	14.0	18.6
4th Cl Con +100 mesh	0.4	94.6	4.4	5.9
6th Cl Con -100 mesh	2.5	97.9	26.7	35.4
Combined Final Con	**7.2**	**97.8**	**75.3**	**100.0**

High concentrate grades were produced across all size fractions. The final C(t) recovery for the bulk concentrate test was 75.3%.

Head grades and results for the variability flotation test work are shown in Tables 13.16 and 13.17, respectively. All composites showed potential with all coarse concentrates grading greater than 93% C(t) and all fine concentrates grading greater than 91% C(t). Concentrate grades could likely be improved with more optimized polishing and attrition mill grind times based on variability composite head grades and mass pulls. Overall recovery could likely be also increased with some tests producing lower-than-expected graphite recovery throughout the bulk roughing and cleaning stages.

Table 13.16 – Variability Composite Head Grades

Composite	C(t) %
80401 – Saprolite	11.0
80402 – Saprolite	6.21
80403 – Terre	9.28
80404 - Terre/Saprolite	2.83
80407 – Terre	5.94

Table 13.17 – Variability Composite Results

Test	Composite	Assays % C(t)	Product	Weight %	Assays % C(t)	% Flake Distribution	% Overall Recovery
F15	80401 - Saprolite	11	3rd Cl Con +48m	27.8	94.7	28.3	22.8
			3rd Cl Con +80m	24.9	93.6	25.1	20.2
			3rd Cl Con +100m	6.8	94.1	6.9	5.6
			3rd Cl Con -100m	40.5	91.1	39.7	32
			3rd Cl Con (Total)	**100**	**92.9**	**100**	**80.7**
F16	80403 - Terre	9.28	3rd Cl Con +48m	19.1	93.2	18.9	14.8
			3rd Cl Con +80m	28.6	94.7	28.8	22.6
			3rd Cl Con +100m	8.3	95.1	8.4	6.6
			3rd Cl Con -100m	44	93.5	43.8	34.4
			3rd Cl Con (Total)	**100**	**93.9**	**100**	**78.5**
F17	80402 - Saprolite	6.21	3rd Cl Con +48m	38.3	94	38.3	35.2
			3rd Cl Con +80m	22.1	94.2	22.1	20.3
			3rd Cl Con +100m	8	95.2	8.1	7.5
			3rd Cl Con -100m	31.6	93.8	31.5	29
			3rd Cl Con (Total)	**100**	**94.1**	**100**	**92**
F18	80407 - Terre	5.94	3rd Cl Con +48m	11.8	98.1	12.2	6.6
			3rd Cl Con +80m	20.1	97.3	20.7	11.2
			3rd Cl Con +100m	10.6	96.2	10.8	5.8
			3rd Cl Con -100m	57.5	92.5	56.3	30.3
			3rd Cl Con (Total)	**100**	**94.5**	**100**	**53.9**
F19	80404 - Terre/Saprolite	2.83	3rd Cl Con +48m	10.2	98	10.3	7.6
			3rd Cl Con +80m	22.8	98	23.1	17
			3rd Cl Con +100m	11.5	97.6	11.6	8.6
			3rd Cl Con -100m	55.5	95.9	55	40.5
			3rd Cl Con (Total)	**100**	**96.8**	**100**	**73.6**

The results for the static settling on the bulk flotation concentrate and bulk flotation tailings, as well as pressure filtration on the bulk concentrate are contained within the Report body.

13.4.4 Solid/Liquid Separation

The flotation concentrate and tailings produced from the bulk flotation test work were subjected to a series of solid/liquid separation testing. Flocculant selection and two-stage static settling testing were conducted on both samples. Pressure filtration was also conducted on the combined concentrate sample.

13.4.4.1 Sample Preparation and Characterization

Both samples were received as dry solids that were individually re-hydrated in tap water and were left overnight to ensure that the samples achieved proper re-hydration prior to testing.

Particle size determinations were conducted on representative aliquots, which were collected from the pulp samples. The determination was performed using screen (sieve) analysis. The particle size determinations are summarized in Table 13.18.

Two aliquots were retrieved from each sample for analysis of the solids content in a Halogen Moisture Analyzer HR83 (Mettler-Toledo), as well as in a conventional oven for comparison purposes. The dried sample was submitted for specific gravity (SG) determination using a nitrogen-purged “Micromeritics” multi- volume pycnometer, model 1305. The results of the SG determinations are also summarized in Table 13.18.

Table 13.18 – Sample Characterization

Sample I.D.	K_{80}, µm	Dry SG
Bulk Comb Ro Tailings	367	2.89
Concentrate Comp	293	2.32

13.4.4.2 Static Testing

Flocculant scoping tests indicated that both samples flocculated well using BASF Magnafloc 333 flocculant, which is a very high molecular non-ionic polyacrylamide flocculant. The selected flocculant was used for subsequent static settling tests. Static settling tests were performed in two (2) stages.

The first stage included four (4) tests using two (2) litre cylinders that were fitted with rotating picket-style rakes. The first stage of tests was performed to determine the effect of feed density (i.e., feedwell % solids) on the settling rates.

The second stage of tests was performed to determine the effect of flocculant dosage on settling rates and supernatant clarity. Preliminary thickener sizing was calculated using the Talmage and Fitch calculation method. Static settling tests results are summarized in Table 13.19.

Table 13.19 – Static Settling Test Results Summary

Sample I.D.	Dosage	Feed[1]	U/F[2]	TUFUA[3]	ISR[4]	Supernatant[5]	TSS[6]
	flocc't g/t	%w/w	%w/w	$m^2/(t/day)$	$m^3/m^2/day$	visual	mg/L
Bulk Comb Ro Tailings	53	9	55	0.13	461	S.C	14
Concentrate Comp	48	2.5	27	0.55	407	Clear	10

All values were calculated without a safety factor. S.C: Slightly Cloudy
Common conditions: Raked, ambient temperature.
Flocculant: BASF Magnafloc 333 flocculant.
[1] Diluted Thickener Feed.
[2] Final Underflow Density
[3] Thickener Underflow Unit Area
[4] Initial Settling Rate.
[5] Supernatant Visual Clarity after 10 minutes of elapsed settling time.
[6] Supernatant Total Suspended Solids (TSS) after 10 minutes of elapsed settling time.

a. Static Testing – Bulk Comb Ro Tailings

Two-stage static settling test results of the Bulk Comb Ro Tailings sample indicated that the sample settled well with the addition of BASF Magnafloc 333 flocculant at a dosage of 53 g/t to a diluted thickener feed at 9% w/w solids. Under these conditions, the underflow density was 55% w/w solids. The resulting supernatant was slightly cloudy by visual observation at 10 minutes of elapsed settling time and the total suspended solids (TSS) was about 14 mg/L. Relevant thickener data included: 0.13 $m^2/t/d$ thickener underflow unit area (TUFUA) and 461 $m^3/m^2//d$ initial settling rate (ISR).

b. Static Testing – Concentrate Composite

Two-stage static settling test results of the Concentrate Comp sample indicated that the sample settled well with the addition of BASF Magnafloc 333 flocculant at a dosage of 48 g/t to a diluted thickener feed at 2.5% w/w solids. Under these conditions, the underflow density was 27% w/w solids. The resulting supernatant was clear by visual observation at 10 minutes of elapsed settling time and the total suspended solids (TSS) was about 10 mg/L. Relevant thickener data included: 0.55 $m^2/t/d$ thickener underflow unit area (TUFUA) and 407 $m^3/m^2/d$ initial settling rate (ISR).

13.4.5 Pressure Filtration – Concentrate Composite Underflow

Testori P6620 TC polypropylene cloth was selected for the Concentrate Comp underflow pressure filtration test after conducting scoping tests using various filter cloths. Pressure filtration was conducted at 6.9 bar (100 PSI) pressure level.

Concentrate Comp underflow pressure filtration was conducted using a filter feed at 25.0% w/w solids which was selected based on the results of the static settling tests. The produced cake thicknesses ranged from 16 to 30 mm. The resulting solids output ranged from 480 to 893 $kg/m^2 \cdot h$. The discharge cake residual moisture content ranged from 23.1% to 26.4% w/w moisture. For each of the tests, filtrate was clear for the duration of the filtration time. Filter cakes were sticky-to-touch; however, the cakes had a good release from the filter cloth. The results for the Concentrate Comp underflow pressure filtration tests are summarized in Table 13.20.

Table 13.20 – Pressure Filtration Results Summary

Sample I.D.	Filter Cloth	Operating Conditions					Filter Outputs				
		Feed Solids %w/w	Pressure Level, bar	Form Time, s	Dry Time, s	Form/ Dry Ratio	Cake Thickness, mm	[1]Throughput, dry kg/m²•h	Cake Moisture, % w/w	Filtrate TSS, mg/L	Cake Texture
Concentrate Comp	Testori P6620 TC	25.0	6.9	11	51	0.22	16	767	23.1	1	Sticky
				17	54	0.31	21	893	26.4	4	Sticky
				26	100	0.26	25	623	26.0	2	Sticky
				36	164	0.22	30	480	24.7	1	Sticky

Cloth manufacturer: Testori S.p.A

1 Examples of general filter throughput predictions versus test conditions using raw test data. Throughputs are calculated based on cycle time of form and dry only. Results are not for sizing of any specific type of filter. Refer to individual test results for additional sizing information.

13.5 Conclusions and Recommendations

In DRA/Met-Chem's opinion, the test work completed to date provides a level of knowledge on the metallurgical response of the ore sufficient for the PEA study.

The following conclusions, with regards to the tested ore samples, and their processing characteristics, can be drawn based on the latest scoping test program results:

- The master composite graded 5.98% C(g) and 0.19% S. The variability composites ranged from 2.83% C(t) to 11.0% C(t);
- Mineralogical analysis showed that the major gangue minerals were quartz, aluminum/iron silicates and oxides, feldspars, micas, and iron oxides;
- The graphite contained in the master composite was 56.6% liberated, with the vast majority of the remaining particles being exposed. Less than 4% of the graphite was locked;
- 100% of the graphite particles in the slimes product was liberated. The slimes agglomerate aggressively likely due to the presence of kaolinite;
- The BWi of the master composite was of the master composite was 10.7 kWh/t, ranking the ore sample as soft ore;
- The best cleaner flotation tests on the master composite were F11 and F13. Test F11 returned screened concentrates all above 96.3 % C(t) at 78.7 % C(t) recovery. Test F13 achieved similar concentrate grades at 83.2 % C(t) recovery. The -100 mesh product from Test F13 required more attrition time however with a final grade of 93.5 % C(t);
- The bulk flotation tests produced high concentrate grades of 98.9 % C(t) for the +48 mesh fraction, 96.1 % C(t) for the +80 mesh fraction, 94.6 % for the +100 mesh fraction, and 97.9 % C(t) for the -100 mesh fraction. An overall recovery of 75.3 % was obtained for the processing of 150 kg of feed material;

- Variability composite cleaner flotation showed some promise in all samples with final coarse concentrates all grading greater than 93.2 % C(t);
- Most of the fine concentrates required more attrition milling time to achieve greater than 95% C(t), but all were above 90 % C(t).

The following recommendations can be made:

- Further grindability tests on larger samples, such as UCS, Bond Rod Mill Work Index (RWi), Ai;
- Repeat tests on the variability composites to achieve better rougher and bulk cleaner recoveries as well as optimizing polishing mill and attrition mill grinding times;
- Further optimization bench scale test work to optimize the final flowsheet based on both typical plant feed head grade and extremes in head grade;
- Pilot plant processing of feed material for both design and concentrate generation purposes;
- Vendor testing to increase the project Owner's confidence in the process equipment selection;
- Continuation of the final concentrate purification studies to develop an optimal process route for production of high purity graphite products from the Lola concentrate.

14 MINERAL RESOURCES ESTIMATES

This Section has been updated in order to be complete and current from the Report available on SEDAR entitled: "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project, dated February 5th, 2018."

The Mineral Resource Estimates of the Lola Graphite deposit are based on 395 boreholes, for a total of 12,086 m and ten (10) trenches for 1,326 m. The area drilled out and accounted for this Mineral Resource represents roughly 33% of the 3.22 km^2 surface area of the entire deposit, as defined by geological mapping and geophysical means.

The mineral resources estimate was performed by Dr. Marc-Antoine Audet, P. Geo., Ph.D Geology. Dr. Audet is a non-independent QP within the meaning of NI 43-101 – Standards of Disclosure for Mineral Projects of the Canadian Securities Administrators. Under subsection 5.3(1) paragraph (c), as the mineral resources have changed by less than 100% from the previous filing, an independent QP is not required for the filing of this mineral resource update.

The criteria used for classifying the estimated resources are based on confidence and continuity of geology and grades. The CIM definition standards for resource classification are provided in Section 14.2.

The Mineral Resource Estimate was prepared using a block model constrained with 3D wireframes of the principal mineralized domains. Values for graphitic carbon were interpolated using the Gemcom software with Ordinary Kriging ("**OK**") interpolation methodologies on 10 × 10 × 2 m blocks. A preliminary open pit optimization algorithm was run on the estimated grade block model to constrain the resources and support the CIM's requirement that mineral resources have "reasonable prospects for eventual economic extraction."

An optimized pit shell was determined using the Lerchs-Grossman ("**LG**") algorithm in the MineSight® software. Only mineralization contained within the pit shell has been included in the resource estimate.

The base case Mineral Resource Estimate is summarized in Table 14.6 at a cut-off grade of 3.0 % Cg per, with estimate sensitivities at 1.64 % Cg/t and 5.0 % Cg/t.

The key assumptions and methodologies used for this Resource Estimate are outlined below.

14.1 Exploratory Data Analysis

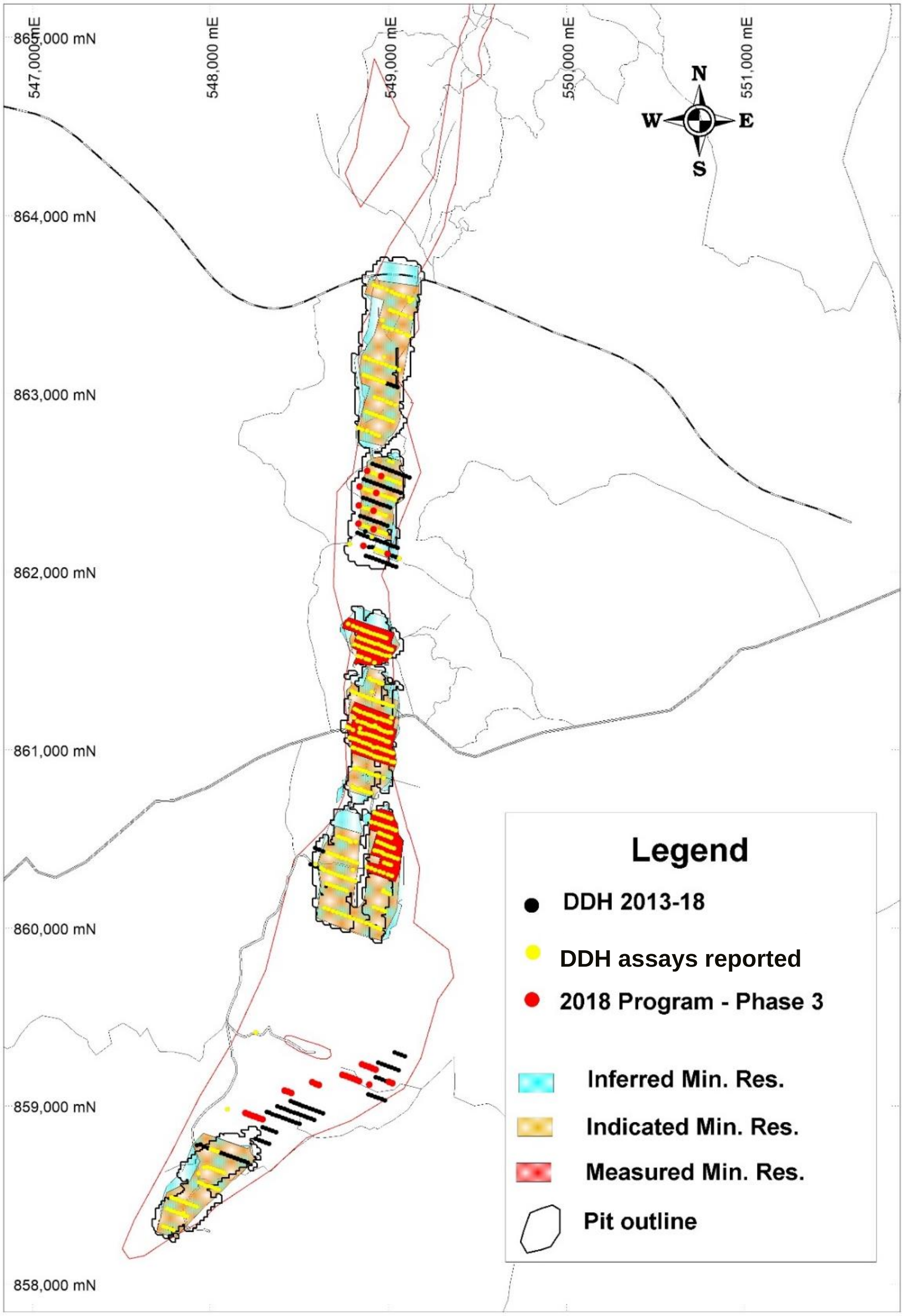
The resource modelling was carried out using Gemcom software ("**GEMS**") and data stored in a GEMS database. GEMS use the Microsoft ("**MS**") Jet database engine.

Drilling, surveying, and assay data were managed in a comprehensive AcQuire and then using Microsoft Access database, which provides a number of built-in data validation features. Assay results from Actlabs were delivered electronically in a pre-defined Microsoft Excel format, and imported directly into the AcQuire database, then automatically linked with the appropriate sample drill holes and sample intervals. Upon verification, the drill-hole, survey, and assay data were extracted and merged into the GEMS database.

14.1.1 TOPOGRAPHY

A 3D-DEM of the topography was supplied by SRG as 1.0 m contours in ASCII format. These contours were generated from an airborne survey using the EBEE drones, in 2017. Collar elevations from trenches and drill holes have been resurveyed using a differential GPS and incorporated into the topography. The topography is undulating with the highest elevation in the north and the central south (Figure 14.1). Elevations within the area of study range from 446 m to a maximum elevation of 571 m.

Figure 14.1 – Lola Graphite Deposit: Drilling and Subdivision by Sectors



14.1.2 DRILL HOLES

This Mineral Resource Estimate is based on 395 drill holes (totalling 12,086 m) and ten (10) trenches (totalling 1,326 m) executed by SRG. Drill spacing varies between 20 m × 50 m, 20 m × 100 m and 20 m × 200 m. Figure 14.1 illustrates a plan view of the drill holes. Drill holes are drilled along lines oriented 110°-290°, dipping at 60° from the vertical toward 110°. The database containing drill hole and trench information was supplied by SRG in a Microsoft Access format. Logging codes used for lithological modelling are summarized in Table 14.2.

Figures 14.2 and 14.3 show, at cross-sections 3400N and 5800N, the geological relationship between the weathered mineralized material and the underlying graphite rich paragneiss. The drilling results are expressed as Cg (%). The deposit continued at depth.

Figure 14.2 – Cross-Section 3400N

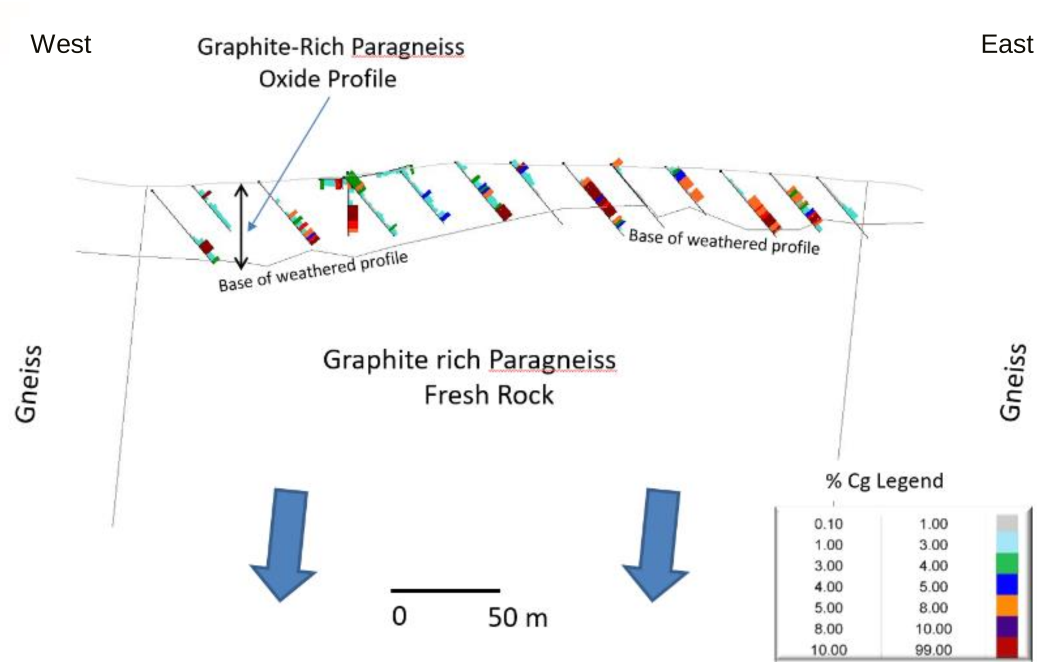
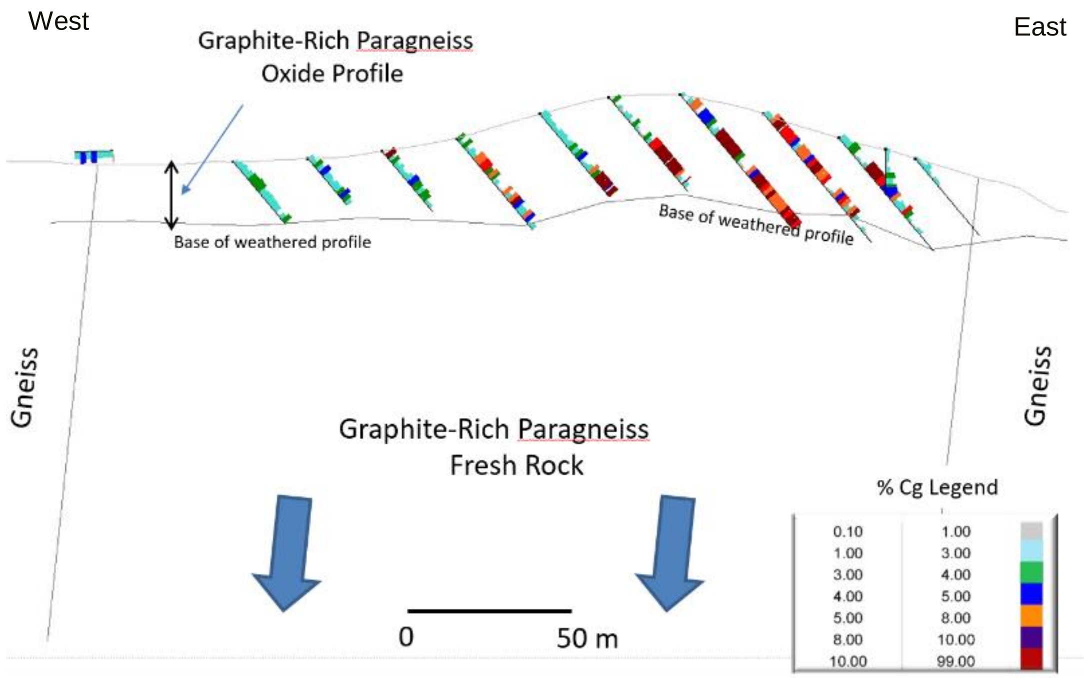


Figure 14.3 – Cross-Section 5800N



14.1.3 DENSITY MEASUREMENTS AND ROCK CODES

The Reader is referred to Section 11.1.4 for details about relative density assessment.

14.2 Geological Interpretation

The Lola Graphite Project's resource database meets industry standards and is compatible with CIM codes for public reporting.

The current Mineral Resource Estimate is based on 395 boreholes. Lists of drill holes used for Mineral Resource estimates are presented in Appendix B.

Appendix C shows the composited mineral intervals, defined using 1.0 % Cg cut-off grade, for every hole drilled at the Lola deposit.

The Author is not aware, at the time of preparing this Report, of any factors, such as environmental, permitting, legal, title, taxation, socioeconomic, marketing, political, or other relevant issues, that may materially affect the Mineral Resource Estimate herein; nor that the Mineral Resource Estimate may be affected by mining, metallurgical, infrastructure or other relevant factors.

Mineral Resource Estimate may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues. A checklist of assessment and reporting criteria is presented in Table 14.1.

Table 14.1 – Check List of Assessment and Reporting Criteria

Items	Discussion	Confidence
Drilling Techniques	Diamond drill holes of HQ size.	High
Logging	All drill holes were geologically logged by qualified geologists using standardized codes. The logging was of an appropriate standard for grade estimation.	High
Drill Sample Recovery	Recoveries recorded for every core run.	High
Sampling Methods	Half core or full core samples were collected from HQ size core. Sample interval of nominal one metre (1 m) length. Lithological contacts were honoured by the sampling.	High
Quality of Assay Data and Laboratory Tests	An external commercial laboratory has been used for all analytical test work. Appropriate sample preparation and assaying procedures have been used. Duplicate samples and industry certified standards were inserted within the sample sequence. There are no major issues that would prevent calculating the resource estimates. The precision of the data is good.	High
Verification of Sampling and Assaying	Historical QA/QC performed by SRG Guinée was found acceptable and of good quality.	High
Location of Data Points	Drill hole collars have been surveyed by a qualified surveyor and press onto detailed topographic surface defined by airborne survey.	High
Tonnage Factors (In-Situ Bulk Densities)	Density determinations were made for drill hole samples using the weight in air and water method.	High
Data Density and Distribution	Diamond drill holes were collared on grids of approximately 20 m × 50 m, 20 m × 100 m, and 20 m × 200 m in selected areas. The level of data density is sufficient to infer geological and grade continuity for an Inferred, Indicated, and Measured Mineral Resource Estimates.	High
Database Integrity	Data is stored in Access databases. Data is verified using GEMS validation procedures.	High
Statistics and Variography	Anisotropic spherical variograms were used to model the spatial continuity.	High
Top or Bottom COG	No grade caps or cut were applied.	High
Data Clustering	Drill holes were drilled on an approximately regular grid.	High
Block Size	10 mN by 10 mE by 2 mRL 3D block models.	High

Items	Discussion	Confidence
Grade Estimation	Metal grades were estimated using OK. Grades were interpolated within a search ellipse representing the ranges of the anisotropic variograms.	High
Resource Classification	Reported on drill spacing basis.	High
Mining Cuts	No mining cuts have been applied.	N/A
Metallurgical Factors	No metallurgical parameters were used for mineral resources estimation.	N/A

14.2.1 Resource Modelling

Mineral resources were estimated using block estimation with OK interpolation methodologies on 10 × 10 × 2 m blocks.

3D models for the Lola deposit were created using collar positions using the UTM coordinates for all boreholes. All models integrated the concept of geological horizons (soil, limonite, alterite, saprolite, hard saprolite and bedrock) to create a 3D block model. A surface geological constraining envelope was generated using borehole data, as well as information from geological mapping.

14.2.2 Horizons

A ‘horizon code’ system has been introduced to interpret geological succession of laterite facies, with all lithology’s categorized into six (6) major groups:

- 100 – Limonite and Alterite;
- 150 – Saprolite;
- 200 – Hard Saprolite;
- 600, 605 – Graphite rich Gneiss;
- 700 – Silicified Bedrock;
- 800 – Country Rock.

Horizons 100 to 600 represent consecutive sub-horizontal layers.

14.2.3 Compositing

No compositing was done.

14.2.4 Block Coding

The rock-type block model was constructed by filling blocks of 10 m × 10 m × 2 m between the surface topography and horizon surfaces on a priority basis within the graphite rich gneiss solid, leading to the unique assignment of each model block with primary horizon codes. The 50 % 'in-out' coding rule was applied such that a minimum volume of 50 % was required to assign a horizon code to the block model prototype.

For the purpose of the interpolation processing, three (3) main rock codes were used for the 3D model, (50, 200, and 600).

Table 14.2 – Block Model Rock Codes Versus Geological Rock Codes

BM Rock Code	Facies	Geological Rock Codes
0	Air	0
50	Soil	50
200	Saprolite	100,150, and 200
600	Fresh rock	600
605	Fresh rock	Extrapolated
800	Gneiss outside the deposit	Extrapolated

14.2.5 Variography

Continuity directions were assessed for the soil, weathered, and bedrock horizons respecting geological surfaces created from drill holes.

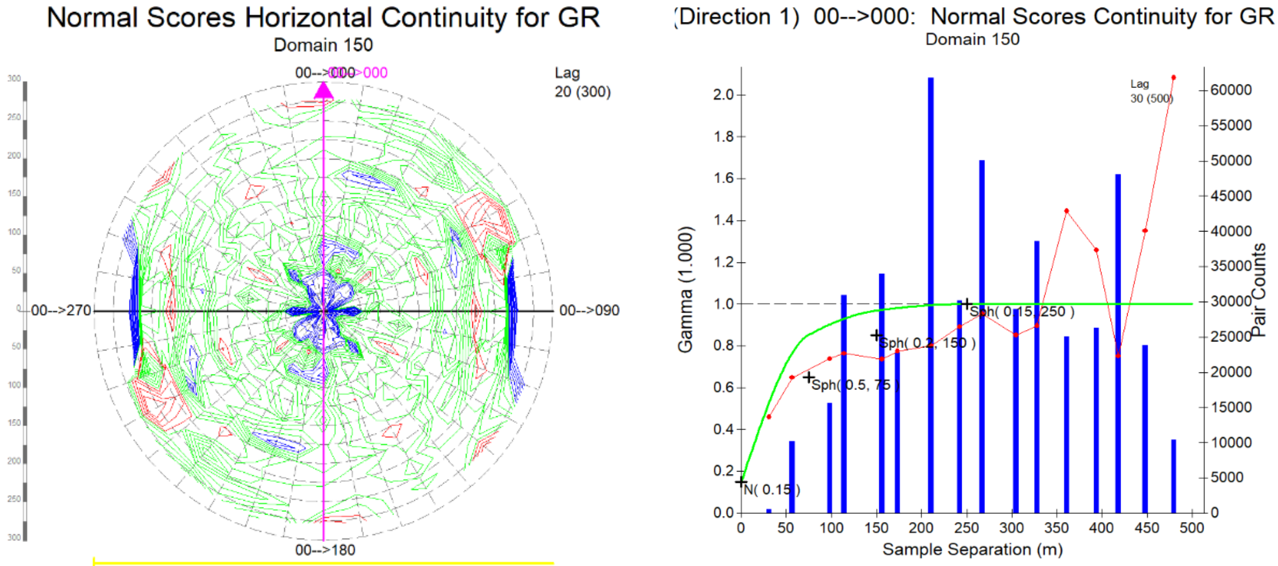
Variogram analysis and modeling were performed using Snowden's Supervisor software. Variography was generated for the Cg for Sector 3 to 6.

The Cg group variogram model was fitted and applied to the Mineral Resource estimation. The variograms model for Sector 3 to 6 is presented in Table 14.3 and Figure 14.4.

Table 14.3 – Cg Variogram Parameters Used for Interpolation

Sector 3 to 6							
Direction	**Nugget**	**C1**	**Range 1 (m)**	**C2**	**Range 2 (m)**	**C3**	**Range 3 (m)**
00	0.15	0.5	50	0.2	100	0.15	250
270	0.15	0.5	25	0.2	30	0.15	50
90 > 000	0.15	0.5	5	0.2	7	0.15	10
Sector 1 and 2							
Direction	**Nugget**	**C1**	**Range 1 (m)**	**C2**	**Range 2 (m)**	**C3**	**Range 3 (m)**
60	0.15	0.5	75	0.2	150	0.15	250
350	0.15	0.5	25	0.2	20	0.15	30
90 > 000	0.15	0.5	5	0.2	7	0.15	10

Figure 14.4 – Normal Scores Horizontal Continuity Variogram for Cg in the Saprolite Sector 3 to 6



14.3 Mineral Resource Classification

Mineral Resources Classification is based on drill spacing as follows:

- Class: Drill spacing;
- Measured: 20 × 50 m and less;
- Indicated: 20 × 100 m and less;
- Inferred: 20 × 200 m.

The following rock code system refer to 3D block models for classified materials (Table 14.4).

Table 14.4 – Rock Code System for the Resources Classification

Facies	Horizon	Inferred	Indicated	Measured
Soil	50	53	52	51
Saprolite	200	203	202	201
Bed Rock	600			

14.4 Mineral Resource Estimation

To comply with the definition from the CIM and demonstrate the “reasonable prospects for economic extraction” of the Lola Graphite deposit, the following methodology has been used for the Mineral Resource Estimation.

Based on the geological block model, a resource pit shell had been generated using MineSight Economic Planner module ("**MSEP**") of MineSight®. MSEP bases its calculations on the LG method, a common and precise algorithm used in the mining industry for pit optimization process.

The automated LG, founded in 3D graph theory, relies on a regular system of blocks that defines the value (profit, loss) and type (ore, waste) of material contained in the blocks. Each block receives a positive or negative value representing the dollar value (profit/loss) that would be expected by excavating and extracting the mineral. It works from the top down through every combination of blocks that would satisfy wall slope constraints to find the one solution (optimum pit) with the largest positive value.

Table 14.5 presents the parameters summary used for the LG optimization process.

Table 14.5 – Parameters for the Lerchs-Grossman

Description	Units	Value
Mining Cost (Ore And Waste)	$/t (mined)	2
Processing Cost	$/t (milled)	10
G&A	$/t (milled)	3.5
Transport Cost	$/t (conc.)	175
Sales Price	$/t (conc.)	1,300
Mill Recovery	%	79.25
Concentrate Grade	%	94.6
Pit Slope (Not Variable)	Degree	30

The base case classified Mineral Resource Estimate is summarized in Table 14.6 at a Cut-Off Grade of 3.0 % Cg together with estimate sensitivities at 1.64 % Cg (which is the calculation of the Cut-Off Grade using the parameters presented in Table 14.5) and 5.0 % Cg

The resource estimate and sensitivities scenarios are established with data from boreholes drilled by June 14th, 2018.

Table 14.6 – Maiden Mineral Resources and Sensitivities

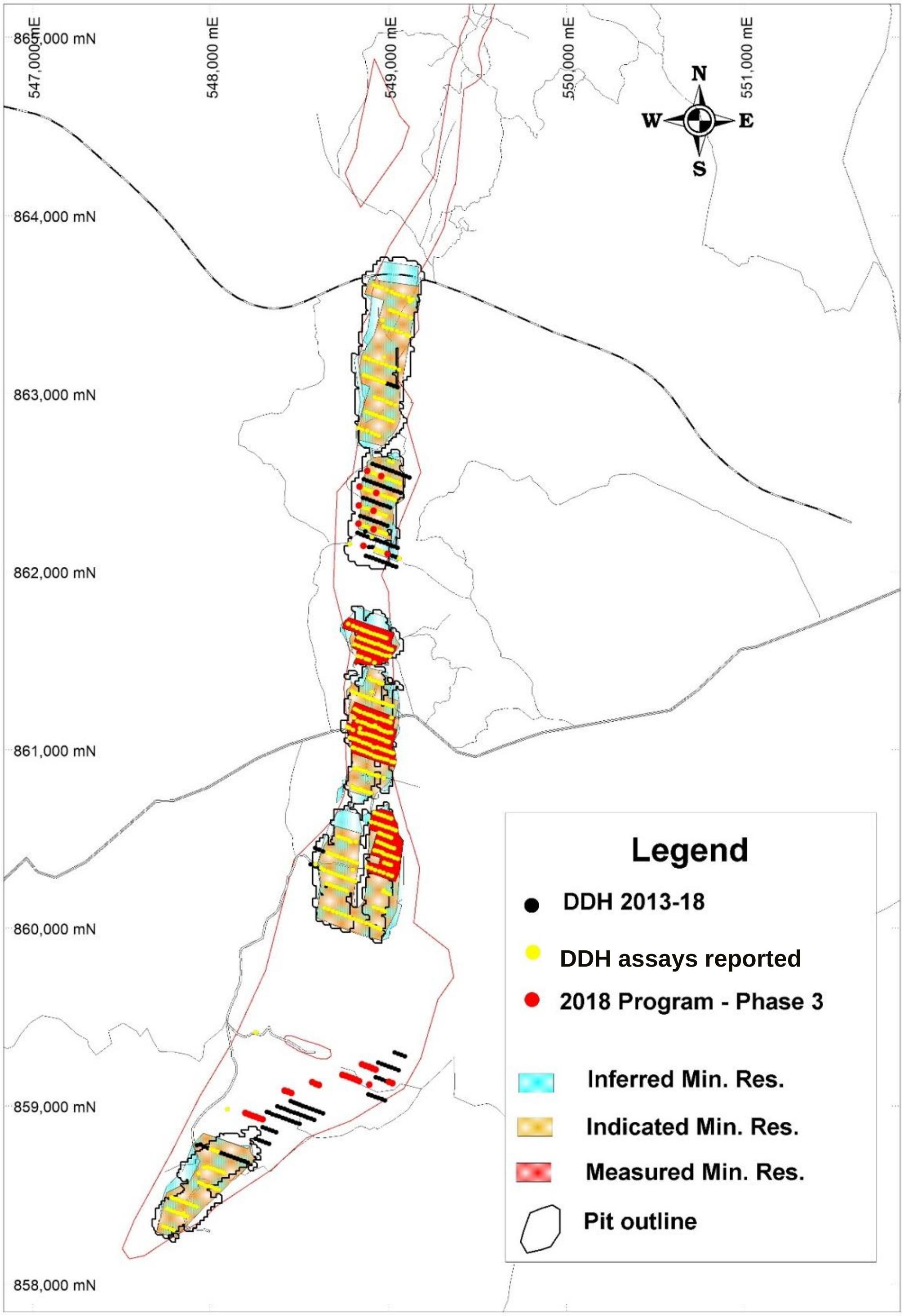
Base Case Mineral Resources				
Cut-off Grade	**Classification**	**Tonnes**	**Cg**	**In-situ Cg**
Cg %		**Mt**	**%**	**t**
3%	Measured	1.40	5.32	74,700
	Indicated	10.79	5.58	602,200
	Total M&I	**12.20**	**5.55**	**676,900**
	Inferred	2.06	6.07	125,200
Sensitivities				
Cut-off Grade	**Classification**	**Tonnes**	**Cg**	**In-situ Cg**
Cg %		**Mt**	**%**	**t**
1.64%	Measured	2.13	4.31	91,900
	Indicated	17.00	4.39	746,400
	Total M&I	**19.14**	**4.38**	**838,400**
	Inferred	2.82	5.07	143,000
Cut-off Grade	**Classification**	**Tonnes**	**Cg**	**In situ Cg**
Cg %		**Mt**	**%**	**t**
5%	Measured	0.60	7.14	42,700
	Indicated	5.02	7.46	374,800
	Total M&I	**5.62**	**7.43**	**417,500**
	Inferred	1.18	7.54	88,700

Note:

8) CIM definitions (May 10, 2014) observed for classification of mineral resources.
9) Block bulk density interpolated from specific gravity measurements taken from core samples.
10) Resources are constrained by a Lerchs-Grossman (LG) optimized pit shell using MineSight software.
11) Pit shell defined using 30-degree pit slope, $1,300/t of concentrate (94.6% Cg grade, 79.25% Cg plant recovery), $2.00/t mining costs, $10.00/t processing costs, and $3.50/t G&A and $175/t of concentrate for transportation costs.
12) Mineral resources are not mineral reserves and have no demonstrated economic viability. The estimate of mineral resources may be materially affected by mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors ("Modifying Factors").
13) Numbers may not add due to rounding.
14) Effective Date of Resource Estimate is June 14th, 2018.

A surface map outlining the Inferred, Indicated and Measured Resources is presented Figure 14.5.

Figure 14.5 – Lola Graphite Deposit – Classified Mineral Resources Within Pit Outline

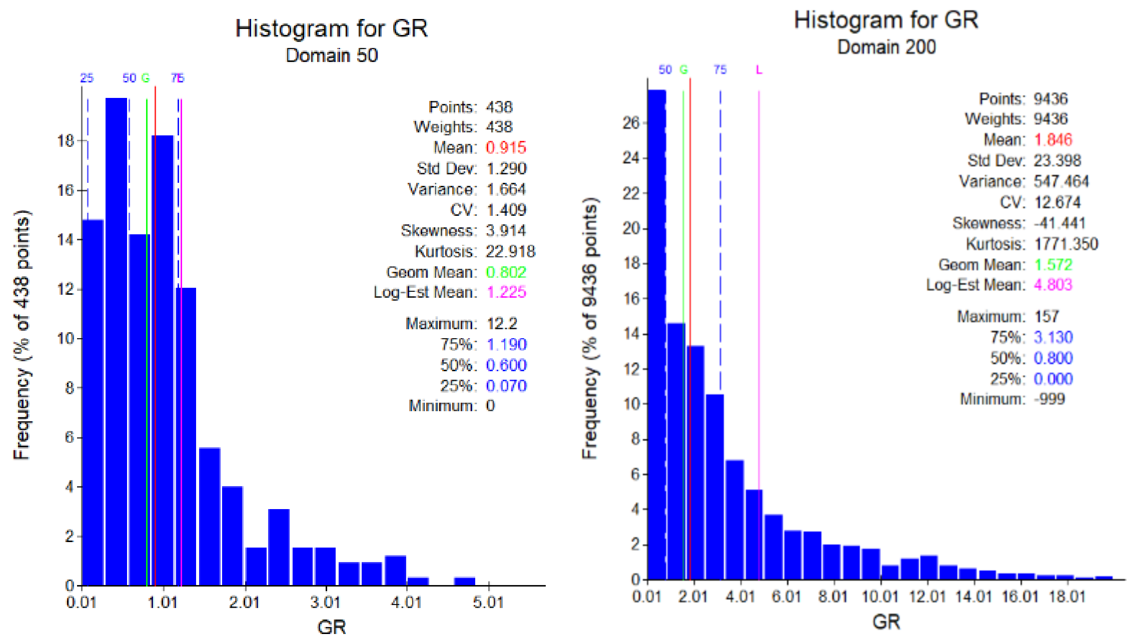


14.5 Block Model Validation

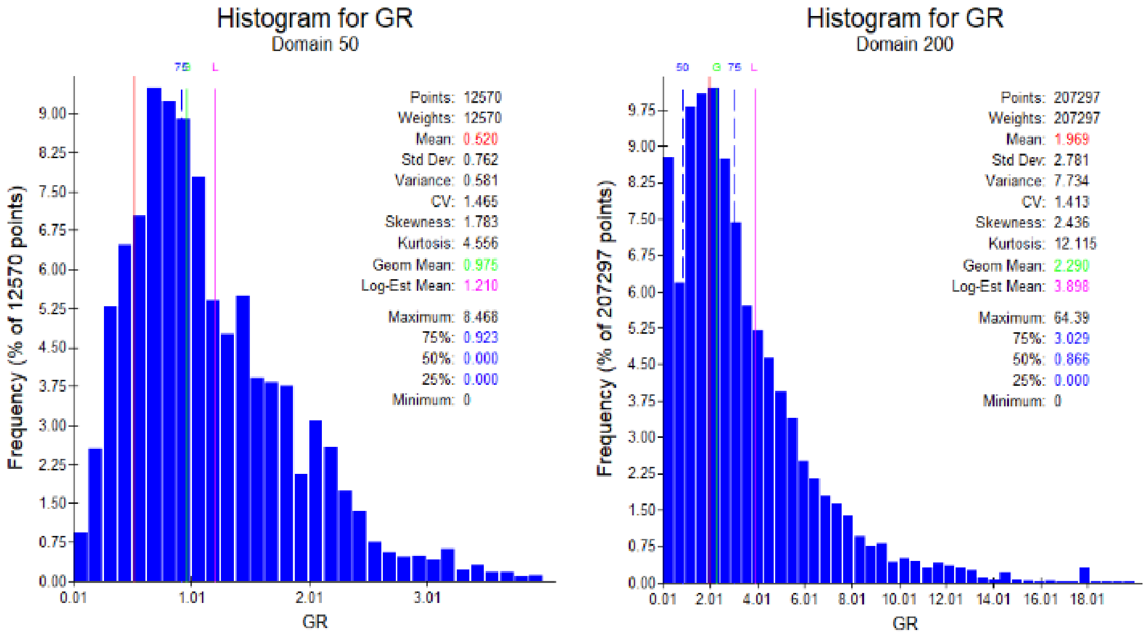
Significant visual comparisons have been made between estimated block grades and in-situ drill hole data. All show reasonable comparisons. Despite the large drill spacing, these 3D models are considered good representations of the in-situ data. Comparisons between histograms of sample grades distribution (Cg %) and block model grades are presented in Figure 14.6.

Figures 14.7, and 14.8, and 14.9 show correlation between block model estimated grades and drill hole data.

Figure 14.6 – Histograms for Cg Grade Distribution – Block Model Versus Drill Hole Data (Horizons 50 and 200)



Sample Grade Distribution: Soil (Code 50), Limonite & Saprolite (Code 200)



Block Grade Distribution: Soil (Code 50), Limonite & Saprolite (Code 200)

Figure 14.7 – Correlation Between the Block Model Estimated Grades and Drill Hole Data at Section 3700N

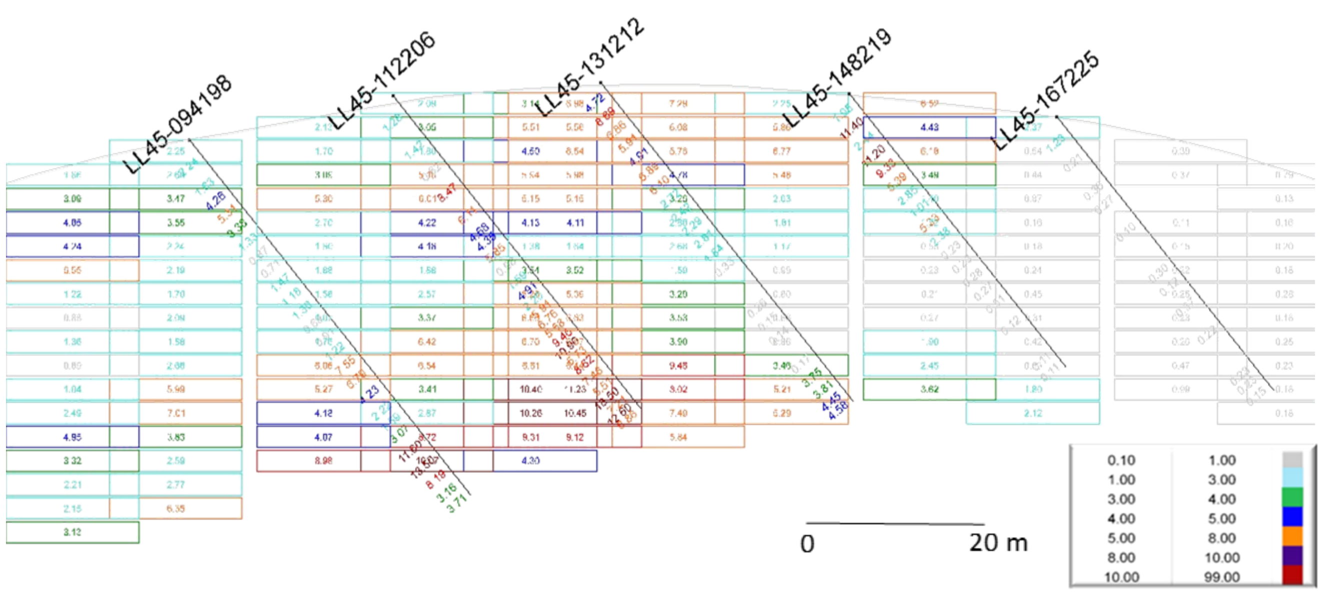


Figure 14.8 – Correlation Between the Block Model Estimated Grades and Drill Hole Data at Section 3400N

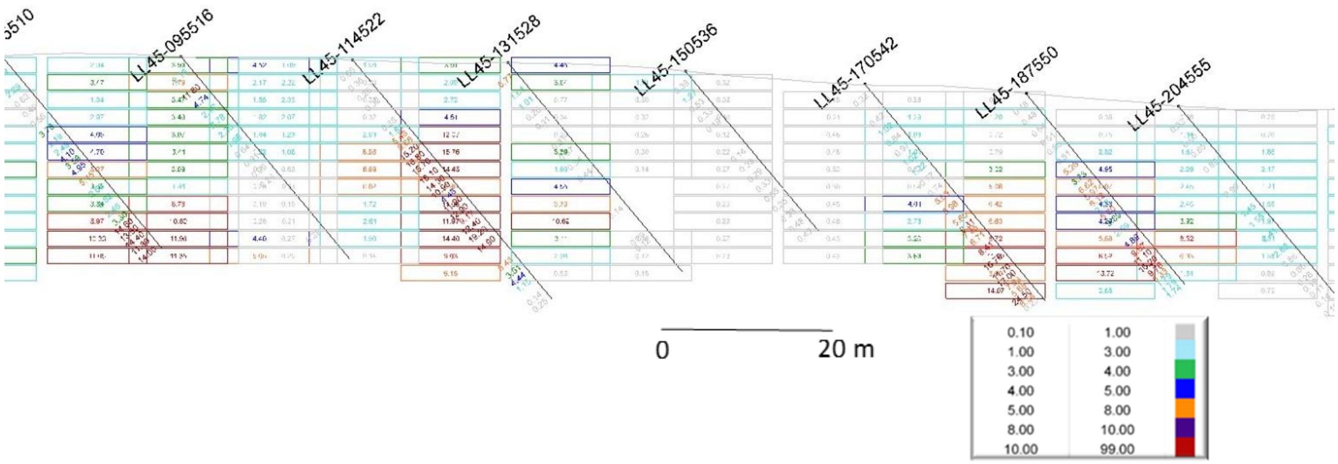
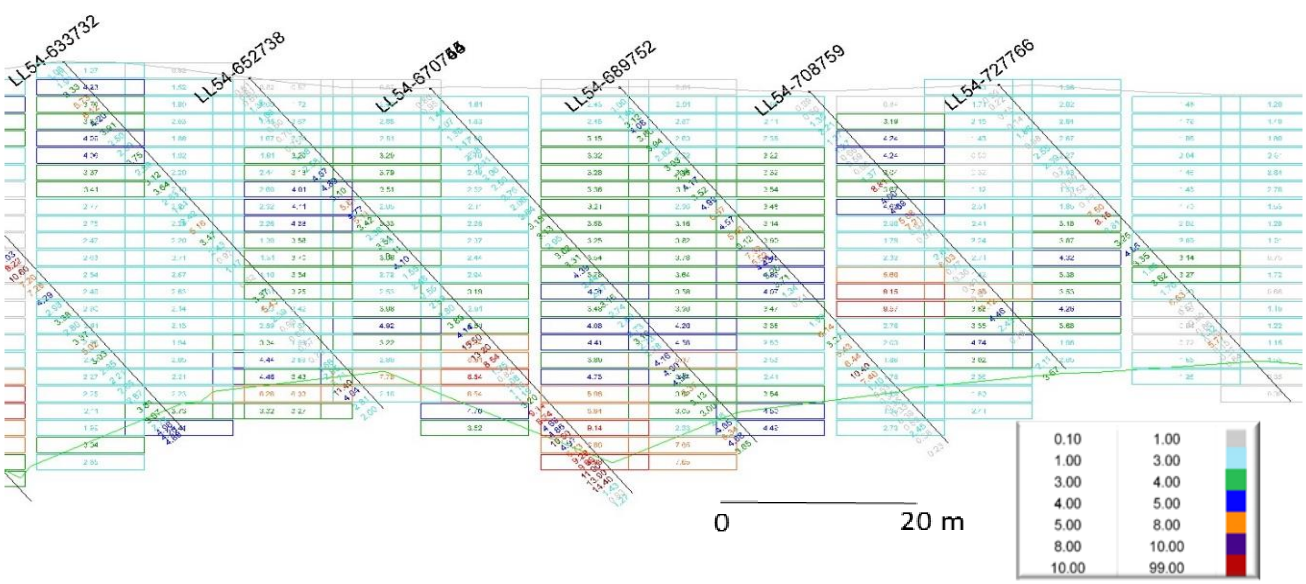


Figure 14.9 – Correlation Between the Block Model Estimated Grades and Drill Hole Data at Section 600



14.6 Conclusion

The 2018 Mineral Resource Estimate includes a pit-constrained measured and indicated resource of 12.2 Mt grading 5.6% Cg and an inferred resource of 2.1 Mt grading 6.1% Cg, using a cut-off grade of 3.0% Cg. The effective date of the estimate is June 14, 2018.

15 MINERAL RESERVE ESTIMATES

This report is a PEA Report, and as such no Mineral Reserves have been estimated for the Lola Graphite Project, as per NI 43-101 regulations.

16 MINING METHODS

The PEA was based on Mineral Resources Estimate by SRG with an effective date of June 14, 2018. DRA/Met-Chem has verified that the results of the PEA continue to be relevant and are valid for the updated Mineral Resource Estimate.

16.1 Mineral Resources

DRA/Met-Chem evaluated the potential for an open pit mine at Lola to produce 50,000 tonnes of graphite concentrate per year. This Section of the Report discusses the pit design, mine plan, and fleet requirements that were estimated for the PEA and which form the basis for the Mine Operating and Capital Cost estimate presented in Section 21.

Figure 16.1 provides a general layout of the mine.

The mineral resources used for the PEA are based on the press release issued June 18, 2018. Table 16.1 summarizes the Mineral Resource Estimate at 1.64% cut-off grade.

Figure 16.1 – Mine General Layout

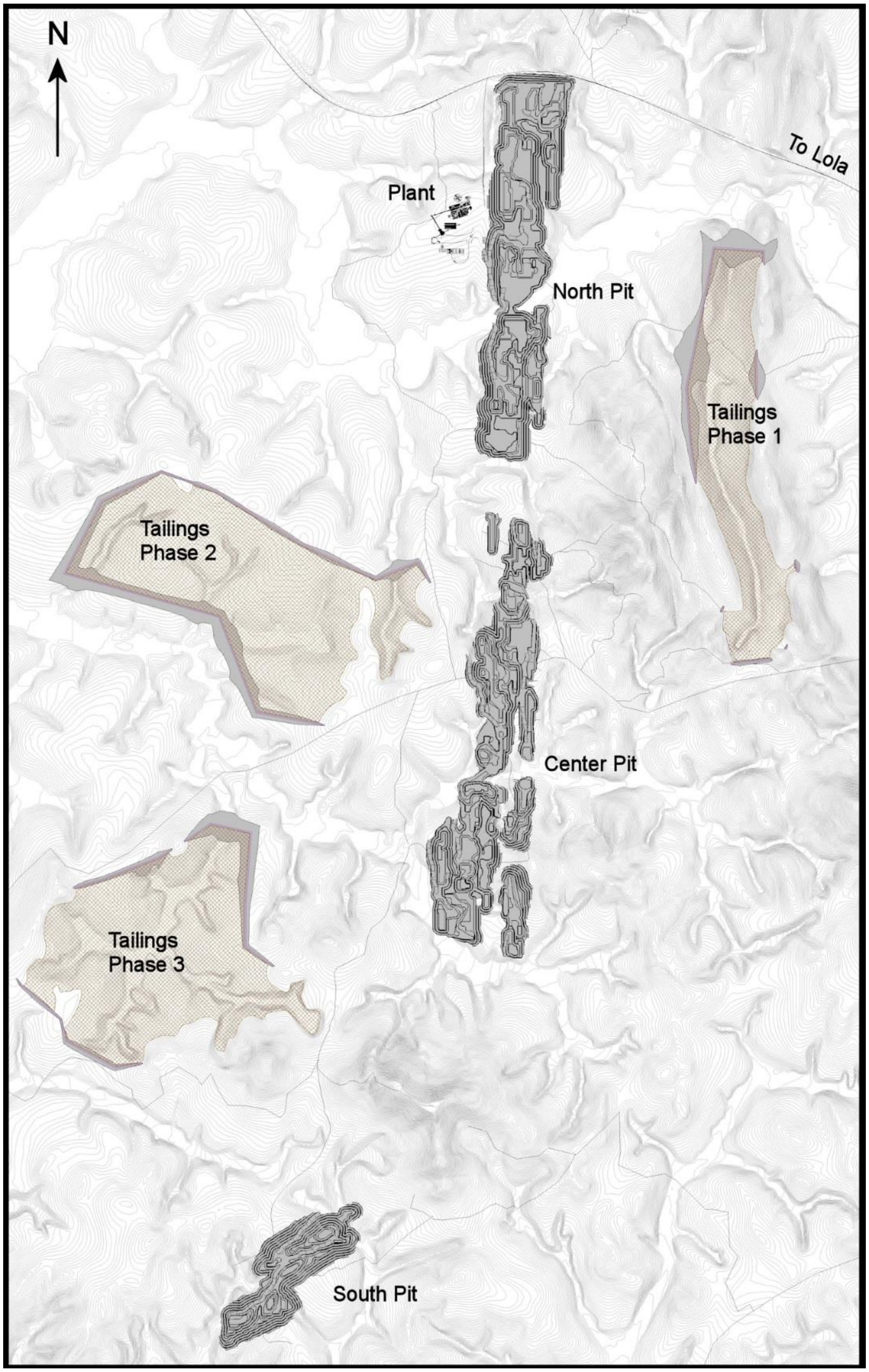


Table 16.1 – Mineral Resources Estimate (1.64% Cg Cut-Off)

Resources	M Tonnes	Volume (Mm^3)	Grade (% Cg)	Cg (Tonnes)
Measured	2.13	1.29	4.31	91,900
Indicated	17.00	10.19	4.39	746,400
Sub-Total (Meas. + Ind.)	**19.14**	**11.48**	**4.38**	**838,300**
Inferred	2.82	1.7	5.07	143,000
Total Ore	**21.96**	**13.18**	**4.47**	**981,300**
Waste	7.76	4.63		
OVB	0.03	0.02		
Total Material	**29.74**	**17.83**		
Stripping Ratio (S/R)	0.35			

16.2 Mining Method

The mining method selected for the Project is a conventional operation with articulated haul trucks and loading shovels.

The mineralized material and waste rock will be loaded into articulated haul trucks with excavators. The mineralized material is part of saprolitic rock and overburden, a weathering of the bedrock surface that does not require drilling and blasting. This material will be hauled roughly 4 km from the north pit area, 6.5 km from the central pit area and 8 km from the south pit area to the primary crusher, and the waste rock will be hauled to the dump.

To properly manage water infiltration into the pit, a sump will be established at the lowest point on the pit floor. Water collected in this sump will be pumped to a collection point at surface.

The mine will operate year-round, seven (7) days per week, twenty (20) hours per day (2 shifts, 10 hours each). Since the mill will operate seven (7) days per week, a run of mine stockpile will be maintained to provide a constant supply of feed to the crusher. During the days when the mine is not operating (for technical or weather reasons), the crusher will be fed by the front-end loader from the stockpile. The mine fleet requirements and manpower are based on this work schedule.

16.3 Pit Optimization

Open-pit optimization was conducted on the deposit to determine the economic pit limits. The optimization was carried out during the initial stage of the Project using initial cost, sales price, and pit and plant operating parameters. The pit optimization was re-evaluated after a preliminary mine plan was completed, and the cost, sales price, and pit and plant operating parameters were better defined.

The pit optimization was done using the Economic Planner optimizer of MineSight®. The optimizer operates on a net value calculation for all the blocks in the model (i.e., revenue from sales of graphite concentrate less operating cost). The formula is presented below:

- **Concentrate Tonnage** = Mineralized Tonnage x Recovery x Grade of Feed / Concentrate Grade.
- **Revenue** = Concentrate Tonnage x Sales Price.
- **Net Value** = Revenue – (Mining Cost + Processing Cost + Transportation Cost + General & Administration Cost).

Since this study is at a PEA level, Measured, Indicated, and Inferred material have been considered in the optimization and mine plan. Table 16.2 presents the pit optimization parameters.

Table 16.2 – Pit Optimization Parameters

Description	Units	Value
Mining Cost (Ore & Waste)	US$/t (mined)	2.00
Processing Cost	US$/t (milled)	10.00
G&A	US$/t (milled)	3.50
Transport	US$/t (conc.)	175.00
Sales Price	US$/t (conc.)	1,300
Mill Recovery	%	79.25
Concentrate Grade	%	94.6
Overall Pit Slope	%	30

16.3.1 Cut-Off Grade (COG)

Using the economic parameters presented above, a cut-off grade of 1.64% Cg was calculated for the Project. The Cut-off Grade is used to determine whether the material being mined will generate a profit after paying for the processing, transportation and administrative costs. Material that is mined below the cut-off grade is sent to the waste dump. The Cut-Off Grade has been calculated according to the following formula:

$$COG = Concentrate\ grade * \left(\frac{Mining\ cost + Procesing\ cost + G\&A}{(Sales\ Price - Transport\ Cost) * Mill\ Recovery}\right)$$

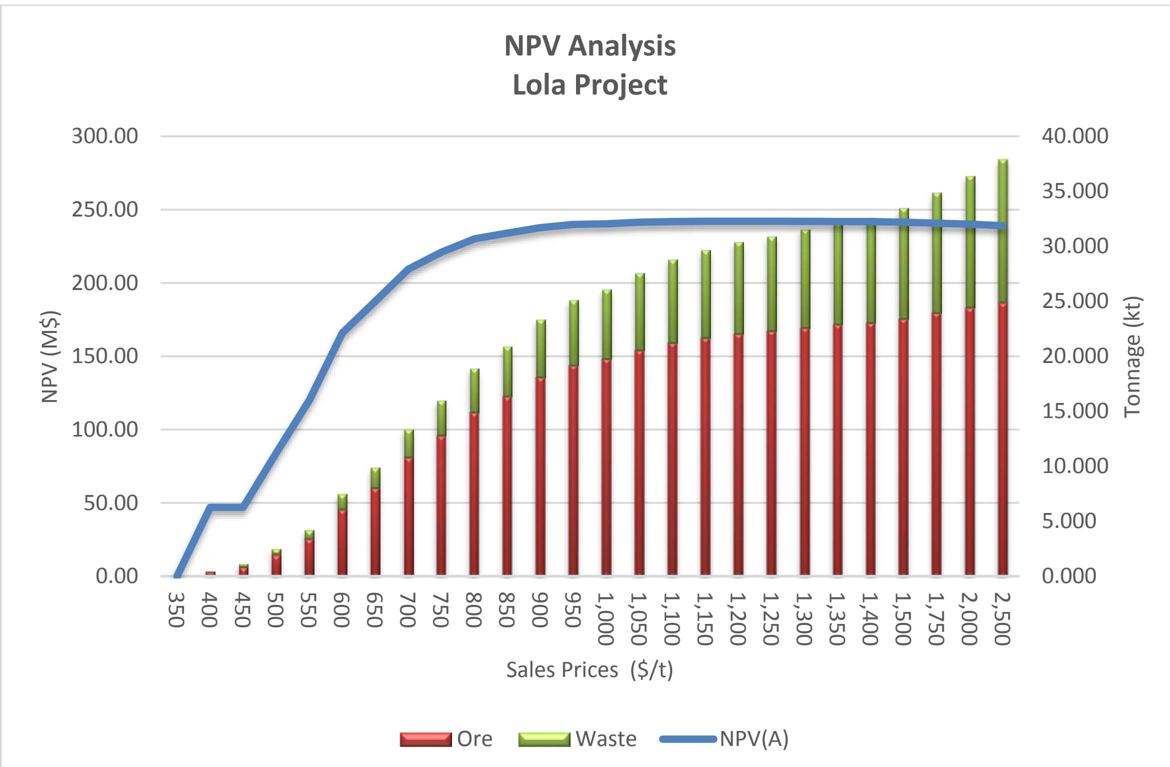
16.3.2 Pit Optimization Results

Optimal open pit mining limits were established with the Economic Planner optimizer of MineSight®, which uses the Lerchs-Grossman algorithm for pit optimization. The Net Present Value (NPV) sensitivity analysis was used as the main criterion to select the optimal pit. When varying graphite sales price from $350 US/t to $2,500 US/t (Figure 16.2), NPV increases gradually until price reaches 1,350 U$/t. From this point on, NPV decreases slightly because the costs associated to waste production exceed profits generated from graphite sales. Pit limits were optimized for a base case concentrate price of $1,200 US/t, where the NPV has the highest value (Section 16.3.2).

The optimized pit shell contains 20.7 Mt of mineralized material at an average Cg diluted grade of 4.43% when applying a 5% dilution factor.

The proportion of Inferred Mineral Resources that are contained within this pit shell is 13.4 %.

Figure 16.2 – NPV Sensitivity Analysis



16.4 Mining Operations

The Lola mineral resources, contained mostly within three areas, are intended to be mined by surface operations.

It is estimated that approximately 20.7 Mt of mineralized material is extractable over a 16-year mine life.

The current plan is to mine the north area for a little more than nine (9) years of operation, continue in the central area for four (4) years, and finish in the area further south during the last three (3) years.

16.5 Mine Design

DRA/Met-Chem designed a pit that results in a 16-year mine life for the Project. The following section provides the parameters that were used for the detailed pit design.

16.5.1 Material Properties

Table 16.3 defines the material properties used for the mine design and mine plan. The densities for the mineralization and waste rock were supplied by SRG with the block model while the remaining parameters were taken from DRA/Met-Chem's internal database. These properties are important for determining the mine equipment fleet requirement.

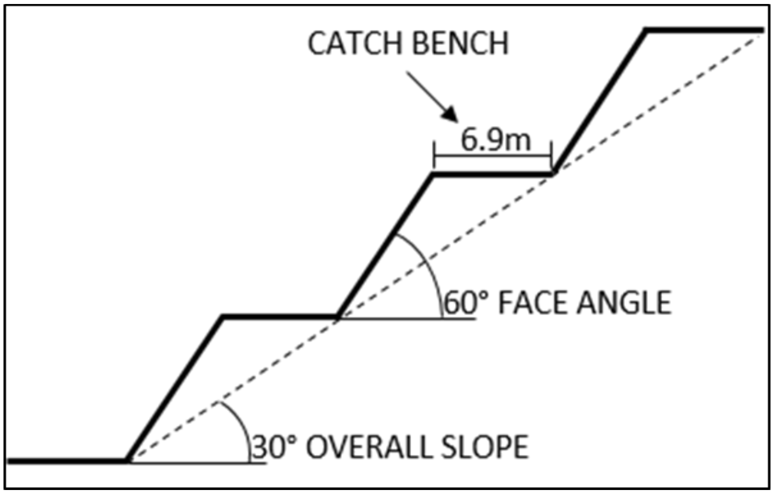
Table 16.3 – Material Properties

Material Type	Density (t/m^3)	Swell Factor (%)
Overburden (Soil)	1.59	35
Saprolite	1.66	35
Fresh Rock (Waste)	1.74	35

16.5.2 Geotechnical Pit Slope Parameters

DRA/Met-Chem used an overall pit slope of 30° for the final pit walls. The final pit wall includes a 6.9 m catch bench, six (6) m high benches and accounts for a 60° face angle. The pit wall configuration is illustrated in Figure 16.3. A minimum mining width of 30 m has been considered for in-pit design for working areas.

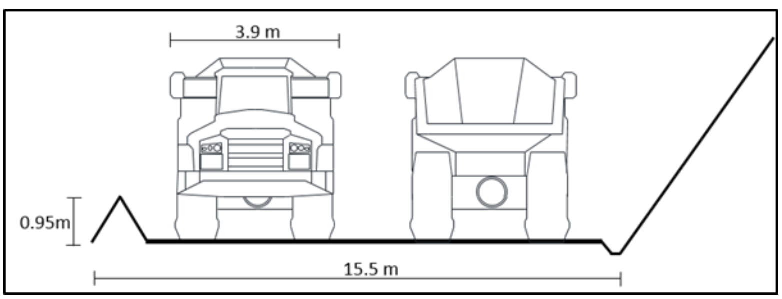
Figure 16.3 – Pit Wall Configuration



16.5.3 HAUL ROAD DESIGN

The ramps and haul roads were designed with an overall width of 15.5 m. For double lane traffic (Figure 16.4), industry practice indicates the running surface width to be a minimum of 2.5 times the width of the largest truck. The overall width of a 40-tonne articulated haul truck is 3.9 m which results in a running surface of 9.75 m. The allowance for berms and ditches increases the overall haul road width to 15.5 m. A maximum ramp grade of eight (8) % was used. This grade is acceptable for a 40-tonne articulated haul truck.

Figure 16.4 – Double Lane Ramp Design



16.5.4 MINE DILUTION AND MINING RECOVERY

During the mining operation, material at the mineralization and waste rock contacts will not be separated perfectly. This effect is accounted for as either dilution, mining recovery or a combination of both. A mining recovery of 98 % has been applied to account for this. In other words, it was assumed that two (2) % of the mineralized material within the pit will be sent to the waste dump rather than the plant.

16.5.5 PIT DESIGN

Three (3) pits have been designed for the Lola deposit. The north pit is approximately 1,640 m long and 350 m wide at surface, with a maximum pit depth of 37 m. The central pit is approximately 1,880 m long and 470 m wide at surface, with a maximum pit depth of 31, and the south pit is approximately 840 m long and 360 m wide at surface, with a maximum pit depth of 52 m. The total surface for each area is roughly 42.5 ha, 45.5 ha, and 15.6 ha, respectively.

The pits include 20,716 kilotonnes (kt) of mineralized material at a diluted average Cg grade of 4.43%, and the strip ratio is approximately 0.39:1. 1,376 kt of overburden and 6,786 kt of waste rock are included in the pit. The proportion of mineralized material classified as Inferred Mineral Resources that are contained within this pit shell is 13.4 %.

16.5.6 DUMP DESIGN

Some areas have been selected for waste rock closer to the processing plant and North Pit. Geotechnical studies must be done to determine the final area where the waste dump could be built. The proposed mining sequence will leave the space of the north pit free from Year 9 onwards, which will allow the in-pit dumping.

16.6 Mining Planning

A production schedule (mine plan) was developed for the Project to produce 50,000 tonnes of graphite concentrate per year. Using the mill recovery of 79.25 % and a targeted concentrate grade of 94.6 % results in an average run of mine feed of 1.3 Mt per year (3,650 t/d) at an average diluted grade of 4.43% Cg.

A pre-production phase of five (5) months has been planned to achieve the following objectives:

- Clear vegetation and topsoil;
- Supply road construction material;
- Supply construction material for the tailings dyke;
- Strip overburden and waste rock to expose the mineralization;
- Stockpile 6,000 tonnes of feed ahead of the crusher.

The schedule produces 44,000 tonnes of concentrate in the first year of production which accounts for a plant ramp-up.

The mine plan has been developed by advancing several benches concurrently. This will allow for the blending of higher and lower grade material. An average of 5,430 tonnes of material will be mined each day during the 16 year mine life.

The mine production schedule is presented in Table 16.4.

Table 16.4 – Mine Production Schedule

Description	Units	Pre. Prod	Y- 1	Y- 2	Y- 3	Y- 4	Y- 5	Y- 6	Y- 7	Y- 8	Y- 9	Y-10	Y-11	Y-12	Y-13	Y-14	Y-15	Y-16	Total
Concentrate	Kt	6	44	50	50	50	50	50	50	50	50	50	50	50	50	50	50	19	**769**
ROM to Plant	Kt	179	994	1,213	1,372	1,281	1,417	1,300	1,200	1,155	1,353	1,508	1,478	1,459	1,361	1,430	1,467	550	**20,716**
Cg	%	4.04	5.32	4.94	4.38	4.69	4.24	4.62	5.00	5.20	4.46	4.02	4.09	4.13	4.44	4.23	4.13	4.26	**4.47**
Cg (diluted)	%	3.98	5.29	4.92	4.35	4.66	4.21	4.59	4.98	5.17	4.41	3.96	4.04	4.09	4.39	4.17	4.07	4.20	**4.43**
Total Waste	Kt	221	155	296	461	410	428	289	233	195	496	1,005	691	711	752	879	753	187	**8,163**
Waste Rock	Kt	177	127	255	372	360	240	274	123	107	476	956	619	580	572	782	649	119	**6,786**
Overburden	Kt	44	28	41	89	50	189	16	110	88	20	49	72	131	181	97	104	69	**1,376**
Total Material Moved	**400**	**1,149**	**1,510**	**1,833**	**1,691**	**1,846**	**1,589**	**1,433**	**1,349**	**1,849**	**2,513**	**2,169**	**2,171**	**2,113**	**2,309**	**2,220**	**400**	**1,149**	**28,879**
S/R		1.2	0.16	0.24	0.34	0.32	0.30	0.22	0.19	0.17	0.37	0.67	0.47	0.49	0.55	0.61	0.51	0.34	**0.39**

16.7 Mine Equipment Fleet

The mine will be operated with an owner fleet. Table 16.5 presents the mine equipment fleet that is required for the Project. The table identifies Caterpillar and Komatsu equivalent to provide the reader with an appreciation for the size of each machine. Fleet selection and requirements are discussed in this section of the Report.

Table 16.5 – Mine Equipment Fleet

Equipment	Model	Description	Units
Haul Truck	740 EJ	38 tonnes Payload	2[1]
Shovel	PC-1250SP-8R	6.7 m³ Bucket	1
Track Dozer	D155A-6R	9.4 m³	1
Road Grader	GD705-5	14' blade	1
Wheel Loader	WA600-6R	393 kW	1
Boom Truck[2]	CT660	354W	1
Pick-up Truck	F250	N/A	4
Lighting plant	n/a	6kw	2

1. 2 From Y-1 to Y-8.
2. The boom truck will be equipped with a water tank to spray the roads for dust suppression

16.7.1 Haul Trucks

The haul truck selected for the Project is an articulated off-road truck with a nominal payload of 38 tonnes. This size truck was selected since it matches well with the production requirements and offers the durability that is required for a mining operation. The following parameters were used to calculate the number of trucks required to carry out the mine plan. These parameters result in 1,458 working hours per year for each truck.

- Mechanical Availability – 85 %;
- Utilization – 90 %;
- Nominal Payload – 38 tonnes (23 m³ heaped);
- Shift Schedule – Two (2), ten (10) hour shift per day, seven (7) days per week;
- Operational Delays – 55 min/shift (this includes 10 minutes for equipment inspection and 60 minutes for lunch and coffee breaks. Refueling will do during breaks or at the end of the shift;
- Job Efficiency – 93 % (50 min/h; this represents lost time due to queuing at the shovel and dump as well as interference along the haul route);
- Rolling Resistance – three (3) %.

Haul routes were generated for each period of the mine plan to calculate the truck requirements. These haul routes were imported in Talpac©, a commercially available truck simulation software package that DRA/Met-Chem has validated with mining operations. Talpac© calculated the travel time required for a 38-tonne haul truck to complete each route.

Haul productivities (tonnes per work hour) were calculated for each haul route using the truck payload and cycle time. The load time is calculated using a wheel loader with a 6.7 m³ bucket as the loading unit. This size wheel loader, which is discussed in the following section, loads a 38-tonne haul truck in five (5) passes.

16.7.2 Loaders

The main loading machine selected for the Project is a wheel loader with a 6.7 m³ (8.9 tonne) bucket. This size loader is a good match for a 38-tonne haul truck and is a suitable loader to handle the production requirements and the face heights expected. Although one (1) loader is sufficient to mine the tonnages presented in the mine plan, a wheel loader will be used to manage the stockpile re-handling and as a backup machine.

16.8 Mine Dewatering

Prior to mining activities, a ditch will be established around the perimeter of the pit to intercept water before it infiltrates the pit. Rainwater and groundwater that is collected in the pit will be collected in an in-pit sump and pumped to a tailings pond at surface.

A ditch system will be established around the footprint of the waste dump and stockpiles. Water collected in these ditches will be directed to tailings ponds. All water that is collected in the ditches and sumps will be sampled prior to discharge into the environment or treated if required.

16.9 Manpower Requirements

The mine workforce for the Project is 23 employees. These employees will work four (4) days per week, ten (10) hours per day. The operators will be versatile employees, so they can operate all types of equipment.

17 RECOVERY METHODS

17.1 Processing Plant

The processing plant consists of a crushing area and a concentrator where material beneficiation and concentrate dewatering, screening, and packaging takes place.

The concentrator will produce a graphite concentrate containing 94% Cg and above from the run-of-mine material. The process flowsheet includes crushing, scrubbing and grinding, rougher flotation, polishing and cleaner flotation. The back-end of the concentrator includes tailings and concentrate thickening, concentrate filtration, and drying, dry screening and bagging, and material handling.

All the tailings from the concentrator will be thickened and pumped to the tailings pond. Substantial reclaim of the tailings pond water has been considered in the process design to minimise fresh water makeup to the concentrator.

17.1.1 Key Process Design Criteria

Graphite concentrate quality is measured with flake size and purity. The design of the processing plant will target minimizing the graphite flakes degradation and production of the high-grade graphite concentrate. All nominal throughput rates are based on the production of 50,000 dry metric tonnes of 94.23 %Cg concentrate. Average weight recovery of 3.7 % and average graphite overall recovery of 79.25 % is used for design. These figures are based on the applicable results of the test work completed to date. The design criteria will progress as the new test work data becomes available.

The crushing plant and the concentrator will operate 24 hours per day, seven (7) days per week, 52 weeks per year. The crushing plant will operate at 90 % as the mineral sizers selected for that duty have a run-time factor higher than 90 % as per the equipment supplier information. The concentrator run-time is 90 %, typical for graphite processing facility operations.

Concentrator feed throughput has been established at an average rate of 3,702 dry tonnes per day or a nominal throughput rate of 171.4 dry metric tonnes of material per hour. Table 17.1 summarizes the design basis for the processing plant.

Table 17.1 – Processing Plant Key Design Criteria

Parameter	Units	Value
Total Run-Of-Mine Processing Rate	Dry Tonnes Per Year	1,351,210
Crusher Run Time	Percentage	90
Nominal Crushing Rate	Dry Tonnes Per Hour	171.4
Concentrator Run Time	Percentage	90.0
Nominal Processing Rate	Dry Tonnes Per Hour	171.4
Graphite Concentrate Production Rate	Dry Tonnes Per Year	50,000
Final Graphite Concentrate Grade	Percentage	94.23
Overall Recovery	Percentage	79.25

17.1.2 Mass Balance and Water Balance

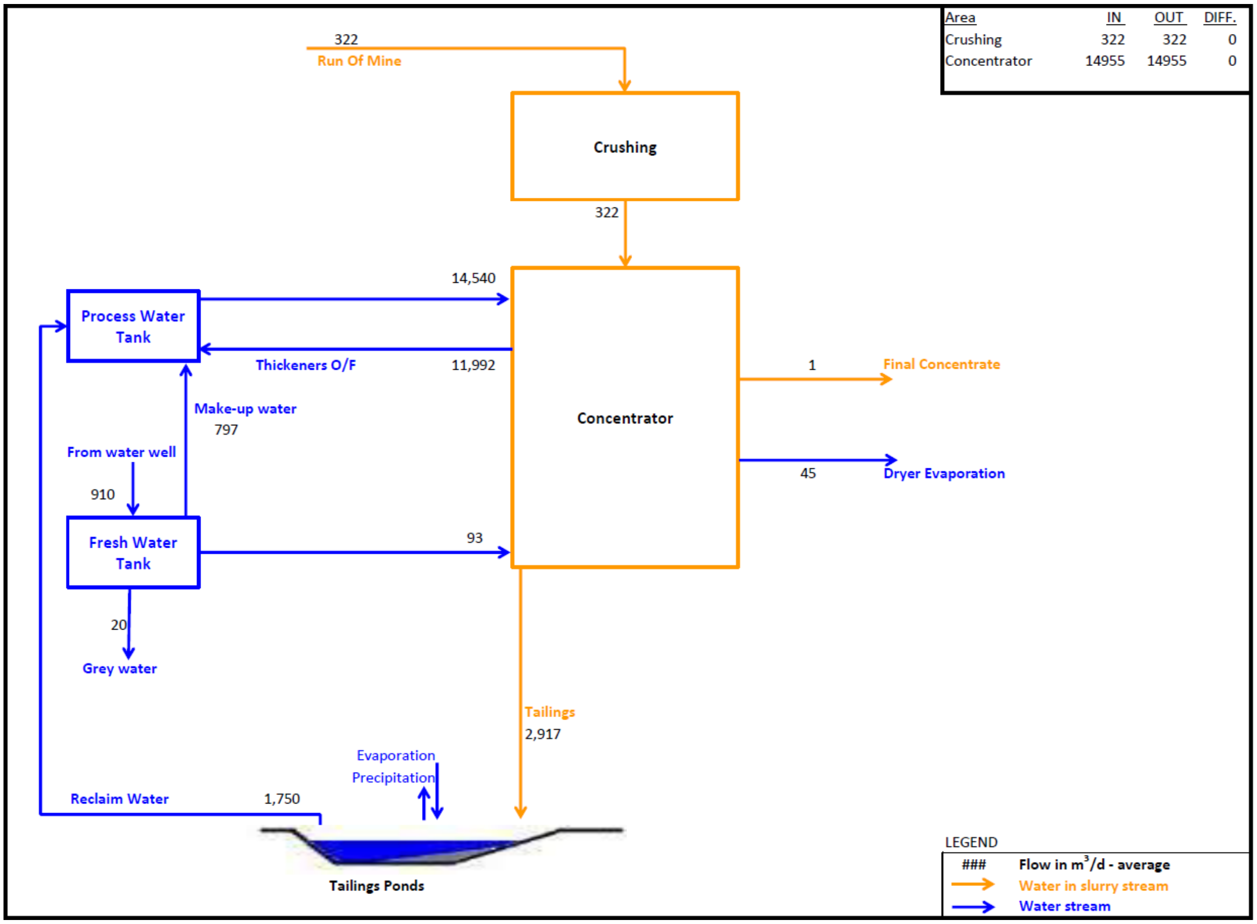
The process plant mass balance is summarized in Table 17.2, and is based on the key design criteria above and the process flow sheet as depicted in Figure 17.2. Throughput and flow rates in Table 17.2 are shown in metric tonnes per day (t/d) and cubic metres per day (m^3/d) where applicable.

Table 17.2 – Concentrator Mass Balance Summary

Mass Entering Concentrator				Mass Exiting Concentrator			
Streams	Dry Solids (t/d)	Water (m^3/d)	Total Mass (t/d)	Streams	Dry Solids (t/d)	Water (m^3/d)	Total Mass (t/d)
Material to Concentrator	3,702	322	4 024	Evaporation from dryer	—	45	45.0
Fresh Water	—	910	910	Grey water	—	20	20
Reclaim Water from Tailings Pond	—	1,750	1750	Tailings to Tailings pond	3565	2916	6481.0
				Final concentrate	137	0.7	137.7
Total Entering	**3 702**	**2 982**	**2 660**	**Total Exiting**	**3 702**	**2 982**	**6 684**

The water balance summary is shown in Figure 17.1. The tailings pond is not considered as part of the concentrator water system, and is only added for illustrative purposes.

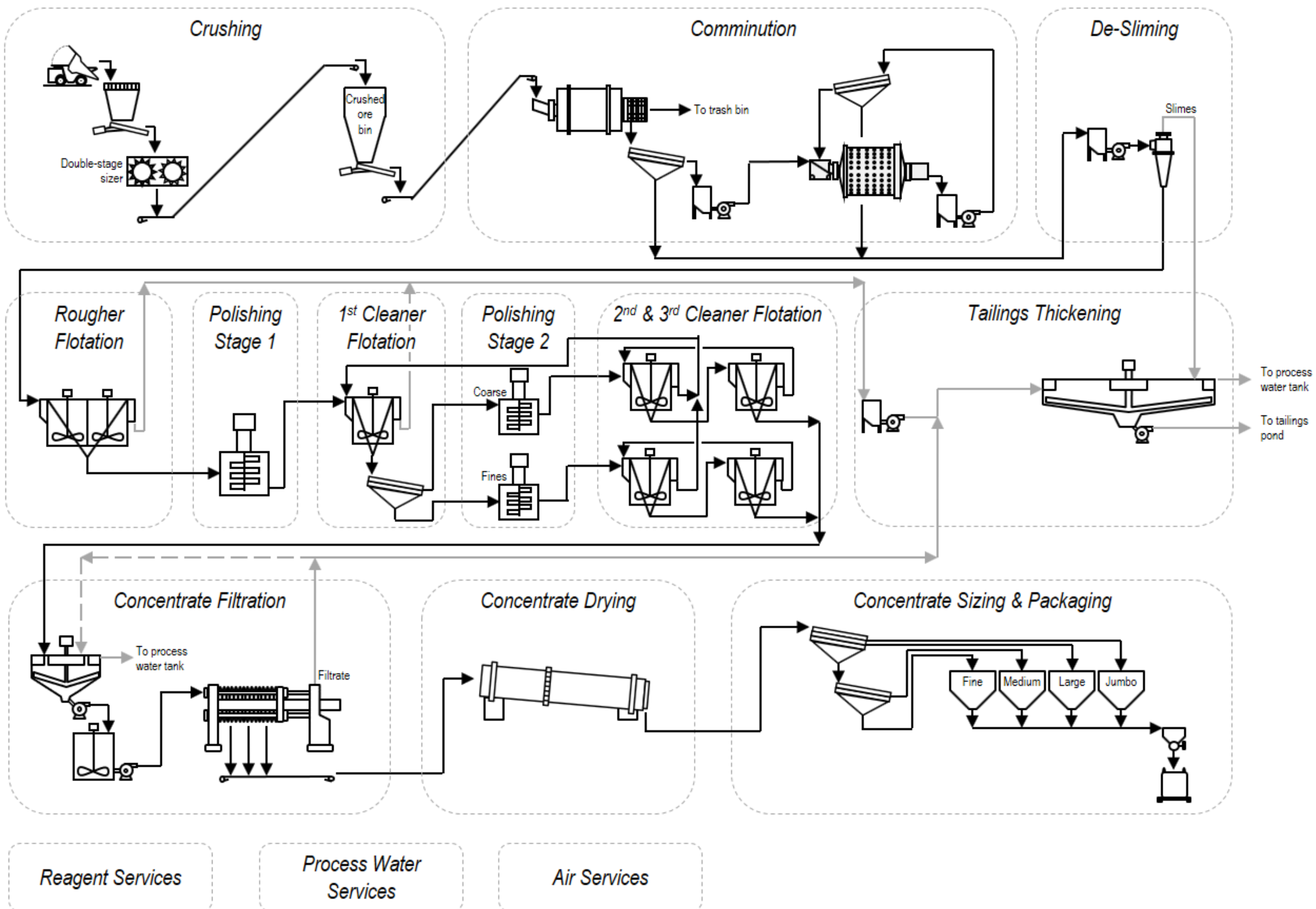
Figure 17.1 – Water Balance Summary



17.1.3 FLOW SHEET AND PROCESS DESCRIPTION

A simplified process flow sheet (Figure 17.2) summarizes process flow routings within the major circuits of the processing plant.

Figure 17.2 – Simplified Flow Sheet



The processing area includes the following major facilities:

- Crushing and crushed material storage that will provide material sizing and storage and feed to the downstream concentrator;
- A concentrator that will include scrubbing, grinding, conventional rougher flotation, polishing, and conventional cleaner flotation;
- A graphite concentrate dewatering area that will consist of thickening, filtering, and drying; this area will include a concentrate screening as per size specification and bagging as per customer's requirements;
- A tailings dewatering area that will consist of a tailings thickener.

The process description by area is described in the following sections.

17.1.4 Crushing and Storage

The Run of Mine (ROM) mineralized material will be dumped into a feed hopper by the mine trucks. A static grizzly on top of the hopper prevents the oversize lumps from feeding into the mineral sizers. A vibrating grizzly feeder feeds the < 600 mm top-size material to the primary mineral sizer, which crushes the material by means of the rotating toothed rolls that reduce the material lump size.

The crushed material from the primary mineral sizer is then fed to the secondary mineral sizer, which reduces the material size to -35 mm. The secondary crushed material is transported via belt conveyors to a bin. This bin has two (2) hours residence time. The crushed material is withdrawn by means of a vibrating feeder located under the bin. The vibrating feeder will discharge the material onto the belt conveyor feeding the drum scrubber in the concentrator.

17.1.5 Scrubbing, Grinding and De-Sliming

Rotary drum scrubbers work in an open circuit with a single-deck vibrating screen. The -1mm screen undersize material is directed to de-sliming circuit prior to rougher flotation. The +1mm oversize material is pumped to the ball mill circuit.

The ball mill operates in a closed circuit with a single-deck vibrating screen to produce a product passing 1mm which will be directed to de-sliming circuit prior to rougher flotation.

The -1 mm undersize material from the scrubber, and the ball mill screen undersize are pumped to a de-sliming cyclone to remove the fine slime particles reporting to the cyclone overflow. The de-slimed material in the cyclone underflow will flow to rougher flotation circuit for further upgrade. The cyclone overflow flows to the tailings thickener.

17.1.6 Rougher Flotation

The rougher flotation circuit recovers graphite flakes early in the process to maintain as much of the large flakes as possible and to minimize flake degradation. To aid the flotation process, the reagents used are diesel as a collector and methyl isobutyl carbinol (MIBC) as a frother. The rougher flotation circuit consists of a bank of four (4) conventional flotation cells of 11 m^3 each which provides sufficient flotation residence time. The rougher concentrate is expected to be approximately of 41% Cg grade. Rougher flotation tailings are pumped to tailings thickener as final tailings.

Rougher concentrate cleaning is completed in two (2) stages.

17.1.7 First Polishing Stage and First Cleaner Flotation

Rougher concentrate is fed to the first stage polishing mill, which uses ceramic media to scrub the graphite flake surfaces of the gangue minerals with a minimal size reduction. The polished rougher concentrate is then fed to the first cleaner flotation bank of four (4) conventional flotation cells, 11 m^3 each, which provides sufficient residence time for the cleaning. It is expected to upgrade the rougher concentrate up to 91.2% Cg. The first cleaner flotation tailings are pumped to tailings thickener as final tailings.

First cleaner concentrate is pumped to a sizing screen which splits it into the two (2) fractions: a screen oversize coarse fraction (+100 mesh) and a screen undersize fines (-100 mesh).

17.1.8 Second Stage Polishing, Second and Third Cleaner Flotation

Based on the knowledge of the graphite flotation circuits and applicable test work results available to date, it is understood presently that the split between the coarse (+100 mesh) and the fine (-100 mesh) fractions for the first cleaner flotation concentrate are expected to be at 50% / 50% weight ratio. After the screening, both the screen oversize (+100 mesh) and the undersize (-100 mesh) streams will be upgraded in the parallel polishing and cleaner flotation circuits, each dedicated to the respective size fraction. Each of the screen products will be polished through the second stage dedicated polishing mills to facilitate the graphite liberation. The solids in the polishing mill feed will be controlled with the polishing cyclones installed in open cycle with the mill.

The discharge of each second stage polishing mill is fed to second cleaners of the coarse and fines cleaner circuits, respectively. Second cleaner concentrates cleaned through the dedicated third cleaners.

The third cleaner concentrate of each circuit (combined grade of 94.2% Cg) is pumped to the concentrate thickener for dewatering. The tailings from the second cleaners are recirculated upstream to the first cleaner flotation, and the tails from the third cleaner are recirculated to the second cleaners.

The coarse and the fine second cleaner flotation is performed in the dedicated banks of four (4) conventional flotation cells of six (6) m^3 each. Similarly, the third cleaner flotation for the coarse and the fines is performed in the dedicated banks of four (4) conventional flotation cells of six (6) m^3 each.

17.1.9 Graphite Concentrate Thickening, Filtering and Drying

Graphite concentrates from third cleaner flotation banks are pumped to the concentrate thickener. The 27% w/w solids thickener underflow is pumped to the final graphite concentrate holding tank prior to being pumped to pressure filtration. The thickener overflow is sent to the process water tank for water recycling. The holding tank allows to de-couple the continuous operation of the thickener upstream from the pressure filtration downstream which is a batch process.

The concentrate filtration circuit consists of a vertical plate pressure filter, and produces a graphite product filter cake that contains 25% moisture. The concentrate cake is gravity discharged onto a conveyor and transported to the dryer via a hopper and a screw conveyor.

Concentrate is dried by means of a diesel-fired indirect rotary dryer, which reduces concentrate moisture content to 0.5% required for efficient dry screening and packaging.

17.1.10 Graphite Dry Screening and Packaging

Four (4) size fractions will be produced from the graphite concentrate as shown in Table 17.3.

Graphite concentrate is dry screened using double-deck vibrating screens. Top deck oversize (+48 mesh) is stored in the jumbo flake graphite bin. Bottom deck oversize (+80 mesh) is stored in the large flake graphite bin. Bottom deck undersize (-80 mesh) reports to single-deck vibrating screens which separate into two size fractions: +100 mesh oversize and -100 mesh undersize. The +100 mesh fraction is stored in the medium graphite bin whereas the -100 mesh is stored in the fine graphite bin.

Table 17.3 – Graphite Concentrate Breakdown by Size

Graphite Concentrate Size Fraction	Weight (%)	Annual Production (t)
+ 48 Mesh	20.2	10,100
– 48 + 80 Mesh	24.4	12,200
– 80 + 100 Mesh	7.9	3,950
– 100 Mesh	47.5	23,750

Packaging of the graphite concentrate will be performed in the graphite bagging circuit. Dry-screened graphite concentrate will be pneumatically conveyed from the size-dedicated bins to a semi-automatic bagging system. Concentrate will be loaded into bags suitable for up to 1,000 kg of cargo. All bags are weighed, put on a pallet, and stretch wrapped. Bags can be stored as needed in a storage area prior to being loaded for shipment.

17.1.11 Tailings Dewatering

A tailings thickener receives the feed from the following streams:

- Desliming cyclone overflow;
- Flotation final tailings; and
- Concentrate filter filtrate (providing for expected small quantity of fine solids that are worthless for sales).

These streams are combined in the thickener feed well where the flocculant is added to aid in the settling process. Thickener underflow is pumped to the tailings pond solids storage and water recovery. Thickener overflow is returned to the process water tank to be re-used in the plant.

17.2 Processing Plant - Utilities

17.2.1 Concentrator Water Services

The total plant water demand is based on the nominal water consumption.

17.2.1.1 Fresh Water

A nearby water well is being considered as a major fresh water source for the processing plant. The water will be pumped to a fresh water/fire water tank at a nominal rate of 910 m^3/d. Fresh water will be used as process makeup, gland seal water, for plant utility purposes (not for drinking), and for fire protection.

A gland water system includes a gland water tank and two (2) gland seal water pumps. The source is fresh water with a flow rate of 93 m^3/d.

Twenty (20) m^3/d of fresh water has been allocated for various plant utility purposes.

Fire water, sourced from the fresh water tank, will be distributed through the plant fire protection system by means of fire pumps and a dedicated fire water distribution network.

17.2.1.2 Process Water

Process water is recycled from the overflow of the concentrate thickener and the tailings thickener. The balance of the make-up water is reclaimed from the tailings pond to the process water tank at a nominal rate of 1,750 m^3/d. Fresh water makeup accounts for 797 m^3/d, and is received from the fresh water tank.

17.2.2 Compressed Air

17.2.2.1 High Pressure Air

The concentrator will include two (2) compressors (one (1) operating and one (1) standby) to supply plant air and instrument air of 650 kPa. The system will include a plant air receiver, an air dryer and an instrument air receiver.

The concentrate filtration circuit will have one (1) dedicated air compressor and an air receiver to supply 650 kPa air pressure.

The concentrate pneumatic conveying circuit will have one (1) dedicated air compressor rated for 650 kPa, an air receiver and an air dryer.

17.2.2.2 Low Pressure Air

Low pressure air for flotation will be produced by four (4) air blowers (two (2) operating and two (2) standby) to supply air at 30 kPa.

17.3 Conclusions and Recommendations

It is DRA/Met-Chem's opinion that the process design detailed above provides a sufficient basis for the development of the capital and operating cost estimates for the processing plant shown in Section 21.

However, certain work is recommended for the next stages of the project development:

- Optimization test work, including comminution, scrubbing, and flotation tests to produce sufficient data for the process design development; and
- Trade-off studies to the major process equipment selection, including technical performance, costs, and vendor project delivery experience, with regards to the schedule and aftermarket service capabilities within the region. These studies would reduce the possible technical and commercial risks for the project.

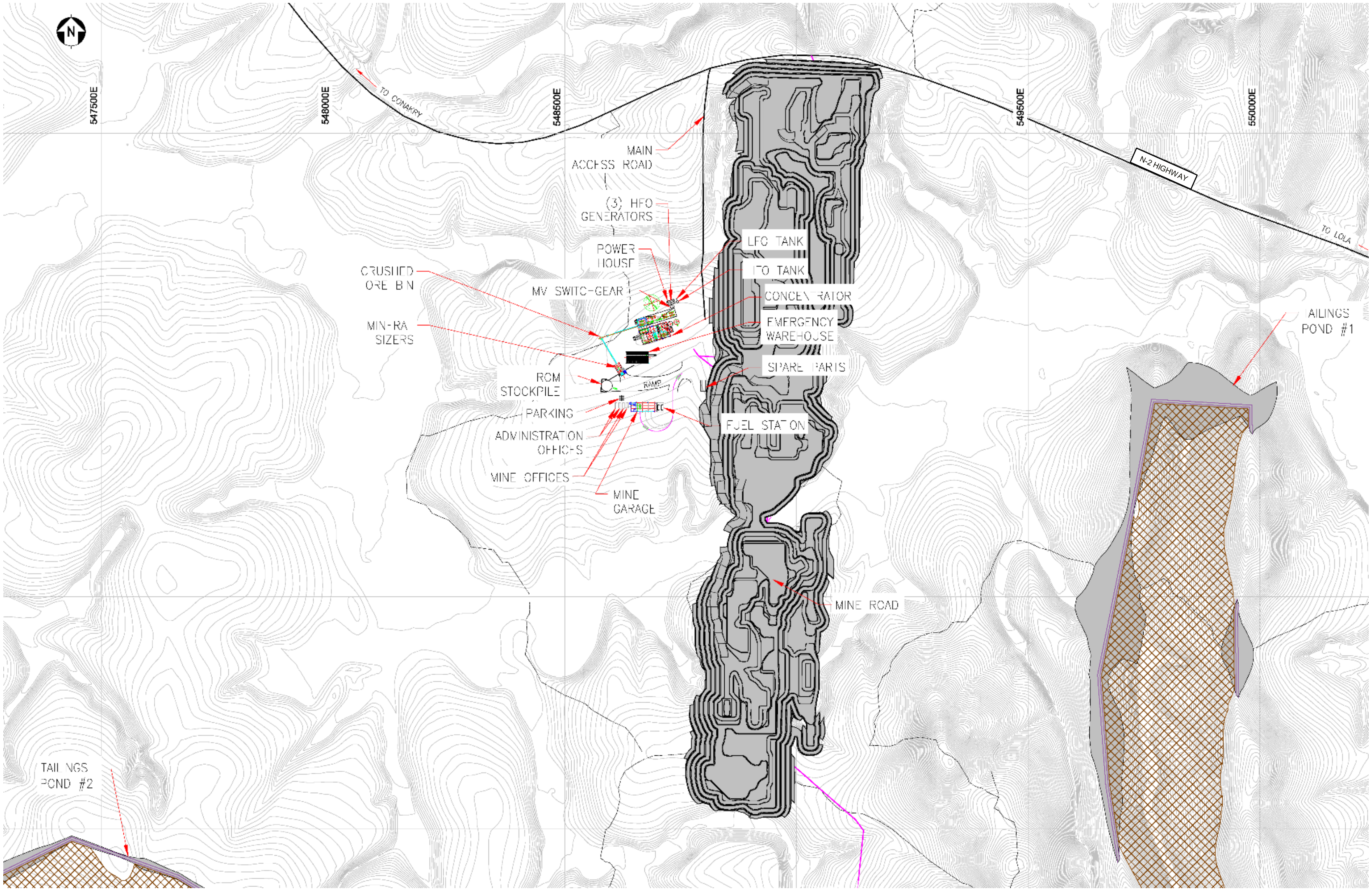
18 PROJECT INFRASTRUCTURE

This section summarizes infrastructure, buildings, other facilities and services that will be required for operations at the Lola site.

Location of infrastructure is based on a recent topographic survey performed by Effigis Geo-Solutions Inc. The survey measured data at 250 cm contours and was detailed enough to serve future studies for this project. Infrastructure has been placed on plateau sections of the terrain to minimize site preparation.

An overall general site layout and access are provided on Figure 18.1.

Figure 18.1 – General Site Layout



18.1 Roads

18.1.1 Main Access Road

The existing highway N2 connects the town of Lola to Conakry, the capital of Guinea. A new road off highway N2 will be developed to provide access into the site. This road will be 6 m wide and approximately 500 m long. Both highway N2 and the main access road are shown in Figure 18.1.

18.1.2 Site Roads

Site and service roads will be six (6) m wide, except for mine roads. They will provide access to:

- Process facility from the new road towards the main road;
- Administration offices, mine offices, mine garage;
- Emergency warehouse;
- Tailings storage facilities; and
- Power house.

18.1.3 Mine Roads

Provision for a network of 1.5 km of haulage roads has been made. Mine roads will be 15.5 m wide and will provide access to:

- ROM stockpiling area;
- Mineral sizers; and
- Mine garage.

18.2 Power Supply and Distribution

Power for the Lola Graphite Project will be supplied by three (3) heavy fuel oil Generator units located inside the power house. Each generator unit will be rated at 2,000 kWe / power factor (PF) = 0.8 / 6.6 kilovolts (kV) / 50 Hz.

The generator configuration will be two (2) generators in operation and one (1) on standby, for a total operating power of four (4) megawatts (MW) and total installed power of six (6) MW.

The total power demand is estimated at 3.3 MW, with three (3) MW for the process. The remaining 0.3 MW is necessary to cover requirements for electrical rooms (ER), mine garage, and lighting for the concentrator and related buildings, as well as for losses in transformers and feeders.

Provision has been made for two (2) ERs to feed the mineral sizer and concentrator areas. The power demand of the plant facilities will be fed at 0.4 kV from the main switchgear installed in the concentrator electrical room.

Pole lines will feed the administration and offices, mine garage, reclaim water pumping station, fueling station and the mine open pit.

18.3 Camp Site Accommodations

As the Lola site will be located adjacent to the town of Lola, no on-site accommodations have been planned. Lodging for expatriate and out-of-town employees will be provided through the rental of villas in the town of Lola.

18.4 Tailings Storage Facility

18.4.1 General

A PEA level assessment of tailings disposal requirements was performed. The assessment aimed to estimate the quantities of materials required for the construction of confinement dykes for the proposed tailings impoundment facility.

From the initial investigations and metallurgical results obtained, a single NAG tailings stream is anticipated. The design considers the transfer of free water from the tailings impoundment facility to the plant to be used in processing. Table 18.1 summarizes the process information used for design of the tailings storage facility.

Table 18.1 – Tailings Design Basis

	Units	
Life of Mine (LOM)	Year	16
Tailings tonnage per Year1[1]	t/y of dry solids	1.3 M
Tailings volume per year	m^3/y of slurry	1.5 M
Total tonnage	tonnes of dry solids	19.9 M

1 Excludes Year 16, as it is not a full year

Additional tailings and site characterization should be undertaken before a final selection is completed to confirm storage capacities and dam volume requirements.

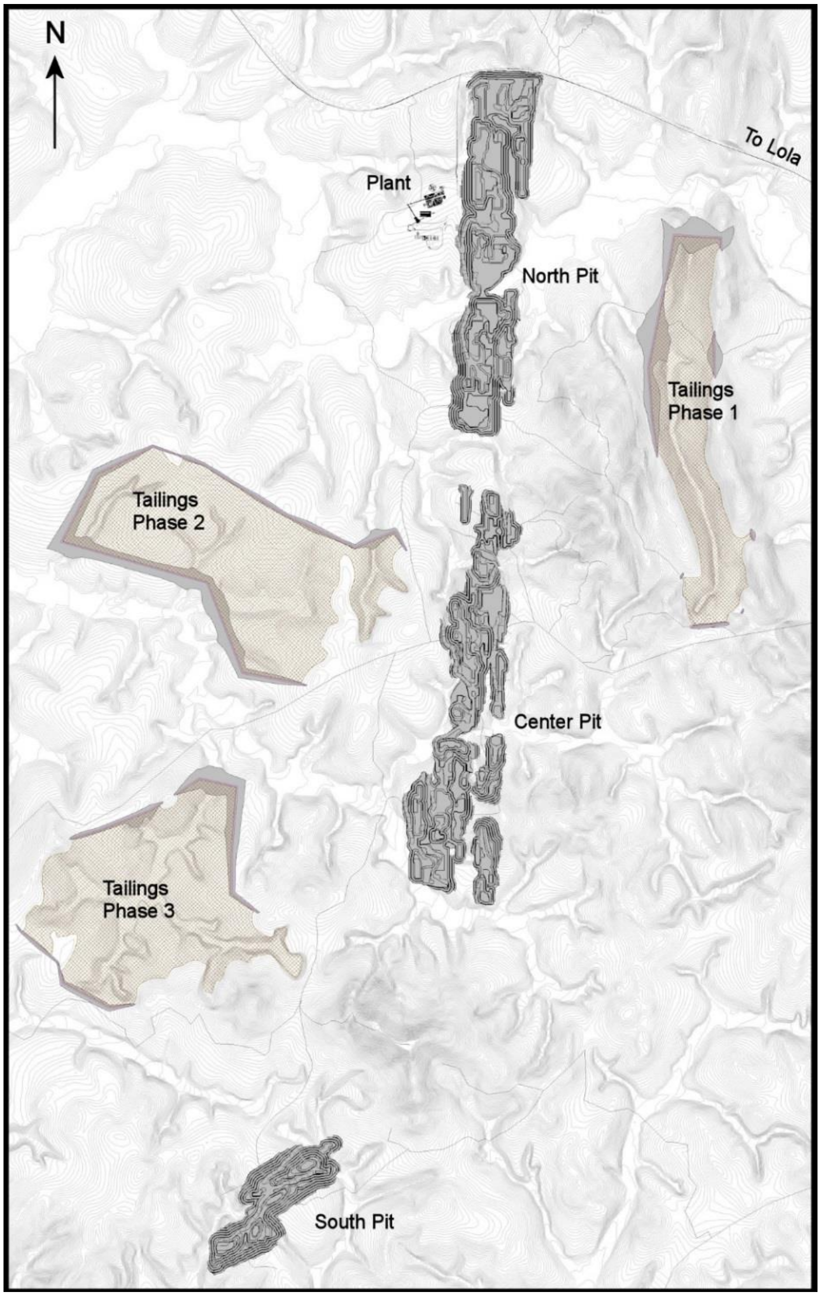
18.4.2 Tailings Storage Options

Various areas within the mining claims were examined to optimize the location of the tailings parks. The following criteria was used in selecting the locations: holding capacity of the location; minimization of the height of the various dykes and, hence, minimization of material quantities and costs; distance from the processing plant; and environmental conditions, such as water bodies.

18.4.3 SELECTED TAILINGS STORAGE FACILITIES

The tailings management plan developed uses three (3) tailings sites sequentially through the life of the project. Figure 18.2 shows the location of each of these facilities.

Figure 18.2 – Tailings Storage Facility



The storage capacity associated with each of the tailings storage facilities is summarized in Table 18.2.

Table 18.2 – Tailings Storage Capacity by Development Stage

Stage	Site	Tailings capacity (m^3)	Stage Capacity (Years)
Stage 1	East	6,570,200	4.4
Stage 2	North	7,348,400	4.9
Stage 3	South	9,235,800	6.2
Total		**23,154,400**	**15.4**

18.4.4 Water Volumes Estimate

Based on the water balance performed, the water volume pumped into the tailings ponds is expected to be 2,197 m³ per day at 55% solids. It is estimated that 1,750 m³ per day will be reclaimed and pumped back to the process water tank for use in the plant.

More detailed water balance estimates will be prepared during the Feasibility Study to include the impact of precipitation/evaporation and water released to the environment. These will be calculated on a per-month basis to account for variations in average monthly precipitation and evaporation, particularly during the rainy season of June to October.

18.5 Buildings

In addition to the concentrator building that will house the processing equipment, the site will include the following:

- Administration offices and mine offices;
- A mine garage to perform maintenance of mine mobile equipment;
- An emergency warehouse to store graphite concentrate; and
- A spare-parts warehouse.

18.6 Telecommunications

Communications services for the Lola Project site will include existing commercial in-country cell phone systems and data/internet communications.

18.7 Site Services

Provision has been made in the project for the following site services:

- Mine dewatering system and provision for pumping system towards plant;
- Fresh water intake system for the mill fresh water and fire protection water tank;
- Reclaim water system from the tailings storage facilities;
- Domestic water treatment;
- Sewage waste treatment; and
- Fuel storage and fueling station.

19 MARKET STUDIES AND CONTRACTS

The information contained in this section has been derived from several sources, including Benchmark Mineral Intelligence reports and IMFormed website.

At this early stage, no independent analysis of the market for graphite concentrate has been conducted for the Lola Project. Similarly, no sales contract has been secured. As the project moves on to Feasibility Study, an independent market study is expected to be carried out.

19.1 Graphite Market

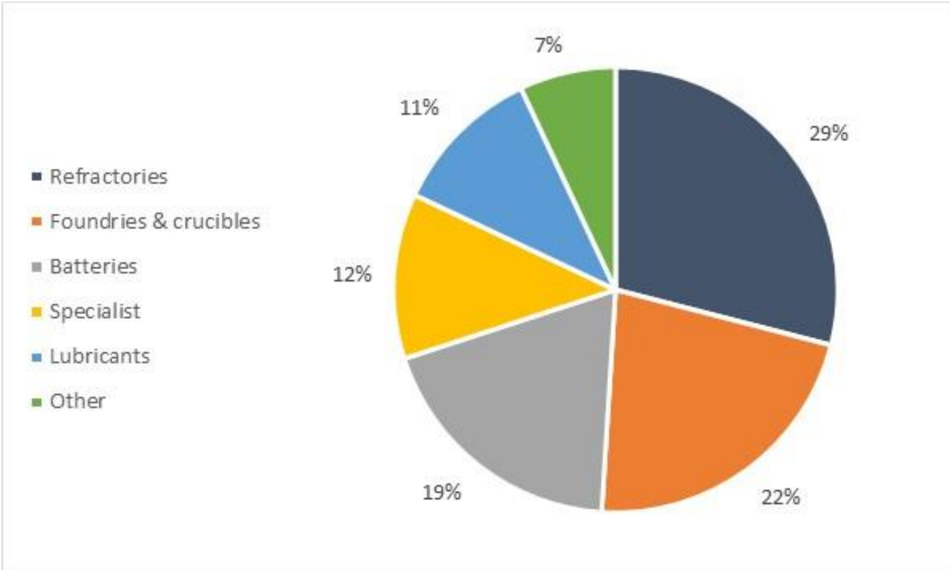
19.1.1 Graphite Demand

Graphite is one of the main natural forms of carbon, which include coke, coal, and diamond. In addition, graphite can be manufactured synthetically from lower-purity, carbon-bearing raw materials. Graphite's chemical and physical properties, such as chemical inertness, thermal stability, electrical conductivity, and lubricity, make it suitable to a number of applications, ranging from electronics to steelmaking.

Figure 19.1 illustrates a breakdown of the graphite market by application. Principal end-uses of graphite are:

- Refractories (high temperature bricks and linings used in manufacturing);
- Steelmaking (as a recarburizer);
- Foundries;
- Lubricants;
- Parts and components (brake linings and brake shoes); and
- Batteries.

Figure 19.1 – Natural Graphite Market Consumption (2015) [4]



The emergence of the electric vehicles industry has contributed to an increase in demand for graphite in battery applications. Between 2012 and 2015, the batteries segment grew from 9 % to 12 %, and it is expected to grow from 80 ktpa in 2015 to 250 ktpa by the end of 2020. Recent news, such as China's New Electric Vehicle ("NEV") and Tesla's production achievements, is likely to encourage demand growth for flake graphite.

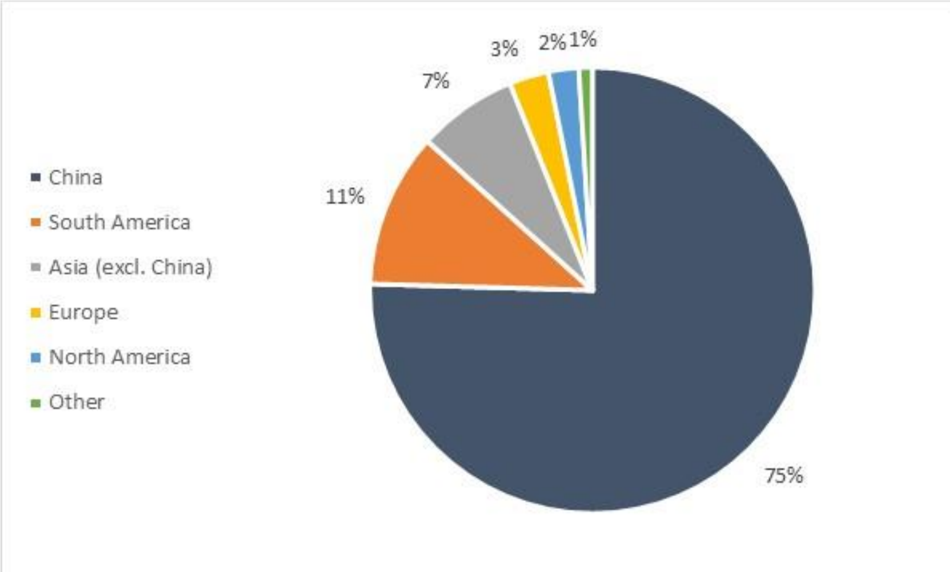
19.1.2 GRAPHITE SUPPLY

Natural graphite is produced in three (3) forms: amorphous (60-85 % Cg), flake (> 85 % Cg), and vein (> 90 % Cg). In 2012, worldwide natural graphite production was 1.1 Mt, of which amorphous represented 44 %, flake 55 %, and vein 1%.

Globally, natural graphite production is dominated by China. In 2012, China accounted for 75 % of the total world output (Figure 19.2)

[4] Source: www.imformed.com

Figure 19.2 – World Production of Natural Graphite (2012) [5]



Future forecasts of supply from China are uncertain. Some producers are ramping up operations following the lift of environmental restrictions in some provinces. Others may be shutting down or curtailing operations as a result of production restrictions and increased operating costs.

In addition, new operations are emerging in Africa, notably in Madagascar, Namibia, and Mozambique.

19.2 Graphite Prices

Lola's graphite concentrate selling price was determined based on pricing information from Benchmark Mineral Intelligence, as well as comparable concentrates pricing. The graphite concentrate sale price used in this study was established at $1,328 US/tonne.

This price was estimated taking into account the purity and size fractions obtained during the metallurgical test work campaign detailed in Section 13 of this Report. The concentrate price was calculated as the weighted average of the sale price of each size fraction. Table 19.1 summarizes the Lola's graphite concentrate pricing per size fraction.

5 Graph derived from Industrial Minerals data (www.indmin.com)

Table 19.1 – Graphite Concentrate Pricing per Size Fraction for Lola Project

Size Fraction	Weight (%)	Purity (% Cg)	Price (USD/tonne)
+50 mesh	20	94-95	2,225
+80 mesh	24	94-95	1,475
+100 mesh	8	94-95	1,150
- 100 mesh	48	94-95	900
Weighted Average	**100**	**94-95**	**1,328**

19.3 Contracts

No contracts have been established to date by SRG Graphite. The Company has not hedged, nor committed any of its production pursuant to an off-take agreement.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

As part of the environmental approval process in Guinea, in 2017, SRG started the Environmental and Social Impact Assessment (“**ESIA**”) for the development of the Lola Graphite Project. SRG mandated a West African environmental consultant firm, SIMPA, based in Côte d’Ivoire, to carry out the ESIA Study and to provide assistance in the environmental approval process. SIMPA is assisted by GES, a Guinean environmental consultant.

This Section highlights available information for the study area and data collected by SIMPA for the Project. Detailed reports used include: SIMPA-July 2017. « *Termes de référence de l’étude d’impact environnemental et social du projet exploitation de graphite* »; GES/SIMPA, March 2017 « R*apport de la consultation publique pour l’étude de cadrage et des termes de référence du projet d’exploitation du graphite par Sama Resources Guinee à Lola »;* and SIMPA-November 2017. *« Rapport provisoire de l’étude de l’état initial socio-économique, projet d’exploitation du graphite de Lola »*. Additionally, some preliminary data collected in the course of the ongoing biophysical baseline surveys were also presented in this Report.

DRA/Met-Chem has performed a review of existing information and local consultant’s reports, and prepared a summary of relevant environmental and social issues, which is presented in the current Section.

20.1 Preliminary Environmental Assessment

The ESIA process in Guinea requires the completion of a preliminary EA to determine, early in the project, the main environmental and social components to examine in the site location. The preliminary EA was performed by SIMPA in 2017.

The environmental approval process in Guinea also includes two (2) distinct consultation cycles. The first cycle was performed in 2017 during the site visit carried out during the preliminary EA to introduce the promotor to the main stakeholders and local communities, as well as to share information and concerns. The second cycle was held the same year during the first part of the socio-economic surveys.

The first and second consultation cycles were carried out by SIMPA and GES, with the assistance of representatives from the *Bureau Guinéen d’Étude et Évaluation Environnementale* (**BGEEE**), the governmental agency in charge of reviewing environmental impact assessment (EIA) studies. Preliminary observations and surveys were carried out at the Project site regarding some environmental and social components for a first assessment of the potential impacts associated with the Project.

It is important to mention that the welcome reserved for the field team by local authorities and technical services, as well as by local communities, was very good once the purpose of the visit was explained. The methodology and main findings of the consultation cycles are described in the following Sections.

20.1.1 Scoping Survey and Public Consultations

20.1.1.1 First Consultation Cycle

SRG, SIMPA, and GES met with various national authorities in Conakry on March 10th, 2017. The BGEEE introduced to SRG, SIMPA and GES several representatives of various services of the *Ministère des Mines et de la Géologie (CPDEM, Direction Nationale des Mines, Direction Nationale de la Géologie, etc*.) and the *Ministère de l'Environnement et des Eaux et Forêts*. The purpose of these consultations was to meet potential national-level stakeholders, and to inform them about the existing Project and its main components.

a. Prefectoral Level Institutional Consultations

A first visit of the Project area was organized by SRG following the discussions with national authorities in Conakry. The site visit of the Project area was undertaken between March 11th and March 17th, 2017. SRG was accompanied on by two (2) representatives from the BGEEE, one (1) from SIMPA and two (2) from GES.

First, the field team stopped in Lola in order to meet the main stakeholders of the Project area. On March 13th, 2017, the team met Mr. Fangama Dore, Director of the Environmental, Water and Forest Prefectoral of Lola District. Mr. Dore accompanied the field team during the site visit of the Project area, and met with the prefecture administrative authorities and elected representatives of the Urban District (*Commune Urbaine* "**CU**") to discuss the purpose of the field visit.

On March 14th, 2017, a meeting was held with most of the technical services representatives and local elected representatives of the Lola Prefecture. A second meeting was held on March 15th, but this time only with few representatives of the technical services.

Some information on the Project and objectives of the preliminary EA were presented by SIMPA and the BGEEE representatives during the meetings. More specifically, discussions were about the scoping and baseline studies, potential impacts, environmental and social management plans, and the closure plan. Concerns, comments, and suggestions from the stakeholders were noted to be integrated in the ESIA's Terms of Reference ("**ToR**").

b. Public Consultations

Public consultations were carried out from March 14th to March 16th, 2017, according to the schedule prepared by the team in collaboration with the Presidents of the *Conseils de Quartier* and the Presidents of the *Conseils de District*. Table 20.1 lists the consultation plan followed during the first consultation cycle.

Table 20.1 – Consultation Plan

Urban District (CU)	District	Attached District
Lola	Flayapo (14/03/2017)	Balémoupour (16/03/2017)
	Manghan-Mo (14/03/2017)	Gama Konikoni (16/03/2017)
	Tighen-Mo1 (14/03/2017)	Gama Yalé (16/03/2017)
	Tighen-Mo2 (14/03/2017)	Tokpanata (Méata) (16/03/2017)
	Woroyapo (15/03/2017)	-
	Tiéta (15/03/2017)	-

Each meeting was presided over by the District/Attached District President or his representative. All district inhabitants were invited to the meetings. Attendance and comments from women and young people were particularly welcomed. Each consultation session lasted about two (2) hours.

The first consultation cycle targeted all districts and attached districts that will be potentially affected by the Project. The consultation process will continue during the ESIA Study. It may include targeted consultations on distinct issues or meetings with authorities concerned with some specific issues.

Figure 20.1 – Public Consultations in Some Districts Visited During the Site Visit

Flayapo (CU)

Balémou

Gama Konikoni

Gama Yalé

Tokpanata

Tingha-Mo 2

20.1.1.2 Main Findings

The meetings with institutional representatives have aimed to inform the attendees about the Project and the beginning of the ESIA, to gather the opinions and concerns of the attendees, and to identify and collect existing sources of information.

Questions that followed the meetings were mainly related to property compensations, young people employment in Lola, and rehabilitation of basic infrastructure. The people and managers of the technical services of the prefecture of Lola have expressed their consent for the implementation of the Project in their locality.

The public consultation process has allowed the identification of the people directly concerned by the Project in regard to the limits of the previous exploration permit for nickel, and the limits of the new exploration permit for graphite and current exploration activities. During the process, local communities were informed on the importance and use of graphite, for instance in steel, paint, pencils, etc.

Overall, the communities' concerns expressed during the first consultation cycle were regarding:

- The nature and process for compensation of private properties located within the limits of the mineral deposit area;
- SRG's hiring process during the various stages of the Project; and
- The involvement of local elected representatives during the exploration work in the study area.

Local communities also wished:

- That several jobs would be allocated in priority to young people from the Lola area;
- Construction/rehabilitation, and supply of new equipment for local infrastructure (school, health center, wells, etc.);
- Laying out of new trails and access roads; and
- Transparency in the compensation process.

20.1.1.3 *Reporting*

Lastly, a scoping report was prepared by SIMPA following the site visit. The report includes a description of the site visit, main results, and some recommendations.

Then, SIMPA prepared the ToR document proposed for the ESIA Study, and submitted it for approval to the Guinean Ministry of Environment. The ToR described the nature of the data to be collected during the ESIA Study in order to assess the potential environmental and social impacts and propose relevant mitigation measures.

20.1.2 SECOND CONSULTATION CYCLE

The continuation of the public consultation process included the second consultation cycle and a public inquiry to be held by the BGEEE.

The second consultation cycle followed the first cycle the same year. It was held from July 23rd to August 3rd, 2017, together with the first part of the socio-economic survey. Another round of consultation was held from May 31st to June 14th, 2018, to complete the socio-economic survey. Details and results of the second consultation cycle will be included in the preliminary ESIA Study report.

A public inquiry will be organised in Lola by the BGEEE following the submission of the preliminary ESIA Study Report in September 2018. The results of the two consultation cycles, baseline, and impacts assessment will be presented during the public inquiry, along with a project description, proposed mitigation measures and a site closure plan. BGEEE has prepared distinct survey forms to allow concerned stakeholders and communities potentially affected by the Project, to express their comments on the potential impact and mitigation measures included in the ESIA Study Report. These comments will be compiled in a report that will be added to the preliminary ESIA report to form the final ESIA Study Report.

The final ESIA Study Report will thenbe presented to the members of the *Comité Technique d'Analyse Environnementale* ("**CTAE**") during the approval hearing and stage of the environmental and social permitting process.

20.2 Environmental and Social Baseline Studies

20.2.1 STUDY AREA

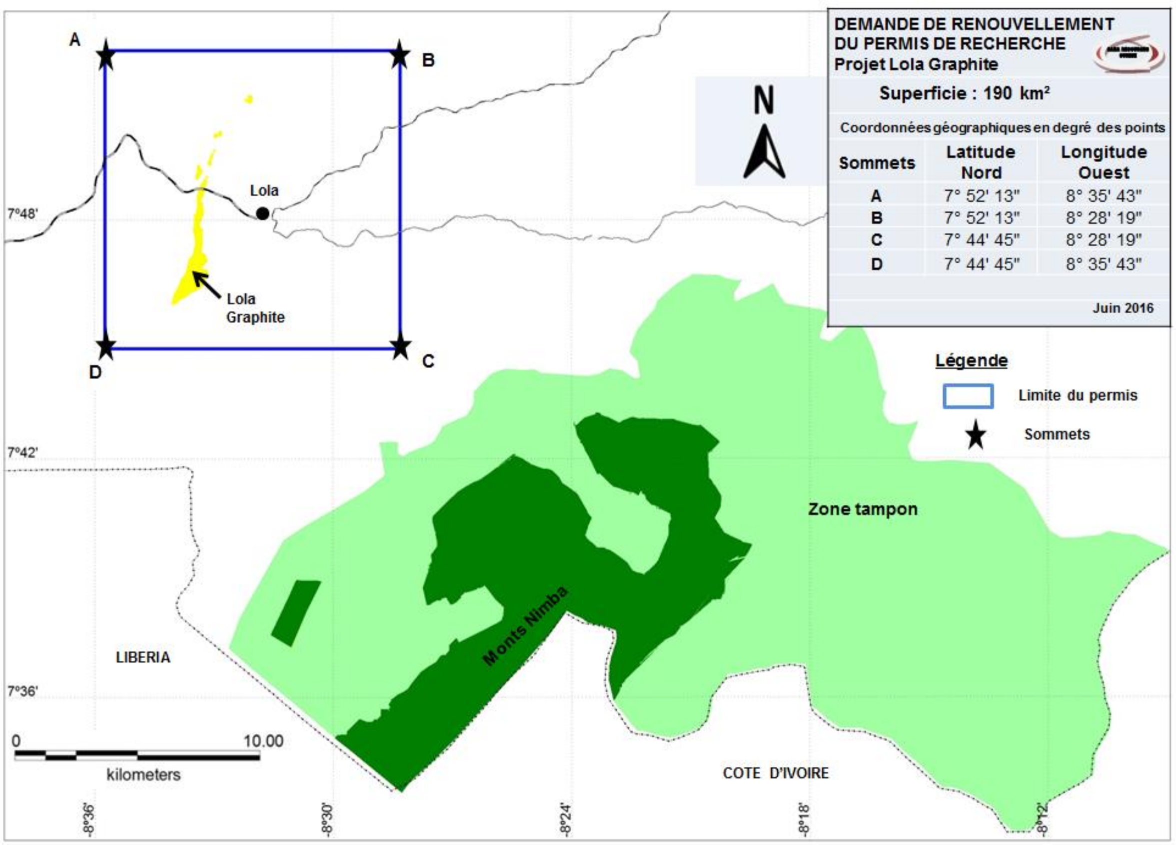
For the purpose of the ESIA Study, the Project area has been divided into three (3) study areas:

First, there is a zone of direct influence in which are examined the biophysical components. This zone is in the northern suburbs of the Lola CU (periphery of five (5) districts), and covers a nine (9) km long by one (1) km wide area. The limits of the zone were set as the limits of the Project intervention zone and according to a preliminary assessment, the biophysical environment of the periphery of the five (5) districts will be the most disturbed by mining activities.

Secondly, the socio-economic components are examined in the zone of diffuse influence. The limits of the zone were set according to the sociological relationship between the communities and indirect activities of ore exploitation. For instance, it consists of the area where mining activities can influence significantly socio-economic activities (population displacement, transport, trade, breeding, agriculture, etc.) and local development of the CU.

Lastly, beyond the zones of direct and diffuse influence, the prefecture and the governorate of N'Zérekoré, and by extension all Guinea, are considered as a zone of indirect influence because of the economic benefits that the Project could generate. This zone, which concerns the Lola Prefecture, particularly the Lola CU and the districts of Balemou, Meata, and Gama Yalé, has been set to a radius of ten (10) km. All the localities visited are permanent and their characteristics have been examined based on the information gathered during the field surveys and the results of desktop study. Figure 20.2 presents the location of the Lola Graphite Project.

Figure 20.2 – Location of the Lola Graphite Project



20.2.2 Environmental Baseline Studies

20.2.2.1 Summary of Environmental Baseline Studies

Currently, some information is available on the physical and biological environments in the Project area. However, it should be noted that environmental baseline studies to collect the missing data are ongoing at the mine site.

Baseline environmental studies at the Project site began in October 2017 and will be completed in 2018. Desktop studies and field surveys have been carried out to collect data on climate, hydrology, hydrogeology, aquatic and terrestrial fauna and flora, surface water and groundwater quality, air quality, and noise.

Table 20.2 shows the status of the studies and surveys completed, ongoing, and planned to collect baseline data for each environmental component.

Table 20.2 – Environmental Baseline Studies

Environmental Component	Status
Climate	Completed, 2017
Soils	Completed, 2017
Hydrology	Completed, October 2017
Hydrogeology	Ongoing (Summer 2018)
Aquatic Habitats	Completed, November 2017
Terrestrial Habitats	Completed, November 2017
Surface Water Quality	Completed, February and June 2018
Groundwater Quality	Completed, February and June 2018
Air Quality	Completed, February and June 2018
Noise	Completed, February 2018

The compilation and interpretation of the biophysical data is still underway, and will be completed during the ESIA Study. Preliminary findings are presented in the following paragraphs.

20.2.2.2 Physical Environment

a. Physiography

The Project area is located in the Guinea Forest Region in the southeastern part of the country. Two-thirds of the Guinean territory is mountainous and benefits from abundant and regular rainfall. These conditions have deeply influenced the hydrographic network, the soils and the vegetation cover.

The Guinean Ridge entirely dominates the terrain of the Guinea Forest Region, on which are juxtaposed mountain ranges with often steep slopes, plateaus, piedmont plains, lowlands and floodplain valleys. The topography in the Lola area presents elevations in the range of 400 to 600 m, and culminates at 1,752 m in the Nimba (Lola) mountains.

The southeastern region is characterized by mountains with valleys giving rise to streams that flow unevenly in depressions along lowlands. This system is fed by seasonal streams and runoff from the slopes. Plateaus, plains, and lowlands characterize the Lola area, notably the Project area.

b. Climate

The Project area is located under Guineo-Soudanien climatic conditions at the transition zone between the tropical forest area and the northern savannah, where grassy woodland and occasional dry scrub are predominant.

The *Direction Nationale de la Météorologie* of Guinea manages a meteorological database available for consultation. Data from two weather stations were examined for the purpose of this Project. The N'zérékoré Weather Station, located 40 km from the Project site, has the longest time series of data (1961-2015), and was examined for long-term processes. The Lola Weather Station, located a few kilometres from the Project site, has of a shorter time series of data (1979-2009), and was used to describe climatic conditions at the site.

The Project area has distinct rainy and dry seasons. Typically, the dry season extends from November to February, while the wet season covers the period from March to October. Annual rainfall in the Lola area varies between 1,416 and 2,108 mm, with an average of 1,773 mm. The average daily temperature is relatively high and constant, and is about 25 °C. Relative humidity ranges between 70 and 80%.

Two (2) types of prevailing winds influence the climate in the Project area: the monsoon and the harmattan. Observations at the Lola Station suggest that the wind has a dominant northeast – southwest component.

The analysis of the long-term time series suggests a trend; that is, that rainfall rate is decreasing, and average air temperature is increasing, over time.

c. Soils

From a morphopedological point of view, the different types of soil encountered in the Project Area are as follows:

- Soils on large and small hills summits;
- Soils in lowland margins;
- Alluvial plain and floodplain soils; and
- Lowland soils.

The soils in the hills and lowland margins belong to the ferralitic soils or ferrasols class in the United Nations Food and Agriculture Organization (FAO) classification system. Additionally, ferruginous soils and brown forest soils occur depending on the degree of ferralitization and the importance of the vegetation cover.

The soils from alluvial plains and floodplains are poorly developed, and are classified as lithosols (FAO).

d. Hydrology

Guinea, with its enormous hydrologic potential, is known as "the water tower of West Africa." Although there are regional disparities in the regularity of rivers, the Guinean hydrographic network is particularly dense and mainly made up of numerous torrential streams. The network is more developed in the south of the country.

In the Project area, there is a dense hydraulic network associated to the Mano River watershed, which has its source in the Nimba Mountains. The Mano River (also referred as Mani River) has a length of 157 km and a basin with an area of 2,506 km^2. The Mano River has a regional importance because it is shared between Liberia, Sierra-Leone, and Guinea.

The Mano River has two (2) major tributaries in the Project area. First, the Tighen River flows from its source located in Mount Zima, east of the Project site, through the Lola CU and SRG's property, before reaching the Mano River. Several streams have their sources (Yeklöya, Handiya, Gniyanya, Töoya, and Haraya) in the mineral deposit plateau, and are feeding small tributaries of the Tighen River.

Secondly, the Hoinya (Konon) or Feinyii (Mano) River, which has its source in the southeast of the Lola CU, flows over a distance of 5 km, crossing south of the proposed mining area, and discharging into the Mano River. It only has a few tributaries, and the most important are the Kereparaya and the Bepaya, which take their sources at block 1 of the Lola deposit.

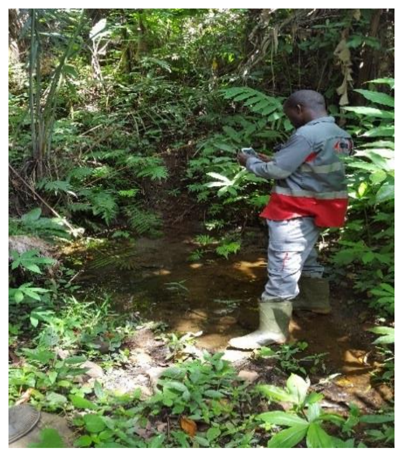
Figure 20.3 presents hydrogeological features in the Project area.

Figure 20.3 – Some Hydrological Features in the Project Area

1. Tighen stream that crosses the deposit and flows from the site to the Mano River.

2. “Bas-fonds” crossed by the Tiéta stream.

3. Kpaya Spring (seasonal).



4. Haraya Spring (perennial).

e. Hydrogeology

Groundwater resources in southern Guinea are mainly associated with metamorphic and igneous rocks from the Precambrian basement. Typically, these rocks form poor aquifers with low hydraulic properties, mainly associated with the density and connectivity of the fracture network. The lateritic crust developed at the bedrock surface and alluvial deposits along streambeds also contain groundwater in various quantities. Nevertheless, groundwater resources are predominantly exploited in fractured bedrock aquifers.

In the Lola area, three (3) main aquifer types have been identified:

- Alluvial aquifers: These aquifers consist of the granular material within river sediments and lowlands. Typically, groundwater depths from the land surface are in the range of 50 cm to 1 m during the rainy season, and in the range of 3 to 5 m during the dry season. Recharge is seasonal and strongly influenced by the level of the river nearby. Alluvial aquifers are vulnerable, and are often exposed to polluting activities.

- Water-table aquifers: This type of aquifer consists of the saturated zone in the ground, where the water pressure head at the upper surface is equal to the atmospheric pressure. The saturated zone includes the pores and fractures in the ground filled with water. Typically, the groundwater level is about 8 m deep during the rainy season and between 13 and 15 m deep during the dry season. Recharge depends on the quantity of water infiltrating from the land surface and reaching the water table.
- Confined aquifers: These aquifers lie between two layers of impervious terrain. They are considered confined aquifers, as they are isolated from the ground surface by an impermeable geological formation. In the Project area, the depth of these layers varies between 50 and 80 m, and even greater in the bedrock.
- Several wells and boreholes have been reported in the vicinity of the mining site. Their characteristics have been established over the course of a hydrocensus performed in the fall of 2017.

Traditional wells and improved traditional wells have been dug by hand down to the water table. Typically, the depth of these wells varies between 13 and 16 m from the land surface, and the water level often drops significantly during the dry season. However, the wells do not dry up. The water from these wells is primarily intended for household activities (washing cloths and others). Several water boreholes have been drilled for water supply (drinking and cooking). Drilling depths in the project area range from 50 to 80 m, and exhibit yields in the order of 3 to 5 m^3/h.

Figure 20.4 illustrates a traditional well and a modern borehole.

Figure 20.4 – Examples of Traditional Well and Modern Borehole

Traditional well, Tighen-mo 1

Modern borehole, Tighen-mo 2

20.2.2.3 Biological Environment

As previously indicated, the Project area is in the Forest Guinean Region. The Region owes its name to the humid forest that covers most of its territory. The forest has been progressively destroyed over time due to anthropic activities, and mainly remains in the form of islets on mountain tops (Nimba, Ziama) and along streams.

a. Vegetation

The vegetation covered in the Project area is characterized by mountain vegetation and forest galleries along the rivers. It is very dense, and includes several types of vegetation: primary dense forests, secondary forests, mesophilic forests, thickets, and fallows.

Dense and moist forest promotes the formation and conservation of relatively thick soils, but it is very sensitive to erosion due to the relief. The region is the domain of food crops and industrial crops (coffee, tea, cocoa, palm oil, rubber, etc.). Furthermore, the forest is a privileged zone for the exploitation of wood. No classified protected or community forest was identified in the Project area. Figure 20.5 shows examples of the typical vegetation found in the deposit area.

Figure 20.5 – Type of Vegetation Cover in the Project Area

Forest Galleries in the Project Site Area

Forest islets

Shrub savanna

Field surveys were performed in October and November 2017 to identify the typical vegetation encountered in the Project site area. The plant species observed in the Project area are of the forest gallery, grassland and shrub savanna types, with scattered trees areas and fallows.

Field surveys were performed in October and November 2017 to identify the typical vegetation encountered in the Project site area. The plant species observed in the Project area are of the forest gallery, grassland, and shrub savannah types, with scattered trees areas and fallows.

- Forest galleries: They are found as narrow bands along streams, and cover a relatively small area. Typically, they present a diversified range of species, which in some places testify to the type of primary forests that have existed in the area. The most abundant species are: *Elaeis guineensis, Ceiba pentandra, Pseudospondias microcarpa, Sterculia tragacantha, Cola cordifolia, lianas*, and herbaceous plants. The forest galleries, which are sensitive to human activities, are refuges for animals, and tend to disappear.
- Grassland savannah: This vegetation type is dominant in the mining area. It is characterized by an important grass cover composed of a continuous carpet of tall grass. The main species are: *Andropogon sp, Hyparrhenia sp,* and *Pennisetum purpurum*. Some shrubs are observed in the area, but in low density. Grassland savannah is subject to recurrent bush fires.
- Shrub savannah: This type of vegetation consists of shrubs with an average height smaller than 10 m. It is distinguished from the grassland savannah by the size and the density of its species. It is characterized by a continuous herbaceous cover scattered with shrubs. The shrub species are from the *Combretaceae, Moraceae* and *Mimosaceae* families.
- Scattered tree areas: These areas consist of isolated forest islets that scatter the savannas. They contain a rich and diversified flora, and provide refuge for wildlife. The

dominant species are: *Terminalia superba, Terminalia ivoirensis, Milicia excelsa, Parkia bicolor,* and *Albizia sp*.

- Fallows: They are found everywhere in the mining concession. They consist of remaining plots of culture left for regeneration. The vegetation cover is abundant and diversified, characterized by a mixture of various herbaceous and shrub species. The dominant species are: *Dichrostachys glomerata, Bridelia sp,* and *Chromoela odorata*.

Several water plant species were identified in stream and pond beds. They are: *Imperata cylindrica, Maranthoclea cuspidata, Cymbopogon simplex, Nymphea sp, Commelina bipendens, Floscopa axillaris*, and *Cyperus rotondus*. However, it was observed that aquatic plants in smaller streams were less diversified.

Thus, 87 plant species have been identified during the surveys in the Project area. *Terminalia glaucescens, Terminalia superba, Musanga cecropioides*, and *Elaeis guineensis* are among the most common plant species inventoried in the Project site. One species, *Melicia excels*, is listed as vulnerable in the IUCN Red List (International Union for the Conservation of Nature). Species that are listed as threatened (National Monograph of Guinea Biodiversity) are: *Afromomum melegeta, Melicia excelsa, Khaya ivorensis, Mytragina stipulosa, Paullina pinata, Spondias monbin, Terminalia ivorensis, Terminalia superba*, and *Triplocyton scleroxylon*. All these species were identified in the forest galleries and forest islets. Of the endangered forest species, some have special protection under the Forest Code (art. 78), but can be cut with an authorization from the forest service.

b. Wildlife

The intensity of anthropic activities in the Project area (agriculture, opening of trails, and mining exploration) contributed to the displacement of wildlife. Historically, hunting was regularly practiced, but its intensity is decreasing now due to the scarcity of the game. However, various animals are still encountered in the area.

The study of the fauna in the Project area was carried out following two approaches: 1) a desktop study and surveys to collect information from stakeholders (technical services, villagers, hunters, fishermen); and 2) field observations and inventory.

Field surveys on wildlife were carried out in October and November 2017. They consisted of visiting the entire mining site area in order to identify sensitive habitats and perform indirect and direct observations, and also to obtain information from the villagers. The fish study consisted of a survey of fishermen.

- Mammals: Field observations have shown that species, such as mongooses, grasscutters, squirrels and antelopes, are most common in the project area. Some species, such as chimpanzees and panthers have left the area due to intense human activities. According to local hunters, some endangered species were reported in a few localities in the project area.
- Birds: The main bird species encountered during the field observations were: hawks, hornbills, francolins, pigeons, turtle doves, rock chickens, partridges, weavers, and crows.

- Terrestrial and aquatic invertebrates: Field surveys indicated the occurrence of a much-diversified entomological fauna belonging to the following orders: *Coleoptera, Diptera, Odonata, Heteroptera, Trichoptera,* and *Plecoptera*. Furthermore, molluscs, spiders, bees, wasps, ants, grasshoppers, locusts, and lepidoptera were identified in forest galleries and riverbanks. The batrachians observed at the Project site were frogs and toads.
- Fish species: Fishing activity is not well developed in the project area. It is usually practiced by women in streams using circular nets and sometimes by men using fishing lines. Fishermen interviewed have identified the most common fish species typically caught in the area: carp, catfish, electric fish, shrimps, and crabs.
- Reptiles: The reptile species reported in the area include: snakes, lizards, Nile monitor lizards, and margouillats.

Threatened animal species reported in the area are: duikers (antelope), *syncerus caffer* (buffalo), *phacochoerus porcus* (warthogs), agoutis, *ploceus melanocephalus* (black-headed weaver), and *Varanus niloticus* (Nile monitor lizards).

20.2.3 Social Baseline Studies

20.2.3.1 Summary of Social Baseline Studies

The environmental approval process in Guinea includes a series of public consultations and the collection of data on the human environment. Public consultations were described earlier. Social baseline surveys to collect the data for the description of the socio-economic environment are ongoing in the mine site area.

Social baseline data is being collected for the Project during a desktop study and field surveys in the various localities surrounding the Project site. The information is based largely on data obtained from national and local authorities, local social service providers, as well as on data obtained from engagement with land users and community stakeholders.

Table 20.3 lists the work completed, ongoing, and planned for the social baseline studies, and expected data collected for each social component.

Table 20.3 – Social Baseline Studies

Social Component	Status
Public Consultations	
Meeting with local administrative authorities	First cycle completed in March 2017; second cycle started in July 2017 and to be completed in September 2018
Meeting with local communities	
Socio-Economical Survey	
Population	Surveys started in November 2017 and to be completed in July 2018
Land use	
Economic activities	
Infrastructures and public services	

Information pertaining to local demographics, economic activities, land use, health and social services, and infrastructure, etc., will provide a snapshot of the community's needs and priorities, and will help determine how the proposed Lola Project may affect current conditions. The compilation and interpretation of the socio-economic data is still underway, and will be completed during the ESIA Study. Preliminary findings are presented in the following paragraphs.

a. Administrative Setting:

The Lola Graphite Project is located in the Forest Guinean Region at the southeast end of the country, near the Ivorian border. The Lola Graphite occurrence was named for the small town called Lola, located just a few kilometres east of the occurrence. The Lola Prefecture lies within the Guinean Department of N'Zérékoré.

Of the same name as the administrative center of the Prefecture, the CU of Lola is composed of 12 districts and 14 attached districts. It is bounded to the north by the rural district (CR) of Kokota, to the south by the CR of Bossou, to the east by the CR of N'Zoo and Gama-Béréma, and to the west by the CR of Yalenzou, one of the CR of the Prefecture of N'Zérékoré.

b. Population

The city of Lola is the head of the regional prefecture, which has an estimated population of 171,561 inhabitants, of which 89,907 women. The average population density of the regional prefecture is about 44 inhabitants per km^2, and is distributed unequally between nine (9) rural development districts (CR) and the CU (Lola Center).

The CU has a total population of 47,995 inhabitants, of which 25,147 women. The population is predominantly under forty years old. As for the population directly affected by the Project, it is estimated at 119 households, according to the field surveys carried out in July 2017.

Due to its geographical position, the Lola Prefecture includes several ethnic groups: 50% konons, 20% manons, 15% guerze, 10% Malinke, and 5% representing other ethnics and populations from other countries of the sub-region, whose presence in the area is due to socio-professional activities. Traditional ceremonies include: marriage, circumcision, religious holidays, etc.

The official language of Guinea is French. Other significant languages spoken are Pular (Fulfulde or Fulani), Maninka (Malinke), Susu, Kissi, Kpelle, and Loma.

The dominant religion in the project area is Christianity. Muslims and animists are about equal in proportion. Although Christianity is the dominant religion in the communities visited, the cultural heritage includes: churches (15), mosques (14), and cemeteries.

Most of the jobs in the Lola Prefecture are related to agriculture, livestock breeding, handicrafts and commercial activities. In the communities surveyed, almost all heads of households are men whose main activity is agriculture. Other professions include: carpenters, drivers, housewives, masons, tradesmen, teachers, state agents, professionals and health aids, engineers, security agents, butchers, craftsmen, mechanics, etc. There is a professional conversion trend of the population due to the arrival of projects and mining companies in the area.

c. Gender Issues:

In terms of gender, the results of field investigations show that women occupy a secondary role in the society; men play the leading role, as in most Guinean societies. In other words, decision-making is the exclusive responsibility of men. Women, for their part, take care of household chores, the education of children, the marketing of agricultural products, and the production of palm oil and vegetable crops, etc.

d. Socio-Economic Activities:

Guinea’s main exports are its natural resources. Guinea possesses one of the world's largest resources of bauxite and high-grade iron, along with significant diamond and gold deposits and potentially other unexploited minerals. The hydroelectric potential is also important.

Guinea also appears to have an underdeveloped potential for growth in agricultural and fishing sectors. The main food crops in Guinea are: rice, cassava, groundnuts, sweet potatoes, and maize. Export crops are: banana, pineapple, coffee, palm oil, and cotton. Livestock is mainly composed of cattle, sheep, and goats. These activities contribute to the socio-economic development of the country.

The economy of the study area is primarily agricultural, and much of it is on a subsistence basis. Small family-run plots of land are cultivated on a shifting agriculture basis. A cash economy exists in the region, and is fueled by cash crops, logging, ranching, and roadside vendors servicing vehicular traffic.

In all the localities surveyed, agriculture remains the main activity (70%), followed by livestock farming (10%) and trade (10%), while other activities, such as masonry, carpentry, public/private functionary, etc., represent the remaining (10%). Slowly, there seems to be an increasing trend of the population working in mining-related activities due to the arrival of projects and mining companies.

- Agriculture: This activity occupies most of the prefectural population. It remained traditional until now, and includes the following crops: rice, maize, groundnuts, potatoes, cassava, tubers, peppers, aubergines, mangoes, banana trees, lemon trees, palm trees, papayas, avocado, and coffee.
- Livestock farming: This activity is extensively and intensively practiced through poultry and pig farms. Livestock is experiencing transhumance in the plains.
- Trade: This activity constitutes a privileged field of activity that relates to a varied range of important products, which consists of agricultural products (fresh and dry) and imported products (other goods and food). Trade is usually done in shops, markets, and kiosks.

Note that there are no wholesalers in Lola. Most of the trade is provided by semi-wholesalers and retailers. Small retail trade appears in a high-precariousness situation with low incomes, but it ensures that the distribution of the goods is evenly made in remote villages.

e. Land Use:

Agriculture is an important economic sector in Guinea. Land use in the Project area reflects the dominant agricultural activities. This use is characterized as follows:

- The lowlands (*bas-fonds*) and plains are intended for cereal crops, tubers, groundnut, vegetables, and fruit trees;
- Hillsides are typically used to grow cereals, tubers, and fruit trees; and
- Bowés are exclusively intended for grazing.

In the area, the level of urbanization is low compared to the national average. At the prefectoral level, the Prefectural Directorate of Urban Planning and Housing (Direction Préfectorale de l'Urbanisme et de l'Habitat) oversees the allocation of residential land. At the sub-prefectural level, the management of the community is ensured by the Sub-Prefect and his technical services in collaboration with local elected officials (in charge of the CR).

Initially, a housing project was planned for the construction of social accommodations at the mining site. However, it was recently reported that this site will be relocated more than 2 km west of the proposed construction site.

f. Infrastructure and Public Services:

Regarding education in the project area, the results of the investigations show that great efforts still need to be made in this domain. Indeed, within the fifteen (15) visited localities, only four (4) of them have a primary school and a secondary school. The other localities have only a primary school, which is in most cases in a state of obsolescence.

In terms of health infrastructure, there are insufficient and obsolete health facilities and staff, which are mostly concentrated in the city of Lola. Meanwhile, the districts only have health posts in poor states, and, in most cases, have shut down due to a lack of staff and equipment.

Furthermore, it is important to emphasize that the Project area presents sanitary issues due to intense rainfall rate and isolated location. The occurrence of diseases such as malaria, waterborne diseases, epidemic diseases (cholera and, recently, fever Ebola virus), typhoid fever, diarrhea, measles, fever, etc., is frequently reported.

Power infrastructure in the area is limited. Despite its importance, the municipality is not electrified; the population need to use privately-owned generators for their energy consumption. A 200 kV ampere power generator, provided by the company EDG, supplies Lola's CU with electricity. However, this is far from meeting the demand of the local populations. Solar-powered streetlights provide public street lighting. The deficit in energy resources is filled through firewood, storm lamps, torches, and candles. In some places, some generators are used for charging telephones and animating videos.

In terms of water supply, boreholes remain the primary source of drinking water in most localities visited. It should be noted that water from watercourses and traditional or improved wells is intended for domestic work; however, it is also used as drinking water in some remote areas of the village. Consumption of these waters is typically without prior treatment, which results in a high risk for its consumers of exposure to diseases.

In the project area, only the districts of the CU benefit totally from the communication network, although they experience regular disruption in the telephone networks (Orange, Celcom, and Areeba, and rural and community radios).

Lastly, in terms of access in the project area, local roads are less developed because of the uncontrolled urbanization and the state of the terrain (forests, plateaus, and elevation of land). A paved road links Lola with N'Zérékoré. The same road cross-cuts the northern edge of the graphite occurrence. Travelling between districts is possible via tracks and crossings. However, these are sometimes difficult to cross. Bush tracks also cross-cut the occurrence. A series of bush tracks also links the border with the area of investigation. Crossing the border from Côte d'Ivoire to Guinea is easily done through an official border post. Lastly, an unpaved road, N'Zérékoré-Lola, crosses the southern edge of the graphite occurrence and cuts it in two (2).

20.3 Development and Operations

The Lola Project will require the construction of some industrial facilities and surface infrastructure, as well as an open pit for mineral ore extraction. Some of these components of the Project may affect the surrounding environment and communities. Although the characteristics of these infrastructure are not yet finalized, SRG has already envisaged their location to minimize their potentially negative impacts. These facilities are summarized hereafter.

20.3.1 SURFACE INFRASTRUCTURE AND OPEN-PIT

Several facilities will be constructed at the mining site. They will include: mine offices, garage, fuel stations, concentrator, power house, etc. Accommodations for the senior staff and workers will be in the town of Lola.

The surface extent of the graphite orebody is about nine (9) km in length and up to one (1) km in width. The exploitation of the graphite deposit will be by open pit. Initially, the orebody is planned to be excavated from two (2) pits. The north pit has a maximum length of 1,050 m, 360 m maximum width, and a depth in the range of 25 to 35 m, and the south pit has a maximum length of 1,500 m, 430 m maximum width, and a depth in the range of 20 to 30 m. It is expected that limited quantities of surface soil and waste rock will have to be managed on the site and kept for soil coverage at final reclamation and closure.

The material will be excavated and transported to rock piles storage areas located in a flat land area near the mine offices and the concentrator. The material extracted will be transported after to a concentrator plant located near the storage area. The process residue will be stored in a tailings pond facility.

20.3.2 WASTE, TAILINGS AND WATER MANAGEMENT

Waste, tailings, and water management aspects of the Project are being designed in order to integrate (in the Project) considerations regarding the following (but are not limited to):

- Regional and local factors (soil type, hydrogeology, wind, land use, etc.) and careful siting of the rock piles area and the tailings pond facilities to mitigate contaminant migration to aquifers;
- Best processing technologies to ensure efficiency and re-use of waste streams; and
- Contingency plans or alternatives to address upset conditions.

20.3.2.1 Waste Management

Waste will be managed out of site to eliminate potential soil and groundwater contamination. Best practices in waste management will be used during the Project.

20.3.2.2 Tailings Management

Preliminary studies have been completed to assist in locating and designing the tailing ponds. More detailed work, including a shallow drilling program, will be carried out to characterize the area and determine the best design for the tailings pond area. The results will confirm the suitability of the proposed area for tailings management.

20.3.2.3 Water Management

Consideration will be given towards water management at the site to avoid the degradation of Consideration will be given towards water management to avoid the degradation of water resources at the Project site. Surface runoff and drainage from developed areas and near the plant site will be directed to an on-site retention pond and re-used in the process. Surface runoff from undeveloped areas will be directed away from the plant site to existing natural drainage and separated from the drainage of the developed areas.

Furthermore, since the orebody is developed below the surface, this means that the open pit could be filled with groundwater. Therefore, mining operation should probably require de-watering to some extent.

Studies are currently underway to determine the impact on water resources and to prepare, as part of the ESIA Study, management plans to address these issues. These studies will include preparing a storm water management plan for the entire mining site and developing a mine water balance.

20.4 Regulatory Context and Permitting

The legal framework for the construction and operation of the projected mining facilities includes national and international policies, regulations, and guidelines. The design and environmental management of the Project facilities and activities will be performed in accordance with this legal framework.

Furthermore, SRG will follow the World Bank Safeguard policies, the World Bank Group ("WBG") Environmental Health and Safety Guidelines, and the International Finance Corporation's ("IFC") Performance Standards and related Equator Principles.

Outlined below are the major steps SRG has already undertaken or will undertake as project development moves forward.

20.4.1 National and International Legal Setting

20.4.1.1 National Institutional Framework

In the Republic of Guinea, the authority in charge of protecting the environment and the application of the environmental and social impact approval process is the *Ministère de l'Environnement, des Eaux et Forêts*, through its BGEEE. The latter coordinates the ESIA examination and approval process.

The *Ministère de l'Environnement, des Eaux et Forêts* is assisted by an Interministerial Technical Committee [*Comité Technique d'Analyse Environnementale* ("**CTAE**")], in the review and approval of the ESIA's ToR (*arrêté* n° 03182/2010). BGEEE has been in contact with the CTAE regarding this process for the Lola Project.

Any other institutions that may be concerned by the Project will be included in the ESIA process.

20.4.1.2 National Legal Framework

Within the legal framework, a series of codes and laws are relevant to the development of the Lola Project. They consist of:

- The Protection and Development of the Environment Code (*Code sur la protection et la mise en valeur de l'environnement*), which was implemented within ruling N°045/PRG/87 and later modified by ruling N°022/PRG/89 (March 10th, 1989). The Code describes the general framework regarding environmental issues, and provides guidelines to ensure the protection of natural and human environments, as well as to reduce environmental nuisances.
- The Protection of Wildlife and Hunting Regulation Code (*Code de protection de la faune sauvage et réglementation de la chasse*) (Law L/97/038/AN, December 9th, 1997). The Code sets the legal framework for the protection, preservation, and management of the fauna and flora and associated habitats, and allows hunting rights. The Code also details rules regarding hunting and promotes the sustainable use of wildlife to satisfy human needs. The protection of biodiversity in Guinea is enforced by the combination of the Protection of Wildlife and Hunting Regulation Code and the Forestry Code (*Code forestier*).
- The Forestry Code (*Code forestier*), Law L/99/013/AN of June 22nd, 1999, sets the legal framework for the protection of forests in Guinea. This Code is the milestone of the forestry legal framework in Guinea, and includes all commercial and communitary uses and preservation measures of forests in Guinea. The Code includes the requirements for the classification, management, employment, protection, and replanting of Guinean forests. It also determines the forestry police responsibilities.
- The Mining Code (*Code minier*), Law L/2011/006/CNT of September 9th, 2011, related to the exploitation of mineral and natural resources in Guinea, as well as the protection of the environment and compensation for harm and damages. According to the Code, all mining activities must follow applicable laws and regulations regarding environmental and health protection and management. More specifically, all authorization requests for exploitation titles must be accompanied by an ESIA Study.
- The Ground Law and State Code (*Code foncier et domanial*), Law L/99/013/AN of March 30th, 1992, specifies the legal framework that determines applicable rules on Guinean land. The Code enforces and highlights property rights according to general principles formulated within the National Guinean Constitution (*Constitution de la Troisième République*), as adopted on April 19th, 2010, by the *Conseil National de Transition* ("**CNT**"), and promulgated May 7th, 2010. The Code mainly discusses registered assets, and allows their registration with titles, leases, and certificates. It includes two (2) land registration processes: 1) within the ground law by the use of a simple administrative document (not a property rights in itself), which is kept at the municipal level in towns and at the community level for rural planning; and 2) within the land property rights registration process, which provides the deliverance of full property rights and the document is kept at the Property Title Conservation Service. In practice, this registration process has not been completely implemented in rural areas where custom rights dominate.

- The Local Community Code (*Code des collectivités locales* or *Code du gouvernement local*), of March 26th, 2006, concerns central government power decentralization, and defines the competencies, missions, jurisdiction, assets and limits of involvement for local communities. The Code also defines local communities' roles and responsibilities in land use management. The municipality must provide its approval prior to any investment project and land occupation/exploitation. Local communities share the management of the land use with the National Government.
- The Water Code (*Code de l'eau*), Law L/94/005/CRTN, of February 15th, 1994, establishes a water use rights system, and defines the general framework for water resource management. The Code specifies the use of water resources as a priority for drinking-water supply in comparison with any other potential uses. In regard to the construction of hydraulic infrastructure in major streambeds or flooding plains, an authorization is required from the Ministry in charge of hydraulic infrastructure and the Ministry of Transport. For the construction, use, and maintenance of hydraulic infrastructure, the various governmental departments, with the approval of the Ministry of Hydraulics, provide all regulations within their technical fields, notably standards, inspection and safety practices, and management of any potential damages to third parties.

The Republic of Guinea has its own legal framework regarding the protection of the environment and the preparation of ESIA studies, notably for mining projects. The requirements for ESIA studies are described in the following documents:

- Article 82 of Title V of Ordinance No. 045/PRG/87 of May 28th, 1987, as amended by Ordinance No. 022/PRG/89 of March 10th, 1989, of the Protection and Development of the Environment Code (*Code sur la protection et la mise en valeur de l'environnement*), requires that the promotor or the main contractor submit an environmental impact study to the competent regulatory authority when projects, works, or facilities are likely to harm the environment, due to their size or the nature of their activities. Subsequently, Article 83 of the Code specifies that a ministerial decree establishes a list of activities that may require an environmental impact study, and regulates the content, methodology and procedure to be followed for the impact study.
- Presidential Decree 199/PRG/SGG/89 of November 8th, 1989, lists, based on their size and nature, the types of projects that require an Environmental Impact Assessment ("**EIA**") and the content of the study, including the construction of hydroelectric dams.
- Ministerial Decree 990/MME/SGG/90 of March 31st, 1990, defines the content, methodology and procedures for the environmental impact study. The Guinean environmental impact assessment approval process includes a public inquiry, after which the concerned ministries have 30 days to publish an inter-ministerial decree granting or refusing the authorization to undertake the project, and it determines the conditions that must be met by the promoter for the protection of the environment. This Ministerial Decree is valid for a period of three (3) years from the date of publication.

- Ministerial Decree A/2013/474/MEEF/CAB of March 11th, 2013, adopted the general guide for EA. This guide is referred "*Guide général de réalisation des études d'impact environnemental et social*" of the BGEEE.

20.4.1.3 International Legal Framework

Several bilateral and multilateral international conventions or agreements have been signed over the years by Guinea for environmental protection. The following list presents the international conventions or agreements ratified by Guinea:

- Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87), ratified by Guinea in January 1959;
- Discrimination (Employment and Occupation) Convention, 1958, ratified by Guinea in September 1960;
- African Convention on the Conservation of Nature and Natural Resources, ratified by Guinea in September 1968;
- Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer, ratified by Guinea in June 1992;
- United Nations Framework Convention on Climate Change, ratified by Guinea in May 1993;
- Convention on Biological Diversity, ratified by Guinea in May 1993;
- Convention on the Conservation of Migratory Species of Wild Animals, ratified by Guinea in August 1993;
- Convention to Combat Desertification, ratified by Guinea in September 1997;
- Kyoto Protocol, ratified by Guinea in September 2000;
- Minimum Age Convention, 1973, ratified by Guinea in June 2003;
- Worst Forms of Child Labour Convention, 1999, ratified by Guinea in June 2003;
- Paris Agreement, ratified by Guinea on September 21st, 2016;
- S Safety and Health in Mines Convention, 1995, entered into force for Guinea on April 25th, 2018;
- Extractive Industries Transparency Initiative, Guinea has a candidate status.

SRG will make an inventory and a review of these different texts, and specify those that are applicable to the Lola Project.

20.4.2 PERMITTING REQUIREMENTS

As per the applicable Guinean mining law and regulations, mining licenses/permits are mandatory before carrying out any exploration and mining activities. In 2013, SRG Guinée, a fully-owned SRG subsidiary, was issued by the Guinean competent authorities the following exploration permits: *Arrêté* No A2013/4543/MMG/SGG dated September 2nd, 2013 valid for a first period of three (3) years and renewable for two (2) additional periods of two (2) years each as per Decree No 442 MMG/CAB/CPDM/2016). The area includes the prefecture of Lola.

To the extent known by the Author and the SRG's team, there are no environmental liabilities associated to the Exploration Permit and there are no surface right agreements in place or being negotiated.

It is anticipated that SRG will have to apply and obtain various exploitation permits prior to and during operation such as:

- General permit for the industrial exploitation: base metals and other substances;
- Various mining activities (blasting, use of petroleum products, transportation, etc.).

SRG will make an inventory and a review of the different permits and specify those that are applicable to the Lola Project.

20.5 Anticipated Environmental and Social Impacts

The assessment presented below is qualitative and presents only a preliminary identification of the main potential impacts based on the anticipated interactions between the Project and the surrounding environment and communities. Environmental and social impacts will be assessed in detail during the ESIA Study.

The potential environmental and social impacts of the Project concern:

- Preservation of the water quality, since several rivers cross or have their source at the Project site, notably the Tighen River;
- Destruction of terrestrial and aquatic habitats;
- Various nuisances due to mining activities (noise, dust, traffic, etc.);
- Loss or relocation of several coffee and kolas plantations located on the mineralized plateau;
- Loss or relocation of low-lying (bas-fonds) rice-growing lands located along the mineralized plateau on both longitudinal sides;
- Dismantlement of houses under construction on the lower part of the plateau along the national road to the Lola CU;
- Loss or decrease in income due to displacement or loss of lands, since the communities of the Project area are mostly rural and derive their income from agriculture (rice growing, arboriculture, palm oil extraction) and livestock (goat, pig, etc.);
- Social pressure and conflicts resulting from job seekers coming from out of the Project area due to the presence of mining companies in the region.

However, chemical characterization of the graphite concentrate indicated that all the sulfide minerals have been naturally leached from the oxide facies, leading to a chemically cleaner concentrate. The tailings are also expected to be NAG for the same reason.

These potential impacts can lead to an imbalance in socio-economic benefits for the Project Affected Persons ("**PAPs**"). These impacts could result in the displacement of populations from their current localities. Such displacement requires that natural or legal persons who lose property or rights be compensated and assisted in a timely manner. Public authorities must ensure that their living conditions are not degraded due to the loss of the land they occupied.

Another potentially important challenge will be associated with the location and design of the tailings management facilities and water management system. SRG is conducting studies to select the best environmental, social, and technical management options.

The importance of each identified impact will be evaluated during the ESIA Study. The importance will depend on the component affected, that is, its intrinsic value for the ecosystem (sensitivity, uniqueness, rarity, reversibility), as well as the social, cultural, economic, and aesthetic values of the ecosystem for the population, with respect to this affected component.

The significance of impacts will be assessed using an appropriate method and criteria for classifying impacts at various levels of significance. The criteria to be considered are: the intensity or the extent of the impact, the frequency, the extent or scope of the impact, and the duration of the impact. Based on these criteria, each impact will be evaluated according to assumptions. Based on the criteria and assumptions, the level of significance of the impact will be determined depending on whether the impact is minor, medium, or major.

The actions to be implemented to reduce, correct, or eliminate the negative impacts, identified during the different phases of the Project, will be described. An estimated cost for the proposed measures will also be provided. SRG will seek to optimize these measures, so that the effectiveness of one does not interfere with that of the other and no measure causes other negative impacts. All recommended measures for the control of negative impacts will be synthesized in a matrix.

20.6 Social and Community Issues

Overall, the Lola Project is well perceived by the local communities. It represents numerous job opportunities for local young people and suppliers and may improve local infrastructure. Administrative and local authorities have collaborated well with SRG to facilitate the development of field surveys in order to assist SRG to fully integrate the results for the sustainable development of the Project and address local communities' concerns.

During the various meetings held in the first and second consultation cycle, the field team has reported the following concerns from some of the people attending and/or met during the field visits regarding components of the Project and SRG:

- Protection of the water quality in the Project area;
- The future of the N'Zérékoré-Lola road, which cuts the deposit in two (2);
- Increase in noise due to mining activities;

- Impact to the properties affected by the company's activities, since part of the site is already owned and allocated to individuals (plantations, crop fields, dwellings, etc.) and some activities are carried out at the site (artisanal extraction of palm oil, maintenance of plantations, fields of culture, etc.);
- Appearance or recrudescence of diseases;
- Local communities are looking forward to the beginning of the Project, and wish that SRG will employ local people first;
- Some people already doubt the recruitment process at the start of activities, and wish for a transparent compensation process, although some communities visited are already enjoying the working relationship between SRG and their people;
- Respect of social engagements and promises made to the communities by SRG;
- Lack of information at the level of the local population regarding the activities carried out by SRG, and almost all the people consulted are not informed about the usefulness of this graphite ore.

Following the consultation cycles, a Stakeholder Engagement Plan was prepared by SRG (05/25/2018). The objectives of the Plan are to ensure that the project remains in contact with all stakeholders, and that their concerns are heard and addressed in an effective and timely manner; comply with national and international requirements on stakeholder engagement, transparency, and reporting; and consolidate SRG's efforts to build lasting relationships with affected communities, government authorities, and other stakeholders.

Additionally, SRG has taken the following approaches to increase trust with local communities:

- SRG’s managers are following the administrative procedures to obtain the exploitation permit;
- SRG tries to reassure landowners by informing them regularly in the field of the progress of the Project.

SRG is committed to incorporating environmental management approaches and strategies into Project planning and execution so that the Project is not only complying with Guinean regulatory requirements to manage the potentially adverse environmental effects, but also ensures that the Project's social and environmental benefits are enhanced and optimized.

20.7 Environmental Management Framework

The ESIA’s ToR, presented by SIMPA to BGEEE on behalf of SRG, included a series of environmental management specifications. The ToR were approved by the Guinean Authorities. Thus, to comply with the requirements of the ToR, SRG will implement within the Project the following environmental management framework, including the following components:

- Integration of environmental design mitigation measures in the mining Project;
- Environmental management procedures and environmental management system, which will describe the mechanisms implemented (required actions) to ensure compliance with

environmental requirements during construction and operation, and the proper functioning of works, equipment, and facilities;

- Environmental monitoring and follow-up during construction and operation of the potential changes in certain natural and human environment components affected by the Project;
- Emergency prevention and response plan for workers and surrounding communities, including contingency plans for effects of the environment on the Project, accidents, and malfunctions, with measures to reduce these risks to an acceptable level, establish potential accident scenarios, and propose emergency management measures, based on existing legislation and internationally-recognized codes of practice;
- Waste, tailings, and water management plans;
- Resettlement Action Plans ("**RAP**") prepared in accordance with the World Bank's procedures for involuntary displacement of populations and in agreement with the populations concerned to respond to all the concerns of the Guinean government in general and local populations regarding the socio-economic benefits of the Project, especially for the local communities that will be affected by the relocation process;
- Decommissioning and reclamation plan.

SRG has confidence in their understanding and ability to manage potential environmental and social effects of the Project using a suite of these proven environmental management tools.

20.8 Mine Closure and Rehabilitation

Following operations, the site will undergo comprehensive decommissioning and reclamation. The decommissioning and reclamation plan will conform to Guinean requirements.

SRG will be providing an account to supply for rehabilitation. The latter will be fed annually in accordance with the Environment and Social Management Plan ("**ESMP**") validated in the ESIA. The detailed provisions will be indicated in the mining agreement that will be established between the SRG and the Ministry of Mines.

Also, a mine closure and rehabilitation plan will have to be prepared to satisfy the concerns of all stakeholders. The closure and rehabilitation plan will be developed in accordance with the national guidelines for preparing a mining site rehabilitation plan.

The mine closure plan will need to be approved before the start of operations.

Mine decommissioning and closure will be performed taking in consideration the following:

- Creation/reinstatement of physical stable and lasting landforms;
- Protection of public health and safety;
- Limiting predictable environmental effects, both physically and chemically;
- Reinstatement of meaningful next land use;
- Sustainability of the social programs, including livelihoods and resettlement;

- Stakeholder engagement for closure;
- Reinstatement of meaningful land functionality;
- Optimization of the possible social and economic benefits that could be derived from the mine in its closed state.

If it is practicable, the mine will cede mine buildings, infrastructure, equipment, and materials to the nearby communities to sustain/enhance local social and economic activity. This could also include the possible use of access roads created for mining.

The mine closure plan will address the following items:

- Securing the mining area after closure;
- Dismantling the mining infrastructures;
- Reclaiming waste rock disposal areas;
- Reclaiming tailings management facility;
- Contaminated soils and waste characterization and disposal;
- Waste water management;
- Emergency plan and monitoring.

The performance and success of the implemented closure measures will be checked and tracked by means of dedicated post closure inspection and monitoring programs. The monitoring programs will specifically focus on possible adverse effects on watercourses and groundwater within the zone of influence of the closed mine, reinstatement of landscape functionally (including vegetation establishment), and those aspects that pose potential adverse health risks and/or dangers to the public.

As part of the next phase, the decommissioning and closure plan and associated costs will be reviewed and updated to align with current generally-accepted good practice and international standards.

20.9 Conclusion

The preliminary EA has allowed a description of the environmental and human setting in the project area, and highlighted the existence of environmental and social issues related to the implementation of the graphite ore mining project in Lola Prefecture.

Overall, the local communities are looking forward to the beginning of the Project, and wish that SRG will employ local people. However, communities are worried about the fate of the properties and activities that would be affected by the company's activities, and about potential impacts on the environment (water quality, noise, loss of land, destruction of ecosystems, etc.).

Based on the identified environmental and social issues, it is recommended in the following phases of the Project that the ESIA Study should aim:

- To continue the collection of data on the biophysical and human components of the Project area for an accurate assessment of potential impacts;
- To provide to local communities' sufficient information about the activities that SRG intends to undertake in their area, and also about the usefulness of the finished graphite product after treatment; and
- To collaborate with other existing companies in the area for harmonization of interventions with local communities.

These issues will be examined during the environmental and social impact assessment phase of the Project.

21 CAPITAL AND OPERATING COSTS

21.1 Capital Cost Estimate (Capex)

21.1.1 PROJECT DESCRIPTION

SRG Graphite wishes to develop a graphite deposit near the town of Lola, located approximately 950 km northeast of Conakry, capital of Guinea. The project consists of the construction of an open-pit mine, processing facilities, tailings management, as well as all necessary ancillaries designed to process 930,000 t/y of mineral and produce 50,000 t/y of graphite concentrate.

a. Purposes of this Basis of Estimate

The purpose of this Basis of Estimate is to outline the methodology used for the development of the initial and sustaining capital cost (Capex) estimates forming part of the PEA for the execution of the Lola project.

b. Purpose of this PEA and NI43-101 Report

The purposes of this PEA, along with the 43-101 report, is to support SRG in further developing the project definition, to help SRG in making a decision to further pursue the project and to help build stakeholder confidence in the project.

c. Scope Covered by the Capex

The initial Capex estimate includes all Projects' direct and indirect costs to be expanded during the implementation of the Lola project, inclusive of an upcoming feasibility study as well as the execution phase, complete with basic and detailed engineering. The Capex is deemed to cover the period starting at the approval by SRG Graphite of this PEA and finishing after commissioning is achieved. It should hence be understood that this Capex excludes transfer to SRG operations, performance test, start-up, ramp up and operations.

The sustaining Capex estimate includes all Projects' direct and indirect costs to be expanded throughout he life of mine.

d. Mandate

For this PEA, DRA/Met-Chem is responsible for estimating and compiling the initial and sustaining Capex for the entire project, including Owner's costs.

e. Capex Presentation

All capital costs are expressed in United States Dollars (USD). Currency exchange rates are dated 2Q 2018. Inflation and risk are not included in the estimate.

A cost summary of the initial Capex is presented below:

Table 21.1 – Initial Capex Summary

Area #	Area Description	Direct Labour Man-Hours ('000)	Direct Labour Cost ('000 USD)	Equipment and Bulk Material Cost ('000 USD)	Total Costs ('000 USD)
	Direct Costs				
0000	Mining	5.1	412	8,781	9,192
1000	Concentrator	171.1	10,695	27,113	37,808
2000	Tailings	30.8	2,005	3,459	5,464
3000	General Site Infrastructure	31.1	2,115	4,019	6,134
4000	Electric Power Plant	19.4	1,090	8,473	9,564
	Sub-total – Direct costs	257.5	16,317	51,845	68,161
	Indirect Costs				
9000	Indirect Costs			21,987	21,987
9000	Contingency			14,968	14,968
	Sub-total –Indirect costs			36,955	36,955
	TOTAL:	**257.5**	**16,317**	**88,800**	**105,116**

Numbers may not add due to rounding.

A cost summary of the sustaining Capex is presented below:

Table 21.2 – Sustaining Capex Summary

Area #	Area Description	Direct Labour Man-Hours ('000)	Direct Labour Cost ('000 USD)	Equipment and Bulk Material Cost ('000 USD)	Total Costs ('000 USD)
	Direct Costs				
0000	Mining	0.0	0	12 652	12 652
1000	Concentrator	0.0	0	0	0
2000	Tailings	195.5	13 729	20 477	34 206
3000	General Site Infrastructure	0.0	0	0	0
4000	Electric Power Plant	0.0	0	0	0
	Sub-total – Direct costs	195.5	13 729	33 129	46 857
	Indirect Costs				
9000	Indirect Costs			2 096	2 096
9000	Contingency			9 075	9 075
	Sub-total –Indirect costs	0.0	0	11 172	11 172
	TOTAL:	**195.5**	**13 729**	**44 301**	**58 029**

Numbers may not add due to rounding.

f. Capex Estimate Accuracy

The accuracy of the initial Capex estimate is assumed at ± 35%. The accuracy of the sustaining Capex estimate is assumed at ± 50%.

g. Deliverables

The Capex estimate was developed based on the following list of deliverables:

- Project description;
- Mine plan, complete with initial mining equipment and pre-production costs;
- Mechanical equipment list;
- MTO for major electrical equipment, including the power plant;
- MTO for tailings storage, including tailings' roads, as well as tailings and reclaim water pipelines;
- Overall general arrangement plan.

h. Estimate Coding

All estimate line items were coded using the existing Work Breakdown Structure (WBS); some adjustments were made to better encompass the scope of work. Also, discipline codes were used to group the various activities, and to enable the use of standard unit hours and material rates.

- Currency Exchange Rates

All costs were expressed in their native currency. Currency exchange rates were based on the XE.com website. The following table lists the currencies used for the estimate along with currency exchange rates dated June 18nd, 2018.

Table 21.3 – Currency Exchange Rates

Source Currency	Description	Base Currency	Currency Exchange Rate	Total Costs, Native Currency ('000)	Total Costs, USD ('000)
USD	United States Dollar	USD	1.000	92,464	92,464
CAD	Canadian Dollar	USD	0.754	9,120	6,876
EUR	EURO	USD	1.166	506	590
GNF	Guinean Franc	USD	0.00011	47,137,604	5,185
					105,116

i. Estimating Software

The Capex estimate was developed using MS Excel.

21.1.2 Methodology

a. Data Sources

- Plant equipment and bulk quantities and material costs

A mechanical equipment list was developed by Engineering. Conceptual estimates, supplemented by general arrangements drawings, were used for civil works, including earthworks, concrete, and structural steel. To ensure the entire scope coverage, some allowances were added, based on DRA/Met-Chem's experience. Piping, electrical distribution downwards of ERs, as well as instrumentation and controls, were factored from mechanical costs. The following table presents the various factors used, per discipline.

Table 21.4 – Factors Used per Discipline

Sub Area	Description	Piping	Electrical	I&C
1100	Crushing, Stockpile, and Reclaim	5.0%	12.5%	10.0%
1200	Drum Scrubber and Grinding	10.0%	12.5%	10.0%
1300	Rougher Flotation, Polishing, and Cleaner Flotation	15.0%	12.5%	10.0%
1400	Graphite Tailings Dewatering	15.0%	12.5%	10.0%
1500	Graphite Concentrate Dewatering	15.0%	12.5%	10.0%
1600	Graphite Sizing and Bagging	5.0%	12.5%	10.0%
1700	Reagents System	10.0%	12.5%	10.0%
2200	Tailings Piping and Return Lines	0.0%	12.5%	10.0%
3900	Utilities	15.0%	12.5%	10.0%

For sustaining Capex, only the tailings area (Area 2000) was estimated. A MTO covering the planned three phases of the project was provided by Engineering.

It was agreed that the initial Capex would only cover 1/3 of the Phase 1, identified as East tailings, for the dyke construction; the other 2/3 of Phase 1 are captured as sustaining Capex, along with Phase 2 (North) and Phase 3 (South). The tailings and reclaim water pipeline, as well as the tailings road for the entire Phase 1, are covered under the initial Capex. Sustaining Capex for Phases 2 and 3 include dismantling and re-construction of the tailings booster station, estimated as mobile. The construction of dykes for Phases 2 and 3 is spread over time, at one third each sub-phase.

Budgetary quotations were obtained for major plant equipment, totaling 22.6 MUSD and 70% of total direct equipment costs; the balance of the plant equipment costs was generally developed based on an internal database, representing 20% of total direct equipment costs. Some equipment costs were estimated when no relevant data was available.

Rates for bulk material were estimated.

The following tables present a summary of bulk materials quantity along with the unit rates used:

Table 21.5 – Summary Bulk Materials and Unit Rates

Discipline	U. of M.	Total Quantity	Unit Manhours	Unit Supply (USD)
Earthworks	M3	365,000	0.06	9.20
Concrete	M3	3,280	13.9	395
Steel	T	745	22.8	4,210
Pipeline	M	5,050	2.3	127
Piping	M	7,330	3.5	125
Cables	M	18,090	0.2	34

b. Labour Costs

Labour manhours were developed internally for each site activities. The productivity factors vary as a function of the expected qualifications, as well as of the building height and the congestion; they vary from 1.16 to 1.64, with an overall weighted average of 1.43. It should be noted that a PF of 1.0 refers to projects being executed with better-than-average skill, base 40-hour workweek, within reasonable commuting distance, limited in-plant movement, favorable weather, etc.

Labour rates were developed based on salary information reflecting local Guinean labour. They are inclusive of salaries, contractors' indirect costs, namely mob and demob, small tools, construction equipment, consumables, PPE, temporary site establishments, supervision, and administration, as well as overhead and profit.

It is assumed that the local community of Lola can accommodate the direct and indirect workforce estimated for the Project, including occasional site visits and vendor representatives. The peak workforce is estimated to reach 240, with an average of 170. Local accommodation and rotational transportation costs are included as part of construction field indirect costs.

c. EPCM services

While the Project may not ultimately be executed via the EPCM model, the cost estimate was structured on that basis. EPCM services consist of the following:

- EPCM team salaries, fringes, uplifts, recruitment, overhead, etc.;
- EPCM team expenses (e.g. business travelling, room & board, accommodation, etc.);
- Home office support and expenses (communications, IT services, IT equipment, courier, printing, office space, furniture, consumables, stationaries, etc.).

For the initial Capex, EPCM services costs are estimated at 12% of the direct costs. For the sustaining Capex, EPCM services costs are estimated at 3.5% of the direct costs, taking into account that the Owner's Engineering team will be working closely with a tailings' specialist.

d. Construction Field Indirect Costs

Site construction indirect costs are included as a percentage of direct costs:

- Site preparation for all temporary infrastructures and buildings, construction facilities, laydown areas, temporary services, etc.;
- Temporary roads, walkways, parking areas and fencing, c/w signage, and temporary lighting, complete with maintenance;
- Temporary buildings/construction facilities (offices - for EPCM and Owner's staff, camp, cafeteria, laundry facilities, medical clinic, security gate/office, etc.), complete with mobilization, demobilization, rental, operations, and maintenance. It should be noted that contractors will be responsible for the provision of their own temporary facilities;
- Temporary infrastructures for the supply of power, fuel, gas, water, and communications. It should be noted that contractors will be responsible for their own temporary infrastructures;
- Temporary infrastructures for the management of sewerage and construction waste (dry and wet, hazardous and non-hazardous), including collection, treatment, and disposal. It should be noted that contractors will be responsible for their own requirements;
- Pad preparation and fencing – only – of contractor's pads are included in the construction field indirect costs;
- Field office supply (IT equipment, courier, printing, office space, furniture, consumables, etc.);
- Access control and monitoring;
- Temporary lay down and storage areas, as well as warehousing, complete with, but not limited to, materials management and materials handling equipment;
- Mobilization and demobilization of all above listed temporary site establishments and restoration back to original site conditions;
- Site surveying
- Site security;
- Light vehicles;
- First aid and medical services;
- General and final clean-up.

Construction field indirect costs are estimated at 6.5% of the direct costs. They are inclusive of vendor representatives for construction and commissioning. For sustaining Capex, field indirect costs are estimated at 2.5% of direct costs considering all facilities will be used to support construction.

e. Owner's Costs

Owner's costs were estimated at 5% of all direct costs, except for the sustaining Capex where it is assumed that Owner's costs will be included with the operations' team.

f. Freight

Costs for freight were estimated at 12% of the equipment costs and at 5% of bulk materials for steel, piping, electrical and instrumentation. The same ratios were used for sustaining Capex.

g. Other Costs

Costs for spare parts, special tools and initial fills are estimated at 3.25% of equipment costs for the initial Capex phase. It is assumed that none will be required for sustaining capex as they are included as part of normal operations.

h. Project Contingency

For initial Capex, the project contingency was assessed at 15.0 M USD, representing 16.6% of all costs. For sustaining Capex, it was estimated at 25% of all costs, i.e. 9.1 M USD.

i. Inflation

Inflation beyond this Capex estimate base date is explicitly excluded.

j. Risks

Risks, complete with mitigation plans, are explicitly excluded from this Capex estimate.

21.1.3 Qualifications

All estimates are developed within a frame of reference defined by assumptions and exclusions, grouped under estimate qualifications. Assumptions and exclusions are listed in the following paragraphs.

21.1.3.1 Assumptions

The following items are assumptions concerning the Capex:

- Estimate is based on rotations schedule of 4 and 2, i.e. 4 weeks in and 2 weeks R&R, with traveling during the 2 weeks R&R;
- Estimate is based on 6 days at 8 hours per day workweek;
- Estimate assumes that labour skills will be medium;
- Estimate assumes aggregates used for fill, adequate both in terms of quality and quantity, will be available within a 5 km radius from site;
- Estimate assumes concrete, adequate both in terms of quality and quantity, will be available within a 15 km radius from site;
- Estimate assumes overburden disposal will be within a 5 km radius from the construction site;

- Estimate assumes fresh water, adequate both in terms of quality and quantity, is available locally at no costs and does not need any treatment to be used for concrete mix, leak/hydro testing, flushing, cleaning, etc.;
- Estimate assumes drinking water will be bottled;
- Estimate assumes EPCM and Owner's teams will be in sufficient quantity so as not to delay contractors;
- Estimate assumes EPCM and Owner's teams will be in sufficient quantity so as to not delay contractors;
- Estimate assumed smooth coordination between contractors' battery limits;
- Estimate assumes 40% of manual labour will be sourced within the Lola area, whilst 60% will be a combination of remote Guinean workers and expats from neighbouring countries;
- Estimate assumes no labour decree is in effect in Guinea;
- Estimate assumes no camp or catering;
- Estimate assumes no limitation to site access;
- Estimate assumes construction contract types will be either lump sum, cost plus, or unit rates;
- Estimate assumes no construction contracts will be time and materials;
- Estimate assumes no underground obstructions of any nature;
- Estimate assumes no hazardous materials in excavated materials;
- Estimate assumes no delay in Client's decision-making;
- Estimate assumes no delay in obtaining permits and licenses of any kind;
- Estimate assumes no interruption in job continuity;
- Estimate assumes normal peak workforce;
- Estimate assumes engineering progress prior to the execution will be sufficient so as to avoid rework.

21.1.3.2 Exclusions

The following items are not included in the Capex:

- Currency fluctuations;
- Any and all scope change;
- Inflation beyond the Capex estimate base date;
- Risk;
- Financing charge;
- Delays resulting from community relation, permitting, project financing, etc.;
- Any and all taxes, customs charges, excises, etc.;
- Closure costs.

21.2 Operating Cost Estimate (Opex)

21.2.1 Introduction

This Section provides information on the estimated operating costs of the Project and covers mining, processing, site services and general administration. Table 21.6 presents the operating costs summary.

The sources of information used to develop the operating costs include in-house databases and outside sources. All amounts are in United States dollars (USD), unless otherwise specified.

Table 21.6 – Operating Costs Summary

Description	Cost per Year ($)	Cost /tonne of concentrate ($/t concentrate) [1]	Total Costs (%)
Mining	3,375,481	67.51	13.5%
Processing	12,490,843	249.82	49.8%
Concentrate Transportation	6,500,000	130.00	25.9%
General and Administration	2,722,273	54.45	10.9%
Total Opex	**25,088,597**	**501.77**	**100.0%**

1. Based on production of 50,000 t/y of graphite concentrate
2. Figures may not add up due to rounding

21.2.2 Summary of Personnel Requirements

Table 21.7 presents the estimated personnel requirements for the Project.

Table 21.7 – Total Personnel Requirement

Area	Number
Mine	23
Processing	73
Management, Administration and Technical Services	117
Total Manpower	**213**

21.2.3 Mining Operating Costs

The mine operating cost was estimated for each period of the mine plan. This cost is based on equipment operation costs, mine-related manpower, explosives costs as well as the costs associated with dewatering, road maintenance and other activities. The breakdown of these costs is summarized in Table 21.8.

In order to determine the operating cost, the following assumptions were used: Diesel Fuel Price: $ 0.8854 / L.

The mine operating cost was estimated to average $ 1.90/t mined for the life of the open pit mine. This cost is divided into $ 1.37/t for mineralization, $ 0.09/t for overburden and $ 0.44/t for waste.

Table 21.8 – Summary of Estimated Annual Mining Operating Costs

Type of Material	Average Annual Cost ($/year)	Cost ($/tonne mined)	Cost ($/tonne of concentrate) [1]	Total Costs (%)
Overburden	162,971	0.09	3.26	4.8 %
ROM	2,430,391	1.37	48.61	72.0 %
Waste	782,120	0.44	15.64	23.2 %
Total Operating Costs	**3,375,481**	**1.90**	**67.51**	**100.0 %**

1. Based on production of 50,000 t/y of graphite concentrate
2. Figures may not add up due to rounding

21.2.4 Processing Operating Costs

For a typical year at design processing rate, the estimated process operating costs are divided into eight (8) main components: Manpower, electrical power, grinding media and reagent consumption, dryer fuel consumption, consumables and wear items, bagging system, material handling and spare parts and miscellaneous. The breakdown of these costs is summarized in Table 21.9. These costs were derived from supplier information, DRA/Met-Chem's database or factored from similar operations. The unit cost of on-site generated electricity was established at $ 0.12/kWh.

Table 21.9 – Summary of Estimated Annual Process Plant Operating Costs

Operating Cost Area	Cost ($/year)	Cost ($/tonne of mill feed) [1]	Cost ($/tonne of concentrate) [2]	Total Costs (%)
Manpower	2,046,131	1.51	40.92	16.4 %
Electrical Power	3,008,238	2.23	60.16	24.1 %
Grinding Media and Reagent Consumption	1,323,286	0.98	26.47	10.6 %
Dryer Fuel Consumption	2,206,197	1.63	44.12	17.7 %
Consumables and Wear Items	1,029,951	0.76	20.60	8.2 %
Bagging System	1,612,582	1.19	32.25	12.9 %
Material Handling	970,572	0.72	19.41	7.8 %
Spare Parts and Miscellaneous [3]	293,887	0.22	5.88	2.4 %
Total Operating Costs	**12,490,843**	**9.24**	**249.82**	**100.0%**

1. Based on feed throughput of 1,351,210 t/y
2. Based on production of 50,000 t/y of graphite concentrate
3. Strategic spare parts, estimated as 1.5% of total equipment capital cost + transport cost
4. Figures may not add due to rounding

21.2.5 Concentrate Transport

The cost of transporting concentrate from site to the port of Conakry has been estimated at $ 130.00/tonne of concentrate.

21.2.6 General and Administration Operating Costs

General and administration operating costs have been sub-divided in three (3) categories: Manpower, General Services, and Site Services. Manpower includes finance, purchasing, warehouse, health & safety, environmental, human resources and other support personnel. General services include various office-related costs, as well as the lodging and travel expenses for expatriate personnel. Site services comprise the costs for operation and upkeeping of site service-related facilities.

Table 21.10 – Summary of Estimated General & Administration Operating Costs

Operating Cost Area	Cost ($/year)	Cost ($/tonne of mill feed) [1]	Cost ($/tonne of concentrate) [2]	Total Costs (%)
Manpower	804,773	0.60	16.10	29.6 %
General Services	1,520,500	1.13	30.41	55.8 %
Site Services	397,300	0.29	7.95	14.6 %
Total G&A Costs	**2,722,573**	**2.01**	**54.45**	**100.0%**

1. Based on feed throughput of 1,351,210 t/y
2. Based on production of 50,000 t/y of graphite concentrate
3. Figures may not add due to rounding

22 ECONOMIC ANALYSIS

The economic assessment of the Lola Project has been generated in USD currency and assuming 100 % equity. In addition, current Guinean tax regulations were applied to assess corporate tax liabilities. Table 22.1 summarizes the base case economic/financial results of the Project.

Table 22.1 – Base Case Financial Results

Financial Results	Unit	Pre-tax	After-tax
NPV @ 8%	M USD	204.2	120.6
IRR	%	34.8	24.9
Payback Period	Year	2.6	3.5

It is to be noted that given the early stage of the Project, the economic analysis that has been done is based entirely on mineral resources that are not mineral reserves. Thus, the following analysis is limited to the potential viability of the project and serves only as a decision tool to proceed or not with additional field work and studies.

The sections below explain the assumptions used in preparing the economic analysis. In addition, a detailed analysis of the financial results and a sensitivity analysis are included in Sections 22.2 and 22.3, respectively.

22.1 Assumptions

22.1.1 Macro-Economic Assumptions

Table 22.2 summarizes the main macro-economic assumptions used in the base case. These assumptions are explained more detail in their corresponding sub-sections.

Table 22.2 – Macro-Economic Assumptions for Base Case

Item	Unit	Value (Base Case)
Average Graphite Concentrate Price	USD/tonne	1,328
Discount Rate	%	8

22.1.1.1 Graphite Concentrate Price

The Lola Project aims to produce four (4) graphite products, based on the particle size distribution of the graphite concentrate produced and market demand. The average graphite concentrate price stated in Table 22.2 has been calculated considering the expected quantities of each product and their corresponding prices. Details on the derivation of the graphite concentrate price used are provided in Section 0 of this Report.

22.1.1.2 Discount Rate

The assessment was carried out on a 100% equity basis. and used a discount rate of 8% to represent the cost of equity capital for the project.

22.1.1.3 Exchange Rate

The economic assessment was done in USD currency. However, as mentioned in Section 21 costs were expressed in their native currency. The table below summarizes the currency exchange rates for conversion into USD. These exchange rates were retrieved from XE.com website. and obtained on June 18th, 2018.

Table 22.3 – Exchange Rates Used

Source Currency	Description	Base Currency	Currency Exchange Rate
USD	United States Dollar	USD	1.000
CAD	Canadian Dollar	USD	0.754
EUR	EURO	USD	1.166
GNF	Guinean Franc	USD	0.00011

22.1.2 MINERAL ROYALTIES

The government of Guinea applies a tax on extraction of mineral substances (Extraction Tax). The extraction tax rate applied depends on the mineral substance, ore grade and quantity extracted. The table below summarizes the extraction tax rates included in Guinea's mining code.

Table 22.4 – Extraction Tax Rates in Guinea

Mineral Substance	Taxation Unit	Extraction Tax Rate
Iron Ore	Metric tonne	3.0 %
Base Metals	Metric tonne	3.0 %
Bauxite	Metric tonne	0.075 %
Diamonds	Carat	3.5 – 5 %
Gemstones	Carat	1.5 – 5 %

Currently, Guinea's Mining Code does not include graphite. Thus, based on the nature of graphite concentrate, the economic assessment done assumed a tax rate of 3.0 %; similar to that applied to iron ore and base metals.

As per Guinea's Mining Code, the extraction tax was deducted when calculating taxable profits.

22.1.3 Taxation Regime [6]

Annual corporate tax liabilities were calculated under the Guinean tax regime.

In 2013, Guinea amended its mining code reducing profit taxes to mining companies from 35 % to 30 %. Thus, the corporate tax rate used to evaluate the Project was 30 % of taxable income.

Going forward, a more detail review of Guinea's tax law and mining code is recommended to identify tax-saving opportunities through accelerated depreciation schemes or tax breaks.

22.1.4 Technical Assumptions

Table 22.5 summarizes the technical assumptions used.

Table 22.5 – Technical Assumptions

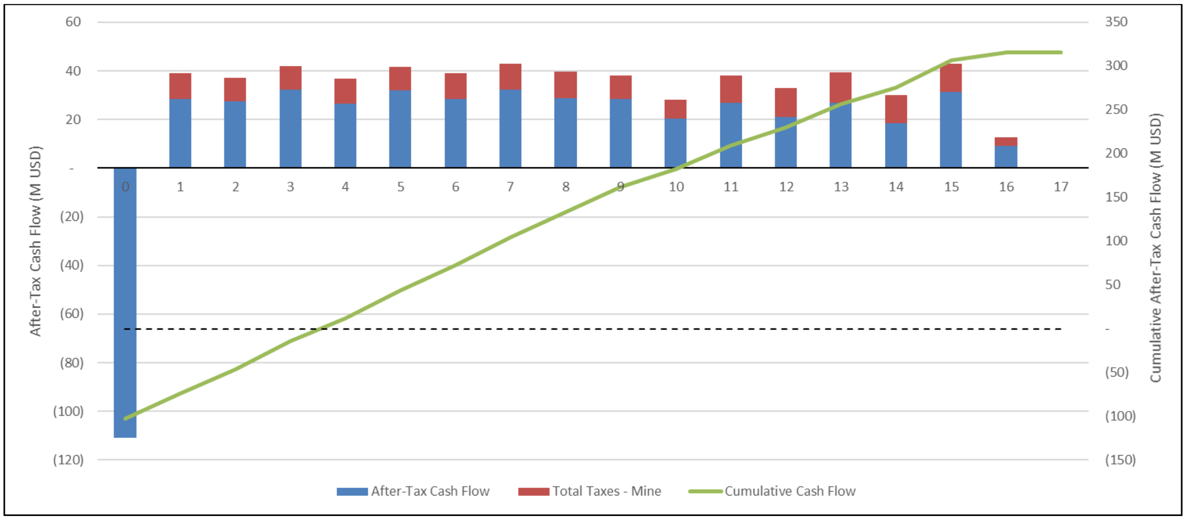
Item	Units	Value
Total Mineral Resources Mined (LOM)	M tonnes	28.9
Mine Life	Years	16
Process Recovery	%	79.25
Concentrate Grade	%	94.23
Average Concentrate Production (Excludes Year 16)	M tonnes	50.2
Average Mining Costs	USD/tonne mined	1.90
Average Processing Costs	USD/tonne milled	9.24
Average General & Administration Costs	USD/tonne milled	2.02
Average Concentrate Transport Costs	USD/tonne conc.	130

22.2 Financial Model and Results

Figure 22.1 shows the after-tax cash flow and cumulative cash flow profiles of the Project for base conditions. The payback period was estimated at 3.5 years, and it is indicated in the figure as the point where the after-tax cumulative cash flow curve intersects the dashed line.

[6]
1. KPMG, 2014 - Guinea – Country Mining Guide
2. République de Guinée, 2004 - Code General des Impôts
3. République de Guinée, 2011 – Code Minier

Figure 22.1 – After-Tax Cash Flow and Cumulative Cash Flow Profiles



A summary of the base case cash flow results is shown in Table 22.6 while Table 22.7 shows the annual cash flow projections.

Total pre-production (initial) capital costs were evaluated at $105.1M USD and incurred over a period of one (1) year. Sustaining costs were estimated at $58.0M USD. Mine closure costs of $4.5M USD were included at the end of the mine's life. Details on how these costs were estimated are included in Section 21.1.

Working capital was estimated as three (3) months of total annual operating costs.

Total operating costs over the life of the project were estimated at $387.9 M USD, or an average $502 / tonne of concentrate.

The financial results indicate a pre-tax Net Present Value ("NPV") of $204.2 M USD at a discount rate of 8 %. The pre-tax Internal Rate of Return ("IRR") is 34.8 % and the payback period is 2.6 years.

After-tax NPV is $120.6M USD at a discount rate of 8 %. The after-tax IRR is 24.9 % and the payback period is 3.5 years.

Table 22.6 – Project Evaluation Summary

		DRA
Throughput[a]	tpy	1,344,401
Concentrate production[a]	tpy	50,192
Total Revenue	'000 USD	1,025,393
Concentrate price	USD	1,328
Total CAPEX	'000 USD	105,116
Total Sust. CAPEX	'000 USD	58,029
Total OPEX[b]	'000 USD	387,860
OPEX[c]	USD/t conc	502
Pre-tax		
NPV (discount rate = 8%)	'000 USD	204,244
IRR	%	34.8%
Payback period	years	2.6
After-tax		
NPV (discount rate = 8%)	'000 USD	120,603
IRR	%	24.9%
Payback period	years	3.5

[a] Excludes Year 16

[b] Total OPEX includes mining, processing, transport costs and municipal taxes (if applicable)

[c] Based on LOM results

Table 22.7 – Cash Flow Statement – Base Case

NPV

Cash Flow - Summary DRA

(in '000 USD)

Item		FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	TOTAL
		-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Net sales revenue		-	66,648	66,647	66,613	66,642	66,698	66,569	66,649	66,624	66,643	66,643	66,643	66,643	66,643	66,643	66,643	25,801	-	1,025,393
Third party royalties		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Income		-	66,648	66,647	66,613	66,642	66,698	66,569	66,649	66,624	66,643	66,643	66,643	66,643	66,643	66,643	66,643	25,801	-	1,025,393
Operating costs		-	(22,469)	(23,093)	(24,787)	(23,884)	(25,262)	(24,016)	(22,999)	(22,534)	(25,054)	(27,318)	(26,854)	(26,804)	(26,079)	(27,387)	(27,779)	(11,541)	-	(387,860)
EBITDA		-	44,179	43,554	41,826	42,758	41,436	42,554	43,650	44,090	41,589	39,326	39,790	39,839	40,564	39,256	38,865	14,260	-	637,533
			66%	*65%*	*63%*	*64%*	*62%*	*64%*	*65%*	*66%*	*62%*	*59%*	*60%*	*60%*	*61%*	*59%*	*58%*	*55%*	*#DIV/0!*	
Other costs		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total		-	44,179	43,554	41,826	42,758	41,436	42,554	43,650	44,090	41,589	39,326	39,790	39,839	40,564	39,256	38,865	14,260	-	637,533
Mine Pre-production Capital Expenditure																				
Mine development - Pre-stripping		(874)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(874)
Mine equipment		(12,888)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(12,888)
Mine site infrastructure		(24,318)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(24,318)
Crushing		(9,056)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(9,056)
Process plant		(49,516)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(49,516)
Front-end participation costs		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tailings & water management		(8,465)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(8,465)
Other		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Royalty buy-out option		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total capital expenditure		(105,116)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(105,116)
Debt financement		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Equity portion of capital expenditure		(105,116)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(105,116)
Residual		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Change of Working Capital(Operational)		(5,617)	(156)	(424)	226	(345)	312	254	116	(630)	(566)	116	12	181	(327)	(98)	4,059	2,885	-	
Change of Working Capital(Initial)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sustaining Capital Expenditure																				
Mine development - Open pit		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mine development - Undeground		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underground equipment & infrastructure		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mine equipment		-	-	(940)	-	-	-	-	(940)	-	(2,970)	(3,265)	(1,719)	-	(940)	(1,880)	-	-	-	(12,652)
Tailings & surface water management		-	(4,966)	(4,966)	-	(5,725)	-	(3,822)	-	(3,822)	-	(7,921)	-	(7,078)	-	(7,078)	-	-	-	(45,377)
Process plant		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contingency		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Investment for sustaining capital assets		-	(4,966)	(5,905)	-	(5,725)	-	(3,822)	(940)	(3,822)	(2,970)	(11,187)	(1,719)	(7,078)	(940)	(8,958)	-	-	-	(58,029)
Mine rehabilitation trust fund payments		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mine closure costs		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(4,457)	-	(4,457)
Debt payment		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Pre-tax cash flow		**(110,734)**	**39,057**	**37,225**	**42,052**	**36,688**	**41,747**	**38,986**	**42,826**	**39,638**	**38,054**	**28,255**	**38,083**	**32,942**	**39,297**	**30,201**	**42,924**	**12,688**	**-**	**469,930**
Cumulative cash flow		(102,531)	(63,474)	(26,249)	15,803	52,491	94,238	133,225	176,051	215,689	253,743	281,998	320,081	353,023	392,321	422,521	465,445	478,133	478,133	
Fractions calculations		n/m	n/m	n/m	0.62	0.43	1.26	2.42	3.11	4.44	5.67	8.98	7.40	9.72	8.98	12.99	9.84	36.68	#DIV/0!	
Mid-year adjustment		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Discount factor	8.00%	0.926	0.857	0.794	0.735	0.681	0.630	0.583	0.540	0.500	0.463	0.429	0.397	0.368	0.340	0.315	0.292	0.270	0.250	
Discounted cash flow		(102,531)	33,485	29,550	30,909	24,969	26,308	22,748	23,138	19,829	17,626	12,118	15,123	12,113	13,379	9,520	12,529	3,429	-	
Government royalty	3.00%	-	(1,999)	(1,999)	(1,998)	(1,999)	(2,001)	(1,997)	(1,999)	(1,999)	(1,999)	(1,999)	(1,999)	(1,999)	(1,999)	(1,999)	(1,999)	(774)	-	(30,762)
Income tax	30.00%	-	(8,756)	(7,682)	(7,909)	(8,215)	(7,818)	(8,440)	(8,627)	(8,760)	(7,705)	(5,921)	(9,401)	(10,032)	(10,367)	(9,692)	(9,716)	(2,709)	-	(131,751)
After-Tax Cash Flow		**(110,734)**	**28,302**	**27,543**	**32,145**	**26,473**	**31,928**	**28,549**	**32,199**	**28,880**	**28,350**	**20,335**	**26,683**	**20,910**	**26,931**	**18,509**	**31,209**	**9,205**	**-**	**307,418**
Cumulative Cash Flow		(102,531)	(74,229)	(46,685)	(14,541)	11,932	43,861	72,410	104,609	133,489	161,838	182,173	208,856	229,766	256,698	275,207	306,415	315,621	315,621	
Fractions calculations		n/m	n/m	n/m	n/m	0.55	0.37	1.54	2.25	3.62	4.71	7.96	6.83	9.99	8.53	13.87	8.82	33.29	#DIV/0!	
Discounted cash flow		(102,531)	24,265	21,865	23,627	18,017	20,120	16,658	17,396	14,447	13,131	8,721	10,596	7,689	9,169	5,835	9,110	2,488	-	

22.3 Sensitivity Analysis

A sensitivity analysis was carried out to assess the impact of changes in total pre-production capital expenditure ("Capex"), operating costs ("Opex") and concentrate price ("Price") on the project's NPV at 8% (i.e. base case) and IRR. Each variable was examined one-at-a-time. An interval of ± 30 % with increments of 10 % was applied to the Capex, Opex and Price variables.

The pre-tax sensitivity analysis is shown in Figure 22.2. The Project's pre-tax viability is not significantly vulnerable to the underestimation of capital or operating costs. If Opex increases by 30 %, pre-tax NPV decreases to 143.6 M USD (i.e. 30 % drop from current estimate) and pre-tax IRR decreases to 27.5 %. Similarly, if Capex increases by 30 %, pre-tax NPV drops to 175.0 M USD (i.e. 14 % drop from current estimate) and pre-tax IRR decreases to 26.6 %. As expected, the NPV is most sensitive to variations in Price.

The same conclusions in terms of viability of the Project can be made from the after-tax results of the sensitivity analysis as shown on Figure 22.3. If Opex increases by 30 %, after-tax NPV decreases to 77.8 M USD and after-tax IRR decreases to 19.4 %. An increase of 30 % in Capex, results in after-tax NPV of 97.3 M USD and after-tax IRR of 19.1 %.

Figure 22.2 – Pre-Tax NPV and IRR Sensitivity to Changes in: Capex, Opex, and Concentrate Price

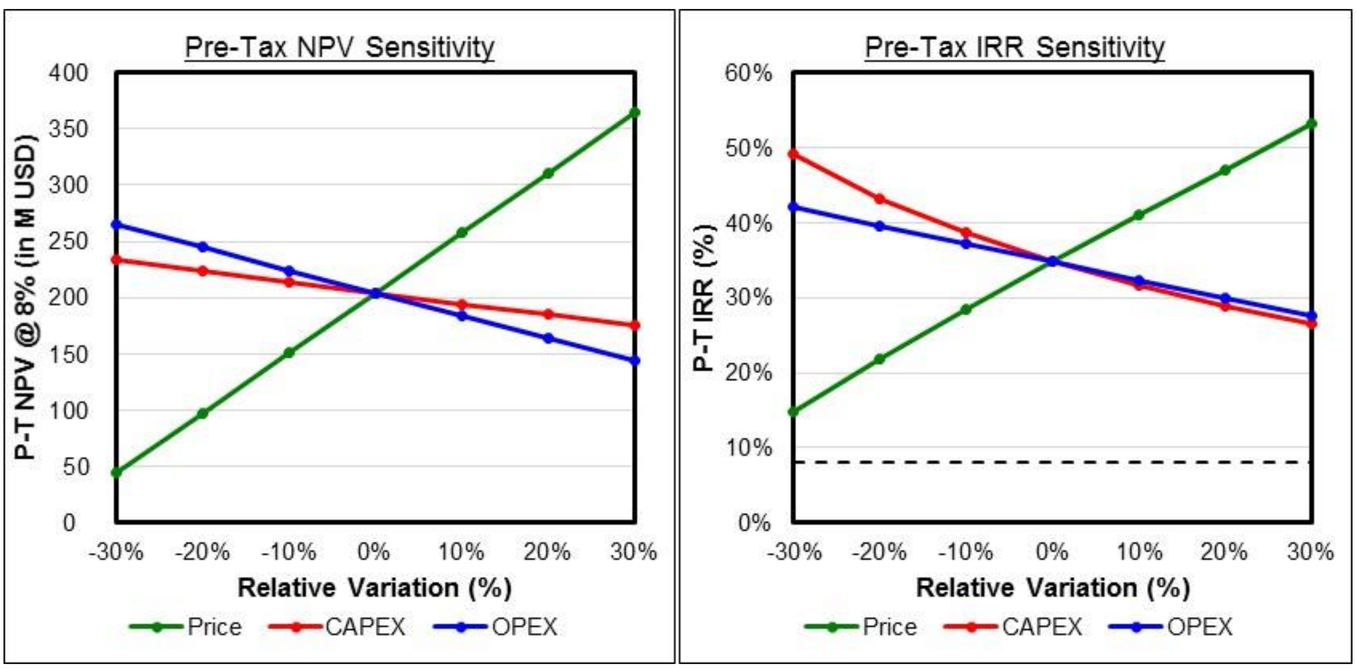
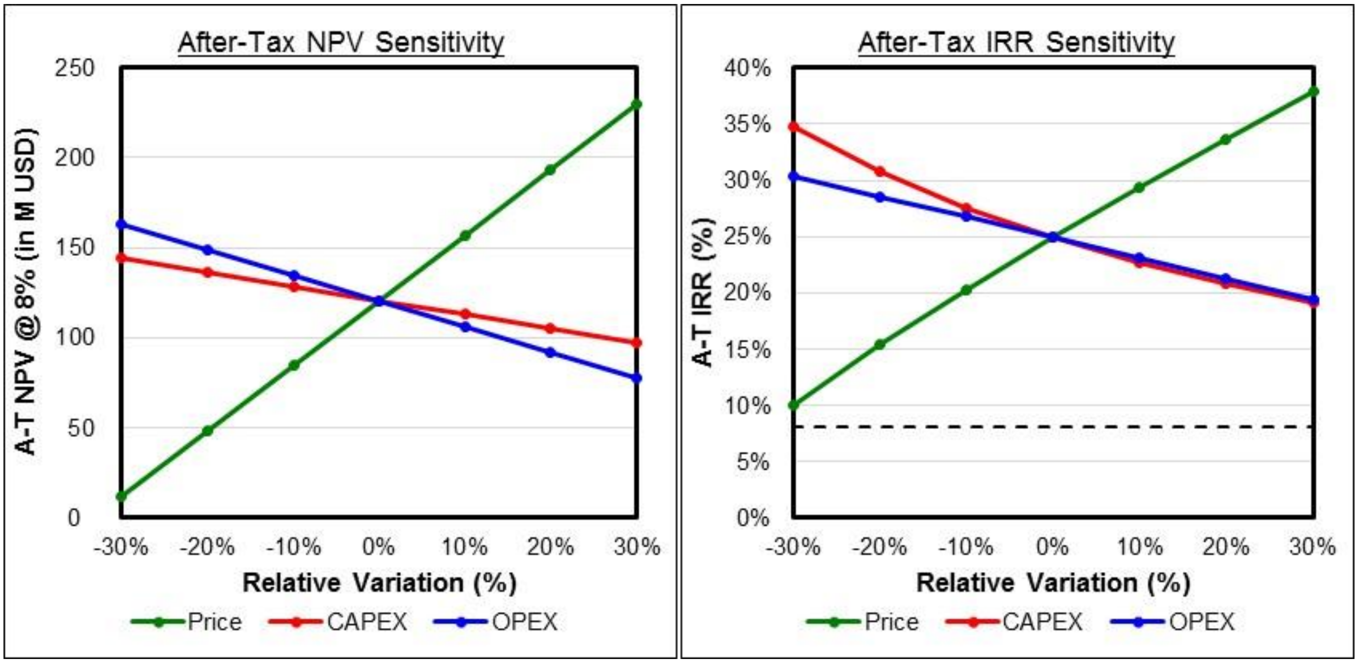


Figure 22.3 – After-Tax NPV and IRR Sensitivity to Changes in: Capex, Opex, and Concentrate Price

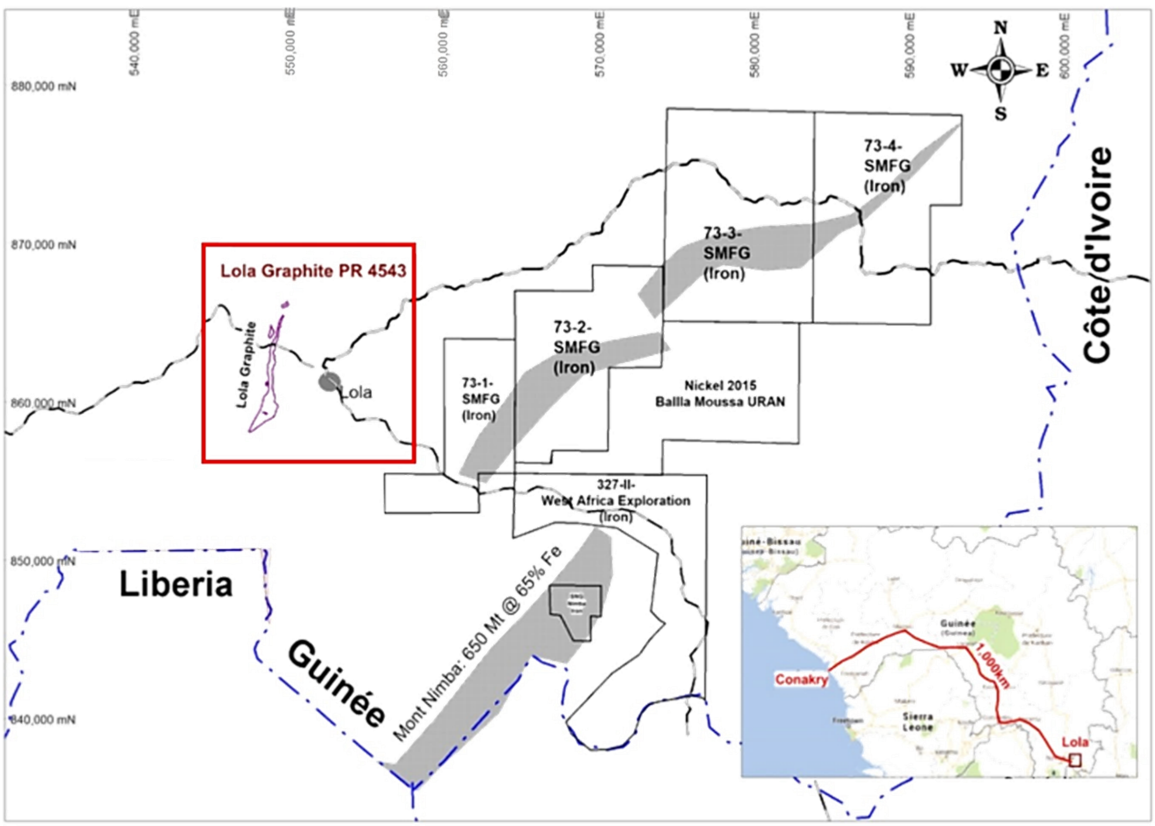


23 ADJACENT PROPERTIES

Lola Graphite Exploration Licenses stand alone with no other adjacent exploration permits for Graphite. However, since the Guinean mining code allows the superposition of exploration permits, if they are not for the same commodities, there are other exploration permits in the surrounding area for iron and base metals (Figure 23.1).

Until December 2015, the Lola Graphite Exploration Licenses were partially included within the SRG Guinée's Base Metal Exploration Permit PR 379-2 (Figure 23.1). However, since December 2015, SRG Guinée decided not to renew the Base Metals Exploration Permits (PR 379-1 to 3), keeping only the graphite exploration permits. In July 2017, SRG Guinée applied for, and obtained, two (2) reconnaissance permits located north and south of PR 4543 but those were later relinquished.

Figure 23.1 – Adjacent Properties with Exploration Permits



24 OTHER RELEVANT DATA AND INFORMATION

There is no additional information or explanation necessary to make the Technical Report understandable and not misleading.

25 INTERPRETATION AND CONCLUSIONS

This Report was prepared and compiled by DRA/Met-Chem under the supervision of the QPs at the request of SRG. This Report has been prepared in accordance with the provisions of National Instrument 43-101 Standards of Disclosure for Mineral Projects.

25.1 Conclusions

The Mineral Resource Estimate includes a pit-constrained measured and indicated resource of 12.2 million tonnes (“Mt”) grading 5.6% Cg and an inferred resource of 2.1 Mt grading 6.1% Cg, using a cut-off grade of 3.0% Cg.

The processing plant is designed to process 1.3 Mt/y of run of mine to produce approximately 50,192 tonnes per year of graphite concentrate grading at about 94.23 % Cg based on a concentrate recovery of 79.25 %. A suitable process flowsheet including crushing, scrubbing and grinding, rougher flotation, polishing and cleaner flotation, concentrate thickening, filtering, and drying. Mining equipment, tailings storage facility, concentrate warehouse, and power generation facilities as well as infrastructure and services have been added to complete the investment cost of the project.

The pre-production initial capital cost, at an accuracy level of ± 35 %, is evaluated at 105.1M USD while the sustaining capital requirement, at an accuracy level of ± 50 %, is 58.0M USD.

The life of mine average operating cost estimate is evaluated at 502 USD/tonne of concentrate.

Mine closure and rehabilitation cost have been estimated at 4.5 M USD.

The economic analysis of the project has demonstrated the potential viability of the project over its 16 years life of mine expectancy with recommendations to proceed to next level of Feasibility studies. At an average sale price of graphite concentrate of $1,328/tonne, the financial results indicate a before-tax Net Present Values (NPV) of 204.2 M USD at discount rates of 8 %. The before-tax Internal Rate of Return is 34.8 % with a payback period of 2.6 years. The after-tax Net Present Values are 120.6 M USD at discount rates of 8 %. The after-tax Internal Rate of Return is 24.9 % and the payback period is 3.5 years.

25.1.1 Mineral Processing and Metallurgical Testing

In DRA/Met-Chem’s opinion, the test work completed to date provides a level of knowledge on the metallurgical response of the mineralized material sufficient for the PEA study.

The following conclusions, with regards to the tested samples, and their processing characteristics, can be drawn based on the latest scoping test program results:

- The master composite graded 5.98% C(g) and 0.19% S. The variability composites ranged from 2.83% C(t) to 11.0% C(t).

- Mineralogical analysis showed that the major gangue minerals were quartz, aluminum/iron silicates and oxides, feldspars, micas, and iron oxides.
- The graphite contained in the master composite was 56.6% liberated, with the vast majority of the remaining particles being exposed. Less than 4% of the graphite was locked.
- 100% of the graphite particles in the slimes product was liberated. The slimes agglomerate aggressively likely due to the presence of kaolinite.
- The Bond ball mill work index of the master composite was 10.7 kWh/t, ranking the sample as soft material.
- The best cleaner flotation tests on the master composite were F11 and F13. Test F11 returned screened concentrates all above 96.3% C(t) at 78.7% C(t) recovery. Test F13 achieved similar concentrate grades at 83.2% C(t) recovery. The -100 mesh product from Test F13 required more attrition time, though with a final grade of 93.5% C(t).
- The bulk flotation tests produced high concentrate grades of 98.9% C(t) for the +48 mesh fraction, 96.1% C(t) for the +80 mesh fraction, 94.6% for the +100 mesh fraction, and 97.9% C(t) for the - 100 mesh fraction. An overall recovery of 75.3% was obtained for the processing of 150 kg of feed material.
- Variability composite cleaner flotation showed some promise in all samples with final coarse concentrates all grading greater than 93.2% C(t).
- Most of the fine concentrates required more attrition milling time to achieve greater than 95% C(t), but all were above 90% C(t).

25.1.2 Mining Methods

The PEA for the Lola mineral resources is based on a 16-year open pit which includes 20.7 M tonnes of ore at an average diluted grade of 4.43% Cg and a stripping ratio of 0.39:1. The mineralized material is contained within 3 areas (North, Central, and South). The mine will operate year-round, seven (7) days per week, 20 hours per day (two [2] shifts, ten [10] hours each).

Each year, an average of 1.4 M tonnes of ore will be mined from the open pit and hauled to the run of mine (ROM) pad which will be located roughly 4 km from the north pit area, 6.5 km from the central pit area and 8 km from the south pit area. The mining equipment fleet includes (during Year 2 to Year 8) two (2) articulated haul trucks with 38-tonne payloads and one (1) hydraulic excavator (6.7 m^3).

Due to saprolite material, drill and blast is not required.

25.1.3 Recovery Methods

It is DRA/Met-Chem's opinion that the process design detailed provides a sufficient basis for the development of the capital and operating cost estimates for the processing plant shown in Section 21.

25.1.4 Environment

SRG has followed the regulatory approach established in Guinea for assessing the environmental and social impacts of mining projects. The environmental approval process consists of conducting a preliminary EA, followed by two (2) cycles of consultation with the stakeholders and communities concerned by the Project and environmental baseline and social characterization studies, as well as issuing an environmental and social impact study report.

The preliminary environmental and social assessment, data from baseline studies, and consultations assisted in the identification of the components of the biophysical and human environments that could be impacted by the Project, as well as to collect expectations and concerns of communities affected by the Project.

The preliminary results of the studies suggest that the different stakeholders consulted are overall favourable to the realization of the Project. However, there are some concerns, mainly about:

- Preliminary environmental impact related mainly to the Project site area: water quality degradation, loss of terrestrial and aquatic habitats, and nuisance's due to mining activities (noise, dust, traffic, etc.);
- The future of the N'Zérékoré-Lola road, which cuts the deposit in two (2);
- The loss of properties and the loss of income from the activities currently carried out on the site (agriculture, livestock breeding, etc.);
- Compensation mechanisms and transparency of the hiring process, and importance of giving priority to the young people in the communities.

The environmental and social impact study is underway, and it will address these concerns. The mitigation measures and environmental management plans will be prepared and discussed during the public inquiry, as well as a mine closure and rehabilitation plan.

25.2 Risk Evaluation

The risks affecting the economic and technical viability of the Project will be reduced as geotechnical and hydrogeological studies, metallurgical testing, and engineering are undertaken during the next phase.

As for all mining projects, external risks beyond the control of the project such as the political situation in the Project region, product prices, exchange rates and government legislations are much more difficult to anticipate and mitigate. Negative variance to these risks from the assumptions used to build the block model may have an impact on Mineral Resource Estimates.

26 RECOMMENDATIONS

Considering the positive outcome of the PEA, it is recommended to pursue the definition of the Project through various aspects in order to get sufficient data to produce a Feasibility Study (FS).

26.1 Mining and Geology

It is recommended to continue with additional work to further define the deposit as outlined below:

- DRA/Met-Chem recommends geotechnical or hydrogeological investigations for surface infrastructure to be carried out if the Project advances to the next phase.
- DRA/Met-Chem recommends a complete pit slope analysis if the Project advances to the next phase.
- DRA/Met-Chem recommends that a hydrogeological study be carried out if the Project advances to the next phase. This study will provide an estimate of the quantity of water that is expected to be encountered during the mining operation.

26.2 Mineral Processing and Metallurgical Testing

The following recommendations can be made:

- Further grindability tests on larger samples, such as UCS, RWi, and Ai;
- Repeat tests on the variability composites to achieve better rougher and bulk cleaner recoveries as well as optimizing polishing mill and attrition mill grinding times;
- Further optimization bench scale test work to optimize the final flowsheet based on both typical plant feed head grade and extremes in head grade;
- Pilot plant processing of feed material for both design and concentrate generation purposes;
- Vendor testing to increase the project Owner's confidence in the process equipment selection;
- Continuation of the final concentrate purification studies to develop an optimal process route for production of high purity graphite products from the Lola concentrate.

26.3 Recovery Methods

Certain work is recommended for the next stages of the project development:

- Optimization test work including comminution, scrubbing, and flotation tests to produce sufficient data for the process design development;
- Trade-off studies to the major process equipment selection including technical performance, costs, and vendor project delivery experience with regards to the schedule and aftermarket

service capabilities within the region. These studies would reduce the possible technical and commercial risks for the project.

26.4 Environment

It is recommended to perform the following work in connection with environmental activities:

- Extend soil and surface water surveys to select the best location for the tailing ponds, waste rock and overburden piles;
- Study options for water management strategy to take into consideration the future graphite plant process water requirement and site water management;
- Carry out an hydrogeological study to collect field data in order to estimate from groundwater flow modeling dewatering rates and impacts;
- Continue on-going consulting and environmental studies required to support permitting requirement and to optimize the site layout;
- Identify environmental requirement for site closure and estimate the cost.

26.5 Proposed Work Program

To ensure the potential viability of the mineral resources, proposed activities to be undertaken in the next phase have been identified. These activities along with their estimated costs are shown in Table 26.1.

Table 26.1 – Estimated Budget for Next Phase

Activities	Estimated Budget $ (CAD)
Definition Drilling Campaign	100,000
Geotechnical and Hydrogeology Studies	490,000
Metallurgical Test Work Program	260,000
Environmental Studies	1,000,000
Feasibility Study	1,400,000
Sub-Total	*3,250,000*
Contingency (20 %)	650,000
Total	**3,900,000**

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28 ABBREVIATIONS

The following abbreviations may be used in this Report.

Abbreviation	Terms or Units
'	Feet
"	Inch
$	Dollar Sign
$/m^2$	Dollar per Square Metre
$/t	Dollar per Metric Tonne
%	Percent Sign
% w/w	Percent Solid by Weight
¢/kWh	Cent per Kilowatt hour
°	Degree
°C	Degree Celsius
3D	Three-Dimensionals
Ai	Abrasion Index
Actlabs	Activation Laboratories Ltd.
Anzaplan	Dorfner/Anzaplan
BET	Brunauer- Emmett- Teller
BGEEE	*Bureau Guinéen d'Étude et Évaluation Environnementale*
BGR	*Bundesanstalt für Geowissenschaften und Rohstoffe*
BIF	Banded Iron Formation
BOF	Basic Oxygen Furnace
BQ	Drill Core Size (3.65 cm diameter)
BRGM	*Bureau de recherches géologiques et minières*
BSG	Bulk Specify Gravity
BTU	British Thermal Unit
BUMIFOM	*Bureau minier de la France Outre-Mer*
BWiI	Bond Ball Mill Work Index
CAD	Canadian Dollar
Capex	Capital Expenditures
CDE	Canadian Development Expenses

Abbreviation	Terms or Units
CDP	Closure and Decommissioning Plan
Ce	Cesium
cfm	Cubic Feet per Minute
CFR	Cost and Freight
Cg	Graphitic
CIF	Cost Insurance and Freight
CIL	Carbon in Leach
CIM	Canadian Institute of Mining, Metallurgy, and Petroleum
CIP	Carbon in Pulp
Cl	Clay
CL	Concentrate Leach
cm	Centimetre
CNT	*Conseil National de transition*
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COG	Cut-o Off Grade
COV	Coefficient of Variation
CRM	Certified Reference Materials
CTAE	*Comité Technique d'Analyse Environnementale*
CTMP	*Centre de Technologie Minérale et de Plasturgie Inc.*
CU	*Commune Urbaine*
CWI	Crusher Work Index
d	Day
d/w	Days per Week
d/y	Days per Year
D2	Second Generation of Deformation
D3	Third Generation of Deformation
D4	Fourth Generation of Deformation
dB	Decibel
dBA	Decibel with an A Filter
DDH	Diamond Drill Hole
deg	Angular Degree

Abbreviation	Terms or Units
DEM	Digital Elevation Model
DGPS	Differential Global Positioning System
DMS	Dense Media Separator
DT	Davis Tube
DTM	Digital Terrain Model
DWI	Drop Weight Index
DWT	Drop Weight Test
DXF	Drawing Interchange Format
E	East
EA	Environmental Assessment
EAB	Environmental Assessment Board
EAF	Electric Arc Furnace
EBS	Environmental Baseline Study
EDS	Energy-dispersive X-ray spectroscopy
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EM	Electromagnetic
EMP	Environmental Management Plant
EOH	End of Hole
EP	Environmental Permit
EPA	Environmental Protection Agency
EPCM	Engineering, Procurement, and Construction Management
EQA	Environmental Quality Act
ER	Electrical Room
ESBS	Environmental and Social Baseline Study
ESIA	Environmental and Social Impact Assessment
FOB	Free on Board
ft	Feet
g	Grams
G&A	General and Administration
g/l	Grams per Litre

Abbreviation	Terms or Units
g/t	Grams per Tonne
gal	Gallons
GCP	Ground Control Points
GCW	Gross Combined Weight
GEMS	Global Earth-System Monitoring Using Space
GPS	Global Positioning System
Gr	Granular
GOH	Gross Operating Hours
H	Horizontal
h	Hour
h/d	Hour per Day
h/y	Hour per Year
H_2	Hydrogen
ha	Hectare
HDPE	High Density PolyEthylene
HF	Hydrofluoric Acid
HFO	Heavy Fuel Oil
HG	High-g Grade
HL	Heavy Liquid
hp	Horse Power
HQ	Drill Core Size (6.4 cm Diameter)
HVAC	Heating Ventilation and Air Conditioning
Hz	Hertz
I/O	Input / /Output
ICP-AES	Inductively Coupled Plasma – Atomic Emission Spectroscopy
ICP-MS	Inductively Coupled Plasma – Mass Spectroscopy
ICP-OES	Inductively Coupled Plasma – Optical Emission Spectroscopy
ID	Identification
IDW	Inverse Distance Method
IDW2	Inverse Distance Squared Method
IFC	International Finance Corporation

Abbreviation	Terms or Units
in	Inches
IR	Infrared Radiation
IRA	Inter-Ramp Angle
IRR	Internal Rate of Return
IT	Information Technology
JORC	Joint Ore Reserves Committee
KE	Kriging Efficiency
kg	Kilogram
kg/l	Kilogram per Litre
kg/t	Kilogram per Metric Tonne
kl	Kilolitre
km	Kilometre
km/h	Kilometre per Hour
kPa	Kilopascal
KSR	Kriging Slope Regression
kt	Kilotonne
kV	Kilovolt
kVA	Kilovolt Ampere
kW	Kilowatt
kWh	Kilowatt-hour
kWh/t	Kilowatt-hour per Metric Tonne
Hz	Hertz
L	Line
l	Litre
l/h	Litre per Hhour
lbs	Pounds
LFO	Light Fuel Oil
LG	Low Grade
LG-3D	Lerchs-Grossman – 3D Algorithm
Li	Lithium
LIMS	Low Intensity Magnetic Separator
LPA	*Lumière polarisée analysée*

Abbreviation	Terms or Units
LPNA	*Lumière polarisée non-analysée*
LOI	Loss on Ignition
LOM	Life of Mine
LV	Low Voltage
m	Metre
m/h	Metre per Hour
m/s	Metre per Second
m^2	Square Metre
m^3	Cubic Metre
m^3/d	Cubic Metre per Day
m^3/h	Cubic Metre per Hour
m^3/y	Cubic Metre per Year
mA	Milliampere
MCC	Motor Control Center
MEB	*Microscopie électronique à balayage*
mg/**L**l	Milligram per Litre
MIBK	Methyl Isobutyl Ketone
min	Minute
min/h	Minute per Hour
Min/shift	Minute per Shift
ml	Millilitre
ML	Metal Leaching
MLA	Mineral Liberation Analyzer
mm	Millimetre
mm/d	Millimetre per Day
Mm^3	Million Cubic Metres
MMER	Metal Mining Effluent Regulation
MMU	Mobile Manufacturing Units
MOLP	Multiple Objective Linear Programming
MOU	Memorandum of Understanding
Mt	Million Metric Tonnes
Mt/y	Million of Metric Tonnes per Year

Abbreviation	Terms or Units
MV	Medium Voltage
MVA	Mega Volt-Ampere
MW	Megawatts
MWh/d	Megawatt Hour per Day
My	Million Years
N	North
NAG	Non-Acid-Generating
Nb	Number
NE	Northeast
NFPA	National Fire Protection Association
NGR	Neutral Grounding Resistor
NI	National Instrument
Nm^3/h	Normal Cubic Metre per Hour
NPV	Net Present Value
NQ	Drill Core Size (4.8 cm diameter)
NSR	Net Smelter Return
NTP	Normal Temperature and Pressure
NTS	National Topographic System
NW	Northwest
O/F	Overflow
OB	Overburden
OK	Ordinary Kriging
Opex	Operating Expenditures
ORF	Ontario Research Foundation
oz	Ounce (troy)
oz/t	Ounce per Short Tonne
P&ID	Piping and Instrumentation Diagram
PAPs	Project Affected Persons
PEA	Preliminary Economic Assessment
PF	Power Factor
PFS	Pre-Feasibility Study
PG	ProGraphite GmbH

Abbreviation	Terms or Units
PGGS	Permit for Geological and Geophysical Survey
ph	Phase (Electrical)
pH	Potential Hydrogen
PIR	Primary Impurity Removal
PLC	Programmable Logic Controllers
PP	Preproduction
ppb	Part per Billion
ppm	Part per Million
PR	*Permis de recherche*
psi	Pounds per Square Inch
P-T	Pressure-Temperature
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QKNA	Quantitative Kriging Neighbourhood Analysis
QP	Qualified Person
RAP	Resettlement Action Plans
RCMS	Remote Control and Monitoring System
RER	Rare Earth Magnetic Separator
RMR	Rock Mass Rating
ROM	Run of Mine
rpm	Revolutions per Minute
RQD	Rock Quality Designation
RWI	Bond Rod Mill Work Index
S	South
S	Sulfur
S/R	Stripping Ratio
SAG	Semi-Autogenous Grinding
scfm	Standard Cubic Feet per Minute
SCIM	Squirrel Cage Induction Motors
SE	Southeast
sec	Second
SEM	Scanning Electronic Microscope

Abbreviation	Terms or Units
Set/y/unit	Set per Year per Unit
SG	Specific Gravity
SGS-Lakefield	SGS Lakefield Research Limited of Canada
SIR	Secondary Impurity Removal
SMC	SAG Mill Comminution
SNRC	*Système National de Référence Cartographique*
SPI	SAG Power Index
SPLP	Synthetic Precipitation Leaching Procedure
SPT	Standard Penetration Tests
SR	Stripping Ratio
SW	Southwest
t	Metric Tonne
t/d	Metric Tonne per Day
t/h	Metric Tonne per Hour
t/h/m	Metric Tonne per Hour per Metre
$t/h/m^2$	Metric Tonne per Hour per Square Metre
t/m	Metric Tonne per Month
t/m^2	Metric Tonne per Square Metre
t/m^3	Metric Tonne per Cubic Metre
t/y	Metric Tonne per Year
Ta	Tantalum
TCLP	Toxicity Characteristic Leaching Procedure
TER	*Travail d'Études et de Recherches*
TIN	Triangulated Irregular Network
ton	Short Tonne
tonne	Metric Tonne
ToR	Terms of Reference
TSS	Total Suspended Solids
U	Uranium
U/F	Underflow
ULC	Underwriters Laboratories of Canada
USA	United Statesd of America

Abbreviation	Terms or Units
USD	United States Dollar
USGPM	US Gallons per Minute
UTM	Universal Transverse Mercator
V	Volt
VAC	Ventilation and Air Conditioning
VFD	Variable Frequency Drive
VLF	Very Low Frequency
W	Watt
W	West
WAC	West African Archean Craton
WHIMS	Wet High Intensity Magnetic Separation
WHO	World Health Organization
WRA	Whole Rock Analysis Method
WSD	World Steel Dynamics
wt	Wet Metric Tonne
X	X Coordinate (E-W)
XRD	X-Ray Diffraction
XRF	X-Ray Fluorescence
y	Year
Y	Y coordinate (N-S)
Z	Z coordinate (depth or elevation)
Zr	Zirconium

29 CERTIFICATE OF QUALIFIED PERSON

CERTIFICATE OF QUALIFIED PERSON

Silvia Del Carpio, P. Eng., MBA

To Accompany the Report entitled "Technical Report, Preliminary Economic Assessment, Lola Graphite Project" prepared for SRG Graphite Inc. and dated August 2, 2018.

I, *Silvia Del Carpio, P. Eng., MBA,* do hereby certify:

1. I am a Process Engineer with Met-Chem, a division of DRA Americas Inc, with an office at 555 René-Lévesque Blvd. West, 6th Floor, Montreal, Canada.
2. I hold a Bachelor's degree in Materials Engineering from McGill University of Montreal, Quebec, Canada.
3. I am a registered member of Professional Engineers Ontario (PEO), membership #100134350.

   I have worked for more than 10 years in the mining industry in various positions since my graduation from university.

   My experience for the purpose of the Technical Report is:

   - Hands-on experience in mining and metallurgical operations in Canada and Peru;
   - Review and interpretation of financial results of industrial projects in Europe, Asia and North America;
   - Generation of cash flows and valuation of mining projects;
   - Management and finance training obtained during a Master of Business Administration degree from London Business School in London, United Kingdom.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the site.
6. I have participated in the preparation of this Technical Report and am responsible for Sections 2, 3, 15, 18, 19, 21.2 except for 21.2.3 and 21.2.4, 22, and 24 and parts of Sections 1 and 25 to 27.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.

9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of August 2018

"Original document signed and sealed"
Silvia Del Carpio, P. Eng., MBA

CERTIFICATE OF QUALIFIED PERSON

Yves A. Buro, P. Eng.

To Accompany the Report entitled "Technical Report, Preliminary Economic Assessment, Lola Graphite Project" prepared for SRG Graphite Inc. and dated August 2, 2018.

I, *Yves A. Buro, P. Eng.,* do hereby certify:

1. I am a Senior Engineer with Met-Chem, a division of DRA Americas Inc, with an office at 555 René-Lévesque Blvd. West, 6th Floor, Montreal, Canada.
2. I am a graduate of University of Geneva, Switzerland with the equivalent of a B.Sc. and a M.Sc. in Geology obtained in 1976.
3. I am a registered member of the "Ordre des ingénieurs du Québec" (OIQ), membership # 42279.
4. I have worked continuously as an engineer in mineral exploration and production in the mining industry since my graduation from University. I have gained relevant experience on deposits similar to the Lola project, including:
    a) Hands-on experience in exploration for industrial minerals in Canada, the USA, South America and Europe;
    b) Field mapping and core logging of geology and structural elements for various projects since 1979;
    c) Collection of representative samples on graphite projects;
        a. Examination of core samples and outcrops to select a representative sample for metallurgical tests (Quebec);
        b. Selection of core samples to generate representative samples for metallurgical tests (Quebec);
        c. Collection of representative samples for metallurgical tests (Ontario);
    d) Desk review of a graphite project in Brazil and technical assistance;
    e) Design and supervision and implementation of drilling programs;
    f) Review, audits, interpretation of geoscientific data;
    g) Experience in exploration and drilling on several projects in weathered terranes under tropical conditions (Africa, India); and
    h) Participation in the preparation of parts of NI 43-101 compliant Technical Reports.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I have visited the site on April 11, 2018.
7. I have participated in the preparation of this Technical Report and am responsible for Sections 4 to 12 inclusively, and 23 and parts of Sections 1 and 25 to 27.I have not had prior involvement with the property that is the subject of the Technical Report.
8. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of August 2018

"Original document signed and sealed"

Yves A. Buro, P.Eng

Yves A. Buro, P. Eng.

CERTIFICATE OF QUALIFIED PERSON

Marc-Antoine Audet, P. Geo., Ph.D.

To Accompany the Report entitled "Technical Report, Preliminary Economic Assessment, Lola Graphite Project" prepared for SRG Graphite Inc. and dated August 2, 2018.

I, *Marc-Antoine Audet, P. Geo., Ph.D.,* do hereby certify:

1. I am a Senior Geologist with SRG Graphite Inc., with an office at 1320 Graham, suite 132, Mont-Royal, Quebec, H3P 3C8, Canada.
2. I am a graduate from Laval University, Quebec City, Canada in Geology/Earth Science (1986), with a Master Degree from University of the Witwatersrand, Johannesburg, RSA in Geology/Earth Science (1995), a Ph.D. in Geology/Earth Science from Université du Québec à Montréal, Canada (UQAM) in 2008.
3. I am a registered member of the Association of Professional Geoscientists of Ontario, membership # 612.
4. I am a Consulting Geologist specialized in Project Management in Foreign Countries as well as in Mineral Resource and Reserve estimations and Reporting. I have more than *30* years of experience in the geological sphere; where I specialize in implementing and managing many greenfield and early development stage of projects in Africa, South America, Pacific, Caribbean, etc. as well as experience in environmental, health and safety and social/ community aspects.

   With more than *20* of experience in the geostatistic and block modelling fields, with emphasis on Mineral Resource Estimation and Mine Planning Process. I have acted as Auditor as well as Qualified Person (QP) in relation to the Canadian NI43-101 regulations as well as for the Australian's JORC code requirements for resource disclosure.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I have visited the site.
7. I have participated in the preparation of this Technical Report and am responsible for Section 14 and parts of Sections 1, 25, and 26.

8. I have not had prior involvement with the property that is the subject of the Technical Report.
9. I am not independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
10. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
11. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of August 2018

"Original document signed and sealed"
Marc-Antoine Audet, P. Geo., Ph.D.

CERTIFICATE OF QUALIFIED PERSON

Volodymyr Liskovych, Ph.D., P. Eng.

To Accompany the Report entitled "Technical Report, Preliminary Economic Assessment, Lola Graphite Project" prepared for SRG Graphite Inc. and dated August 2, 2018.

I, *Volodymyr Liskovych, Ph.D., P. Eng.,* do hereby certify:

1. I am a Senior Process Engineer with DRA Americas with an office at Suite 300, 44 Victoria Street, Toronto, Ontario, Canada.
2. I am a graduate from Zaporozhye State Engineering Academy, Zaporozhye, Ukraine in 1996 with a Metallurgical Engineer Degree, and a graduate from National Metallurgical Academy of Ukraine, Dnepropetrovsk (Dnipro), Ukraine with the PhD degree in Metallurgical Engineering in 2001.
3. I am a registered member of the Professional Engineers of Ontario (#100157409).

   I have worked continuously as a Metallurgical Engineer for 22 years since my graduation from Zaporozhye State Engineering Academy.

   My relevant experience for the purpose of the Technical Report is:

   - Review and report on mineral processing and metallurgical operations and projects around the world for due diligence and regulatory requirements;
   - Engineering study (PEA, PFS, FS, and Detailed Engineering) project work on multiple minerals processing and metallurgical and hydrometallurgical projects around the world, and in North America;
   - Operational experience in operations management and operational support positions in metallurgical and hydrometallurgical operations in Ukraine, Canada, and Brazil.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the site.
6. I am responsible for Sections 13, 17, and 21.2.4 and parts of Sections 1, 25 to 27.
7. I have had prior involvement with the property that is the subject of the Technical Report.

   My prior involvement with the Project is preparing and supporting the Technical Report entitled "NI 43-101 Technical Report – Mineral Resource Estimate for Lola Graphite Project" prepared for SRG Graphite Inc. ("SRG") issued on February 5th, 2018 with an effective date of September 30th, 2017.

8. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of August 2018

"Original document signed and sealed"

Volodymyr Liskovych, Ph.D., P. Eng.

CERTIFICATE OF QUALIFIED PERSON

William Shadeed, P. Eng.

To Accompany the Report entitled "Technical Report, Preliminary Economic Assessment, Lola Graphite Project" prepared for SRG Graphite Inc. and dated August 2, 2018.

I, *William Shadeed, P. Eng.,* do hereby certify:

1. I am a process engineer with Met-Chem, a division of DRA Americas Inc, with an office at 555 René-Lévesque Blvd. West, 6th Floor, Montreal, Canada.
2. I am a graduate from *École Polytechnique de Montréal,* Québec with B.Eng. in Chemical Engineering in 2008.
3. I am a registered member of *Ordre des ingénieurs du Québec* (OIQ), membership # 145770.

   I have worked continuously in engineering for 10 years since my graduation from *École Polytechnique de Montréal*.

   My relevant experience for the purpose of the Technical Report is:

   - Engineering study (PEA, PFS, FS, and Detailed Engineering) project work in mineral processing.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the site.
6. I have participated in the preparation of this Technical Report for Sections 13, 17, and 21.2.4.
7. I have not had prior involvement with the property that is the subject of the Technical Report.

8. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report that I have participated in contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of August 2018

"Original document signed and sealed"

William Shadeed, P. Eng.

CERTIFICATE OF QUALIFIED PERSON

Patrick Pérez, P. Eng.

To Accompany the Report entitled "Technical Report, Preliminary Economic Assessment, Lola Graphite Project" prepared for SRG Graphite Inc. and dated August 2, 2018.

I, *Patrick Pérez, P. Eng.,* do hereby certify:

1. I am Senior Mining Engineer with Met-Chem, a division of DRA Americas Inc, with an office at 555 René-Lévesque Blvd. West, 6th Floor, Montreal, Canada.
2. I am a graduate from "Ecole Nationale Supérieure de Géologie de Nancy", in France, with a M.Sc. in Geological Engineering in 2003.
3. I am a registered member of APEGS (Association of Professional Engineers and Geoscientists of Saskatchewan), membership #16131.

   I have worked as a Mining Engineer or Project Manager continuously since my graduation from university.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the site.
6. I am responsible for Section 16 and 21.2.3, and part of Sections 1, 25, and 26.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of August 2018

"Original document signed and sealed"

Patrick Pérez, P. Eng.

CERTIFICATE OF QUALIFIED PERSON

Martin Stapinsky, P. Geo., M.Sc., Ph.D.

To Accompany the Report entitled "Technical Report, Preliminary Economic Assessment, Lola Graphite Project" prepared for SRG Graphite Inc. and dated August 2, 2018.

I, *Martin Stapinsky, P. Geo., M.Sc., Ph.D.,* do hereby certify:

1. I am a Senior Professional Geologist with Met-Chem, a division of DRA Americas Inc, with an office at 555 René-Lévesque Blvd. West, 6th Floor, Montreal, Canada.
2. I am a graduate from the University of Montreal with B.Sc. in Geology in 1989 and hold a M.Sc. in Geology (hydrogeology) from the University of Laval in 1991 and a Ph. D. in Earth Science (hydrogeology) from the University of Ottawa in 2001.
3. I am a registered member of the Ordre des Géologues du Québec (OGQ), membership # 794 and the Association of Professional Geoscientists of Ontario, membership #2679.

   I have worked continuously as a Hydrogeologist and in Environment for more than *25* years since my graduation from university, and more than 15 years specifically in the mining industry.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have not visited the site.
6. I have participated in the preparation of this Technical Report and I am responsible for Section 20 and parts of Sections 1, 25 to 27.
7. I have not had prior involvement with the property that is the subject of the Technical Report.
8. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
9. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
10. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of August 2018

"Original document signed and sealed"

Martin Stapinsky, P. Geo., M.Sc., Ph.D.

CERTIFICATE OF QUALIFIED PERSON

Martin Saint-Amour, P. Eng.

To Accompany the Report entitled "Technical Report, Preliminary Economic Assessment, Lola Graphite Project" prepared for SRG Graphite Inc. and dated August 2, 2018.

I, *Martin Saint-Amour, P. Eng.,* do hereby certify:

1. I am Senior Estimator with Met-Chem, a division of DRA Americas Inc, with an office at 555 René-Lévesque Blvd. West, 6th Floor, Montreal, Quebec, Canada.
2. I am a graduate from "École Polytechnique de Montréal", Montreal, Quebec, Canada with a bachelor's degree in engineering.
3. I am a member of the "Ordre des Ingénieurs du Québec" (membership #116377).
4. I have worked as an engineer for more than 20 years, most of which in the mining and metallurgy industry, in various positions. Prior to joining Met-Chem, I was a consultant in estimating and a lead estimator at SNC-Lavalin Inc.

   My relevant experience for the purpose of the Study is in estimating on projects' execution as well as studies for the mining and metallurgy industry.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I have not visited the site.
7. I am responsible for Section 21.1 and parts of Section 1.
8. I have not had prior involvement with the property that is the subject of the Technical Report.

9. I am independent of the issuer applying all of the tests in section 1.5 of NI 43-101.
10. I have read NI 43-101 and Form 43-101F1 and the sections of the Technical Report I am responsible for have been prepared in compliance with that instrument and form.
11. As of the aforementioned Effective Date, to the best of my knowledge, information and belief, the sections of the Technical Report I am responsible for contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 2nd day of August 2018

"Original document signed and sealed"
Martin Saint-Amour, P. Eng.

Appendix A –
Protocoles des activités géologiques majeures

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Juin 2013

PROTOCOLES DES ACTIVITES GEOLOGIQUES MAJEURES

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1. RESUME

Ce document a été conçu pour permettre au géologue de s'approprier la connaissance en ce qui concerne la supervision des activités géologiques majeures dont le forage diamanté (diamond drilling). Il s'agit entre autres des principes de réalisation d'une campagne de forages, de l'établissement d'un site de forage, des dispositions à prendre avant, pendant, après le forage et des pratiques de sécurité et de l'approbation d'un forage.

Il fournir les rudiments de la procédure technique à appliquer pour la collecte et l'évaluation qualitative des données issues des travaux de forages et d'ouverture de tranchées. Ce manuel est conçu pour limiter les risques techniques liés à un projet minier et minimise les erreurs pouvant subvenir lors de ces activités, en assurant un contrôle continu de la qualité des échantillons et des données. Ce document présente des méthodes permettant d'obtenir des données structurales et géotechniques décrivant le comportement de la roche et intervient notamment dans la conception du design de la mine.

Des erreurs peuvent survenir non seulement lors des phases de forages mais aussi pendant la détermination du poids spécifique ou lors des analyses en laboratoire. Des résultats d'analyses fiables et une bonne interprétation géologique, basés sur les analyses structurales des carottes et la connaissance des caractéristiques géotechniques de la roche, constituent les informations de base nécessaires à la conception de la mine et à sa planification. Toute donnée collectée durant la phase d'exploration doit pouvoir fournir une base fiable pour les interprétations géologique, minéralogique, géotechnique, hydrologique et métallurgique. Chaque projet doit être traité comme s'il devait donner naissance à une étude de faisabilité.

2. Forage DDH

2.1. Dispositions préliminaires

2.1.1. Programmation de forage

Toutes les campagnes de forages doivent suivre un processus de programmation de forage. La fiche de programmation de forage (figure1) doit être approuvée par le directeur de l'exploration.

La planification et le positionnement des forages doivent être vus par au moins un autre géologue, incluant un bilan des informations réunissant les différentes données existantes (géochimie du sol, mapping, géophysique, forages précédents, etc.). Les différents facteurs géologiques, et les exigences techniques de la campagne doivent être pris en compte au moment de la planification des forages.

Les fiches de programmation de forage sont soumises au manager de la base de données, et peuvent ensuite être rentrées dans la base de données comme forages planifiés. Les sections des forages, les analyses et les données géologiques fournissent des données de référence supplémentaires au forage originellement planifié. Notons qu'un forage planifié non foré peut rester dans la base de données, et qu'un nouveau nom est donné à un forage réalisé (voir procédure de nomenclature de forage). Dans la base de données, les forages qui ont été réalisés remplacent ceux qui ont été planifiés.

Une fois la programmation de forage validée, un programme de travail est établi et distribué au géologue de terrain. Les fiches de programmation de forage peuvent être communiquées à tout le personnel concerné par le forage. Cela afin de s'assurer que le géologue, le superviseur du forage et le foreur aient compris les besoins de la campagne de forage, levant ainsi toute ambiguïté dans les instructions à donner.

	A	B	C	D	E	F	G	H	I
1	Hole ID	RIG	PRIORITY	LOCAT.[X]	LOCAT.[Y]	LOCAT.[Z]	AZIMUTH	DIP	LENTGH PROPOSAL
2				(m)	(m)	(m)	(°)	(°)	(m)
3	P3950-04	1	1	548,821	861,690	475	110	-50	25
4	P3950-03	1	2	548,800	861,697	473	110	-50	25
5	P3950-02	1	3	548,773	861,707	470	110	-50	25
6	P3850-13	1	4	549,005	861,521	482	110	-50	25
7	P3850-12	1	5	548,987	861,528	484	110	-50	25
8	P3850-11	1	6	548,967	861,535	486	110	-50	25
9	P3850-10	2	7	548,949	861,542	487	110	-50	25
10	P3850-09	2	8	548,930	861,548	487	110	-50	25
11	P3850-08	2	9	548,912	861,555	486	110	-50	25
12	P3850-07	2	10	548,893	861,562	484	110	-50	25
13	P3850-06	2	11	548,876	861,569	482	110	-50	25
14	P3850-05	3	12	548,857	861,575	479	110	-50	25

Figure 1 : Fiche de programmation de forage

2.1.2. Contrat de forage

Le géologue doit connaitre et comprendre les termes du contrat de forage avant de superviser les opérations.

A ce titre il doit savoir :

Quels sont consommables facturés et ceux qui ne le se sont pas ?

Quelle activité est payable ?

Qu'est –ce qu'on attend de la compagnie de forage ?

Quelles sont nos obligations vis-à-vis de la compagnie de forage ?

Tout géologue qui devrait rentrer en possession de ce document se doit d'appliquer scrupuleusement les recommandations en vue de la réalisation d'une bonne campagne de forage.

2.1.3. Préparation du site de forage

Les éléments suivants doivent être pris en compte lors de la préparation du site de forage :

– Le positionnement des points à forer sera effectué par un géologue à l'aide un GPS portatif. Une fois les points trouvés, ils seront matérialisés par un jalon à l'endroit que le GPS portatif aura signalé. Sur le jalon sera indiqué les informations (nom du point proposé tel que P5000-1, coordonnées UTM, la précision du GPS). Les noms proposés sont employés seulement comme références de terrain pour les chefs d'équipe pour implanter et préparer le prochain point de forage, ils ne seront pas inscrits sur les caisses à carottes. Les points localisés seront balisés par des "tapes". Si la précision de l'appareil est réduite en raison d'une mauvaise réception du satellite, attendre un peu plus longtemps ou revenir plus tard lorsque la couverture satellitaire sera plus clémente.

– Vérifier la position du point. Si le jalon est dans une position gênante, par exemple trop proches d'une route, une falaise ou un talus, il doit être déplacé.

– **Trouver des points d'**eau (marigot, rivière, fleuve, etc.) à proximité du point de forage en vue de l'utilisation de cette eau pour le forage. A défaut de cours d'eau, utiliser l'eau dans de gros fûts dont le ravitaillement se fera via un camion-citerne. L'accès à l'eau doit être organisé par le géologue de terrain.

– Planifier la venue de la machine (foreuse) sur le site de forage en s'assurant que les voies d'accès menant au site sont entretenues et ne présentent pas d'handicap. Cela à l'aide d'un bulldozer.

– La plate-forme doit être nettoyée. La zone nettoyée doit toujours être réduite à son strict minimum, tout en appliquant les règles élémentaires de sécurité et d'impact sur l'environnement. Les arbres doivent être coupés le moins possible. La couverture superficielle du sol ne doit pas être arrachée. L'opérateur du bulldozer doit être averti que la lame du bulldozer doit être surélevée de quelques centimètres par rapport au sol. S'assurer que le site ne présente aucun risque (présence de bois sec aux alentours du site). La taille et le type de la foreuse, ainsi que les véhicules éventuellement associés, déterminent la taille de la zone à nettoyer

– Une plateforme de forage doit être plane et horizontale.

– **Laisser suffisamment d'espace pour la foreuse** devant le trou. En général, un espace de 6 à 10 mètres est suffisant (voir avec le foreur) pour le stockage des tiges, devant la foreuse. Et un espace de 4 à 6 mètres en arrière du point à forer pour le positionnement de la machine.

– Le site de forage doit être balisé et contrôlé pour mesure de sécurité.

– Une fosse de récupération doit être préparée, supposée être en aval de la foreuse si possible. Généralement grande de 3 à 4 mètres cubes, situés à environ 5 mètres de la position du trou, elle doit être positionnée du côté du poste de forage (généralement le côté gauche de la foreuse).

– La fosse de récupération doit toujours être balisée.

– **Toujours préparer un certain nombre de sites de forage à l'avance**. S'il arrive un problème particulier lors d'un forage, la foreuse peut alors être déplacée vers un autre trou.

Tous les détails du forage doivent être réglés avant l'arrivée de la machine, de même pour l'assignation et l'organisation des tâches.

La responsabilité et la réalisation de ces différentes opérations sur le site de forage incombent au géologue en collaboration avec le superviseur des foreurs ou du foreur.

Figure 2: Site et sump balisés

2.1.4. **Mise en place d'une foreuse sur le site de forage**

Lors de la mise en place de lignes de forages, il est préférable d'organiser les trous de façon à ce que la foreuse n'ait juste qu'à avancer jusqu'au trou suivant.

La foreuse doit être positionnée en utilisant la méthode la plus efficace et la plus appropriée, c'est-à-dire en utilisant une boussole et le jalon repère positionné par le géologue. La méthode utilisée pour aligner une foreuse inclut trois piquets placés le long de la ligne d'azimut (située à 1.50 mètre environ l'un de l'autre) à partir du jalon repère positionné par le géologue du trou.

Le conducteur doit manœuvrer la foreuse de telle façon que le tube de la foreuse soit correctement alignée avec les jalons matérialisant la direction de forage (azimut).

Le géologue doit être à tout moment sur le terrain pendant la mise en place de la foreuse. Toute erreur dans la mise en place est de la responsabilité du géologue en dernier ressort.

La direction (azimut) doit être vérifiée avec une boussole à une distance assez suffisante de la foreuse pour éviter l'influence de métaux alentour. La direction, le pendage (dip) et l'équilibre de la machine du sondage doivent être vérifiés avant de commencer le forage au diamant.

Figure 3: Mesure de la direction (azimut) de forage en vue du positionnement de la foreuse

2.1.4.1. Déclinaison magnétique

Une boussole indique le nord magnétique, pour trouver le nord géographique (celui qui nous intéresse ici), il faut connaitre la déclinaison dans la région du projet et ajuster sa boussole en fonction. Elle est de 5°W à Lola.

2.1.5. Nomenclature de forages

Chaque trou sera localisé sur le terrain par un géologue en utilisant le GPS avant le forage. Les coordonnées seront vérifiées encore après positionnement de la machine de forage. Dès lors les trous seront identifiés avec de nouveaux noms d'après la nomenclature de Sama Resources.

La zone entière est subdivisé en blocs carrés de 800m X 800m en utilisant le système UTM comme référence (figures ci-dessous). Chaque bloc a un identifiant unique, Exemple: LL44 ou LL36, etc... Les deux premières lettres et les deux nombres se rapportent au secteur de forage (par exemple le LL est pour LoLa et GG pour GoGota). L'identifiant est suivi d'une séquence de six nombres qui donnent l'emplacement exact au mètre près dans un bloc donné.

Les 3 premiers nombres de la séquence représentent la distance entre le trou et le côté Ouest du bloc tandis que les trois derniers nombres se rapportent à la distance allant du côté Nord du bloc au trou.

Avec cette méthode, chaque trou possède un nom unique qui se rapporte au lieu exact sur le terrain. Il donne une flexibilité de nommer le trou avec une précision au mètre près.

Les foreurs emploieront le nom du trou donné par le géologue avant le commencement du trou. Les noms proposés sont employés seulement comme références de terrain pour les chefs d'équipe pour implanter et préparer le prochain point de forage, ils ne sont pas inscrits sur les caisses à carottes.

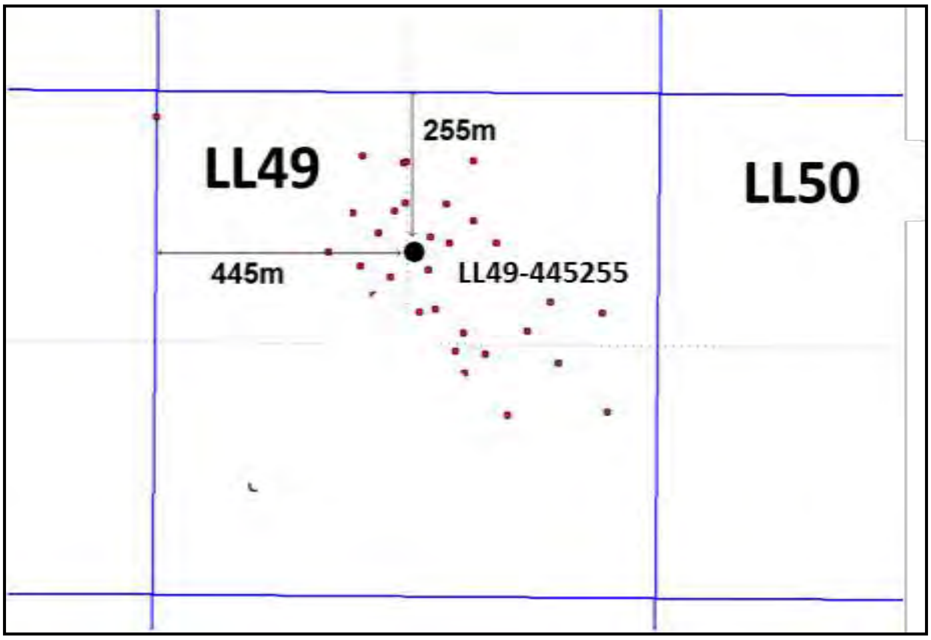

Figure 4 : Méthode de détermination de noms de forage

2.1.6. Sécurité sur le site de forage

C'est une exigence pour le géologue en tant que premier responsable du site de forage de faire appliquer les procédures HSE pour site de forage établies par la compagnie Sama Nickel-Ci et de s'assurer du fonctionnement effectif de la foreuse. Ceci pour vérifier les conditions sécuritaires et de discuter avec les foreurs sur certains aspects, échanger les informations.

Durant la vérification journalière sur le site de forage, le géologue doit s'assurer que le site est balisé par les piquets, les foreurs ainsi que tout le personnel qui travaillent aux alentours de la machine portent leurs équipements de protection individuelle. A savoir les casques, les protections d'oreille, les lunettes de sécurité, les chaussures de sécurité, les gants, les vêtements appropriés tels que des chemises à manches longues de préférence, fourrées entièrement boutonnées, pas de vêtements déchirés. Ce type d'équipement est obligatoire et doit être porté à tout moment.

Vérifier l'ordre et la propreté de façon générale sur le site, rechercher les dangers potentiels, s'assurer que les extincteurs et autres boîtes de premiers secours sont sur place et en parfait état de fonctionnement. Faire attention aux objets volatiles ou glissants, vérifier que les tiges sont convenablement classés et que les tuyaux plastiques sont bien placés et sécurisés convenablement.

2.1.7. Préparation du forage et forage

Toute personne impliquée dans un forage devrait consulter les procédures HSE pour site de forage avant le début du forage. Il est de la responsabilité du géologue superviseur, en rapport avec le superviseur du forage ou avec le foreur de faire appliquer les règles et exigences par tous les opérateurs associés au forage de façon à ce que le forage s'effectuent correctement et en toute sécurité. Cela requiert une bonne communication de la part de toutes les personnes impliquées. Il est important de mentionner qu'en l'absence du géologue sur le site de forage, le superviseur du forage ou le foreur devient le responsable du site de forage.

Il est nécessaire de compléter une feuille d'information supplémentaire sur le forage comportant le nom du trou de forage, le pendage, l'azimut, la profondeur proposée du forage.

Avant le début de forage, il est nécessaire de s'assurer que le foreur possède l'appareil de mesure de pendage du forage, de vérification de l'équilibre de la machine et l'équipement de mesure du survey à la fin du forage.

Le foreur se doit d'avoir un nombre suffisant de caisse de rangement de carotte et de taquet (pour noter les profondeurs et les intervalles forés), un marqueur indélébile de préférence noir, une agrafeuse munie d'agrafe, une paire de ciseaux, un rouleau de plastique (pour le stockage des formations latéritiques) et une poubelle (pour le ramassage des ordures).

Une fois le forage commence, sur chaque caisse doivent être marqués le nom du trou de forage, le numéro de la caisse (box), début (START) et la fin (END) de chaque caisse. Aussi, les profondeurs et intervalles forés doivent être marqués sur les taquets dans les caisses (de…à, en mètres). Toujours utiliser des stylos marqueurs indélébiles. Les informations (le nom du trou de forage, le numéro de la caisse (box)) doivent être marquées

La Manipulation des carottes dans les caisses et le convoyage de ces caisses du camp au site de forage et du site de forage au camp incombe au foreur et son équipe.

Après que le forage d'un trou soit terminé, le foreur se doit de réaliser la mesure dans le trou (survey) à la demande du géologue sur le site de forage et de laisser une tige (casing) de 3 mètres avec bouchon de scellement pour protéger le trou.

Il est important de vérifier que le site est proprement nettoyé avant le départ de la foreuse et des opérateurs.

Tout comme cela devrait se faire avant le début de forage, à la fin du forage, le géologue se doit de prendre les mesures collars du point foré avant et après le forage.

Le géologue doit par la suite matérialiser les différents trous forés par la confection de bornes avec les informations : nom du trou foré ; coordonnées UTM (easting, northing) ; élévation ; pendage (dip) ; direction (azimut) ; profondeur forée.

Au cours du forage, le géologue doit reporter les informations géologiques recueillies (faciès, minéralisations, structurales) sur une section pour pouvoir corréler les informations qui ont permis de faire la programmation des forages d'avec la réalité du terrain. Ceci permet de mieux contrôler le forage, aide dans la prise de décision de continuer ou d'arrêter le forage et assure une bonne planification pour les programmes à venir. La section indiquera le nom du trou, sa longueur, les faciès, les pourcentages estimés en sulfure, tous les traits structuraux significatifs (par exemple failles principales), et comportera une interprétation géologique. Lors de la réception des résultats d'analyse, tout intervalle minéralisé de 5% ou plus sera reporté à la main sur la section par le géologue. Les intervalles moyens seront calculés pour chaque trou par le géologue. Le géologue écrira les teneurs réelles en Cg près des pourcentages estimé visuellement.

2.1.8. Arrêt du forage

Pour arrêter un trou, il faudrait tenir compte de la longueur proposée sur la fiche de programmation de forage, de la lithostratigraphie, de la minéralisation, et dans une certaine mesure des forages déjà réalisés voisins. Le géologue doit arrêter le forage 5 mètres dans la roche saine afin de s'assurer que le forage ne s'arrête pas dans un gros bloc isolé en profondeur.

Si vous êtes dans le doute ou si vous n'avez pas entièrement la section minéralisée, ou encore vous pensez être près d'un matériel susceptible de contenir de la minéralisation pendant que la profondeur finale proposée est pratiquement atteinte, continuez de forer. **Un trou trop long vaut mieux qu'un** trou arrêter trop tôt.

2.1.9. Signature des rapports quotidiens de forage (Daily Drilling Report)

Le superviseur de la compagnie de forage doit signer ces rapports chaque jour. Le géologue doit prendre le temps d'examiner minutieusement le rapport. Le temps chargeable doit être clairement indiqué. Le superviseur doit signer le rapport conjointement avec le géologue de terrain chaque jour.

Avant de signer le rapport, les éléments suivant doivent être vérifiés:

- La date et le shift
- Le nom du rig
- Le nom du client et du site
- Le nom du foreur et des membres de son équipe
- Le numéro du trou doit être correct
- Le métrage du jour doit être vérifié par le géologue.
- Les profondeurs forées doivent être correctes.

2.2. Procédures **du forage à l'échantillonnage**

Une bonne manipulation des carottes et leur présentation dans la caisse (box) garantissent la qualité et donc la fiabilité des données géologiques rassemblées. Les carottes doivent être déplacées le moins possible quand on les sort du trou. Elles doivent montrer une certaine homogénéité de taille lors de la récupération. Cela facilite l'analyse structurale des carottes.

Il est de la responsabilité du géologue de s'assurer que la compagnie de forage offre un service de qualité supérieure. Les carottes doivent être représentatives des conditions réelles de terrain. Pour cela, elles doivent être débarrassées des résidus de boue de forages, d'huile, de graisse et autres débris de forage.

2.3. Procédures sur site de forage

2.3.1. Disposition des carottes dans les caisses

Les carottes sont disposées dans les caisses de façon particulière. La caisse doit être identifiée convenablement avec le nom du trou et le numéro de la caisse. Au coin supérieur gauche on marquera « START » pour indiquer le début de la caisse (comme pour les lignes d'une page) et le coin inférieur droit « END » pour indiquer la fin de la caisse.

2.3.2. Matérialisation de la profondeur forée

Il revient au foreur de clairement identifier les profondeurs de trou dans la caisse, à la fin de chaque remontée du carottier quel que soit la taille de l'échantillon. Pour s'assurer que les morceaux de carottes ne sont pas perdus, retournés ou mis à la mauvaise place, le foreur ou le technicien doit reconstituer la carotte quand il la dispose dans la caisse. Ainsi, il doit inscrire sur des blocs de bois, avec un marker permanent noir, la profondeur de trou atteinte à chaque remontée de carottier et les disposer dans la caisse de carotte. Ces blocs de bois sont appelés des taquets.

Dans certains cas où le foreur doit retirer toutes les tiges du trou pour récupérer la carotte, ce sont les tiges de carottier que l'on compte ; à ce moment c'est cette information que l'on inscrit sur le taquet en plus de la profondeur connue. On utilise également les taquets pour localiser le matériel rocheux perdu lorsque la carotte remontée en surface est plus petite que le métrage foré. On rencontre ce cas dans les zones très fracturées ou dans les cavités où les carottes molles ont été lessivées. La profondeur et la quantité de carotte perdue (Core lost, L) doivent être marquées sur le bloc.

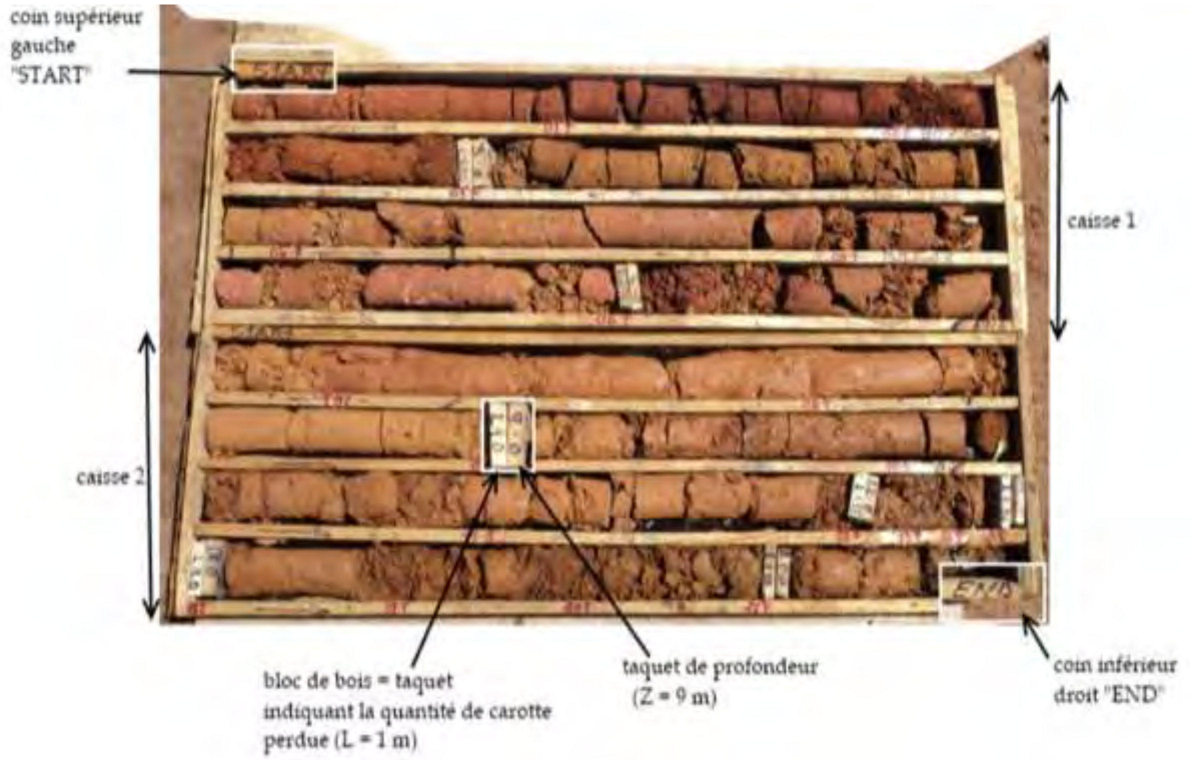

Figure 5 : Vue de la disposition de carotte dans une caisse

2.3.3. Conditionnement et transport des carottes

Etant constituées en majeurs partie de matières terreuses et saprolitiques, les carottes sont protégées à l'aide de plastiques noirs solides pour conserver leur humidité naturelle, les roches saines peuvent être mises en caisse telles quelles sans risque.

Le transport des carottes du forage au site de traitement doit se faire avec le moins de secousses possible. Si le site est très éloigné et les conditions de transports mauvaises, il faut prévoir d'attacher fermement les caisses de carottes dans le véhicule pour éviter les chocs pouvant conduire au déversement.

Figure 6 : Conditionnement des carottes dans les caisses.

2.4. **Procédures à l'atelier de loggage**

2.4.1. Vérification des annotations des caisses et de la profondeur forée

Il est indispensable de vérifier les annotations sur les caisses de carottes (nom du trou, numérotation des caisses, profondeur indiquée sur taquets). Pour les profondeurs, on mesure la longueur des corps disposés dans la caisse entre deux taquets, à l'aide d'un mètre ruban. La longueur des carottes récupérée doit être identique à celle du carottier (1.5 m). Si une erreur est constatée, le géologue doit interpeller le foreur pour qu'elle soit autant sur les taquets que sur le Survey. Toutes ces informations sont marquées sur une fiche standard de log.

2.4.2. Taux de récupération

La détermination du taux de récupération permet de tester la qualité des services offerts par la compagnie de forage. Dans le cas des sulfures, le taux de récupération doit être de 100% entre deux taquets dans la roche saine. Une tolérance de taux de récupération est acceptable dans le top matériel ou dans les zones de broyage. La récupération est exprimée comme telle:

$$\frac{\text{Longueur de la carotte récupérée X 100\%}}{\text{Longueur de la tranche entre les 2 blocs}}$$

2.4.3. Magnétisme

Le magnétisme est défini par la susceptibilité magnétique de la roche et participe à la détermination des différents types de faciès rencontrés dans les carottes. Il est déterminé par un appareil appelé Kappameter. La mesure est effectuée entre deux taquets sur plusieurs carottes.

La fonction à afficher est r : nP

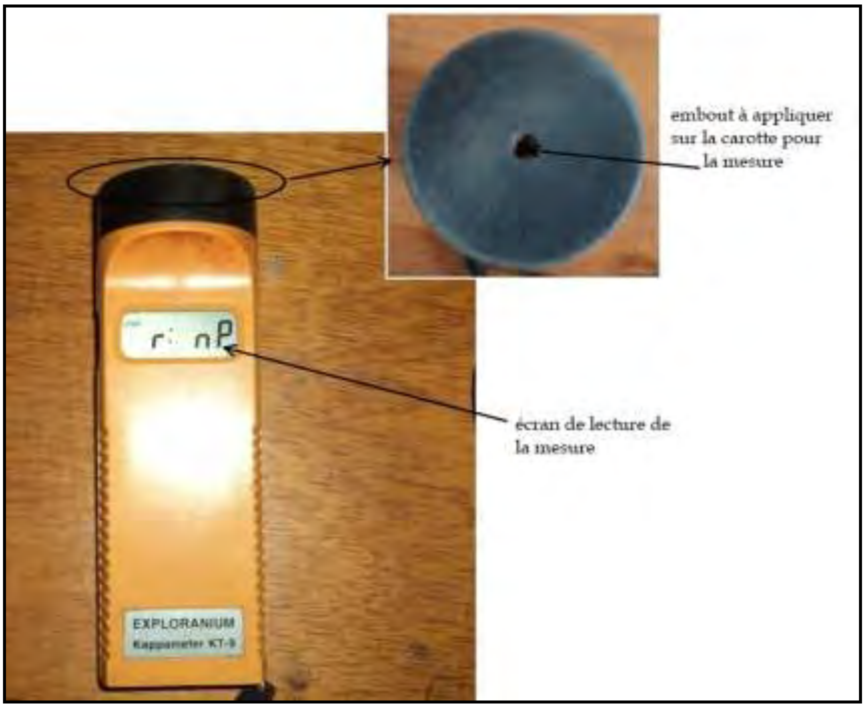

Figure 7: Vue de l'outil de mesure de magnétisme: le Kappameter

Le principe de l'opération est le suivant : Prendre le Kappameter dans la main droite et l'allumer à partir du bouton gauche;

-S'assurer que l'écran affiche la fonction « r : nP » ; Appuyer le bouton gauche, « C 0 » s'affiche sur l'écran du Kappameter en émettant un bip ;

-Déposer l'appareil sur le corps, appuyer de nouveau le bouton gauche et le maintenir environ 5 secondes jusqu'à émission d'un bip, éloignez alors l'appareil du corps ;

-Reprendre l'opération et cette fois-ci « C 1 » s'affiche avec le même son ;

-Refaire plusieurs fois jusqu'avoir plusieurs mesures ;

-A la fin de l'opération, maintenir longuement le bouton droit pour voir la mesure.

2.4.4. Mesure de la gravité spécifique

Voir « section 4. »

2.4.5. Descriptions géologiques des carottes de forages.

Cette étape du traitement des carottes correspond à la description complète et détaillée des carottes. Elle est effectuée parfois concomitamment au forage. Le géologue doit identifier le contenu des caisses de carottes qui arrivent à l'atelier de loggage.

Le géologue fait avant tout un « short log » faciès et minéralisation qui consiste à déterminer les grands ensembles géologiques (faciès) et leurs minéralisations. Ensuite arrivent toutes les étapes de description détaillées dont font partie la numérotation, la récupération et la mesure de magnétisme.

Le log géologique doit préciser la lithologie, la géologie structurale et la minéralisation. Le log est le rapport de description géologique sur un matériau de l'écorce terrestre et non d'interprétations des phénomènes géologiques sous-jacents. Cependant, Il est indispensable pour le géologue d'avoir une connaissance claire du contexte géologique régionale et local (Annexe 1 à 4).

Les logs sont effectués sur papier ou fiches standard de description prévues à cet effet avec les « rocks codes » et à travers l'observation macroscopique. Il est important que la légende des codes soit clairement spécifiée pour permettre l'homogénéité d'informations et la compréhension de tous les géologues. Un code appliqué à un projet doit être le plus simple possible pour assurer un bon modelage futur(?), sans avoir à faire des subdivisions supplémentaires. Un programme de formation des géologues travaillant sur un même projet doit être assuré pour harmoniser la description des logs entre les géologues.

2.4.5.1. Descriptions lithologiques et structurales

Il faut faire ressortir la couleur du faciès, la taille des grains, la composition minéralogique, la texture, l'intervalle de profondeur de chaque faciès. L'ordre d'abondance des minéraux doit être marqué dans le log afin que la détermination du nom de la roche ou du faciès soit aisée.

Le géologue doit préciser les informations basées sur l'état d'oxydation (Sol, ferricrete, limonite, saprolite, roche saine), les structures (fracture, contact, schistosité, foliation, rubanements, etc.) indiquant l'angle α en degré (Fig. 9), et la présence de carbone graphitique (CG). La mesure de l'angle α est déterminée à l'aide d'un rapporteur, par rapport à l'axe de la carotte, l'angle est compris entre 0 et 90°.

Une fracture ou déformation est définie comme toute cassure ou surface plane dans la carotte. Une fracture ouverte est définie comme une fracture qui s'est ouverte avant l'opération de forage. Le géologue doit faire un inventaire structural c'est-à-dire recenser toutes les fractures naturelles et les classer. La classification est basée sur l'angle d'ouverture. Donc on aura des fractures générales (valeur de l'angle qui se répète plusieurs fois).

Il faut prêter une attention particulière aux contacts lithologiques (mesurer les angles α). Ces éléments sont importants dans l'interprétation ultérieure des formations et des corps de minerai.

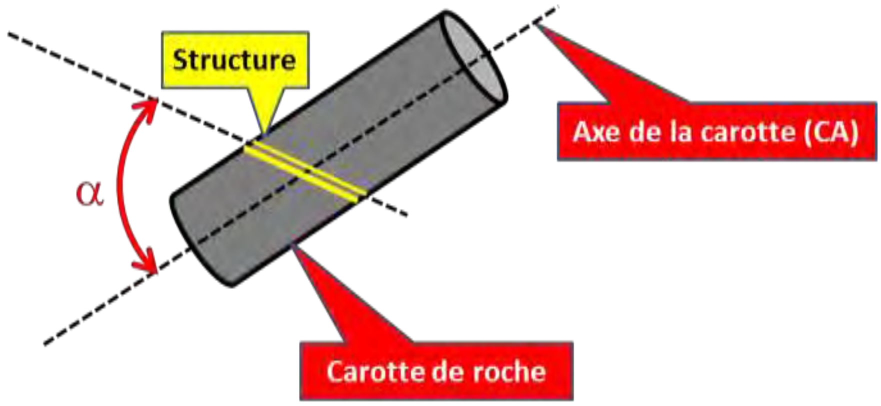

Figure 8 : mesure de la direction des structures par rapport à la carotte

2.4.5.2. Descriptions minéralogiques

Le géologue doit préciser le style de minéralisation dans son log. La minéralisation peut être massive, semi-massive ou disséminée. Elle peut être sous forme interstitielle, de veine ou veinule. La taille des particules doit être indiquée : fine, moyenne, grossière. Le géologue doit estimer la proportion de minéralisations présentes dans les carottes. La proportion est estimée en pourcentage (%) :

- Minéralisation faible: 0 à 5%
- Minéralisation moyenne : 5 à 10%, 10 à 15%, 15 à 20%
- Minéralisation forte : à partir de 20%

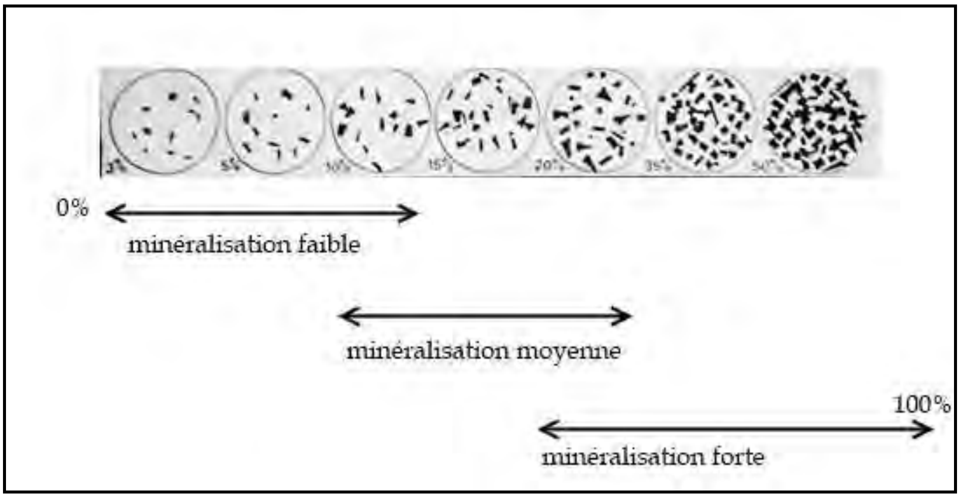

Figure 9: Détermination des différents seuils de minéralisation

2.4.6. Log géotechnique

Le log géotechnique qui est différent du log géologique consiste à la quantification (pour chaque remontée de tige) de:

-La récupération

-Le RQD

-La fréquence des fractures, des craquelures suivant le type de roches

-La dureté et la structure de la roche encaissante afin de trouver l'orientation minière la plus stable

Son objectif principal est de définir les caractéristiques mécaniques d'un dépôt sur des domaines ou des espaces ayant des contraintes ou stabilités similaires. Ce procédé décrit les propriétés mécaniques inhérentes, la nature et la fréquence des diverses malformations dans les roches.

En recomposant ces données de trou et en interprétant les dites données composites, les domaines géotechniques peuvent être déterminés, ce qui est utile pour la planification du plan de mine. L'orientation des carottes aide dans la connaissance des déformations, incluant les structures principales, les veines et donc un lien direct avec l'interprétation géologique.

Les données géotechniques (qu'on procède à l'orientation des carottes ou pas) sont importantes pendant la planification de la mine. Ces informations sont importantes pour les ingénieurs pendant la conception du plan de mine, la stabilité des talus et les plans de minage.

- RQD

La désignation de la qualité de la roche est un index empirique. On tente de quantifier la qualité mécanique de la roche par la mesure de la longueur des morceaux de carottes récupérées dans la roche. Une roche de bonne qualité avec très peu de cassure aura un haut RQD tandis qu'une roche de basse qualité ou fortement fracturée aura une faible valeur de RQD. Seules les ouvertures et les fractures faiblement compensées seront considérées pendant la détermination de la longueur des morceaux de carottes. Toute cassure effectuée par le foreur pour pouvoir disposer la carotte dans les caisses doit être ignorée dans le calcul des RQD.

100 - (Somme des morceaux de carottes > 100mm) X 100 Longueur de la carotte entre 2 taquets

Dans sa formule brute, on pourrait donner les sens suivants au RQD en fonction des conditions de terrains anticipées dans le développement de la mine.

Tableau 1 : Relation entre RQD (%) et Conditions de terrain

RQD (%)	Conditions de terrain
100-90	Excellent
90-75	Bon
75-50	Moyen
50-25	Pauvre
25-0	Très pauvre

La mesure des RQD est une norme internationale reconnue pour la présentation de la qualité, et qui a été intensément liée aux conditions de terrain dans les opérations minières. Cette expérience a renforcé l'usage des RQD. Ils (RQD) sont devenus l'une des bases dans l'indice de qualité des roches utilisées pour spécifier les bancs stables souterrains. Une bonne qualité de photos et la fréquence des fractures peuvent suppléer aux imperfections comme décrit dans les sections précédentes.

2.4.7. Echantillonnage

2.4.7.1. Dispositions préalables

L'objectif de l'échantillonnage est d'obtenir une estimation de la valeur véritable de la masse rocheuse échantillonnée fournie par le laboratoire après une analyse géochimique. La qualité de cette estimation est affectée par plusieurs types d'erreur- erreur de justesse, erreur de précision, contamination- insérées aux étapes successives de la chaîne d'acquisition. Le contrôle de cette qualité, autrement dit l'erreur potentielle globale associée à la valeur mesurée, ne peut être assuré que par l'insertion d'échantillons de contrôle utilisée de pair avec des méthodes de validation spécifiques. Elle revêt une importance majeure sinon critique puisqu'elle permet d'apprécier en bout de ligne la validité des interprétations, tant qualitatives (modèles géologiques) que quantitatives (estimation des ressources), dont découlent notamment l'évaluation du risque financier associé à l'exploitation.

Ainsi, le géologue doit préparer les carnets dédiés à l'échantillonnage en identifiant les numéros correspondants aux échantillons de contrôle. Le géologue échantillonnera donc les carottes de roches en tenant compte des échantillons de contrôle. SAMA RESOURCES en utilise plusieurs types notamment :

- des échantillons de contrôle CRM[1] de type STANDARD insérés à chaque 30 échantillons de roche. Ils sont de 2 types ; des basses teneurs à insérer entre les échantillons dont le %Cg est estimé visuellement entre 0 et 10% et des fortes teneurs pour les profils supérieurs à 10%Cg. Ils contrôlent la bonne calibration des instruments d'analyses.
- des échantillons de contrôle CRM de type BLANC (de concentration nulle –non détectable-caractérise) insérés à chaque 60 échantillons. Ils vérifient la contamination ou non dans le processus d'acquisition des données.
- des échantillons de contrôle CRM de type DUPLICATA insérés à chaque 40 échantillons. Ils contrôlent la représentativité des (sous)échantillons, autrement dit par l'hétérogénéité du rejet et de la pulpe.
- des échantillons témoins « checks samples » représentant 5% des échantillons qui sont analysés par un autre laboratoire.

2.4.7.2. Echantillonnage

L'échantillonnage est fonction des intervalles minéralisations et dans une certaine mesure du découpage lithologique ; des échantillons composites (associant plusieurs faciès) sont produits sans toutefois associer la partie altéré à la roche saine du substratum. La longueur d'un échantillon est d'environ 1m pour les zones de minéralisation en %CG supérieur à 5% et d'environ 2 m pour les zones de minéralisation en %CG inférieur à 5%.

Après avoir faire le découpage des carottes échantillon par échantillon en inscrivant les limites sur la carotte ou sur la bordure de la caisse à l'aide du marqueur rouge, le géologue appose des tickets imprimés 3 coupons (résistants à l'humidité) dans les caisses de carottes dont l'un des coupons et la souche dans le carnet comporte le nom du forage, le faciès, les intervalles de profondeurs de

[1] Matériel de Référence certifiée

l'échantillon, etc… . Un ticket se place dans une caisse de carotte au mur de la formation géologique à laquelle il fait référence et dont le toit coïncide avec la position du ticket précédant sinon avec « START ».

Les carottes à prélever sont ensuite diviser en 2 portions égales sur toutes leurs longueurs à l'aide d'une spatule ou du « core splitter » (Fig. 11) en fonction de la dureté. Ne pas fendre les portions enrobées de film plastique, ces échantillons attendent pour les mesures de densités. En effet, compte de tenu du temps assez long que prend les mesures de densité (temps de séchage), l'échantillonnage des carottes pour l'analyse géochimique se font généralement avant la fin des mesures de densité donc sans les portions de roches prélevés pour la densité

Pour chaque échantillon toute la partie gauche est prélevée (en respectant les limites) et mis dans un sachet en plastique dur sur lequel est inscrit le numéro de l'échantillon. Si des tranches de roches (10 à 15 cm de longueur, enrobées de film plastique) attendent pour la mesure de densité, les préserver et poursuivre le prélèvement avec les portions non concernées. Ensuite, les deux coupons sans inscription à la main du ticket préalablement déposé dans la caisse doivent être détachés et mis dans le sachet, le coupon restant est fixé à la caisse au bon endroit à l'aide d'une agrafeuse.

Dans le cas où les échantillons de densité ont été prélevés et remis dans les caisses de carottes après l'échantillonnage, le géologue faire fendre en deux une par une (si possible dans la caisse de carotte), chaque tranche de roche ayant servi pour la densité. Il doit identifier, pour chacun de ces échantillons (de densité), le numéro de l'échantillon pour l'analyse géochimique auquel il appartient soit à partir du ticket d'échantillonnage dans la caisse de carotte (un ticket se place dans une caisse de carotte au mur de la formation géologique à laquelle il fait référence et dont le toit coïncide avec la position du ticket précédant sinon avec « START »-Fig. 10) ou soit en se référant à la liste des échantillons dans les logs où les intervalles de profondeur de chaque échantillon sont indiquées. Ainsi, il remet une partie de la roche fendue dans le sachet d'échantillonnage correspondant au numéro identifié.

Les échantillons de contrôle doivent être insérés dans un lot d'échantillons prêt à l'envoi pour le traitement mécanique et pour l'analyse géochimique.

Figure 10 : Core splitter

2.4.8. **Identification des caisses de carottes à l'aide de ruban métalliques**

Les carottes portent leur identification sur la caisse qui les contient. Sur le site de forage, l'on écrit sur la caisse à l'aide d'un simple marqueur le nom du forage dont sont issues les carottes qu'elle contient. Cependant elles s'effacent au fil du temps. Ainsi, chaque caisse doit avoir une étiquette permanente en aluminium ou faite à partir d'une étiqueteuse « dymo » (Fig. 12). Cette étiquette est vissée ou pontée à côté du point START ou sur la face de la caisse avec les détails précis de la caisse, gravés ou inscrits dessus (Fig. 13).

Figure 11 : Etiqueteuse « Dymo » permettant d'identifier les caisses de carottes par des rubans métalliques.

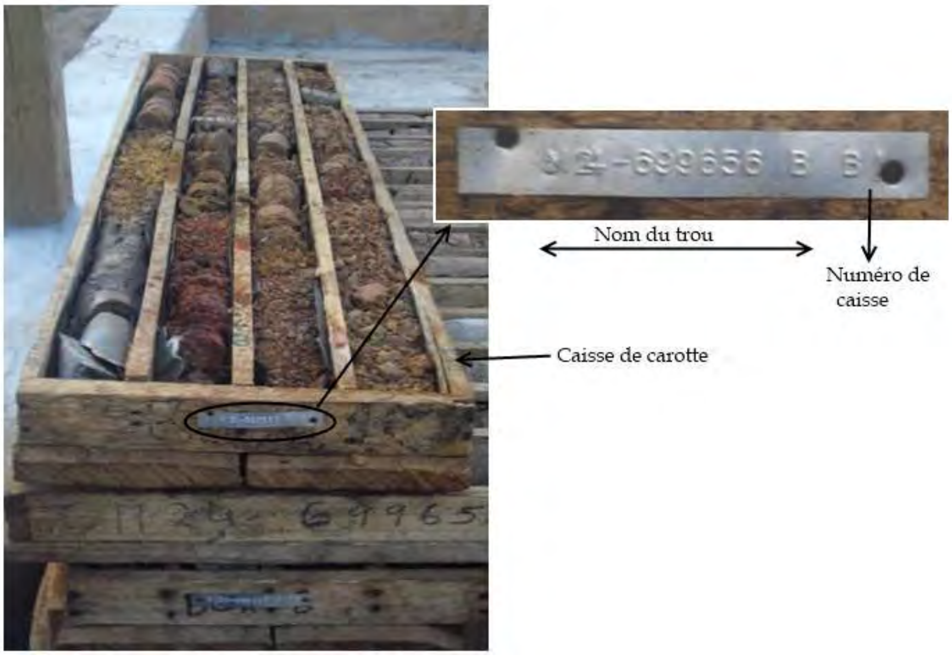

Figure 12 : Disposition des caisses de carottes dans l'entrepôt de staockage des carottes; vue de l'étiquettage des caisses.

2.4.9. Photographie des carottes

Le sondage carotté est une opération coûteuse et spécialement conçue pour récupérer les carottes dans un état originel. Ainsi toutes les carottes doivent être photographiées afin de constituer un témoin visuel « permanent » des effets de l'exposition des carottes. Les photos doivent être de la meilleure qualité possible, permettant d'identifier au mieux les informations géologiques. La position de la caisse et de l'appareil photo sont normalisées. L'appareil doit être positionné au centre de la caisse, avec une ombre pour optimiser les conditions lumineuses sur les carottes. Il est préférable de faire plusieurs essais pour mieux canaliser la lumière. L'utilisation du flash produit une qualité de couleur. La lumière naturelle est encore plus efficace et recommandée.

Il faut un appareil photo digital avec un objectif standard (et non à angle élargi) pour réduire les déformations sur le négatif.

- Il faut savoir que la couleur et la texture sont mieux visibles quand la carotte est fraîche (mouiller la carotte avec de l'eau) ;

- Il faut s'assurer de la bonne disposition des caisses de carottes pour la photo (positions START et END des caisses)

-Rendre clairement visibles les structures de la carotte telles que les litages, les joints, etc et les orienter;

- Sur chaque cliché photo doivent se trouver deux caisses qui se suivent. Dans le cas d'un nombre total de caisses impaires pour une carotte, il peut n'y avoir qu'une seule caisse sur le cliché photo ;

- le nom du trou (exemple : LL45-125470) pris en photo doit apparaitre en entête de la photographie réalisée;

Figure 13: Vue de la disposition de rigueur pour la réalisation du bons cliché

3. Tranchées.

Une tranchée est une excavation longue et étroite pratiquée dans le sol. Par définition, la tranchée est généralement considérée comme plus longue que large (contrairement à un puits plus profond que longue et large). Les tranchées sont réalisées avec 1 m de largeur, la longueur et la profondeur restent variables.

3.1. Descriptions lithologiques et structurales

Les tranchées sont décrites de la même manière que les forages (Section 2.2.5). Cependant la description se fait sur terrain dans la tranchée.

3.2. Echantillonnage

L'échantillonnage se fait successivement pour chaque 2 mètre de longueur (dans le sens horizontale) à partir du début de la tranchée. Les échantillons se prélèvent sur parois ou plancher (propre) lorsque la tranchée atteint 50 cm de profondeur et dès les instants qui suivent l'ouverture de la tranchée.

Le prélèvement (avec mise en sachet direct) se fait par rainurage jusqu'à 5 cm en profondeur sur le long de la tranchée. Aucun sous-échantillon n'est produit. Des échantillons de contrôle doivent être insérés tel que spécifié à la « section 2.4.7.1 » dans un lot d'échantillons prêt à l'envoi pour le traitement mécanique et pour l'analyse géochimique.

4. Densité brute et gravité spécifique

La détermination de la densité brute est un des facteurs critiques dans l'estimation précise de la réserve. L'estimation quelconque de la densité brute ou la sous-estimation de la densité selon la lithologie et la désagrégation peuvent avoir un impact sur les réserves autant que l'erreur dans l'estimation de la teneur.

Il est donc impératif de déterminer les densités brutes adéquates et précises et de s'assurer qu'elles correspondent à plusieurs lithologies ou faciès et à plusieurs niveaux d'oxydation. La différence entre Densité Brute et Gravité Spécifique est exprimée dans les définitions ci-après :

- Densité brute : poids d'un objet ou matériel divisé par son volume, ceci incluant le volume de ses pores ;
- Gravité spécifique : ratio du poids d'un volume d'une substance donnée avec le poids d'un volume égal d'eau. La gravité spécifique décrit la densité d'un matériel homogène sans vide interne.

Les termes Densité et Gravité spécifique sont techniquement différents théorie derrière la détermination de la densité brute sur le terrain est donc basée sur la mesure précise du poids, combinée à la détermination similaire d'un volume précis. Les règles demandent de mesurer les densités brutes sèches et les densités brutes humides. Les données de ces déterminations aideront dans le calcul de la Gravité spécifique.

En utilisant les carottes pour déterminer les densités brutes, il faut s'assurer de leur uniformité et de leur longueur (de 10 à 15 cm) pour représenter les zones minéralisées et les matériels stériles.

La fréquence d'échantillonnage dépend des variations observées dans la détermination des densités selon les types de matériels. La règle est qu'une suite représentative de types de roches soit prélevée de chaque trou. Dans la pratique, au moins 10 mesures sur chaque type de roches doivent être disponibles pour l'estimation de la réserve. Le nombre d'échantillons va varier avec le degré d'oxydation et l'uniformité pétrologique basique parmi plusieurs facteurs. L'échantillonnage va continuer jusqu'à ce que le niveau de confiance placé dans les densités brutes des matériels soit raisonnable.

4.1. Choix et prélèvements des échantillons pour la mesure des densités brutes

Le géologue doit indiquer les échantillons destinés pour la mesure des densités brutes. Les échantillons doivent être représentatifs des différents types de faciès ou lithologie, minéralogique, et d'altération. Le géologue doit remplir la fiche de profondeur (de…/à…), longueur, faciès, numéro d'échantillon sur la fiche.

Les bouts de carottes doivent être parfaitement coupés droits (à la scie dans le cas des roches et saprolites dures, à la spatule dans les saprolites molles et limonite) avant de mesurer la carotte.

Si la carotte est très poreuse ou désagrégée, elle doit être rapportée au laboratoire pour que soit déterminée une méthode appropriée.

Il est important de protéger la carotte choisie avec un film plastique fin pour éviter : que l'eau ne rentre dans les interstices et que le matériel ne se désagrège. La membrane doit avoir un poids négligeable de sorte qu'elle n'ajoute pas du poids et du volume. Il faut éviter de créer des bulles d'air ou de trop compresser le matériel pour ne pas biaiser les calculs. Un changement de volume, donc de poids entrainerait une erreur sur les valeurs de densités obtenues. Des milliers de SG de plusieurs mesures de différents les facies seront nécessaires.

4.2. Identification des échantillons pour la mesure des densités brutes

Les mesures de densité demandent à sélectionner des échantillons dans les caisses de carottes et d'où ils seront retirés. Cela peut conduire à des erreurs de correspondance lors de leur remise dans les caisses. En plus, compte de tenu du temps assez long que prend les mesures de densité (temps de séchage), l'échantillonnage des carottes pour l'analyse géochimique se font généralement avant la fin des mesures de densité donc sans les portions de roches prélevés pour la densité. Pour éviter des problèmes, il faut prendre bien à l'avance quelques dispositions.

En effet, donner une numération (nombre entier de 1 à 12) à chacun des échantillons sélectionnés pour la densité de manière successive (du toit au mur) pendant qu'ils sont encore dans les caisses à carottes. Pour ce faire, inscrire au marqueur le numéro pour chaque échantillon donné sur le film plastique qui l'enrobe ainsi que sur la bordure de la caisse de carotte à l'endroit où se situe l'échantillon en question. Reporter dans l'ordre, sur la fiche de renseignements des densités, les intervalles de profondeur et le nom du forage correspondant pour chaque échantillon (1 pour la ligne 1, 2 pour la ligne2, etc…). La série de numérotation (1 à 12) peut reprendre pour un même forage à partir du 13ieme échantillon.

Après cela, un lot de 12 échantillons successifs tout au plus peut être retiré des caisses de carottes pour la mesure de densité. Prendre le soin de déposer chaque échantillon dans une gamelle[2] ayant le même numéro (les gamelles sont aussi numérotées de 1 à 12).

Dans le laboratoire, après avoir aligné les gamelles dans l'ordre de numéros croissants, effectuer les mesures échantillon par échantillon et le même ordre. Un échantillon ne peut être retiré d'une gamelle à la fois, il doit être remis dans « sa » gamelle avant d'en sortir un autre. En bref, le processus de mesure s'effectue dans l'ordre des numéros d'échantillons. Les reports des mesures de densités sur la fiche de renseignements des densités se fait au fur et à mesure illico dès l'obtention de résultat dans l'ordre (1 pour la ligne 1, 2 pour la ligne 2, etc…).

Après la fin des mesures, les échantillons sont remis dans les caisses de carottes à l'endroit correspondant en suivant les numéros identifiants et la profondeur. Ainsi, le processus peut être repris sur un autre lot de 12 échantillons successifs tout au plus.

4.3. Mesure du poids de la carotte

La mesure d'une tranche de carotte suit une certaine procédure telle que déterminée par les spécifications de l'équipement.

Il faut faire très attention au calibrage de la balance. La remise à ZERO après chaque lecture est recommandée. Les équipements de mauvaise qualité ne doivent pas être utilisés, ils doivent être améliorés, sinon il faudra envoyer les échantillons dans un laboratoire certifié.

4.4. Détermination du poids humide (poids wet)

Une fois les échantillons prélevés dans les box, il faut prendre toutes leurs références (nom du trou duquel ils proviennent, profondeur de prélèvement, numéro de l'échantillon) sur la fiche de densité. Il faut prendre immédiatement les poids humides sur une balance numérique de préférence.

4.5. **Détermination du poids dans l'eau**

L'usage de l'eau déplacée comme moyen de mesure du volume de carotte, repose sur l'observation de la procédure et l'utilisation d'un cylindre gradué et précis, ou tout autre équipement de précision.

Le dispositif mis en place pour la mesure est le suivant :

[2] Petite cuvette creuse à profil parabolique

Un bac à eau de 5 litres environ, avec un bec verseur est mis en place Le niveau précis du volume maximum du bac, (considérations faites des ménisques de surfaces, sans perte de l'eau déplacée), doit être marqué par une ligne fine sur le bac.

Un récipient de récupération de l'eau déplacée, (si possible gradué précisément) est posé au niveau du bec verseur

Un système permettant de suspendre la carotte entièrement dans l'eau contenue dans le bac a été conçu. Il comporte une grille sur laquelle on pose la carotte en faisant attention à ce qu'elle ne flotte pas et un fil par lequel la grille est reliée à la balance numérique à partir de laquelle on lit la mesure.

Les étapes suivantes sont recommandées :

- Remplir le bac de 5 litres à ras, avec la grille dedans, et attendre que le surplus d'eau coule tranquillement dans le récipient de récupération d'eau ;
- Tarer le poids de la grille + son fil de suspension avant toute opération;
- Retirer avec précaution la grille du bac et y placer la carotte ;
- Placer le récipient de récupération d'eau juste en dessous du bec verseur verser du bac à eau ;
- Descendre doucement la grille portant la carotte dans le bac à eau et récupérer l'eau déplacée dans le petit récipient de récupération;
- La valeur qui s'affiche sur l'écran de la balance numérique constitue le poids de l'échantillon dans l'eau.

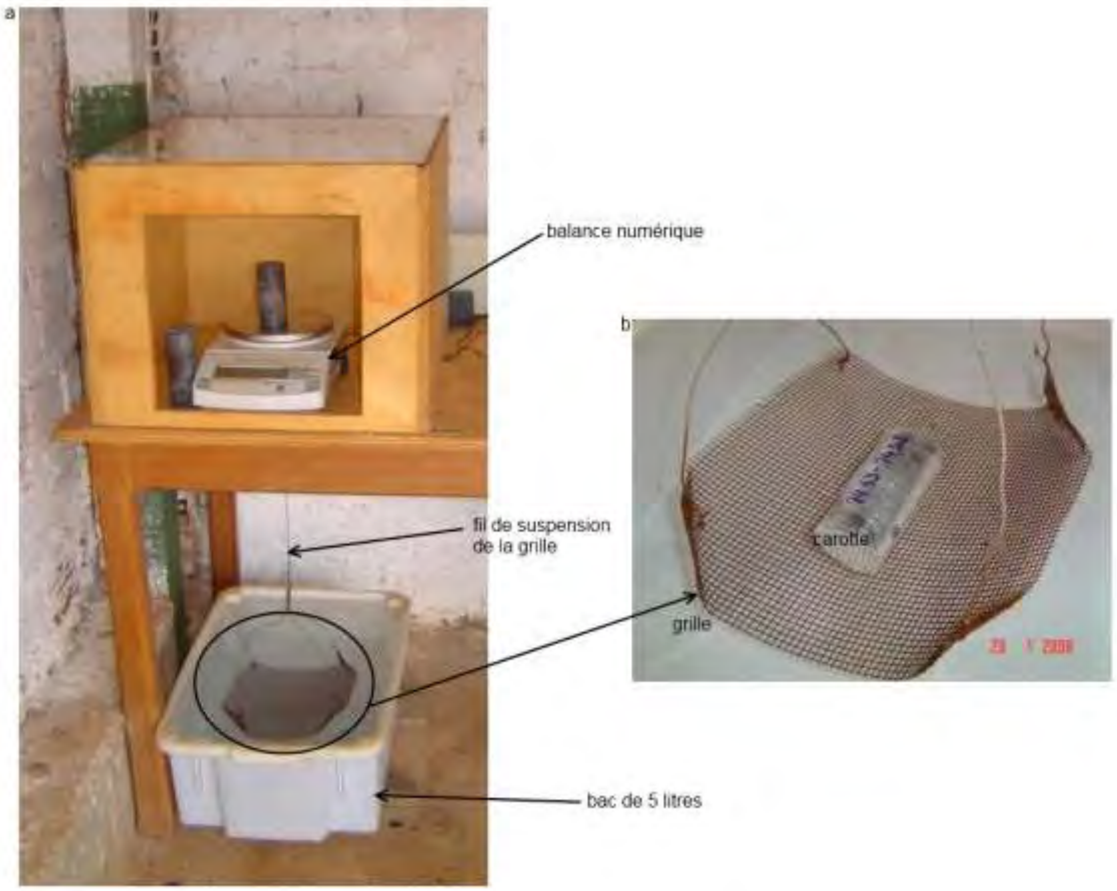

Figure 14 : Dispositif de détermination du volume de l'eau déplacée
a. Montage prévu pour la pesée de carotte
b. Vue d'un échantillon portant un film plastique prêt pour la pesée sur la grille

4.6. Détermination du poids sec (poids dry)

La détermination du poids sec est fondamentale. Il faut enlever la membrane fine protégeant l'échantillon et disposer celui-ci dans la gamelle numérotée correspondant à sa référence. La disposition des gamelles numérotées dans les fours répond à un schéma qui va permettre de ne pas se tromper dans le report des mesures après la pesée des échantillons. Six (6) gamelles peuvent être insérées dans un four à raison de 3 gamelles par compartiments.

Un test réalisé sur plusieurs échantillons humide de saprolite (constituant essentielle des forages) recommande de chauffer l'échantillon à une température de 250°C pendant 8 à 10h de temps pour un séchage optimal (Fig. 18).

Il est important de s'assurer que la balance est à nouveau à ZERO avant la mesure du poids sec.

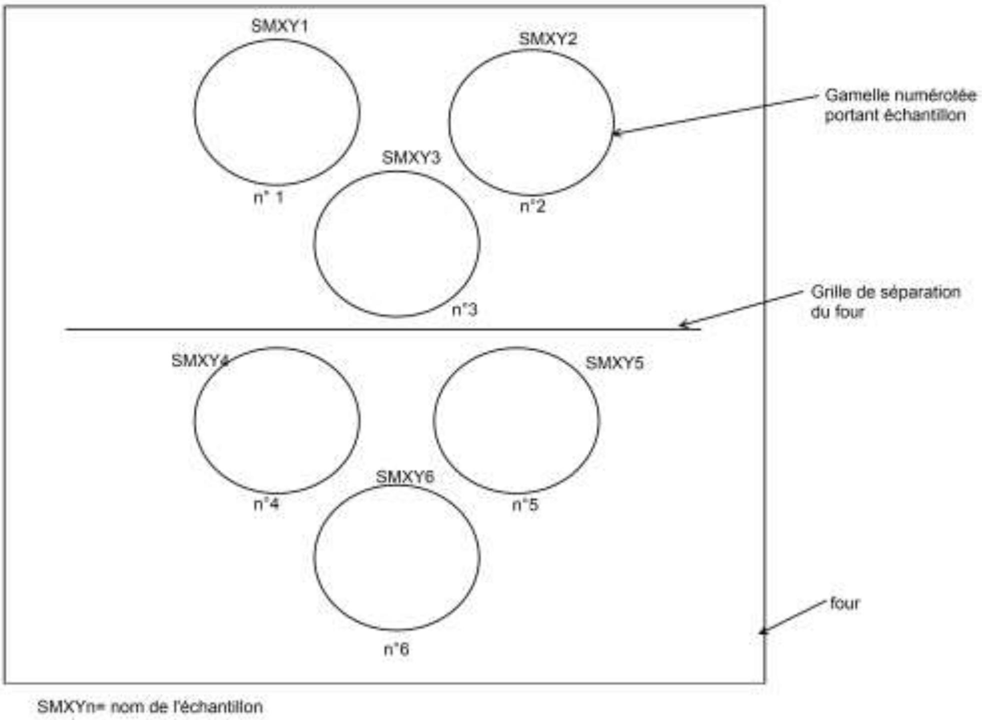

Figure 15 : Schéma de disposition des gamelles numérotées contenant les échantillons avant la mise au four

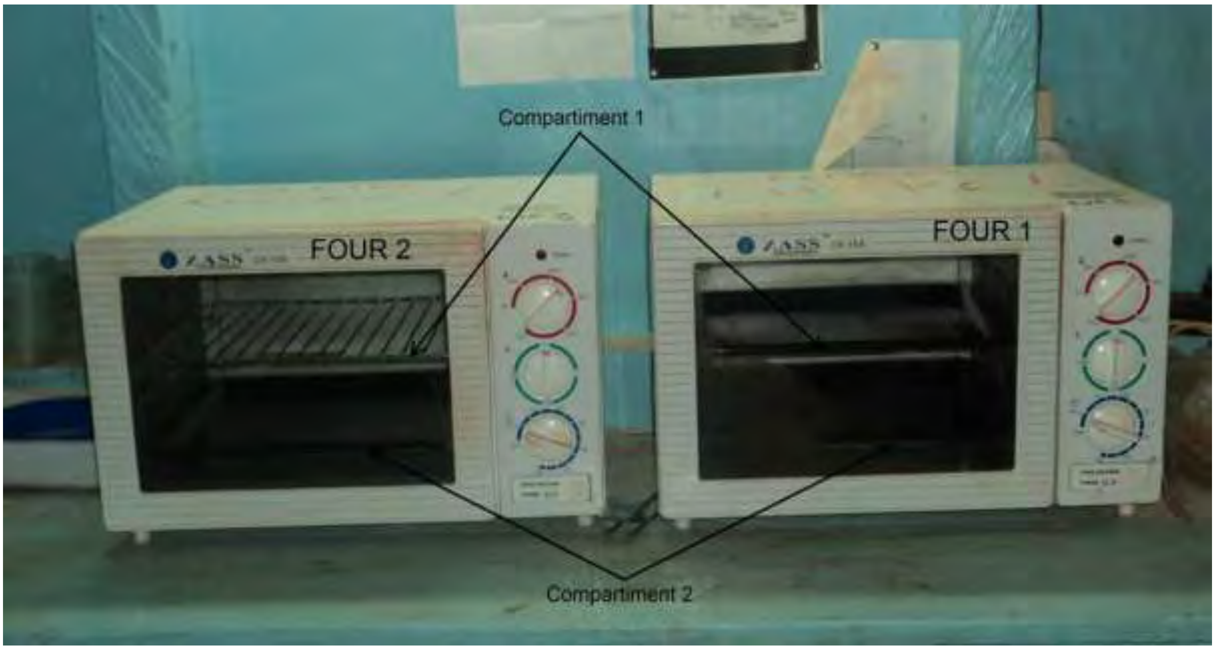

Figure 16 :Vue des fours utilisés pour les mesures de Densité Brute (Bulk Density)

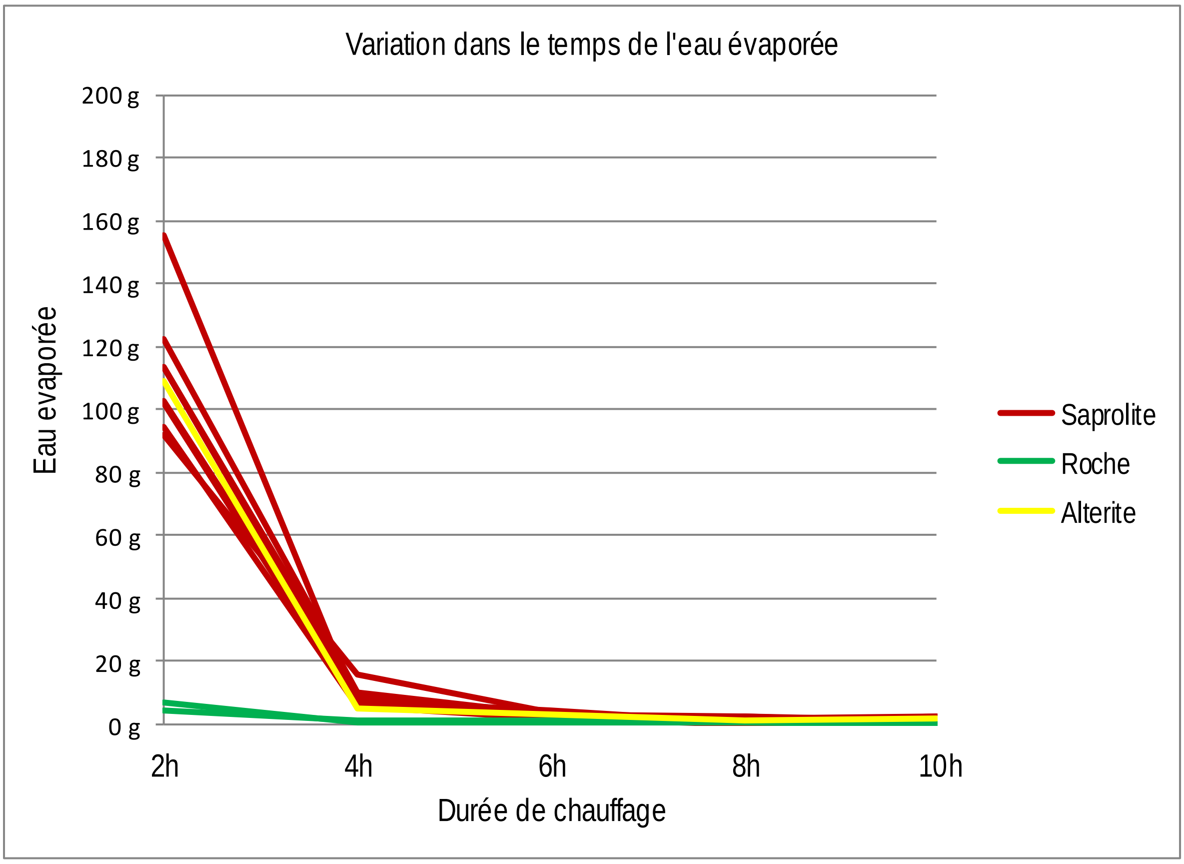

Figure 17 : Diagramme de variation du poids de l'eau évaporée au fil du chauffage

4.7. **Calculs des paramètres de Taux d'Humidité et Volume de l'échantillon**

4.7.1. Détermination du volume de la carotte (Vol)

La mesure directe du volume d'eau déplacé est relativement imprécise. Ainsi la meilleure méthode est peser l'échantillon immergé dans l'eau. La balance doit être ajustée au préalable pour le poids de la grille dans l'eau. La différence entre le poids dans l'air et celui dans l'eau donne une mesure précise du poids de l'eau déplacée qui est numériquement égale au volume de l'échantillon (étant donné que la densité de l'eau est de 1g/cm^{3}). La formule est la suivante :

Volume(Vol) = Poids humide **– Poids dans l'eau**

Une fois les manipulations pour les mesures des différents poids effectués, des formules interviennent pour obtenir les paramètres Densité Brute et Gravité spécifique

4.7.2. **Détermination du taux d'humidité (H2O, %)**

Connaître le taux d'humidité d'un échantillon permet de mettre en évidence les différents faciès lithologiques rencontrées dans un forage. Généralement, selon les faciès, on a :

- H_2O élevée (20% et +) pour limonites

- H_2O moyen (10 à 20%) pour les saprolites fines
- H_2O faible (0 à 10%) pour les saprolites grossières ou les roches

Le taux d'humidité (H_2O, %) est déterminé par la formule suivante :

H_2O,% = 100 – (Poids sec X (100 / Poids humide))

Ce paramètre constitue un moyen de contrôle de la logique de succession des faciès dans le log.

4.8. Calculs de la Densité Brute(BD) et de la Gravité Spécifique(SG)

4.8.1. Détermination de la densité brute

La mesure de la densité brute, correspond à la détermination du volume de l'échantillon et de ses pores.

La densité brute (BD) peut être calculée selon la formule suivante :

Densité brute = Poids de la carotte (g) / Volume de la carotte (cm^3)

Selon la méthode d'Archimède, on peut la réécrire ainsi :

Densité brute = Poids à l'air libre / (Poids à l'air libre – Poids dans l'eau)

En fonction des poids humides et secs, on peut encore écrire :

Densité brute humide = Poids humides / Volume de l'eau déplacée
Densité brute sèche = Poids sec / Volume de l'eau déplacée

4.8.2. Détermination de la gravité spécifique

La gravité spécifique est la mesure du poids par volume unitaire d'une matière homogène. Il faut enlever les volumes des pores et les poids dans les calculs.

-Poids sans vide interne = Poids total (M) – Poids des pores (PV)
-Volume sans vide interne = Volume total (Vol) - Poids des pores (PV)
-Gravité spécifique (SG) = Poids sans vide interne / Volume sans vide interne

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Hole ID	Sample-ID	From	To	Longueur (cm)	Facies	Poids humide (g)	Poids ds l'eau (g)	Poid sec (g)	H2O (%)	Volume mesuré (cm3)	SG wet	SG dry	Validation
2														
3														
4														
5														
6														
7														
8														
9														
10														

Figure 18 : Fiche de renseignement pour les densités

4.9. Contrôle qualité

Pour s'assure de la qualité des données collectées, la prise de mesure de densité commence par une prise de mesures sur un échantillon témoin dont la densité est connue d'avance. Cette opération sur l'échantillon témoin est répétée dans l'intervalle de 5 échantillons de forage. L'échantillon témoin est une roche saine sans fissurations apparentes et ayant une forme régulière.

5. Saisie de données et bases de données

Le processus d'entrée des données doit se faire de manière méthodique et ordonnées pour éviter les confusions et les erreurs. Toutes les données doivent être validées et corrigées selon le protocole dans un délai raisonnable. Les protocoles suivants doivent être respectés :

1) Toutes les données de levés et autres rapports quotidiens (manuel ou numérique) doivent être rendues le jour même, le plus rapidement possible. Cependant le superviseur devra tout d'abord procéder à la vérification de la conformité de ses données. Concernant le forage, un tableau noir est installé à l'atelier de loggage où des données du forage sont mises à jour dessus.
2) En cas de problème pendant la numérisation et la compilation des données, le gestionnaire de la base de données doit avertir le géologue responsable pour résoudre le problème. Chaque géologue doit avoir une base de données numérique concernant son activité qui lui permettra de faire des vérifications en cas de problème. Chaque géologue entrera son log dans un ordinateur en utilisant un programme approprié. Après s'être assuré que toute l'information exigée a été écrite et que le log est complet, imprimez immédiatement une copie pour ne pas perdre les données au cas où votre ordinateur s'endommagerait. À la fin de la journée, assurez-vous que vos copies sont à jour. Maintenez une copie dans le bureau du camp

d’exploration.

3) La validation des données entrées dans la base de données est de la responsabilité du gestionnaire de la base de données avec référence au manager de l’exploration.
4) Toutes les mises à jour des données doivent être remises au gestionnaire de la base de données, par des corrections à la main ou versions digitales.
5) Toutes les données numériques seront contenues dans les archives de la base de données. La base de données est sauvegardée sur l’ordinateur de la banque de données de grande performance installé au Bureau de Lola. Un disque dur externe y est associée où une copie des données est sauvegardé automatiquement à la fin de la journée par le système de sauvegarde automatique de Windows. Ceci permettra de restaurer ultérieurement la base de données dans sa dernière version de mise à jour en cas de disfonctionnement de l’ordinateur. Une autre copie est gardée sur l’ordinateur du gestionnaire de la base de données.
6) Toutes les informations qui constituent la base de données de SAMA RESOURCES sont confidentielles et n’ont pas le droit d’être divulgués par le personnel.
7) S’adresser au gestionnaire de la base de données pour toute demande d’informations (logs de forage, carte, …) déjà contenue dans la base de données afin d’éviter les confusions. Toute production ou utilisation (à n’importe quel niveau que ce soit) de carte non fiable est interdite.
8) Tout changement dans les procédures doit être soumis au géologue de projet du site et au manager de l’exploration.

6. ANNEXE 1 : Cadre géologique du Craton Ouest Africain (WAC):

L'Afrique de l'ouest est caractérisée du point de vu géologique par le craton ouest-africain (WAC) qui en occupe la partie majeure. C'est un immense craton d'environ 4.500.000 km2 de surface formé d'un ensemble de chaines pénéplanées largement granitisées appartenant au précambrien ancien. Deux épisodes orogéniques majeurs marquent l'histoire ancienne du craton ouest africain (Bessoles, 1977): le Libérien (entre 3.0 Ga et 2.5 Ga) et l'Eburnéen (entre 2.5 et 1.8 Ga) au terme duquel le craton ouest africain s'est définitivement stabilisé vers 1.9 Ga. Ce craton est recouvert, pour une large part, par le bassin de Taoudéni.

Les principaux affleurements du WAC apparaissent tout autour de ce bassin (figures 1) avec :

- au Nord la dorsale Réguibat formée de gneiss, orthogneiss et chornockites archéens d'environ 2.7 Ga dans sa partie ouest, et par des granites et autres formations volcaniques et volcanosédimentaires du protérozoïque inférieur (Birimien) dans sa partie est.

- au Sud , la dorsale de Léo qui couvre une large région qui va du Liberia au Ghana en passant par la Guinée, le Mali, la Côte d'Ivoire et le Burkina-Faso. Comme la dorsale de Réguibat, cette dorsale comprend deux parties : à l'ouest, le domaine archéen de Keneman-Man, et à l'est le domaine Birrimien du Baoulé-Mossi, ces deux domaines étant séparés par la faille de Sassandra (Gouamellan et al., 1997; Bering et al., 1998 ; Thiéblemont et al., 1999, 2004). .

Les roches précambriennes de Guinée appartiennent pour l'essentiel au "Domaine de Keneman-Man" (Cahen et al., 1984; Bessoles, 1977 - figure 1), lequel est pour l'essentiel constitué de granites et granulites affectés par l'orogenèse libérienne.

Figure 1: la structure du craton ouest africain (Berger et al.,2013), carte régionale de l'Afrique de l'Ouest, montrant le positionnement de la région de Lola (projet SAMA).

7. ANNEXE 2 : Le pionjar

La technique consiste à forer à l'aide d'une tige équipée d'un tube échantillonneur de 15cm de long par environ 2.5cm de diamètre situé immédiatement derrière le trépan. Lors du forage, le matériel passe par l'intérieur du tube échantillonneur et est évacué sur les parois du trou par un orifice latéral situé à 15cm derrière le trépan. À chaque mètre foré, le train de tige est sorti, et le matériel présent dans le tube échantillonneur est récupéré. Suivant le prélèvement de l'échantillon, une nouvelle tige d'un mètre de longueur est ajoutée et un mètre additionnel de terrain est foré. Le processus d'échantillonnage est repris à chaque mètre foré. L'échantillon prélevé n'est pas représentatif du mètre foré mais plutôt d'une section de 15cm prélevée à la fin de chaque mètre. Cette méthode, bien que qualitative, est très efficace pour la définition de cibles à l'étape de la prospection.

Appendix B –
Lists of Drill Holes used for Mineral Resource Estimates

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
1	LL45-127462	548927.00	861138.00	493.05	26.00		-90.00
2	LL45-125470	548925.00	861130.00	492.37	22.50		-90.00
3	LL45-043479	548843.00	861121.00	486.06	24.00		-90.00
4	LL45-220420	549020.00	861180.00	491.76	10.50		-90.00
5	LL48-048018	548845.78	860781.24	481.37	24.00		-90.00
6	LL45-110273	548910.00	861327.00	502.37	21.20		-90.00
7	LL48-168378	548968.00	860422.00	503.12	13.50		-90.00
8	LL48-177588	548977.00	860212.00	511.67	19.00		-90.00
9	LL41-783245	548783.00	862155.00	472.85	25.00		-90.00
10	LL42-110205	548910.00	862195.00	476.76	25.50		-90.00
11	LL42-156287	548956.00	862113.00	473.49	22.50		-90.00
12	LL55-098218	548098.00	858982.00	498.74	33.00		-90.00
13	LL51-256586	548256.00	859414.00	540.49	27.70		-90.00
14	LL54-737579	547937.00	858621.00	495.21	27.20		-90.00
15	LL57-652800	547852.00	858399.00	495.96	26.00		-90.00
16	LL47-592442	548592.00	860358.00	474.86	30.00		-90.00
17	LL48-003473	548803.00	860327.00	496.78	22.50		-90.00
18	LL36-168588	548968.00	863412.00	484.90	17.00		-90.00
19	LL39-179005	548979.00	863205.00	474.89	20.50		-90.00
20	LL36-322481	549122.00	863519.00	484.17	16.00		-90.00
21	LL45-094729	548894.00	860871.00	483.87	29.50	290.00	-50.00
22	LL45-076722	548876.00	860878.00	484.39	26.50	290.00	-50.00
23	LL45-057716	548857.00	860884.00	485.20	25.00	290.00	-50.00
24	LL45-038709	548838.00	860891.00	481.61	28.00	290.00	-50.00
25	LL45-019702	548819.00	860898.00	479.93	22.50	290.00	-50.00
26	LL48-198391	548998.00	860409.00	505.62	12.00	290.00	-50.00
27	LL48-178386	548978.00	860414.00	504.73	12.50	110.00	-50.00
28	LL48-162375	548962.00	860425.00	502.39	13.50	110.00	-50.00
29	LL48-142369	548942.00	860431.00	499.26	20.00	110.00	-50.00
30	LL48-125364	548925.00	860436.00	495.27	14.00	110.00	-50.00
31	LL48-018316	548818.00	860484.00	488.90	26.00	110.00	-50.00
32	LL47-790317	548790.00	860483.00	492.06	17.00	110.00	-50.00
33	LL47-780306	548780.00	860494.00	491.55	25.50	110.00	-50.00
34	LL47-759300	548759.00	860500.00	488.68	27.00	110.00	-50.00
35	LL47-741294	548741.00	860506.00	486.40	24.00	110.00	-50.00
36	LL47-721286	548721.00	860514.00	482.79	22.50	110.00	-50.00
37	LL45-085401	548885.00	861199.00	500.11	27.10	110.00	-60.00
38	LL45-102406	548902.00	861194.00	500.48	30.00	110.00	-50.00
39	LL45-121413	548921.00	861187.00	498.85	28.50	110.00	-50.00
40	LL45-089460	548889.00	861140.00	491.96	36.00	110.00	-50.00
41	LL45-106466	548906.00	861134.00	491.92	36.00	110.00	-50.00
42	LL45-125471	548925.00	861129.00	492.29	34.40	110.00	-50.00
43	LL45-133324	548933.00	861276.00	504.21	24.10	110.00	-50.00
44	LL45-152331	548952.00	861269.00	502.18	27.70	110.00	-50.00
45	LL45-172336	548972.00	861264.00	498.86	21.00	110.00	-50.00

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
46	LL45-191342	548991.00	861258.00	496.65	27.00	110.00	-50.00
47	LL45-208350	549008.00	861250.00	494.72	27.30	110.00	-50.00
48	LL45-226355	549026.00	861245.00	492.98	30.00	110.00	-50.00
49	LL45-096311	548896.00	861289.00	505.09	28.50	110.00	-50.00
50	LL45-115317	548915.00	861283.00	505.53	28.50	110.00	-50.00
51	LL45-161487	548961.00	861113.00	490.65	28.50	110.00	-50.00
52	LL45-181495	548981.00	861105.00	489.17	30.30	110.00	-50.00
53	LL45-199501	548999.00	861099.00	487.89	28.50	110.00	-50.00
54	LL45-218505	549018.00	861098.00	487.17	25.50	110.00	-50.00
55	LL45-095516	548895.00	861084.00	489.98	30.50	110.00	-50.00
56	LL45-114522	548914.00	861078.00	489.61	36.00	110.00	-50.00
57	LL45-131528	548931.00	861072.00	489.30	31.50	110.00	-50.00
58	LL45-150536	548950.00	861064.00	488.33	24.10	110.00	-50.00
59	LL45-170542	548970.00	861058.00	486.79	32.60	110.00	-50.00
60	LL45-187550	548987.00	861050.00	485.71	28.70	110.00	-50.00
61	LL45-204555	549004.00	861045.00	484.27	30.00	110.00	-50.00
62	LL45-193605	548993.00	860995.00	484.05	25.95	110.00	-50.00
63	LL45-211611	549011.00	860989.00	482.50	19.50	110.00	-50.00
64	LL45-220667	549020.00	860933.00	480.78	18.70	110.00	-50.00
65	LL45-233669	549033.00	860931.00	478.73	25.50	110.00	-50.00
66	LL45-117580	548917.00	861014.00	486.39	29.20	110.00	-50.00
67	LL45-138586	548938.00	861014.00	485.94	22.50	110.00	-50.00
68	LL45-097572	548897.00	861028.00	486.58	27.00	110.00	-50.00
69	LL45-077565	548877.00	861035.00	486.41	30.00	110.00	-50.00
70	LL45-059559	548859.00	861041.00	486.00	39.50	110.00	-50.00
71	LL45-228618	549028.00	860982.00	479.57	19.50	110.00	-50.00
72	LL45-079303	548879.00	861297.00	501.65	36.00	110.00	-50.00
73	LL45-060296	548860.00	861304.00	496.41	37.50	110.00	-50.00
74	LL45-037287	548837.00	861313.00	489.71	37.50	110.00	-50.00
75	LL45-017280	548817.00	861320.00	485.30	25.50	110.00	-50.00
76	LL45-001269	548796.59	861330.19	480.45	31.50	110.00	-50.00
77	LL45-026378	548826.00	861222.00	490.07	38.40	110.00	-50.00
78	LL45-043385	548843.00	861215.00	493.20	32.60	110.00	-50.00
79	LL45-066393	548866.00	861207.00	497.43	30.75	110.00	-50.00
80	LL45-137423	548937.00	861177.00	497.31	25.70	110.00	-50.00
81	LL45-159425	548959.00	861175.00	496.25	25.50	110.00	-50.00
82	LL45-176433	548976.00	861167.00	494.49	21.20	110.00	-50.00
83	LL45-196439	548996.00	861161.00	492.27	24.00	110.00	-50.00
84	LL45-214447	549014.00	861153.00	490.11	20.90	110.00	-50.00
85	LL45-009429	548809.00	861180.00	483.53	34.50	110.00	-50.00
86	LL45-028438	548828.00	861162.00	487.41	31.50	110.00	-50.00
87	LL45-052446	548851.59	861154.96	490.07	39.00	110.00	-50.00
88	LL45-070451	548871.55	861148.69	491.44	39.00	110.00	-50.00
89	LL45-011373	548812.18	861229.42	486.81	34.00	110.00	-50.00
90	LL45-094198	548895.54	861403.14	487.93	39.00	110.00	-50.00

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
91	LL45-112206	548910.43	861391.89	491.61	34.50	110.00	-50.00
92	LL45-131212	548928.26	861386.68	492.72	34.90	110.00	-50.00
93	LL45-148219	548948.69	861378.36	491.84	30.00	110.00	-50.00
94	LL45-167225	548965.99	861371.93	489.91	30.00	110.00	-50.00
95	LL45-148482	548947.29	861122.65	491.59	27.00	110.00	-50.00
96	LL44-768470	548768.93	861129.31	479.47	36.00	110.00	-50.00
97	LL44-782476	548780.64	861122.97	481.02	22.50	110.00	-50.00
98	LL45-033503	548838.37	861097.75	485.15	29.60	110.00	-50.00
99	LL45-056502	548856.54	861092.56	487.15	25.50	110.00	-50.00
100	LL45-075510	548875.16	861090.33	490.04	29.00	110.00	-50.00
101	LL45-004489	548804.00	861111.38	482.45	31.00	110.00	-50.00
102	LL44-785331	548785.82	861068.17	481.56	30.00	110.00	-50.00
103	LL45-002536	548803.21	861062.39	482.43	31.50	110.00	-50.00
104	LL45-020544	548819.48	861058.72	483.86	28.50	110.00	-50.00
105	LL45-039552	548837.07	861051.84	484.97	31.80	110.00	-50.00
106	LL45-156592	548960.75	861005.95	486.68	20.50	110.00	-50.00
107	LL45-174598	548977.82	860999.69	484.69	21.00	110.00	-50.00
108	LL45-197653	548995.92	860945.45	482.78	16.50	110.00	-50.00
109	LL45-181651	548978.47	860949.27	486.65	21.70	110.00	-50.00
110	LL45-162645	548958.66	860954.39	485.17	29.50	110.00	-50.00
111	LL45-143637	548939.91	860958.26	485.38	18.65	110.00	-50.00
112	LL45-124632	548923.71	860964.96	485.30	18.00	110.00	-50.00
113	LL45-105625	548902.92	860973.69	484.33	24.00	110.00	-50.00
114	LL45-086618	548884.70	860983.05	483.11	28.20	110.00	-50.00
115	LL45-067612	548866.84	860989.24	480.53	31.90	110.00	-50.00
116	LL45-049605	548847.71	860996.19	481.84	27.00	110.00	-50.00
117	LL45-011592	548811.73	861009.57	479.40	30.00	110.00	-50.00
118	LL45-030598	548831.95	861001.91	481.02	31.50	110.00	-50.00
119	LL45-001589	548800.59	861013.79	478.01	19.50	110.00	-50.00
120	LL45-170756	548975.16	860842.37	481.31	19.50	110.00	-50.00
121	LL45-151749	548947.84	860852.15	482.49	17.90	110.00	-50.00
122	LL45-132742	548930.41	860858.20	482.45	21.00	110.00	-50.00
123	LL45-113736	548910.06	860863.72	483.58	21.00	110.00	-50.00
124	LL45-009699	548811.15	860896.35	479.21	27.00	110.00	-50.00
125	LL47-796005	548799.35	860792.93	477.49	30.00	110.00	-50.00
126	LL48-015012	548813.90	860785.26	479.11	24.30	110.00	-50.00
127	LL48-033019	548832.02	860778.66	480.72	27.00	110.00	-50.00
128	LL48-052026	548851.02	860774.15	480.79	24.00	110.00	-50.00
129	LL48-071033	548870.62	860767.56	478.48	21.30	110.00	-50.00
130	LL48-090040	548889.06	860761.82	477.47	15.00	110.00	-50.00
131	LL48-109046	548904.23	860758.71	476.92	13.80	110.00	-50.00
132	LL36-119389	548918.36	863610.02	479.59	27.80	110.00	-50.00
133	LL36-143397	548942.54	863602.91	480.95	21.00	110.00	-50.00
134	LL36-262441	549061.24	863554.32	503.34	60.00	110.00	-50.00
135	LL36-289450	549085.70	863547.38	497.13	57.10	110.00	-50.00

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
136	LL36-313459	549115.14	863539.19	487.13	50.50	110.00	-50.00
137	LL36-337469	549139.63	863529.40	479.83	34.50	110.00	-50.00
138	LL36-239433	549038.82	863562.38	502.60	42.10	110.00	-50.00
139	LL36-217425	549018.69	863573.66	496.65	36.80	110.00	-50.00
140	LL36-191413	548993.23	863583.84	488.73	40.50	110.00	-50.00
141	LL36-167405	548966.99	863594.89	483.44	27.00	110.00	-50.00
142	LL36-205528	549011.31	863470.42	489.91	36.00	110.00	-50.00
143	LL36-228537	549032.00	863461.76	496.15	60.00	110.00	-50.00
144	LL36-255545	549054.46	863455.75	495.78	48.30	110.00	-50.00
145	LL36-279554	549076.02	863446.57	493.29	49.00	110.00	-50.00
146	LL36-303564	549099.10	863436.97	486.78	34.50	110.00	-50.00
147	LL36-330572	549130.15	863425.72	478.56	27.00	110.00	-50.00
148	LL36-171622	548973.76	863377.53	481.53	40.50	110.00	-50.00
149	LL36-196631	548995.08	863368.90	483.21	42.20	110.00	-50.00
150	LL36-221639	549020.50	863361.38	481.95	27.00	110.00	-50.00
151	LL36-245648	549050.95	863353.14	479.02	43.00	110.00	-50.00
152	LL36-269658	549074.83	863342.74	480.40	36.00	110.00	-50.00
153	LL36-296666	549101.38	863331.90	479.35	30.00	110.00	-50.00
154	LL36-319675	549118.12	863324.12	477.23	23.00	110.00	-50.00
155	LL39-141022	548941.15	863177.86	474.67	42.00	110.00	-50.00
156	LL39-117013	548917.95	863184.54	474.78	43.50	110.00	-50.00
157	LL39-094004	548893.03	863193.43	472.58	36.60	110.00	-50.00
158	LL36-070796	548871.60	863201.08	471.92	43.50	110.00	-50.00
159	LL39-164030	548965.07	863170.31	476.00	43.50	110.00	-50.00
160	LL39-188038	548988.96	863162.33	476.59	35.60	110.00	-50.00
161	LL39-211047	549012.35	863151.19	476.18	24.00	110.00	-50.00
162	LL39-235056	549037.21	863144.92	474.28	25.50	110.00	-50.00
163	LL39-258064	549063.02	863134.84	474.67	26.50	110.00	-50.00
164	LL39-218252	549015.11	862946.31	473.11	28.50	110.00	-50.00
165	LL39-242261	549041.14	862936.18	468.66	24.00	110.00	-50.00
166	LL39-195244	548993.20	862954.24	476.04	34.50	110.00	-50.00
167	LL39-171235	548969.96	862965.69	478.86	39.30	110.00	-50.00
168	LL39-148227	548948.28	862972.53	479.61	31.50	110.00	-50.00
169	LL39-124218	548924.12	862980.02	479.05	31.50	110.00	-50.00
170	LL39-124429	548928.84	862771.31	464.59	30.00	110.00	-50.00
171	LL39-147437	548947.94	862762.98	463.04	22.50	110.00	-50.00
172	LL39-100420	548907.48	862781.60	465.71	34.00	110.00	-50.00
173	LL39-077412	548881.76	862792.25	466.11	31.50	110.00	-50.00
174	LL39-053403	548854.64	862798.92	466.56	33.00	110.00	-50.00
175	LL39-030395	548832.47	862808.16	466.29	25.50	110.00	-50.00
176	LL42-192773	548989.63	861627.74	488.57	25.50	110.00	-50.00
177	LL42-174766	548974.35	861633.39	490.08	24.50	110.00	-50.00
178	LL42-155759	548958.65	861638.85	490.65	25.30	110.00	-50.00
179	LL42-136752	548940.08	861644.36	490.41	25.50	110.00	-50.00
180	LL42-117746	548920.38	861650.38	490.16	18.00	110.00	-50.00

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
181	LL42-099740	548902.27	861657.31	486.65	16.50	110.00	-50.00
182	LL42-081733	548883.61	861664.25	482.76	36.00	110.00	-50.00
183	LL42-063726	548864.87	861671.32	479.60	34.30	110.00	-50.00
184	LL42-044719	548847.94	861677.59	477.51	33.00	110.00	-50.00
185	LL42-021710	548824.77	861686.81	475.18	26.60	110.00	-50.00
186	LL41-800703	548803.30	861695.77	473.03	28.50	110.00	-50.00
187	LL41-773693	548774.74	861707.23	469.99	18.00	110.00	-50.00
188	LL45-210073	549010.00	861527.00	483.24	21.00	110.00	-50.00
189	LL45-187072	548987.00	861528.00	483.68	24.30	110.00	-50.00
190	LL45-167065	548967.00	861535.00	485.94	24.00	110.00	-50.00
191	LL45-149058	548949.00	861542.00	486.71	25.50	110.00	-50.00
192	LL45-130052	548930.00	861548.00	486.66	25.50	110.00	-50.00
193	LL45-112045	548912.00	861555.00	486.80	26.50	110.00	-50.00
194	LL45-093038	548893.00	861562.00	484.46	27.00	110.00	-50.00
195	LL45-076031	548876.00	861569.00	481.88	29.00	110.00	-50.00
196	LL45-057025	548857.00	861575.00	478.65	23.50	110.00	-50.00
197	LL45-034016	548834.00	861584.00	475.34	24.00	110.00	-50.00
198	LL45-013008	548813.00	861592.00	472.88	15.00	110.00	-50.00
199	LL45-030073	548830.00	861527.00	472.52	23.20	110.00	-50.00
200	LL45-051080	548851.00	861520.00	475.04	19.90	110.00	-50.00
201	LL45-075089	548875.00	861511.00	475.99	22.00	110.00	-50.00
202	LL45-093094	548893.00	861506.00	478.47	14.00	110.00	-50.00
203	LL45-124111	548924.00	861489.00	475.87	15.30	110.00	-50.00
204	LL45-220038	549020.00	861562.00	488.39	24.00	110.00	-50.00
205	LL45-201031	549001.00	861569.00	488.92	32.60	110.00	-50.00
206	LL45-183024	548983.00	861576.00	492.11	30.00	110.00	-50.00
207	LL45-164017	548964.00	861583.00	493.09	30.10	110.00	-50.00
208	LL45-145009	548945.00	861594.00	493.93	20.50	110.00	-50.00
209	LL45-126006	548926.00	861596.00	493.67	25.50	110.00	-50.00
210	LL42-107797	548907.00	861603.00	491.43	21.00	110.00	-50.00
211	LL42-089790	548889.00	861610.00	486.31	33.00	110.00	-50.00
212	LL42-070783	548870.00	861617.00	481.96	24.00	110.00	-50.00
213	LL42-051776	548851.00	861624.00	478.52	29.10	110.00	-50.00
214	LL42-032769	548832.00	861631.00	475.61	13.50	110.00	-50.00
215	LL48-218186	549018.00	860614.00	479.38	25.90	110.00	-50.00
216	LL48-199179	548999.00	860621.00	478.80	21.60	110.00	-50.00
217	LL48-181171	548981.00	860629.00	478.17	19.50	110.00	-50.00
218	LL48-163165	548963.00	860635.00	477.69	24.00	110.00	-50.00
219	LL48-143159	548943.00	860641.00	476.11	17.60	110.00	-50.00
220	LL48-124152	548924.00	860648.00	473.84	18.30	110.00	-50.00
221	LL48-218294	549018.00	860506.00	487.28	21.80	110.00	-50.00
222	LL48-199286	548999.00	860514.00	488.16	22.70	110.00	-50.00
223	LL48-180279	548980.00	860521.00	488.80	16.00	110.00	-50.00
224	LL48-162271	548962.00	860529.00	487.12	17.60	110.00	-50.00
225	LL48-151266	548951.00	860534.00	485.01	19.50	110.00	-50.00

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
226	LL48-217398	549017.00	860402.00	505.31	24.00	110.00	-50.00
227	LL48-236405	549036.00	860395.00	502.66	30.00	110.00	-50.00
228	LL48-254411	549054.00	860389.00	499.68	25.80	110.00	-50.00
229	LL48-141315	548941.00	860485.00	492.42	19.50	110.00	-50.00
230	LL48-160323	548960.00	860477.00	494.42	18.00	110.00	-50.00
231	LL48-178330	548978.00	860470.00	495.33	13.50	110.00	-50.00
232	LL48-196339	548996.00	860461.00	495.48	13.70	110.00	-50.00
233	LL48-214346	549014.00	860454.00	494.48	18.00	110.00	-50.00
234	LL48-178433	548978.00	860367.00	514.08	16.80	110.00	-50.00
235	LL48-197440	548997.00	860360.00	517.21	18.00	110.00	-50.00
236	LL48-215446	549015.00	860354.00	517.37	26.00	110.00	-50.00
237	LL48-106205	548906.00	860595.00	478.29	16.85	110.00	-50.00
238	LL48-129211	548929.00	860589.00	479.66	18.00	110.00	-50.00
239	LL48-151218	548951.00	860582.00	481.41	28.70	110.00	-50.00
240	LL48-206237	549006.00	860563.00	483.90	17.35	110.00	-50.00
241	LL48-188232	548988.00	860568.00	483.03	16.10	110.00	-50.00
242	LL48-169224	548969.00	860576.00	482.03	20.75	110.00	-50.00
243	LL48-222508	549022.00	860292.00	518.84	20.50	110.00	-50.00
244	LL48-199499	548999.00	860301.00	519.77	21.10	110.00	-50.00
245	LL48-175491	548975.00	860309.00	516.01	17.20	110.00	-50.00
246	LL48-152482	548952.00	860318.00	512.55	22.20	110.00	-50.00
247	LL48-128494	548928.00	860326.00	507.87	13.50	110.00	-50.00
248	LL48-105465	548905.00	860335.00	503.87	10.50	110.00	-50.00
249	LL48-172595	548972.00	860205.00	509.99	34.70	110.00	-50.00
250	LL48-192603	548992.00	860197.00	509.76	33.00	110.00	-50.00
251	LL48-166699	548966.00	860101.00	492.68	18.00	110.00	-50.00
252	LL48-142690	548942.00	860110.00	491.61	19.70	110.00	-50.00
253	LL48-119682	548919.00	860118.00	490.70	20.30	110.00	-50.00
254	LL48-100781	548900.00	860019.00	486.17	21.00	110.00	-50.00
255	LL48-119792	548919.00	860008.00	485.41	19.80	110.00	-50.00
256	LL48-077772	548877.00	860028.00	484.83	18.70	110.00	-50.00
257	LL48-053764	548853.00	860036.00	484.81	21.00	110.00	-50.00
258	LL48-030755	548830.00	860045.00	485.11	20.20	110.00	-50.00
259	LL48-007747	548807.00	860053.00	483.85	22.50	110.00	-50.00
260	LL47-783738	548783.00	860062.00	482.43	21.00	110.00	-50.00
261	LL47-760730	548760.00	860070.00	483.34	22.50	110.00	-50.00
262	LL47-736721	548736.00	860079.00	485.07	26.60	110.00	-50.00
263	LL47-713713	548713.00	860087.00	484.60	34.00	110.00	-50.00
264	LL47-689704	548689.00	860096.00	482.29	24.00	110.00	-50.00
265	LL47-666695	548666.00	860105.00	479.36	31.50	110.00	-50.00
266	LL47-642687	548642.00	860113.00	476.40	34.50	110.00	-50.00
267	LL47-717397	548717.00	860403.00	485.74	13.50	110.00	-50.00
268	LL47-740405	548740.00	860395.00	487.49	30.20	110.00	-50.00
269	LL47-787422	548787.00	860378.00	494.73	33.90	110.00	-50.00
270	LL47-764414	548764.00	860386.00	491.75	18.00	110.00	-50.00

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
271	LL47-081457	548881.00	860343.00	500.50	18.00	110.00	-50.00
272	LL47-640475	548640.00	860325.00	479.53	34.75	110.00	-50.00
273	LL47-664483	548664.00	860317.00	482.12	31.50	110.00	-50.00
274	LL47-682490	548682.00	860310.00	484.66	34.50	110.00	-50.00
275	LL47-701497	548701.00	860303.00	487.75	37.14	110.00	-50.00
276	LL47-720504	548720.00	860296.00	489.29	47.50	110.00	-50.00
277	LL47-739510	548739.00	860290.00	492.11	29.50	110.00	-50.00
278	LL47-758517	548758.00	860283.00	495.55	34.60	110.00	-50.00
279	LL47-776524	548776.00	860276.00	495.56	28.70	110.00	-50.00
280	LL47-795531	548795.00	860269.00	494.06	20.20	110.00	-50.00
281	LL48-014538	548814.00	860262.00	491.24	23.60	110.00	-50.00
282	LL47-768592	548768.00	860208.00	486.22	30.00	110.00	-50.00
283	LL47-750585	548750.00	860215.00	487.01	32.30	110.00	-50.00
284	LL47-731578	548731.00	860222.00	487.90	36.70	110.00	-50.00
285	LL47-712571	548712.00	860229.00	486.30	36.00	110.00	-50.00
286	LL47-693564	548693.00	860236.00	483.71	43.50	110.00	-50.00
287	LL47-674557	548674.00	860243.00	480.68	38.10	110.00	-50.00
288	LL47-656551	548656.00	860249.00	477.58	28.00	110.00	-50.00
289	LL47-661377	548661.00	860423.00	478.63	38.10	110.00	-50.00
290	LL47-680384	548680.00	860416.00	480.60	28.00	110.00	-50.00
291	LL47-698390	548698.00	860410.00	482.33	30.00	110.00	-50.00
292	LL48-006429	548806.00	860371.00	494.80	31.50	110.00	-50.00
293	LL48-025435	548825.00	860365.00	494.74	28.50	110.00	-50.00
294	LL48-210609	549010.00	860191.00	507.18	30.00	110.00	-50.00
295	LL48-184706	548984.00	860094.00	492.33	22.50	110.00	-50.00
296	LL47-625462	548625.00	860338.00	478.21	10.00	110.00	-50.00
297	LL48-138799	548938.00	860001.00	487.00	23.90	110.00	-50.00
298	LL52-157006	548957.00	859994.00	486.41	27.70	110.00	-50.00
299	LL48-225244	549025.00	860556.00	482.60	22.50	110.00	-50.00
300	LL48-243252	549043.00	860548.00	481.99	27.00	110.00	-50.00
301	LL48-233353	549033.00	860447.00	493.22	22.50	110.00	-50.00
302	LL39-206577	549006.00	862623.00	456.02	13.50	110.00	-50.00
303	LL39-225584	549025.00	862616.00	456.69	18.00	110.00	-50.00
304	LL39-097640	548897.00	862560.00	457.28	30.20	110.00	-50.00
305	LL39-134654	548934.00	862546.00	462.05	52.50	110.00	-50.00
306	LL39-115647	548915.00	862553.00	460.31	33.50	110.00	-50.00
307	LL39-153661	548953.00	862539.00	463.39	49.50	110.00	-50.00
308	LL39-172668	548972.00	862532.00	465.82	40.50	110.00	-50.00
309	LL39-191674	548991.00	862526.00	468.31	31.50	110.00	-50.00
310	LL39-204682	549009.00	862519.00	467.29	27.60	110.00	-50.00
311	LL39-228688	549028.00	862512.00	464.61	31.50	110.00	-50.00
312	LL39-247695	549047.00	862505.00	463.22	16.50	110.00	-50.00
313	LL39-266702	549066.00	862498.00	461.18	16.60	110.00	-50.00
314	LL39-238796	549038.00	862404.00	467.61	25.00	110.00	-50.00
315	LL39-219789	549019.00	862411.00	468.63	29.00	110.00	-50.00

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
316	LL39-182775	548982.00	862425.00	472.74	25.50	110.00	-50.00
317	LL39-163768	548963.00	862432.00	474.52	35.00	110.00	-50.00
318	LL39-201782	549001.00	862418.00	469.30	27.00	110.00	-50.00
319	LL39-144761	548944.00	862439.00	475.05	36.00	110.00	-50.00
320	LL39-125755	548925.00	862445.00	475.64	44.00	110.00	-50.00
321	LL39-107748	548907.00	862452.00	474.05	34.50	110.00	-50.00
322	LL39-088741	548888.00	862459.00	470.97	37.50	110.00	-50.00
323	LL39-069734	548869.00	862466.00	466.28	37.50	110.00	-50.00
324	LL39-049724	548849.00	862476.00	462.86	41.00	110.00	-50.00
325	LL57-538076	547738.00	858324.00	482.63	21.95	110.00	-50.00
326	LL57-557082	547757.00	858318.00	484.73	48.25	110.00	-50.00
327	LL42-055037	548855.00	862363.00	470.84	41.00	110.00	-50.00
328	LL57-576089	547776.00	858311.00	486.58	44.20	110.00	-50.00
329	LL42-074043	548874.00	862357.00	471.91	42.00	110.00	-50.00
330	LL57-594096	547794.00	858304.00	487.02	37.75	110.00	-50.00
331	LL54-560778	547760.00	858422.00	484.91	64.40	110.00	-50.00
332	LL54-578785	547778.00	858415.00	489.02	47.20	110.00	-50.00
333	LL54-597791	547797.00	858409.00	492.11	51.20	110.00	-50.00
334	LL54-616798	547816.00	858402.00	495.71	43.10	110.00	-50.00
335	LL57-635005	547835.00	858395.00	497.35	59.00	110.00	-50.00
336	LL57-658016	547858.00	858384.00	495.61	48.20	110.00	-50.00
337	LL39-227356	549027.00	862844.00	468.15	37.50	110.00	-50.00
338	LL57-672019	547872.00	858381.00	495.95	43.25	110.00	-50.00
339	LL39-208349	549008.00	862851.00	468.45	36.00	110.00	-50.00
340	LL54-727766	547927.00	858434.00	493.21	48.50	110.00	-50.00
341	LL39-190342	548990.00	862858.00	469.33	44.00	110.00	-50.00
342	LL54-708759	547908.00	858441.00	492.52	42.55	110.00	-50.00
343	LL39-152328	548952.00	862872.00	472.31	40.20	110.00	-50.00
344	LL39-133321	548933.00	862879.00	474.45	32.40	110.00	-50.00
345	LL39-115315	548915.00	862885.00	475.22	30.50	110.00	-50.00
346	LL54-689752	547889.00	858448.00	492.99	54.60	110.00	-50.00
347	LL54-670754	547870.00	858455.00	492.88	54.30	110.00	-50.00
348	LL39-096308	548896.00	862892.00	473.48	46.00	110.00	-50.00
349	LL39-077301	548877.00	862899.00	472.86	48.50	110.00	-50.00
350	LL54-652738	547852.00	858462.00	494.06	63.60	110.00	-50.00
351	LL39-171335	548971.00	862865.00	471.01	34.90	110.00	-50.00
352	LL39-065095	548865.00	863105.00	474.08	48.00	110.00	-50.00
353	LL42-093050	548893.00	862350.00	472.85	48.80	110.00	-50.00
354	LL54-633732	547833.00	858468.00	496.01	53.20	110.00	-50.00
355	LL42-112057	548912.00	862343.00	473.99	49.10	110.00	-50.00
356	LL42-130064	548930.00	862336.00	473.57	51.50	110.00	-50.00
357	LL54-614725	547814.00	858475.00	492.26	51.80	110.00	-50.00
358	LL42-149071	548949.00	862329.00	472.72	48.75	110.00	-50.00
359	LL54-582710	547782.00	858490.00	485.75	33.70	110.00	-50.00
360	LL42-187085	548987.00	862315.00	468.75	24.40	110.00	-50.00

SEQUENCE	HOLE-ID	LOCATIONX	LOCATIONY	LOCATIONZ	LENGTH	Azimuth	Dip
361	LL54-595718	547795.00	858482.00	488.54	57.70	110.00	-50.00
362	LL42-168078	548968.00	862322.00	470.73	31.05	110.00	-50.00
363	LL54-737627	547937.00	858573.00	493.03	50.20	110.00	-50.00
364	LL42-188187	548988.00	862213.00	469.08	29.10	110.00	-50.00
365	LL42-169180	548969.00	862220.00	471.78	30.75	110.00	-50.00
366	LL42-150173	548950.00	862227.00	473.87	45.40	110.00	-50.00
367	LL54-756636	547956.00	858564.00	495.16	47.90	110.00	-50.00
368	LL54-771645	547971.00	858555.00	495.03	36.60	110.00	-50.00
369	LL42-132167	548932.00	862233.00	475.65	45.50	110.00	-50.00
370	LL42-113160	548913.00	862240.00	476.84	55.95	110.00	-50.00
371	LL54-791650	547991.00	858550.00	494.23	33.40	110.00	-50.00
372	LL55-008654	548008.00	858546.00	493.72	32.00	110.00	-50.00
373	LL42-094153	548894.00	862247.00	475.14	57.60	110.00	-50.00
374	LL55-030663	548030.00	858537.00	493.19	33.75	110.00	-50.00
375	LL39-084102	548883.73	863098.28	475.19	46.60	110.00	-50.00
376	LL55-003547	548002.83	858653.40	502.48	51.60	110.00	-50.00
377	LL42-075146	548875.00	862254.00	472.28	55.45	110.00	-50.00
378	LL39-103109	548902.53	863091.44	477.10	43.50	110.00	-50.00
379	LL55-048669	548048.00	858531.00	492.76	30.00	110.00	-50.00
380	LL55-022553	548021.63	858646.56	502.21	41.10	110.00	-50.00
381	LL42-056139	548856.00	862261.00	469.89	57.80	110.00	-50.00
382	LL39-121115	548921.32	863084.60	478.28	32.20	110.00	-50.00
383	LL55-059567	548059.00	858633.00	500.54	41.80	110.00	-50.00
384	LL55-040560	548040.43	858639.73	501.45	45.55	110.00	-50.00
385	LL55-078574	548078.01	858626.04	499.66	34.85	110.00	-50.00
386	LL39-140122	548940.12	863077.76	479.62	48.00	110.00	-50.00
387	LL42-262324	549062.00	862076.00	475.68	29.15	110.00	-50.00
388	LL39-159129	548959.00	863070.92	479.85	36.00	110.00	-50.00
389	LL54-784541	547984.00	858659.00	501.79	51.70	110.00	-50.00
390	LL54-765546	547965.00	858654.00	500.12	62.10	110.00	-50.00
391	LL39-178136	548977.70	863064.08	478.94	51.50	110.00	-50.00
392	LL42-187296	548987.00	862104.00	472.97	30.55	110.00	-50.00
393	LL55-005442	548004.89	858758.01	504.66	66.45	110.00	-50.00
394	LL55-024449	548023.69	858751.17	504.50	69.60	110.00	-50.00
395	LL42-168289	548968.00	862111.00	473.55	27.55	110.00	-50.00

Appendix C – *Composited Mineral Intervals*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
LL45-127462	1	0.00	26.00	9.8089228	*1.97*
*including *1*			*25.00*	10.12	1.99
LL45-125470	2	0.25	22.25	11.572584	*1.69*
*including *1*			*22.25*	11.58	1.70
LL45-043479	3	0.40	19.10	6.5880626	*1.51*
*including *1*			*15.00*	7.84	1.50
LL45-220420	4		Below COG		
LL48-048018	5	1.50	10.00	3.212	*1.56*
*including *1*			*5.50*	4.87	1.53
LL45-110273	6	0.00	21.20	3.9100471	*1.74*
*including *1*			*19.50*	4.04	1.77
LL48-168378	7	0.00	13.50	4.1214075	*1.73*
*including *1*			*7.80*	6.29	1.66
LL48-177588	8	0.00	14.85	11.381549	*1.80*
*including *1*			*12.85*	12.94	1.80
LL41-783245	9	9.00	16.00	2.0062499	*1.63*
*including *1*			*1.50*	5.56	1.66
LL42-110205	10	0.00	25.50	9.8002157	*1.68*
*including *1*			*21.00*	11.55	*1.69*
LL42-156287	11	1.00	21.50	2.97	1.66
*including *1*			*12.00*	3.71	*1.66*
LL55-098218	12	1.50	31.50	2.79	1.59
*including *1*			*9.00*	4.92	*1.66*
LL51-256586	13	17.60	6.10	1.18	1.66
LL54-737579	14	0.15	12.09	9.83	1.58
*including *1*			*10.74*	10.8	*1.60*
LL57-652800	15	0.15	16.95	9.66	1.61
*including *1*			*10.30*	15.03	*1.66*
LL47-592442	16	0.15	29.85	10.11	1.70
*including *1*			*24.50*	12.06	*1.72*
LL48-003473	17	0.00	22.50	2.85	1.67
*including *1*			*5.20*	5.99	*1.60*
LL36-168588	18	0.00	16.50	2.76	1.63
*including *1*			*6.50*	3.82	*1.66*
LL39-179005	19	1.50	18.20	1.82	1.61
LL36-322481	20	0.00	15.10	2.200861	*1.58*
*including *1*			*7.10*	3.34	*1.66*
LL45-094729	21	0.00	29.50	5.26	1.61
*including *1*			*25.20*	5.77	*1.60*
LL45-076722	22	0.00	13.40	4.61	1.59
*including *1*			*5.60*	6.78	*1.55*
LL45-057716	23	0.00	17.00	2.31	1.62

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
*including *1*			*4.50*	4.15	1.51
LL45-038709	24	0.00	16.70	3.3844311	*1.55*
*including *1*			*5.70*	6.29	1.57
LL45-019702	25	6.00	12.00	3.9862499	*1.60*
*including *1*			*4.50*	7.27	1.66
LL48-198391	26	0.40	10.10	1.5834653	*1.66*
LL48-178386	27	5.10	5.40	1.39	1.69
LL48-162375	28	0.20	11.80	4.0677118	*1.69*
*including *1*			*6.10*	6.02	1.66
LL48-142369	29	0.00	18.50	4.3763785	*1.65*
*including *1*			*11.00*	5.93	1.58
LL48-125364	30	0.00	14.00	5.0691428	*1.61*
*including *1*			*9.00*	7.2	*1.66*
LL48-018316	31	10.50	13.50	4.83	1.61
*including *1*			*13.50*	4.84	*1.61*
LL47-790317	32	0.00	4.50	2.92	1.52
*including *1*			*1.00*	8.56	*1.50*
LL47-780306	33	0.00	22.00	2.78	1.59
*including *1*			*8.35*	4.69	1.53
LL47-759300	34	0.00	25.50	5.7498431	*1.55*
*including *1*			*7.50*	15.41	1.50
LL47-741294	35	0.00	24.00	5.4767084	*1.57*
*including *1*			*19.50*	6.37	1.59
LL47-721286	36	1.50	12.00	1.7359166	*1.60*
LL45-085401	37	0.00	27.10	4.93	1.64
*including *1*			*12.80*	8.33	*1.70*
LL45-102406	38	0.00	17.50	3.90	1.64
*including *1*			*10.00*	5.69	*1.66*
LL45-121413	39	6.00	19.90	8.28	1.68
*including *1*			*18.00*	8.93	*1.66*
LL45-089460	40	0.00	28.00	3.8494642	*1.64*
*including *1*			*17.00*	5.00	1.65
LL45-106466	41	1.50	15.00	7.4786665	*1.74*
*including *1*			*10.50*	10.01	1.85
LL45-125471	42	0.00	10.50	9.2828569	*1.50*
*including *1*			*10.50*	9.29	1.51
LL45-133324	43	4.50	13.60	7.13	1.64
*including *1*			*13.60*	7.14	*1.65*
LL45-152331	44		Below COG		
LL45-172336	45		Below COG		
LL45-191342	46	4.50	22.50	5.26	1.80
*including *1*			*22.50*	5.26	*1.80*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
LL45-208350	47	3.00	14.00	3.45	1.57
*including *1*			*3.00*	10.34	*1.50*
LL45-226355	48		Below COG		
LL45-096311	49	0.00	26.00	3.919827	*1.66*
*including *1*			*16.35*	5.00	1.68
LL45-115317	50	0.00	19.50	4.0512309	*1.65*
*including *1*			*12.45*	5.29	*1.66*
LL45-161487	51		Below COG		
LL45-181495	52	0.00	25.80	3.7374032	*1.72*
*including *1*			*14.50*	5.36	1.65
LL45-199501	53	4.50	17.25	1.6330435	*1.62*
*including *1*			*1.50*	4.31	1.50
LL45-218505	54		Below COG		
LL45-095516	55	0.00	12.00	3.7525001	*1.62*
*including *1*			*3.00*	8.28	1.66
LL45-114522	56	9.00	22.50	10.742462	*1.70*
*including *1*			*20.80*	11.51	1.68
LL45-131528	57	0.00	5.50	3.7918181	*1.54*
*including *1*			*2.50*	6.77	1.60
LL45-150536	58	1.90	1.10	1.27	*1.49*
LL45-170542	59	4.60	20.70	7.65	1.69
*including *1*			*16.20*	9.47	*1.75*
LL45-187550	60	9.00	19.70	5.68	1.80
*including *1*			*17.20*	6.26	*1.76*
LL45-204555	61	13.50	7.50	2.0880001	*1.63*
LL45-193605	62	0.00	19.30	3.39	1.71
*including *1*			*8.35*	5.54	*1.63*
LL45-211611	63	3.00	12.00	2.33	1.55
*including *1*			*1.50*	6.22	*1.50*
LL45-220667	64		Below COG		
LL45-233669	65	15.00	1.50	6.93	1.50
*including *1*			*1.50*	6.93	*1.50*
LL45-117580	66	1.50	12.40	6.77	1.61
*including *1*			*12.40*	6.77	*1.62*
LL45-138586	67		Below COG		
LL45-097572	68	0.00	6.00	3.6366668	*1.51*
*including *1*			*3.50*	4.65	1.50
LL45-077565	69	0.00	28.50	6.2067719	*1.63*
*including *1*			*21.50*	7.73	1.66
LL45-059559	70	0.00	30.20	3.8806357	*1.71*
*including *1*			*11.78*	7.26	1.75
LL45-228618	71		Below COG		

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
LL45-079303	72	0.00	33.00	4.0213939	*1.72*
*including *1*			*10.40*	9.00	1.67
LL45-060296	73	0.00	34.00	3.6668236	*1.66*
*including *1*			*11.80*	7.92	1.71
LL45-037287	74	1.50	18.50	3.5481082	*1.69*
*including *1*			*3.00*	11.94	1.66
LL45-017280	75		Below COG		
LL45-001269	76	16.50	15.00	3.2295268	*1.88*
*including *1*			*3.49*	8.36	1.77
LL45-026378	77	0.00	27.70	4.4105415	*1.71*
*including *1*			*15.10*	6.46	1.74
LL45-043385	78	0.00	31.00	4.5646772	*1.66*
*including *1*			*23.00*	5.55	1.66
LL45-066393	79	0.00	30.75	4.0291057	*1.65*
*including *1*			*10.50*	8.73	1.66
LL45-137423	80	0.00	2.60	1.5465385	*1.53*
LL45-159425	81		Below COG		
LL45-176433	82	2.20	19.00	5.3477578	*1.72*
*including *1*			*17.10*	5.71	*1.71*
LL45-196439	83	3.00	20.00	5.08	1.75
*including *1*			*16.10*	5.96	*1.81*
LL45-214447	84		Below COG		
LL45-009429	85	0.00	30.00	8.1386003	*1.67*
*including *1*			*22.90*	10.09	1.68
LL45-028438	86	0.00	26.50	5.09	1.65
*including *1*			*21.00*	5.85	*1.65*
LL45-052446	87	0.00	34.50	3.16	1.71
*including *1*			*10.00*	6.91	*1.75*
LL45-070451	88	0.00	39.00	3.34	1.76
*including *1*			*20.50*	4.89	*1.85*
LL45-011373	89	3.00	31.00	5.76	1.68
*including *1*			*21.67*	7.62	*1.66*
LL45-094198	90	0.00	33.00	4.30	1.65
*including *1*			*18.50*	6.39	*1.67*
LL45-112206	91	0.00	34.50	5.36	1.71
*including *1*			*23.75*	7.25	*1.77*
LL45-131212	92	0.00	22.70	4.555154	*1.72*
*including *1*			*15.20*	5.62	1.75
LL45-148219	93	0.00	15.00	5.3280001	*1.65*
*including *1*			*9.00*	7.52	1.66
LL45-167225	94	0.00	3.00	1.23	*1.59*
LL45-148482	95		Below COG		

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
LL44-768470	96	23.00	13.00	14.22	1.71
*including *1*			*6.00*	28.51	*1.77*
LL44-782476	97	3.00	18.00	2.17	1.64
*including *1*			*1.35*	10.5	*1.66*
LL45-033503	98	0.00	23.60	2.65	1.69
*including *1*			*10.00*	4.35	*1.63*
LL45-056502	99	0.00	24.60	1.88	1.66
*including *1*			*3.20*	4.26	*1.66*
LL45-075510	100	0.00	24.50	5.38	1.64
*including *1*			*13.00*	8.25	*1.66*
LL45-004489	101	9.00	17.50	4.88	1.66
*including *1*			*14.50*	5.6	*1.66*
LL44-785331	102	0.00	4.50	1.2833333	*1.58*
LL45-002536	103	7.50	24.00	6.82	1.66
*including *1*			*21.00*	7.57	*1.66*
LL45-020544	104	0.00	22.50	2.92	1.62
*including *1*			*9.00*	4.4	*1.66*
LL45-039552	105	0.00	27.00	2.60	1.69
*including *1*			*7.00*	5.23	1.69
LL45-156592	106		Below COG		
LL45-174598	107	1.50	19.50	4.34	1.72
*including *1*			*18.00*	4.53	*1.75*
LL45-197653	108	1.50	10.80	2.44	1.69
*including *1*			*1.50*	8.47	*1.66*
LL45-181651	109	1.50	16.60	5.09	1.65
*including *1*			*13.60*	5.62	*1.67*
LL45-162645	110	16.50	13.00	6.25	1.66
*including *1*			*13.00*	6.25	*1.66*
LL45-143637	111		Below COG		
LL45-124632	112		Below COG		
LL45-105625	113	12.00	7.50	4.678	*1.66*
*including *1*			*4.50*	6.83	1.66
LL45-086618	114	0.00	21.50	3.6762791	*1.66*
*including *1*			*14.50*	4.42	1.66
LL45-067612	115	15.00	13.90	4.9055394	*1.72*
*including *1*			*10.90*	5.79	1.74
LL45-049605	116	1.50	22.50	2.56	1.65
*including *1*			*4.50*	5.86	*1.68*
LL45-011592	117	3.00	19.00	7.02	1.66
*including *1*			*11.50*	10.23	*1.66*
LL45-030598	118	3.00	27.00	2.53	1.66
*including *1*			*9.00*	3.82	*1.66*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
LL45-001589	119		Below COG		
LL45-170756	120	0.00	14.50	5.6603449	*1.68*
*including *1*			*12.00*	6.48	1.66
LL45-151749	121		Below COG		
LL45-132742	122		Below COG		
LL45-113736	123		Below COG		
LL45-009699	124	3.00	24.00	2.038125	*1.66*
*including *1*			*1.50*	3.95	1.66
LL47-796005	125	0.00	27.00	3.6483333	*1.64*
*including *1*			*14.00*	5.25	1.66
LL48-015012	126	0.00	24.30	7.2731686	*1.65*
*including *1*			*21.30*	7.93	1.66
LL48-033019	127	0.00	23.00	3.76	1.63
*including *1*			*17.00*	4.61	*1.62*
LL48-052026	128	4.00	20.00	4.97	1.72
*including *1*			*20.00*	4.97	*1.73*
LL48-071033	129	0.00	16.50	3.41	1.65
*including *1*			*10.50*	4.2	*1.65*
LL48-090040	130		Below COG		
LL48-109046	131		Below COG		
LL36-119389	132	0.00	27.30	2.58	1.65
*including *1*			*7.80*	3.36	*1.66*
LL36-143397	133	0.00	21.00	2.77	1.65
*including *1*			*9.50*	3.35	*1.66*
LL36-262441	134	0.00	55.50	8.924054	*1.67*
*including *1*			*48.00*	10.07	1.70
LL36-289450	135	0.00	46.10	6.8019306	*1.60*
*including *1*			*38.60*	7.78	1.57
LL36-313459	136	0.00	40.00	4.8913749	*1.62*
*including *1*			*21.00*	7.76	1.64
LL36-337469	137	0.00	12.00	1.36	1.59
LL36-239433	138	1.50	36.00	6.6898332	*1.63*
*including *1*			*21.50*	10.28	1.66
LL36-217425	139	0.00	36.30	5.841033	*1.63*
*including *1*			*16.80*	10.25	1.66
LL36-191413	140	0.00	37.40	4.3205347	*1.65*
*including *1*			*23.40*	5.78	1.65
LL36-167405	141	1.50	24.00	3.5062499	*1.62*
*including *1*			*13.50*	4.75	1.61
LL36-205528	142	4.50	30.00	5.7080002	*1.65*
*including *1*			*23.70*	6.63	1.67
LL36-228537	143	0.00	60.00	5.2709332	*1.68*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
*including *1*			*46.50*	6.37	*1.68*
LL36-255545	144	0.00	43.50	2.12	1.65
*including *1*			*12.00*	5.51	*1.64*
LL36-279554	145	1.50	40.50	6.18	1.66
*including *1*			*25.50*	9.19	*1.69*
LL36-303564	146	1.50	33.00	3.42	1.67
*including *1*			*13.00*	5.99	1.63
LL36-330572	147		Below COG		
LL36-171622	148	0.00	31.50	3.57	1.66
*including *1*			*15.00*	5.23	*1.66*
LL36-196631	149	0.00	42.20	3.96	1.68
*including *1*			*26.00*	5.14	*1.65*
LL36-221639	150	0.00	6.20	2.53	1.70
*including *1*			*5.20*	2.79	*1.72*
LL36-245648	151	25.50	17.50	3.88	1.83
*including *1*			*15.20*	4.04	*1.85*
LL36-269658	152	0.00	33.50	5.96	1.81
*including *1*			*30.50*	6.43	*1.78*
LL36-296666	153	0.00	21.00	3.4568572	*1.66*
*including *1*			*8.50*	6.15	1.68
LL36-319675	154		Below COG		
LL39-141022	155	0.00	39.40	5.61	1.67
*including *1*			*31.30*	6.51	*1.67*
LL39-117013	156	3.00	39.20	7.13	1.69
*including *1*			*26.10*	9.85	1.69
LL39-094004	157	4.00	32.60	7.0501842	*1.67*
*including *1*			*23.00*	9.36	1.67
LL36-070796	158	1.70	34.40	4.0122818	*1.65*
*including *1*			*11.75*	8.72	1.68
LL39-164030	159	0.00	40.50	3.9785186	*1.66*
*including *1*			*19.50*	5.87	1.66
LL39-188038	160	0.00	27.20	3.8863604	*1.66*
*including *1*			*15.00*	5.54	1.67
LL39-211047	161	1.50	2.20	6.5300002	*1.66*
*including *1*			*2.20*	6.54	1.66
LL39-235056	162	0.60	6.90	1.2194203	*1.64*
*including *1*			*1.30*	3.47	*1.66*
LL39-258064	163	4.00	18.00	3.01	1.67
*including *1*			*8.50*	4.32	*1.67*
LL39-218252	164	2.00	5.50	3.74	1.66
*including *1*			*2.50*	6.11	*1.66*
LL39-242261	165	3.00	15.00	4.55	1.64

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
*including *1*			*12.00*	5.22	1.66
LL39-195244	166	0.00	34.50	6.2311592	*1.65*
*including *1*			*22.50*	8.59	1.67
LL39-171235	167	0.00	39.30	7.1904073	*1.72*
*including *1*			*26.10*	10.06	1.77
LL39-148227	168	3.00	28.50	2.4031579	*1.66*
*including *1*			*7.50*	4.55	1.68
LL39-124218	169	1.50	25.50	2.9902354	*1.64*
*including *1*			*12.00*	4.41	1.67
LL39-124429	170	0.00	27.00	6.8622222	*1.60*
*including *1*			*21.00*	8.19	1.63
LL39-147437	171	4.50	12.00	2.3212499	*1.69*
*including *1*			*4.50*	3.17	*1.66*
LL39-100420	172	0.00	30.00	4.12	1.65
*including *1*			*16.50*	6.11	*1.67*
LL39-077412	173	4.00	27.50	3.48	1.64
*including *1*			*10.50*	5.72	*1.67*
LL39-053403	174	0.00	33.00	5.81	1.62
*including *1*			*18.00*	9.14	1.63
LL39-030395	175		Below COG		
LL42-192773	176	0.00	3.00	2.57	1.54
LL42-174766	177	6.00	16.50	3.659091	*1.66*
*including *1*			*10.50*	4.69	1.66
LL42-155759	178	0.00	25.30	4.5669169	*1.65*
*including *1*			*16.50*	5.86	1.66
LL42-136752	179	1.50	16.80	4.5333929	*1.69*
*including *1*			*10.50*	5.95	1.66
LL42-117746	180	0.00	18.00	3.2255001	*1.63*
*including *1*			*13.20*	3.95	1.67
LL42-099740	181	1.50	4.50	2.4357777	*1.52*
*including *1*			*0.70*	4.66	*1.66*
LL42-081733	182	17.20	17.30	3.09	1.70
*including *1*			*7.00*	5.23	*1.68*
LL42-063726	183	1.50	32.80	2.19	1.66
*including *1*			*8.80*	3.94	*1.64*
LL42-044719	184	4.50	18.00	4.14	1.67
*including *1*			*6.00*	8.57	1.67
LL42-021710	185	1.00	15.50	5.0212903	*1.64*
*including *1*			*7.50*	9.01	1.66
LL41-800703	186	6.00	19.50	3.1	*1.69*
*including *1*			*6.00*	5.47	1.79
LL41-773693	187		Below COG		

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
LL45-210073	188	0.00	21.00	4.03	1.74
*including *1*			*10.50*	6.35	*1.73*
LL45-187072	189		Below COG		
LL45-167065	190	3.00	10.50	5.6528573	*1.66*
*including *1*			*6.00*	8.44	1.66
LL45-149058	191	0.00	21.40	3.2022898	*1.76*
*including *1*			*9.40*	5.57	*1.64*
LL45-130052	192	9.00	13.50	3.89	1.76
*including *1*			*9.00*	4.95	*1.82*
LL45-112045	193	0.00	24.00	2.58	1.65
*including *1*			*6.00*	4.16	*1.63*
LL45-093038	194	3.00	19.50	3.39	1.73
*including *1*			*10.50*	4.88	1.79
LL45-076031	195	0.00	14.00	3.7189286	*1.86*
*including *1*			*4.50*	8.29	2.09
LL45-057025	196	0.40	22.10	2.3834841	*1.64*
*including *1*			*6.00*	3.35	1.66
LL45-034016	197	3.00	9.00	3.3539999	*1.83*
*including *1*			*2.80*	7.32	1.82
LL45-013008	198		Below COG		
LL45-030073	199	7.50	15.70	1.89	1.76
*including *1*			*3.90*	1.89	*1.66*
LL45-051080	200	4.00	6.50	3.50	1.66
*including *1*			*3.00*	4.52	*1.66*
LL45-075089	201	10.50	11.50	4.1240001	*1.70*
*including *1*			*5.10*	7.39	1.67
LL45-093094	202	0.00	14.00	3.2375	*1.67*
*including *1*			*9.50*	3.62	1.69
LL45-124111	203	0.00	15.30	3.8068628	*1.65*
*including *1*			*9.50*	5.03	1.67
LL45-220038	204	0.70	20.30	3.31	1.64
*including *1*			*7.00*	5.86	*1.66*
LL45-201031	205	12.00	20.60	5.47	1.75
*including *1*			*16.50*	6.37	*1.75*
LL45-183024	206	1.50	1.70	3.49	1.59
*including *1*			*1.70*	3.5	*1.60*
LL45-164017	207	0.00	19.60	3.61	1.68
*including *1*			*13.20*	4.25	*1.64*
LL45-145009	208	3.00	14.50	4.36	1.62
*including *1*			*9.00*	5.98	*1.61*
LL45-126006	209	0.00	22.20	2.70	1.72
*including *1*			*6.70*	4.92	*1.63*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m³
LL42-107797	210	0.00	20.30	6.4467978	*1.63*
*including *1*			*13.50*	8.93	1.67
LL42-089790	211	1.50	30.00	3.2905333	*1.65*
*including *1*			*10.70*	6.21	1.67
LL42-070783	212	3.00	4.50	1.8366667	*1.66*
LL42-051776	213	3.00	26.10	2.33	1.67
*including *1*			*9.60*	3.67	1.70
LL42-032769	214		Below COG		
LL48-218186	215		Below COG		
LL48-199179	216	1.50	17.10	2.2730409	*1.72*
*including *1*			*4.50*	4.94	1.66
LL48-181171	217	0.00	17.00	5.0961766	*1.67*
*including *1*			*14.50*	5.67	1.65
LL48-163165	218	0.00	18.00	4.0494445	*1.73*
*including *1*			*11.50*	5.16	1.70
LL48-143159	219	8.90	8.10	4.2819753	*1.85*
*including *1*			*8.10*	4.29	1.85
LL48-124152	220		Below COG		
LL48-218294	221		Below COG		
LL48-199286	222	3.00	16.50	1.76	1.66
*including *1*			*3.00*	4.25	*1.66*
LL48-180279	223	0.00	16.00	2.44	1.69
*including *1*			*3.00*	4.78	*1.66*
LL48-162271	224	0.00	17.00	3.30	1.75
*including *1*			*6.00*	5.64	1.88
LL48-151266	225	0.00	19.50	4.540513	*1.65*
*including *1*			*17.00*	4.92	1.64
LL48-217398	226		Below COG		
LL48-236405	227		Below COG		
LL48-254411	228		Below COG		
LL48-141315	229	0.00	19.50	4.02	1.69
*including *1*			*15.00*	4.73	*1.65*
LL48-160323	230	0.00	18.00	3.75	1.68
*including *1*			*7.50*	6.15	*1.75*
LL48-178330	231	1.50	12.00	1.62	1.69
LL48-196339	232	3.00	10.50	4.972857	*1.79*
*including *1*			*9.00*	5.47	*1.75*
LL48-214346	233		Below COG		
LL48-178433	234	1.50	10.80	1.3376852	*1.78*
LL48-197440	235	0.00	10.50	1.31	1.61
LL48-215446	236		Below COG		
LL48-106205	237		Below COG		

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m³
LL48-129211	238		Below COG		
LL48-151218	239	0.00	28.70	6.3500347	*1.70*
*including *1*			*22.40*	7.79	1.68
LL48-206237	240		Below COG		
LL48-188232	241	1.50	13.60	2.67	1.73
*including *1*			*6.00*	4.52	*1.62*
LL48-169224	242	1.50	19.25	3.44	1.74
*including *1*			*10.50*	4.86	*1.66*
LL48-222508	243		Below COG		
LL48-199499	244	3.00	1.50	1.03	*1.66*
LL48-175491	245	1.50	15.70	1.40	1.70
*including *1*			*1.80*	3.63	*2.09*
LL48-152482	246	0.00	22.20	5.6348648	*1.68*
*including *1*			*20.70*	5.96	1.69
LL48-128494	247	0.00	13.50	4.0519261	*1.68*
*including *1*			*8.50*	5.60	1.72
LL48-105465	248		Below COG		
LL48-172595	249	0.00	30.00	4.42	1.66
*including *1*			*17.20*	6.25	1.66
LL48-192603	250	0.00	4.50	1.4266666	*1.58*
LL48-166699	251	7.50	1.50	1.26	1.66
LL48-142690	252	1.50	18.20	4.7191758	*1.67*
*including *1*			*15.00*	5.31	1.66
LL48-119682	253	1.50	18.50	3.7664864	*1.70*
*including *1*			*9.00*	5.95	1.65
LL48-100781	254	1.50	19.50	3.8315384	*1.67*
*including *1*			*10.10*	5.59	1.68
LL48-119792	255	3.00	16.80	1.37375	*1.66*
LL48-077772	256		Below COG		
LL48-053764	257		Below COG		
LL48-030755	258		Below COG		
LL48-007747	259		Below COG		
LL47-783738	260		Below COG		
LL47-760730	261		Below COG		
LL47-736721	262	0.00	26.60	4.3848872	*1.68*
*including *1*			*10.50*	7.97	1.75
LL47-713713	263	0.00	34.00	4.82	1.72
*including *1*			*13.00*	8.89	*1.75*
LL47-689704	264	0.00	24.00	4.89	1.66
*including *1*			*19.50*	5.66	*1.67*
LL47-666695	265	0.00	28.50	8.37	1.65
*including *1*			*18.00*	12.14	*1.67*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m³
LL47-642687	266	3.00	30.00	3.51	1.67
*including *1*			*10.50*	6.8	*1.67*
LL47-717397	267	3.00	10.50	2.79	1.67
*including *1*			*3.00*	5.1	*1.66*
LL47-740405	268	0.00	18.00	6.53	1.67
*including *1*			*12.00*	8.73	*1.66*
LL47-787422	269	0.00	33.90	3.5651917	*1.70*
*including *1*			*26.40*	4.23	1.72
LL47-764414	270		Below COG		
LL47-081457	271		Below COG		
LL47-640475	272	1.50	30.00	2.5804999	*1.64*
*including *1*			*15.00*	3.68	1.71
LL47-664483	273		Below COG		
LL47-682490	274	0.00	31.50	2.8638095	*1.66*
*including *1*			*7.50*	6.24	1.67
LL47-701497	275	12.00	24.00	4.3937502	*1.66*
*including *1*			*12.50*	7.15	1.67
LL47-720504	276	4.50	37.50	4.3521733	*1.66*
*including *1*			*27.00*	5.63	1.67
LL47-739510	277	0.00	29.50	2.3445764	*1.66*
*including *1*			*11.50*	3.64	1.68
LL47-758517	278	0.00	34.60	7.9125724	*1.68*
*including *1*			*17.50*	13.85	1.66
LL47-776524	279	9.00	18.70	2.2079144	*1.66*
*including *1*			*3.00*	4.21	*1.66*
LL47-795531	280	0.00	20.20	3.43	1.52
*including *1*			*15.70*	3.73	*1.65*
LL48-014538	281		Below COG		
LL47-768592	282	1.50	21.00	2.5407143	*1.72*
*including *1*			*9.00*	3.63	1.68
LL47-750585	283	3.00	26.30	2.70	1.71
*including *1*			*5.30*	6.1	*1.74*
LL47-731578	284	1.50	34.50	3.99	1.68
*including *1*			*12.00*	7.66	*1.66*
LL47-712571	285	0.00	36.00	3.95	1.59
*including *1*			*19.50*	5.9	*1.66*
LL47-693564	286	0.00	40.50	4.94	1.54
*including *1*			*25.50*	6.97	*1.48*
LL47-674557	287	1.50	34.50	4.32	1.66
*including *1*			*13.50*	8.26	*1.66*
LL47-656551	288		Below COG		
LL47-661377	289	3.00	29.70	1.5023906	*1.75*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
LL47-680384	290	4.50	1.50	1.74	*1.66*
LL47-698390	291	7.50	19.50	4.14	1.66
*including *1*			*9.00*	6.47	*1.66*
LL48-006429	292	0.00	31.50	5.10	1.70
*including *1*			*17.50*	8.03	*1.67*
LL48-025435	293	0.95	5.05	1.85	1.66
LL48-210609	294		Below COG		
LL48-184706	295		Below COG		
LL47-625462	296		Below COG		
LL48-138799	297	1.50	5.50	4.5749093	*1.66*
*including *1*			*3.60*	5.91	1.66
LL52-157006	298		Below COG		
LL48-225244	299		Below COG		
LL48-243252	300		Below COG		
LL48-233353	301		Below COG		
LL39-206577	302		Below COG		
LL39-225584	303		Below COG		
LL39-097640	304	7.30	19.90	4.5270352	*1.67*
*including *1*			*13.50*	5.73	*1.67*
LL39-134654	305	0.00	47.00	8.14	1.72
*including *1*			*38.59*	9.52	*1.68*
LL39-115647	306	0.00	28.00	6.41	1.66
*including *1*			*26.00*	6.78	*1.67*
LL39-153661	307	0.00	45.08	6.46	1.74
*including *1*			*34.35*	7.88	1.73
LL39-172668	308	0.00	39.50	5.0416455	*1.66*
*including *1*			*18.50*	8.24	1.66
LL39-191674	309	0.00	26.00	3.2446154	*1.75*
*including *1*			*18.50*	3.94	1.77
LL39-204682	310	3.00	9.00	3.1085556	*1.66*
*including *1*			*4.70*	4.68	1.66
LL39-228688	311	2.66	28.84	5.5159016	*1.73*
*including *1*			*27.20*	5.76	1.73
LL39-247695	312	0.00	3.50	1.1642857	*1.62*
LL39-266702	313		Below COG		
LL39-238796	314		Below COG		
LL39-219789	315	0.00	25.00	5.5784721	*1.62*
*including *1*			*21.50*	6.18	1.63
LL39-182775	316	1.50	18.50	3.9546378	*1.66*
*including *1*			*14.42*	4.63	1.66
LL39-163768	317	0.50	26.50	2.4709056	*1.70*
*including *1*			*8.50*	4.14	1.68

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
LL39-201782	318	19.20	7.80	6.14	1.85
*including *1*			*7.80*	6.15	*1.86*
LL39-144761	319	0.00	32.20	5.21	1.66
*including *1*			*12.50*	11.08	*1.65*
LL39-125755	320	1.10	42.90	4.05	1.67
*including *1*			*10.50*	10.6	*1.68*
LL39-107748	321	0.00	33.97	4.77	1.65
*including *1*			*22.97*	6.15	*1.66*
LL39-088741	322	0.00	28.60	4.90	1.66
*including *1*			*16.10*	6.96	*1.66*
LL39-069734	323	2.00	35.50	4.30	1.66
*including *1*			*22.00*	5.65	*1.66*
LL39-049724	324	5.00	33.00	6.3623939	*1.70*
*including *1*			*21.50*	8.90	1.71
LL57-538076	325	0.00	17.40	4.2006894	*1.65*
*including *1*			*7.90*	6.64	1.66
LL57-557082	326	10.70	15.22	4.6469776	*1.66*
*including *1*			*10.72*	5.95	1.66
LL42-055037	327	0.90	37.97	6.13	1.66
*including *1*			*20.37*	9.78	*1.67*
LL57-576089	328	3.70	31.50	2.69	1.71
*including *1*			*13.50*	3.97	*1.67*
LL42-074043	329	1.00	41.00	3.30	1.66
*including *1*			*25.60*	4.23	*1.67*
LL57-594096	330	1.16	9.85	3.97	1.66
*including *1*			*7.35*	4.86	*1.66*
LL54-560778	331	0.00	46.00	3.61	1.67
*including *1*			*36.40*	3.98	*1.68*
LL54-578785	332	0.60	46.60	4.06	1.66
*including *1*			*31.80*	5.03	*1.67*
LL54-597791	333	0.00	51.20	3.1352148	*1.68*
*including *1*			*25.80*	4.21	1.69
LL54-616798	334	0.00	23.20	1.739569	*1.66*
*including *1*			*3.80*	4.37	1.66
LL57-635005	335	2.20	23.60	6.9273304	*1.66*
*including *1*			*20.10*	7.90	1.66
LL57-658016	336	0.00	33.16	2.89	1.66
*including *1*			*13.10*	4.9	*1.66*
LL39-227356	337	22.50	15.00	6.46	1.79
*including *1*			*13.50*	6.93	*1.81*
LL57-672019	338	3.25	19.20	3.25	1.66
*including *1*			*8.40*	5.31	*1.66*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m3
LL39-208349	339	3.00	21.00	7.55	1.65
*including *1*			*19.50*	8.02	*1.66*
LL54-727766	340	5.00	23.00	3.38	1.66
*including *1*			*15.60*	4.17	*1.67*
LL39-190342	341	0.50	42.00	4.93	1.70
*including *1*			*25.72*	6.96	*1.73*
LL54-708759	342	2.55	22.68	4.0632099	*1.66*
*including *1*			*12.80*	5.77	1.67
LL39-152328	343	5.00	33.70	4.5016856	*1.69*
*including *1*			*15.70*	7.71	1.73
LL39-133321	344	0.00	22.60	2.8494027	*1.66*
*including *1*			*9.15*	4.41	1.66
LL39-115315	345	3.90	25.10	4.34	1.66
*including *1*			*18.00*	5.09	*1.67*
LL54-689752	346	0.60	43.50	4.05	1.67
*including *1*			*34.30*	4.8	*1.67*
LL54-670754	347	1.90	52.40	3.02	1.70
*including *1*			*26.12*	3.81	*1.74*
LL39-096308	348	1.10	36.00	2.84	1.66
*including *1*			*12.74*	5.63	*1.67*
LL39-077301	349	2.00	42.00	5.73	1.68
*including *1*			*36.50*	6.23	*1.68*
LL54-652738	350	2.10	57.00	4.91	1.77
*including *1*			*36.00*	6.76	*1.80*
LL39-171335	351	1.50	30.40	5.0659966	*1.67*
*including *1*			*19.55*	6.91	1.67
LL39-065095	352	3.90	42.60	6.9340796	*1.67*
			23.86	10.83	1.68
LL42-093050	353	0.70	48.10	5.7751808	*1.74*
*including *1*			*24.29*	9.81	1.76
LL54-633732	354	0.00	43.70	3.29	1.66
*including *1*			*22.23*	4.44	*1.67*
LL42-112057	355	0.00	49.10	8.62	1.71
*including *1*			*21.40*	17.61	*1.66*
LL42-130064	356	0.50	51.00	3.72	1.67
*including *1*			*17.50*	7.21	*1.71*
LL54-614725	357	0.00	40.27	3.97	1.66
*including *1*			*27.97*	4.84	*1.67*
LL42-149071	358	0.00	48.75	3.98	1.73
*including *1*			*25.95*	5.8772447	*1.74*
LL54-582710	359	12.70	13.50	4.74	1.66
*including *1*			*7.50*	6.5766666	*1.67*

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m³
LL42-187085	360	21.40	3.00	4.1424999	*2.09*
*including *1*			*0.75*	12.40	2.09
LL54-595718	361	4.56	39.90	4.4884461	*1.66*
*including *1*			*36.90*	4.74	1.66
LL42-168078	362	2.05	22.50	4.1164131	*1.66*
*including *1*			*13.50*	5.43	1.66
LL54-737627	363	2.20	48.00	3.68	1.67
*including *1*			*34.50*	4.2396521	*1.67*
LL42-188187	364	23.50	5.60	5.11	2.09
*including *1*			*4.70*	5.8994679	*2.09*
LL42-169180	365	0.00	25.55	4.09	1.63
*including *1*			*12.00*	6.32375	*1.64*
LL42-150173	366	1.70	43.70	2.94	1.76
*including *1*			*19.90*	4.6225829	*1.76*
LL54-756636	367	2.30	44.80	3.45	1.70
*including *1*			*25.80*	4.4237209	*1.70*
LL54-771645	368	0.60	27.00	3.36	1.65
*including *1*			*18.00*	4.0877223	*1.66*
LL42-132167	369	0.00	45.50	2.5201647	*1.66*
*including *1*			*15.50*	3.91	1.67
LL42-113160	370	0.00	52.20	4.4304062	*1.67*
*including *1*			*28.60*	6.71	1.67
LL54-791650	371	5.00	11.65	2.4736909	*1.68*
*including *1*			*3.75*	5.21	1.68
LL55-008654	372		Below COG		
LL42-094153	373	33.70	23.90	4.9049454	*1.95*
*including *1*			*18.53*	5.98	1.95
LL55-030663	374	11.25	14.65	2.0564506	*1.84*
*including *1*			*3.00*	4.21	1.84
LL39-084102	375	0.00	41.00	5.1940048	*1.68*
*including *1*			*20.65*	8.59	1.68
LL55-003547	376	0.00	51.60	3.1669962	*1.65*
*including *1*			*27.40*	4.03	1.68
LL42-075146	377	0.30	46.20	4.8846862	*1.71*
*including *1*			*33.25*	6.20	1.73
LL39-103109	378	0.29	26.26	5.1631158	*1.73*
*including *1*			*17.90*	6.8172802	*1.74*
LL55-048669	379	15.50	4.60	1.73	1.66
*including *1*			*0.66*	5.25	*1.66*
LL55-022553	380	1.30	39.80	4.39	1.66
*including *1*			*20.20*	6.42	*1.67*
LL42-056139	381	0.00	49.28	5.86	1.69

Composite at 1.0% Cg cog including composite at 3.0% Cg cog

HOLE-ID	SEQUENCE	From	Mineralised interval	CG	SG
		m	m	%	t/m^3
*including *1*			*26.48*	9.36	1.71
LL39-121115	382	9.00	14.23	3.143604	*1.66*
*including *1*			*9.73*	3.92	1.66
LL55-059567	383	3.60	33.00	2.9839849	*1.66*
*including *1*			*19.35*	3.68	1.66
LL55-040560	384	0.55	40.70	6.1426046	*1.70*
*including *1*			*27.00*	8.29	1.74
LL55-078574	385	3.35	5.15	1.9990291	*1.66*
LL39-140122	386	15.12	32.88	4.97	1.69
*including *1*			*19.05*	7.26	*1.68*
LL42-262324	387		Below COG		
LL39-159129	388	0.00	30.00	3.8997972	*1.67*
*including *1*			*11.00*	9.53	*1.68*
LL54-784541	389	0.00	51.70	3.72	1.65
*including *1*			*34.85*	4.41	*1.67*
LL54-765546	390	0.00	62.10	4.25	1.67
*including *1*			*48.00*	4.86	*1.67*
LL39-178136	391	12.00	30.00	5.76	1.67
*including *1*			*21.00*	7.35	1.67
LL42-187296	392	18.55	12.00	6.0086665	*1.87*
*including *1*			*10.50*	6.67	1.90
LL55-005442	393	0.00	61.95	3.5747474	*1.66*
*including *1*			*21.60*	6.65	1.68
LL55-024449	394	0.00	63.00	5.6692509	*1.70*
*including *1*			*46.15*	6.97	1.71
LL42-168289	395	0.60	9.30	6.1194625	*1.66*
*including *1*			*4.75*	10.09	1.66