EKAA HRIM EARTH RESOURCES MANAGEMENT INC QUARRY PROJECT

EXPLORATION SUMMARY REPORT AND MINE PLAN

ATLANA, BATAVIA, CUYUNI RIVER

Effective Date: November 18, 2022

Report Date: November 21, 202

Prepared for
EKAA Earth Resource Management Inc, Georgetown, Guyana

Report Prepared by
Bjorn Jeune BSc, Consulting Geologist
Sudesh Srivastava, EERM Geologist

Contents

1.0 SUMMARY

EKAA Earth Resources Management (EERM) Quarry Permit is a stone aggregate project located at Atlana, Batavia, in the Cuyuni Mining district, county of Cuyuni, Guyana, approximately 82 air kilometers SW of the capital city of Georgetown, Guyana, S.A. Current access to the Permit is by river and road access, namely from Georgetown to the project area located on the right bank of the Cuyuni River via the Linden-Rockstone-Bartica-Itaballi-Pine tree roads. Total travel time is ~5 hours. The property covers several un-named tributaries of the Cuyuni river and the area under tenure totals 1,098 acres/ 4.4 sq kilometers. The Atlana project is wholly owned by EERM.

The deposit consists of a relatively massive dioritic intrusive intruding a basement Biotite gneiss. Exploration of the project includes ten vertical drill holes that were cored in September 2022. Drilling encountered a dioritic unit and saprolite as the overburden, confirming the presence of aggregate material within the project area. The samples were delivered to a testing laboratory where standard ASTM aggregate quality tests were carried out. A model for the EERM aggregate deposit was created using Leapfrog 3D software.

Based on the interpreted data from the drilling done, it is indicated that the EERM Atlana Quarry permit currently has a quarriable resource of **~152.7 million** tons of diorite with the mining pit (PIT) proposed for phase 1, an indicated resource of **~13.7 million** tons of diorite with an estimated investment cost of **~USD$5,379,700 (GY$1,129,737,000)** to bring the quarry into production with a production rate of **~575,000 tons per year @ ~USD$19.00 per ton,** operating cost. The resource estimate for EERM is summarized in Table 1.1.

Table 1.1 Industrial Mineral Resource Estimate for Atlana Deposit

Area	Classification	Volume (m3)	Specific Gravity	Mass (t)
Atlana	Measured aggregates	18,211,813	2.58	46,986,477
	Indicated aggregates	40,990,716	2.58	105,756,046
	Measured and indicated	**59,202,528**	**2.58**	**152,742,523**

1 Mineral resources which are not mineral reserves do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, sociopolitical, marketing, or other relevant issues.

2 The mineral resources in this report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council November 27, 2010.

3 The specific gravity value of 2.58 used to convert volumes to tonnes and is the average SG for the Diorite. For Measured resource, 100m radius from center of each drill hole done with 150m for Indicated from measured, projected to 64.2m depth.

Area	Classification	Volume (m3)	Specific Gravity	Mass (t)
Atlana Mine Pit	Measured aggregates	1,252,448	2.58	3,231,317
	Indicated aggregates	4,089,176	2.58	10,550,073
	Measured and indicated	**5,341,624**	**2.58**	**13,781,389**

ID	Total Area (Sq.m)	Recovery factor (100%)	Total Volume (cu.m)	Total weight of (kg/ cu.m)	Total Reserves (tons)
Out-crops	**38725.47**	**100.00%**	**122,396.21**	**305,990,520.40**	**305,990.52**

Source: Geologist S. Srivastava, EERM

The production of Stone aggregates from the EERM Atlana Quarry project will be mainly for the local Guyana Market and will be sold locally within the construction industry, targeting the building of road infrastructure in Bartica, Georgetown, West coast and Regions 3, 4 & 5 including housing construction and cement production.

Particulars	Details		
Geographical Location		Northing(N)	**6°23'11''N**
		Easting (E)	**58°47'54' W**
Total Mine Lease area	1,098 acres/ 4.4 sq kilometers		
Current status of the quarry	No existing logging and mining activities		
Local name of the project area	**Atlana Batavia**		
Project Site Toposheet No.	27NW		
Production	None		
Geological Resource	~152 million Tons		
Mineable Resources Pit A	~13.7 million Tons		

Startup Mine Pit Resource	~3,000K tons of Diorite
Life of Mine (Pit A)	~23 years
Estimated project cost	**USD$5,379,700**
Production target	**~575,000 tons per year**
Manpower	36 personnel
Highest and lowest elevation	250ft (Highest) and 125ft ASL (Lowest)
Land use	Mining
Nearest habitation	Batavia Village, ~1.2km E
Nearest Town	Bartica, ~16.4km E
Width of access road to the site	~5m wide road
Nearest Airstrip	Bartica, ~16.4km E
Power supply	Thermal generators
Water and its Source	Water will be sourced from the Cuyuni River
Nearest streams/ rivers/ water bodies	Atlana creek and Cuyuni River
Nearest Hospital / dispensary	Bartica Hospital, 16.4km E
Police Station	Bartica, ~16.4km E
Mobile Towers	Bartica, ~16.4km E
Ecological sensitive zone	None within the Mining area
Defense installations	None within the Mining area
Archeological Features	None within the Mining area

2.0 INTRODUCTION

Consulting Geologist Bjorn Jeune BSc was retained by EZAA Earth Management Resources Inc. (EERM) to prepare a technical report covering exploration activities along with proposed Mining plan for work done within the company Atlana Prospecting License.

2.1 SOURCES OF DATA

Sources of information used in this report include available public domain information and personally acquired data along with review of other proprietary company data.

3.0 RELIANCE ON OTHER EXPERTS

The Author has prepared the report based on field observations and work done by EERM Geologist Sudesh Srivastava along with site visit to the area.

4.0 ACCESSIBILITY, PROPERTY DESCRIPTION, CLIMATE AND INFRASTRUCTURE

The EERM property is remote and is accessible by paved road from Georgetown to Linden (2hrs) then via All-terrain 4WD laterite road from Linden to Itaballi through Rockstone crossing the Mazaruni and Essequibo Rivers via the Sherima and Teperu crossings then north and northwest ~12km (1.5hrs) along all-terrain 4WD road (logging road) to the permit (Figure 1). Alternative access is by paved road from Georgetown to Parika (1hr) then via boat along the Essequibo then Cuyuni Rivers to the permit (~1.5hrs). Total travel time will depend on state of all-terrain access roads and level of water within the Cuyuni river for both access points

The area has a tropical climate characterized by wet and dry season, and abundant precipitation and humidity. The climate allows year-round extraction operations.

The community of Bartica, ~16.4km to the East, has average temperatures of 28ºC during the year. Average annual precipitation is about 2,000 mm Although rain falls throughout the year, about 50 percent of the annual total arrives in the summer rainy season that in the regional area extends from April-May to the end of June. There is a second rainy season from November through January. Rain generally falls in heavy afternoon showers or thunderstorms. Overcast days are rare; most days include four to eight hours of sunshine from morning through early afternoon.

There are the Batavia and Itaballi communities in the immediate area of the property. Bartica is the nearest major commercial center and is located about 26km by road to the East. All equipment and materiel have been trucked to the site and exploration operations supported by a small camp to house the staff and workforce.

The site lacks any electrical infrastructure and drilling operations were being supplied by generators.

There is abundant wood, water and aggregates in the immediate/within property area that could be exploited in support of a quarrying operation.

The property support tree covers up to 250ft amsl. The property has been logged in part and several of the logging access roads are now overgrown. The logged areas support mixed softwood and hardwood species.

Infrastructure Availability and Sources

Proximity to Population Center

The Batavia Amerindian village is located on both the left and right bank of the Cuyuni river east of the permit with several houses ~1.2km East of the permit on the right bank of the river. The closest town Bartica is ~16.4km away to the east. Georgetown is ~135 km away by road.

Power

There is no nearby electricity grid. Permanent power is currently generated within the general area by thermal power generators.

Water

Water for mining is readily available throughout the year from the Cuyuni River if needed, catchment ponds and from rainfall run-off.

Mining Personnel

Laborers with a variety of experience in heavy equipment operation are available in Georgetown, Linden and Bartica.

Formal Boundary Description

A Tract of state land located in the Cuyuni Mining District No. 4 as shown on Terra Surveys Topographic 1:50,000 Map 27NW, within the following boundaries;
Commencing from a reference point located at the confluence of **the Mazaruni and the Cuyuni Rivers** located at geographical coordinates of longitude **58°41'31.2"W** and latitude **6°23'18.6''N**, thence at true bearing of **268.4°**, for a distance of approximately **5.32 miles** to **Point 1**, located at geographical coordinates of longitude **58°47'54''W** and latitude **6°23'11''N**, thence at true bearing of **182°**, for a distance of approximately **342 yards**, to **Point 2**, located at geographical coordinates of longitude **58°47'54''W** and latitude **6°23'1''N**, thence at true bearing of **93°**, for a distance of approximately **2 miles 536 yards**, to **Point 3**, located at geographical coordinates of longitude **58°45'53''W** and latitude **6°22'55''N**, thence at true bearing of **1°**, for a distance of approximately **592 yards**, to **Point 4**, located at geographical coordinates of longitude **58°45'53''W** and latitude **6°23'13''N**, thence at true bearing of **31°**, for a distance of approximately **831 yards**, to **Point 5**, located at geographical coordinates of longitude **58°46'6''W** and latitude **6°23'34''N**, thence at true bearing of **85°**, for a distance of approximately **1124 yards**, to **Point 6**, located at geographical coordinates of longitude **58°46'39''W** and latitude **6°23'36''N**, thence at true bearing of **45°**, for a distance of approximately **819 yards**, to **Point 7**, located at geographical coordinates of longitude

58°46'56''W and latitude **6°23'54''N**, thence at true bearing of **244°**, for a distance of approximately **753 yards**, to **Point 8**, located at geographical coordinates of longitude **58°47'17''W** and latitude **6°23'44''N**, thence at true bearing of **258°**, for a distance of approximately **414 yards**, to **Point 9**, located at geographical coordinates of longitude **58°47'29''W** and latitude **6°23'41''N**, thence at true bearing of **83°**, for a distance of approximately **205 yards**, to **Point 10**, located at geographical coordinates of longitude **58°47'35''W** and latitude **6°23'42''N**, thence at true bearing of **204°**, for a distance of approximately **1219 yards**, to **Point 11**, located at geographical coordinates of longitude **58°47'49''W** and latitude **6°23'9''N**, thence at true bearing of **72°**, for a distance of approximately **88 yards**, to **Point 12**, located at geographical coordinates of longitude **58°47'52''W** and latitude **6°23'10''N**, thence at true bearing of **68°**, for a distance of approximately **62 yards**, to the point of commencement at **Point 1**, thus enclosing an area of approximately **1,098 acres**, save and except all lands lawfully held or occupied.

Figure 1: Access Map EERM Atlana Quarry Permit

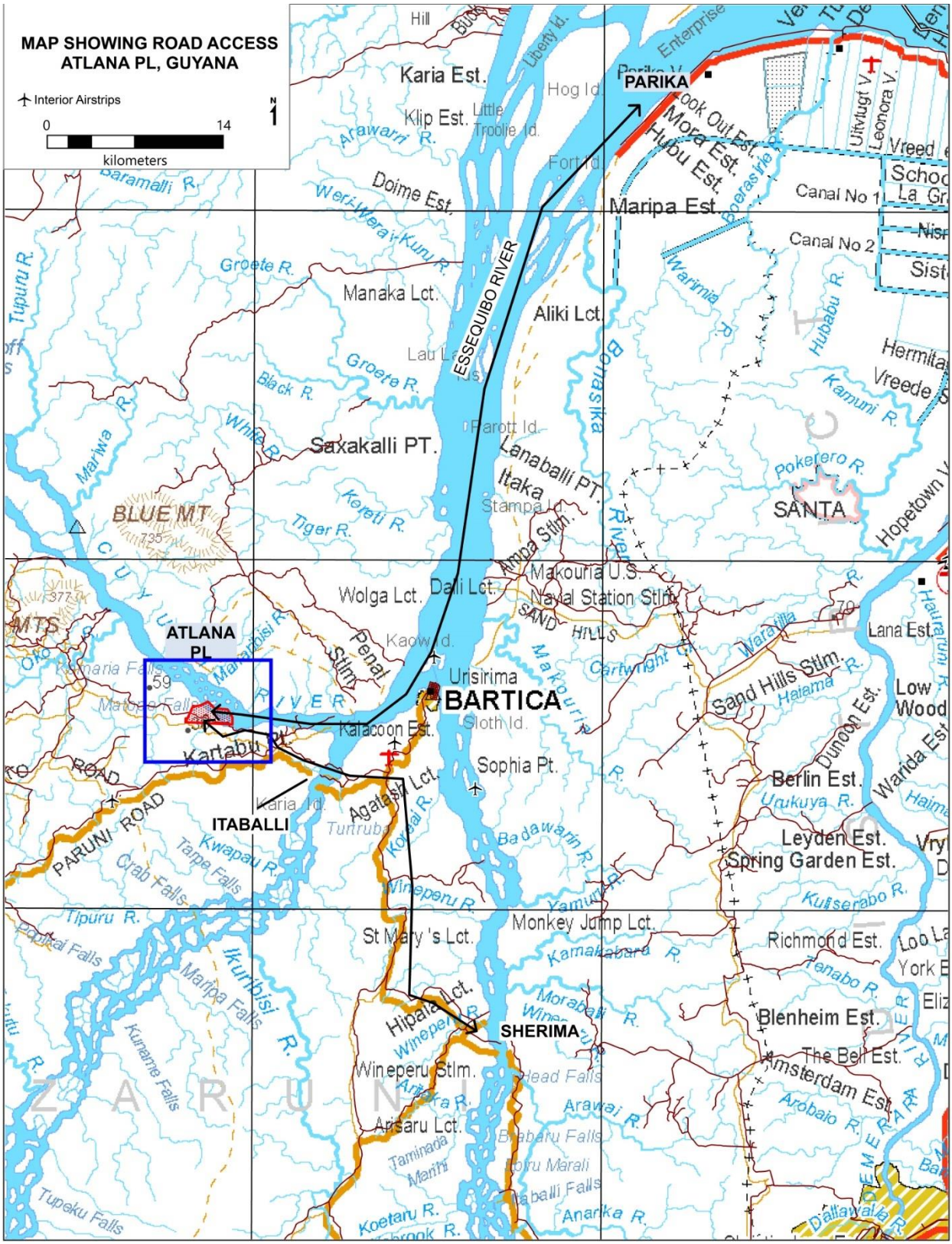


Figure 2: Road Access Map EERM Atlana Quarry Permit

4.1 OWNERSHIP

The EERM Atlana Quarry Permit is a Prospecting license located on the right bank of the Cuyuni River and the area under tenure totals 1,098 acres/ 4.4 sq kilometers. This permit covers several un-named tributaries of the Cuyuni River along the northern boundary. In Guyana, all mineral rights are vested in the state. Mineral policy is administered by the Ministry of Natural Resources and the Environment and the Commissioner of the Guyana Geology and Mines Commission (GGMC). The GGMC was created by legislative act in 1978 and later in the year amended to the current "Mining Act 1989". The permit is in the process of being granted to EERM by the GGMC.

5.0 GEOLOGIC SETTING; REGIONAL AND LOCAL GEOLOGY

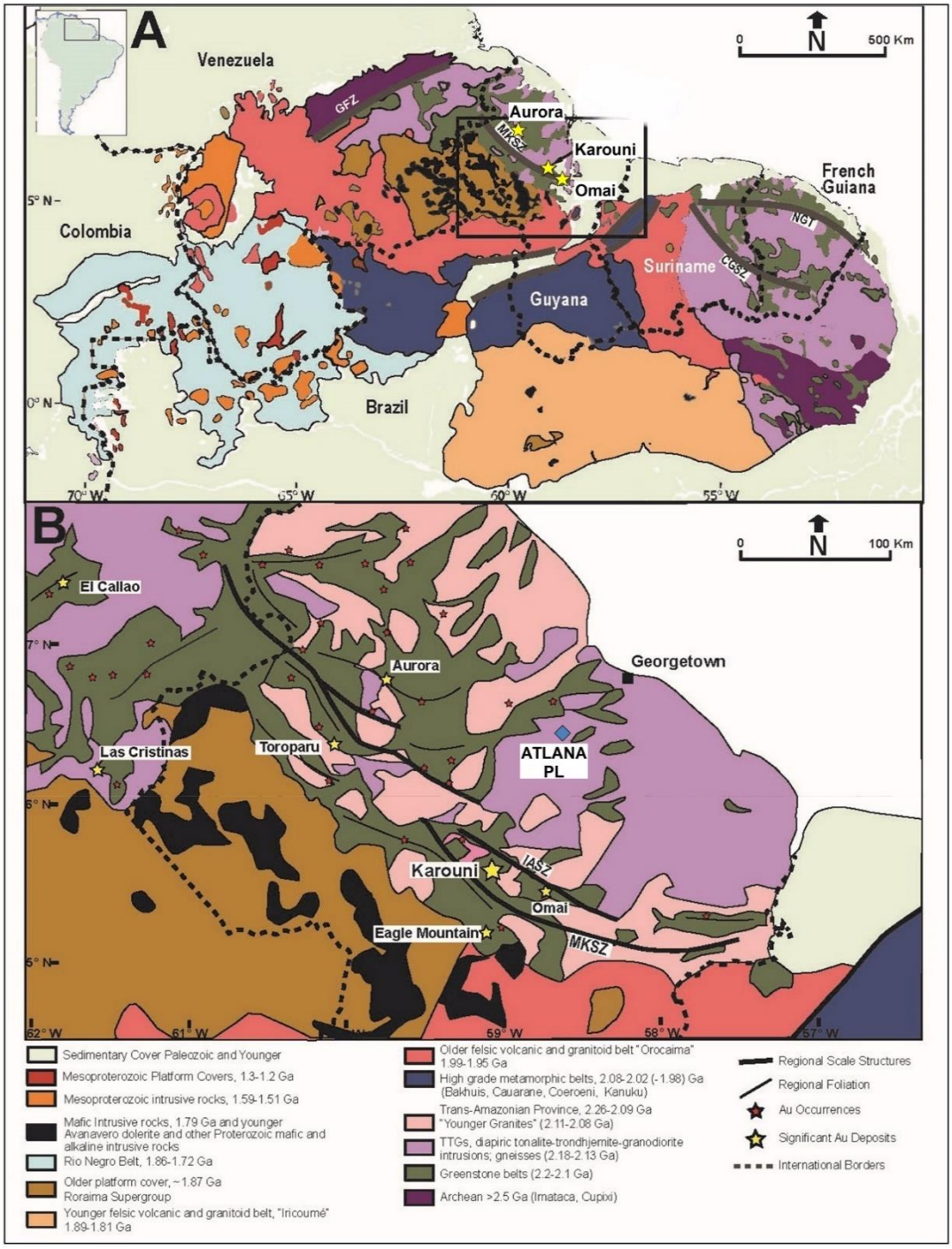
5.1 REGIONAL GEOLOGY

The EERM Atlana permit is located within the Guyana Shield in northern South America as shown in Figure 3. The shield covers easternmost Colombia, southeastern Venezuela, Guyana, Suriname, French Guiana, and northeastern Brazil. The Guyana portion of the shield is subdivided geologically into a Northern and a Southern geologic province at a latitude of approximately 4.5 degrees north. The Northern Province is composed of a basement suite of rocks ranging in age from Archean to early Proterozoic, roughly between 2.12 and 1.9 billion years of age. These rocks appear to have been deposited in marine troughs that were filled with offshore sedimentary and volcanic deposits. Subsequent to their deposition, the troughs were compressed and metamorphosed into greenstone belts with associated mineralizing events, resulting in an auriferous terrain throughout most of northern South America in all rocks of this geologic age.

The Guiana Shield is a Paleo-Proterozoic granite-greenstone terrane forming the northern part of the Amazon craton. Subdivisions of the Amazon craton are based upon age determinations, lithologies, structural and geophysical trends. It is one of the largest cratonic areas in the world covering an area of about 4.3 x 105 km.

The metavolcanics, metabasic and metasedimentary greenstone belts forming the Guiana shield are in the Pastora-Amapa Province (2.2 Ga to 1.95 Ga) and subdivided into the Barama-Mazaruni Supergroup metasedimentary / greenstone terrane intercalated with Archean-Proterozoic gneisses. These rocks are intruded by Transamazonian granites and mafic to ultramafic intrusions which the Bartica assemblage is part of (Voicu et al., 1999).

Figure 3 Simplified Regional Geological Map



Source: A) Geology of the Guiana Shield (taken and modified from Tedeschi et al., 2018). B) Geology of northern Guyana highlighting major Mineral deposits, showing EERM Atlana Quarry location. Modified from the geologic maps of Guyana (Walrond, 1987), Suriname (Bosma et al., 1978), and Venezuela (Hackley et al., 2005). D. Abbreviations: CGSZ = Central Guiana shear zone, GFZ = Guri fault zone, IASZ = Issano-Appapari shear zone, MKSZ = Makapa-Kuribrong shear zone, NGT = Northern Guiana trough, TTG = tonalite-trondhjemite-granodiorite.

The regional geological map is a compilation of work by different authors spanning a significant time period. Rock type descriptions are necessarily general and used to identify large-scale differences between meta-sedimentary, meta-basic and meta-volcanic horizons within greenstone belts. These observations are limited by poor exposure due to intense tropical weathering obscuring primary mineralogy and mineral fabrics[1].

Regionally within the Batavia area, the general geology is mainly the Biotite-Gneiss of the Bartica Assemblage intruded by younger gabbro-norite dykes and covered by White silica Sand.

Three dominant structural fabrics are recognized in Guyana, a system of significant east-west, northwest-southeast and northeast-southwest structures. The regional magnetic survey data is sufficient to interpret structural features at the property scale with NE-SW, N and NW-SE lineaments (Figure 4) noted within the Permit area with the rocks exhibiting low Fe content.

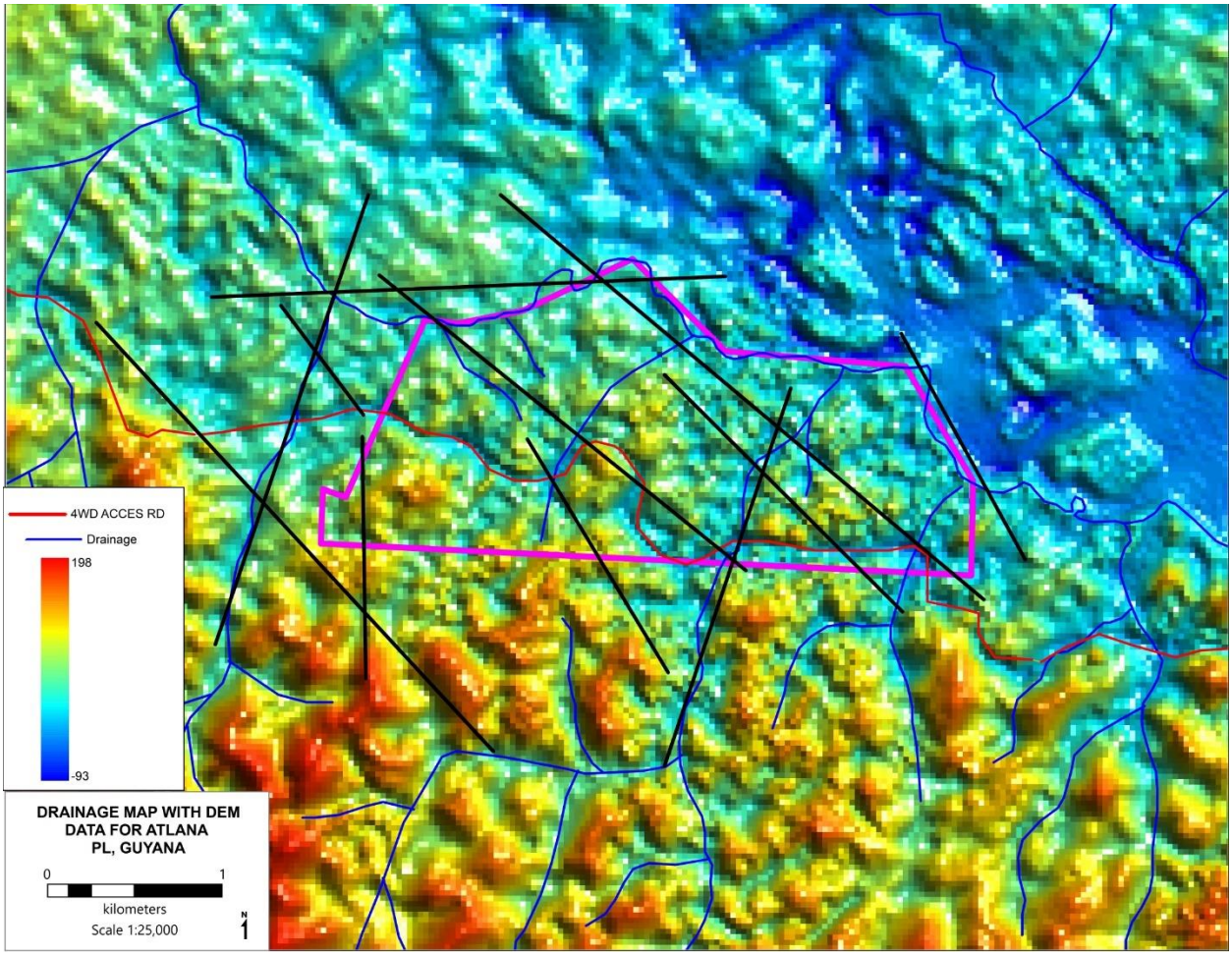


Figure 4: Drainage structure map for Atlana Quarry area

[1] Annual Report 1969, Geological Survey of British Guyana.

5.2 PROPERTY GEOLOGY

The mappable rock units based on outcrops and drill coring are the Biotite-gneiss of the Bartica Assemblage basement, intruded by the younger intrusives (Diorite), all overlain by saprolite and White sand of the Berbice formation with weathered Fe-rich duricrust (formed from the weathering of the mafic dyke) in some sections (Figure 5). Thus, the Geologic sequence is interpreted to be as follows:

- Deposition of the greenstone basement, medium to fine grained.
- Intrusion produced by varying plutons, resulting metamorphism in the volcanic sequence (metavolcanism), alteration by sericite, carbonate, epidote, biotite, deformation (folding and shearing).
- Intense erosion of the greenstone basement rocks.
- The structural events that produce shearing and faulting shown by the in brittle-ductile fabrics of the host rocks (greenstone rocks and granodiorite), are a result of the tensional and compressional straining, caused by the intrusion of small mafic dykes. These structural events with general trend NE-SW, N and NW-SE generate Graben/Horst and minor Fold structures in the regional area, as a part of a sequential fault system.

The erosion process continues. During all the erosion processes, first a mechanical and later chemical, the silica within the gneiss/diorite weathers to sand (some of these sands were blown off cliffs and high regions unto the plains. These areas of South America were very low coasts in ancient times) which contributes to the White sand series[2] seen within the regional area.

[2] Bleackley D, 1957; Geomorphology, Observations and Geological history of the Coastal plain of British Guiana

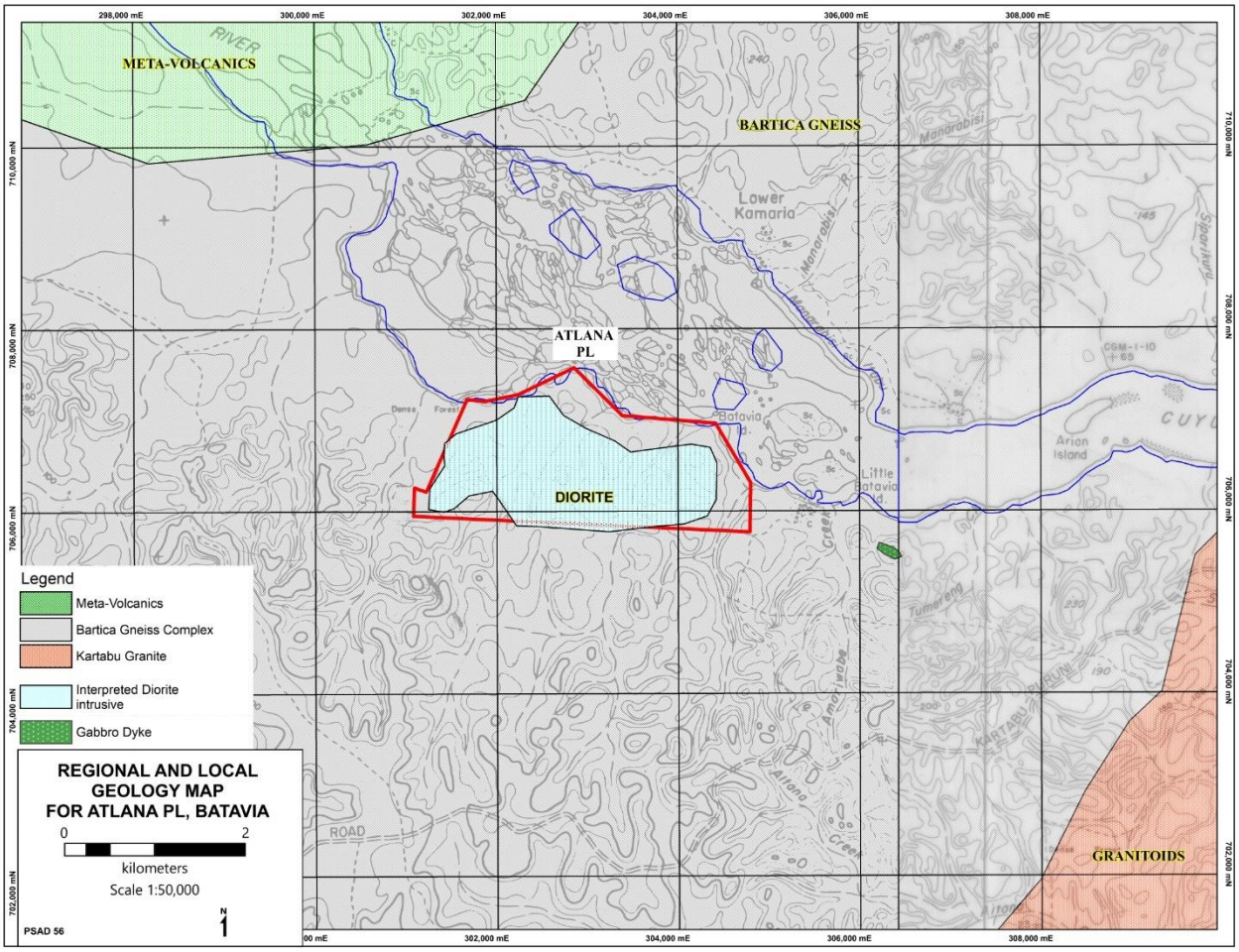


Figure 5: Map showing interpretation of local Geology projected to surface based on field mapping and drilling, Atlana Permit

6.0 ADJACENT PROPERTIES

There are several adjacent Quarry Permits located east of the EERM Quarry Permit (Figure 6) which are owned by Queensway and BK Quarries. The nearest active quarry license, which is to the east, is BK Quarries Teperu Quarry which is currently operational and is ~10.4km East of te Permit. GGMC has granted several medium scale Permits for gold and base metals within the immediate area. The permit is within the Batavia Amerindian Reservation.

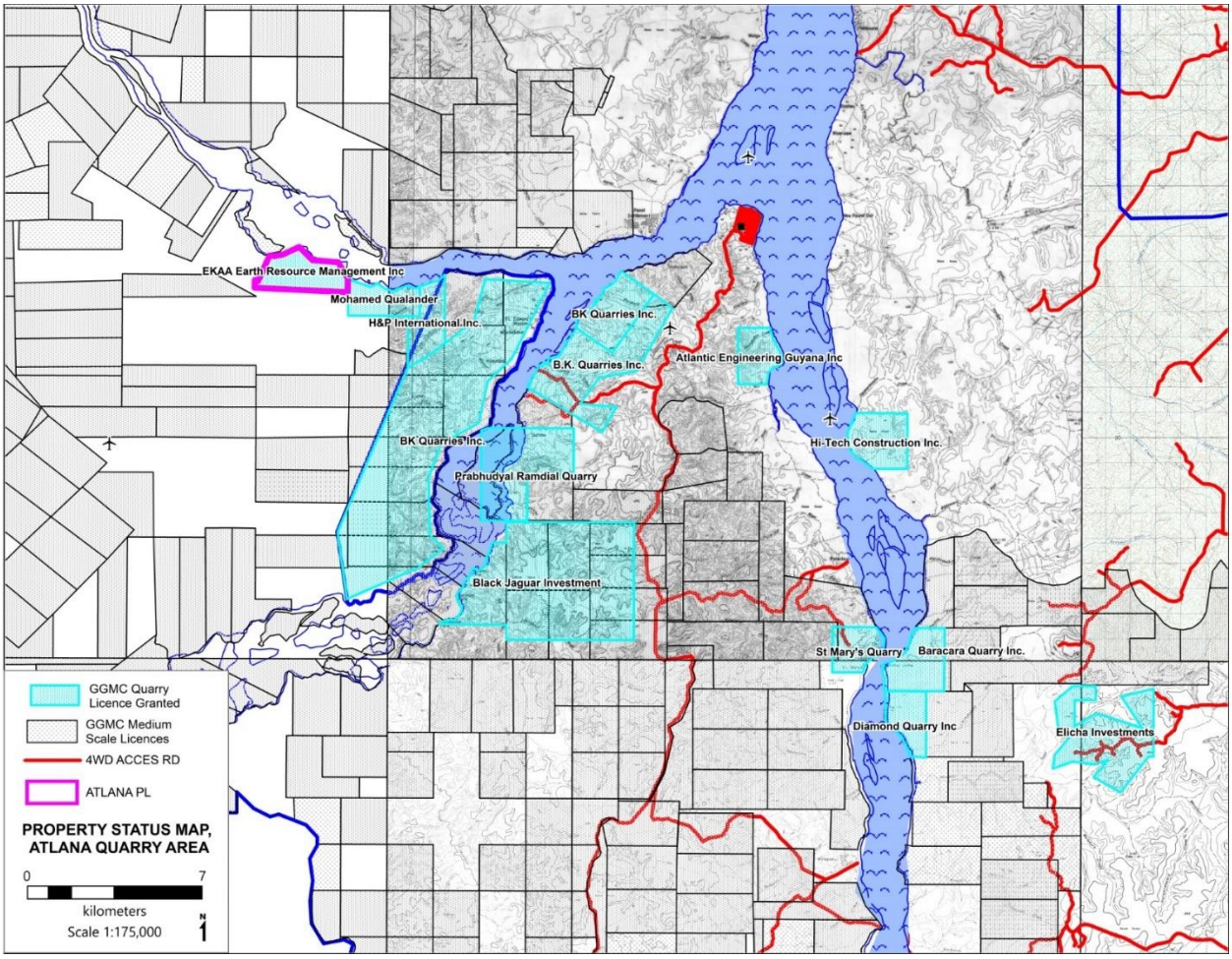


Figure 6: Property Status Map for Regional Area, EERM Atlana Quarry Permit

7.0 PREVIOUS WORK

There are currently no mining or logging activities recorded within the EERM Atlana Permit. The first written report of the area is The Geology of the Goldfields of British Guiana by Sir J.B. Harrison (1908), who described the granites/gabbro outcrops located along the Mazaruni (Teperu) as potential quarriable material for the colony. In 1960, R.T. Cannon[3] complied the first Geologic map for the area while traversing the Bartica and Mazaruni region. In 1963, P. Allen[4] compiled the Granites of Northern and Central Guyana which showed a number of these intrusives to the east and south of the permits. In 1965[5], the UN in partner with Terraquest flew

[3] Cannon, R.T. 1960; Geological Map of the Bartica Area, British Guiana Geological Survey
[4] Allen, P. 1963; Granites of Northern Guiana, British Guiana Geological Survey
[5] United Nations, 1965; Geophysics, Aeromagnetics Survey

Airborne magnetics for the regional area covering the permits. In 1986, Gansham[6] conducted exploration and drilling activities within the Flat rock area, just east of the permits where an estimated reserve of 157,000 tons of pegmatites within the Flatrock Hills from 5 drill holes mainly targeting the pegmatites at Flatrock "A" Hill was identified. In the 90s, logging of timber was conducted within the area, which is currently ongoing in the regional area mainly to the South, West and East of the permits.

8.0 EXPLORATION

8.1 FIELD MAPPING

Field mapping and prospecting were done within the property in September 2022 with the aim to collect data in the field regarding rock types and contact, structures, weathering patterns. To make observations of outcrops along a path across the area through cross-sections, stream and ridge and roads traverses. To collect rock samples and identify overburden thickness along with ascertain access route for area and finally identify target area(s) for drilling.

8.2 FIELD RESULTS

North-South Grid lines spaced at ~300m were cut (Figure 8) and along with the existing logging road within the permit, traversed by the team, mapping and prospecting with any notable features recorded and samples taken. From the traverse done, a total of 30 grab samples were taken comprising of the diorite with outcrop locations (Figure 7) mapped and recorded. Drainage (Figure 9) and road access were also mapped with the road network outside of the permit traversed by an ATV Bike.

Based on the observations from the creeks and ravines, it was estimated that within the permit, the saprolite (weathered bedrock) thickness varied from 5-10m.

[6] Ghansham, J. 1986; Exploration report for Flat rock Quarry, Cuyuni, GGMC

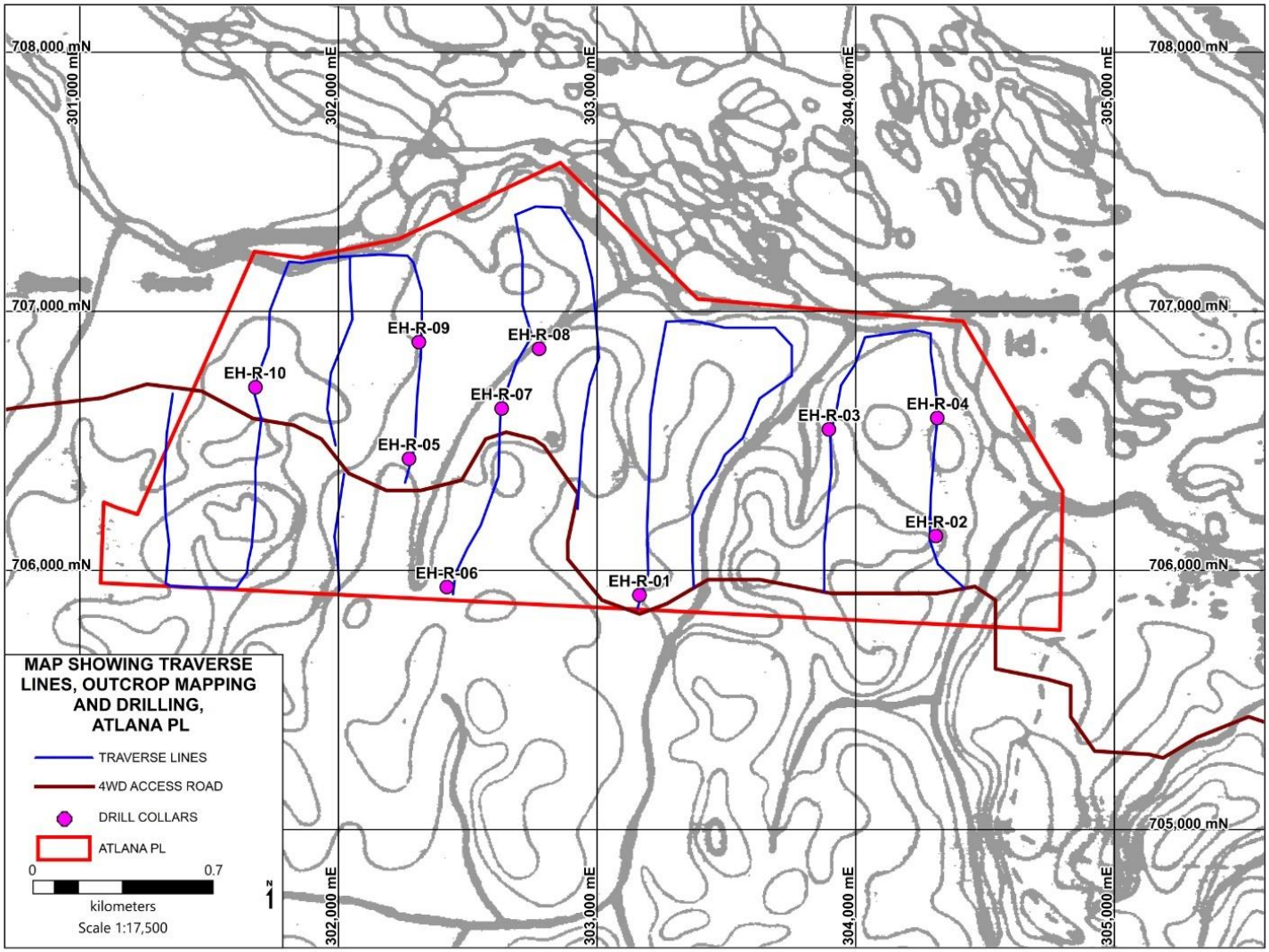


Figure 7: Traverse Map with Drill hole data, Atlana Quarry field exercise

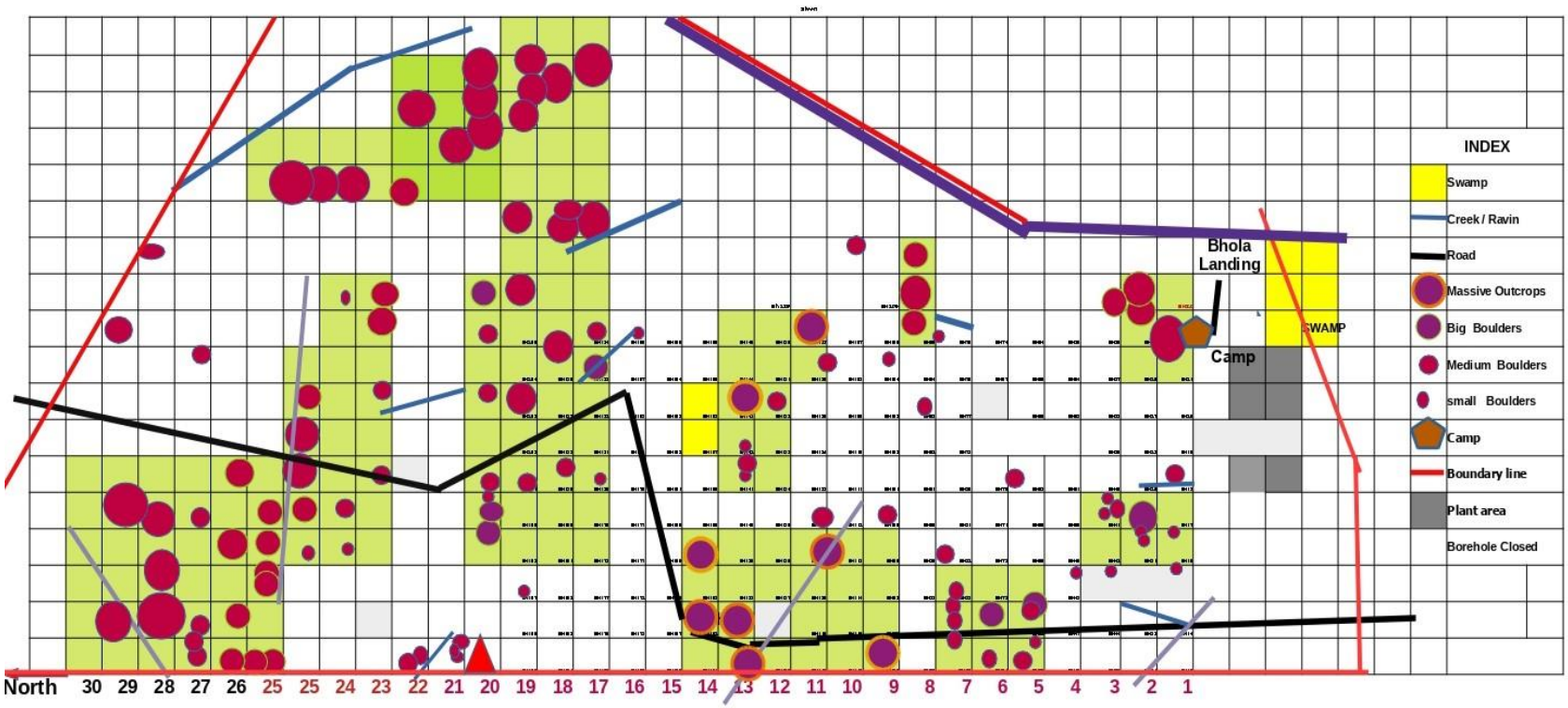


Figure 8: Outcrop sample of Diorite found from field traverse. Source EERM

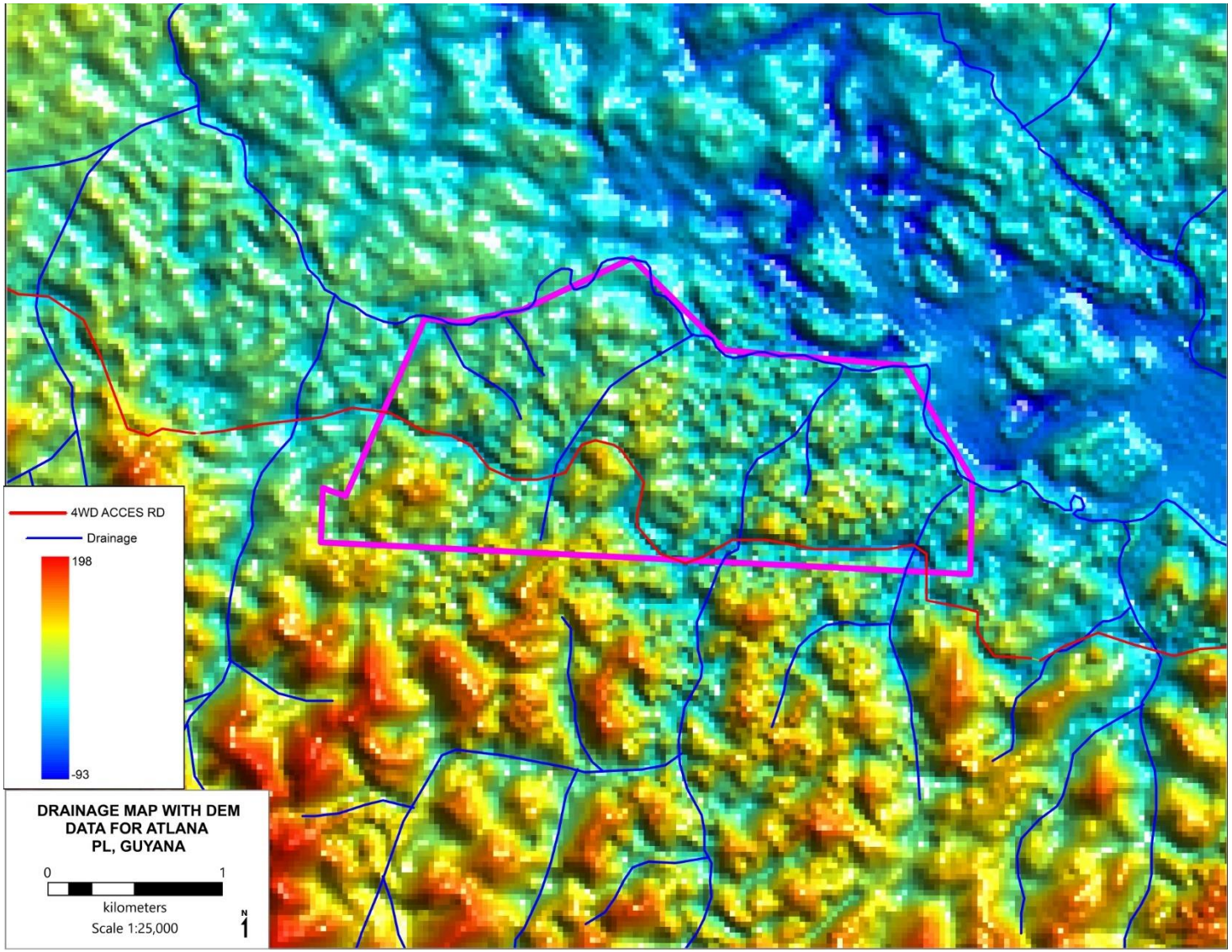


Figure 9: Drainage map for EERM Atlana Quarry Permit based on Field Traverse and DEM (elevation) regional data

9.0 DRILLING

In September 2022 (28th Sept – 2nd Nov), ten vertical drill holes (Table 2) were drilled across the Atlana quarry project. The distribution of drill holes included three drill holes within the eastern section of the permit with four holes to the west and two holes to the south. The drilling was carried out under the supervision of EERM Company Geologist Sudesh Srivastava. The geologist logged the cores and recorded the details using Microsoft Excel. In general, the drilling procedures were as follows:

- Drill holes were located within the project area by Geologist S. Srivastava to delineate the extent of the diorite intrusion using Garmin GPSMAP 64SC handheld system.
- Drill pads were created as close as was practical to the projected locations.
- Drill holes drilled at least 30m into the bedrock or until cut off depth.
- Drill core was logged by a geologist in the field, using the following lithological units that were differentiated in the core: sand, saprolite, and diorite.
- Logging information was transferred into Microsoft Excel worksheet
- All drill holes were vertical.
- The core is stored in a coreshed within the property

Table 2 Drill Hole Details

Hole_ID	East	North	Elevation (m)	Closing depth (m)	Depth (m)	Litho
EH-R-01	303164	705905	1.5	50.00	2.3	Sap
EH-R-01	303164	705905	-0.8	50.00	8.9	Quartz
EH-R-01	303164	705905	-9.7	50.00	50.00	Diorite
EH-R-02	304310	706133	19.1	64.20	6.30	Sap
EH-R-02	304310	706133	12.8	64.20	64.20	Diorite
EH-R-03	303896	706544	7.0	50.10	6.00	Sap
EH-R-03	303896	706544	1.0	50.10	50.10	Diorite
EH-R-04	304315	706588	7.0	43.50	6.00	Sap
EH-R-04	304315	706588	1.0	43.50	43.50	Diorite

EH-R-05	**302273**	**706431**	**15.2**	**36.00**	**10.50**	**Sap**
EH-R-05	**302273**	**706431**	**4.7**	**36.00**	**36.00**	**Diorite**
EH-R-06	**302419**	**705936**	**6.7**	**36.00**	**7.50**	**Sap**
EH-R-06	**302419**	**705936**	**-0.8**	**36.00**	**36.00**	**Diorite**
EH-R-07	**302631**	**706625**	**4.5**	**55.00**	**7.50**	**Sap**
EH-R-07	**302631**	**706625**	**-3.0**	**55.00**	**55.00**	**Diorite**
EH-R-08	**302776**	**706855**	**3.3**	**55.00**	**6.20**	**Sap**
EH-R-08	**302776**	**706855**	**-2.9**	**55.00**	**55.00**	**Diorite**
EH-R-09	**302311**	**706881**	**4.5**	**55.00**	**4.50**	**Sap**
EH-R-09	**302311**	**706881**	**0.0**	**55.00**	**55.00**	**Diorite**
EH-R-10	**301679**	**706707**	**2.1**	**55.00**	**3.50**	**Sap**
EH-R-10	**301679**	**706707**	**-1.4**	**55.00**	**55**	**Diorite**

Figure 10: Drilling at Atlana Permit site with Core photo images of the Diorite

9.1 DRILL HOLE PROCEDURES

Drillholes were collared in the field using a mobile handheld GPS, Garmin GPSmap 76Cx. The mobile core drill was towed and positioned on the drill collar locations with a Doosan 225 Excavator. All holes done were vertical and did not require site surveys. No downhole surveying or orientation measurements were carried out for the dill collars.

The Drill core was logged by a Geologist where all lithological, structural and alteration descriptions, as well as the sampling data, were digitally coded using a standardized litho-structural and geotechnical code list. All information was recorded using Microsoft Excel. After geological and geotechnical logging, and sample marking are completed, but before core sampling, the core boxes are photographed using a digital camera.

9.2 DRILL HOLE INTERPRETATION AND RESULTS

Drilling at Atlana Permit encountered the diorite unit with white alluvial sand and saprolite as the overburden. All ten drill collars intercepted the bedrock consisting of the Diorite.

Details	No of Drill Holes
Holes intercepted only Sand	0
Holes intercepted only Saprolite	0
Holes intercepted Diorite	10
Holes intercepted Saprolite and Diorite	10

Table 3: Results of Lithology intercepted from Drilling

A trace shade was then done to project the depth to bedrock from the surface (Figure 12) along with saprolite thickness (Figure 11). From the images, the saprolite cover is thicker to the West/SW section of the permit averaging 5m while the depth to bedrock is shallower, SE and NW of the permit.

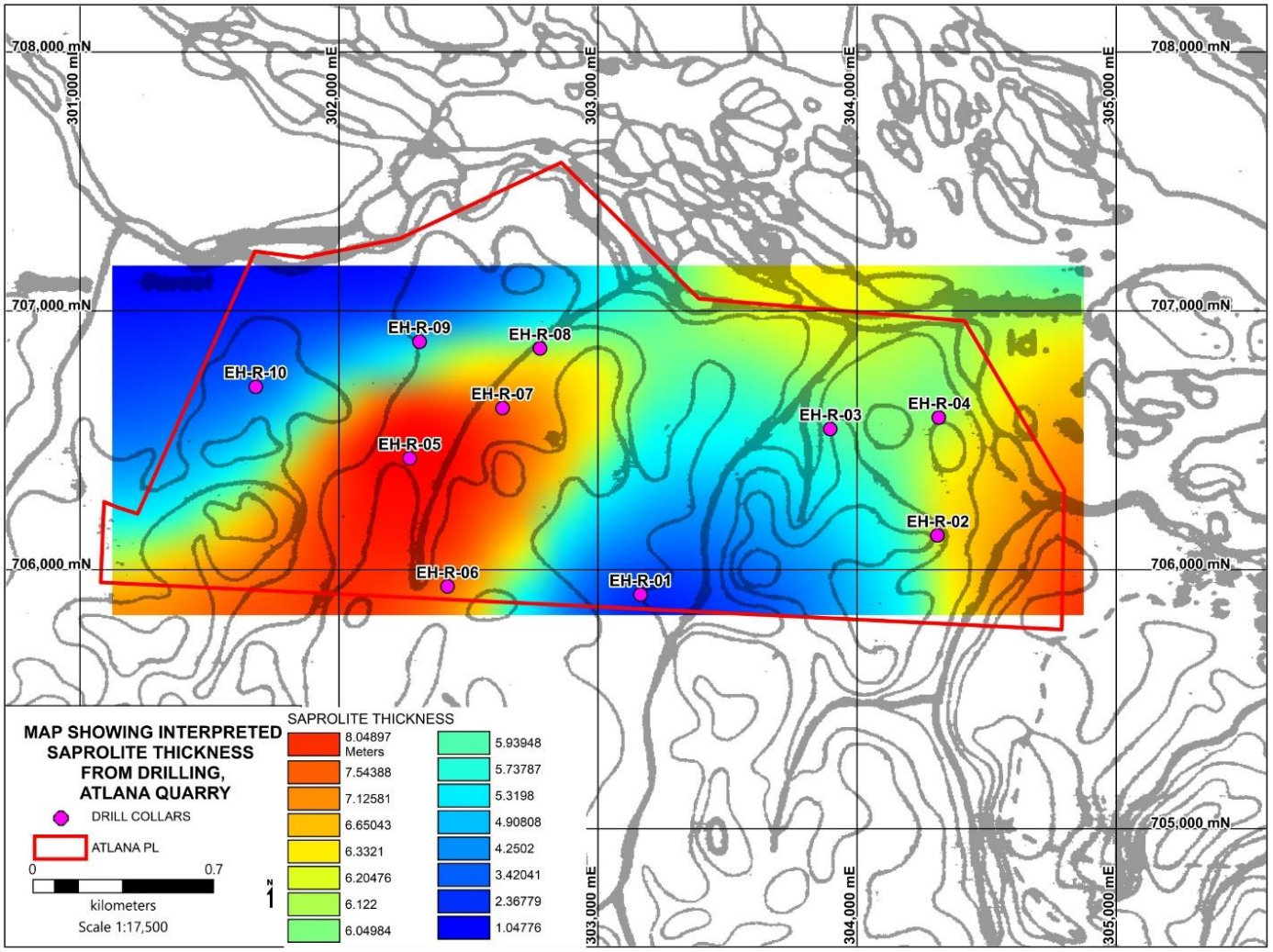


Figure 11: Thematic Map showing Thickness of Saprolite from Drilling program

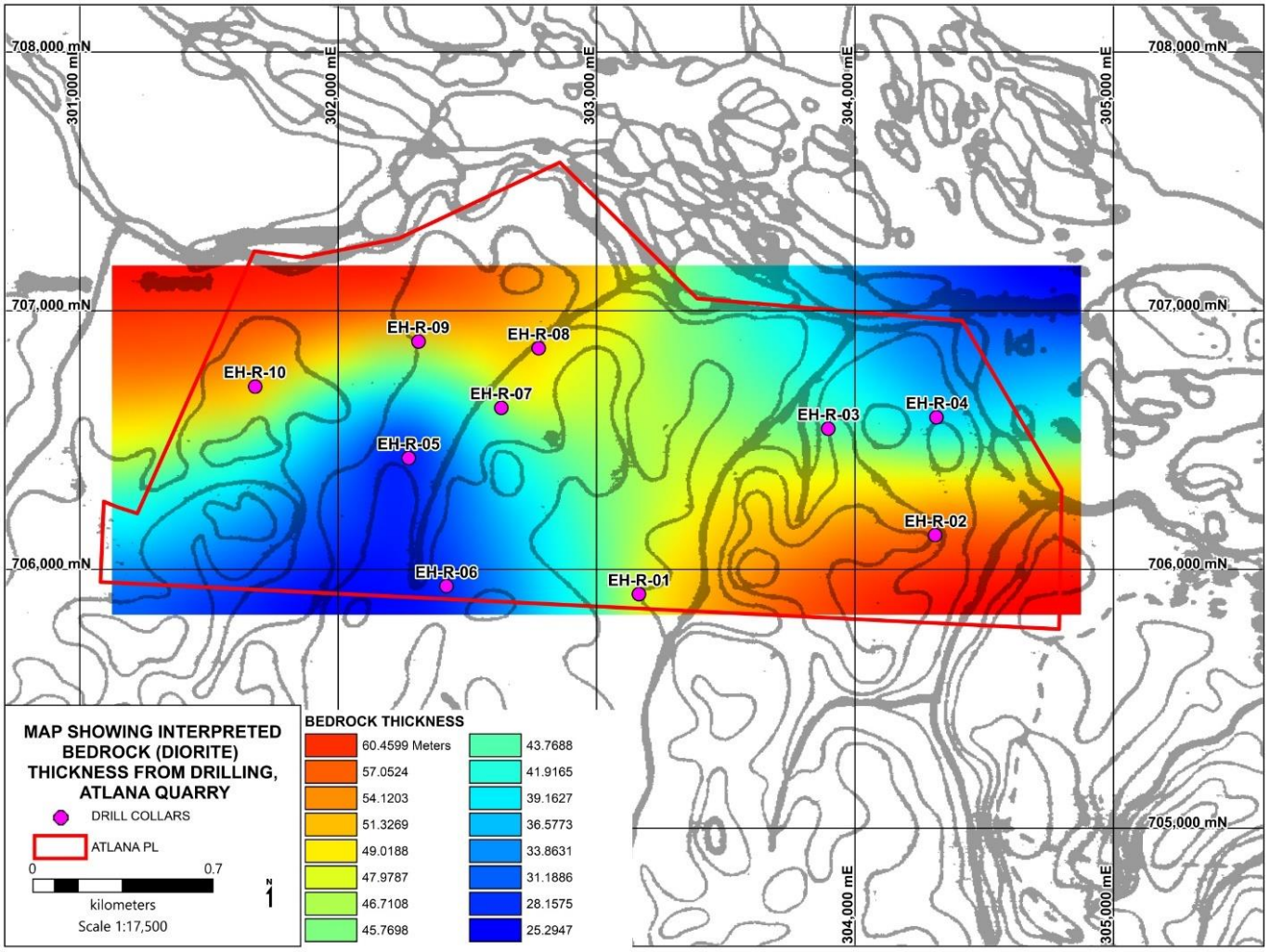
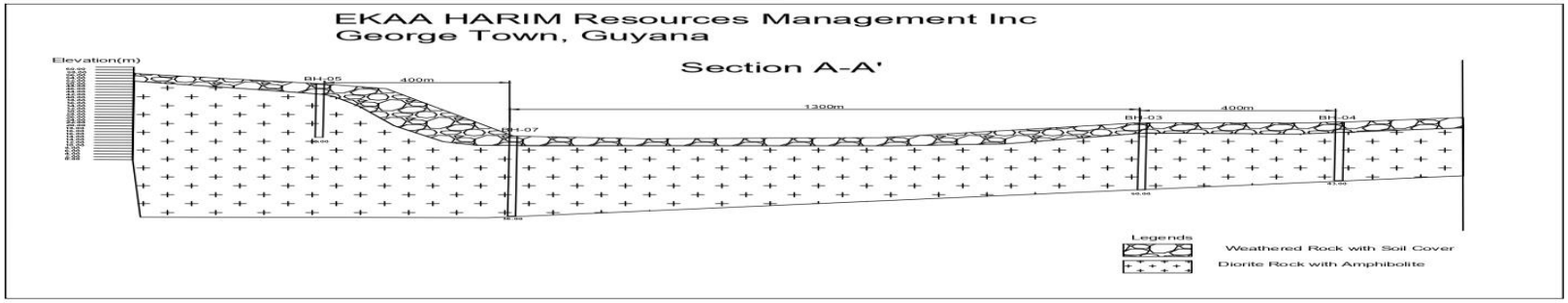
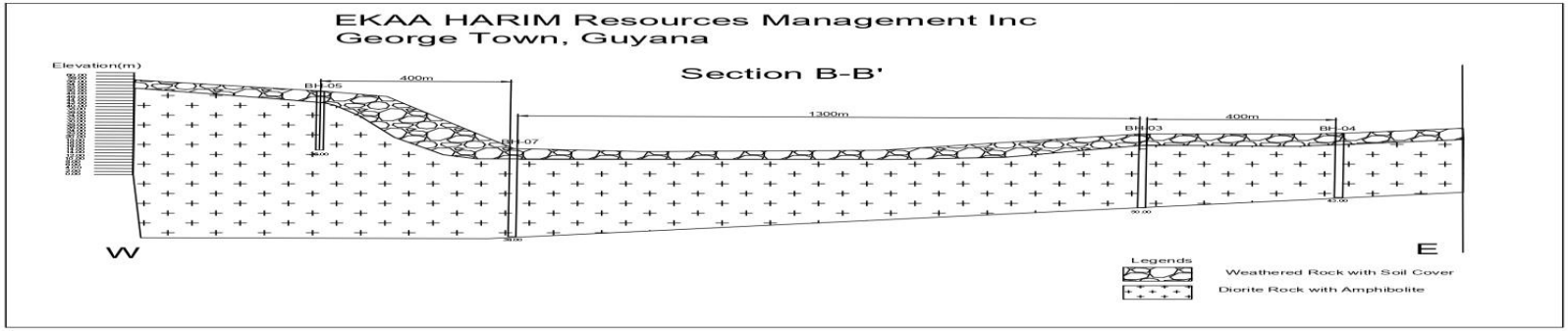


Figure 12: Map showing Depth to Bedrock from Drilling Program

Cross Sections for Drilling done, EERM Atlana Permit, Source EERM Geologist


EKAA HARIM Resources Management Inc
George Town, Guyana
Section A-A'
Elevation(m)
BH-05
400m
1300m
BH-07
BH-03
400m
BH-04
Legends
Weathered Rock with Soil Cover
Diorite Rock with Amphibolite


EKAA HARIM Resources Management Inc
George Town, Guyana
Section B-B'
Elevation(m)
BH-05
400m
1300m
BH-07
BH-03
400m
BH-04
W
E
Legends
Weathered Rock with Soil Cover
Diorite Rock with Amphibolite

10.0 DEPOSIT TYPE

The Atlana Quarry Project deposit consists of a Biotite Gneiss basement that was intruded by an intrusive pluton and then these were later intruded by several gabbroic dykes as seen to the east. The diorite is generally fresh and relatively unaltered, with a few zones of fracturing and shearing.

11.0 MINERAL PROCESSING AND METALLURGICAL TESTING

11.1 AGGREGATE PROPERTIES

The Atlana deposit has been characterized using a combination of laboratory testing procedures and an analysis of drill logs. The drill holes were considered as representative samples for the deposit as a whole.

11.2 CORE DATA

Logs from ten vertical core holes drilled on the property (Table 4) have been analyzed to determine average composition of the aggregate material.

Table 4 Distribution of Materials Based on Core Logs

Rock Type	Meterage logged (m)	Percentage of core (%)
SAPROLITE	54.1	10.82%
QUARTZ	6.2	1.24%
DIORITE	439.5	87.94%
Totals	**499.8**	**100.00%**

11.3 Quantification and Qualification Based on Gradation Analysis

The University of Guyana reported on the results of ASTM gradation analysis tests on three samples in November 2022. The results for the ¾" Diorite are shown in Table 5.

Table 5 Gradation analysis for ¾" Minus Diorite from Drill core

FACULTY OF TECHNOLOGY
TURKEYEN CAMPUS
Department of Civil Engineering
Tel.: 222-6006, Fax.: 222-5491

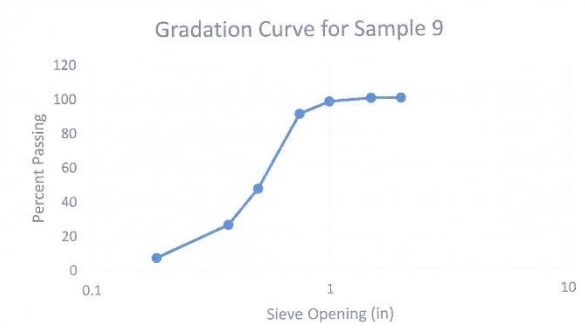
UNIVERSITY of GUYANA
NAME OF CLIENT: ACT Labs Guy Inc.
STANDARD: ASTM C 136
TESTED BY: G. YARDE
CHECKED BY: J. ALVES

DATE TESTED: 1/11/2022
PROJECT:
MATERIAL: COARSE AGGREGATES

SAMPLE: Stone

Table below showing the results of the sieve analysis of (Sample 9) Coarse Aggregates

Sieve No.	Mass Retained	Percent Retained	Cummulative Percent Retained	Percent Passing
2"	0	0.00	0.00	100.00
1.5"	0	0.00	0.00	100.00
1"	39.9	1.99	1.99	98.01
3/4"	141.3	7.06	9.06	90.94
1/2"	873.9	43.68	52.74	47.26
3/8"	419	20.94	73.68	26.32
4	383.4	19.16	92.84	7.16
Pan	143.2	7.16	100.00	0.00
	2000.7			



.....
Head of Civil Engineering Department.

FACULTY OF TECHNOLOGY
TURKEYEN CAMPUS
Department of Civil Engineering
Tel.: 222-6006, Fax.: 222-5491

UNIVERSITY of GUYANA
NAME OF CLIENT: ACT Labs Guy Inc.
STANDARD: ASTM C 136
TESTED BY: G. YARDE
CHECKED BY: J. ALVES

DATE TESTED: 1/11/2022
PROJECT:
MATERIAL: Coarse Aggregates

SAMPLE: Stone

Table below showing the results of the sieve analysis of (Sample 1) Coarse Aggregates

Sieve No.	Mass Retained	Percent Retained	Cummulative Percent Retained	Percent Passing
2"	0	0.00	0.00	100.00
1.5"	2.7	0.13	0.13	99.87
1"	24.8	1.24	1.37	98.63
3/4"	91.1	4.55	5.93	94.07
1/2"	668.3	33.41	39.34	60.66
3/8"	285.4	14.27	53.61	46.39
4	381.3	19.06	72.67	27.33
Pan	546.7	27.33	100.00	0.00
	2000.3			

.....
Head of Civil Engineering Department.

11.4 BS/ASTM Aggregate and Abrasion Tests

Table 6 presents the test results for the other standard tests completed by MOPI and University of Guyana.

Table 6 Summary of BS/ASTM Aggregate and Abrasion Test Results

LAB TESTS DRILLING					
ID	**TYPE**	**SPECIFIC GRAVITY**	**AGGREGATE IMPACT VALUE**	**AGGREGATE CRUSHING VALUE**	**LA ABRASION**
1	Diorite	2.52	14	22.1	24.37%
2	Diorite	2.42	15	30.86	54.88%
3	Diorite	2.54		32.82	48.68%

11.5 Petrographic Analysis

Not Applicable

11.6 Specific Gravity

The average specific gravity value of the aggregate material determined by MOPI for the Atlana Quarry project is 2.58 (7) and applies to samples retrieved from the drill cores and outcrop samples.

Table 7 Specific Gravity Values from Laboratory Testing by MOPI.

ID	ROCK TYPE	SPECIFIC GRAVITY
1	Diorite	2.52
2	Diorite	2.42
3	Diorite	2.54

MINISTRY OF PUBLIC WORKS

WORKS SERVICES GROUP

Fort Street, Kingston, Georgetown, Guyana Tel: +592-225-2906, 223-6082

ASTM D854 - SPECIFIC GRAVITY - PYCNOMETER METHOD

Project Name: Quality Control
Client: EKAA HRIM Earth Resources Management
Sample Description: Stones (Sample 4)
Sample Location:
Sample Source:

Lab #: EKAA- SG-PYC-Stones-QC-22-001
Sample #: 1
Date Sample:
Date Tested: 3/11/2022
Sampled By: Contractor

		Wt (g)
	Pycnometer + SSD Sample	767.94
	Pycnometer	415.06
S	Saturated Surface Dry Sample	352.88
P	Pynometer + Water to Fill	1408.9
W	Pynometer + Sample + Water to Fill	1615.5
	Pan + Oven Dried Sample	574.6
	Pan	223.3
D	Oven Dry Sample	351.3
	Absorption = 100(S-D)/D	0.450
	Bulk = D/(P+S-W)	2.402
	Bulk SSD = D/(P+S-W)	2.412
	Apparent g = D/(P+D-W)	2.428

Tested By: R.P

Computed By:

Verified By:

12.0 MINERAL RESOURCE ESTIMATES

12.1 GEOLOGICAL DATA – DRILL HOLES

All 10 drill holes from the September 22 drilling program have been incorporated into a modeling database that includes collar, survey, and lithological tables. The drill hole distribution is illustrated in Figure 11.

12.2 GEOLOGICAL MODELLING

12.2.1 Principles

The Atlana quarry model was created in Leapfrog 3D using an upper topographic digital terrain model and a lower bedrock digital terrain model. Various boundary files were applied in order to compute volumes of aggregate material between the two surfaces.

Modeling was done within the property area to provide a total resource for the deposit.

12.2.2 Model Limits

The model is bounded by the outermost drill holes.

12.3 DISCUSSION

From the 3D modeling done, it was interpreted that the diorite intrusive intrudes the gneiss basement rock. There is no apparent strike or dip noted from the drilling. The saprolite is more prevalent in the SW area of the permit, with the depth to bedrock thinner to the SE and NW areas of the permit.

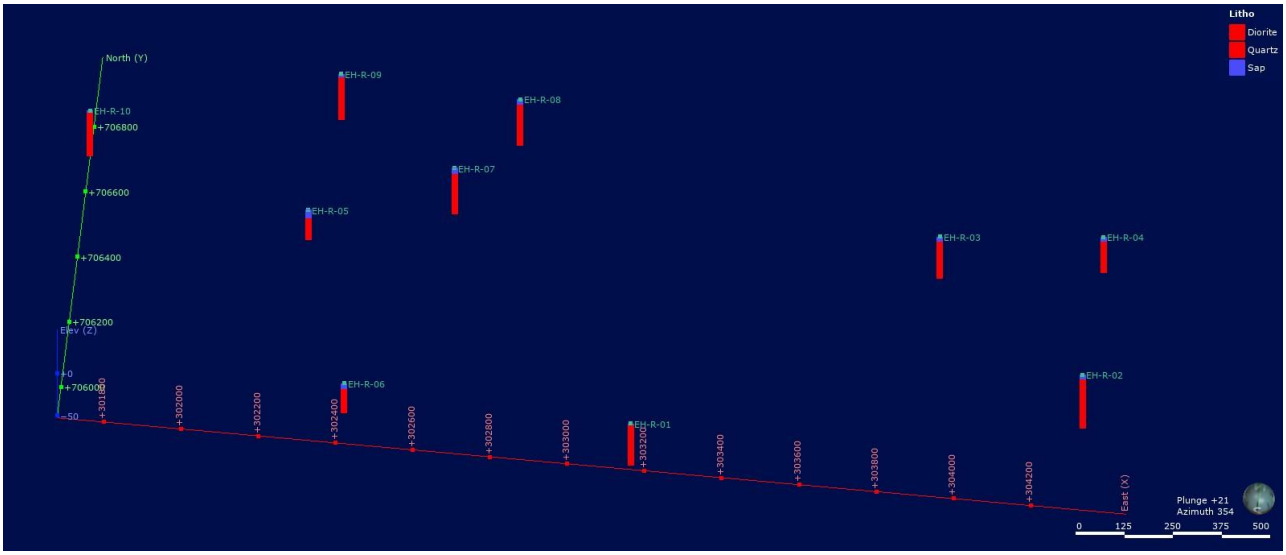


Figure 13: 3D Model of Atlana Deposit drill collars (VE x4)

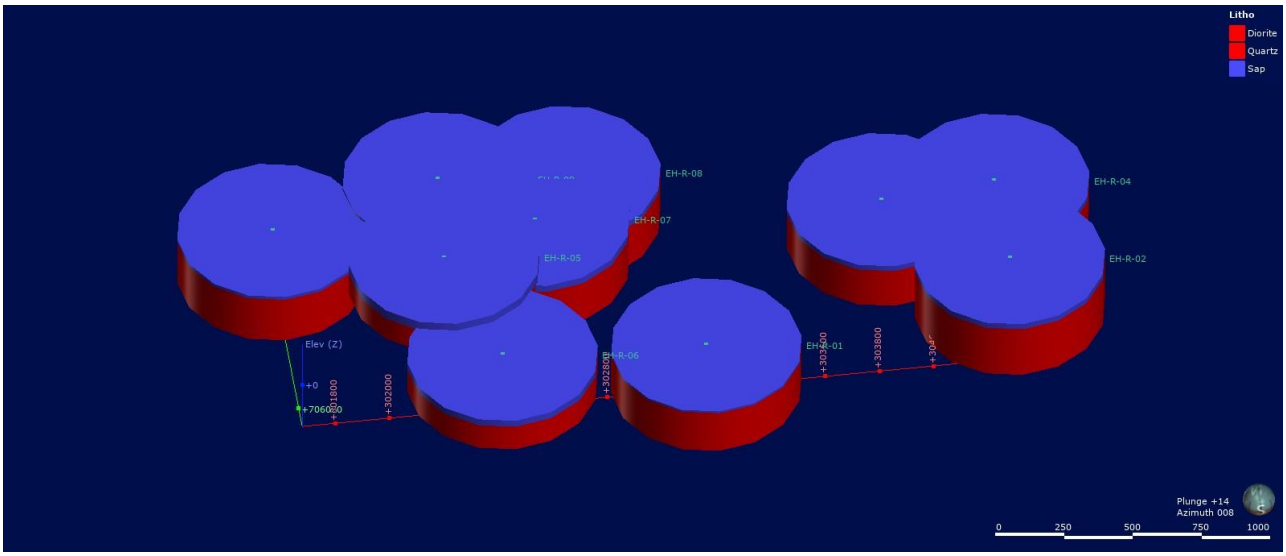


Figure 14: 3D Model showing geological units (Saprolite, Bedrock) intercepted from drilling. Looking N (VE x4).

12.4 MINERAL RESOURCE ESTIMATE AND CLASSIFICATION

After the completion of 2022 drill program, EERM had a resource estimate for Atlana aggregate project done. The geological modeling and aggregate resource estimation was undertaken by Geologist Bjorn Jeune.

Within the mining and resource limits, the classification of the industrial mineral resources of the Atlana deposit has been based on an analysis of drill holes. It was possible to correlate several individual drill hole data across the property.

Material located within 100m radius of a drill hole has been classified as measured, while material located within 250m radius of a drill hole but outside of the 100m has been classified as indicated with a cutoff depth of 64.2m (depth of deepest hole) used. Inferred resources encompass all additional material located outside the optimum range to which the data can reasonably be projected, but within the limits of mining. The definitions of measured, indicated and inferred resources, from the CIM Definition Standards on Mineral Resources and Mineral Reserves are provided below:

> *A "Measured Mineral Resource" is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are so*

well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as

outcrops, trenches, pits, workings, and drill holes that are spaced closely enough to confirm both geological and grade continuity.

An "Indicated Mineral Resource" is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings, and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed."

The relationships between each resource category and the project boundaries are shown in Figures 15 and 16. The market for aggregates in Guyana remains robust which provides support for mine planning and the economic viability of the EERM Atlana deposit. The 2022 mineral resource estimate is current since no further exploration has been conducted on the property since then.

The resource estimate tables below (Table 9 and 8) provides resource volumes and tonnes for deposit and proposed mining pit.

Figure 15: Relationship between mining boundaries and Measured Resource, aggregates with 100m radius of each drill collar

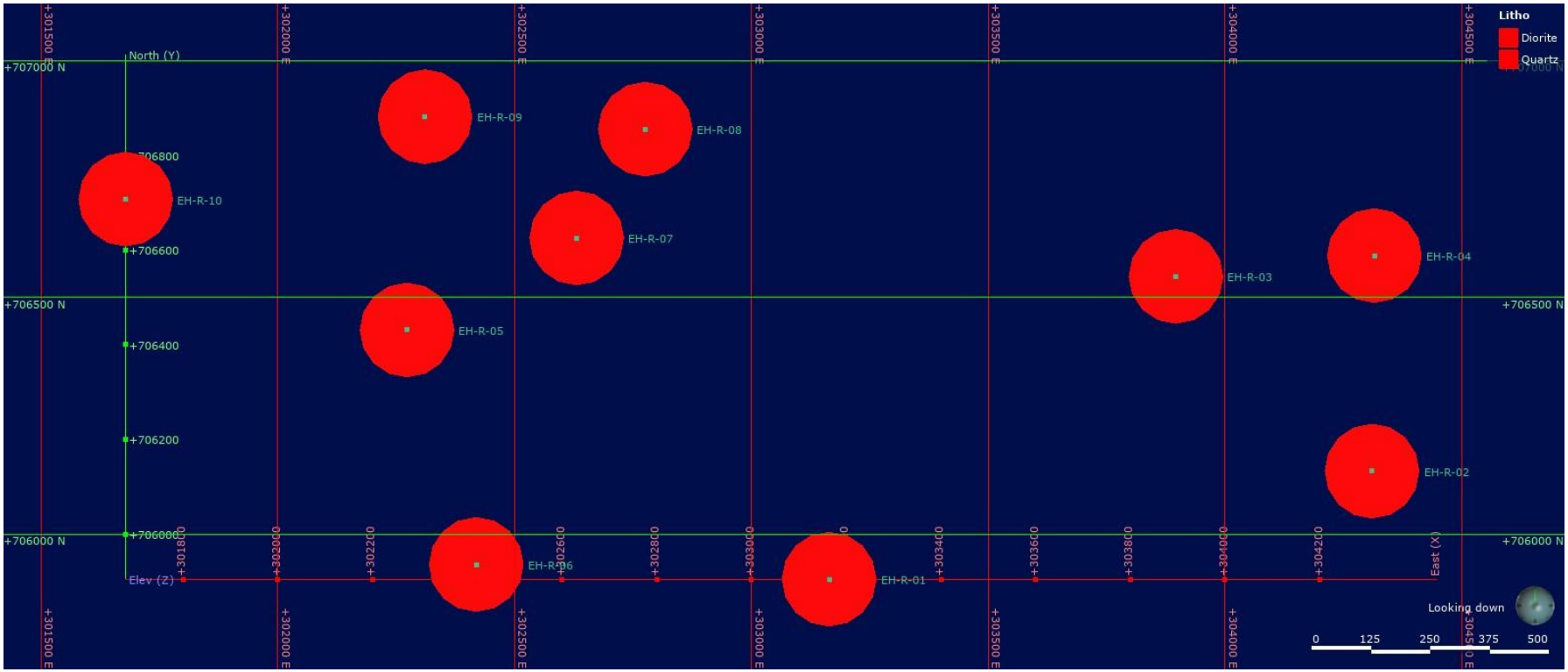


Figure 16: Relationship between mining boundaries and Measured and Inferred Resource, Aggregates with 250m radius of each drill collar.

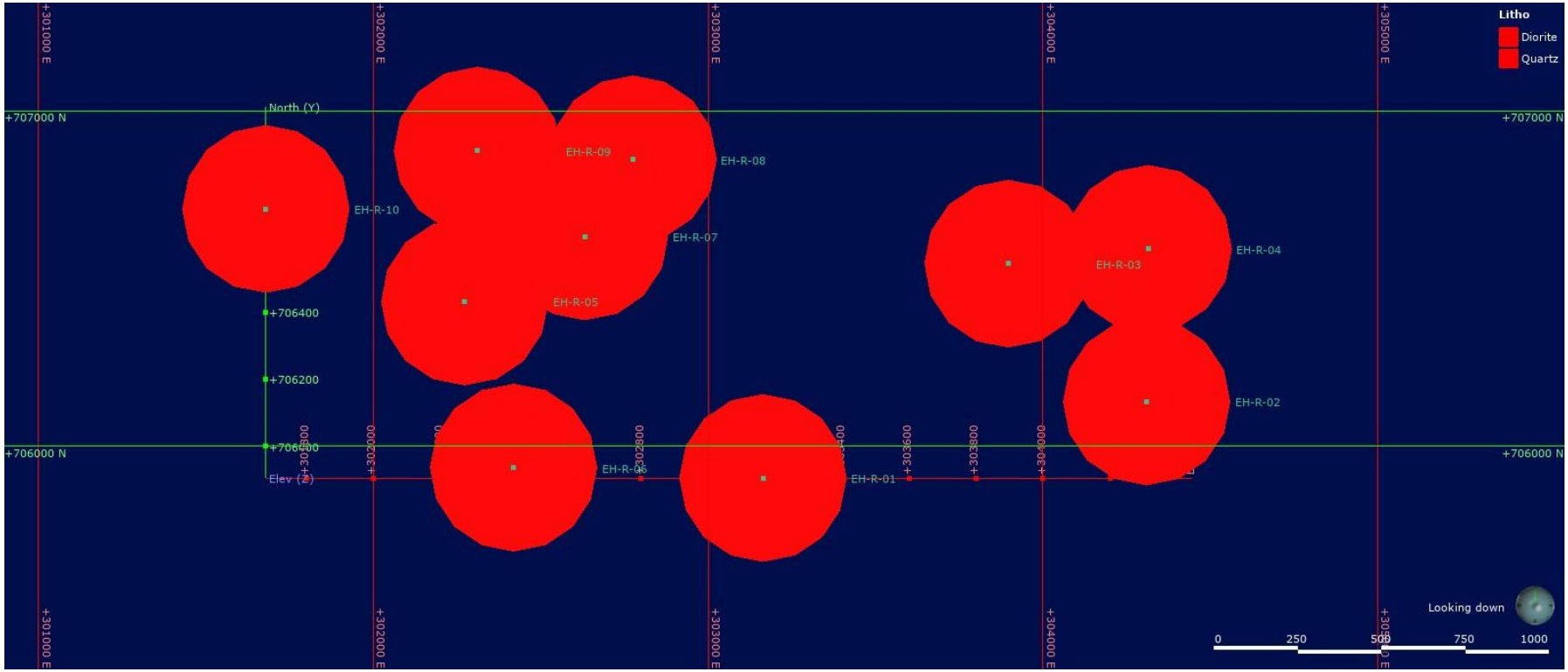


Table 8 Industrial Mineral Resource Estimate for Atlana Deposit and startup pit

Area	Classification	Volume (m3)	Specific Gravity	Mass (t)
Atlana	Measured aggregates	18,211,813	2.58	46,986,477
	Indicated aggregates	40,990,716	2.58	105,756,046
	Measured and Indicated	**59,202,528**	**2.58**	**152,742,523**

1 Mineral resources which are not mineral reserves do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, sociopolitical, marketing, or other relevant issues.

2 The mineral resources in this report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council November 27, 2010.

3 The specific gravity value of 2.58 used to convert volumes to tonnes and is the average SG for the Diorite. For Measured resource, 100m radius from center of each drill hole done with 150m for Indicated from measured, projected to 64.2m.

Area	Classification	Volume (m3)	Specific Gravity	Mass (t)
Atlana Mine Pit	Measured aggregates	1,252,448	2.58	3,231,317
	Indicated aggregates	4,089,176	2.58	10,550,073
	Measured and Indicated	**5,341,624**	**2.58**	**13,781,389**

Table 9: Industrial resource estimate for Outcrops within the Atlana Permit

ID	Total Area (Sq.m)	Recovery factor (100%)	Total Volume (cu.m)	Total weight of (kg/ cu.m)	Total Reserves (tons)
Out-crops	**38725.47**	**100.00%**	**122,396.21**	**305,990,520.40**	**305,990.52**

Source: Geologist S. Srivastava, EERM

12.5 MINERAL RESERVES

At this time, there are no mineral reserves for the Atlana Quarry project.

13.0 MINE PLANNING

13.1 Mining Methods

Quarry mining operations planned for the EERM Atlana Quarry project will be open pit with benching and blasting, with the planned mining pit hosting an estimated resource of **~13.7 million tons Diorite**. The mining plan below details a proposed mining operation of 2.875 million tons over 5 years at an average of 575,000 tons of stone aggregates produced per year with an investment cost of **~USD$5,379,700 (GY$1,129,737,000),** and an estimated operating cost of **~USD$19/ton[7].**

The mining method selected for the Project is conventional truck and shovel for both overburden stripping and mining. The shallow pit depth, relatively high production levels and initial soft ground conditions favor a fleet of backhoe oriented hydraulic excavators and small rigid frame mining haul trucks.

Vegetation and topsoil will be cleared by dozers ahead of the mining operation. Suitable organic material will be stockpiled for future reclamation use. Overburden and clays will be stripped with excavators exposing the bedrock.

The quarriable materials, namely aggregates and rip-raps will be transported to the stockpile site located at the bank of the Cuyuni River for barging to local markets (Mine Plan Figure). 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 (groundwater pond) at surface (Conceptual mine plan below).

The production target for the Project is 575,000 tons yearly. To meet this demand, the mining operation at Atlana Quarry is required to produce an average of 1,850 tons of aggregate material per working day (26 days working month projected).

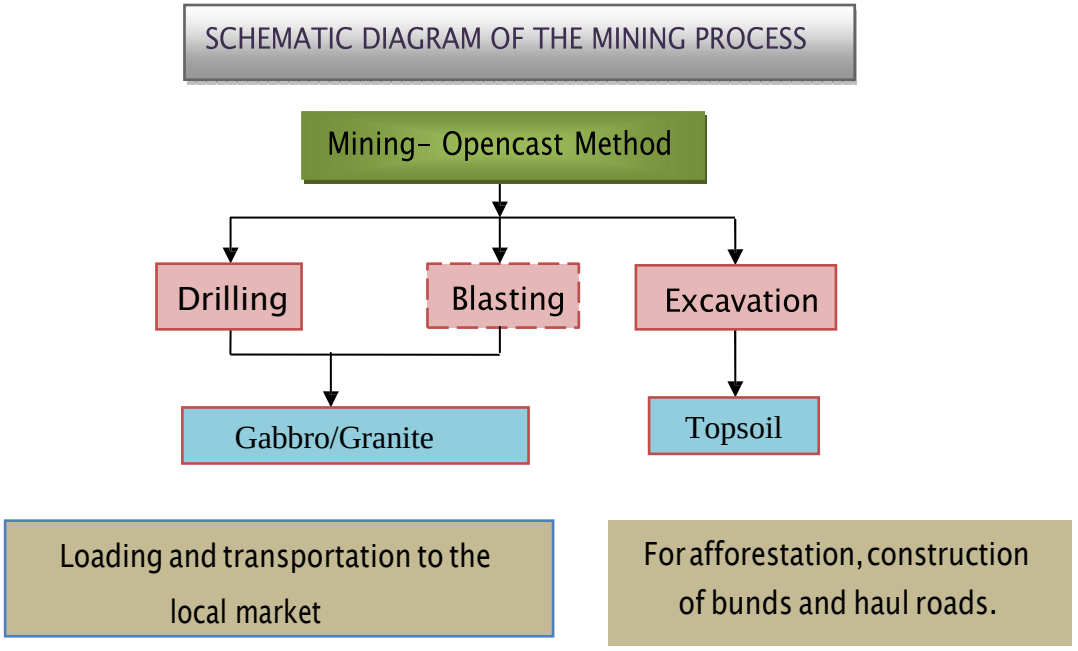
Mining operations for the Project will be six days per week, operating 8-10 hours per day.

The haul truck selected for the project is the SANY SYZ324C Dump Truck. This rigid frame mining truck will be robust enough to manage the ground conditions expected and be able to satisfy the hauling to the plant. The nominal payload of the SANY Dump truck is 55 tons.

A fleet of six (6) trucks is required during pre-production with the number increased by eight (8) within the second year.

The loading machine selected for the Project is the SANY 335H hydraulic excavator. To mine the tonnages presented in the mine plan, five (5) excavators are required during pre-production, and mining. A fleet of one (1) D6K dozer, two (2) SANY SW 966K1 wheel loaders, 1 road grader and service trucks complete the mining fleet.

[7] Cost per ton estimated from mining operations at St. Mary's and Teperu quarries



13.1.1 Mining Design

The economic pit limits derived from the pit optimization will be used as a guideline for the detailed pit design. The pit design process includes smoothing the pit wall, adding ramps to access the pit bottom, and ensuring that the pit can be mined using the initially selected equipment. The following sections provide the parameters that will be used for the detailed pit design.

Geotechnical Pit Slope Parameters

Overall pit configuration will reflect local geological conditions of rock orientation and stability. The pit will closely follow a north-easterly orientation, and the approximate 60° dip of bedding will affect high-wall and bench construction. Construction of 30 foot high-walls with 70° faces and 20 foot benches would produce a 1:1 (45°) overall slope. If high-walls were 25 feet high with 70° faces and 25-foot benches, the overall slope would be about 1.34:1 (horizontal to vertical; -36° slope). Exact high-wall to bench ratios will depend on site specific conditions at the site. Maximum height of high-walls would probably be around 30-35 feet. Where steep high-walls are developed, they will be designed and maintained in compliance with regulations.

Pit wall slopes and bench widths are dependent on the types of rock involved and the size of equipment working the mine faces. High-walls developed in coherent rock being worked by large excavators can be higher and steeper than high-walls in loose material being worked by small equipment.

Haul Road Design

The ramps and haul roads will be designed with an operating width of 9m. For double lane traffic, industry practice indicates the road width to be a minimum of 3 times the width of the

largest truck. The overall width of the SANY SYZ324C haul truck is 2.95 m. A maximum ramp grade of 8% will be used. Ramps will be added as the need arises to access the stone aggregates. These ramps will be constructed from waste material.

Dump Design

Waste material will be hauled to an out-of-pit waste dump until sufficient pit floor space is developed to allow for in-pit backfilling if needed. The parameters are highlighted below will be used as a guide for the dump design:

Overall Slope ~18.4° (3H:1V);

Maximum Dump Height 50 m;

Setback from Pit Crest 40 m;

Setback from Major Creeks 100 m.

To ensure the safety of the operation, all mining activity will remain at a minimum distance of 50m from the in-pit waste dump.

Material Properties

The table below defines the material properties that were used for the conceptual mine design and mine planning purposes.

Estimated Material Properties for Atlana

	In-Situ Dry Density (t/m^3)	Moisture Content (%)	Swell Factor (%)
Overburden	1.40[1]	20.0[1]	12

1. Taken from Soil data, Bonasika.

13.1.2 Production Objective

The production objective for the EERM Atlana Quarry is to produce riprap and aggregates for the local Guyana market. The estimated mine life based on the proposed exploitable resource for the proposed Pit is +23 years. The mining proposal is done for a 5-year time period. Over the 5-year period, 96% of the quarrying material will be aggregates with just 4% rip-rap. Initial production will focus on ¾", ½", Gabions, 1st Grade and Sifting for local construction and road building industry. It is expected that the Quarrying Operation will commence 1st Quarter, 2023 with an average yearly production of 550,000 tons aggregates and 25,000 tons rip-rap. The table below gives a proposed breakdown.

Table 10: Proposed Production by Year for EERM Atlana Quarry

Product (1,000 tons)	Years					TOTAL
	2023	2024	2025	2026	2027	
Rip-Rap	25	25	25	25	25	**125**
Aggregates	550	550	550	550	550	**2750**
TOTAL	**575**	**575**	**575**	**575**	**575**	**2875**

13.1.3 Products

The proposed quarry will produce the following products:

STONE AGGREGATES	Product market
3/4"	ROAD CONSTRUCTION
1/2"	CONSTRUCTION
7/8"	CONSTRUCTION
5/8"	CONSTRUCTION
3/8"	CONSTRUCTION
1 1/2" MINUS	CONSTRUCTION
SIFTING	CONSTRUCTION
BOULDERS	SEA DEFENCE
GABIONS	ROAD CONSTRUCTION
1ST GRADE	ROAD CONSTRUCTION

13.1.4 Mine and Process Methodology

As mining is done on undisturbed areas, vegetation will be removed according to EPA regulations, and overburden along with topsoil will be stockpiled for reclamation efforts. Once a desirable surface is exposed, the diorite will be excavated via ripping with appropriate tracked equipment and blasting. The first cut will be carried out within the Proposed Pit (see Mine Plan) with the overburden cleared and stockpile within the "Overburden Stockpile Dump" area located ~500m west of the Pit. The equipment used (Table 4) will be;

- SANY 335H Excavator
- Caterpillar D6K Bulldozer
- SANY SW 966K1 Wheel loader
- SANY SYZ324C Articulated truck 55 Ton

In general, a series of high-walls and benches trending chiefly north-easterly will be created. Areas too hard to be ripped by tracked excavators will be drilled and blasted. Blasting will be done using ANFO (ammonium nitrates and fuel oil) explosives which are readily available locally and the blast pattern proposed will be a standard 6 x 7 matrix. Note that blasting pattern can change depending

on mining conditions. All blasting and related activities will be supervised by locally experienced blasting and mining engineers. A jack hammer will be used to break oversize boulders in the pit and at the crusher grizzly.

Overall pit configuration will reflect local geological conditions of rock orientation and stability. The pit will closely follow a north-easterly orientation, and the approximate 70° dip of bedding will affect high-wall and bench construction. Construction of 30 foot high-walls with 70° faces and 20 foot benches would produce a 1:1 (45°) overall slope. If high-walls were 25 feet high with 70° faces and 25-foot benches, the overall slope would be about 1.34:1 (horizontal to vertical; -36° slope). Exact high-wall to bench ratios will depend on site specific conditions. Maximum height of high-walls would probably be around 30-35 feet. Where steep high-walls are developed, they will be designed and maintained in compliance with regulations.

Pit wall slopes and bench widths are dependent on the types of rock involved and the size of equipment working the mine faces. High-walls developed in coherent rock being worked by large excavators can be higher and steeper than high-walls in loose material being worked by small equipment.

Once the desired material is broken loose in the open pit, it will be transported by front end loaders and dump trucks to a primary crusher and loading facility located within the northeastern part of the permit. Stockpiles will be established to store run-of-mine and crushed material such that crushing and loading capacities will not be exceeded. The Crushing Plant is rated at 250 tons/ operating hour. This size specification for the crusher is as follows:

Siftings:

¼" Minus, 3/8" Minus, ½" Minus, ¾" Minus, 1" Minus (all Aggregates)
Rip-rap
Boulders

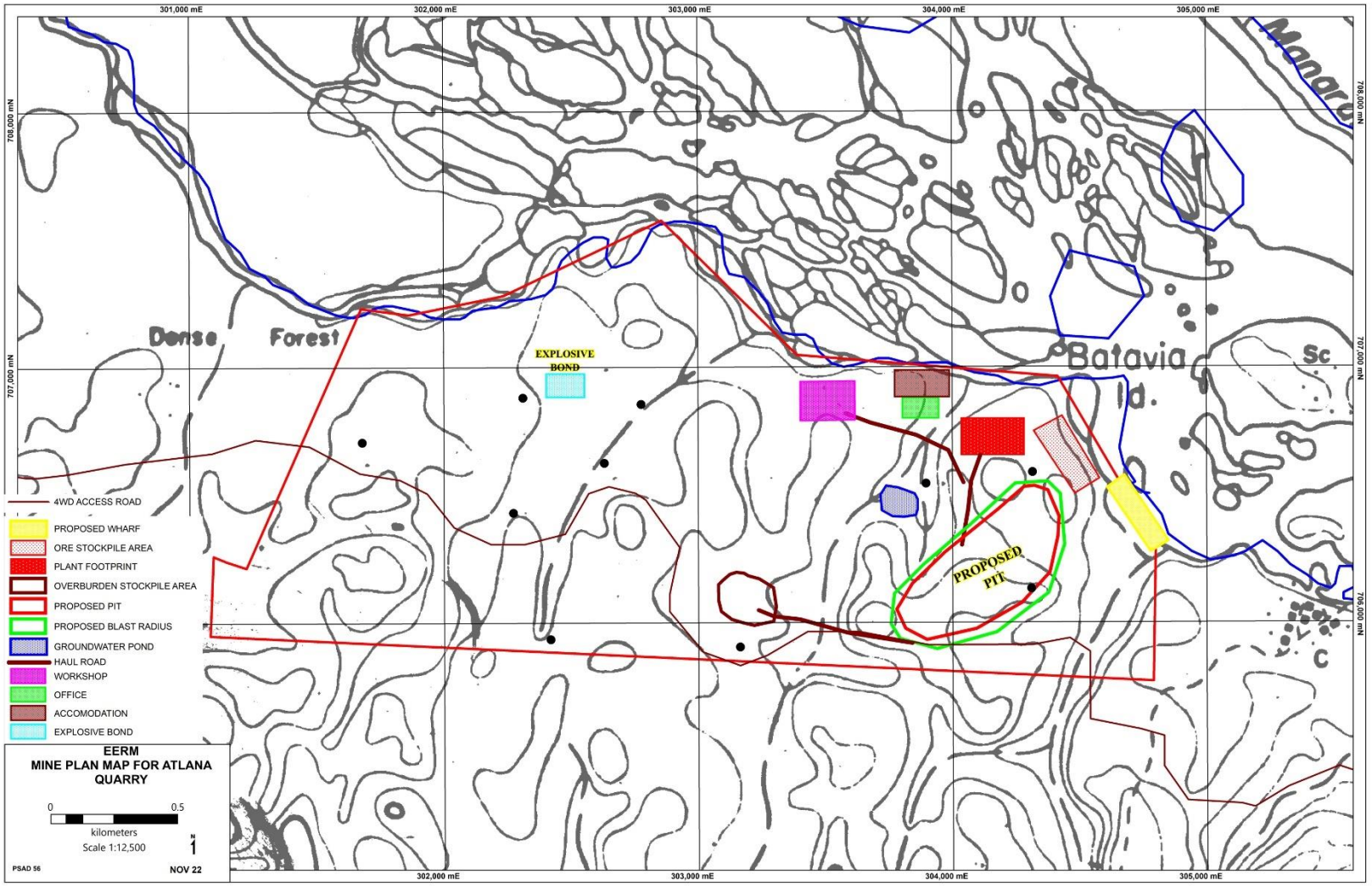
Crushing will be accomplished only during daylight hours (8 hours per day). Materials (rip-rap and aggregates) will stockpile and shipped via barge and trucks to the targeted market mainly road construction and sea defense. Some materials will be used for cement manufacturing and local construction industry. The quarry with be operated 8 hours a day (plant operation). Out-loading will be done initially by two (1500 tons and 1000 tons) barges (one equipped with extremely heavy metal decking for rip-rap) (additional barges will be rented to meet market demand). The estimated barge turnaround time is ~38 hours (22 hrs. on the river, ~8 hrs. at the quarry (on-loading) and ~8hrs off-loading, efforts will be made to reduce on this barge turnaround time by reducing on the on -loading and off-loading times. It is estimated that ~575,000 tons of quarriable products will be transported per annum for the local road construction projects.

Water will be routinely sprayed from a water tanker onto roadways and active stockpiles, and water

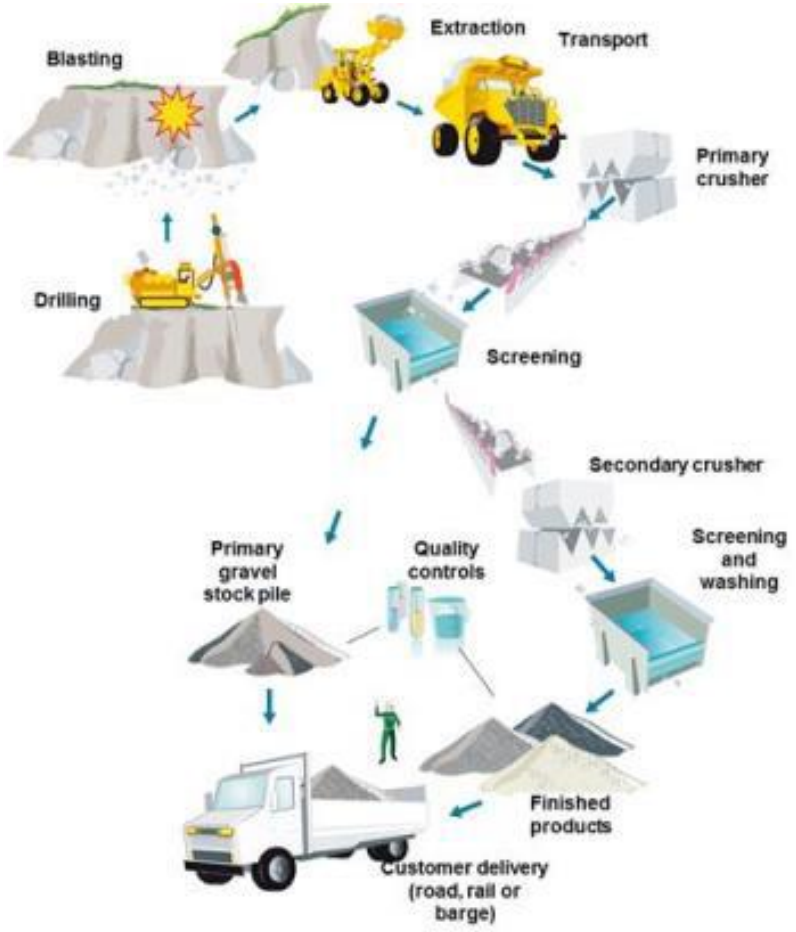
spray bars will be installed on crushing equipment. Roads and process areas within the facility will be periodically graded and bermed to allow for safe travel and to control surface drainage.
The following equipment are proposed to be used in the mining and processing of quarrying material at the EERM Atlana Quarry;

Table 11: Proposed Equipment for Quarry mining at EERM Atlana Quarry

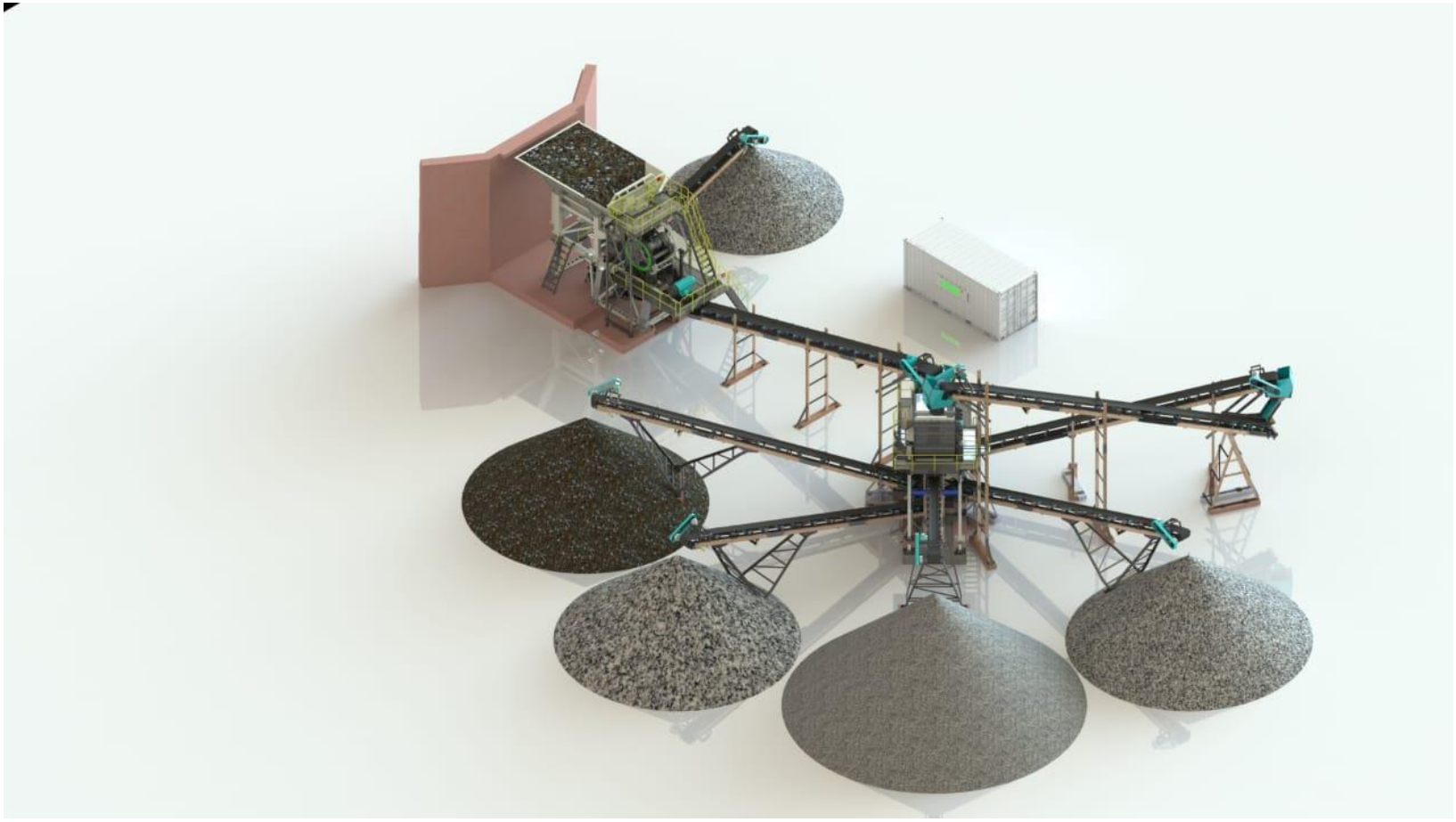
Machinery Details	Machinery Specification	Machinery No
Stationery Crusher	250 TPH 2STAGE CRUSHING& SCREENING PLANT	**1**
Crusher Spars	SUPPLY OF SPARE PARTS FOR CRUSHING & SCREENING MACHINERY	**1**
Weighing bridge	40 foot - 90 tonne scale (Installation) * 2 (Incl civil works and Installation charges)	**2**
Excavators	SANY Excavator 335H. Operating Capacity 31.5 Ton Bucket Capacity 1.65 to 1.8 Cubic meter, Engine Power 212K/ 2000 RPM Model 6HK1.	**5**
Dozer	CAT D6K2LGP	**1**
Truck	SANY DUMP TRUCK SYZ324C-8W(R)Dump Truck Full load 55 Ton Gross Weight 16.2 Ton SANY DEUTZ power Engine, Fuel 300L	**8**
Drilling Rig	Drilling Rig - Blasting Only	**1**
Wheel Loader	SANY Wheel Loader SW 966K1. Operating weight 21.4 Ton Bucket Capacity 3.5 to 4.5 Cubic meter, Rated Load 6 Ton	**2**
Road Grader	Caterpillar 140	**1**
Water Truck	Sino Truk Howo ZZ1	**1**
Off Road Pickup	2019 TOYOTA HILUX X W CAB	**1**
Barges	1500 and 1000 tons	**2**
Lighting Tower	400W Height is 9 meters adjustable, rotate 360 degrees - Atlas COPCO	**2**
Genset	912 KVA - Plant	**1**
Genset	42 KVA - Office & Site	**1**
Water Pump	MVM diesel engine 6 cylinder Turbo 180 HP with Bluewater pump	**1**



CONCEPTUAL MINING PLAN FOR EERM ATLANA QUARRY

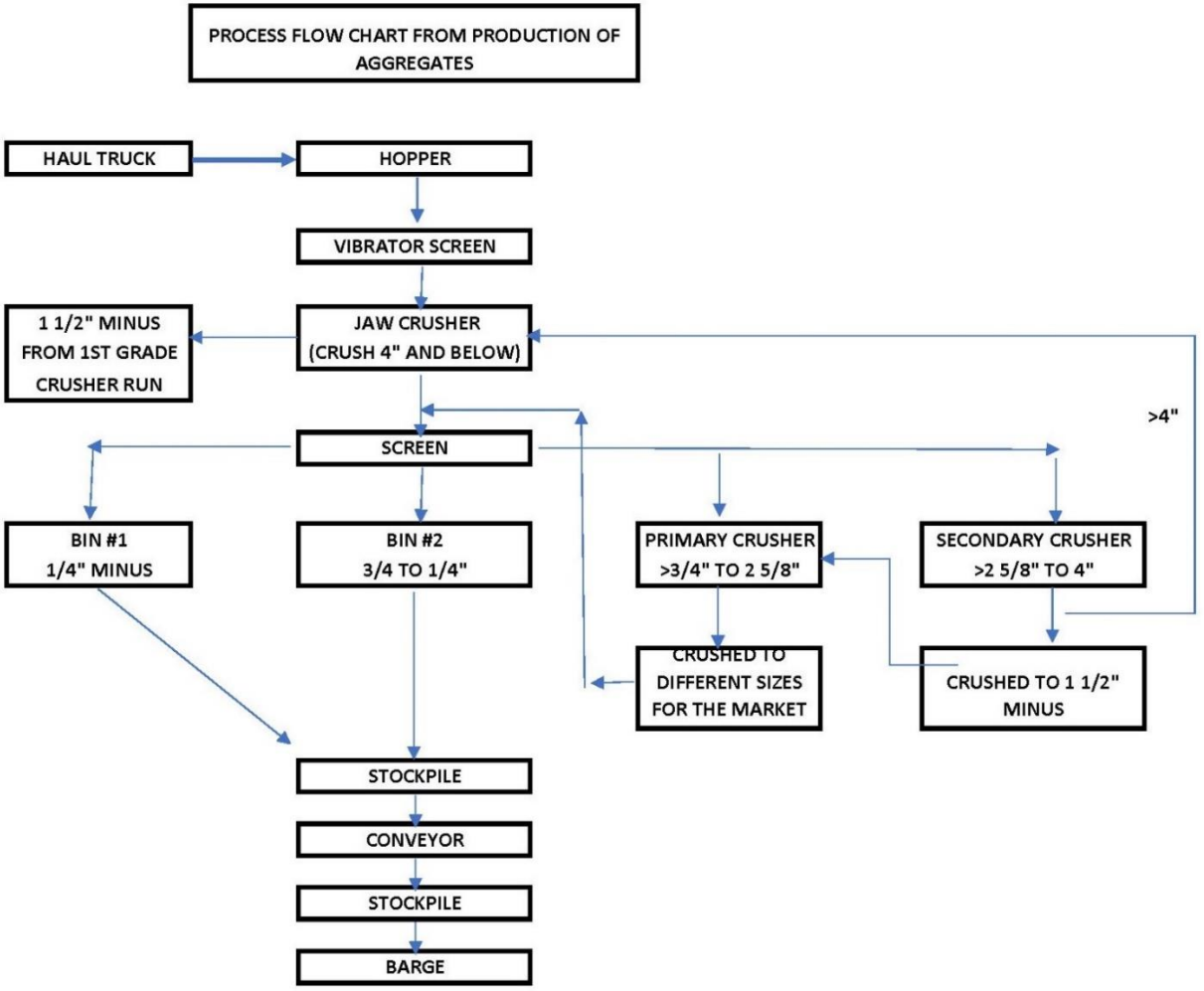


CONCEPTUAL MINING PROCESS



PROPEL CRUSHER PLANT OVERVIEW

CONCEPTUAL PLANT 250 TPH FOR EKAA ATLANA BATAVIA QAURRY



CONCEPTUAL PROCESS FLOW DIAGRAM

13.2 DRILLING AND BLASTING TECHNIQUES

Drilling and blasting will be carried out to fracture the rock to enable mechanical excavation. Holes will be drilled behind the working face and filled with an explosive (ANFO explosive). When detonated, the rock is broken into manageable fragments and transported for further crushing and processing. Multiple blast holes will be drilled with the help of 32 mm drill rods, Jack Hammer and Air Compressor. The plan at EERM Quarry is to have inhouse blasting services, with a blasting engineer to supervise all blasting activities. Below is the proposed blasting plan for the EERM Atlana Quarry.

At the EERM Atlana Quarry, blasting of the quarriable material will be done twice a month and the type of blasting proposed is Fragmentation Blasting. The target is to blast ~48,000 tons of material per month of which 90%-94% should be fragmentation.

Based on the mining advance, the Quarry foreman would first indicate to the Blast foreman the area selected for blasting. The area is then cleared and cleaned using an Excavator and Dump truck. The drilling pattern is then marked out which is checked by the Blasting and Drilling foremen. At the Quarry, a 6ft x 7ft (burden x spacing) pattern is proposed since locally this has shown to improve the percentage of fragments produced from blasting.

The pattern is then drilled. For each pattern, there are ~150 holes which will be drilled to a depth of 30ft. While the drilling is ongoing, the Sargent of the onsite Police Outpost is informed of the imminent blast and for preparations to be made for usage of explosives since they will be responsible for the securing of the explosives at site. Once the pattern has been drilled, it is then checked by the Blast foreman to make sure there are no blockages and that the required depth of the hole is met.

The number of explosives for the blast pattern is then calculated (Table 12) and the explosives then transported from the Explosive magazine bond to the blasting pattern with the assistance of the Police. The explosives to be used is the ANFO (ammonium nitrate/fuel oil) which is a bulk industrial explosive. For the 6'x7' blasting pattern at the quarry, a total of 24,750lbs ANFO of explosive is used. The powder factor used is 0.56 kg/ cubic meter.

Once the holes are loaded, it is covered with stemming (Rocklock) to complete charging. The HTD (millisecond connector) is then connected to the designated shot pattern. The detonator cord is then connected to the HTD then the blasting wire is connected to the battery to set off the blasting of the pattern in sequence. For the blasting, there is a 42 second delay between each blast row when detonated. The blast force is targeted mainly towards the "Free Face" (area into the mine) of the mine and the blasting footprint is ~100 ft in this direction. Due to the potential of "flyrock" (rock that is ejected from the blast site in a controlled explosion in mining operations) from the blast, the surrounding area will be evacuate during the blasting exercise. Before the detonation is initiated, a warning consisting of a Siren which is mounted on the crushing plant, is sounded to warn of the

impending blast. This siren is only turned off when the Blast foreman has given the greenlight that the blast was a success. Also, all entrances to the blast site are secured by the Guyana Police force unit prior to the blasting.

Once the blasting is completed, after 1 hour, the area is checked by the blasting foreman to confirm that there have been no misfires. Once the area has been cleared, it is handed over to the quarry foreman for mining. The material is then checked where the amount of Oversize (boulders >36”), fragments (<30”) and boulders (18”-36”) are noted. The oversized is then broken up by the Jackhammer but in cases where this cannot be done, these oversizes are usually blasted back during the next blasting session.

Table 12: Calculation of ANFO total Explosive pounds for 6’x7’ drill pattern

EERM ATLANA QUARRY	
ANFO EXPLOSIVE	
DEPTH OF HOLE	30 FT
LBS PER HOLE	165
TOTAL LBS OF EXPLOSIVE	**24,750**

13.3 GROUND AND SURFACE WATER MANAGEMENT

Ground water occurs at a shallow depth at the proposed EERM Atlana Quarry with parts of several un-named creeks within the quarrying concession and the Cuyuni river bordering the north. If significant ground water accumulates in an active pit, it may be pumped for use in processing and dust control. Ground water level and quality measurements will be recorded periodically during mine operations and within the proposed pit if ground water is encountered there. The Dozer and excavator will have to be utilized to establish both top level and quarry floor level drainage. Dykes and drains will be established on top of the quarry face and drains will be drilled and blasted around the quarry face and drains will be drilled and culvert to the Atlana Creek, a pump and sump may be necessary to facilitate the initial drainage of the quarry floor. Priority will be given to the maintenance of these drainage systems for a clean/ dewatered quarry. The mine water pond is proposed approximately 150m * 100m for the quarrying operation ~280m NW of the proposed quarry pit.

In the Environmental Management Plan (EMP), additional details are set out on parameters to be tested for surface runoff and ground water seepage.

14.0 REVENUE AND COST ESTIMATES

The estimated operating cost for the proposed mine is ~USD$19[8]/ton. The initial startup cost of the project has been estimated as follows;

ITEM - QUARRY		COST (GY$)
Plant, Machinery and Equipment		$816,837,718.00
Mine development expenses		$165,000,000.00
Building and civil works		$97,900,000.00
	TOTAL	**$1,079,737,718.00**
NET INITIAL WORKING CAPITAL		**$50,000,000.00**
PROJECT COST		**$1,129,737,718.00**

REVENUE

The base price for all categories of products to be exported from the EERM Quarry is projected at GY$9,660 per ton for aggregates and GY$6,300 per ton for Rip-Rap[9]. These products will be sold within country, mainly at Georgetown and Berbice.

Average selling price per ton of aggregates = **$9,960**

Revenue = **$9,960 x 550,000 tons = $5,313,000,000**

Average selling price per ton of rip-rap = **$6,300**

Revenue = **$6,300 x 25,000 tons = $15,500,000**

Profit / Loss: Revenue – Total Expenditure

$5,470,500,000,000 - $2,993,600,000[10] = $2,476,900,000 (Profit / Surplus)

OPERATING

Operating requirements have been derived from the projected Quarry project expenditures upon startup and allowances made for increased prices on some items.

[8] This is estimated from the costs of production from Teperu and St. Mary's Quarries
[9] These are the current market prices for aggregates and rip-rap within the local market
[10] Calculated from expected Admin costs, depreciation, taxes and operating costs, Table 6

Table 6: Projected Profit and Loss expenditure for EERM Quarry

		Year 1 ($ million)
Revenue	Gross Sales	5,470.50
less	Royalty ($25/t)	14.38
	Net Sales Revenue	5,456.13
Operating Costs	Mining Costs	1,975.00
	Processing Costs	275.00
	G&A costs	25.00
	Total cash operating costs	2,275.00
Net Cash Operating Margin		3,181.13
Capital Expenditure	Initial/expansion capital	50.00
	Sustaining & Closure	10.00
Depreciation		25.00
Net cash flow before tax		3,096.13
Taxation payable (20%)		619.23
Net cash flow after tax		**$2,476.90**

14.1 PROJECTED INCOME STATEMENT

Projected Profit and loss for Proposed EERM Quarry. Note that the table below does not deduct the initial mine investment of $1.13 billion dollars. Base on NPV @ 8% the mine will need 1 year to pay back on the investment before making a profit.

		Year 1 ($ million)	NPV @ 8% ($ million)	LOM (YR 1-5) ($ million)
Revenue	Gross Sales	5,470.50	4814.0	27,352.50
less	Royalty	14.38	12.7	71.88
	Net Sales Revenue	5,456.13	4801.4	27,280.63
Operating Costs	Mining Costs	1,975.00	1738.0	9,875.00
	Processing Costs	275.00	242.0	1,375.00
	G&A costs	25.00	21.5	125.00
	Total cash operating costs	2,275.00	2001.5	11,375.00
Net Cash Operating Margin		3,181.13	2799.9	15,905.63
Capital Expenditure	Initial/expansion capital	50.00	44.0	200.00
	Sustaining & Closure	10.00	8.8	50.00
Depreciation		25.00	22.0	150.00
Net cash flow before tax		3,096.13	2,725.09	15,505.63
Taxation payable (20%)		619.23	544.9	3,101.13
Net cash flow after tax		**$ 2,476.90**	**$2180.2**	**$ 12,404.50**

Rip-Rap	$6,300 per tonne
Aggregates	$9,960 per tonne

14.2 MACHINERY REQUIREMENTS;

A balance mix of imported and locally available machinery has been selected to maintain optimum level of productivity and efficiency for the quarry.

Machinery Details	Machinery Specification	Machinery No	Costing USD	Costing GYD	Total Cost USD	Total Cost GYD
Stationery Crusher	250 TPH 2STAGE CRUSHING& SCREENING PLANT	**1**	**848,234**	**176,432,755**	**$848,234**	**176,432,755**
Crusher Spars	SUPPLY OF SPARE PARTS FOR CRUSHING & SCREENING MACHINERY	**1**	**211,315**	**43,953,562**	**$211,315**	**43,953,562**
Weighing bridge	40 foot - 90 tonne scale (Installation) * 2 (Incl civil works and Installation charges)	**2**	**43,269**	**8,999,952**	**$86,538**	**17,999,904**
Excavators	SANY Excavator 335H. Operating Capacity 31.5 Ton Bucket Capacity 1.65 to 1.8 Cubic meter, Engine Power 212K/ 2000 RPM Model 6HK1.	**5**	**198,000**	**41,184,000**	**$990,000**	**205,920,000**
Dozer	CAT D6K2LGP	**1**	**142,680**	**29,677,440**	**$142,680**	**29,677,440**
Truck	SANY DUMP TRUCK SYZ324C-8W(R)Dump Truck Full load 55 Ton Gross Weight 16.2 Ton SANY DEUTZ power Engine, Fuel 300L	**8**	**96,000**	**19,968,000**	**$768,000**	**159,744,000**
Drilling Rig	Drilling Rig - Blasting Only	**1**	**140,879**	**29,302,790**	**$140,879**	**29,302,790**
Wheel Loader	SANY Wheel Loader SW 966K1. Operating weight 21.4 Ton Bucket Capacity 3.5 to 4.5 Cubic meter, Rated Load 6 Ton	**2**	**103,200**	**21,465,600**	**$206,400**	**42,931,200**
Road Grader	Caterpillar 140	**1**	**23,810**	**5,000,000**	**23,810**	**5,000,000**
Water Truck	Sino Truk Howo ZZ1	**1**	**21,429**	**4,500,000**	**21,429**	**4,500,001**

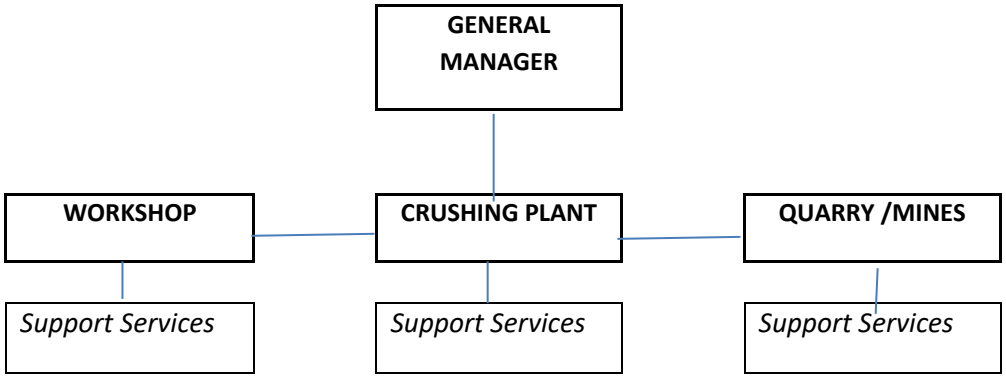
Off Road Pickup	2019 TOYOTA HILUX X W CAB	**1**	**30,120**	**6,264,960**	**$30,120**	**6,264,960**
Barges	1500 and 1000 tons	**2**	**38,095**	**8,000,000**	**38,095**	**8,000,000**
Lighting Tower	400W Height is 9 meters adjustable, rotate 360 degrees - Atlas COPCO	**2**	**31,730**	**6,599,923**	**$63,461**	**13,199,846**
Genset	912 KVA - Plant	**1**	**305,770**	**63,600,077**	**$305,770**	**63,600,077**
Genset	42 KVA - Office & Site	**1**	**21,923**	**4,559,942**	**$21,923**	**4,559,942**
Water Pump	MVM diesel engine 6 cylinder Turbo 180 HP with Bluewater pump	**1**	**27,650**	**5,751,240**	**$27,650**	**5,751,240**
Total			**$2,284,103**	**$475,260,242**	**$3,926,303**	**$816,837,718**

14.3 BUILDING AND INFRASTRUCTURE

	Detail of Building and Civil Works	
Description	**Covered Area sq ft**	**Cost GUY$**
Offices/Prefabricated Containers	2500	$8,000,000.00
Workshop/Bond	5000	$16,000,000.00
Residential Setup /Prefabricated Containers	4,500	$14,400,000.00
Haul Road	10000	$32,000,000.00
Wharf	5500	$27,500,000.00
Total	**22,000**	**$97,900,000.00**

14.4 PERSONNEL QUARRY

The operation is expected to be manned by a team of skilled, experienced, and motivated individuals. This team will be led by a General Manager.



The quarry is expected to have in its employment thirty-six (36) persons with the following designations:

Atlana Quarry Mine			
DESIGNATION	**TYPE**	**NUMBER**	**SALARIES ANNUAL**
Manager	Skilled	1	$ 4,800,000.00
Certified Blaster	Skilled	1	$ 4,200,000.00
Utility Operator	Skilled	2	$ 8,400,000.00
Truck Driver	Skilled	3	$ 9,000,000.00
Driller	Skilled	2	$ 7,200,000.00
Excavator Operator	Skilled	2	$ 7,680,000.00
CRUSHING PLANT			
Production Engineer	Skilled	1	$ 3,360,000.00
Crushing Plant Operator	Skilled	1	$ 2,880,000.00

MECHANICAL WORKSHOP/ POWERHOUSE				
Welder	Skilled	1	$	2,640,000.00
Serviceman	Semi-skilled	2	$	2,880,000.00
Security	Unskilled	1	$	1,440,000.00
Electrician	Skilled	1	$	2,400,000.00
Supervisor	Skilled	1	$	2,640,000.00
Driver	Semi-skilled	1	$	1,800,000.00
WHARF FACILITY (Waterfront / Jetty)				
Utility Operator	Skilled	1	$	4,200,000.00
Security Guard	Unskilled	1	$	1,440,000.00
Laborer	Unskilled	4	$	5,760,000.00
Jetty Foreman	Skilled	1	$	2,160,000.00
Launch Captain	Skilled	2	$	5,760,000.00
SUPPORT SERVICES				
Security	Unskilled	1	$	1,440,000.00
Domestic	Unskilled	1	$	1,200,000.00
Cook	Semi-Skilled	2	$	3,360,000.00
Medic/Safety Officer	Skilled	1	$	2,880,000.00
ADMINISTRATION				
Office Clerk	Unskilled	1	$	1,560,000.00
Stores Clerk	Unskilled	1	$	1,560,000.00

14.5 FUEL POWER AND LUBRICANT

Item	Liters/Kgs Consumption per annum	Price per Liter/Kg
Diesel	170,325	215
Lubricant oil	9,463	700
Hydraulic oil	7,570	1,400
Grease	1200	610

		Years				
		1	2	3	4	5
Capacity Utilization	100%	50%	60%	70%	80%	90%
Diesel	36,619,875	18,309,938	21,971,925	25,633,913	29,295,900	32,957,888
Lubricant oil	6,623,750	3,311,875	3,974,250	4,636,625	5,299,000	5,961,375
Hydraulic oil	10,598,000	5,299,000	6,358,800	7,418,600	8,478,400	9,538,200
Grease	732,000	366,000	439,200	512,400	585,600	658,800
		27,286,812.50	32,744,175.00	38,201,537.50	43,658,900.00	49,116,262.50
		27,286,812.50	36,018,592.50	45,841,845.00	56,756,570.00	68,762,767.50

Taken on capacity utilization and increased @ 10% per annum

15.0 ENVIRONMENTAL CONSIDERATIONS

Guyana is richly endowed with mineral resources such as gold, diamond, bauxite etc. However, in order to uncover these resources, one must disrupt the forest cover, which can adversely affect the natural environment. Economic activities such as mining will inevitably have an impact, but these can be minimized with use of appropriate mitigation strategies to reduce the impact on the forest and biodiversity. As such for the quarry mining operation, we are adhering to the following:

1. Minimize the clearance of the natural forest via drilling to identify the exact extent of the mining target areas that are within the viability criteria of the Mine.
2. Adopt progressive reclamation and replacement of topsoil cover to enhance natural revegetation.
3. Ensure efficient waste disposal and garbage.
4. Ensure all fires lit at camp sites are properly put out when not in use to safeguard against forest fires.

EKAA Earth Resources Management desires to conduct the Atlana quarry operations in an environmentally responsible manner and will address all pertinent issues to insure proper stewardship of public lands and preservation of wildlife. A separate environmental assessment will be completed to further address the following and other issues of environmental concern. Details of the environmental mitigation measures to be employed at the quarry will be provided in the Environmental Management Plan (EMP). The EMP will address potential impacts of the design, construction, operation and closure phases of the quarry.

Air Quality: Dust and diesel emissions are the main elements of air quality concern at the quarry. To limit dust formation during mining and transport of materials at the site, water will be periodically sprayed on roadways, process areas and accessible working faces. Dust suppressants will also be used as required. Appropriate speed limits will be enforced within the quarry and access road to limit fugitive dust, and spray bars will be installed at several points on crushing equipment to limit dust generation. Combustion emissions will result from the use of diesel and gasoline fueled equipment. Due to the small nature of the operation and the small number of heavy equipment to be used very minor changes in air quality resulting from equipment emissions is anticipated. Fueled equipment will be maintained according to the manufacturer's manual and kept in good working order.

Storm Water Runoff: Surface water from disturbed surfaces of industrial sites can cause pollution down gradient from areas of disturbance. The most likely form of down-gradient pollution is siltation caused as fine materials washed away from active mine operations are

deposited in areas where such deposition is harmful to plants and wildlife. Because much storm water runoff is or will be captured by internal drainages associated with quarries, large amounts of storm water will not flow from the area of mining operations. Untreated discharge can result in increase turbidity in the receiving water bodies. Dewatering of the quarry of accumulated water resulting from surface runoff or ground water infiltration will require pumping excess water to the Cuyuni River and may potentially impact surface water turbidity. Surface run-off will be directed to a settling pond. Excess water from the settling pond will be discharged to the Cuyuni River through site drains to prevent overfilling and overtopping. Discharge from the settling pond under these circumstances will be monitored to ensure the compliance with water quality standards established by the EPA. Design details and the location of settlement pond will be determined following geotechnical investigations as well as topographic, hydrological and structural surveys at the project site.

Ground Water: Because EZAA Earth Resources Management will use only clean water and processes inert materials in their operations, it will not release pollutants into the ground-water table. Major fuel storage would be secured properly. Fuel, lubricants, coolant, waste oil, waste chemicals and hazardous materials will be stored in suitable clearly marked containers or surface tanks within impervious clay and or concrete bund walls to contain spillage. The storage areas will be completely covered to prevent any entry of rain and located away from operating areas, waterways and drainage lines and areas prone to flooding. The fuel and hazardous materials storage areas will be constructed with a containment capacity of 110% of the largest container stored. Discharges from the fuel storage and workshop areas will be directed to an oil/water separator before discharge to the environment.

Fire Safety and General Safety: Approved fire extinguishers will be located on all pieces of mobile equipment and in process control rooms. Heavy equipment and water will be available on site to assist in firefighting. Police and emergency medical services are readily available. Cellular/Satellite telephone service is available at the Atlana quarry for emergency and other communications. EKAA Earth Resources Management employees will be trained in proper emergency response, incident reporting and general health and safety. An Emergency Response Plan will be prepared as a component plan of the Environmental Management Plan (EMP) for the project. The emergency response plan will outline the measures to respond to possible emergencies such as the unintended release of hazardous materials, fire and accidents at the project site. EKAA Earth Resources Management will identify and have trained an emergency response team and nominate an emergency response coordinator. The coordinator will have the authority to commit resources necessary to respond to emergencies. The Company will also ensure that all employees are trained in emergency response scenarios.

EERM will establish and maintain an emergency response outfit, which will be located at a strategic location within the Mine Site and equipped with communication equipment as well as equipment to respond to potential emergencies. The outfit will have the following equipment readily available at their disposal for emergency response:

- Designated evacuation vehicle; Pickup. Transport vehicles will be provided with emergency communication equipment.
- Earth Moving Equipment.
- Pumps.
- Earthen gravel; sand, clay.
- Booms and absorbents.

In the event of an emergency, an emergency alarm will be raised to alert all persons likely to be affected and to summon the emergency coordinator and crew. All personnel within the affected area will be evacuated to an established emergency assembly point. Emergency assembly areas will be clearly identified and communicated to all employees and visitors of the mine site.
In the event of a spill, the spill response and clean up procedures will be initiated. If there is a release of fuel oil or other hazardous material all persons living downstream and downwind of the release will be notified. Spills will be contained by deploying relevant equipment such as booms in water and earthen material on land. In the event of a fire, water and/or other fire suppressants shall be used. In the event of an accident, a first aider will render first aid care. The emergency response coordinator will make contact with the Bartica Public Hospital and inform them of the estimated time of arrival of the injured person. Details of the injuries sustained, and the state of the injured will also be communicated. The Coordinator will complete an accident report to be provided to the hospital on arrival of the injured.

Emergency contact numbers/radio frequencies/satellite phone numbers/etc and for identified medical personnel, hospital, and police will be clearly posted at the mine and camp. An accident report will be prepared describing the cause and nature of the accident, and the remedial actions taken to prevent the reoccurrence of the accident. This report will be forward to the relevant regulatory agencies on request.

For effective implementation of the EMP and for a safe and healthy work environment, training will be provided to all workers. A site induction will be conducted for all new workers. This policy will ensure that employees become familiar with potential hazards and safety precautionary measures in a quarry environment. The training program will be coordinated and implemented by the Environmental Manager of the Company.

Hazardous Materials: Diesel fuel and lubricants will be the major hazardous materials present at the quarry site. Care will be taken so that equipment lubricants, fuels and other industrial liquids

do not drip or flow onto natural surfaces. Waste oil, other related fluids, filters, oily rags, etc., will be collected and disposed of properly. Large metal refuse containers will be positioned at the site for collection of hazardous waste materials.

Hazardous Waste: No hazardous waste will be produced at the proposed Atlana quarry. Any waste rock products will consist chiefly of biotite and hornblende.

Mine Safety: The proposed Atlana quarry will be inspected periodically and will operate under applicable EPA and Guyana safety and health regulations. All employees will receive initial training before commencing work and annual refresher safety training.

Impacts from blasting will be mitigated by:

- Ensuring prescribed procedures for blasting are followed, which include (1) assessing the type of rock formation; (2) determining the depth of drill holes and (3) determining the Frequency of Blasting and Type of Explosives used.
- Careful design of the blast sequence and ensuring detonation is designed using appropriate delay intervals for charge ignition to avoid detonation of large unconfined charges and to reduce air-blast and vibration effects. The use of electronic detonators will also be employed to reduce vibrations. The number of explosives used in the blast will be carefully administered to reduce fly rock.
- Ensuring that blast safe zones are established during blasting.
- Informing the residents of Atlana of blasting times in advance.
- Strict procedures for transport, storage and handling of explosive and blasting will be implemented in accordance with Mining regulations and the GGMC Code of Practice for Quarrying.
- A Certified Blaster will be recruited to supervise the blasting exercise, as required by law.
- Blasting will be done according to the Blasting Plan approved by the GGMC.

Blasting: Blasting will periodically be required at the Atlana quarry. All blasting will be conducted by qualified individuals in compliance with Guyana Laws. A model blasting plan for the project is presented in the section Drilling and Blasting techniques. The closest village (Batavia) lies approximately 1.2km NE and East of the project area.

Blasting will occur only during workdays during daylight working hours such as to minimize impact to surrounding area. Noise limiting methodologies will also be used to lessen noise impact.

Vibration and Noise: In addition to blasting, other mine operations including mechanical excavation, crushing and processing can produce significant noise and vibration. Best available practices of noise and vibration reduction will be utilized at the quarry and noise monitoring will be conducted during initial mine operations. The project's operations will be associated with noise and vibration generating activities – excavation with machinery, drilling and blasting of rock, transport of boulders within the site and loading of barges are the critical noise generating activities. Excessive noise can affect workers and give rise to hearing loss, sleep disturbance and can also affect wildlife within the project area.

Noise will be mitigated by installing sound suppression equipment on vehicles, e.g., mufflers and ensuring vehicles are maintained according to the manufacturer's manual and are kept in good working order. Operators will be equipped with PPEs such as air plugs or earmuffs. Generators will be installed with sound proofing or at a safe distance away and downwind from the living quarters. Blasting will be implemented in accordance with Mining regulations and the GGMC Code of Practice for Quarrying. Careful design of the blast sequence and the use of electronic detonators will be employed to reduce vibrations. Quarry operations will comply with the decibel limits outlined in the GNBS Noise Emission Standard.

General Housekeeping: Operational litter will be collected in appropriate containers and removed as required from the site. No waste will be buried on site. A septic system on the land will be utilized

Waste and Ablution Facilities: Project activities is expected to produce both liquid and solid waste which, if not properly stored and or disposed can lead to pollution of receiving water bodies or accumulate on site creating an unhygienic and un-aesthetic environment. Improper management of domestic waste and sewage can pollute land and water resources in the area, resulting in health impacts on site.

Waste generated will be collected, segregated, stored, and transported to an on-site landfill constructed in accordance with the EPA Guidelines for establishing landfills. Domestic wastewater will be directed to a soak-away filter treatment system prior to discharge to the Cuyuni River. Discharges to the river will be in accordance with the EPA domestic wastewater discharge limits. All sewage will be directed to septic tanks with filter bed treatment installed.

Table 13: Estimated Reclamation costs for EERM Atlana Quarry

Area	Hectares (approx)	Reclaim to Seed @ $4,000/ha	Trees	Sapling and Labour	Cumulative Total
Camp & Common Areas	1.2	$960,000	600	$60,000	$1,020,000
Year 1 Disturbance	6	$4,800,000	3000	$300,000	$6,120,000
Year 2 Disturbance	0.6	$480,000	300	$30,000	$6,630,000
Year 3 Disturbance	0.6	$480,000	300	$30,000	$7,140,000
Year 4 Disturbance	0.8	$640,000	400	$40,000	$7,820,000
Year 5 Disturbance	0.6	$480,000	300	$30,000	$8,330,000
Equipment Removal				$50,000	$8,380,000
15% Contingency				$1,257,000	$9,637,000

15.1 Existing Land Use Pattern

There is one quarry license located at the eastern boundary of the proposed EERM Atlana Quarry which is the Queensway Flatrock Quarry License. There is river access for tugs and barges using the Cuyuni River all year round. Road and river access from the site is also readily available to take the product (stone aggregates) to market (Cuyuni and Essequibo rivers, Bartica/Linden roads). The local markets targeted are roads and housing construction industry. Infrastructure development in Guyana has risen significantly due to funds from oil production which has seen the government implementing a 10-year infrastructure development plan. The current mining venture is expected to deforest about 350 acres which will be mined over the proposed 5-year period; approximately 68% (748 acres) of the prospect area will remain intact. The consequent loss of primary vegetation is not expected to have significant long- term environmental impact in so far as the organic topsoil will be stripped, stockpiled and proposed to be reused in a systematic reclamation effort. This will enhance natural reforestation which is known to occur in many tropical forests.

15.2 Alternative Land Use

There are limited competitive viable alternative uses of mineralized lands in and around the project site. While agriculture is a plausible possibility, farm to market transportation cost can increase the cost for the produce, making it uncompetitive in Georgetown. The demand for agricultural produce within the Batavia community is not significant and is driven by mining activities within the district, mainly west of the proposed Quarry. Given its significant contribution to Guyana's GDP, mining is considered the most viable land use activity for mineralized areas.

15.3 Occupational Health and Safety

Workers employed at the quarry will be housed in elevated wooden buildings with zinc roof. The buildings will be constructed to accommodation forty persons, all of the building will be supplied with potable water via pipelines, which will convey water from elevated storage tanks. The storage tanks will be supplied from an inground concrete reservoir which will be constructed to harness rainwater from the roofs of the buildings. The water supply will be equipped with approved filtration system to maintain a pure source of water for cooking and drinking.

The accommodation will have toilet and bath units within the main accommodation building. A laundry room will be separated, washing machines will be available for use by employees and laundry detergents will be supplied to employees at recovery cost. The accommodation building will be screened with mosquito mesh, as malaria is one of the potential health issues. All workers will be issues with medicated nets. Fogging will be done weekly to control mosquitos and other insects.

A prescribed medical kit will be available on site at all times. In the event of an illness, transportation will be provided to the Linden Hospital to seek medical attention.
All employees will be supplied with the below listed items.

- Treated mosquito net
- Safety Boots
- Safety Helmet
- Safety Gloves
- Gloves
- Dust mask
- Ear mufflers
- Long boots

All water storage containers at the camp site will be covered. Garbage will be placed in a pit, excavated for biodegradable waste.

Meals will be supplied to employees three times daily. The cooking staff will be guided by a health and nutrition specialist on the preparation of a balance diet. The mine will supply a balance diet daily.

16.0 MARKET STUDIES AND CONTRACTS

Summary of Information

The information contained in this report has been obtained from independent vendors and/or estimated from first principles based on the author experience in Guyana.

Market Studies

Stone Aggregates is the main product to be produced by the EERM Atlana Quarry. Final products will initially consist of 1st Grade, Gabions, ¾", ½" and Siftings and additional sizes added as the market dictates.

1st Grade will be produced mainly for road construction and will target the building of the road infrastructure in Regions 3, 4 and 5. It is expected that ~10% of the production will be 1st Grade.

Gabions will be produced also for road construction mainly for revetment, embankments, canals and dams. It is expected that ~15% of the production will be Gabions

¾" will be produced for road construction mainly as a base for roads targeting Regions 5, 3 & 4 roads. It is expected that 50% of the production will be ¾".

½" and Siftings will be produced for concrete and building construction and will target the local housing market. It is expected that ~10% of the production will be ½" and Siftings.

All stone aggregates produced will be sold locally within the Guyana Market.

17.0 INTERPRETATION AND CONCLUSIONS

Geology and Resources and Mining

Drilling has identified an extensive diorite intrusive within the permit. The resource estimation identified a measured and indicated resource of **~152.7 million** tons of diorite with the mining pit (PIT) proposed for phase 1, an indicated resource of **~13.7 million** tons of diorite with an estimated investment cost of**~ USD$5,379,700 (GY$1,129,737,000)** to bring the quarry into production with a production rate of **~575,000 tons per year @ ~USD$19.00 per ton,** operating cost.

Project Implementation

The Project implementation is expected to start in 1st Quarter, 2023 with arrival of mine plant and equipment along with the granting of the Mining license.

Market

The produced stone aggregates will be sold mainly within the local Guyana Market and will be sold locally within the construction industry, targeting the building of road infrastructure in Bartica, Georgetown, West coast and Regions 3, 4 & 5 including housing construction and cement production.

18.0 STATEMENT OF QUALIFICATIONS

The principal author of this report is Bjorn Jeune BSc who is an Exploration Geologist with over 20 years' experience in prospecting and exploration of precious minerals, base metals, stone aggregates, bauxite and mine development and currently works as a consultant for a number of local and foreign exploration and mining companies in Guyana. He has participated in completing NI-43-101 reports for companies listed on the Toronto Stock Exchange and contributed to the feasibility, resource evaluation and mine planning for Sacre-Coeur's Million Mtn Gold project, Gran Colombia Sona Hill and Toroparu Deposits and First Bauxite Bonasika/Sand Hills Project.

He has previously worked within the regional area visiting the Teperu, St. Mary, Moraballi and Monkey Jump Quarries.

APPENDIX I: National Production, Stone Aggregates 2014-2019

Year	National Production	St. Mary` s and BK's Quarry Production	% for Country
2014	840,074	467,303	56%
2015	373,162	277,524	74%
2016	412,177	291,351	71%
2017	448,161	325,500	73%
2018	637,708	457,303	72%
2019		615,578	

APPENDIX II: Closure Plan
1.0 Introduction.

The sole precedent for closure of a mine site operation in Guyana is the closure of Omai Gold Mines (OGML, 2007). This closure plan partly draws from this closure plan since there are some similarities namely the proposed quarrying pit(s) and is conceptual in nature and done in accordance with the Environmental Management Code of Practice to ensure that the site is returned as closely as possible to its pre-utilization state.

1.1 Project Components Requiring Closure.

The EERM Quarry Mine will include the following components:

- Open pit mine.
- Building Infrastructure, namely Admin, Storage bond, maintenance, and housing accommodations.
- Mobile processing equipment
- Overburden Stockpiles
- Access Road

1.2 Closure Plan – Ecological and Environmental Goals. The overall intent of the closure plan is to achieve project objectives for restoring the site and aquatic environment to a high ecological value. The facilities will be progressively closed over the duration of the mine site operations. Progressive closure will be undertaken in a manner to not pose challenges to the day-to-day operations of the site. Final closure of the mine site will be undertaken after it has been determined that viable stone aggregates material no longer exist at EERM Atlana Quarry.

The conceptual closure is intended to ensure the "return to nature" of the mine site. At the conclusion of the closure process, no buildings or supporting infrastructure would remain at the project location. The area will be fully replaced by a sustainable and productive ecological system. Spoil piles, stockpiles, borrow areas etc. would be vegetated with general grass as well as emerging forest (primarily early stages in rainforest succession are expected to dominate the period immediately following closure). The site will be monitored for success of the Closure Plan. A few routes will be left for access to points of interest for the monitoring program. These routes will be closed after successful reclamation.

The objectives of the closure plan are to:

- Prevent, reduce or mitigate the adverse environmental effects associated with the Project;
- Provide for the reclamation of all affected sites and landscapes to a stable and safe condition;
- Provide for the return of all affected ecosystems to healthy and sustainable functioning;
- Reduce the need for long-term monitoring and maintenance and instituting progressive reclamation;
- Provide for long-term monitoring and maintenance of the sites affected by the Project as required;
- Provide for mine closure using the most current available proven technologies in a manner consistent with sustainable development.

Closure will result in the establishment of conditions that support public safety through physical stability (Physical Stability); it will encourage productive end land use by promotion of revegetation and promote conditions for biological stability (Biological Stability); and will ensure that mechanisms are in place to protect water resources and the receiving environment, thereby providing chemical stability (Chemical Stability). Performance standards related to physical, biological and chemical stability would function as measures of accomplishment of the closure objectives. The Project performance standards are as follows:

- Physical Stability – Preservation of protective safety measures (in a state in which the measures can be effective) throughout the post-closure monitoring period, once there has been no external human influence.
- Biological Stability – Effective revegetation and restoration evidenced by vegetative proliferation on 70% of the site areas intended for revegetation by the end of the post-closure monitoring period.

- Chemical Stability – Water quality similar or improved when compared with historic data at the end of the post-closure monitoring period, once there has been no human or related influence.

The closure activities incorporate strategies to protect surface water and groundwater; prevent erosion and control discharge from reclaimed mine facilities; and protect wildlife, as outlined below.

The storm-water management practices will provide systems that minimize environmental damage by:

- Maximizing retention time within the system by use of detention ponds
- Minimizing increases in surface runoff flow and volume
- Channeling and diverting runoff
- Use of bench terraces

Soil conservation techniques to be employed to ensure closure success include

- Modifying the soil slope
- Maintaining and establishing natural vegetative cover
- Securing favorable soil conditions to facilitate vegetative growth

Wildlife conservation techniques will include:

- Providing food resources through establishment of vegetation
- Providing habitats for wildlife through encouragement of vegetative proliferation, as well as creation of aquatic habitats
- Providing surface water and soils of good quality for wildlife consumption and use.

1.3 Closure Plan: Reclamation Concepts.

The Reclamation of the Quarry Mine site will be coordinated by the Guyana Geology and Mines Commission. The basic reclamation concept of the Closure Plan is the “return to nature” of the mine site. At the conclusion of the closure process, no buildings or supporting infrastructure or facilities would remain at the site. The areas will be fully replaced by a sustainable environment comprised of productive and diverse lake and pond ecosystems. Spoil piles, stockpiles, borrow areas etc. would be vegetated with general sustainable grass as well as emerging forest (primarily early stages in rainforest succession are expected to dominate the period immediately following closure).

Certain facilities will be progressively closed over the duration of the mine site operations. Progressive closure will reduce the costs of reclamation since closure will be integrated with the production operations. In addition, progressive closure will result in the development of expertise on the most appropriate reclamation methods. Progressive closure will be undertaken, however without posing impediments to day-to-day operations of the site.

Final closure of the mine site will be undertaken once treatment of site waters is no longer required, and the operator has made a determination that no further mining of the Quarry is warranted.

Final closure of the facility will occur in two stages and will be coordinated with the Guyana Geology & Mines Commission. The first stage will entail removal of all fuel, chemicals, waste hydrocarbon products, and any potentially hazardous materials from the site.

During the second stage of the final closure, all equipment, machinery, and storage tanks will be removed for reuse or recycle. Where such uses are not practical, any remaining such materials will be disposed of at a suitable long-term waste disposal area on-site. All structures will be removed and/or be demolished. Structures that are suitable for reuse or recycling will be salvaged. Structures not suitable for use will be disposed of at the waste area. The water management ponds will be closed, and all disturbed areas will be reclaimed, with the exception of roads needed for monitoring access or as may be requested by GGMC.

After the major closure activities are complete, a monitoring program will be implemented if required which could include the site water quality monitoring.

The site will be monitored for success of the revegetation component of the closure plan. A few routes will be left open for access to points of interest for the monitoring program. These routes will be closed after successful reclamation unless GGMC may otherwise direct.

1.4 Closure Plan: Specific Reclamation Areas and Tasks

The reclamation work will focus on the following aspects of the overall closure plan.

1.4.1 Water Management Strategy

Final closure designs will be developed for the project and reevaluated at final closure to include such surface water controls as are necessary to prevent erosion of the facilities that remain at closure. Future geochemistry studies will predict the quality of discharges at closure and recommend management strategies if any discharges are problematic.

It is anticipated that the established quarry pit(s) will be provided with a spillway to enable discharge to surface water features around the pit(s). The discharge spillway will be sloped and will be covered with geotextile and rock waste to minimize the possibility of erosion. All power and water line will be disconnected and will be removed from the site.

It is also anticipated that the water management ponds will be breached to reduce the pond to one-half of its designed height and a spillway will link the pond to nearby surface water features. The spillway will be covered with geotextile and rip rap to minimize the possibility of erosion.

1.4.2 Mining Pits

At closure, most of the pit walls will be reduced to a safe slope. Where feasible, upper portions of pit walls will be ripped from above and pushed into the pit. Where necessary, stockpiled overburden and processing water will also be placed against the high wall. Any loose high wall or fill material will be compacted to a safe, stable slope significantly less than the angle of repose for unconsolidated materials. Final pit slopes are anticipated to be 2.5:1 or less for most areas. Where high walls cannot be collapsed from above, those portions of the high wall remaining above backfill will be scaled from within the partially refilled pit or otherwise made safe and stable.

Barriers will be constructed around the perimeter of the pit for safety. A perimeter berm and fence will be placed around the open pit, and the earthen berm will be revegetated. The berm will be to prevent vehicles from entering the pit except at a designated, locked access point. The fence will be used to prevent unauthorized access. It is assumed that any future pit lake will not require water quality management activities; however additional assessment will be required to predict future pit lake conditions and the need for post-closure treatment or management.

1.4.3 Overburden (Spoil pile) Storage Areas

A containment berm will be constructed around the perimeter of each spoil pile to control erosion and the migration of solids. The spoil pile will be graded to blend with the natural topography. Soil will then be applied over the spoil piles and vegetated islands will be planted and observed. If the Islands indicate that the soils are fertile to develop a diverse community of plants, no additional action will be taken, and the vegetation will be allowed to naturally spread. If observations of the Island indicate very little development and spreading of vegetation, seedlings from a nursery plot at the site will be transplanted into the spoil pile.

1.4.4 Processing Plant and Facilities

All processing plant and related facilities will be dismantled or demolished. Concrete slabs and footings will be broken up to allow for infiltration or will be placed into open facilities such as ponds. Power and water lines will be disconnected and will be removed from the site. Useful major equipment and material will be salvaged and reused or sold to third parties. Foundations will be removed, and excavated areas will be filled with native topsoil to restore naturally sloping topography, where feasible. Facility sites will be graded to blend in with existing topography, and compacted areas will be ripped and the whole area will be covered with topsoil and revegetated. All topsoil areas will be regraded and revegetated. Covers will be installed using saprolite available at site.

Several roads will remain to provide access to the Property for closure and post-closure monitoring. Internal roads will be leveled and graded to facilitate vegetation growth and re-establish drainage. All exploration roads at the mine site will be reclaimed in a similar manner to

haul and access roads. This will include all areas outside the active mining area.

1.4.5 Closure Monitoring

It is anticipated that surface water and groundwater quality will be monitored after closure for evidence of environmental impacts. Water samples will be collected annually to establish water quality trends. Physical inspections will be conducted to monitor the physical stability of remaining facilities and the condition of the closure covers and revegetation. It is anticipated that physical inspections will take place quarterly. Environmental monitoring is assumed to continue for five years, or until non-hazardous conditions are achieved for any discharge from the remaining facilities and the groundwater and surface water quality meets applicable regulatory standards. Monitoring records will be maintained by the mine operator.

1.4.6 Reclamation and Closure Cost Estimate

An allowance of USD$150,000 for the final cost of reclamation and closure of the Property has been included in the cash flow projection for the project.

1.4.7 Conclusions and Recommendations

Closed facilities will be inspected, and annual reports provided to evaluate the success of progressive reclamation. Reclamation monitoring will be coordinated with the EPA, GGMC and GFC. Reclamation sources will be evaluated both in terms of vegetation and erosion. Monitoring would be modified to address progressive reclamation as it proceeds. If it is determined that artificial seeding (re-vegetation) of reclaimed areas would be cost efficient, a seed mixture approved by EPA/GGMC will be applied. The seed mixture would likely attempt to duplicate the area's natural vegetation.

In summary, this conceptual closure plan will lead to the re-establishment of ecological processes that will allow for the development of healthy habitats on areas previously disturbed by mining activities.

1.4.8 Summary of Closure strategy and performance goals

Project Component	Issues	Closure Action	Performance Goals
Quarry	**Safety**	Installation of fence to restrict unauthorized access.	Prevention of unwarranted accidents
		Posting of signs to indicate hazardous areas.	
	Open Cast Pit	Progressive reclamation	Reemergence of vegetation and habitats
		Surface Profiling, and effective drainage	

	Pit wall stability	Maintaining final pit wall slope below 55 degrees	Stable pit wall
	Visual impact	Configure disturbed areas to blend in with surrounding landscape.	Obscure physical alteration to site
		Replace Organic cover to enhance re-vegetation.	
	Loss of forest cover	Reclamation and surface water management to enhance the regeneration of natural forest and habitats.	Effective and continuous rejuvenation of natural conditions
	Water quality	Mitigating mobilization of soil via appropriate surface profiling	Mitigate erosion and suspended solids during periods of high precipitation.
	Dust Generation	Reclamation and organic cover replacement to accelerate re- vegetation	Suppress dust mobilization
	Overburden Dumps	Runoff and associated suspension of solids	Reclaiming open cast with 100% of overburden
			Mitigating mobilization of solids
Dump Sites	**Solid waste**	Backfilling of all dump sites as previously prescribed, profiling and placement of organic cover to enhance rapid forest regeneration.	Eliminating visual evidence of dump site
General Infrastructure		Demolition and removal of all buildings and plant infrastructure not negotiated for takeover by government or other alternative land use	**Nil**
		Post closure care and maintenance	