AILIAI AGGREGATES INC
QUARRY PROJECT
PROJECT SUMMARY

KAMAKABRA, Potaro Mining District

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INTRODUTION

This Kamakabra Quarry Project is being designed to initially produce 920,000 tons of aggregate per annum with emphasis being placed on meeting the demands for aggregates in the Berbice area. Direct employment at the quarry will be 80 personnel while auxiliary employment required for transporting aggregates will be approximately 28 persons. The aggregates from the quarry will be transported via truck to various locations along the Linden- Georgetown corridor, however the primary target area is the Berbice sub-regions. To achieve this goal AILIAI Aggregates Inc intends to truck aggregates 29 km to Kwakwani, then utilize barges on the Berbice River to supply aggregates to the east and west banks of the Berbice River. The core objective of this project is to conduct mining operations including prospecting, exploring, development, drilling, blasting, and crushing on-site to supply these products to the local market.

Quarrying is interconnected with several other industries and economic sectors such as transportation, construction, and environmental management. The proposed project site is rich in dolerite, diorite, gabbro, and related metabasic rocks. This development will generate significant positive impacts for both the Government and GGMC through government taxes, fees, and duties. Additionally, this project will contribute significantly to the country's economic growth by generating revenue, creating job opportunities, and supplying the materials necessary for the construction industry. Primary beneficiaries will include the local workforce and businesses associated with quarrying operations especially in the once vibrant mining villages of Ituni and Kwakwani. Economic activities that will directly benefit these two communities will include direct employment at the quarry and secondary employment associated with the road and river and road transport of aggregates.

The potential for quarries in this area is being recognized and developed in light of the upcoming construction of the Berbice River Bridge and port facilities at Palmyra along with continued construction demands. Existing quarries situated in the Mazaruni area, around Bartica, have primarily supplied the local market in and around Georgetown via river routes. However, due to operational limitations and lack of expansion, these and other local operations have struggled to meet the growing local demand for quarry materials. From 2018 to 2020, the GGMC reported an average of 180,000 – 210,000 metric tons of aggregate being imported to meet market demands. A tentative market survey revealed that gross local production of quarry aggregates rose from

448,166 tons in 2017 to approximately 971,000 tons in 2021; representing an increase in demand of 116 % during the mentioned period. Further increases were seen in 2022 and 2023 with production records showing 1,507,402 and 1,851,132 tons respectively being produced locally.

PHYSIOGRAPHY, LOCATION AND ACCESS

The project is located in Administrative Region #10: Upper Demerara – Upper Berbice. C-1095/MP/00 is located on Stocksheet 45 NW, in the Potaro Mining District, central Guyana. The area is on the right bank of the Demerara River, approximately 65 km south of Linden and 6 km south-east of Ituni.

The project area is located in the Amazon rainforest of Guyana and bracketed on all sides by forested areas. The location of the project site is shown in Figure 1 below.

Figure 1: Location and access map for Kamakabra Quarry Project.

PROPERTY DESRIPTION

The tract of state land located in the Potaro Mining District No. 2 shown on Terra Surveys Map 45NW at a scale of 1:50,000 with reference point ‘X’ located at the confluence of the Kamakabra River and the Upper Haimarakabra Creek with geographical coordinates longitude 58018’29.38”W and latitude 5027’13.832”N

Thence at a true bearing of 159.70 for a distance of 1 mile 918.688 yards to the point of commencement.

Point A located at geographical coordinated of longitude 58018’0.403”W and latitude 5025’58.963”N, thence at a true bearing 90.340, for a distance of approximately 1 mile 1127.27 yards to point B, located with geographical coordinates of longitude 58016’34.543”W and latitude 5025’59.452”N, thence at a true bearing 179.770, for a distance of approximately 1 mile 241.858 yards to point C, located at geographical coordinated of longitude 58016’34.304”W and latitude 5025’0.188”N, thence at a true bearing 269.870, for a distance of approximately 1 mile 1122.1 yards to point D, located at geographical coordinated of longitude 58018’0.007”W and latitude 5025’0.001”N, thence at a true bearing 359.620, for a distance of approximately 1 mile 265.477 yards to point A.

Thus, enclosing an area of approximately 1200 acres, save and except all lands lawfully held or occupied.

The Property is surrounded by mining permits for gold mining on all sides, however there is no active mining operations within the area.

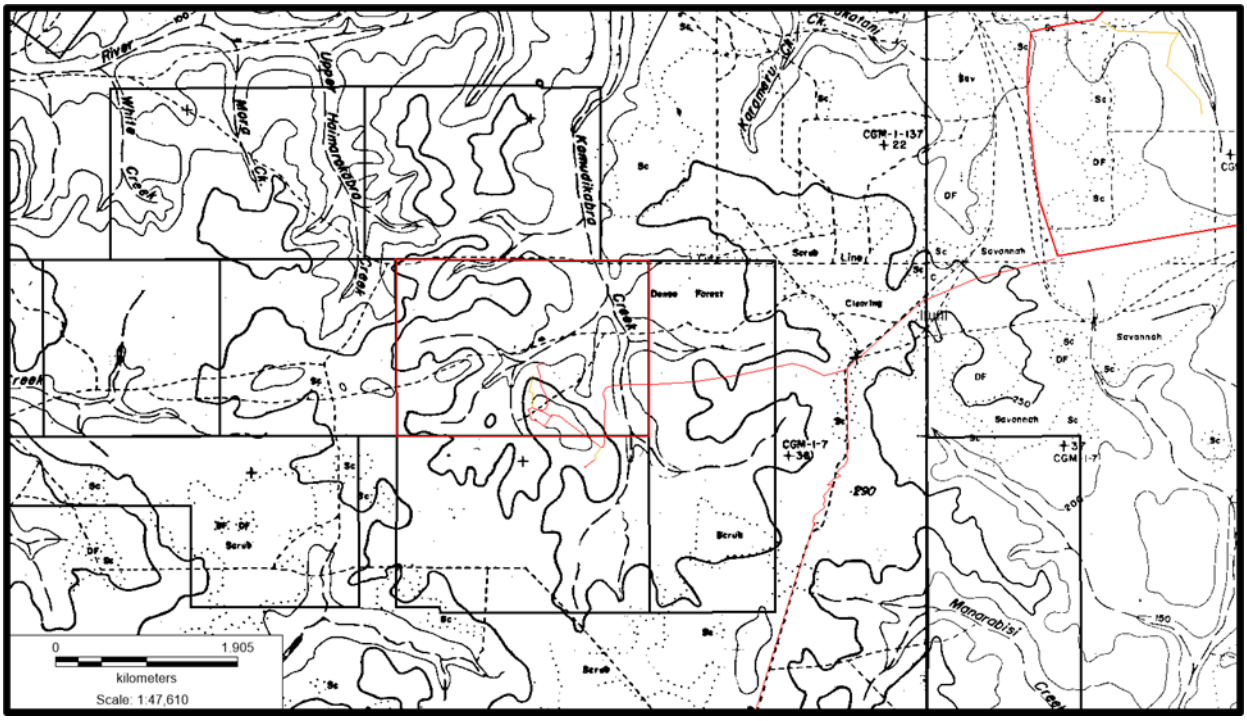

Figure 2: Property Status Map

GEOLOGY

The area is located in Trans-Amazonian Tectonothermal province in the Guiana Shield, part of the Amazonian Craton.

The Trans-Amazonian Tectonothermal province is a granitoid-greenstone terrane between

2.25 and 2.0 Ga in age (Gibbs and Olszewski, 1982; Cox et al., 1993; Santos et al. 2000) whose structural trends broadly parallels the Atlantic coast from Venezuela, through the Guianas to Amapa state in Brazil.

In Guyana, the region's rocks, collectively known as the Barama-Mazaruni Supergroup, are Paleoproterozoic in age and comprise an east-west trending series of mafic through felsic volcanic flows with intercalated clastic sediments (Gibbs, 1980; Gibbs and Barron, 1993). The Barama-Mazaruni Supergroup sequences formed through orogenic collision events, which developed due to juvenile plate tectonic processes (Gibbs and Barron, 1993).

These strata were deformed by the Trans-Amazonian Tectonothermal Episode (2.1-2.0 Ga). They were subsequently intruded by granite intrusions known as the Younger Granite Group, which

probably were emplaced coevally with a regional sub-greenschist facies metamorphic event (Williams et al., 1967).

Mafic dykes belonging to the Younger Basic Group or the Avanavero Suite (1.78 Ga) cut the metamorphosed rocks.

The Bartica Assemblage in northern Guyana consists of various ortho-and paragneisses and amphibolites, generally metamorphosed in the almandine facies (Gibbs and Barron, 1993). The development of hypersthenes in some Bartica Assemblage bands suggests that these may have reached the granulite facies, possibly reflecting an original dried composition (Cannon, 1964). The northern Guyana metallogenic Province, which includes Barama-Mazaruni Supergroup, is the principal metallogenic province of Guyana.

Local Geology

Four distinct lithological units are found within the area (Figure 3). The oldest unit is the BMS meta-basic rocks. Then the Bartica Gneiss complex with ages of 1.9 Ga – 1.8 Ga, then the pluton was emplaced (younger granites) approximately 1.7 Ga – 1.6 Ga ago. The Avanavero suite then intruded the Bartica gneiss complex.

Avanavero Suite

Large Igneous Province or LIPs are usually made up of granitic plutons, dykes, and sills, mostly mafic, ultramafic, and gabbroic intrusions. They are primarily melanocratic rocks ranging from a fine grain matrix to a coarse grain matrix.

Younger Granites rocks.

Granodiorite is an intrusive igneous rock that has phaneritic textured. The grain sizes are visible to the naked eye. Granodiorite formation is slow cooling crystallization below Earth’s surface. It is similar to granite and diorite, but it has more plagioclase feldspar than orthoclase feldspar. It appears to be a small pluton intrusion with coarse grain biotite.

Gneiss Metamorphic rocks.

In that area, distinct gneisses are present but occur in narrow zones within a belt of syn-tectonic granites with amphibolitic xenoliths and amphibolite slivers.

Meta Basic rocks.

Meta-basalts, dolerites and meta-gabbros occur in several parts of the field area, usually in the areas with higher laterite capped hills. One large area dominantly composed of meta-gabbro is thought to be part of a slightly younger unit.

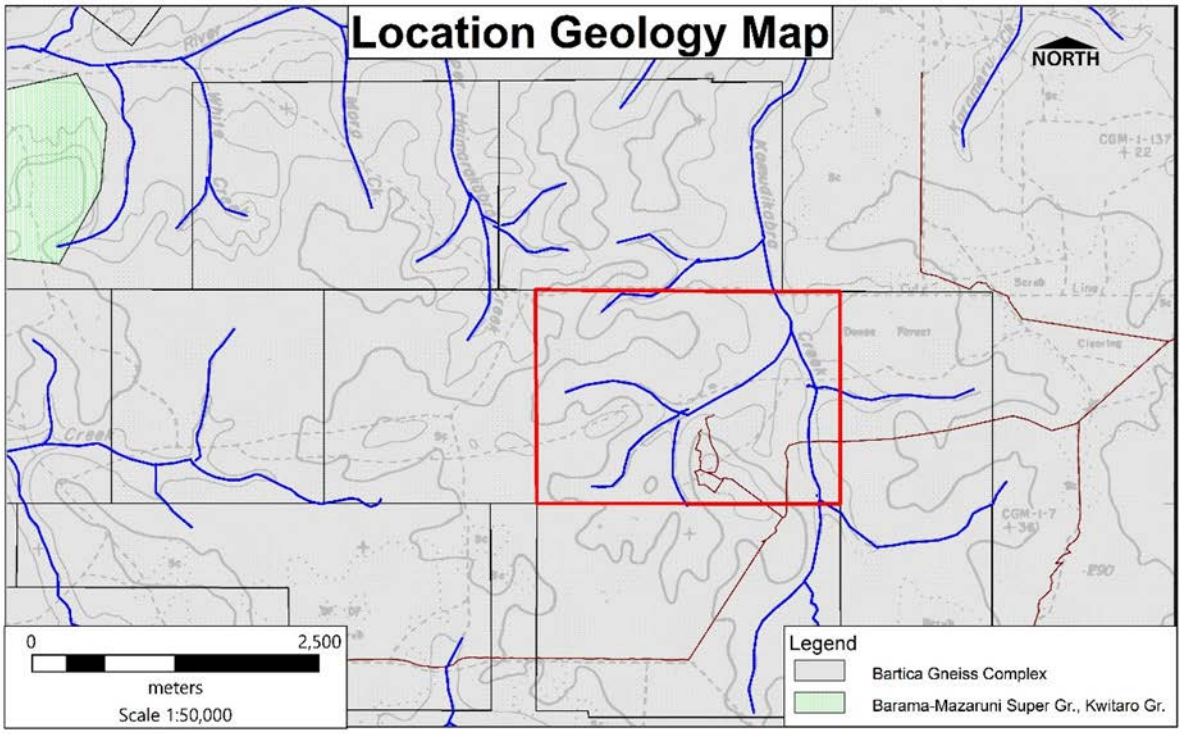

Figure 3:Geology Map for the Kamakabra Quarry Project.

Gabbro

Medium-grained gabbro to Dark medium-grained dolerite forms the dike and sills of the avanavero suite and in this case, it is a suspected pluton (Figure …). Massive, very defined mineralogy with hardly any changes. No cleavage and joint directions are typical – cube-shaped bodies.

Figure 4: Sample of gabbro.

Rock Analysis

The rock type identified was deemed ideal for establishing a quarry and was then sent to a laboratory for testing to determine the quality of materials present.

The tests done were:

- Specific Gravity- (SG) - The specific gravity of a solid is the ratio of its mass to that of an equal volume of distilled water at a specified temperature to determine if the aggregates contain water-permeable voids. The specific gravity of aggregates normally used in construction ranges from about 2.5 to 3.0 with an average value of about 2.68. Specific gravity of aggregates is considered as an indication of strength. Materials having higher Specific Gravity is generally considered as having higher strength. The lab analysis indicated a SG of 2.97.

- Aggregate Impact Value- Determines if the aggregates have sufficient toughness to resist their disintegration due to impact. This characteristic is measured by the impact value test. The aggregate impact value is a measure of resistance to sudden impact or shock. Aggregate Impact Values, (AIV's), below 10 are regarded as strong, and AIV's above 35 would normally be regarded as too weak for use in road surfaces. The lab analysis indicated an average value of 2.71%.

- Los Angeles Abrasion Test- A common test method used to indicate aggregate toughness and abrasion characteristics. Aggregate abrasion characteristics are important because the constituent aggregate in Hot Mix Asphalt (HMA) must resist crushing, degradation and disintegration in order to produce a high quality HMA. The maximum Los Angeles abrasion value should not be more than 30% for the use of wearing surfaces. The lab analysis indicated a value of 3.96% which makes its great for construction of road.

- Aggregate Crushing Value Test – Is a test on coarse aggregates which gives a relative measure of the resistance of an aggregate crushing under gradually applied compressive load. Coarse aggregate crushing value is the percentage by weight of the crushed material obtained when test aggregates are subjected to a specified load under standardized conditions. Aggregate crushing value is a numerical index of the strength of the aggregate, and it is used in construction of roads and pavements. Crushing value of aggregates indicates its strength. Lower crushing value is recommended for roads and pavements as it indicates a lower crushed fraction under load and would give a longer service life and a more economical performance. The lab analysis indicated an average value of 6.33%.

RESOURCE ESTIMATION

The Quarry Potential was calculated by mapping the outcrop to determine the area and calculating the volume based on the difference in elevation. This approach is possible since the lateritic overburden has already been removed from a large portion of the outcrop as shown in Figure 6. The delineated area designated for quarrying covers an area of 549,100 m2 (135.9 acres). Of this area 231,600 m2 has already had the overburden removed to expose the outcrop, the remainder of the outcrop, 317,500 m2 is covered with lateritic overburden (illustrated in Figure 5). A density of 1,600 Kg/m3 is used to calculate overburden tonnage and a density of 2.98 ton/m3 (2.28ton/yd3) for the quarriable stone. This principle was also used to estimate the volume of overburden that remained in-situ.

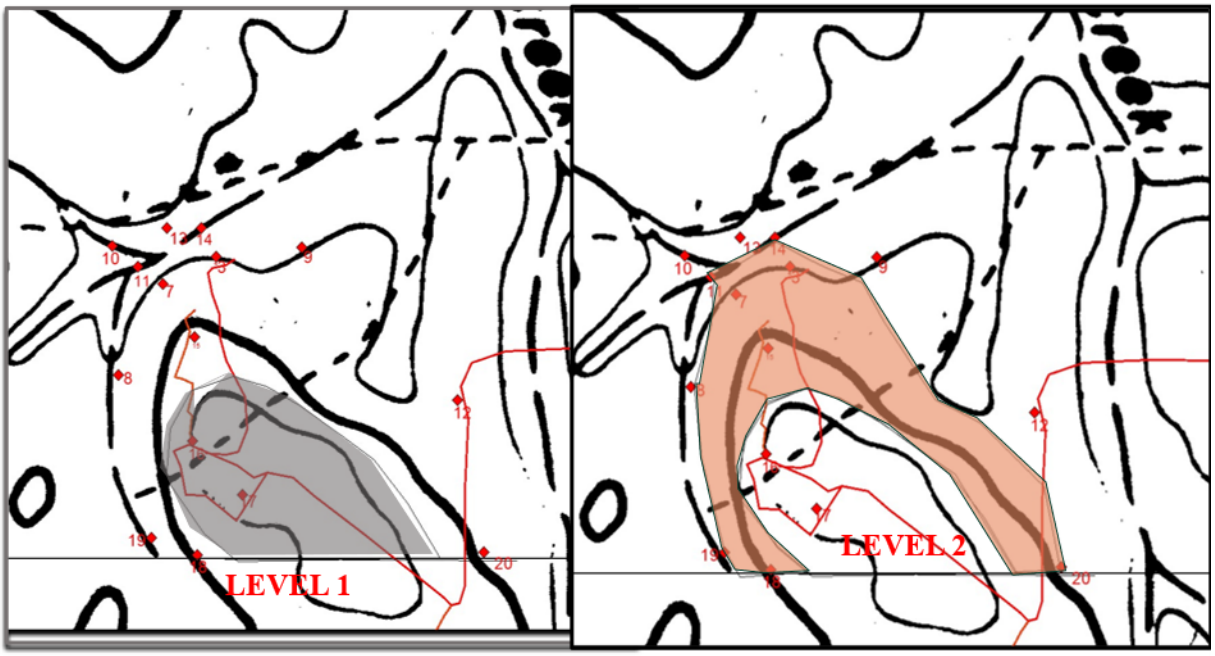

Figure 5: Resource estimation map.

Property	Area (m^2)	S.G	Volume (m^3)	Overburden(m^3)	Estimated Reserves(tons)
Level 1	231,600	2.97	6,484,800	0	19,324,704
Level 2	549,100	2.97	12,097,850	531,500	36,051,593
Total			**18,582,650**	**531,500**	**55,376,297**

Table 1:Resource estimation values.

Figure 6: Rock outcrop at the Quarry Site.

PROPOSED MINE PLAN ACTIVITY

A total of 55 million tons of gabbroic material is available for extraction from the Kamakabra quarry site that can ultimately be used for construction, sea defenses, and aggregates. Pit optimization is based on a USD 30/ton aggregate price to create a series of quarry blocks for analysis. Quarry design is based on a conventional surface mine using 76mm blast holes, 4.2m^3 front end loaders, and 1.5m^3 excavators for stone and overburden loading; haulage will be carried out by a fleet of 43.5 m^3 capacity trucks and a transport fleet of 50-ton capacity trucks. The total mineral reserve within the designed pit is 55 million tons of stone that can be mined continuously utilizing one open pit. The area of proposed pit is 549,100 m^2 (135.9 acres). Mining waste/overburden volume is 531,500 m^3 with a stripping ratio of 0.009:1 for the entire pit. The annual production for the first year during the consolidation of operations is estimated at 920,000 tons of aggregate at 82% capacity.

Upon optimization of operations after the first year, production is expected to increase to 960,000 tons at 85% capacity. The estimated production figures for the quarry initial five-year plan is illustrated in Table… below.

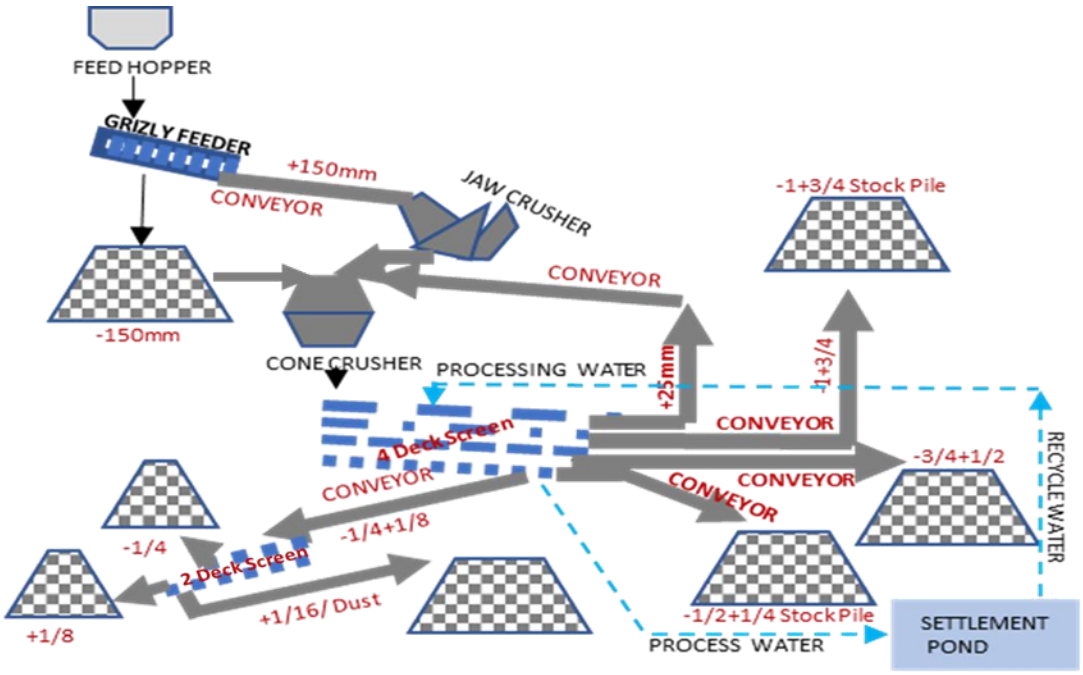

Figure 7:Schematic diagram of proposed quarry operation.

The Quarry has planned all its work activities for the next five years beginning in the last quarter of 2024 providing permitting requirements are achieved. The planned activities for the development, production and other pertinent phases are illustrated in Figure 8 below. This quarry intends to supply boulders, gabions, and crushed aggregates in the following fractions 7/8", 3/4", 5/8", 1/2", 1/4" minus, sifting, and quarry cleaning. The quarry will utilize a production process as illustrated in the simplified flow-diagram in Figure 7 above.

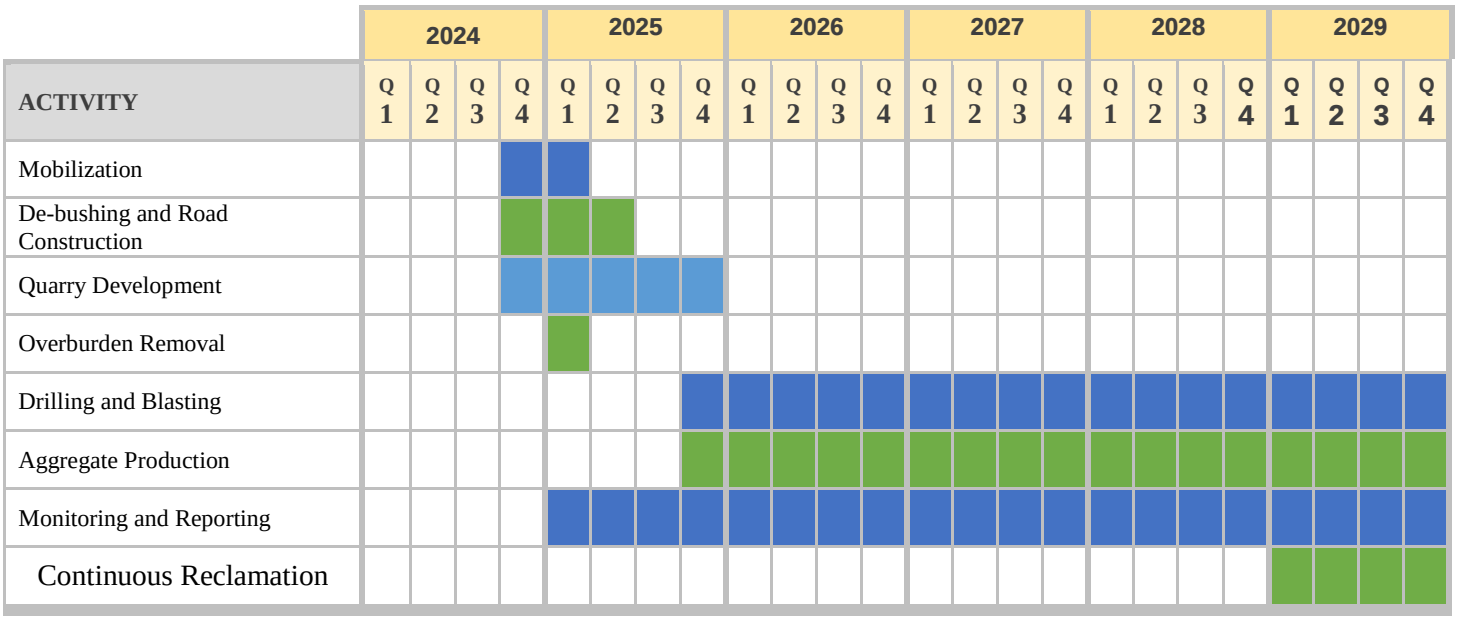

Figure 8: Proposed phases of the quarry development and operation.

Estimated Quarry Production						
ITEM	**PERCENTAGE**	Year 1	Year 2	Year 3	Year 4	Year 5
1ST Grade Crusher Run	10%	92000	96000	96000	96000	96000
2nd Grade Crusher Run	2%	18400	19200	19200	19200	19200
7/8" Aggregate	2%	18400	19200	19200	19200	19200
3/4" Aggregate	45%	414000	432000	432000	432000	432000
5/8" Aggregate	2%	18400	19200	19200	19200	19200
1/2" Aggregate	15%	138000	144000	144000	144000	144000
Sifting	4%	36800	38400	38400	38400	38400
Underlayer	10%	92000	96000	96000	96000	96000
Sand	5%	46000	48000	48000	48000	48000
Boulders	5%	46000	48000	48000	48000	48000
Total	**100%**	**920000**	**960000**	**960000**	**960000**	**960000**

Table 2: Estimated stone production from the Quarry.

In light of the proposed production capacity and geomorphology of the area delineated, an open pit surface mining operation with benches is proposed. The expansion of the pit will consist of laybacks to the permitted pit limits.

For the design of the pit, it was assumed that the pit slopes and benching will follow the permitted conditions of a 1.15H: 1V pit slope, a maximum bench height of 7.5 m and a minimum catch bench width of 5 m (see Figure 9). The pit will have an overall strip ratio of 0.009:1 (waste to ore), and

a mine life of 5 years with possibility for expansion. Mining will continue down to the 0 m ASL bench elevation, with potential for extension of mine life with potential reserves at further depths.

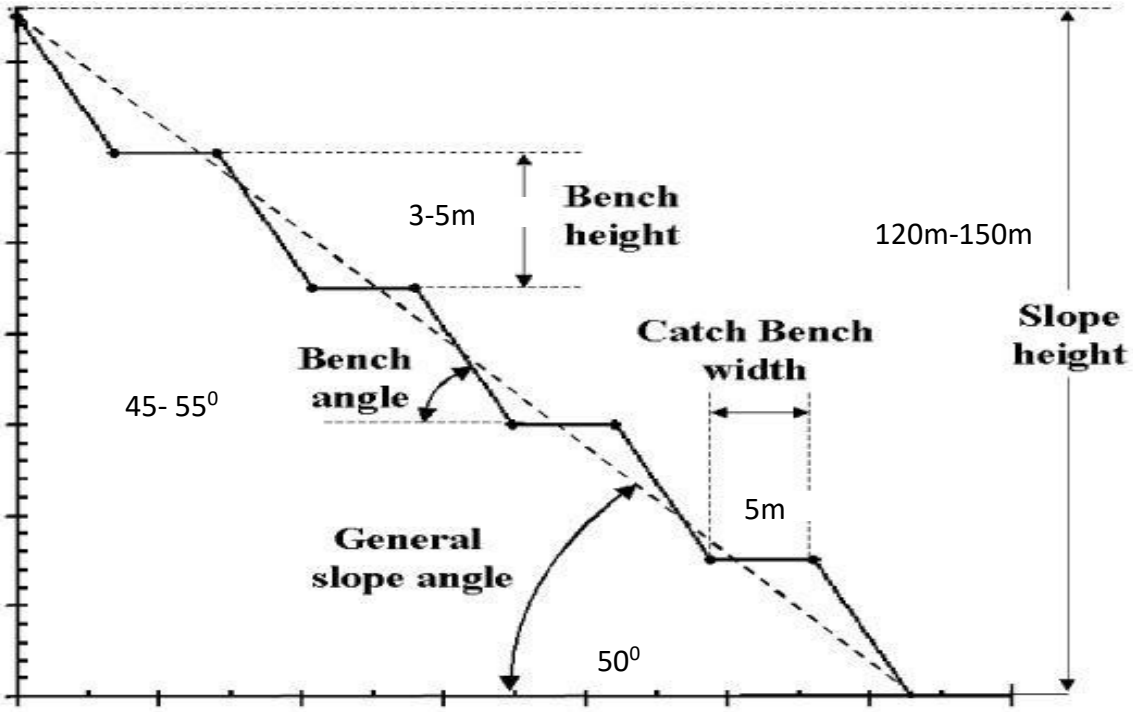

Figure 9: Proposed bench design for the Quarry.

OVERBURDEN AND WASTE STOCKPILES

Due to the geological conditions present at the proposed mine site there is a fairly uniform layer of lateritic overburden covering a portion of the rock outcrop at the lower elevations, this overburden is generally between 1.5 to 2 m thick and needs to be excavated in order to allow access to rock outcrop to enable mining.

A General Site has been selected adjacent to the mining pit comprising approximately 25 acres of low-lying area for the dumpsite and stockpiling of topsoil for reclamation purposes. Lateritic overburden will be utilized for road construction and maintenance. Mining waste covers an area of 549,100 m^2 and an estimated overburden volume is 531,500 m^3 with a stripping ratio of 0.009:1 for the pit.

Waste Dump Designs

- 22-degree overall slope angles
- 3 m lift offsets.
- 3 m lift heights.
- Maximum height of 30-40m (from high elevation to valley bottom).
- Location of dumps away from villages, settlements and rivers.
- Dumps in a valley will have an overall slope angle of 37 degrees since the material will be dumped from an elevation higher than 3 m.

LABOUR REQUIREMENTS

The estimated labour requirements for the entire mining operations are 80 personnel as shown in Table 3 below. The distribution of the required personnel is illustrated in Figure 10 below.

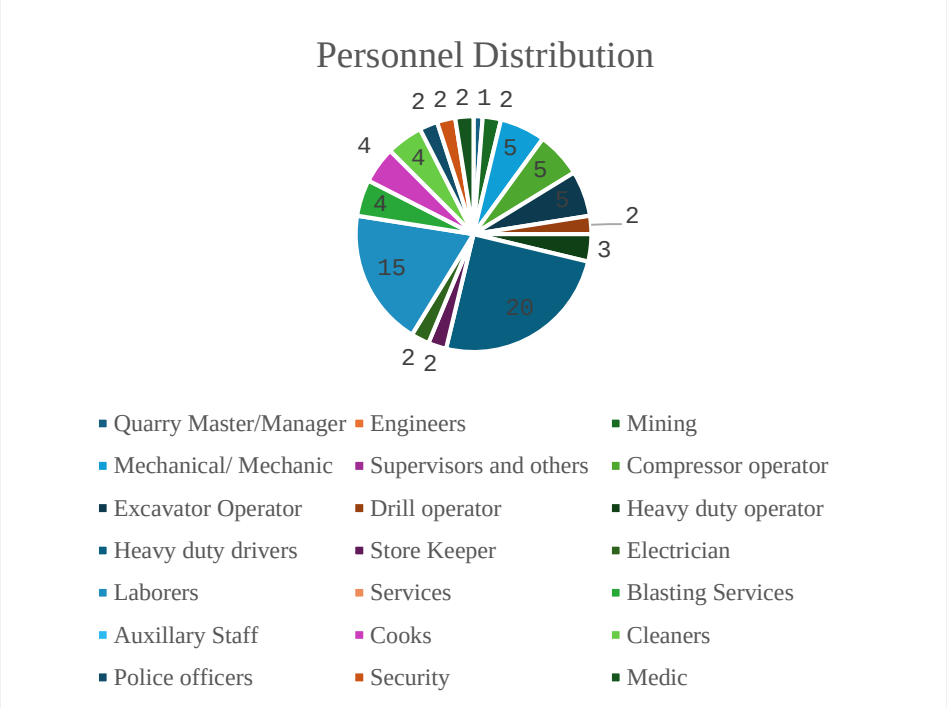

Figure 10: Labour requirements for the Quarry.

NO	STAFF	NO OF EMPLOYEES
1	Quarry Master/Manager	1
	Engineers	
2	Mining	2
3	Mechanical/ Mechanic	5
	Supervisors and others	
4	Compressor operator	5
5	Excavator Operator	5
6	Drill operator	2
7	Heavy duty operator	3
8	Heavy duty drivers	20
9	Store Keeper	2
10	Electrician	2
11	Laborers	15
	Services	
12	Blasting Services	4
	Auxiliary Staff	
13	Cooks	4
14	Cleaners	4
15	Police officers	2
16	Security	2
17	Medic	2
Total		**80**

Table 3: List of personnel requirements.

LIFE OF MINE

Based on the projected Quarry production, the total amount of aggregate to be processed will be on average 3,200 t/day, whereas maximum capacity of the current system is 5,000 t/day. With a 350-day working schedule that caters for 15 days of downtime, for holidays and miscellaneous activities. The life of the Mine is expected to be five years for the initial phase based on the conceptual mine planning requirements. However, given an average efficiency of 85%, the life of mine will be extended beyond the initial five years, as the processing parameters and equipment are modified along with resource modelling.

Total estimated resource = 55,000,000 tons of stone

Production for the Five years = 5-year production x efficiency

= 4,760,000 tons' x 85%

= 4,046,000 tons

Yearly Production = 4,046,000 tons / 5 years

= 809,200 tons per year Remaining tonnage = 54,190,800 t

Therefore, to find the additional life of this mining operation = Remaining tonnage/Yearly Production

= 54,190,000 tons/ 809,200 tons per year

= 54 years

The Life of this Mine Operation is expected to last for 55 years given an average efficiency of 85%.

DRILLING AND BLASTING

The drilling and blasting plan cater for efficient rock fragmentation and excavation. A tried, tested, and proven delay design will be implemented to achieve the best fragmentation, heave, and muck pile profile. The blast patterns to be used will be multi-row staggered rectangular arrangements.

To meet production goals, it is estimated that twenty-two holes will need to be drilled per day. One drill will be required to complete this target. Two PWH 5000's will be used because of their relatively low cost and their ability to drill holes in a single pass thus reducing drilling times. Penetration rates for blast hole drills were assumed to be 132 feet per hour and a set-up time between holes of 4 minutes. The average depth of the holes is 34.3 feet. The drilling time for each hole, including set up time, is 20 min per hole. With the 50-minute operating time, each drill will be capable of completing an average of 48 holes per 12-hour shift. Table 7 shows the drill that will be used on site.

Explosives will used to fracture the high-quality Gabbro to enable the excavation of the blasted stone by earth moving equipment. To achieve this, holes will be drilled in a pre-determined pattern giving attention to their angle, depth and spacing. These holes will then be filled with an explosive and the charge is initiated with the aid of primers and detonators. The detonation of each hole is delayed in a pre-designed sequence to ensure that each hole is fired individually in close succession. This delayed firing technique improves the efficiency of the blast and also reduces its environmental impacts. The design of a blast depends on its location, geological structures in that area, volume of resource in the target area, end product requirements and any limiting factors in relation to potentially sensitive locations (including residences and infrastructure). Blast design is therefore completed on a blast-by-blast basis, ensuring that all these factors are considered to achieve blast levels within acceptable limits.

Based on these requirements, MAGNAFRAC 2.5” X 16’ was selected. The specific gravity of the explosive was assumed to be 1.12 ton/m^3. The rock mass at the Quarry site was given at 2.97 ton/m^3. A blast hole diameter of 3 inches was selected. It should be noted that it is within the range of hole sizes that the drill rig, an PWH 5000 is capable of drilling. The bench height was set at 32.8 feet to best accommodate the equipment fleet.

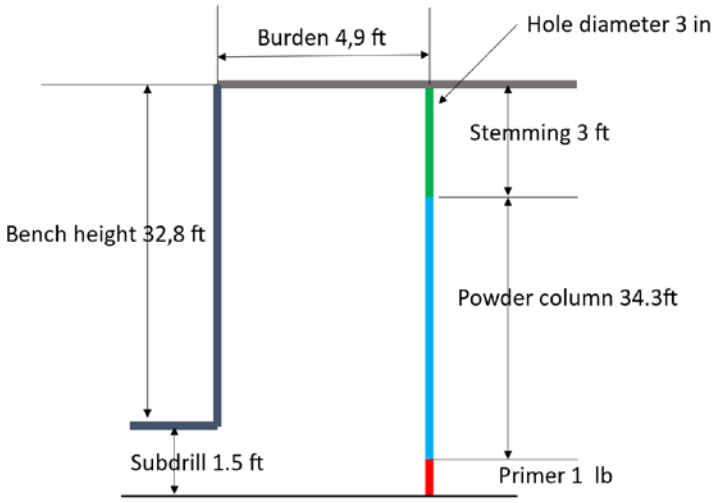

Figure 11: Simplified diagram of blast design.

Blast Dimensions	
Burden	4.9 ft.
Spacing	8.4 ft.
Subdrill	1.5 ft.
Hole Depth	32.8 ft.
Stemming Length	3 ft.
Explosive Column length	34.3 ft.

Table 4: Blast design dimensions.

The blast holes will be drilled on a rectangular pattern, with dimensions as shown in Table 4 above. Blasts will be based on a per hole basis, that is to say the required amount of stone fragmented per blast hole is calculated and used to determine the number of holes required to meet production for

each year. A blast with the aforementioned dimensions can be expected to liberate 50.7 Yd3, (115 tons) of stone per blast hole. Table 5 below shows the number of holes required to meet the production goals. It should be noted that this table shows the minimum required holes per year, and in practice it is likely that patterns will not be blasted daily.

Year	Time	Total Fresh Ore & Rock to be Blasted (Tons)	Volume of Rock (m^3)	No. Of Blast Holes	Total Explosives (kg/Magnafrac)	Total Drilling & Blasting Cost
2025	Year 1	920,000.00	315,392.53	7,768	277,328	2,106,800
2026	Year 2	960,000.00	329,105.25	8,106	289,386	2,198,400
2027	Year 3	960,000.00	329,105.25	8,106	289,386	2,198,400
2028	Year 4	960,000.00	329,105.25	8,106	289,386	2,198,400
2029	Year 5	960,000.00	329,105.25	8,106	289,386	2,198,400
Totals		**4,760,000.00**	**1,641,379.31**	**40,192**	**1,434,870**	**10,900,400**

Table 5:Estimated five years blasting requirements.

BLASTING REUGLATORY REQUIREMENTS

The maintenance and operation of explosives magazines and use of explosives are subjected to The Explosives Act: Chapter 16:06 and The Blasting Operations Act Chapter 65:03 of the Laws of Guyana. Construction, storage and management of the explosive magazine, and use of explosives will be in accordance with the relevant sections of ‘The explosives Act: Cap.16:06’ and ‘The Blasting Operations Act: Cap. 65:03.’

Wherever a magazine is constructed onsite, general rules for a magazine construction and upkeep under Section 6 of The Explosives Act Cap. 16:06 will be observed and implemented. A proposal, with the construction details and location will be submitted for approval, prior to construction, to ensure that a license is granted.

The explosives magazine will be located approximately 1000 feet from the plant and dwellings structures. The site will be cleared so that there is no danger form bush fires and the local fire authority at Linden will be informed of the location of the magazine. The detonator magazine will

be located at the legally prescribed distance (approx. 100 ft.) from the explosive's magazine in accordance with The Explosives Act Cap. 16:06.

Explosives will be stored in an approved, licensed and properly constructed magazine under suitable conditions to:

- Comply with statutory regulations;
- Minimize the risk of accidental spills and explosions;
- Minimize deterioration that may adversely affect safety or performance;
- Provide separation of incompatible explosives;
- Prevent unauthorized access and theft;
- Provide safety distances from 'protective works';
- Maximize shelf life; and
- Enable ready access to products when required.

A Mining Engineer will design each blast. A blaster with a certificate of competency granted under Section 4 of The Blasting Operations Act Cap. 65:03, by the Commissioner, Guyana Geology and Mines Commission will perform blasting at the Mine Site. As standard procedure, blasters will follow the practice of making pre-blast or loading charts1. This will be used to calculate the amounts and types of explosives based on the number, diameter, depth of holes and stemming required.

Blast designs are based on empirical information from industry standards and applications and from experience in similar geological conditions. Information provided for the Quarry Project are as follows:

- Geology- gabbro density 2.97
- Overburden- Saprolite, Laterite and organics
- Bench Height- 32.8 Feet
- Groundwater-not a major issue but some water will be present

- Use of MAGNAFRAC 2.5” x 16” Package Explosive
- 2.5-inch hole diameter

BLASTING CRITERIA

AILIAI Aggregates Inc Kamakabra Quarry Project shall undertake blast monitoring to verify that the limits for airblast overpressure levels, ground vibration and peak particle velocity are not exceeded at any point within one meter of any affected residential boundary or other noise sensitive area. The AILIAI Aggregates Inc Kamakabra Quarry Project shall ensure that blasting on site does not exceed the criteria at any residence on privately-owned land.

The air blast overpressure level from blasting operations must not exceed:

- 115 decibels (dB) (Lin Peak) for more than five per cent of the total number of blasts over each reporting period
- 120 dB (Lin Peak) at any time.

The ground vibration peak particle velocity from blasting operations must not exceed:

- 0.197 inch per second (in./s) for more than five per cent of the total number of blasts over each reporting period
- 0.394 in./s at any time
- at any point within one meter of any affected residential boundary or other noise sensitive area in the vicinity of the plant.

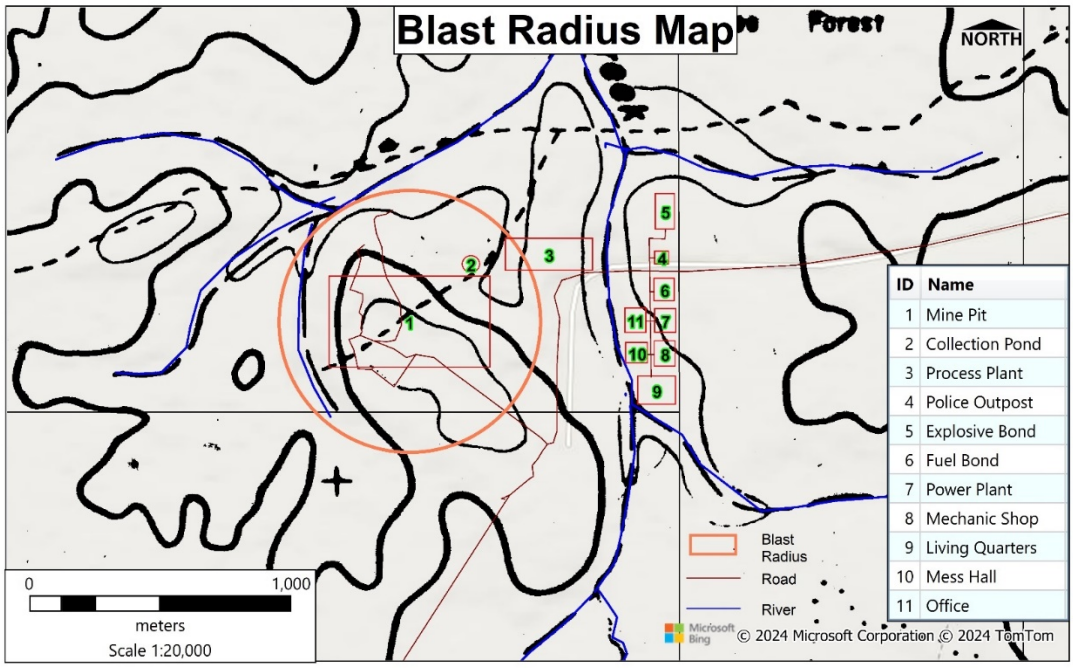

Figure 12: Map showing blast radius relative to quarry infrastructure.

BLAST MANAGEMENT COUNTROLS

Control measures that have been considered as a standard part of the operation of the AILIAI Aggregates Inc Kamakabra Quarry Project and incorporated include:

- All relevant mining personnel will be trained on the environmental obligations in relation to blasting controls.
- The surrounding landowners/miners will be notified prior to undertaking a blast.
- The date, location of blast holes and quantity of explosive used each day will be documented.
- Blasts will be designed to comply with overpressure and vibration criteria.
- Monitoring will be undertaken at the nearest residence and/or other sensitive locations (as required) to verify compliance with the relevant criteria.
- The maximum number of holes to be detonated in a blast is 150.

- Sufficient distance will be maintained between the blast hole and the mine face.
- Appropriate delays will be used.
- All blasts will be monitored and recorded.
- Blast monitoring data will be used on an ongoing basis to further refine the blast design and management.
- Blast design and blast management procedures will be periodically reviewed to evaluate performance and identify corrective action, if required.
- Blasting will be undertaken between 9.00 am and 5.00 pm, Monday to Saturday inclusive, except under apparent temperature inversions conditions when blasting shall only occur between 11.00 am and 1.00 pm Monday to Saturday. No blasting is undertaken on Sundays or public holidays, without approval of the Guyana Police Force (GPF).
- AILIAI Aggregates Inc Kamakabra Quarry Project will undertake consultation with miners and farmers whose properties are adjacent to the development, with a view to determining the most appropriate blasting times for the development. The applicant shall, in accordance with the requirements of the GPF, give notice of proposed blasting times.
- Not to blast more than twice weekly unless an additional blast is required following a blast misfire.
- Design all blasts to minimize airblast overpressure and vibration using the NONEL system of equivalent.
- Design all blasts based on the results of monitored blasts and modelled predictions in Table 10. This will minimize airblast overpressure and vibration such that any one blast has less than a five per cent probability of exceeding airblast overpressure and vibration goals as set by the Environment Protection Authority (EPA) for affected property.
- EPL noise limits of 115 dB/120 dB are likely to be exceeded.
- Undertake detailed designs for each blast in order to maximize the blast efficiency, minimize dust, fumes, ground vibration and airblast, the potential for flyrock and to ensure compliance with site specific blasting conditions.

- AILIAI Aggregates Inc Kamakabra Quarry Project intends to undertake a pre-blast methodological assessment in order to confirm the applicability of blasting within the proposed blasting times. The pre-blast methodological assessment will inform the likelihood of potential blast impacts as a result of forecasted adverse wind inversion weather conditions.

- Monitor blasts as mining progresses utilizing the adaptive management techniques so that blast prediction and site laws can be further refined and future blast designs can be optimized based on more detailed site information. By adopting this approach, in conjunction with the adoption of improved blasting products and methods, as they are developed and introduced, it is anticipated that blast emissions criteria can be met without imposing any significant constraints on blast designs throughout the operation of the AILIAI Aggregates Inc Kamakabra Quarry Project. The company will design all blasts to comply with the project specific vibration and air blast criteria and to protect public and private infrastructure and property from any damage as a result of flyrock. Future updates of this plan will include any additional management requirements, taking into account the results of blast monitoring undertaken.

- The blasting site design will be regularly reviewed using site-specific blast monitoring data. This process will provide AILIAI Aggregates Inc Kamakabra Quarry Project with flexibility to design blasts to best meet production requirements while complying with relevant criteria for residential receivers.

- All blast configurations and delays used will be thoroughly checked by the Mine Manager before the blasts are detonated.

BLAST MONITORING

AILIAI Aggregates Inc Kamakabra Quarry Project will monitor blasts as mining progresses in accordance with the existing blast monitoring system so that blast performance and design can be further refined, and future blast designs can be optimized based on more detailed site information.

Blast monitoring for airblast and vibration will continue to be undertaken at strategically identified locations to ensure compliance with the Guyana EPA Environmental Permit and the GPF Permit to transport, store and use explosives.

AILIAI Aggregates Inc Kamakabra Quarry Project will undertake blast monitoring at the Quarry project area in accordance with the policies, principles, regulations and guidelines contained within:

- The Environmental Permit, Guyana EPA
- Guyana Geology and Mines Commission Guidelines; and
- The Permit to transport, store and use explosives.

EQUIPMENT LIST

AILIAI Aggregates Inc Kamakabra Quarry will procure all the equipment necessary for the Quarry Project Operation. All the equipment is necessary to ensure smooth operations and to produce at least 2,800 tons of aggregates daily. The proposed fleet of equipment comprises of the following:

Item	Unit cost	Quantity	Total Cost (G$)	Activity
CAT D8 Bulldozer	157,500,000	2	314,000,000	Mining and land preparation and relay of overburden
CAT 966 Wheel Loader	157,500,000	3	472,500,000	Loading and Crusher Plant support
CAT 320 Excavator with Hydraulic Jack Hammer	52,000,000	1	52,000,000	Fragmentation of large boulders
CAT 336 Excavator	73,500,000	3	220,500,000	Stripping and Mining
Heavy Duty dump truck	63,000,000	12	378,000,000	Haulage and transport of orders
Manual Jackhammer	170,000	2	340,000	Secondary Fragmentation
Air Compressor Atlas Corpo XRHS666C	250,000	1	250,000	Drilling and blasting ancillary unit
Rotary Procession Drill	7,980,000	3	23,940,000	Production drilling
Chain saw	175,000	5	875,000	De-bushing and log production
4x4 Double Cab Pickup truck	17,850,000	4	71,400,000	Mine services and emergency transport unit
Secondary fragmentation drill (30mm)	100,000	2	200,000	Blasting accessory
ATV	3,150,000	2	6,300,000	Filed staff transport

Portable light tower	2,500,000	2	500,000	Mine site lighting
Electric Power Generator (800KW)	7,000,000	1	7,000,000	Crushing Plant
Electric Power Generator (100KW)	4,200,000	2	8,400,000	Camp and mine infrastructure
Welding Plant	2,500,000	2	5,000,000	Work shop and maintenance
Fuel tanker (50,000L)	8,500,000	1	8,500,000	Fuel transportation
Water sprinkler truck (5,500L)	5,500,000	1	5,500,000	Dust control on roads
Wash plant accessories	1,600,000	1	1,600,000	Washing of aggregates
8x24 vibrating screen (4 deck)	13,000,000	1	13,000,000	Screening of aggregates
	1,600,000	1	1,600,000	1/8- 1/16 /quarry dust
Grizzly feeder	9,450,000	1	9,450,000	Automatic relay of crusher run
Primary conveyor	1,200,000	1	1.200,000	Conveyance from jaw crusher to cone crusher
Secondary conveyor	1,200,000	1	1,200,000	Conveyance from cone crusher to vibrating screen
Product Conveyors	1,000,000	6	6,000,000	Stockpiling of aggregates
Jaw Crusher	10,000,000	1	10,000,000	Primary crusher
Cone Crusher	9,000,000	1	9,000,000	Secondary Crusher
Automatic scale	1,500,000	1	1,500,000	Weighing of delivery
Permanent magnet	100.000	1	100,000	Metal separator
Water Pump system	400,000	2	800,000	Crushing plant water supply
H Iron assembly frames	1,000,000	----------	1,000,000	
TOTAL G$			1,621,655,000	
TOTAL US$ (210G$ to 1US$)			**7,722,166**	

Table 6: List of Equipment for Kamakabra Quarry.

FUEL AND LUBRICANT CONSUMPTION

The estimated fuel and lubricant consumption for the initial five years for the Kamakabra Quarry Project is shown in Table 7 below.

ESTIMATED FUEL/LUBRIANTS CONSUMPTION						
		2025	**2026**	**2027**	**2028**	**2029**
Capacity Utilization	100%	50%	60%	70%	80%	90%
Diesel	266,400,000	133,200,000	159,840,000	186,480,000	213,120,000	239,760,000
Gasoline	46,250,000	23,125,000	27,750,000	32,375,000	37,000,000	41,625,000
Lubricant oil	19,980,000	9,990,000	11,988,000	13,986,000	15,984,000	17,982,000
Hydraulic oil	14,985,000	7,492,500	8,991,000	10,489,500	11,988,000	13,486,500
Grease	4,403,000	2,201,500	2,641,800	3,082,100	3,522,400	3,962,700
Total	**$ 352,018,000.**	**$ 176,009,000 0**	**$ 211,210,800.0 0**	**$ 246,412,600.0 0**	**$ 281,614,400.0 0**	**$ 316,816,200.0 0**

Table 7: Estimated fuel and lubricant consumption.

INFRASTRUTURE DEVELOPMENT

The company intends that the Quarry Project will be a model complex with facilities that are comparable with other regional and international Quarry operations. The topography is ideal with housing etc. overlooking the operation. The mine will have a full-time sanitation crew and a medic will always be on site with adequate medical supplies. Because of the threat of malaria and dengue fever in the area, the company will work closely with the Ministry of Health to maintain a malaria and dengue fever free environment at the quarry and nearby communities. The infrastructure development estimates are illustrated in Table 8 below.

Detail of Building and Civil Works		
Description	**Covered Area sq ft**	**Cost GUY$**
Offices/Prefabricated Containers	1000	$2,000,000.00
Workshop/Bond	1500	$4,000,000.00
Residential Setup /Prefabricated Containers	2,500	$5,000,000.00
Haul Road		$5,000,000.00
Total	**15,000**	**$16,000,000.00**

Table 8: Estimated infrastructure development cost.

CAPITAL COST

The capital investment for the development of the AILIAI Aggregates Inc Kamakabra Quarry project is illustrated in Table 9 below.

ITEM	COST (GUY$)
Plant, Machinery and Equipment	$ 1,621,655,000
Mine development expenses	$20,000,000.00
Building and civil works	$16,000,000.00
Furniture and Fixtures	$5,000,000.00
Reclamation & Closure	$20,000,000.00
TOTAL	**$1,682655,000.00**
NET INITIAL WORKING CAPITAL	**$73,500,000.00**
PROJECT COST	**$1,756,155,000.00**
USD COST	**$8,630,448.00**

Table 9: Estimated capital investment.

OPERATING COST

Life Of Mine operating costs are summarized in Table ... Operating costs are estimated at USD

28.86 million. Open pit mining will average USD 7.68/ t ore and waste moved. Processing is estimated at USD 7.14/ t ore crushed. G & A costs are estimated at USD 2.38/t ore and overburden moved.

Cost Item	LOM Costs $USD	Unit Cost $/ton-moved (USD)	Unit Cost $/ton-crushed (USD)
Open Pit Mining	26,258,441	3.01	
Open Pit Drilling & Blasting	10,900,400	2.29	
Processing	38,431,525		7.14
G & A	11,724,137	2.38	
Totals	**87,314,508**	**7.68**	**7.14**

Table 10: Life of Mine Operating Cost.

FINANCIAL ANALYSIS

Economic Results are summarized in Table 11 the analysis suggests the following conclusions assuming no gearing:

Mine Life: 5 Years

Pre-Tax NPV10%: USD 399

Post Tax NPV10%: USD 216

Pay-Back Post Tax: 1.25 year.

Total Taxes Paid: USD $ 28,152,709

Peak Funding of Initial Project Capital: USD $8,630,448.00

	Year 1 (GUY$)	Year 2(GUY$)	Year 3 (GUY$)	Year 4 (GUY$)	Year 5 (GUY$)
SALES	**$ 5,520,000,000**	**$ 5,760,000,000**	**$ 5,760,000,000**	**$ 5,760,000,000**	**$ 5,760,000,000**
Operating cost	(2,300,000,000)	(2,400,000,000)	(2,400,000,000)	(2,400,000,000)	(2,400,000,000)
GROSS PROFIT	$ 3,220,000,000	$ 3,360,000,000	$ 3,360,000,000	$ 3,360,000,000	$ 3,360,000,000
Administration, Rehabilitation and other expenses	$ 460,000,000	$ 480,000,000	$ 480,000,000	$ 480,000,000	$ 480,000,000
Transportation Cost	$ 176,009,000	$ 211,210,800	$ 246,412,600	$ 281,614,400	$ 316,816,200
NET PROFIT BEFORE TAX	$ 2,583,991,000	$ 2,668,789,200	$ 2,633,587,400	$ 2,598,385,600	$ 2,563,183,800
Provision for taxation 20%	$ 1,104,000,000	$ 1,152,000,000	$ 1,152,000,000	$ 1,152,000,000	$ 1,152,000,000
PROFIT / (LOSS) AFTER TAX	**$ 1,479,991,000**	**$ 1,516,789,200**	**$ 1,481,587,400**	**$ 1,446,385,600**	**$ 1,411,183,800**
USD PROFIT/LOSS After tax	$ 7,047,576	$ 7,222,806	$ 7,055,178	$ 6,887,550	$ 6,719,923

Table 11:estimated cash flow analysis.

ENVIRONMENTAL AND SOCIAL CONSIDERATION

- The project's area of influence (AOI) has been significantly impacted by historical logging, and hunting, for well sixty years;

- Large fauna that are otherwise common in pristine habitats along similar types of rivers in this area of South America are absent or rare in the project AOI, and may be viewed as a key indicator of significant historical human impact;

- No rare, threatened, or endangered species have not been observed in the area of the project;

- There are no formal or established communities or settlements in the immediate vicinity of the AILIAI Aggregates Inc construction site, and the project is not expected to generate direct socio- economic effects;

- There is no evidence of indigenous hunting activity within the proposed mining area;

- Results of geochemical testing to date indicate that project overburden and waste rock has very low acid rock drainage (ARD)/metals leaching potential;

- The project will develop and implement a comprehensive Environmental Management Plan (EAMP).

AILIAI Aggregates Inc Kamakabra Quarry will carry out its operations in an environmentally responsible manner and will address all pertinent issues to ensure 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 Assessment and Management Plan (EAMP). The EAMP will address potential impacts of the design, construction, operation and closure phases of mining.

Air Quality: Dust and diesel emissions will be the main elements of air quality concerns at the quarry. To limit dust formation during mining and transportation 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 (15-30 mph) will be enforced within the mining 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.

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. All employees will be trained in proper emergency response, incident reporting and general health and safety. 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 site. AILIAI Aggregates Inc Kamakabra Quarry would also ensure that all employees are trained in emergency response scenarios.

AILIAI Aggregates Inc Kamakabra Quarry will 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. 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 Ituni Health entre and Linden 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 forwarded 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 mining environment. The training program will be coordinated and implemented by the Environmental Manager.

Hazardous Materials: Diesel fuel and lubricants will be the major hazardous materials present at the mining 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 is produced at the mining. Any waste rock products will consist chiefly of biotite, quartz, muscovite and plagioclase.

Mine Safety: The quarry will be inspected periodically and will operate under applicable GGMC, 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 St. Mary and Rockstone of blasting times in advance.

- Strict procedures for transport, storage and handling of explosives and blasting will be implemented in accordance with Mining regulations and the GGMC Code of Practice for Mining.

- 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 Mine site. All blasting will be conducted by qualified individuals in compliance with Guyana Laws. A buffer zone was created for the blasting radius at a minimum of 500 meters. 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 reduce noise impact. Stakeholder consultations will be conducted with communities such as the residents of Ituni. Stakeholder engagement is an on-going process of sharing information and knowledge, seeking to understand the concerns of others and building relationships based on collaboration and partnership. Developing relationships with stakeholders is a long-term process, which will take place throughout the lifetime of the mine. The ultimate aim is to engage stakeholders as part of the project process to ensure that issues and concerns can be dealt with as quickly as possible thereby avoiding any potential conflict, and to build a general sense of goodwill towards the project.

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 ore within the site and loading of trucks 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 ear muffs. 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 Mining. Careful design of the blast sequence and the use of electronic detonators will be employed to reduce vibrations. Mining 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 are expected to produce both liquid and solid waste which, if not properly stored and or disposed of 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 nearby creek. Discharges to the creek will be in accordance with the EPA domestic wastewater discharge limits. All sewage will be directed to septic tanks with filter bed treatment installed.

Floral Resources: The removal of vegetation for mine site operations will alter the availability of food and shelter for wildlife. Mining may impact biodiversity by changing species composition and structure and may provide access to previously isolated areas thereby enabling exploitation of biological resources from the area. Imported species including weedy plants and insect pests may thrive while native species may decline. Improved access to the mine site areas may result in increased hunting, logging and land development.

Emission impacts upon plants may include changes in leaf structure, which may include chlorophyll destruction (chlorosis), tissue death (necrosis), and pigment formation. Visible symptom patterns may result from either acute or chronic exposures. Acute injury may result from brief exposures (several hours) to elevated levels of a pollutant. Tissue necrosis is generally the dominant symptom pattern from acute exposures. Chronic plant injury may result from intermittent or long-term exposures to relatively low pollutant concentrations, with chlorophyll destruction or chlorosis as the principal symptom of injury. These are moderate impacts (long-term, moderate severity, local extent).

These impacts will be mitigated by employing the following measures:

- Employing dust suppression technique such as applying water or non-toxic chemicals

- Maintaining construction equipment according to manufacturer's specifications

These mitigation measures will result in low impacts (short-term, low severity, local extent).

Traffic: on the access road and mine service roads during the operation phase would impact the early succession/edge and secondary forest habitats located along these roads by increasing dust, which will settle on vegetation. Given the limited geographic scope of this impact, the impact of dust accumulation on plants would be low (medium term, low severity, local extent). Wetting roads during the dry seasons would reduce this impact to low (short-term, low severity, local extent).

The project may use equipment that were previously used on other projects. Soil pathogens, insects and fungi can be introduced from these items unless stringent measures are taken to avoid this possibility. These are moderate impacts (long-term, high severity, local extent). These impacts will be mitigated by having all equipment fumigated prior to deployment to the mine site. This will result in low impacts (short-term, low severity, local extent).

The movement of people, equipment, and materials to the mine has the potential to cause the introduction of alien invasive species of plants. The disturbance and clearing of natural habitats can also promote the growth or colonization of alien invasive species. This impact is rated as moderate (long-term, moderate severity, local extent). These impacts will be mitigated by implementation of the following mitigation measures:

- Monitoring of biodiversity and,
- Control of invasive species.

Implementation of these measures will result in low impacts (short-term, low severity, local extent).

Faunal Resources: During operation additional loss of habitats will not affect any threatened or restricted-range endemic species of fauna since much of the fauna will have likely already left the affected habitats due to disturbance during the construction phase. This impact is rated as moderate (medium term, moderate severity, local extent). These impacts will be minimized by implementation of the following:

- Minimization of the Project footprint and,

- Initiating restoration as soon as practicable in temporary work areas.

Implementation of these measures will result in low residual impacts (medium term, low severity, local extent).

Most of the larger animals would have already abandoned the area during the construction phase. Only small fauna accustomed to disturbed environments are likely to remain in or enter mining areas and other work sites during the operation phase. It is likely that small numbers of small animals such as amphibians and snakes will experience mortality due to equipment and vehicle use. The loss of terrestrial fauna during the mining operations phase is rated as moderate (long-term, moderate severity, local extent). These impacts will be mitigated by implementation of the following:

- Minimization of the Project footprint and
- Performance of pre-clearance surveys.

The movement of people, equipment, and materials to the mine has the potential to cause the introduction of alien invasive species of animals. This impact is rated as moderate (long-term, moderate severity, local extent). These impacts will be mitigated by implementation of the following mitigation measures:

- Monitoring of biodiversity and
- Control of invasive species.

Implementation of these measures will result in low impacts (short-term, low severity, local extent).

During operation of the mine, wildlife may move away from the area. This displacement will increase competition with wildlife on the periphery of the area. This is a moderate impact (medium term, moderate severity, local extent). This impact cannot be mitigated.

Wildlife species live in communities that depend on each other. Survival of these species depends on soil conditions, local climate, altitude, and other features of the local habitat. Mining operations will result in direct and indirect impacts to wildlife. The impacts will stem primarily from disturbing, removing, and redistributing the land surface. Most of these impacts would be short-

term and would be confined to the mine site. Mining operations will displace and possibly destroy wildlife in areas to be excavated and to be used for disposal of mine waste. The mobile wildlife species, like game animals, birds, and predators will leave these areas, however, the more sedentary animals, like invertebrates, many reptiles, burrowing rodents, and small mammals, may be more severely affected.

Aquatic Resources: The operation of the mine and associated infrastructure will impact various stream habitats within the concession area. These habitats will have already been affected by construction phase activities, but the initiation of mining operations will bring additional impacts to these affected aquatic habitats. Impacts to aquatic habitats associated with the operation of the open pit area, the tailings pond and other areas where major conversion of the land surface occurs will be unavoidable due to the nature of the activities.

The loss of aquatic habitats in the concession area is a high impact (long-term, high severity, regional extent). Mining operations will include relocation of streams. Several of these streams may contain fish, aquatic invertebrates and amphibians. The relocation of these streams may result in loss of these aquatic resources. This will reduce food supplies for predators which feed on these aquatic resources which may result in the reduction or disappearance of these predators. These are high impacts (long- term, high severity, regional extent). These impacts will be mitigated by minimizing the number and longitudinal extent of streams to be relocated. The mitigation measures will result in moderate impacts (short-term, moderate severity, local extent).

Forest Resources: The concession is located within an area of undulating terrain covered with tall evergreen ombrophiles forest in the Guiana Shield forest region with elevations ranging between 300

– 1200 m. According to ter Steege (2000), this forest region is found on soils developed on the crystalline shield, such as granites and greenstones and on pockets of Plio-pleistocene sediments. Rainforests of the region fringe the savannahs and are characterized by a high abundance of Goupia glabra, Couratari, Sclerolobium, Parinari, Apeiba, Peltogyne, Catostemma, Spondias mombin and Anacardium giganteum. Other notable species of this region are Parkia, Ficus, Sclerolobium, Trichilia, Parkia, Parinari and Goupia. Eperua falcata are characteristic of late secondary forest while Pterocarpus and Macrolobium acaciifolium are common in forests along rivers in this area. None of the 5 primate species recorded in the project area serve as a source of proteins for persons

within the concession. Two species of birds namely, Tinamus major (Great Tinamou) and Crax alector (Powis) are used as sources of protein, however, these were not collected within the area designated for the project.

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Paul Callender