

WHITE PAPER

Gravel Production + Blockchain Option: GRAVEL COIN (GRV)



Guinea (Conakry)

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1 ABSTRACT

The project is based on the opportunity made available by the Government of Guinea (Conakry), which issued an Invitation Letter on behalf of Craton-Roche Recursos Minerais, a Brazilian mining company with large experience in mineral prospecting, geological survey, mining and mineral processing. This plan aims the capital raising through the blockchain technology issuing the GRV COIN to invest in the registration of a new company in Guinea, obtaining a licence for stone extraction – already included in the Invitation, setting up the stone extraction and a crushing plant, as well as the commercialisation of gravel in the country and exporting to the neighbouring and GCC countries.

2 INTRODUCTION

The two most relevant topics on the ICO campaign are Market and the Blockchain technology. Guinea is facing a shortage of the gravel output for construction, roads and railways to be built or renovated. The companies active in the country are not able to meet the damned demand, thus the country is facing some challenges to meet its needs. The Guinean market presents an average output of 150,000 tons per month, even though the actual production does not meet the demand, and besides there is an additional demand of gravel from neighbouring countries as well as in the GCC countries – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE.

The present mining undertaking is the gravel production, aiming primarily to supply the demand from civil construction in Guinea, mainly in Conakry where the demand is higher, as well as the demand from the construction of roads and railways. This undertaking in few months will serve as the basis for an immediate expansion into the production of concrete and asphalt.

The sale of GRV Coin (GRAVEL Coin) will create an outstanding market for cryptoinvestors, who will benefit from the company's activity and a feasible expansion. After this project is consolidated, the company can easily increase its mineral portfolio by exploring other mining opportunities: precious metals, niobium, Rare Earths Elements (REE), iron ore, zinc, copper and more.

The Ministry of Mines and Geology will make available some deposits for inspection and selection in the Dubreka area, just 30 km from the capital Conakry. The team will choose a stone deposit according to its reserves and other features, which will be measured at the selected site after the site is inspected. Besides its mineral reserves, the geologist will select a deposit based on characteristics like logistics, geomorphology, distance to power and water, among others.

The project is comprised by the registration of a new Guinean mining company, selection of a granite deposit, purchase, import and setup of machinery and equipment, operational test, and start-up of full operation.

3 MARKET ANALYSIS

The gravel market in Guinea (Conakry) is growing, evidencing a present economic transformation in the country. The existent production nowadays is not capable to meet the demand. Gravel is a simple product used day-by-day in the residential construction sector. Even during hard times, this mineral product always has market, as it has application in all social levels. In the urban centres, even the most humble families the product is sought for the construction of floors, water reservoirs, septic tanks, beams, poles or pillars. That is why the consumption behaviour results in an ample consumer range and exhibits a stable behaviour.

According to the current and future demand for gravel in the country, allied to a export potential to the GCC countries, the government of Guinea invited our company Craton-Roche Recursos Minerais to set up a new company in the country and runs a new mine to extract and crush rock to produce gravel. The product will be used in the civil construction, roads and new railways.

Based on official information from the Ministry of International Cooperation, the demand is much higher than it is produced by the operating companies, including some from China and Italy, which production in the region of Lower Guinea (Conakry) is at 150,000 tons per month. Thus, considering a restrained demand, it is expected that mine will be explored according to the proposal, start a saleable production from 30,000 tons/month and grows steadily.

In the future, according to the market, and with new investment, it is possible to increase the production to reach the amount of 75,000 tons/month. Within the urgent market need the project has very favourable conditions to be successfully launched in a short time.

4 PROBLEM

The country is facing a shortage in the output of gravel to meet the demand from the building sector, along with the need to construct or renovate roads and railways. At section 6 we present an extensive list of projects, our potential consumers. In the country, due to a great demand there is an immediate market share at 50,000 tons/month.

It is easily observable that there is a clear situation of the technological and financial capabilities limitation for an efficient execution of the planned public projects. The advanced degradation of transport infrastructure and energy production and the absence of massive investment in these areas for several years make insufficient the significant efforts since 2012. Not only the housing sector is facing difficulties, but also the transport sector in the Republic of Guinea, as it is mainly dominated by road transport with a significant milage needing resurfacing works. About 95% of the movement of people and goods are carried by road.

5 SOLUTION

According to the problem faced in the country, the Guinean government searched for an entity with expertise in the mining sector in order to set up the activities of stone extraction and stone crushing, aiming at the production of gravel to meet the current and future market demand. Thus, the government of Guinea issued the Invitation Letter on behalf of our company, which in turn structured the production on the mining plan at 30,000 tons/month. Besides, this project will contribute with better transportation conditions, improvement of living standards, the generation of jobs, the environment protection through rational and technical mining methods, a better economy, among others.

6 OPPORTUNITY

As mentioned above, the following projects provide the company with a potential consumption and a great business opportunity:

Railway:

- ❖ The country is preparing a series of works like the construction of the railway line Conakry-Kankan;
- ❖ The circulation of a second commuter train "Blue Train";

- ❖ A new railway, the Trans-Guinean: a multi-use multi-user railway line 650 km long linking south-east Guinea with the coast along the Southern Growth Corridor.

Roads:

- ❖ Arranging the highway from Conakry to km 36 into 2x2 lanes and from that point to be reconnected to the different national roads.
- ❖ Arranging the road Enta – Sonfonia into 2x1 lane for 2.6 km and the south cross section for 2 km.
- ❖ Asphaltting different roads in some cities and towns which are: Faranah, Kissidougou, Dabola, Kouroussa, Siguiri, Mandiana, Kérouané and Dinguiraye for a total of 52 km of roads.
- ❖ The African Bank for Development is financing a project of road interconnectivity between Ivory Coast and Guinea. US\$50 million will be used to pave a section of Lola motorway. Lola is a town in Guinea situated in the border zone between Guinea and Ivory Coast. In addition the project will rehabilitate 300 km of roads between three countries of the Mano River Union.
- ❖ Louis Berger recently launched a project of supervision of construction work of €1.3 million (US \$1.4 million) for the repairing of a section of 151 kilometres of the National road (RN1) connecting Dabola to Kouroussa in the center of Guinea.
- ❖ The construction of the national road RN2. Sogea-Satom realizes the rehabilitation of the RN2 a distance of 53 km between Kissidougou and Guéckédou, as well as the reconstruction of ten bridges. Worth €55 million, the project is funded by the European Union (10th EDF program). It will be implemented within 24 months.
- ❖ Rehabilitation of 194 kilometers between Kankan and Kissidougou road into a modern road meeting international standards. This road major project expected to open up areas of the Haute -Guinée, the Middle Guinea and facilitate access to maritime corridor.
- ❖ The construction of the railway line Conakry-Kankan, the second largest city in the country (662 km long) was entrusted to the French group Bolloré. Also announced that the construction of the railway line Conakry - Kagbélén, approximately 142 km long.
- ❖ Railway Kaloum- Kagbélén: Six wagons and 450 tons of rails are already in Conakry On the side-lines of the inauguration of the Bluezone Kaloum, Bolloré who wants to link the port of Conakry to the railway track no later than 2 October, The Bolloré Group is managing Conakry container terminal is also he who is contractor of the construction project of the railway Kagbélén-Conakry, along about 42 km and Conakry-Kankan-Bobo-Dioulasso via Bamako.

Several projects have been completed in the area concerning the construction, reconstruction, rehabilitation and restoration of roads infrastructure as follows:

- ❖ 639 km of new road infrastructure construction;
- ❖ 240 km reconstruction of existing road infrastructure;
- ❖ 246 km rehabilitation of road infrastructure and 340 km of semi-rehabilitation of existing road infrastructure.
- ❖ The rehabilitation of the prefectural road Yombiro-Dangaldou, Kissidougou prefecture of 47 km;
- ❖ Rehabilitation of community roads sections Mongo-Badala-Téméssadou in the prefecture of Gueckedou about 20 km;
- ❖ In terms of transport, in particular the rehabilitation of the airstrip and access road for 17 km N'Zérékoré airport;
- ❖ The development of a modern logistics platform Transport 100 ha Kouriah (Coyah).
- ❖ The opening up at least half of rural areas;
- ❖ Maintenance in good condition of at least 60% of the national road network by prioritizing the prefectures are not served by asphalt axes.

7 PRODUCTION: MINING PLAN

This chapter addresses the aspects related to the mining methodology which will be adopted in the undertaking of interest to Craton-Roche.

In Dubreka, there are massive granitic outcrops, which normally present overburden in some spots. This topsoil will be removed utilising a loader and/or excavator, which will be stockpiled in order to be later discharged in the most suitable way, and for subsequent utilisation for environmental recovery, and can be redistributed on the worked area according to the extraction advancement..

The quarrying method to be adopted for the stone extraction will be the open pit model, with an exploitation slot through descending benches, initiating by lowering the level, aiming at maximum harnessing of the existent mineral potential preserving the stability of the excavated slopes.

Each opening will be monitored topographically and updated in the end of each month. The definition of the bench (height 12.0 metres and inclination of 15°) provides a geomechanical safety for such type of stone extraction, including signalling all area including the sides of the benches, access ways, etc., and where there are potential risks, proper bulkheads.

The estimated waste/ore relation is 0.20/1.00 m³ of extracted granite. The waste is composed by gravel and sandy soil, very little fertile.

For an average soil thickness *in situ* of 0.4 metre, in an area of 30,000 sq.m. (3 hectares) to be effectively extracted, 12,000 m³ of waste material will be moved. This material when stocked in an area of 50,000 sq.m. (5 hectares) will generate a 3.00 metre high pile, if totally utilised, what will hardly occur, as the environmental recovery will be conducted as the extraction will be advancing.

The operational sequence: topographical mapping with definition of drilling net, drilling, primary blasting, secondary blasting, loading, transport and stone crushing.

Each bore will have 3 inches done by the pneumatic drill rig – Rockdrill connected to a 900 PCM compressor. The initial drilling distribution will be 1.50 x 3.50 m, which can be modified according to the results. The explosive to be used will be the emulsion type Powergel 800 as bedload and Powermix (NCN) as column load in the proportion of 40/60, respectively. Whenever possible the company will try to replace the use of explosives with an innovative eco-friendly solution.

The accessories will be detonating cord at 25 metre distant, and the fire will be started with fuse. Safety norms will be adopted using particle speed of 10mm/s, considering the Brazilian NBR 9653 established by ABNT (Brazilian Association of Technical Norms), which is capable to preserve the surrounding structures. The seismograph of the first detonations will be monitored, in order to study the rocky behaviour in the region adjusting the equation variables of Langford.

$$VP = K (D/Q^{1/2}) - B$$

VP = peak particle speed

D = distance of detonation to the point of measurement (m)

Q = maximum load by weight (kg)

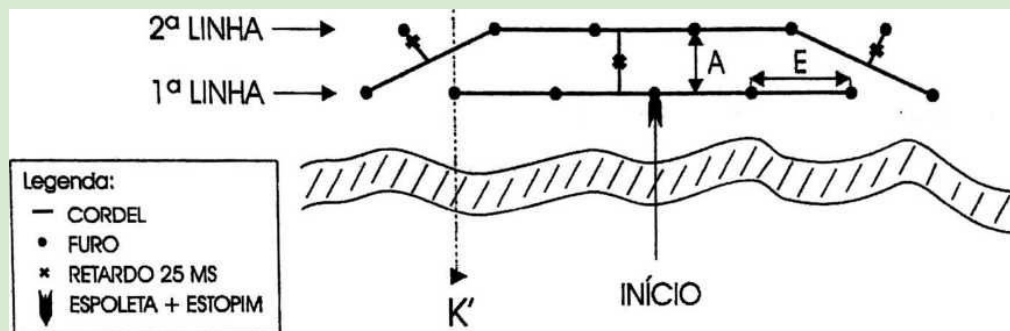
K e B = constants to be determined in measurements and it is related to the rocky package x distance.

The detonations should be monitored, since the blast plan below was dimensioned considering previous experiences to such type of rock and the available equipment. The blast plan should be adapted according to the local structural geology (fracturing, faults, schistosity plan, etc), always being adapted taking the results into account:

$A = 1.5$ m (distance)
 $H = 12$ m (bench height)
 $T = 1.5$ m (buffer)
 $CF = 12.5$ kg explosive emulsion by hole
 $CC = 18$ kg granulated explosive by hole
 Volume by hole = 63 m^3

$E = 3,5$ m (spacing)
 $SF = 0.5$ m (sub drilling)
 $\theta = 15^\circ$ (inclination)
 (CF = bed load)
 (CC = column load)
 $RC = 484 \text{ g/m}^3$ (load ratio)

CUT K

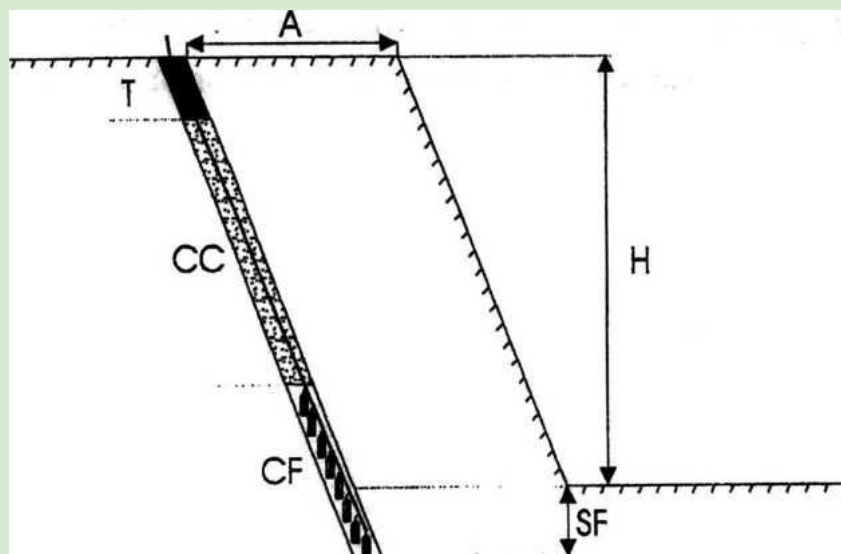


INÍCIO - Start
 FURO - Hole

LINHA - Line
 RETARDO - Delay

CORDEL - Cord
 ESPOLETA+RETARDO - Fuse+DElay

CUT KK'

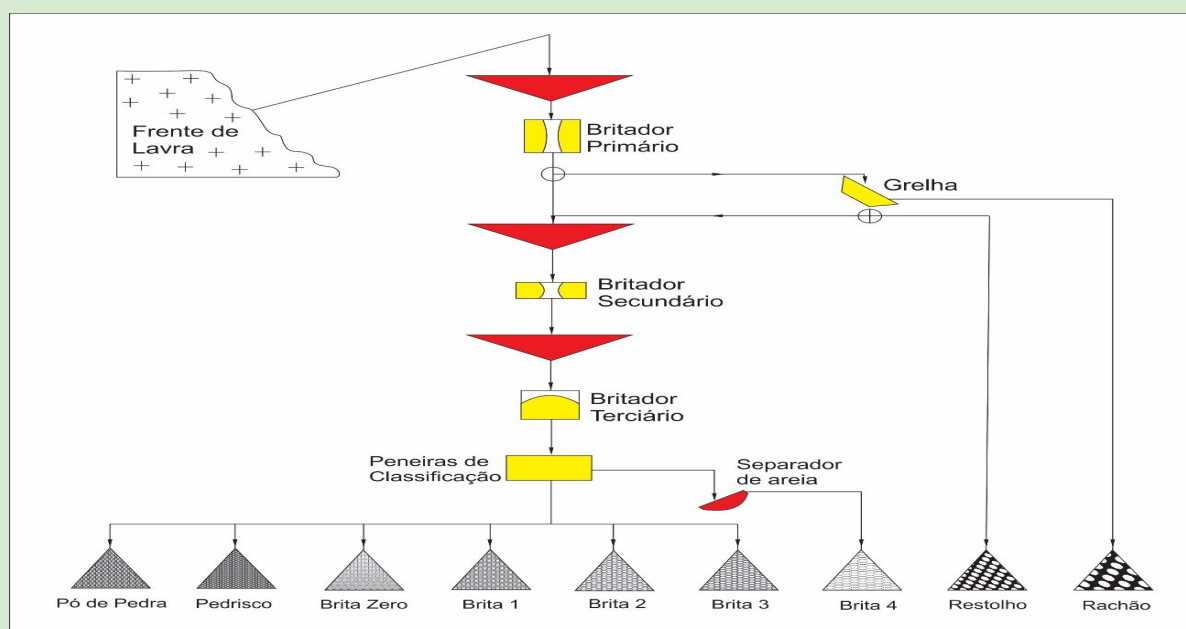


The secondary blasting will be carried out mechanically utilising the excavator and hydraulic breaker.

The loading of the removed material will be operated using a 194 cv loading shovel (possibly a FIAT FR-180). Internal transport will be realised by tipper dump trucks Mercedes Benz model MB 2318 with 12 m^3 capacity ore bucket, while external transport will be done by truck and eventually by train. Observation: all area will be signalled.

After blasting, the rock will be transported to the crushing centre, comprising a 40090 feeder, where the truck will dump the material. Following, the rock passes through the primary jaw crusher with 8060 size, afterwards to the lung pile. This material passes through a secondary crusher size 9025, where is put on screening. The material will be selected below 38 mm, above this it will pass through the tertiary crusher 90 TS, returning to the screen ending the circuit. The screen will select gravel 0 and 1, and rock powder, according to the market expectation. This system is projected for a nominal capacity to produce 150 ton/h of crushing material.

Crushing Plant Unity



Frente de Lavra - Mining Front

Grelha - Grid

Britador Terciário - Tertiary

Separador de Areia - Sand Separator

Pedrisco - Small Stone

Brita 1 - Gravel 1

Brita 3 - Gravel 3

Restolho - Stubble

Britador Primário - Primary Crusher

Britador Secundário - Secondary Crusher

Peneiras de Classificação - Classifying Screeners

Pó de Pedra - Rock Powder

Brita Zero - Gravel 0

Brita 2 - Gravel 2

Brita 4 - Gravel 4

Rachão - Cracked Rock

The production of this crushed rock is aimed at the country and in this context the enterprise will be settled with the objective to yield 30,000 tons of gravel a month. The mining plan is essentially dynamic, as the mine is being explored. New information will be available, requiring a constant adaptation on the original plan according to the new conditions of the mine, demonstrated by its evolution.

8 ICO

Guinea Gravel project is the investment vehicle, through which gravel a highly demanded product by the building industry, is linked to GRAVEL COIN blockchain option implemented and managed by Waves platform. The GRV COIN offer will be divided in three stages: Pre-ICO, Pre-Sales and ICO.

The expected revenue is \$540,000/month or \$6,480,000/year (30 thousand tons of gravel a month x \$18.00). Within three years the volume of gravel to be produced will be 1.08 million tons corresponding to \$19,440,000, and within five years the quantity produced will be 1.8 million tons generating \$32,400,000.

During the **Pre-ICO**, taking place during the first two (2) weeks of November, the blockchain option in the form of the GRAVEL COIN will be offered to investors for **\$9.00** with 63,111 tokens (GRAVEL COIN) emitted by the blockchain with a discount of 50% for \$568,000 (1 token = 1 ton of gravel).

For the **Pre-Sales**, to take place during the last two (2) weeks of November, investors will have the opportunity to purchase a block-chain option of 107,143 GRAVEL COINS, being 1 GRAVEL COIN = **\$14.00**.

For the **ICO**, will take place between 01 and 15 December, the minimum milestone setup is \$2.5 million, the planned amount is **\$5,764,065**, with no limit. A possible excess will be invested in the project expansion and/or in new projects. At this stage, investors will have the opportunity to purchase a block-chain option of 205,337 GRAVEL COINS, being 1 GRAVEL COIN = **\$18.00**.

9 ROADMAP

December 2017 - The team will register a new company in Conakry, select the stone deposit made available by the Government of Guinea, prepare reports and assessments for the start-up.

January 2018 - Development and preparation of the mining site, import part of the machinery and equipment, connection of water and power, building part of the infrastructure.

February 2018 - Complete the import of the machinery and equipment, complete the infrastructure, setting up machinery and equipment, carry out the operational tests, and startup mining.

Q 1-2 2018 - Expansion of gravel production

Q 2-3 2018 - Expansion into other mineral opportunities

10 CONDITIONS

- ❖ The crowdsale of tokens will be conducted in the form of a loan;
- ❖ Possibility of conversion tokens into equity if the company goes public (IPO);
- ❖ Investors may purchase options using cryptocurrencies;
- ❖ Investors will get 30% discount on the purchase of the products;
- ❖ In 12 months the company will start a buy-back campaign of GRAVEL COIN blockchain options right after the ICO period, and burn these tokens until reach 100%;
- ❖ Investors will also have the right to get a 5% discount over next coins issued by the company's new ICO campaigns. Example: when a new coin of a new project is sold during the Pre-ICO, and if the discount would be 50%, the investor will get 55% discount, and during the ICO the investor would get 5% discount;
- ❖ Minimum investment: \$18.00 (1 ton of gravel);
- ❖ Audit services are being discussed with one of the BIG4;
- ❖ The company will share profits on the basis of 40%.

11 TOKEN DISTRIBUTION

5%: 1,877,954 tokens to compensate the team;

5%: 1,877,954 tokens to compensate supporters;

90%: 33,803,180 tokens for the project settlement.

12 ECONOMIC FEASIBILITY ANALYSIS

The nature of such mining business feasibility depends on the domestic consumer market. The economic decision to the investment of such type is associated to four basic factors: demand, mineral reserves, location and distance to be compatible to the freight cost.

The required equipment for the mine set up of this size, sum up approximately \$3,774,000 and \$222,222.22 additional for buildings, facilities and access ways. The mine will be managed considering an average monthly production of 30,000 tons, with 23 employees distributed as mine manager, stone crushing officer, mechanic, blaster, auxiliaries, welder, operators, drivers and security.

The projected initial investment comprises the acquisition of machinery and equipment, civil construction, equipment setup, working capital, and commissions plus compensation for the team at the whole amount of \$5.764 million. There are two references, sales according to the initial production of 30,000 tons and the costs/expenses presented above, defined on the mining plan. Costs include all expenditure related to the resources used in the production, and the annual costs at \$1.870 million.

Finally, the income statement forecast could be prepared considering sales of 30,000 tons/month of crushed material at \$18.00/ton, generating a Gross Operating Income at \$6,480,000.00 p.a.

Income Statement	\$
Gross Operating Revenue	6,480,000
VAT 15%	(972,000)
Net Operating Revenue	5,508,000
Costs	(1,870,308)
Income	3,647,692
(-) Income Tax 15%	(545,654)
Net Profit	3,092,038

Economic Indicators: Return on Assets, Net Margin and Return on Investment

Economic Indicators	ROA	Net Margin	ROI
%	60.00	48.00	54.00

13 MANAGEMENT TEAM

The team is composed by:

- ❖ **Paulo Carneiro** is a Brazilian mining entrepreneur, well experienced in mineral prospecting, geological survey, extraction and processing, he took part in gold mining project in Ghana; founder of Craton-Roche (managing partner, Brazil) and StanRocc (director, UK). He is a chartered accountant affiliated to CRC (Bahia State Accounting Council), with specialisations

- in managerial accounting (iMBA, University of Illinois at Urbana-Champaign) and investment management (MOOC, University of Geneva). LinkedIn: <https://www.linkedin.com/in/paulo-carneiro-34bb9612>
- ❖ **Eli Rocha** a senior Brazilian electrotechnician specialised in machinery and equipment set up. He worked at several mining projects, including stone crushing, gold extraction and recovery, layout and operational procedures, all involved following technical norms. Structural, mechanical, electrical, equipment projects, and civil works. He has worked with asbestos, ceramics and other minerals. He worked in cooperation with several mining companies, as well as equipment companies like METSON.
 - ❖ **Emanoel Apolinário**, Geologist with specialisations in mineral prospecting and geological survey at Universidade Federal de Minas Gerais / Geology Centre Eschwege in Diamantina/MG –1991, as well as in stone extraction and processing. Geologist at DNPM (Brazilian Mining Department) 1984-2004, where he was head of diverse sectors. He has carried out geological survey in the following minerals: iron ore, manganese, industrial sand, sand for construction, gypsum for plaster and cement, gold, emerald, amethyst, feldspar for ceramics, natural/dimension stone, clay and other ores. Chief geologist at the iron ore project of Paili Mineração Ltda; head of prospecting, survey and settlement of mineral water production at Industria de Bebidas São Miguel; Bahia Nigranito, Mineral Consult Brasil, Corcovado, Pedreiras do Brasil. LinkedIn: <https://www.linkedin.com/in/emanuel-apolinario-85ba653a/>
 - ❖ **Ricardo Tadeu Chagas**, Mining and Safety Engineer. His professional experience includes services provided to large, small and medium companies. Mine manager at Oliveira Maciel Mineração Ltda in Divinópolis de Goiás, Goiás, Brazil - activity: limestone extraction and processing for corrective amendment utilisation. Processing engineer at Mineração Yukio Yoshidome S/A (MYRSA) in Calçoene, Amapá, Brazil - activity: gold ore extraction and processing. Mining Engineer at Flacol Mármore in the Pio IX, state of Piauí, Brazil - activity: marble extraction. Mining, safety and environmental planning at Craton-Roche Recursos Minerais, Brazil. Research works: Economic Feasibility for Small Deposits of Gold, UFBA, Salvador – BA 1987/88, Talc Ore Processing with High Grade of Iron, CEPED, Salvador, Brazil. LinkedIn: <https://www.linkedin.com/in/ricardo-tadeu-santos-chagas-9a34b1112/>
 - ❖ **Felipe Sanches** is a Senior Audit and Business Advisory Manager at PwC (<http://www.pwc.com.br/>) and Corporate Governance Director at ANEFAC (https://www.anefac.com.br/ANEFAC_Ing.aspx), Salvador-Brazil. At PwC, he is experienced in external audit in several segments and in consulting on Corporate Governance, Integrity Program, Evaluation of Business Processes and Internal Controls, SOX Compliance, Internal Audit and IT Audit. LinkedIn: <https://br.linkedin.com/in/felipesanches/pt>
 - ❖ **Pedro Fonseca**, Geologist specialized in mineral resource exploration with target evaluation and reserve development; graduated in 2004 by the Federal University of Bahia. He has worked in several research programs in Brazil, Mineração Caraíba (underground development and extraction) 2005-2006 for copper and as Chief Geologist of Braziron Limited for iron ore research, 2012-2016; also at Northeast States and Pará (INV Metals) for Au, Cu, W, Mo and others, with exposition to industrial commodities and water/soil quality. In Australia (2007-2010) he has worked mainly in the Outback (Abra Mining- today's Galena Mining) with responsibility role, for lead, copper, zinc, gold and silver. Studies on project feasibility, metallurgy, cash flow, logistics, complying with quality controls (QA/QC), international reporting standards, safety/environmental guidelines. Additionally, implemented revegetation programs and a mahogany pilot project (in 2012). Pedro Fonseca on LinkedIn: <https://www.linkedin.com/in/pedro-fonseca-53a31267/>
 - ❖ **Dmitry Pshenin**, marketing director. He is managing partner at tokenUP Agency and CEO at ICOBoard, and co-founder/investor at Polystock, all companies based in Moscow. In his background it is included: CBDO at StarTrack (2014-2015, Moscow), head of partnership at

IPOBoard (Moscow Exchange, 2012-2014, Moscow), head of business development at Technopolis (Dec 2011-2012, Moscow). His education comprises graduation in economy with specialisation in development management by The Russian Presidential Academy of National Economy and Public Administration under the President of the Russian Federation (RANEPA), and specialisation in management at SKOLKOVO Academy. Dmitry Pshenin on LinkedIn: <https://www.linkedin.com/in/dmitrypshenin/>

14 ENVIRONMENTAL PLAN

The environmental costs were considered in the calculations in the overall mining operation. The cash flow includes the investment in the environmental planning, mitigation, and recovery for the area to be mined. After the mineral reserves depletion, the area will be recovered, possibly with a lake and or reforestation.

It is planned to retain on each unity of gravel sold (ton), a value with the aim to also cover the costs on the improvement of the standard of living of the mine employees and the neighbouring community. The jobs to be created will play an important role for the country.

15 CONCLUSION

The company is supported by the Guinean government, whilst financial figures and economic assessment evidence a high probability of a successful settlement of the mining project with a great demand to be explored, which commercial feasibility can be reached both through domestic market such as through exports especially to the GCC countries.

The geology in the area is represented by a massive granite body well-formed for setting up stone extraction and crushing unity aiming the production of gravel to be applied in the civil construction, renovation and building of roads, railways, etc.

The stone extraction costs in the beginning of operations will be reduced due to the low relation ore/waste, since the deposit presents a large exposed surface.

Considering the scale of gravel production around 30,000 tons/year, comparing the project profitability with a fixed income investment, we may conclude that the present investment opportunity is profitable, attractive and technically feasible. Moreover, with the consolidation of this project the company will be in a advantageous position to proceed into an expansion phase in terms of quantity as well as into other minerals as precious metals, for example.