

# **MEGA BUILDERS LIMITED**

**(GOLD PROCESSING PROJECT)**

**Proposed Project for Establishment of Gold Processing Plant**

**at**

**Mlandizi Village, Mvomero District, Morogoro Region**

**A Techno-Economic and Financial Feasibility Study**

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## **1.0 EXECUTIVE SUMMARY**

### **1.1 INTRODUCTION**

#### **1.1.1 Background Information**

This revised report represents an objective analysis of the overall viability of engaging in gold processing using gold tailings and gold ore as the basic raw materials by applying cyanide in Carbon-In-Pulp gold extraction technique. The project is being promoted by Messrs. Mega Builders Limited (hereinafter referred as the company), a locally incorporated company. As the name would suggest, the company was formed way back on 10<sup>th</sup> December, 1985 under Certificate of Incorporation No. 11668 for the main objective of undertaking building works under the name of M/s Leco Engineers and Builders Limited. The name was changed to M/s Mega Builders on 26<sup>th</sup> July, 2002 under Certificate of Change of Name No. 11668.

Having been in the construction industry in Tanzania for more than 35 years, the Company is now desirous to diversify its business activities, and sees a very bright future in gold mining and processing. In preparations for venturing into this sector, M/s Mega Builders has entered into partnership with 40 Primary Mining Licences holders (local small scale miners) in nearby Kilolo and Magari Villages at Mvomero District. These PMLs will be developed into active mining areas. The areas have been proven to contain gold mineralization during the initial exploration of the area. Likewise, the Company has acquired PMLs for copper in Kilosa District. Both PMLs are in Morogoro Region. However, the Company plans to start with gold processing in Mvomero where Feasibility Study conducted earlier by Consultant M/s Golseel Limited has indicated the project to be viable. They have already on hand Gold Processing Licence No. 0010/2015 for conducting the activity at Mlandizi Village. M/s Mega Builders Limited envisages conducting a similar study on copper in near future. The Company, in collaboration with its local partners has already started small scale mining in some of the PMLs

#### **1.1.2 The Project Concept**

M/s Mega Builders Limited envisages setting up a gold tailings and ore crushing and extraction plant at Mlandizi Village after acquiring legally a project site with a total area measuring approximately 9 acres under Processing Licence No. 0010/2015 within the Village. The Company plans to obtain gold tailings and gold ore from artisanal/small scale gold miners at the vicinity of the processing site/surrounding villages; as well as gold ore from the Company's small scale mining from its PMLs.

The proposed project entails design, finance, development, construction, establishment and operation a cyanidation gold processing plant using gold tailings and gold ore as the raw materials by applying Carbon-In-Pulp gold extraction technique. Maximum processing capacity of the plant is estimated at 280 metric tons per week or 1,120 metric tons per month, translating into 13,440 metric tons of tailings/ore per annum. Recovery rate for the gold tailings has been conservatively estimated at only two and a half (2.5) gram per ton, and for ease of computations, the same rate has been applied for gold ore although it can go as high as 6 grams per ton.

### **1.1.3 Objectives of the Study**

The objectives of this study are two-fold. The first is to work out and determine technical, commercial and financial viability and operational feasibility of the proposed medium gold processing project in a five-year period; and if viable, use it as a business guide in implementing the project. The second objective is to facilitate the application for Tanzania Investment Centre (TIC) Certificate of Incentives to access tax reliefs on duties, VAT and other benefits and protections as statutorily provided for under Tanzania Investment Act (1997) for the proposed project.

### **1.1.4 Scope of Assignment**

The scope of the assignment includes standard requirements of a techno-economic feasibility study to facilitate appropriate investment decision. Hence such a study carried out professionally for this study must include, among others:

- ◆ Review of location and proposed site;
- ◆ Construction costs: processing sites, buildings, structures and civil works;
- ◆ Capital and deemed capital requirements, including plant machinery, tools, equipment;
- ◆ Gold processing requirements and techniques (main raw materials, processing technology and process, processing chemicals, processing costs etc.);
- ◆ Labour requirement and costs;
- ◆ Maintenance requirements and provisions made in the major capital items;
- ◆ Financial and economic analysis;
- ◆ Developmental Values/Economic Benefits;
- ◆ Risk Analysis;
- ◆ Review of Environmental Aspects;
- ◆ Project implementation schedule and management.

Most of the data has been compiled by a Consultant, M/s Golseel Limited who conducted a study on the project in May 2014. However, the promoters' own research and study has also been very useful in preparation of this business plan. On the other hand, Environmental Management Plan and all environmental aspects referred to under this study was recently carried out by M/s M & E Jembe Consultants, a private Consultant on environment assessment and management. The financial projections have been carried out on the basis of market and cost information provided by the promoters of the project.

### **1.1.5 Layout of the Study**

This report presents the Techno – economic and financial feasibility for setting up/operating a medium scale gold processing project with operations based at Mlandizi Village in Mvomero District, Morogoro Region. The report is organised in nine (9) Chapters.

The Executive Summary is dealt with in this Chapter 1, followed by the mining Business Environment in Tanzania in Chapter 2. Chapter 3 deals with the project details (project concept, location and infrastructure, ownership, investment costs and financing plan). Chapter 4 provides technical aspects of the project (gold production process, logistics and supply of raw materials and inputs, raw materials requirement and availability, production costs and revenue estimates, environmental aspects and project implementation schedule).

A brief account on the manpower requirements and organization structure is as dealt with in chapter 5. Chapter 6 deals with project Financial Analysis (estimated capital cost and basic operating assumptions, and analysis of financial results). Chapter 7 covers Threats to Profitability and Running of the Project (risk analysis looked from the strengths and weaknesses of the project environment). Chapter 8 deliberates on the Development Values/Economic Benefits (social and local economic benefits emanating from the project). The report ends with conclusion and recommendations in Chapter 9.

## **1.2 PROJECT SPONSORS**

The proposed gold processing and refinery project is being promoted by M/s Mega Builders Limited, a private company incorporated in the United Republic of Tanzania for the purpose of carrying out various economic activities. The company envisaged diversification of its activities by establishing gold processing project in Tanzania.

The current shareholders of Mega Builders Limited are as shown in the table below:

Name of Current Shareholders	Nationality	Number of Shares	Percent Shareholding
Balbir Singh Malik Msasani Ward, Mikoroshoni Area P.O. Box 5767 Dar es Salaam	Indian	5,500	3.25%
Aruna Malik Msasani Ward, Mikoroshoni Area P.O. Box 5767 Dar es Salaam	Indian	5,400	2.7%
Asha Selemani Lindonde Msasani Ward, Mikoroshoni Area P.O. Box 5767 Dar es Salaam	Tanzanian	500	0.25%
Nitin Malik Msasani Ward, Mikoroshoni Area P.O. Box 5767 Dar es Salaam	Indian	6,500	3.5%
Un-alloted Shares		181,100	90.55
<b>TOTAL</b>		<b>200,000</b>	<b>100%</b>

### 1.3 LOCATION AND INFRASTRUCTURE

The proposed gold processing project will be located in an unsurveyed land measuring approximately 9 acres at Mlandizi Village, Mvomero District, Morogoro Region under Processing Licence No. 0010 /2015. The project location is southwest of Mlandizi Secondary School, approximately 2 kilometers from the village centre along Morogoro-Iringa Road.

### 1.4 PRODUCTION PROCESS (TECHNOLOGY)

Mega Builders Limited plans use state-of-the-art gold processing facilities. The proposed processing technology to be used under this project is Carbon-In-Pulp (CIP) gold extraction technique for recovery of gold liberated into a cyanide solution as part of gold cyanidation process. The technology behind this plant is superior to current leaching plants in Tanzania.

## 1.5 PLANT CAPACITY AND UTILISATION

The company envisages construction and installation of gold processing and recovery plant with an installed processing capacity of 280 metric tons of gold tailings per week or 1,120 metric tons per month. Realization of this production target will involve procurement and installation of small ten (10) Ball Mills with grinding capacity of 4 tons per day each, equivalent to 1,120 metric tons of tailings/ore per month. The grinding capacity calls for procurement and installation of eight (8) Vat Leach Tanks with holding capacity of 35 tons each. On assumption that it takes 7 days to complete the leach process, this translates into processing/leaching of 280 metric tons per week or 1,120 tons per month.

Plant Capacity Utilization is estimated at 60% in the first year, raising to 70% in the second year before stabilizing at 80% from year three onwards.

## 1.6 REVENUE ESTIMATES

The basis of revenue computations are on estimated gold recovery rate which has been conservatively projected at two and a half (2.5) grams per ton of tailings/gold ore, translating into estimated recovery of 2,800 grams of gold per month or 33,600 grams per annum. Revenue per gram is estimated at US\$ 35-. Total revenue per annum is therefore estimated at a maximum of US\$ 1,176,000- when the plant is operating at 100% capacity utilization. Actual capacity utilization is assumed at 60% during the first year, 70% during the second, before it stabilises at 80% from the third year onwards. Gold recovery however is estimated at a maximum rate of 90%.

### Revenue Estimates per annum

	YEAR 1	YEAR 2	YEAR 3
Installed Processing Capacity of Tailings/Ore per annum (tons)	33,600	33,600	33,600
Capacity Utilization (%)	60%	70%	80%
Average Gold Content (g/ton)	20,160	23,520	26,880
Total Recoverable Gold (grams)	2.5	2.5	2.5
Maximum Gold Recovery	50,400	58,800	67,200
Average Gold Recovery Rate (%)	70%	70%	70%
Annual Gold Production	35,280	41,160	47,040
Average Gold Price/gram (US\$)	35	35	35
Revenue Estimates (US\$)	1,234,800	1,440,600	1,646,400

## 1.7 RAW MATERIALS REQUIREMENT AND AVAILABILITY:

Mega Builders Limited will be operating a gold processing plant using gold tailings to be obtained from small scale miners within the proximity of the

processing site as the source of raw materials. The second major source will be gold ore to be obtained from the Company's own mining activities at their PMLs in nearby villages.

## **1.8 ESTIMATED INVESTMENT COSTS AND PROPOSED FINANCING**

The initial capital investment for the proposed project is estimated at US\$ 823,514- (including costs of development of the processing camp, acquisition of gold processing facilities, transportation facilities initial chemicals and other inputs, and working capital requirements) as given in Annex II & V.

It is proposed to finance the fixed investment costs of this project through equity at US\$ 448,514- and seek a bank loan of US\$ 300,000- to supplement the investment requirements. The Company envisages obtaining a short term loan from a commercial bank in form of an overdraft facility to finance working capital requirements of US\$ 75,000-.

## **1.9 COLLATERAL SECURITY**

The project promoters will mortgaged all assets and development thereon including plant and machinery located on the project site at Mlandizi Village, Mvomero District in Morogoro Region. Should they be required, the promoters will also issue directors' guarantee as additional security against the bank loans.

## **1.10 ORGANISATION AND MANAGEMENT**

The project will be managed through the Board of Directors. The Board will formulate policy and offer strategic business guidance to management and regularly monitor and evaluate performance of the company.

The day to day management of the project will be vested in the technical team. The technical team will comprise of the Project Manager who will be the overall in-charge of the project. The Project Manager will be assisted by Production Manager, Metallurgist, Plant Operations & Maintenance Engineer, Chemical Engineer/Quality Controller and Logistics & Procurement Manager. These will in turn be supported by qualified personnel in their areas of specializations.

On implementation, the proposed project plans to employ up to 36 people in its production facilities while 4 administration staff including an Accountant and Personnel & Administration Officer will also be employed to support operations of the project.

## **1.11 PROJECT IMPLEMENTATION**

Mega Builders Limited has already acquired gold processing project site located in an un-surveyed land measuring approximately 9 acres at Mlandizi Village,

Mvomero District, Morogoro Region as well as Processing Licence No. 0010/2015. The initial project activities will include site preparations and development including construction site selection, clearing trees and shrubs, land levelling, site fencing and procurement of construction materials. This will be followed by construction of storage structures, temporary shelters and latrines. Installation of leach tanks will involve excavation of the tanks, laying of foundation/tank bases, laying of bricks, final finishes and pipe connections.

Other activities are: excavation of water storage and barren tanks, laying foundation/tank bases and related finishes and pipe connections; construction of CIC Columns and buildings to house them. These are to be followed by construction of offices, storage and laboratory buildings, and construction of ball mill and jaw crushers. The project activities will likewise involve sinking of a borehole, construction of water reserve dam and tailings slurry storage ponds. These activities are scheduled to start in July/September 2021.

Importation of the cyanidation gold processing plant/Carbon in Pulp (CIP) plant and procurement of all other necessary machinery, tools, equipment and development of infrastructure is scheduled to start in August, 2021 after obtaining Tanzanian Investment Centre Certificate of Incentives and all other necessary licences and authorizations. It is expected that the plant should start initial production by November 2021 and embark in full commercial production by January 2022.

## 1.12 FINANCIAL PROJECTIONS AND EVALUATIONS

Annex VI of the attached Financial Projections forms analyses the Total Production Costs, Annex XII analyses Income Statement Projections while Annex XIII deals with Break-even Analysis as summarised hereto below. The analysis is well elaborated in the attached projections and summarised as follows:

- Internal Rate of Return on investment 44.01%
- Internal Rate of Return on equity 53.75%
- The Normal Payback Period is 3.24 years at zero discount rate and 3.53 years when discounted at the assumed discount rate of 8%.
- NPV Ratio is positive and computes at 1.27
- Breakeven Point ranges between 27.33% and 13.55% from the 1<sup>st</sup> year to the 5<sup>th</sup> year of production.
- Company Net worth grows over three fold during the assumed economic life of the project of 5 years, increasing from US\$ 448,514- at the end of construction period in December 2021 to US\$ 2,381,992- in 2026.

### **1.13 ENVIRONMENTAL CONSIDERATIONS**

Mega Builders Limited operations will have a minimal impact on the environment of the area. Tailings from mining operations can pose a threat to the environment and health of nearby communities. Not only can this waste be harmful if it leaches into ground water, but it can also mean losing minerals still contained in the residue. To prevent this, the project operations will use storage methods to contain the toxic tailings before use, and storage ponds will be constructed at the project site to store tailings slurry, the by-product of gold extraction process.

### **1.14 PROJECT DEVELOPMENT VALUES/BENEFITS**

Implementation of this project will lead to realisation of a number of development values/social and economic benefits. The project will contribute substantially to local economies in form of sale of gold tailings which is otherwise a processing waste to them. Direct job creation in the region of 40 in the proposed processing and elution plants.

The village in which the mining operations will be taking place will also see a number of benefits besides the creation of jobs in the form of social services from the company's Corporate Social Responsibility. It will be in the interests of the company to assist small scale miners in the proximity to the processing site to ensure a good supply of gold ore and tailings which in turn may sell gold extracted by them to Mega Builders Limited. For this reason if the company is forward thinking it will try and work with the artisanal miners and find ways of significantly increasing tailings production as well as gold ore. In addition, the project involves transfer of technology to Tanzania. Tanzanians will be trained on the job on how to extract gold using modern gold processing techniques.

### **1.15 CONCLUSION AND RECOMMENDATIONS**

The project is:

- technically feasible
- financially viable
- economically viable
- socially desirable
- environmentally sound, sustainable and manageable

In view of the global growing demand for gold and the benefits associated with this project as indicated in this report, the project is therefore strongly recommended for financing and subsequently implemented without unnecessary delays.

## **2.0 GOLD MINING IN TANZANIA**

### **2.1 The Business Environment**

Tanzania has a unique geological environment that hosts a variety of economic minerals. The most famous deposit is the Lake Victoria Greenstone belt in the central and north-central part of the country. Gold discovery and exploitation by German colonialists started towards the end of the 19<sup>th</sup> century and lasted until the First World War. During the British colonial era (1918-1961) mineral production and revenue were mainly from gold, diamonds, lead, mica, salt and tin. Gold was at a peak level in 1940 when it contributed to about 90% of the value of the mineral production. Following independence in 1961, many industrial sectors including the mining industry, were nationalised by the government.

In 1986 Tanzania agreed to a structural adjustment programme designed by the World Bank. Internal and external trade was liberalised, and the government opened up for foreign investment in the country. The liberalisation of mining, accompanied by the legalisation of the buying and selling of gold and gemstones through banks and designated dealers, had immediate effects.

Now Tanzania has become one of the fastest-emerging gold producers in Africa, and is the continent's third-largest gold-producing country after South Africa and Ghana. A number of large international mining companies (Barrick Gold Corporation, AngloGold, Ashanti Mining, Resolute Limited) are now involved in operations in the country.

### **2.2 Small Scale Mining in Tanzania**

The sector most relevant to the proposed operations of Mega Builders Limited will be the small scale and artisanal sectors. Estimates for the number of artisanal miners operating in the country are usually taken to be around 500,000 people. There are approximately 6000 small scale claim holders for gold in Tanzania. Assuming the number of people employed on each site is between 30 and 60. This leads to an estimate of 270,000 people working on government sanctioned claims. There are also a large number of miners working on non-government sanctioned claims.

Currently in Tanzania there is a dichotomy between the large multinational mining companies and the artisanal miners. Mega Builders Limited will seek to exploit this dichotomy. It will operate in a way that will add value to artisanal miners while not troubling the larger mining companies.

### **2.3 Small Scale Gold Mining and Processing in Mvomero District, Morogoro**

Small scale mining started in Mlandizi and Mangwe villages, Mvomero District around year 2003. As of current, small scale mining is being conducted at different areas in the two villages. About 100 small scale miners are assumed to be involved in the mining activities in this area.

Mining method involves excavation of shafts to approximated depth of 10 - 30 metres using simple hand tools such as hammer, shovels, and metal bars to reach the gold mineralized zones. Sometimes blasting is conducted by drilling holes and charging with explosives and then detonates the mixture. The mined ore is packed into bags and transported to the surface, then to the processing sites.

Processing involve batch dry grinding in custom ball mills. After grinding, the mill is emptied, the ore mixed with water and fed to sluice boxes. A sluice box consists of a feed box where ground ore and water are mixed, and a slanted wooden trough covered by sisal mat or hessian cloth. The slurry is allowed to run on the trough from top to bottom. Gold in the slurry is trapped on the mat and is later recovered and panned with mercury to amalgamate the gold. The resulting amalgam is squeezed to remove mercury and then burned in bone fire to drive off the mercury before it is sold.

The tailings from the sluice boxes are piled around the processing areas and contain some significant amount of gold that can be recovered by cyanidation process.

### **2.4 Gold Processing in Tanzania by use of Tailings**

The small scale gold leaching market in Tanzania is still clearly in its infancy. Most of the companies operating started as small scale mining operations that sought to employ leaching as a method of improving yield from the mined ore.

There are a small number of companies that are carrying out similar gold leaching operations in Tanzania. These companies have appeared in the last few years following the gold price rises of 2005 where such business models became feasible. Pioneers of this business include M/s Mineral Extraction Technologies Ltd. Their leaching operation is based near Geita approximately 100km south west of Mwanza with another leaching plant 40km north of their current plant. There are also operations based in Ushirombo and Kahama by M/s Dynamic Mining, and a leaching plant at Igurubi by MMS Limited near Nzega.

More companies of similar operations have increased in the last three years. Statistics obtained from Tanzania Investment Centre, Lake Zone indicates that at

least three gold processing companies using tailings as the source of raw materials are being officially registered with the Centre per year. Most of the new entrants are from China and India and almost all are based in Geita Region (see the figure below)



The most recent one is M/s Mega Builders Limited (owned by Indian Nationals) with its operations site based in Mlandizi Village, Mvomero District in Geita Region.

## 3.0 THE PROJECT

### 3.1 The Project Concept

#### 3.1.1 The Core Business Activities

The proposed project entails design, finance, development, construction, establish and operate a cyanidation gold processing plant using gold tailings as the raw material by applying Carbon-In-Pulp gold extraction technique. Maximum processing capacity of the plant is estimated at 280 metric tons per week. Recovery rate has been conservatively estimated at only two and a half (2.5) gram per ton.

#### 3.1.2 Technical Support Services to Artisanal/ Small Scale Gold Miners

In addition to gold processing, the project promoters are also looking at supporting small scale miners for purposes of increasing their production on understanding that the company and small scale miners will enter into contract where the gold recovered by the small scale miners will be sold to the company. Another option will be procuring gold ore from the artisanal/small scale miners. Such support services will include supply of cyanide and small gold recovery plants; and also small scale mining equipment. The Company will also obtain gold ore from its own mining activities from its 40 PMLs in nearby Kololo and Magari Villages

#### 3.1.3 Processing Licence

M/s Mega Builders Limited 2016 Company Limited has already legally acquired a project site with a total area measuring approximately 9 acres in Mlandizi Village under Processing Licence No. 0010/2015 within in the Village.

#### 3.1.4 Gold Elution Plant

The Second Phase of this project proposal entails setting up gold recovery facilities, providing electro-winning plants so the gold may be liberated from the carbon and into bullion form using modern technology.

#### 3.1.5 Project Implementation Activities

Implementation of the proposed project will involve the following major activities:

- Site preparation and development including sinking of a borehole, construction water reserve dam and tailings slurry storage ponds;
- Development of civil works, structures and buildings, including construction of residential camps and facilities for key staff, office

- building, staff canteen and facilities for workers, and storage facilities for materials and equipment;
- Importation and installation of gold processing plants, including ball mill plant, leaching plant, laboratory for metal testing etc.;
  - Establishing a workshop and acquisition of workshop machines, tools and equipment;
  - Acquisition and installation of ancillary infrastructure including heavy duty power generators, installation of security system etc.;
  - Procurement and installation of environmental protection plant equipment
  - Procurement of heavy duty trucks fleet for transportation of gold tailings from the small scale mining centres to the processing. Other utility vehicles will include pickups, 4-WD station wagon and motorcycles to facilitate movement.
  - Purchase of furniture and office equipment;
  - Fencing of the site compound and storage yard.

### **3.2 Ownership**

The project is being promoted by Messrs. Mega Builders Limited (hereinafter referred as the company), a locally incorporated company. As the name would suggest, the company was formed way back on 10<sup>th</sup> December, 1985 under Certificate of Incorporation No. 11668 for the main objective of undertaking building works under the name of M/s Leco Engineers and Builders Limited. The name was changed M/s Mega Builder on 26<sup>th</sup> July, 2002 under Certificate of Change of Name No. 11668. The company envisaged diversification of its activities by establishing gold processing project in Tanzania.

Presently, the Company is registered with authorized share capital of 200,000,000/= divided into 200,000 shares of TShs 1,000=.

The current shareholders and shareholding structure of Mega Builders Limited as shown in the table below:

Name of Current Shareholders	Nationality	Number of Shares	Percent Shareholding
Balbir Singh Malik Msasani Ward, Mikoroshoni Area P.O. Box 5767 Dar es Salaam	Indian	5,500	3.25%
Aruna Malik Msasani Ward, Mikoroshoni Area P.O. Box 5767 Dar es Salaam	Indian	5,400	2.7%
Asha Selemani Lindonde Msasani Ward, Mikoroshoni Area P.O. Box 5767 Dar es Salaam	Tanzanian	500	0.25%
Nitin Malik Msasani Ward, Mikoroshoni Area P.O. Box 5767 Dar es Salaam	Indian	6,500	3.5%
Un-alloted Shares		181,100	90,55
<b>TOTAL</b>		<b>200,000</b>	<b>100%</b>

The directors and shareholders of the company are experienced business people in a variety of business activities in the country with an experience of over thirty five (35) years in the construction industry. They have now started to look for opportunities for diversification of their economic activities, and foresee a big opportunity in the mining industry, considering the vast minerals available to in country and the attractive policies in the industry.

### 3.3 Estimated Investment Cost and Financing Plan

The initial capital investment for the proposed project is estimated at US\$ 823,514- (including costs of development of the processing camp, acquisition of gold processing facilities, transportation facilities initial chemicals and other inputs, and working capital requirements) as given in Annex II & V and summarised here below:

Promoters: M/s Mega Builders Limited P.O. Box 5767 Dar es Salaam

S/N	CAPITAL ITEM	COST (US\$)
1.	Land and Buildings	84,261
2.	Plant Machinery and Equipment	390,026
3.	Utility Motor Vehicles	152,996
4.	Furniture, Fittings and Office Equipment	15,000
	<i>Sub total</i>	<i>642,285</i>
5.	Contingencies	64,228
	Total Fixed Costs	706,514
6.	Pre-operational Expenditures	42,000
	Total Investment Costs	748,514
7.	Add: Initial Working Capital	75,000
	<b>GRAND TOTAL</b>	<b>823,514</b>

It is proposed to finance the fixed investment costs of this project through equity at US\$ 448,514- and seek a bank loan of US\$ 300,000- to supplement the investment requirements. The Company envisages obtaining a short term loan from a commercial bank in form of an overdraft facility to finance working capital requirements of US\$ 75,000-. The project financing arrangement is given in the table below:

(IN US\$)

SOURCE	AMOUNT (US\$)	As% age of total
Sponsors Contribution to Capital Investment	448,514	60%
Long Term Loan	300,000	40%
<b>Total Long Term Finances</b>	<b>748,514</b>	
Short Term Finance	75,000	100%
<b>TOTAL FINANCING</b>	<b>823,514</b>	<b>100%</b>

Short Term Financing of the Initial Working Capital Requirements estimated at US\$ 75,000- will be sought from a local commercial bank in the form of overdraft facility.

### 3.4 Collateral Security

The project promoters will mortgaged all assets and development thereon including plant and machinery located on the project site at Mlandizi Village, Mvomero District in Morogoro Region. Should they be required, the promoters will also issue directors' guarantee as additional security against the bank loans.

## 4.0 TECHNICAL ASPECTS

### 4.1 Cyanidation Gold Processing Technology

#### 4.1.1 Introduction

Various methods such as gravity concentration, flotation, panning, pyrometallurgy, cyanidation etc. are available for the extraction of gold metal from its ores. Amongst these methods, cyanidation is the most common method used in the leaching of gold from the ore. This process involves the dissolution of gold containing ores in dilute cyanide solution in the presence of lime and oxygen. The common processes for recovery of gold solution include:

- (i) Carbon adsorption,
- (ii) Merrill-Crowe process,
- (iii) Electro-winning and
- (iv) Ion-exchange / solvent extraction.

#### 4.1.2 Definitions

1) Tailings:

Tailings, also called mine dumps, culm dumps, slimes, tails, refuse, leach residue or slickens, are the materials left over after the process of separating the valuable fraction from the uneconomic fraction (**gangue**) of an **ore**. The extraction of minerals from ore requires **comminution**, i.e., grinding the ore into fine particles to facilitate extraction of the target element(s). Because of this comminution, tailings consist of a slurry of fine particles. Mine tailings are usually produced from the **mill** in **slurry** form, which is a mixture of fine mineral particles and water.

2) Tailings ponds or impoundments

Tailing ponds are areas of refused **mining** tailings where the waterborne refuse material is pumped into a **pond** to allow the sedimentation (meaning separation) of solids from the water. The ponded water is of some benefit as it minimizes fine tailings from being transported by wind into populated areas where the toxic chemicals could be potentially hazardous to human health; however, it is also harmful to the environment.

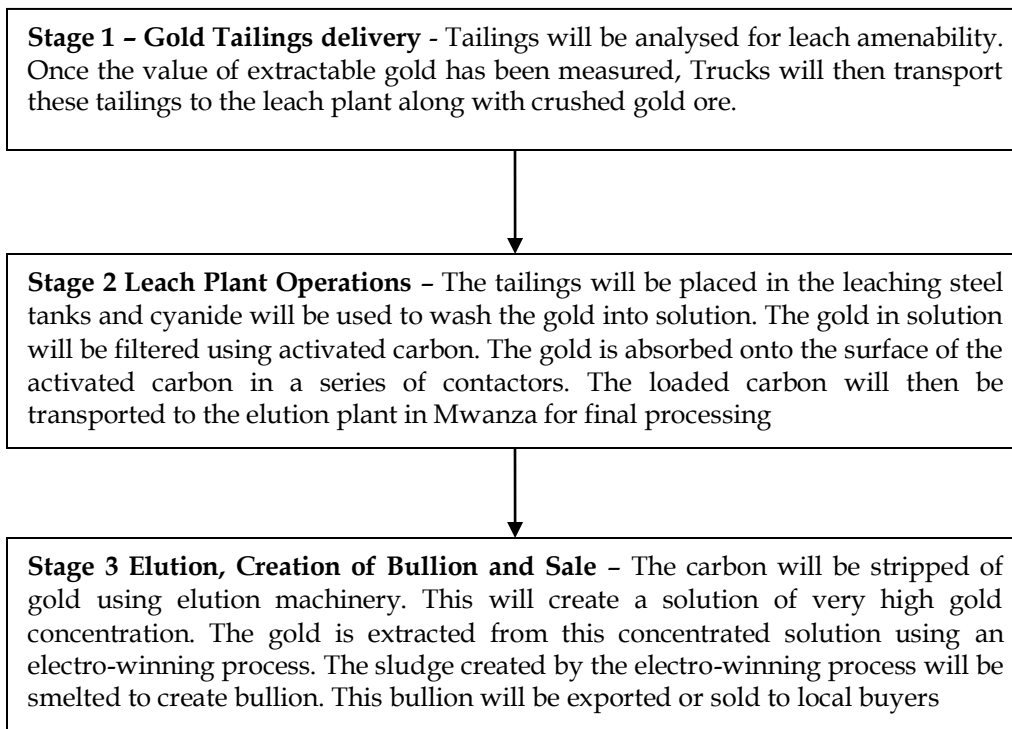
3) Carbon-In-Pulp (CIP) Technique

Carbon in Pulp (CIP) is an extraction technique for recovery of gold which has been liberated into a cyanide solution as part of the gold

cyanidation process. The CIP method involves creating ore slurry and directly contacting the activated carbon with the gold containing slurry in an agitated environment..

#### 4.1.3 The Process

The business will be broken down into three stages or “gold flows”. The first stage will be that of the delivery of tailings to the leach plant. The second stage will be the leaching process that will take place at the leach plant. The third stage will be the elution of gold and creation of the bullion that will be sold to local buyers or exported.



#### 4.1.4 Logistics and Tailings Supply

The first stage in the process of creating the bullion will be the sourcing of the gold ore/raw tailings to be processed. Scouting will be carried out and samples taken from piles in various areas around the leach site. These samples will be analysed to measure their leach amenability and their effective value to the company. Once this has been done, the trucks will be organised to collect the gold ore/tailings and take them to the leach plant site. Gold tailings and gold ore will then be crushed by company crushers at the processing site.

During the start-up phase, only one truck will be required to fill the small number of leaching steel tanks that will be available at this stage. As the tailings

in the immediate vicinity are exhausted and as there are more steel tanks created for leaching, a larger transport capacity will be required to maintain the gold tailings flow capacity. Once the plant is operating at full capacity, two 20 Tipper Trucks should be sufficient for supplying the plant with the required amount of tailings.

One important factor will be to build up and maintain an on-site tailings stock pile. This will ensure a steady and reliable flow of tailings. There will always be occasions when roads are made impassable by bad weather, or when trucks are being serviced or repaired. It would be wise to maintain a pile of at least 15,000 tons of tailings at the site. During the wet seasons it may be reasonable to increase this stock pile to 30,000 tons.

The extraction of gold from the tailings requires comminution, i.e., further grinding the tailings into fine particles to facilitate extraction of the gold.

#### **4.1.5 Leaching and the Cyanidation process**

##### **4.1.5.1 The Cyanidation Process**

The solubility of gold in cyanide solutions was recognised as early as 1783 by Scheele (Sweden) but wasn't implemented for commercial purposes until 1888 in the USA. At this time a zinc cementation process was used to extract the gold from the gold bearing solution. At a later time, following significant advances in this method, this process was named the Merrill-Crowe process.

The absorption of gold from aqueous solutions onto activated carbon was first noted in the early 19<sup>th</sup> century. However, at this time the only known way of extracting the gold from the carbon was by combustion of the carbon and smelting of the resulting ash. This was costly and given the advances made in the zinc cementation process, was not used. It wasn't until the 1950s when the Zadra process was developed to strip gold from activated carbon that the use of activated carbon became widespread. However the low gold price during this era restricted developments. It wasn't until the gold price boom of the 1980s that saw the development of the two major processes that are used widely today.

##### **4.1.5.2 The Carbon-In-Pulp (CIP) Process**

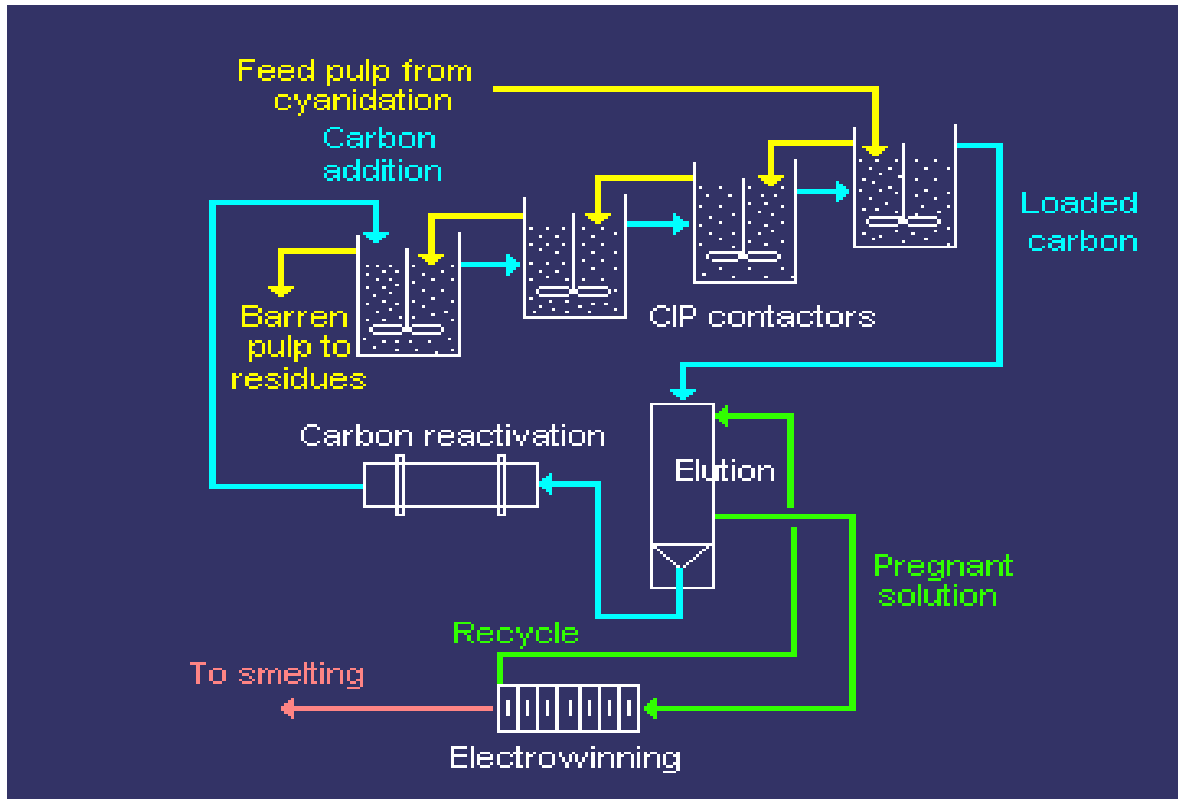
The project plans to use Carbon-In-Pulp (CIP) gold processing technology. Carbon in Pulp (CIP) is an extraction technique for recovery of gold which has been liberated into a cyanide solution as part of the gold cyanidation process. Introduced in the early 1980s, Carbon in Pulp is regarded as a simple and cheap process. The gold cyanide complex is adsorbed onto the carbon until it comes to

an equilibrium with the gold in solution. Because the carbon particles are much larger than the ore particles, the coarse carbon can then be separated from the slurry by screening using a wire mesh.

Modern gold-recovery techniques depend on the fact that gold (and silver) dissolves in dilute solutions of cyanide. The broken ore from the mine (or tailings for this particular project) is first ground to a fine powder in large rotary mills, and the slurry of fine ore and water (the 'pulp') is treated with cyanide in large tanks that are stirred mechanically or by air-agitation. In the conventional process, the gold that is dissolved (leached) into the solution is precipitated by adding zinc dust. However, before this can be done, the pregnant gold-bearing solution must be filtered to remove the fine particulate matter, then rendered sparkling clear. De-aeration may also be required. After the zinc dust is added, the solution has to be filtered again to remove the zinc-gold precipitate.

The carbon-in-pulp (CIP) process, which was developed to its present form in South Africa during the 1970s, is considered to be the most significant advance in gold recovery technology in recent years. Using CIP, the minute (but economically important) quantity of gold that remained in the barren solutions and solid residues from conventional processing can be recovered. Although the amount of gold extracted is high, the equipment is expensive and complicated to maintain and operate

In the CIP process, activated carbon is used to adsorb the gold directly from the cyanided pulp in a series of large adsorption tanks. Activated carbon acts like a sponge to aurocyanide and other complex ions in solution. Hard carbon particles (much larger than the ore particle sizes) can be mixed with the ore and cyanide solution mixture. Pulp flows continually from the first vessel to the last in the series, and the carbon is transferred intermittently by pumping in the opposite (counter current flow) direction between a series of tanks. Interstage screens between the tanks prevent the carbon from moving downstream. The gold value of the pulp decreases downstream, and the gold loading on the carbon increases upstream, with the highest value in the first tank.



Gold is washed (eluted) from the loaded carbon with a solution of cyanide and caustic soda, and then recovered by electrolysis or by precipitation with zinc dust. This method makes it unnecessary to filter the pulp and subsequently treat large volumes of dilute gold-bearing solution.

#### 4.1.5.3 The Leaching Plant Process

The tailings is brought to the plant in trucks and offloaded adjacent to the leaching plant. The leach steel tanks will have a capacity of approximately 20 tons. The Tailings are ground into fine powder in the ball mill plant before being mixed with hydrated lime and placed into the leaching tanks. The hydrated lime optimises the conditions for gold extraction and reduces the loss of cyanide by hydrolysis. The tap at the bottom of the tank is closed and a cyanide solution of approximately 250ppm is run into the top of the tank at a slow rate so as to achieve a plug flow through the tank and avoid channelling. This improves gold extraction. Once the tailings have been soaked, the tap is opened and solution is allowed to percolate through the fine powder of tailings, dissolving the gold in its path. The solution flows through a filter at the base of the tank that keeps the tailings in the tank.

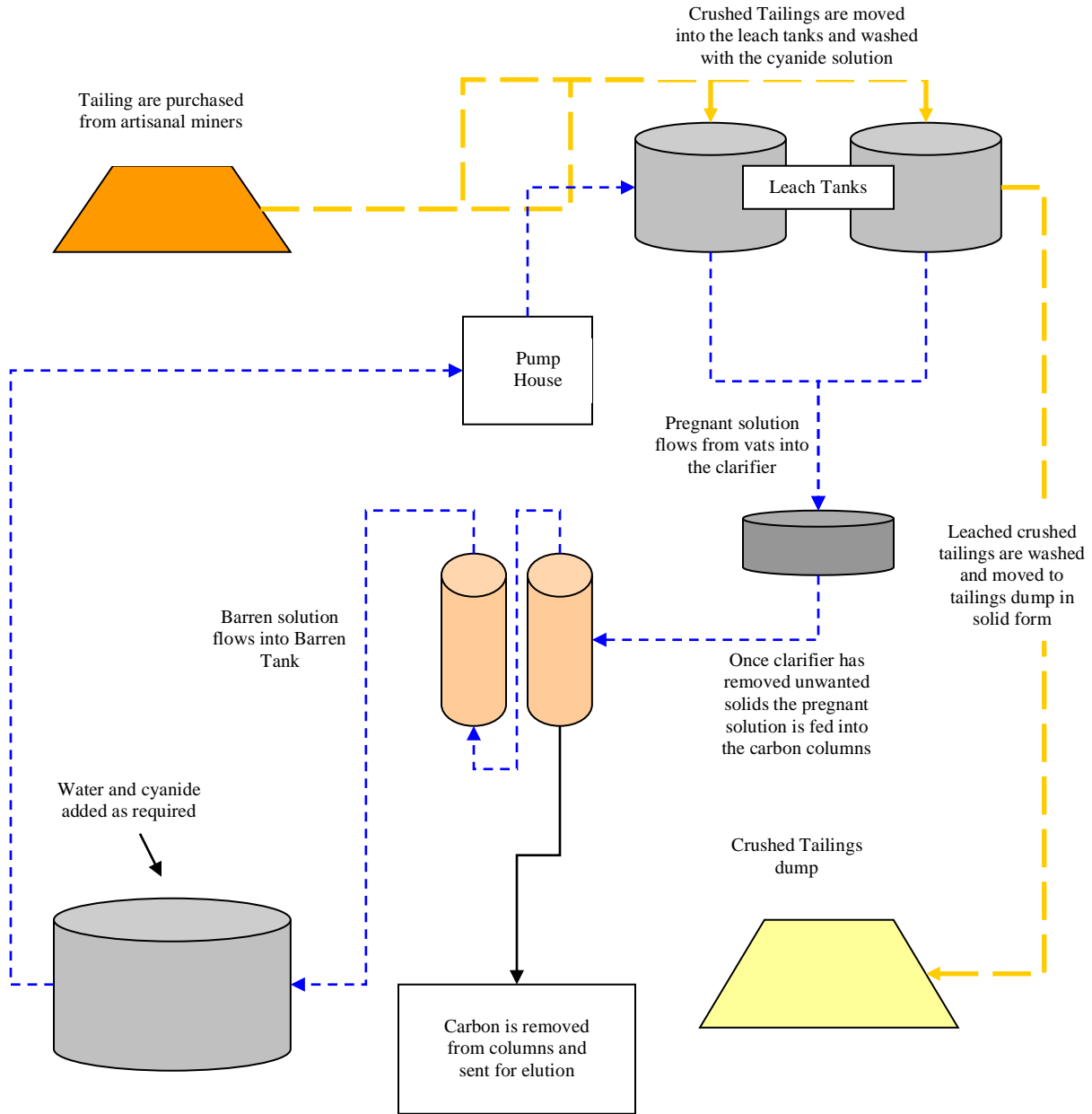
The gold bearing (pregnant) solution flows out of the tank and into the clarifier. This removes any unwanted solid particles in the clear solution. This solution is

then pumped through a series of carbon columns or contactors. The carbon adsorbs the gold from the pregnant solution. Barren solution then flows out of the columns and into the barren tank. Water and cyanide are added here to maintain the balance in the closed system. Oxygen, a key reactant in the process is added in the barren tank by using a pump to aerate the solution. The barren solution containing the cyanide is then pumped into the newly filled tank and the solution cycle starts again.

After 3-5 days of solution flowing through the tailings the gold will have been extracted. The exhausted tailings in the tank are now washed with water and drained. The tank is then emptied and the tailings are moved to the tailings slurry storage pond.

Once the gold has been absorbed by the carbon, the carbon is removed and replaced with fresh carbon. The loaded carbon is then sent to the elution plant for extraction/stripping.

#### 4.1.5.4 Leach Plant Schematics



#### 4.1.5.4 Elution, Extraction and Smelting

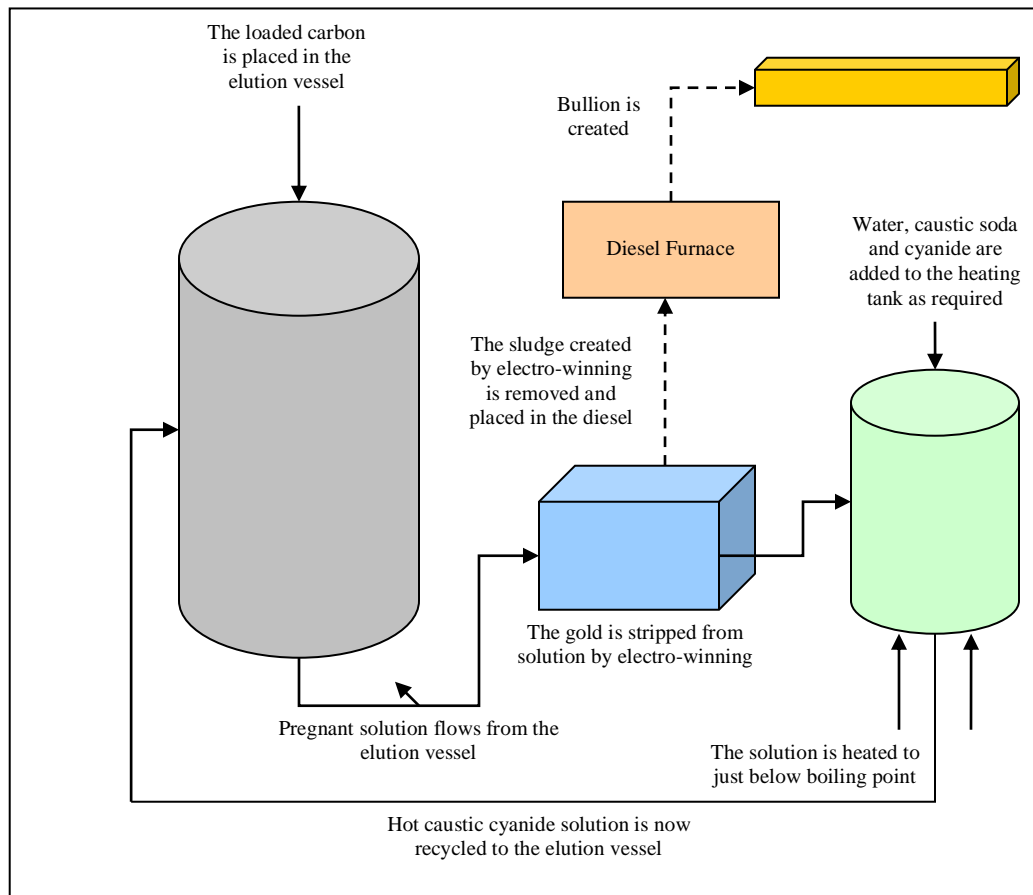
Once the loaded carbon has been transported from the leach plant to the elution plant the stripping of the gold can commence. This is done by taking the carbon and placing it in an elution vessel. Here the process of loading the gold onto the carbon is reversed and the gold is stripped. This is done by passing hot caustic solution past the carbon. Once the gold has entered the solution, it is pumped to an electro-winning cell. Here the gold is removed using electrolysis and it

accumulates at the steel cathode. The now barren solution is then pumped to a heating tank where more cyanide and caustic soda can be added to recharge the stripping solution. The solution is now fed back to the elution vessel for another stripping cycle.

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Once all the gold has been stripped from the carbon, the carbon is removed and replaced with more loaded carbon. The stripped carbon is then acid washed and sent back to the leach plant for reloading. The gold sludge is now removed from the electro-winning cell, placed into a kiln and smelted to create bullion.

#### 4.1.5.5 Elution Plant Schematics



## 4.2 Raw Materials Requirements and Availability

Mega Builders Limited will be operating a gold processing plant using gold tailings and gold ore to be obtained from small scale miners within the proximity of the processing site, as well as gold ore obtained from its own 40 PMLs in nearby villages as the source of raw materials.

### **4.3 Location and Infrastructure**

As stated elsewhere, the gold processing project will be located in an un-surveyed land measuring approximately 9 acres at Mlandizi Village, Mvomero District, Morogoro Region. The site is accessible by gravel road and electricity from the National Grid will be connected from nearby source.

### **4.4 Environmental Aspects: Emissions and Controls**

Tailings from gold mining operations can pose a threat to the environment and health of nearby communities. One of the largest hazards often found in abandoned gold tailings is acid mine drainage. Due to inefficiencies in the extraction process, large volumes of sulphides often end up going into the tailings. Over time, the sulphides start to oxidize as they're exposed to wind, snow and temperature changes, creating sulphuric acid. The sulphuric acid mixes with rainwater and eventually works its way out of the tailings and into waterways, where it can change the pH of the water and precipitate harmful heavy metals.

To prevent this, mining operations use a variety of storage methods to contain toxic tailings, and focus on treating water for contamination, though this process can be costly and resource intensive. The most effective method of remediating tailing areas of abandoned mining operations is removing toxins by processing the tailings and recovering gold for a profit in the process.

Mega Builders Limited operations will have a minimal impact on the environment of the area. A benefit of using leaching tanks as a method of gold extraction is that the fine powder of tailings can be washed and drained before moving to the tailings slurry ponds. This means that the extracted tailings will be inert and relatively free of chemicals.

The last charge to the leaching tanks will be a fresh water wash. This will ensure that all salts, soluble material and cyanide are washed from the extracted gold tailings rendering the ore chemically inert.

Furthermore, to prevent chemical hazards, the project operations will use storage methods to contain the toxic tailings before use, and storage ponds will be constructed at the project site to store tailings slurry, the by-product of gold processing

A good quantity of Ferro-Sulphate will be stored at site. Should any cyanide spillages occur, this can be used to neutralise the chemical safely

### **4.5 Implementation Schedule**

The project is expected to be implemented within a period not exceeding 6 months. Important activities identified for implementation of the proposed

project are funds mobilisation, civil works, construction of buildings, procurement and installation of plant and machinery, furniture/equipment, motor vehicles and fittings.

Mega Builders Limited has identified suitable land at Mlandizi Village, Mvomero District in Morogoro Region for the project location and has already obtained Gold Processing Licence to implement the project in the area. Site preparations and development including sinking of a borehole, construction of water reserve dam and tailings slurry storage ponds are scheduled to start in July/September 2021. Importation of the cyanidation gold processing plant/Carbon in Pulp (CIP) plant and procurement of all other necessary machinery, tools, equipment and development of infrastructure is scheduled to start in September 2021. It is expected that the plant should start initial production by November 2021 and embark in full commercial production by January 2022.

In future, Mega Builders Limited plans to expand into the final stage (Phase II) of gold recovery alongside gold processing, providing electro-winning plants so the gold may be liberated from the carbon and into bullion form. Currently, this is very expensive in the country but the company is looking at providing this service a lot cheaper and more efficiently using superior imported technology.

## **5.0 ORGANISATION AND MANAGEMENT**

### **5.1 Board of Directors**

The project will be managed through the Board of Directors. The Board will formulate policy, offer strategic business guidance to management and regularly monitor and evaluate performance of the company. The Board of Directors will comprise of the company directors and possibly the local joint venture partner. However, only the shareholders will have the right to vote.

### **5.2 Management and Organizational Structure**

The project will be managed through the Board of Directors. The Board will formulate policy and offer strategic business guidance to management and regularly monitor and evaluate performance of the company.

The day to day management of the project will be vested in the technical team. The technical team will comprise of the Project Manager who will be the overall in-charge of the project. The Project Manager will be assisted by Production Manager, Metallurgist, Plant Operations & Maintenance Engineer, Chemical Engineer/Quality Controller and Logistics & Procurement Manager. These will in turn be supported by qualified personnel in their areas of specializations, including three (3) Shift Supervisors.

On implementation, the proposed project plans to employment up to a total of 36 people in its production facilities while 4 administration staff including an Accountant and Personnel & Administration Officer will also be employed to support operations of the project.

## 6.0 FINANCIAL ANALYSIS

### 6.1 Financial Assumptions

The estimated capital cost and basic operating assumptions are summarised in the financial projections as shown in Appendices I to XIV. In the financial analysis the following major assumptions have been taken into considerations:

- By taking into consideration gradual increase in plant production capacity, the financial projections are for 5 years.
- For convenience and stability, all financial figures have been quoted in United States Dollar at US\$ 1 = 2,320/=TShs.
- Total capital investment cost is estimated at US\$ 823,514-.
- It is proposed to finance the total Investment costs of this project through equity contribution and directors' loans (60%), as well as bank term loan (40%).
- Implementation period of six (6) months has been taken into consideration to allow for construction of processing site, and installation of plant machinery equipment, and including trial production.
- Discounting rate has been assumed to be 8%
- The Initial Working Capital Requirements estimated at US\$ 75,000- will be financed through equity contribution and directors' loans
- Depreciation of fixed assets and amortisation of the pre-operational expenses rates used are as follows:

Land .....	0.00%
Civil Works/ Structures/Buildings.....	5.00% on straight line basis
Plant and Machinery.....	12.50% on straight line basis
Furniture/Equipment and Fittings.....	12.50% on straight line basis
Motor Vehicles.....	20.00% on straight line basis
Pre-operational Expenses .....	20.00% on straight line basis

Mega Builders Limited will procure gold tailings from small scale/artisanal gold miners within the proximity of processing site at Mlandizi Village, and from own sources in its 40 PMLs in nearby Kololo and Magari villages at Mvomero District as these PMLs will be developed into active mining areas in very near future.

- Plant capacity utilization is estimated at 60% in the first year, raising to 70% in second year before stabilizing at 80% from year three onwards.

- The price of refined gold is assumed to be US\$ 35- per gram at fob price. This price has been based on the prevailing rate in the world market. The price has been conservatively maintained constant over the projected period, although it is obvious it will be rising from time to time.
- Direct production costs shown in Annex VI are based on current rates.
  - Salaries and Wages have been based on the prevailing scales in the private sector. There is provision of 20% to cover company contribution to Social Security Fund (10%) and other social welfare benefits (10%).
  - Administrative/Overhead costs are based on the prevailing rates in the market and needs of the proposed project.

### MAJOR OPERATING COSTS

The following will be the major production cost items per annum. The table below indicates individual operating cost as a percentage of revenue estimates. These will include:

S/NO.	OPERATING COST ITEM	AS a % OF REVENUE ESTIMATE
	<b>RAW MATERIALS</b>	
1.	Tailings/Ore Purchase	18.00
2.	Tailings Loading/Transportation	2.50
	<i>Sub total</i>	<i>20.50</i>
	<b>REAGENTS (INPUTS/FACTORY SUPPLIES)</b>	
3.	Sodium Cyanide	15.00
4.	Caustic Soda	2.00
	<i>Sub total</i>	<i>17.00</i>
	<b>LABOUR</b>	
5.	Management	1.50
6.	Operators	2.50
7.	Casual Labourers	1.80
8.	Security	1.00
	<i>Sub total</i>	<i>6.80</i>
9.	General Transport	1.00
10.	Water	1.40
11.	Fuel Expenses (petrol and diesel)	8.40
12.	Meals and Miscellaneous Expenditures	5.50
	<b>TOTAL OPERATING COSTS</b>	<b>60.60</b>

- Corporate Tax is fixed at 30% of taxable profits.

The project will be granted a Tanzania Investment Centre (TIC) Certificate of Incentives and therefore enjoy tax relief on both capital and deemed capital goods, including investment allowance on all capital goods with a loss carry forward allowance against future profits.

## **6.2 Analysis of Financial Results**

Following are highlights of the financial projections and analysis:

### **Appendix XII - Projected Profit and Loss Statement**

Operations of the project are profitable right from year 1 when the company posts a net profit of US\$ 257,964-. The profitability position remains stable during the subsequent years, rising to US\$ 308,384- in year three before climaxing at US\$ 312,882- by end of the 5<sup>th</sup> and last assumed economic life of the project.

### **Appendix XIII - Cash flow Projections**

The projected Cash flow for Financial Planning indicates that the project will generate enough cash to meet its financial obligations. Net cash surplus balance increases from US\$ 96,745- in year one to US\$ 273,436- by the 5<sup>th</sup> year of operation. The cumulative cash balances during the same period grows over nine fold, increasing from US\$ 96,745- to US\$ 920,644-. This is a positive indication that the project is liquid enough to meet its cash requirements to support its trading operations.

### **Appendix XIV - Projected Balance Sheets**

The balance sheets indicate a favourable state of affairs of the project throughout the projected period. Similarly current liabilities are well covered by the current assets, the ratio ranging from 3.39 to 14.35.

The company net-worth grows over three fold during the economic life of the project, increasing from US\$ 448,514- at the end of construction period to US\$ 1,381,992- by end of the 5<sup>th</sup> year, a significant growth in the value and profitability of the company.

### **Appendix X - Discounted Cash flow**

The Discounted Cash flow yields an Internal Rate of Return (IRR) of 44.01%, which is well above the assumed cost of capital at 8%. This confirms the financial viability of the proposed project.

### **Payback Period**

The Normal Payback Period is 3.24 years at zero discount rate and 3.53 years when discounted at the assumed discount rate of 8%.

## **Key Financial Ratios**

- The ratio between Net Profit + Interest to Investment ranges from 32.33% to 37.99%.

## **Appendix XIII - Breakeven Analysis**

Highest breakeven capacity is estimated at 27.33% and the lowest breakeven capacity is just 13.55%.

## **Sensitivity Analysis**

From the analysis carried out on changes of some key factors to show their effect on profitability and IRR, the project shows to be more sensitive to changes in selling price than changes in decline in capacity utilisation and increase in direct production costs.

## **7.0 THREATS TO PROFITABILITY AND RUNNING OF THE COMPANY**

**Risk analysis** can be looked from the strengths and weaknesses of the project as follows:

### **7.1 Refractory Tailings**

It will always be the case that there are some tailings that are more amenable to the leaching process than others. Ore bodies can have certain characteristics that make gold extraction difficult. This can be due to sulphides ores that consume reagents, carbonaceous ores that reabsorb the gold once it is liberated or telluride ores that dissolve poorly in cyanide solutions. Although such ores have been yet to be found following the initial study, if they are found, Mega Builders Limited will not treat them as the preparation of such ores for leaching will be prohibitively expensive and complicated. All such refractory ores will be identified during sampling. In the case of sulphide ores it is usually possible to identify the crushed ore by its appearance and odour.

### **7.2 Copper Rich Tailings**

Another problem that similar operations have experienced has been high concentrations of copper in the tailings purchased. This copper has the effect of displacing the gold in the extraction process, thereby reducing gold produced. All copper levels in the samples taken have been well below acceptable levels. Ores that are high in copper can still be treated, but it must be ensured that only a small proportion of the vats should contain such an ore to keep the copper concentrations below a certain threshold. The copper content of all the tailings will be measured during sampling.

### **7.3 Gold Price**

The price of gold can be very volatile. With current gold prices the prediction is for a very profitable company but if the gold price recedes to the kind of levels seen 10 years ago, such operations will struggle to remain profitable.

### **7.4 Political and Social Instability**

Unlike other gold mining sites in the country, the proposed location in Mvomero District, Morogoro Region for the processing activities is unlikely to experience serious civil unrest, although the people surrounding the big gold mine areas feel that the mining lands are their properties which have been confiscated by the government and given to foreign miners.

After independence the government made an attempt to unify the country and reduce the negative aspects of tribalism in Tanzania. However, there has been worrying levels of civil unrest in nearby Kenya that has been attributed in some degree to tribalism. This has spilled over the border and Barrick has had significant trouble with their North Mara mine. The trouble is thought to be caused by the way the government enforced a very meagre compensation package to the local miners that were displaced during setup. The levels of civil unrest in the area where Mega Builders Limited plans to set up its leaching operations are thought to be insignificant compared to gold mining and processing sites in North Mara and even Geita. However, it is hoped that as the plants presence in the area will significantly benefit the local miners and population and will not harm any local interests, the company will be popular and will experience little strife.

Likewise, Morogoro Region, like all other mining areas, the proposed location of the processing site is likely to experience periodical raids of armed bandits who are believed to come from neighbouring countries, and especially Burundi where they have been experiencing social unrest from time to time.

### **7.5 Security**

There are certain traits of this Mega Builders Limited project that make security issues much less significant than with most other gold producing companies. Usually gold is found in remote places where security is difficult. However, Mega Builders Limited will initially hire the services of refinery plants in the city of Dar es Salaam, Mwanza or elsewhere to produce accessible gold in the city where security is much more stringent. The gold solution produced in the field will be of very low concentration and hence not readily extractible. It is also very difficult to extract gold from loaded carbon so there will be little risk of gold being stolen this way. The only real security threat for the leach plant will be

theft of machinery (trucks, generators, and pumps), consumables (quicklime, cement) and petty theft.

There will be two layers of security for the leach plant. There will be an outer perimeter that encompasses the entire plant and an inner secure compound where all valuable items will be stored. Both will have their own security.

A basic level of security will be maintained at the elution plant(s). On days when gold is being produced security will be arranged at the respective recovery plant. The gold produced will be taken to the bank immediately and sold. Mega Builders Limited will not store gold or speculate on gold price.

## **8.0 DEVELOPMENT VALUES/BENEFITS**

Implementation of this project will lead to realisation of the following development values/economic benefits.

1. The social and local economic benefits from Mega Builders Limited operations will be considerable. In the first year it is expected to contribute substantially to local economies in form of the gold ore and tailings purchased from local small scale/artisanal miners.
2. Tailings from gold mining operations poses a threat to the environment and health of nearby communities. One of the largest hazards often found in abandoned gold tailings is acid mine drainage. Due to inefficiencies in the extraction process, large volumes of sulphides often end up going into the tailings. Over time, the sulphides start to oxidize as they're exposed to wind, snow and temperature changes, creating sulphuric acid. The sulphuric acid mixes with rainwater and eventually works its way out of the tailings and into waterways, where it can change the pH of the water and precipitate harmful heavy metals.

The most effective method of remediating tailing areas of abandoned mining operations is removing toxins by processing the tailings and recovering gold for a profit in the process. This is exactly what Mega Builders Limited intends to do.

3. About 40 jobs will be created directly in the proposed processing and refinery facilities. The operations will significantly add value to current artisanal miners by replacing artisanal mining techniques to modern techniques. A high proportion of the investment will be spread widely to remote communities that are in desperate need of jobs and investment.

4. The village in which the mining operations will be taking place will also see a number of benefits besides the creation of jobs. When boreholes are sunk on site to allow extraction of water for the process, boreholes will also be provided for the village, improving their access to fresh water. It will also be useful for the plant to be connected to mains electricity.
5. The Tanzanian government has been striving to rationalise and organise the artisanal mining sector. Companies like Mega Builders Limited can play a key role in such a process. Although the company will not get directly involved with the artisanal mining activities, it will be in the interests of the company to assist current miners with this process to ensure a good supply of gold tailings which in turn may sell gold extracted to the Company. For this reason if the company is forward thinking it will try and work with the artisanal miners and find ways of significantly increasing tailings production. This shared interest will play a key role in improving technologies and processes used by the artisanal sector.
6. The project involves transfer of technology to Tanzania. Tanzanians will be trained on the job on how to extract gold using modern gold processing techniques.

## **9.0 CONCLUSION AND RECOMMENDATIONS**

Analysis of the project confirms that the project is:

- Technically feasible,
- Financially and Economically viable,
- Socially desirable,
- Environmentally sound, manageable and sustainable.

A timely financing and implementation of the project is therefore highly recommended in order to realise the anticipated benefits outlined in this study/report. Provided all other economic factors remain substantially the same, it is strongly recommended that the project be implemented with immediate effect. It is further recommended that applications for Processing Licence for the proposed processing site and Environmental Impact Assessment for the proposed plant site be submitted forthwith. It is further recommended that an application for TIC Certificate of Investment Incentives be submitted to Tanzania Investment Centre with a view to benefit from investment benefits and protection as statutorily allowed under Tanzania Investment Act, 1997.

# FINANCIAL PROJECTIONS