Sheby Mix Investment Ltd

P.O. Box 93 Mtwara

Umoja Street – Ligula

Mtwara- Tanzania

PROPOSED BUSINESS PLAN FOR GYPSUM QUARRYING, EXTRACTION & TRANSPORTATION PROJECT AT Likawage Village, Kilwa District, Lindi – TANZANIA

PREPARED BY:

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1.0. INTRODUCTION

Tanzania is a vast country with a total arable of about 13,500 thousand hectares and with growing at an average annual rate of 1.42%. The current dynamic socioeconomic environment, like the one currently exists in Tanzania the development of mining and construction sector has a great role to make the overall economic growth to be persistent.

The government of Tanzania has a conductive investment policies and guideline that promote the private sector investment in the economic development through the various investment and business endeavors. Tanzania is endowed with vast quantities and types of natural resources whose extraction has been significant to the country's economic contribution and growth. Leading minerals include gold, iron ore, nickel, copper, cobalt, silver, diamond, tanzanite, ruby, garnet, limestone, soda ash, gypsum, salt, phosphate, coal, uranium, gravel, graphite, sand and dimension stones.

In this regarded the owner of the envisioned gypsum quarrying, extraction and transportation project Sheby Mix Investment Ltd planned to invest in Lindi region in Kilwa District, Likawage Village 1 km long from Dar es salaam – Mtwara main Road and carried out this pre-project study to check the market technical and financial feasibility of these project. The result of the study is very sound and promising for the miner to start the project in this area.

The miner is very determined to commence the project Hence they expect to get the required support from the regional mines bureau and local government to make the project operational.

1.1. About Sheby Mix Investment Ltd

Company Name	SHEBY MIX INVESTMENT LTD
Date of Registration	6th August, 2017
Number of Incorporation	139576756
TIN	139-576-756
VAT	105-251-858
VRN	40-027612-H
Address	P.O. Box 93 Mtwara
	Umoja Street – Ligula – Mtwara - Tanzania
	+255 754 203 610

1.1.1. Company Businesses

B/#	Business Area	Status	Activities
1.	Logistics	Active	• Warehousing • Transportation services
2.	Clearing & forwarding services	Active	• Booking of shipping space or air freighting • Warehousing facilities before the goods are transported
3.	Storage & Warehousing	Active	• Inventory management • Kitting • Packaging
4.	Sanitary Works	Active	• Office & Home Cleanness • Fumigation

1.2.Project justification

Tanzania has been passing through dynamic fast and double-digit economic growth in all sectors. As one sector of the economy, the construction and building sectors are also growing in fast rate. Hence, parallel growth of construction firm and building are vital to keep this growth persistently.

The booming advancement in the construction (infrastructure) sector necessitate the comparable speedy increase in complementary sector for raw materials, inputs, accessories of these sector that finally results the establishment of consistent and strong economic of the nation. As an input of the sector, Gypsum has widely applicable in cement, construction, and building.

The Mining sector covers the activities ranging from mining the minerals to the production of (end-use) products. Products of the gypsum industry are plaster, plasterboards (which includes a wide range of standard and specialty products). Gypsum fiberboard and gypsum blocks which are all used in the building sector (Euro gypsum, 2007) gypsum is also an essential ingredient in cement production, where it is used as a retarding agent. Outside the construction industry, dried and grinded raw gypsum is used in the making of ceramic molds, plaster cove and cornice, surgical and dental casts as a water conditioner for beer-brewing and sugar- refining as ingredient in flour, bread, ice- cream and pet food, and as an agent in pharmaceutical products.

The government of Tanzania through Tanzania Investment Centre has developed a conductive investment policy packages and other sectorial reforms at federal and regional level to attract a huge private investment for the wellbeing of the nation and its citizen as a whole. Moreover, it is also implemented the five-year growth and transformation plan II (2015/16-2019/20) That gave a space for infrastructural development and industrialization.

1.3.Objective of the project

The main of Objective of the project will be generating attainable profit through effectively and efficient quarrying, extraction and transportation of quality gypsum stone to the market by selling at competitive price.

In line with the above objective, the project has the following specific objectives:

- To utilize the available raw material (Gypsum quarry) in Tanzania.
- To exploit the gypsum market in the nation.

1.4.The socio-economic significance of the project

The envisaged project deemed to contribute to the economic development of the nation in general and the region in specific with following ways:

a. Value add

In the extraction of gypsum stone and transporting to processing centers to get gypsum powder the project will add value in mining sector.

b. Contribute to the nation's development

By producing gypsum stones the project will satisfy the demand of manufacturing gypsum end products and construction sector through this it will contribute for nation development.

c. Source of revenue

As public policy of any nation the government collects different forms of taxes from different business income taxes, payroll tax and vat are collected from undertaking business activity, therefore, the project will serve as source of revenue for both region and nation as whole.

d. General Foreign Exchange

The nation can generate foreign currency when we will be able to export gypsum powder to neighboring nations in the future.

e. Employment Opportunity

One of the problems that our country faced is unemployment. Therefore, the current objective of the government is working on tackling the problem of unemployment and fostering the development process either through creating self-employment or employment in other organization. Hence this project will hire directly more than 220 Tanzanians.

f. Benefit the local community

As a corporate responsibility the company will engage in different development activities on the surrounding areas and through Lindi region. This will better worse the community and contribute for the development of the nation.

g. Stimulate the Economy

This project has positive externality in the zone that will encourage the economic movement of local economy. There will be economic relationship and transactions among different economic actors.

1.5.Project Location, Infrastructure and Land

1.5.1. Location

The project site will be located in the Likawage Village, Kilwa District, Lindi Region. Located in the Southern parts of Tanzania. The proposed location has altitude and longitude of 10'N and an elevation between 2421 and 2490 meters above sea level, it is the administrative center of Likawage ward.

1.5.2. Existing Primary Licenses.

In the area where the project is likely to be implemented, there are valid Primary Mining Licenses that will be applied during the project implementation as per the lease agreement.

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CORNER	LATITUDE	LONGITUDE
1	-09 deg. 18 min. 48:00 sec	39 deg. 23 min. 6. 00 sec
2	-09 deg. 18 min. 48:00 sec	39 deg. 23 min. 9. 00 sec
3	-09 deg. 18 min. 56:00 sec	39 deg. 23 min. 9. 00 sec
4	-09 deg. 18 min. 56:00 sec	39 deg. 23 min. 6. 00 sec

PML0410LND

1	-09 deg. 18 min. 56:00 sec	39 deg. 23 min. 21. 00 sec
2	-09 deg. 18 min. 48:00 sec	39 deg. 23 min. 21. 00 sec
3	-09 deg. 18 min. 48:00 sec	39 deg. 23 min. 9. 00 sec
4	-09 deg. 18 min. 56:00 sec	39 deg. 23 min. 9. 00 sec

The main justification behind the selection of this location is;

- Availability of huge gypsum mineral deposit
- Strategically located along Mtwara – Dar es salaam road.
- Availability of huge skilled labour force who are currently quarrying gypsum rocks.
- Conductive investment policy and governance
- Near to the gypsum processing factories (Dangote, Knauf, Fortune Cement, Mtwara Cement Industry at Mtwara and Gypsum Board making factory at Coastal Region.

1.5.3. Land use plan

The project required a total of 11.24 hectares' areas of land. This land is planned to use as follow indicated in table below.

Table 1: Premises required and land use

SN	Description	Land requirement (Hectares)
1	Quarry & production area	8.02
2	Store	0.81
3	Office	0.68
4	Worker shelter and cafeteria	0.45
5	Parking, road & load unloading	1.03
6	Green area and buffer zone	0.25
	Total	**11.24**

1.5.4. Infrastructures Plan

Electrical Power Supply

The electrical power needs for the Project are relatively modest, and electrical service is required only for the portable trailer/office. Electrical power will be supplied by constructing a short power line (approximately 30-50 m in length) to connect the portable trailer to the solar panels or portable generators or to the existing electrical grid connected to neighbor villages. The power line will consist of conventional wooden poles, conductors, and insulators, and will be similar to that required for residential service, providing single-phase alternating current at a voltage of 220 V.

Security Gate

Though the entire Project site will not be fenced, a security gate with appropriate fencing at and near the entry point to the site will be established to control access to the site. The security gate will remain locked to prevent unauthorized entry after hours, or during periods when the site is inactive.

The security gate will be located on the access road to the site and a number of warning signs will be installed throughout the perimeter of the site to prevent unauthorized entry to the site by would-be trespassers and to warn individuals about the dangers that may be present within the perimeter of the site (i.e., blasting, presence of moving heavy vehicles, large excavations, etc).

Site Access and Internal Site Roads

The Project site will be provided via the south of the site using an existing access road that will be upgraded to suit the Project purposes. The existing access road for the Project site was developed for the purpose of logging the subject property in the early 2018s.

Various internal site roads will be developed to access the active areas of the Project site and to facilitate the movement of materials on-site. The internal site roads will be unpaved, although

consideration will be given to watering down the internal site roads or using other approved dust suppressants during extreme dry periods to reduce fugitive dust.

Gypsum Storage Area

Following primary crushing, the gypsum rock will be stored in the gypsum storage area while awaiting transportation to customers.

The storage area will have an approximate area of 0.81 Hectares. It is anticipated that up to 100,000 tones of gypsum rock could be stored in the storage area at any given time. The gypsum storage pile(s) will remain open to the air, uncovered, as fugitive dust from 15-20 cm diameter materials is not expected.

Runoff from the gypsum storage area arising from precipitation will be collected and directed to a settling pond to allow for suspended sediments contained in the runoff to settle out, prior to its release to the natural environment.

Truck Scale (Optional)

As an optional component, a truck scale will be installed on-site to allow for weighing of incoming and outgoing trucks to determine the weight of their cargo. This is not only to enable a proper accounting of the weight of gypsum being sold to customers, but also to assist in meeting seasonal highway weight restrictions.

Alternatively, the loaders will be fitted with scales to measure the weight of the load being placed on the trucks. Additionally, trucks will be weighed upon arriving and when leaving wallboard facilities.

2.0. MARKET STUDY

On the back of rising demand from industries such as construction, ceramic, cement etc., the Tanzania gypsum market is poised to grow significantly in the coming years. Government is also backing the mining sector by allowing up to 100% foreign direct investment (FDI) for gypsum products and other minerals. As a result, FDI inflows to gypsum products industry in Tanzania have registered significant growth in the last few years.
The country is thus anticipated to witness huge growth in gypsum consumption. And as per our prophecy, gypsum consumption in Tanzania would grow at a CAGR of around 4% during 2022-13 to 2027-28. The rapid infrastructure development in the country is expected to boost the Tanzanian Mining sector.

The global gypsum market is valued at $1.49 billion in 2016, equivalent to 252 million tones, with 33.3% and 60.9% being consumed in the plasterboard and cement industries, respectively. The gypsum market is forecast to grow at a CAGR of 9.9% to reach nearly $2.4 billion by 2018 and $3.8 billion by 2026. Nearly all gypsum is used in three prime applications: building construction, cement (where it is used as a setting retarder), and agriculture (mostly for soil conditioner and fertilizer). Another common application is wet or powdered plaster. Minor applications include dentistry and surgical/medical, e.g., plaster casts.

2.1. Factors for Demand of Gypsum

The are many factors that determine the market demand for the construction inputs including Gypsum in Tanzania, the majored factors are economic growth of the nation that reflect in booming in the construction sector and infrastructure development of the government, population growth are increasing the market demand and supply for those construction materials particularly gypsum. These factors are explained as follows:

- Demand factors for the Gypsum products
    - Fast economy Growth (Booming in the construction sector)

Mining and quarrying had the highest contribution to Tanzania's Gross Domestic Product (GDP) growth in the first quarter of 2021. Overall, the country's economy expanded by 7.1 percent in the period. Other economic activities with strong performance were information and communication, transport and storage, and water supply, each with a growth rate of nine percent. The only industry to record a shrink was accommodation and food services. Indeed, the Tanzanian tourism sector was highly affected by the coronavirus (COVID-19) pandemic, with a fall of around 60 percent in the number of visitors' arrivals.

The Tanzania economy has been experiencing dynamic and double-digit growth that experienced annual average growth of 4.6 % in past 8 years. According to the Bank of Tanzania (BoT) estimated the country's economic growth to be 4.8% in 2020 and project a GDP growth of 5.6% in 2021 despite the impact of the Covid-19 pandemic.
However, the African Development Bank (AfDB) projected Tanzania's GDP growth to remain stable at 6.4% in 2020 and 6.6% in 2021, subject to favorable weather, prudent fiscal management, mitigation of financial sector vulnerabilities, and implementation of reforms to improve the business environment.

Table 2: Major Economic Indicators

Trends in performance of the economy: grow Rate (%)											
Item	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**20020/21**
Agriculture	25.58	24.98	26.55	26.79	25.80	26.75	27.44	28.74	27.87	26.55	26.74
Industry	23.56	26.38	25.4	25.45	25.14	24.49	24.86	25.1	27.01	28.62	28.67
Construction	5.2	5.7	7.6	5.2	5.8	5.7	5.7	5.71	5.8	6.2	6.9
Service	43.32	41.41	40.61	40.27	41.3	40.43	37.45	37.92	37.92	36.77	36.25
Real GDP ($ Billion)	32.01	34.66	39.65	45.68	49.96	47.38	49.77	53.32	57.00	61.14	62.41
Per capital GDP ($)	743	781	868	970	1,030	984	967	1,005	1,043	1,086	1,076
Inflation	6.20	12.69	16.0	7.87	6.13	5.59	5.17	5.32	3.49	3.46	3.29

Source: NBS

This fast growth of these sectors resulted from different bodies like government, non-governmental and private activities in Tanzania growing in the fastest rate moreover the current agriculture, infrastructure, residential (condominium) and building in paramount level.

In economics, there exist direct relationship between sectorial development and complementary equipment and martial. As economic since proved the demand for complementary goods (goods
that will consume together like fuel and car) have positive relationship. This means when the demand for one good increase the corresponding complementary good demand also increase automatically with different rate depending on the nature of good.

The fasts growth of construction sector created the fast and bulk demand for construction (building) martial, since Gypsum is among the main complementary inputs for this sector particularly, the corresponding demands for these products are also increase. Therefore, those have the highest-rated demand.

Population Growth

The rate growth of the urban population increases from year to year. Tanzania is growing at a very fast rate. At the end of 2020, the country's population is estimated to be at 59.73 million and by the end of the century, the population will reach 282.67 million. Tanzania's population is currently growing at a rate of 2.98%.

Tanzania has a high fertility rate of 4.8 births per woman and a high birth rate of 36.2 births per 1,000 people.

Tanzania - Historical Population Growth Rate Data		
Year	**Population Growth Rate**	**Growth Rate**
2021	61,498,437	2.95%
2020	59,734,218	2.98%
2019	58,005,463	3.00%
2018	56,313,438	3.02%
2017	54,660,339	3.04%
2016	53,049,230	3.04%
2015	51,482,633	3.05%
2014	49,960,561	3.05%
2013	48,483,129	3.04%
2012	47,053,030	3.02%
2011	45,673,512	2.99%
2010	44,346,525	2.95%

The trend suggests that the size of urban population likely to continue to grow at a high speed in the future. Tanzania's population was forecast to reach 129.4 million people in 2050. According to the same forecast, the country had around 59.7 million inhabitants in 2020, ranking among the most populated nations in Africa. As a result, from big population growth and urbanization demand for construction inputs will be increase.

Past Supply and Present Demand for Cement

The consumption and growth of cement (both domestic production and import) in Tanzania are dynamic in nature. At 2016, Tanzania's annual cement production amounts to more than 2m tones, compared to only 900,000t in 2001. According to the latest data, the quantity of cement produced in Q1 2016 increased to 690,640t from 680,671t produced in the corresponding period in 2015. Meanwhile, the imported cement during Q1 2016 decreased from 344,408t imported in 2015 to 173,683t imported in 2016. Tanzania's largest cement producers are Tanga Cement (Simba), Portland Cement (Twiga) and Dangote Cement industry.

Since gypsum is one of the required inputs for cement industry the demined and supply for cement show as a direct demanded and supply for gypsum.

Projected Demand

The future demand for cement, like many other construction materials is a function of a number of interrelated variables. These variables that are essentially in determining the magnitude and trend of demand for cement are:

- The overall economic development level and growth trend of the country.
- The pattern and trend of the construction industry.
- Expected technological changes that affect the structure of the construction industry.
- Government policies and regulation that have impact on the future level and trend of construction activities, and
- Size of population and growth rate.

Considering the growth trend in supply observed from the historical data, future demand is forecasted to grow at a rate of 20%, annually.

2.2. Project Prospects

From the above market demand and supply analysis for the envision project product there exist very huge market in Tanzania. Hence, the project will be successful by entering in to this market.

2.3. Marketing Channel

In the construction industry, marketing is considered to be of significant importance. In very Gypsum quarrying and extraction product marketing parameters are very limited and usually in some degree with the construction sector. Some of the marketing promotion activities which should duly be rendered are given below:

- Connection development with the building material supplier including gypsum processing company and factory, well known builders and contractors.
- Update information on civil and construction work initiated by local, provincial and central government.
- Draw linkages with material suppliers to the housing industry at level.
- Establish contacts with local civil engineering firms, individual and professionals.

3.0. PROJECT CAPACITY, PROJECT LIFE AND SUPPLY CAPACITY

3.1. Assumptions

Total working hours/Day	8
Number of shifts per day	1
Number of working days per year	250
Mine Reserve Volume	1,281,600 Tones
Quarrying Capacity/day	700 Tones
Stone delivery/ Day (Trucks)	16

3.2. Reserves Estimate for the preliminary

For the preliminary estimation of the reserve, minor geological mapping was done in the area. The mineral and average thickness of the deposited is not common to all area under concession is taken and calculated.

The average mineable depth measure to be 14 meters with depth of around 16m – 100m.

The total area of the deposit under discussion is about 8.02 hectares (which is equivalent to 80,200 m^2)
Effects of inflorescent factor like weathering, intercalation of unwanted materials and nonresistant inclusion in the martial, etc are assumed to lower its actual exploitable volume by about 10%. Therefore, the total mine able reserve of the deposit at the proposed project site is estimated as follow.

The Total Reserve Volume = (80,200m2 xl5m) = 1,281,600 m^3

When we convert this volume to mass, we use a mathematical formula; Mass = Density x Volume, where Density is assumed to be 1.5
Mass = 1.2x 1,203,000= 1,281,600 tons

Therefore, the total reserve will be 1,443,600 tones.

3.3. Program & Project life

The project designed to 500 tones extraction of gypsum stone per day and 175,000 tones of Gypsum stone per year in one shift of 8 hours per day and 250 working days with total reserve amount 1,443,600 tones in a mine lifespan (Project Life) of 10.31 years.

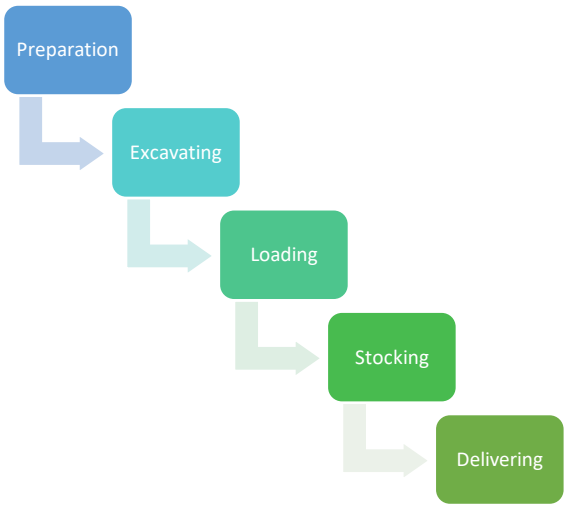
3.4. Pricing

It would be important to examine the possible level of price based on the competitor's action. In this connection, the existing average prices of similar company were assessed for the benefit of comparison.

Based on the existing average price for gypsum stone in the market, Table

Product	UOM	Price of the Gypsum in $
Gypsum Stone	Ton	25

3.5. Processes



3.6. Project Phases and Activities

A description of the various phases of the Project, and the activities associated with each phase, is provided in this section.

3.6.1. Construction Phase

The construction phase will be initiated following the completion of the EIA review and the receipt of all required permits, approvals, licenses, authorizations, or leases for the Project. A high-level description of each of the activities associated with the construction of the Project is provided below:

Vegetation Clearing

Most of the site was cleared of mature vegetation in the early 2018s for the purpose of logging; therefore, clearing of the site will be relatively modest and straightforward and will focus on the
removal of immature trees, shrubs, and other ground vegetation to make way for the Project facilities. Limited clearing of immature vegetation present in the active areas at the southern portion of the site (e.g., storage area and other active areas) will occur first so as to allow for the preparation of the storage area prior to removing topsoil and overburden in the open pit area.

Efforts will be made to maintain as much mature vegetation that remains along the edges of the site as possible, so as to act as a tree and watercourse/wetland buffer. Clearing of immature vegetation in the open pit area will then be initiated when the storage area has been developed, and will occur progressively in phases as the size of the open pit increases over time during operation.
Limited clearing will be completed largely using a bulldozer supplemented by manual methods (e.g., chain saws, brush saws) supplemented, as necessary, by forest harvesting machinery if required.

Mature trees along the perimeter of the site will be maintained as a tree buffer to the extent possible, and as much mature vegetation and trees as possible will be maintained along wetlands and watercourses that are not required to be disturbed for the Project (particularly at the southern and of the site). Clearing near watercourses and wetlands, if necessary, will be conducted manually.

All cleared merchantable timber will be sold, but non-merchantable cleared vegetation will remain on- site and be used as fill material during reclamation and closure.
Erosion and sedimentation control techniques will be employed throughout the clearing phase as well as for subsequent construction activities discussed below, as required, to minimize erosion of exposed areas and sedimentation in surface water runoff on the site. Dust suppression will also be employed during construction activities to minimize the potential environmental effects of fugitive dust to offsite
locations.

Grubbing
Grubbing includes the removal and disposal of stumps and roots remaining after clearing. Grubbing will be conducted using a skidder or bulldozer to remove the roots and stumps of cleared vegetation. The entire cleared portion of the site will be grubbed, progressively as the size of the open pit increases over time during operation. Grubbings will be stored on-site in an inactive area and used as fill material during construction or reclamation and closure.

Levelling and Contouring
Once the southern portions of the Project site are cleared and grubbed, location of the surface facilities to be located on the southern half of the site will be prepared by levelling of the areas using mobile equipment such as excavators, front end loader, bulldozer, and articulated dump trucks. Since the quarry area on the northern half of the site will eventually be stripped of topsoil and overburden, levelling of this area is not required.
Contouring and shaping of the levelled areas will be conducted to maintain stable slopes and facilitate proper drainage to the drainage channels and settling pond.

Construction of Storage Area
Following grading and levelling, the sub-base for the storage area will be prepared as necessary using some of the native soils from the levelling activities on-site, supplemented by materials from approved local borrow sources where required. If the natural soils are not of a suitable nature to be used as the sub-base, locally-sourced till or clay will be used. A geo-synthetic liner is not required underneath the storage area, given the inert nature of gypsum.
The final storage area will be graded to create the desired grade for drainage capture, and drainage collection works for the area will be installed.

Removal and Stockpiling of Topsoil and Overburden
The overburden in the open pit area generally consists of a veneer of organic matting and topsoil over till. The overburden thicknesses generally range from 10 to 15 m in depth below ground surface. Topsoil and overburden removal in the open pit area will be initiated during construction, and will continue progressively throughout operation of the Project as the size of the open pit increases over time.
Topsoil will first be removed and stored in a designated location at the storage area. Following this, overburden will be excavated until bedrock is reached, and similarly stored in a designated location at the storage area. Topsoil and overburden will be stockpiled for future reuse during site reclamation at the end of quarry life.
Sediment control fencing will be installed and maintained at all stockpiles that are up-gradient of a watercourse to prevent the down-slope transport of sediment into watercourses.

Development of Internal Site Roads, and Paving of Access Road

Internal site roads connecting the various areas of the Project will be developed and/or upgraded as necessary to meet the Project needs. Native soils and gravel from other earth moving activities on the Project site will be used for road development, supplemented as necessary by gravel and crushed rock sourced from approved local borrow pits.

Finally, the first 30 m of the site access road will be paved to prevent the undue release of dust from unpaved roads near the highway system. The end of the access road will be flared to a suitable radius to facilitate truck turning movements.

Installation of Optional Truck Scale, Optional Portable Trailer/Office, and Security Gate

Once all other surface facilities have been developed, the optional truck scale (if required) will be installed. An optional portable trailer to be used as a site office/lunch room will be brought to the site and installed. The security gate and other security signage will be installed.

3.6.2. Operation Phase

The operation phase will begin immediately following the completion of construction activities, for an approximate duration of 10 years or until the mineral resource has been depleted. Operation of the Project is relatively straightforward, and most activities take place within the open pit. A brief description of the activities that will be conducted during the operation phase is provided below.

Open Pit Operation (Drilling, Blasting, Excavation, Hauling, Crushing)

Open pit operations will include drilling, blasting, excavation, hauling of rock, and crushing. Open pit operations (e.g., blasting, excavation, crushing) will be carried out up to 5 days a week (excluding weekends), for up to 12 hours a day during daytime, for approximately 250 days per year.

Activities in the open pit will be as follows:

- Following construction, the open pit will be excavated by drilling and blasting successive benches and removing the broken rock with a hydraulic shovel and/or wheeled loaders.
- Blasting will occur approximately 25 times per year as an annual average (excluding nights, weekends, and statutory holidays) using explosives by a licensed blasting contractor.
- The broken rock will be excavated from the active pit area and delivered to the portable crusher.
- Gypsum will be loaded into the portable crusher and will be crushed to an approximate diameter of 15-20 cm.

On-site Transportation, Storage, Loading, and Transportation to Customers

Following crushing, the operations on the site are limited to the on-site hauling, storage, loading, and transportation of gypsum to customers. These activities will be as follows:

- Crushed gypsum will be loaded onto articulated rock trucks (Sino Dump Trucks) using a wheeled loader and trucked to the storage area.
- Gypsum will be stored on the storage area for a short period of time (up to a few months), pending transportation.
- A wheeled loader will load crushed gypsum from the storage area onto transport trucks (HOWO 6*4 Tractor trucks) in preparation for transportation.
- Gypsum will be transported to customers using the preferred transportation routes.

Approximately 105,000 t/yr of gypsum will be directly transported to customers. Assuming the use of trucks carrying approximately 30 tons of material at a time, and assuming 300 days of year of potential trucking, approximately 20-50 trucks per day on average would be required to carry the annual production of natural gypsum to markets. In the event that the entire preferred trucking route is able to sustain loads of up to 62,500 kg GVM, larger trucks (e.g. HOWO 6*4 Tractor trucks, "B-train" tandem trucks) could be used to reduce the number and frequency of shipments and should highway conditions permit.

While open pit operations (i.e., excavation, crushing) will be limited to up to five days a week during weekdays (up to 12 hours a day during daytime) for up to 250 days a year, loading of trucks and transportation of gypsum to customers could occur throughout the day, year-round, as highway restrictions permit.

Reclamation and Closure Phase

The conceptual approach to completing reclamation and closure of the Project as currently conceived at this early stage of Project development includes:

- Removal of all materials and surface facilities on the site;
- Re-contouring and reshaping the site;
- Re-vegetating the site as much as possible with native species as appropriate; and,
- Allowing the open pit to fill with water from natural precipitation (over time).

Prior to allowing the open pit to fill with water, its edges will be reshaped to an appropriate slope to allow for safe entry and egress of the pit lake by animals or humans.

Additionally, appropriate signage and other safety measures will be put in place to warn individuals about the potential safety hazards arising from the presence of the pit lake.

This conceptual plan will be updated as part of the process to obtain a mining lease for the Project under the Mining Act, which requires a reclamation and closure plan to be developed as a pre-requisite to obtaining a mining lease.

High-level details of the activities to be conducted during the reclamation and closure phase are provided in the sub-sections that follow.

Decommissioning

As a first step in decommissioning the site, any remaining gypsum material located in the storage area will be removed and transported to customers, or returned to the open pit. The surface facilities and infrastructure will then be decommissioned and removed, including the removal of all pumps, hoses, portable crusher, optional portable office/trailer, optional truck scale, mobile equipment, and any other machinery. All site access roads, internal roads, power supplies, and other utilities will be decommissioned, unless required for closure of the site.

Reclamation

Reclamation will involve the restoration of the Project site to as near natural conditions as possible. In general, disturbed areas of the site including the storage areas and other active areas of the site will be graded and shaped. The settling pond will either remain as a water feature or be infilled with on-site fill material and the site will be levelled using mobile equipment.

Slopes will be graded to merge naturally into adjacent undisturbed areas. Grading may include decommissioning drainage channels and other water management facilities that are no longer needed, or enhancing them to provide natural swales for channeling surface water into nearby watercourses. The former storage area and other active areas of the site will be covered with stored overburden, then covered with topsoil.

Since gypsum rock will be trucked off-site during operation, there will be insufficient material remaining on site to fill the open pit at closure, and trucking in of fill material for such purpose is not economically feasible. As such, other than for some minor residual materials (e.g., grubbings, off-specification gypsum) not used on site that will be disposed of in the former open pit, it will not be possible to reclaim the open pit other than as an open-water landscape feature once a pit lake has been established.

Similarly, there are no reclamation options for the bare rock faces, and some of the upper benches of the open pit may remain exposed above the pit lake water level. Reclamation will consider implementing feasible measures to mitigate potential hazards to humans and wildlife (e.g., risks potentially posed by vertical rock faces in the open pit, or from deep water in the open pit with no easy exit), subject to further definition as part of reclamation planning throughout the Project life.

The focus for reclamation will be to encourage natural re-vegetation of the site, with limited intervention. Over time, some natural habitats will emerge, such as rock outcrop on the pit rim and walls, possibly wetland habitat on shallow, submerged rock terraces, and upland forest in areas surrounding the pit. Exposed areas will be re-vegetated with native species of hydroseed as necessary to accelerate natural regrowth. Once the areas are stable, it is expected that native shrubs will quickly invade the site, providing natural vegetation cover for the site.

3.6.3. Closure

During closure, the surface water drainage channels on the site as well as the settling pond will be removed, but the perimeter channels along the edges of the site will be maintained. Any drainage channels within the site itself will be directed if possible towards the open pit to direct runoff to the open pit to enable its filling with water.

3.7. Project Schedule

The anticipated Project schedule is as follows:

Construction:
Construction will proceed for a period of up to 2 months, commencing as soon as the EIA review has been completed and the applicable permits, approvals or other forms of authorization have been obtained. For the purpose of this EIA Registration, it has been assumed that construction will begin in the fourth quarter of 2021. Clearing of trees and vegetation from the site would be conducted early October to end of November.

Operation:
Operation will commence immediately following the construction phase and will continue for approximately 10 years or until the mineral resource is depleted. For the purpose of EIA Registration, it has been assumed that the operation phase will begin within a fourth quarter of 2021.

Reclamation and closure:
Decommissioning of Project facilities and reclamation and closure of the Project site will occur following the completion of the operation phase. Closure will commence during the initial reclamation period and will be complete when the open pit is full of water.

3.8. Machinery and Equipment Requirement

The list of machines, equipment and vehicle are shown below in the table for each production line; the number of machines, equipment and vehicles will increase on demand basis throughout the project life time.

#	Equipment	Suggested Specification	Approximately Quantity
1.	Crawler bull dozer	230 HP	03
2.	Wheel Loader	35 tons 350-400 Hp With operational & maintenance manuals and part books	08
3.	Hydraulic Excavator	350 – 400 HP	08
4.	Compressor	With one Jacks hammer designed for 20 feet's drilling equipped with 3 meters long guide bar	03
5.	Diesel Generator	250 KVA prime power	02
6.	Sino Dump truck	30-35 Tones	20
7.	Tractor trucks	HOWO 6*4 tractor truck with 3 Axles Carbon Steel Semi Trailer	50
8.	Minibus	28-30 Seats	4
9.	Toyota pick-up		8

3.9. Utilities

A number of utilities would be put in order to ensure smooth functioning of the project. These utilities include:

i. Water supply
ii. Supplementary Electricity supply
iii. Paved Road Transportation,
iv. Drainage Facility
v. Fuel & lubricant storage

3.10. Project implementation plan

The project's implementation is expected to take 24 months. The Major activity includes Bank loan processing, construction of the building, cleaning the area around the building, procurement of equipment and start rendering services. The time schedule for the above-mentioned major activities is presented below:

Table 3: Project - implementation schedule

SN	Activities	Date
1.	Land Approval	May, 2021
2.	Bank loan processing	June- October, 2021
3.	Site Development	August- Sep, 2021
4.	Building and construction work	Sep- Oct,2021
5.	Purchasing of machines and equipment	Sep 2021
6.	Production execution	October, 2021

3.11. Organization, management and Manpower

Organization and management

The organization structure should be in a way that the company able to achieve its objective as well as the satisfaction of requirement.

Man Power

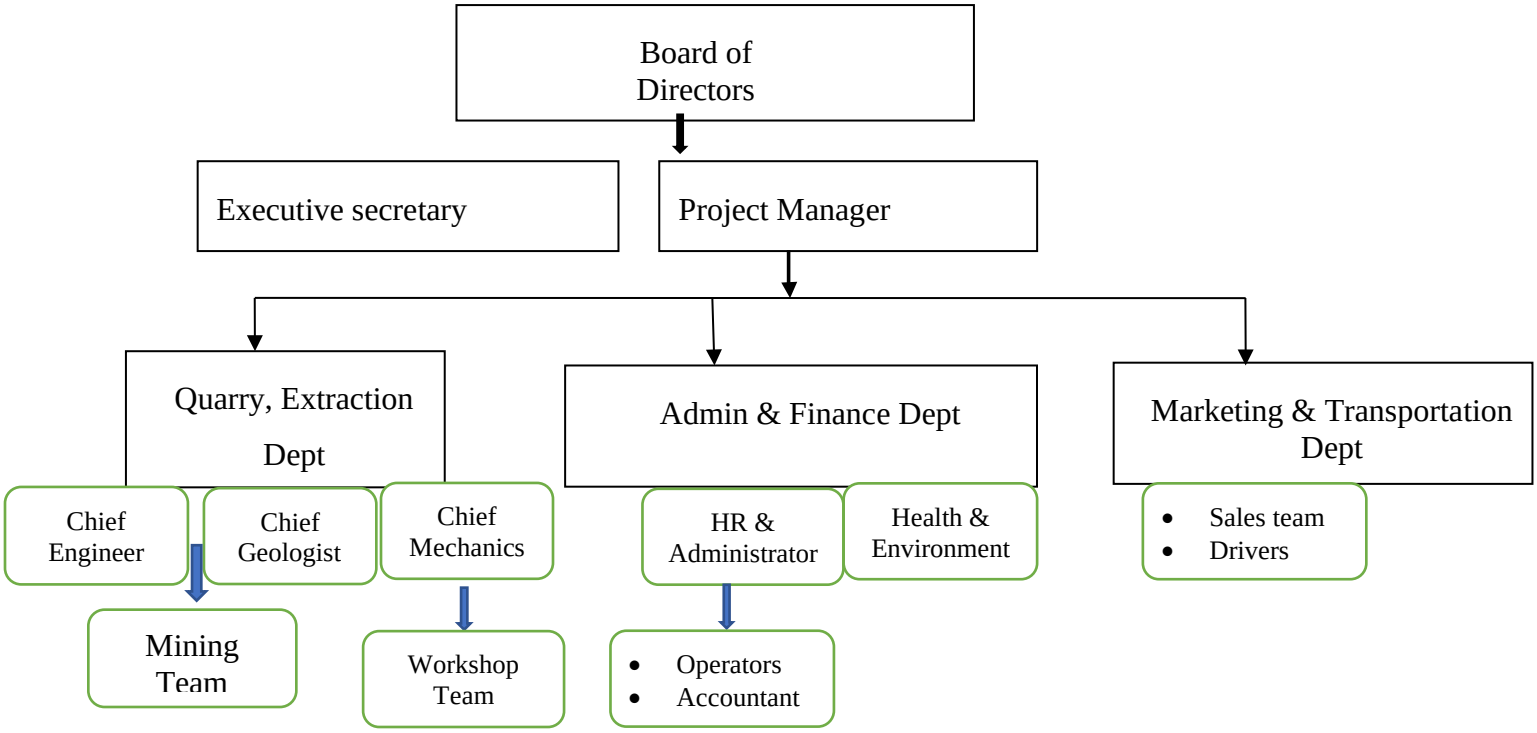
The total manpower required for the project are approximated to reach 220 individuals (160 skilled and 60 unskilled) who will be employed direct.

Description	No.
Project Manager	1
Secretary	1
Chief Engineer	1
Chief Geologist	1
Chief mechanics	2
Health and safety coordinator	1
Accountant	2
Human Resource Officers	2
Administrator	1
Operators (Machinery)	30
Drivers & workshop men	60
Security	8
Mining, blast hole drillers, ore spotters, site attendants	50
Total (Skilled)	**160**

Organizational structure

The organizational structure of the project is designed by including all the necessary personal under the right division. At the top of the organizational structure, there will be Project Manager with the responsibility of supervising the overall activity of the project. Depending up on the nature of the center and the amount of work to be performed; there exist auxiliary units under the Project Manager.

Employees under each unit will be supervised by the department head that is accountable for the general manager. Project Manager will be appointed by the Board of Directors.



	Duties and responsibility
Project Manager	• She/he will plan organize, direct and control the overall activities of the project • She/he will devise policies and strategies that will enable the project to be profitable. • She/he will incorporate modern technological innovation that will facilitate the service delivery of the project center and increase customer satisfaction. • He/he will plan, organize, direct and control the human and non-human resource of the project so as to achieve the short and long run objectives of the organization.
The quarry and Extraction Department	It is the core department of the project center and has the following responsibility • Ready and prepared the quarry for Gypsum stone/rock extraction

	• Use modern quarrying and extraction, processing and technology that will enhance the quality of the Gypsum stone/rock • Extraction quality of the Gypsum rock/ stone that will enable the center component both in the domestic and international market. • Use appropriate technology to manage its product • Providing gypsum stone crushing service for external customers • Control on the quarry nature quality of the gypsum stone/rock and also the overall extraction process. • Produce products in least cost so that the profitability of the center is guaranteed • Moreover, control over quality of the final product (Gypsum stone/rock)
Administration and finance department	• Will plan, organize direct and control the financial transaction of the project by using the entire necessary document. • Will develop sound financial control system by developing modern financial control systems. • Will prepare the annual financial statements and prepare condescend reports for the Project manager, owner and other concerned government body. • Will control the human and non-human resource of the project, which include: effective handing of the different inventories of the machinery and devise strategies of controlling against fraud and devise strategies of controlling against fraud and damage. • Manage and execute the company national and international procurement produce • Administer and control the company logistic resource. • Effectively administer the company procurement process domestically as well as internationally. • Manage the public relation of the quarry project with external parties/stakeholders • Provide and manage general supportive service to the project
Commercial Department	• Will handle the overall marketing activities of the organization which include planning, organizing, directing and controlling • Provide cost estimate in preparation for securing. • Gather information on the gypsum market demand • Plan and execute sales • Will develop effective customer handling strategies • Will design and implement effective advertisement and promotion schemes • Will develop the marketing strategies for future project center development • Conduct both foreign and domestic market research for expanding the sales of the company

4.0. FINANCIAL REQUIREMENT AND ANALYSIS

4.1. The Financial Assumptions of the Project

ITEM	ASSUMPTION
Inflation Rate	3.2%
Financing Structure	Loans constitutes 75% and Shareholders Equity constitutes 25% of the investment.
Working Capital	US$ 687 thousand
Pre-Operating Expenses	2.3% of total investment
Tax Rate	5%
Additives cost	28% of revenues
Electricity and water cost	9% of revenues
Maintenance Cost	1% of investment
Staff Benefits	20% of salaries
Annual Salaries Increase	10%
Staff incentives	2% of revenues
Assets Depreciation Rate	4% - 25% of asset value
Insurance Expenses	US $ 29,266.7 in the first year with increase by 5%
Accounts Receivable	8.8 of revenues
Inventory	8 months of costs
Annual Depreciation	20% annually

4.2. Total initial Investment Cost

The total amount of money that is required to establish the envisaged project is estimated to be 3.6 Million US Dollar.

Table 4: Total initial investment capital

Description	Cost in $
Fixed Investment capital	
Land, Building & Construction	91,496.2
Machines & Equipment	1,642,000.0
Vehicles	1,182,872.5
Office Equipment	10,305.4
Subtotal (Total fixed investment cost)	**2,926,674.1**
Pre-service expense	4,189.5
Initial working capital	687,568.3
Sub Total	**691,757.8**
Contingency (5 % of operation costs)	6,875.7
Total initial investment capital	**3,625,307.6**

Table 5: Fixed Investment (Land, Building& construction)

Description	UOM	Land requirement	Unit cost in $	Total cost in $
Quarry & production area development	Hectares	11.24	13.4	150.6
Store	Sqm	8100	3.7	30,294.0
Office	Sqm	6800	2.6	17,680.0
Worker shelter & Cafeteria	Sqm	4500	3.1	13,950.0
Parking, road & loading	Sqm	10300	1.7	17,510.0
Green Area and buffer	Sqm	2500	0.4	1,000.0
Fence				995.9
Electric line installation				909.3
Water line installation				1,212.4
Land acquisition				7,794.0
Total Fixed Costs				**91,496.2**

Table 6: Machines & Equipment

Description	Quantity	Unit price in $.	Total price in $	Remark
Crawler Bull dozer 230 hp	1	335,000.0	335,000.0	Duty Free
Wheel loader XG 958H- 35 tons	2	295,000.0	590,000.0	Duty Free
Excavator 350 HP	2	335,000.0	670,000.0	Duty Free
Compressor	1	22,000.0	22,000.0	Duty Free
Generator 250 KVA prime power	1	2,000.0	2,000.0	Duty Free
Other miscellaneous equipment's			23,000.0	
TOTAL			**1,642,000.0**	

Table 7: Vehicles

Description	Qty	Unit price in $	Total price in $	Remark
Tractor trucks	10	62,000.0	620,000.0	**Duty Free**
Sino dump truck	5	30,000.0	150,000.0	Duty Free
Minibus	1	12,990.0	12,990.0	Duty Free
Worker service bus	1	1,082.5	1,082.5	Duty Free
Toyota pick-ups	8	49,850.0	398,800.0	Duty Free
TOTAL			**1,182,872.5**	

Table 8: Office Equipment

Description	**Qty**	**Unit cost in Br**	**Total cost in**
Managerial tables with chair	3	303.1	909.3
Secretarial chairs with table	1	238.2	238.2
Office chairs with tables	10	207.8	2,078.4
Computer with its accessories	3	173.2	519.6
Printer	3	995.9	2,987.7
Shelf	3	151.6	454.7
Filing cabinets	4	129.9	519.6
Curtain and carpet	LS		1,732.0
Other miscellaneous expenses	LS		866.0
TOTAL		-	**10,305.4**

Table 9: Pre- Service Expenses

Cost of Items	**Unit**	**Qty**	**Unite cost in $**	**Total Cost in $**
Business plan	Set	1	510.1	510.1
Pre- feasibility Study	Set	1	280.0	280.0
Design and BOQ	Set	1	960.3	960.3
License and other processing	LS			1,465.0
Developing administrative, logistics & financial formats	Set	1	519.7	519.7
TOTAL	-	-		**3,735.1**

Table 10: Salaries

Personnel	**Qty**	**Rate/Person**	**Rate/Month**	**Rate/Year**
Project Manager	1	606.2	606.2	7,274.4
Secretary	1	346.4	346.4	4,156.8
Chief Engineer	1	443.825	443.8	5,325.9
Chief Geologist	1	454.65	454.7	5,455.8
Chief mechanics	1	398.36	398.4	4,780.3
Health and safety coordinator	1	372.38	372.4	4,468.6
Accountant	2	385.7	771.4	9,256.8
Human Resource Officers	1	368.05	368.1	4,416.6
Administrator	1	454.65	454.7	5,455.8
Operators (Machinery)	18	281.45	5,066.1	60,793.2
Drivers & workshop men	40	259.8	10,392.0	124,704.0
Security	6	129.9	779.4	9,352.8
Mining, blast hole drillers, ore spotters, site attendant	20	181.9	3,638.0	43,656.0
Unskilled Labors	25	86.6	2,165.0	25,980.0
Sub Total				**315,077.0**
Benefit (20% of basic Salary)				63,015.4
TOTAL				**378,092.4**

Table 11: Operation Costs

Description	Annual cost $ (Annually)	Assumption Used
Property insurance	29,266.7	1% of fixed investment cost
Audit & Legal Fee	649.5	$ 54.13 per month
Protective and safety equipment	1,299.0	LS
Telephone, fax, and postal	541.3	$ 45.11 per month
Repair maintenance &spare parts	4,330.0	LS
Stationery and other office supplies	411.4	
Electricity	866.0	Per annum
Medical supply	423.7	
Water	779.4	
Fuel, Oil and lubricant	268,460.0	
Miscellaneous expenses	2,450.0	
Total	**309,476.9**	

4.3. Operation Financial Analysis

Table: Project Source of Fund

Source	%	Amount
Shareholders' Equity	25	906,326.90
Bank Loans	75	2,718,980.69
Total Fund		**3,625,307.6**

Table 12: Loan repayment schedule

Date	Pmt #	Payment	Principal	Interest	Balance
11/1/2021	Starting Balance				$2,718,980.69
10/1/2022	1	$376,068.26	$0.00	$376,068.26	$2,718,980.69
10/1/2023	2	$376,068.26	$0.00	$376,068.26	$2,718,980.69
10/1/2024	3	$376,068.26	$0.00	$376,068.26	$2,718,980.69
10/1/2025	4	$376,068.26	$0.00	$376,068.26	$2,718,980.69
10/1/2026	5	$376,068.26	$0.00	$376,068.26	$2,718,980.69
10/1/2027	6	$376,068.26	$0.00	$376,068.26	$2,718,980.69
10/1/2028	7	$3,099,680.28	$2,718,980.69	$380,699.59	$0.00
Total	**7 Pmts**	**$5,356,089.85**	**$2,718,980.69**	**$2,637,109.16**	

4.4. Depreciation & Income-Loss Statement

Table 13: Deprecation schedule

FIXED ASSETS	RATE	YEAR 0	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Office Furnitures	12.5%	10305.4	1288.175	1288.175	1288.175	1288.175	1288.175	1288.175	1288.175	1288.175	1288.175	1288.175
Infrastructures	4%	91,496.2	3,659.8	3,659.8	3,659.8	3,659.8	3,659.8	3,659.8	3,659.8	3,659.8	3,659.8	3,659.8
Machinery	25.0%	1,642,000.0	410,500.0	410,500.0	410,500.0	410,500.0	410,500.0	410,500.0	410,500.0	410,500.0	410,500.0	410,500.0
Vehicles	25%	1,182,872.5	295,718.1	295,718.1	295,718.1	295,718.1	295,718.1	295,718.1	295,718.1	295,718.1	295,718.1	295,718.1
Allowances	20%	378,092.4	75,618.5	75,618.5	75,618.5	75,618.5	75,618.5					
TOTAL		**3,304,766.5**	**786,784.6**	**786,784.6**	**786,784.6**	**786,784.6**	**786,784.6**	**711,166.1**	**711,166.1**	**711,166.1**	**711,166.1**	**711,166.1**

Table 14: Income - Loss Statement

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Sales of Gypsum/Tones	4,168,500	4,376,925	4,595,771.25	4,825,560	5,066,838	5,320,180	5,586,189	5,865,498	6,158,773	6,466,712
DIRECT COSTS										
Land, Building & Construction	91,496.2	7,794.0	7,794.0	7,794.0	7,794.0	100,205.18	7,794.0	7,794.0	7,794.0	7,794.0
Machines & Equipment	1,642,000.0	1,617,000.0	672,000.0							
Vehicles	1,182,872.5	1,567,062.5	2,610,000.0							
Office Equipment	10,305.4	0								
Pre-Service Expenses	4,189.5	0								
SUB TOTAL	**2,930,863.6**	**3,191,856.5**	**3,289,794.0**	**7,794.0**	**7,794.0**	**100,205.2**	**7,794.0**	**7,794.0**	**7,794.0**	**7,794.0**
OPERATING EXPENSES										

Property insurance	29,266.7	29,559.41	29,855.00	30,153.55	30,455.09	30,759.64	31,067.24	31,377.91	31,691.69	32,008.60
Salaries & Wages	378,092.4	415,901.61	457,491.77	503,240.95	553,565.05	608,921.55	669,813.71	736,795.08	810,474.59	891,522.04
Audit & Legal Fee	649.5	649.5	649.5	649.5	649.5	682.0	682.0	682.0	682.0	682.0
Loan Repayment	376,068.3	376,068.3	376,068.3	376,068.3	376,068.3	376,068.3	3,099,680.3	-	-	-
Protective and safety equipment	1,299.0	1,311.99	1,325.11	1,338.36	1,351.74	1,365.26	1,378.91	1,392.70	1,406.63	1,420.70
Telephone, fax, and postal	541.3	541.3	541.3	541.3	541.3	568.31	596.73	626.56	657.89	690.79
Repair maintenance & spare parts	4,330.0	4,373.30	4,417.03	4,461.20	4,505.82	4,550.87	4,596.38	4,642.35	4,688.77	4,735.66
Stationery and other office supplies	411.4	415.46	436.24	458.05	480.95	505.00	530.25	556.76	584.60	613.83
Electricity	866.0	883.32	900.99	919.01	937.39	956.13	975.26	994.76	1,014.66	1,034.95
Medical supply	423.7	427.94	432.22	436.54	440.90	445.31	449.77	454.26	458.81	463.39
Water	779.4	787.19	795.07	803.02	811.05	819.16	827.35	835.62	843.98	852.42
Fuel, Oil and lubricant	268,460.0	271,144.60	273,856.05	276,594.61	279,360.55	282,154.16	284,975.70	287,825.46	290,703.71	293,610.75
Miscellaneous expanses	2,450.0	2,450.0	2,450.0	2,450.0	2,450.0	2,450.0	2,450.0	2,450.0	2,450.0	2,450.0
SUB TOTAL	**1,063,637.6**	**1,104,513.8**	**1,149,218.5**	**1,198,114.3**	**1,251,617.5**	**1,310,245.6**	**4,098,023.5**	**1,068,633.4**	**1,145,657.3**	**1,230,085.1**
Profit before Depreciation	**173,999**	**80,555**	**156,759**	**3,619,652**	**3,807,426**	**3,909,729**	**1,480,371**	**4,789,071**	**5,005,322**	**5,228,833**
Depreciation	708,496.4	**708,496.4**	**708,496.4**	**708,496.4**	**708,496.4**	**708,496.4**	**708,496.4**	**708,496.4**	**708,496.4**	**708,496.4**
Profit before Tax	(534,498)	(627,942)	(551,738)	2,911,155	3,098,930	3,201,232	771,875	4,080,574	4,296,825	4,520,336
Corporate Income Tax (30%)	-	-	-	873,346.54	929,678.96	960,369.75	231,562.43	1,224,172.29	1,289,047.60	1,356,100.85
Profit After Tax	**(534,497.58)**	**(627,941.72)**	**(551,737.62)**	**2,037,808.59**	**2,169,250.91**	**2,240,862.75**	**540,312.33**	**2,856,402.00**	**3,007,777.74**	**3,164,235.32**
Accumulated Profit	**(534,497.6)**	**(1,162,439.30)**	**(1,714,176.92)**	**323,631.68**	**2,492,883**	**4,733,745.33**	**5,274,057.66**	**8,130,459.66**	**11,138,237.40**	**14,302,472.72**

4.5. Profitability

According to project income statement the project will start generation profit in the 5th year- operation important ratios such as profit to total sales net profit to equity.' (Return on equality) and net profit plus interest on total investment (return on total investment) show an increasing trend during the lifetime of the project the income statements and other indicator of profitability show that project is viable.

4.6. Pay-Back Period

The investment cost and income statements projection are used to project the pay-back period. The project's initial investment will be fully recovered within 4.32 years of the project operation.

4.7. Sensitivity Analysis

First: Increase of Investment Cost By 10%

The following table shows the results of the sensitivity analysis when investment cost increases by 10%.

Table 15: Investment Increase by 10%

INDEX	BASE	IMPACT	CHANGE
Internal Rate of Return (IRR)	40.1%	37.2%	2.9%
Profitability Index (Time)	3.4	3.1	0.3
Payback period (Year)	4.32	3.9	0.7
The Net Profit Ratio – an average of 10 years	28.7%	28.4%	0.3%
Return on Investment - an average of 10 years	32.8%	30.4%	2.4%
Return on Capital – an average of 10 years	55.6%	50.2%	5.4%
Net Profit on Revenues - an average of 10 years	28.7%	28.4%	0.3%
Assets Turnover (Time) – an average of 10 years	1.7	1.7	0.2

The above analysis refers to the feasibility of investment in the Business, in light of the high cost of the total investment of the Business, which increased by 10%. It is noted that:

- The Internal Rate of Return reaches 21.9%, which is considered high for investment purposes
- The new payback period is 4.32 years, and it is reasonable for recovery purposes

The return on capital is 29.5%, which is high for investment purpose

Second: Reducing Revenues by 10%

The following table shows the results of the sensitivity analysis when reducing revenues by 10%.

Table 16: Reducing Revenues 10%

INDEX	BASE	IMPACT	CHANGE
Internal Rate of Return (IRR)	40.1%	23.80%	16.3%
Profitability Index (Time)	3.57	1.87	1.53
Payback period (Year)	3.1	5.8	2.4
The Net Profit Ratio – an average of 10 years	28.7%	13.9%	14.8%
Return on Investment - an average of 10 years	32.8%	19.6%	13.3%
Return on Capital – an average of 10 years	55.6%	38.8%	16.8%
Net Profit on Revenues - an average of 10 years	55.6%	28.1%	27.5%
Assets Turnover (Time) – an average of 10 years	1.7	1.87	-0.17

The above analysis shows the low sensitivity of the Business in case of reducing the revenues or demand by 10%. It indicates that:

- The Internal Rate of Return is 14%, which is suitable for investment purposes
- The new payback period is 7.8 years, and it is reasonable for recovery purposes
- The return on capital reaches 16.5%, which is high for investment purposes

Third: Increasing the Operating Costs by 10%

The following table shows the results of the sensitivity analysis when increasing the operating costs by 10%.
Table: Increasing the Operating Costs by 10%

INDEX	BASE	IMPACT	CHANGE
Internal Rate of Return (IRR)	40.1%	30.1%	10.0%
Profitability Index (Time)	3.4	2.38	1.02
Payback period (Year)	3.1	4.8	1.4
The Net Profit Ratio – an average of 10 years	28.7%	18.5%	10.2%
Return on Investment - an average of 10 years	32.8%	25.0%	7.8%
Return on Capital – an average of 10 years	55.6%	38.8%	16.8%
Net Profit on Revenues - an average of 10 years	28.7%	18.5%	10.2%
Assets Turnover (Time) – an average of 10 years	1.7	1.87	-0.17

The above analysis shows the feasibility of the Business in light of increasing the operating costs of the Business by 10%. It indicates that:

- The Internal Rate of Return is 30.1%, which is considered high for investment purposes
- The new payback period is 4.8 years, and it is reasonable for recovery purposes
- The return on capital is 38.8%, which is high for investment purposes

5.0. ENVIROMNTAL IMPACT OF THE PROJECT

Environmental aspects are fundamental for the sustainability assessment of the current and novel designs of this project. To assess the impacts and design mitigation measure if any adverse are there so as to make the project benefited more and nation.

The extraction process implies an unavoidable impact on the landscape and natural environment, however, human activities does not necessarily mean loss of biodiversity and danger for eco- systems.

5.1. Issues & Impacts Mining/Quarrying Project

The key environment problems and impacts of mining/quarrying are

- Land degradation
- Degradation of forest and loss of biodiversity
- Air and noise pollution
- Surface water pollution
- Ground water pollution
- Environmental degradation due to abandoned and closed mines

5.1.1. Monitoring plan and implementation program

Environmental monitoring is an essential tool in relation to environmental management as it provides the basis for rational management decision regarding impact control.

The monitoring program for the present project will be undertaken to meet the following objectives:

- To check on weather mitigation and benefit enhancement measure have actually been adopted, and are proving effective in practice
- To provide a means whereby any impacts which were unforeseen, can be identified, and to provide a basis for formulating appropriate additional impact control measures
- To provide information on the actual nature and extent of key impacts and the effectiveness of mitigation and benefit enhancement measure which through a feedback mechanism, can improve the planning and execution of future, similar projects.

5.1.2. Topsoil and Overburden Storage Area

To expose and extract the gypsum mineral, it is first necessary to remove surface materials including grubbings and soils (i.e., topsoil and overburden) above the gypsum deposit. Based on exploration and drilling work conducted on the site, it is anticipated that approximately 10-20 m of topsoil and overburden will need to be removed in the area of the open pit. Topsoil and overburden will be stored in a designated area on or near the storage area, for later use in site reclamation at the end of the Project life. Topsoil or overburden resulting from levelling or reshaping of other areas of the site will also be stored in these designated areas for future use. Storage piles of topsoil and overburden will remain open to the air, uncovered, since fugitive dust from these piles over time is not expected to require active management. Seeding of the storage piles using native species may be considered if there is a concern for erosion and sedimentation from the storage piles, though it is expected that vegetation will naturally grow on these piles over time.

As with the gypsum storage area, runoff from the topsoil and overburden storage area will be collected and directed to a settling pond or other sediment control structures to allow for settling or removal of suspended sediments that might be contained in the runoff prior to its release to the natural environment.

5.1.3. Facilities for Pit Dewatering and Runoff Management

The water management plan for the Project has not yet been fully developed and will evolve as site planning and design is conducted. The conceptual plans for pit dewatering and runoff management, as currently conceived at this early planning stage, are described below. These will be confirmed as part of the water management plan, as it is finalized.

Since the open pit will be located at depth below the surrounding ground elevation, it is expected that surface water (from precipitation and spring snow melt) as well as groundwater seepage will collect at the bottom of the open pit, thereby requiring periodic dewatering of the open pit so as to manage water volumes and minimize interference with operations occurring within it. To this end, the open pit will be developed in such a manner that the active bench being worked on to extract gypsum rock will be located at a higher elevation than the bottom of the open pit, so that the deepest portion of the open pit serves as a sump to store water infiltrating into the open pit until such time as it is removed by pumping. It is expected that most of the storage will be provided by the pit sump, which will require active pumping to control water levels.

5.1.4. Potable Water and Sanitary Sewer

During construction, sanitary needs will be met by using bottled water and a portable toilet (managed and periodically serviced by a third-party company).

During operation, consideration will be given to installing a potable water well and septic tank and sub- surface disposal field for the duration of the Project. If they are required, the well will be approved under the Potable Water Regulation under the Clean Water Act, and the septic tank and disposal field will be approved under the On-site Sewage Disposal System Regulation under the Public Health Act.

Water consumption would be expected to be modest (approximately 50 L/day per person on site, for approximately 20-100 people). Alternatively, sanitary needs could be met in a manner similar to during construction (i.e., bottled water and portable toilets).

5.1.5. Hazardous Materials Use and Storage

As the Project involves little material handling and no chemical processing, there are no chemicals required for the Project operation, nor any chemical storage required on the Project site.

Fuel for the crusher, mobile equipment, and trucks on-site will be supplied by third party owned mobile tankers who will refuel mobile equipment on-site on a daily basis, then leave. There is no planned fuel storage on-site at this time. In the unlikely event of a future decision to store fuels on-site, they would be stored in a self-contained tank(s) equipped with secondary containment (“con-tanks”) owned, operated, and serviced by third parties. In such an unlikely case, no more than 10,000 liters of fuel would be expected to be stored on-site at any given time.

6.0. CONCLUSION AND RECOMMENDATIONS

6.1. Conclusions

The geological investigation completed so far within the project has confirmed the presence of gypsum within the area as evidenced in the resource estimate presented.
Processing will be done by crushing the gypsum rocks into sizes as per client or as per market demand.

An economic evaluation of the project has been prepared based on the pre-tax financial model. For the first ten (10) years of the mine life and 1.4m Tones mineable reserve;
The following pre-tax financial parameters were calculated:

- 14 % Internal Rate of Return
- Payback of 4.32 years on 323,631.68 $ initial capital that includes 2,450.0 $ contingency of direct costs

6.2. Recommendations

- The company should plan to increase daily and annual production above 500t/day and 125,000t/yr in order to maximize profit
- Continue negotiation and keep good relation with the surrounding society at Likawage Village
- The project developer has to identify how to secure the available Tanzania subsidies
- The project developer has to investigate how to use mining contractors during mining to avoid re-investment in equipment purchase
- The project developer has to finalize acquiring of the missing permits from different government institutions like; Occupational Safety and Health Authority (OSHA), Fire and Rescue, Explosive, Water use permits, etc.