

PERMANENT MINERALS CO. LIMITED

BUSINESS PLAN

FOR

MINERALS (GRAPHITE) PROCESSING

PREPARED FOR

PERMANENT MINERALS CO. LIMITED

1.0. Introduction

PERMANENT MINERALS CO. LIMITED is a new company incorporated in Tanzania with Certificate of Incorporation No. 162931105 dated 31st January 2023 159153037 dated 2nd December 2022 the company is owned by 2 shareholders.

PERMANENT MINERALS CO. LIMITED has acquired land located at **Simanjiro Area, QDS 72/1, and 72/2 Simanjiro District, Manyara region**. The proposed area will be used for minerals processing

PERMANENT MINERALS CO. LIMITED vision is to offer our clients reliable, secure, and fast graphite processing. PERMANENT MINERALS CO. LIMITED also aim to be amongst the medium size company providing graphite processing facility of high quality with environmentally friendly equipment by the year 2025.

PERMANENT MINERALS CO. LIMITED location in **Simanjiro Area, QDS 72/1, and 72/2 Simanjiro District, Manyara region** is very strategic as is the area with large and good quality various industrial minerals deposit in Tanzania and the availability of skilled workforce is very fundamental for such project, **Simanjiro district** is the ideal place where abundant of skilled force are available that will lower overheads in running graphite processing facility.

PERMANENT MINERALS CO. LIMITED intend to procure the best equipment in order to be able to provide the best for our clients, lower operation cost and increase minerals recovery. PERMANENT MINERALS CO. LIMITED goal is also to ensure that we build a business structure that will aid us in achieving our corporate goals and objectives.

PERMANENT MINERALS CO. LIMITED's intention in running a smooth business with as less hitches as possible are to ensure that we hire the right number of employees who not only have an understanding of the industry and are professionals but also are attuned to our corporate goals and vision and are committed to ensuring that these goals and visions are achieved.

PERMANENT MINERALS CO. LIMITED intend to provide a conducive and friendly environment for our employees as well as ensure that they get the required training that is continuous in nature so as not only to enhance their skills and increase productivity for the organization but to also ensure that the skills gotten are the best across similar start-up such as ours in the industry.

2.0 Some Of Few Selected Machines and other items

The graphite processing equipment primarily includes:

- Graphite vertical stirring mill,
- Flotation machine,
- Drum dryer,
- Agent agitation tank,
- Chamber filter press,
- XHGY-B series numerical control agent feeder
- Graphite ore crushing stage

3.0 The Sponsors

PERMANENT MINERALS CO. LIMITED will be sponsoring this project. The Company is currently jointly owned by 4 shareholders.

Names of Shareholders	Number of Shares	Nationality
Wang Ying	5600	China
Qingdao Prosperity Mineral Co Limited	2600	China
Lan Xiaoqing	1000	China
Gao Decun	800	China

3.1 Objective of Study

The purpose of this study is to work out the technical and commercial details and financial viability of the project

3.2 Location

There are two considerations on this point. One is referred to as the mine and the other is the treatment plant. Ideally, the first one must be close to the plant, but sometimes the area and accessibility are serious issues. Probably, the most critical aspect is the plant location due to the idea is to have a good foundation for the buildings to be constructed and using the geography of the area. The latter is important because the gravity force must be utilized at maximum because the energy is an operative cost that will influence the economy of the project.

If the plant will be located near cold zones where the temperature can reach low values, the building must consider special protection due to exists the possibility of having frozen problems with the slurry. This situation is painful if the problem is not considered before. The project location of treatment plant has been selected after considering all factors, the project will be located at **Simanjiro Area, QDS 72/1, and 72/2 Simanjiro District, Manyara region**

3.3 Profitability

The economy and profitability of the project is influenced by the mining costs, operative costs, shipping costs, impurity levels, concentrate treatment charges and smelter/refinery returns. These factors have to be projected from the laboratory tests or scaled metallurgical tests. Basically, minerals concentrate has to be related to the mineralized block, minerals distribution, and diluents such as pyrite, graphite, clays,

and organic matter. PERMANENT MINERALS CO. LIMITED has studied All these factors together in order to optimize the revenue of the project according to the mineralized zone.

The company's production capacity is estimated to be 1000 tone per year and the average selling price is US\$20,000 of CSPG graphite

3.0 What Equipment Is Needed for Graphite Ore Beneficiation

In recent years, with the strong rise of the new energy industry, related raw materials have received extensive attention. Among them, graphite, as an important battery anode material, is of great significance in the development of new energy, and its beneficiation technology and equipment have been greatly developed. The graphite ore beneficiation process mainly includes the stages of crushing, grinding, and beneficiation.

Graphite ore crushing stage

Graphite ore is soft in nature. Generally, the hardness of graphite ore is medium-hard or medium-hard and soft. Therefore, the crushing process of graphite is relatively simple, and the crushing process that can usually be used includes two-stage one-closed-circuit crushing, two-stage open-circuit crushing, or one-stage open-circuit crushing process. A small number of new graphite ore processing plants may also adopt a three-stage closed-circuit crushing process.

The first-stage crushing of graphite ore usually uses a. The secondary crushing can use a cone crusher to further reduce the particle size of graphite ore. Screening equipment can use circular vibrating screen

Crystalline graphite ore grinding stage

Since graphite has a flake structure, it is necessary to ensure that the graphite concentrate has as many large flakes as possible in the grinding stage to improve the large flake rate of the concentrate. At this stage, the shape of the grinding medium and the form of the mill has a great influence on the large flake rate of the graphite concentrate. In the selection of, rod mills, vertical stirring mills, and other equipment can be selected as the main grinding equipment

Crystalline graphite ore beneficiation stage

According to the properties of raw graphite ore, the beneficiation of crystalline graphite can be divided into four types: coarse flake graphite ore, medium flake graphite ore, fine flake graphite ore, and cryptocrystalline graphite ore. Due to the different

properties, the four types of graphite have different sorting methods, and flotation is the main sorting method.

① Coarse flake graphite ore has large graphite flakes and good floatability. The graphite particle size is generally 0.6~2mm, the graphite content is 1%~10%, and the raw ore contains a certain amount of mica. In the separation of this kind of graphite ores, the main purpose is to protect the large scales. The grade of graphite concentrate is above 87%.

② In the medium flake graphite ore, the raw graphite flakes are medium in size and have good floatability. The graphite particle size is 0.2~0.6mm, and the graphite content is 4%~15%. This kind of ore contains less mica, and the beneficiation is mainly to protect the existing graphite flakes and improve the yield of large

flake graphite. Its graphite concentrate grade is controlled at 86% to 90%.

③ The graphite flakes of fine flake graphite ore are smaller, and the floatability is poorer than that of medium flake graphite. The particle size of graphite in the raw ore is 0.03~0.2mm, and the graphite content is 6%~15%. The selection of this kind of graphite ore is mainly to improve the purity of graphite. At the same time, the graphite flakes are protected from damage, which can reduce the requirement of graphite recovery rate. The grade of graphite concentrate is generally around 90%. Multi-stage grinding and multi-stage beneficiation process are often used in this kind of ore separation to strengthen the beneficiation process.

④ The graphite particle size of cryptocrystalline graphite is generally below 1 μm . Due to its fine graphite particle size, other beneficiation methods can

also be used in addition to the flotation method, such as alkaline acid method, hydrofluoric acid method, high temperature purification method, etc.

In the process of graphite ore flotation, the flotation equipment selected can be aerated agitated flotation machine, mechanical agitated flotation machine, flotation column, etc. Among them, KYF-type flotation machine and XCF-type flotation machine can be selected for aerated stirring flotation machine, and SF-type flotation machine, JJF-type flotation machine, BF-type flotation machine, etc. can be selected for mechanical stirring flotation machine. Among them, the XCF flotation machine can form a flotation unit with the KYF flotation machine. The horizontal configuration of the flotation unit can be realized without the need to use a foam pump, and the capital construction cost required for the stepped configuration can be reduced.

The above is about the content of graphite ore beneficiation equipment. In actual beneficiation production, scientific and reasonable beneficiation process and beneficiation equipment should be determined according to the properties of graphite and the test results after , so as to ensure the economic benefits of the beneficiation plant and the rational utilization of resources.

4.0 Graphite Production Process

- **Mining**

Graphite ore is mined using excavating machines that carry dump trucks with raw ore.

The entire extraction process follows a mining plan, facilitating the selection of the most suitable one for final products.

- **Homogenization**

The deposition of this ore on the feeding plant is systematized to form feeding piles in layers.

The goal is to reduce the natural variability of the ore.

- **Mechanical Concentration**

The ore is subjected to successive grinding and a mechanical process separating impurities from the graphite. The mechanical concentration aims for maximum recovery of the graphite present in the ore, preserving its physical features.

- **Chemical Concentration**

The chemical concentration is used to remove the remaining impurities in the previously graphite mechanically concentrated. Nacional de Grafite uses and treats the residues of the chemical concentration in order not to pollute the environment.

- **Filtering and drying**

After the chemical concentration, the graphite is washed extensively with demineralized water, reaching a neutral pH. The remaining moisture is removed in Press-type filters and rotary dryers.

- **Classification**

Screening techniques are used to classify the particles of the concentrated graphite, reaching the desired particle size distribution.

- **Milling**

Jet and hammer mills grind the concentrated graphite until it reaches the desired size. The ground particles are classified, enabling control of the particle size distribution of the product generated. The different methods of grinding and classification allow for the shaping of the particle, giving the graphite distinct characteristics of density and a specific surface.

- **Briquetting**

In this process, agglomerated graphite grains are produced for use as carburized and carbon additives.

- **Intercalation**

Due to its extreme anisotropy, the graphite crystal enables salts to be intercalation in its structure. When heated, these salts evaporate, causing the disruption of inter-planar connections, "expanding" the graphite. Nacional de Grafite developed graphite intercalation and expansion processes compatible with the environment.

PERMANENT MINERALS CO. LIMITED COST

STRUCTURE US\$

Land and Buildings	400,000.00
Machinery & Equipment	2,500,000
Motor Vehicles	500,000
Furniture & Fixtures	5000
Pre exp	45,000.00
Others	50,000.00
Working Capital	1,500,000.00
TOTAL	5,000,000.00

For the project to be a reality a total investment amounting to US \$5,000,000. is needed

**(i) Land and Building (industrial premises):
US\$400,000**

The project has identified and secured a long-term lease to accommodate machinery and be used as a project office.

(ii) Machinery and Equipment: US\$ 2,500,000

Some US\$2,500,000 is anticipated to be spent on the purchase of different types of machines, working tools, and equipment accommodating new technology

(iii) Motor Vehicles: US\$500,000

The project will need 10 trucks, 2 Land Cruisers, and 2 double cabin picks. These vehicles will be used to facilitate project business and double cabin pick-up for administrative purposes.

(iv) Furniture: US\$5,000

This investment cost item has been estimated to cost US \$5,000. It will consist of office furniture such as tables, chairs, telephone, fax, machines, file cabinets, sofa chairs, etc.

(v) Pre-Operational Expenses: US\$ 45,000

They cover things like company registration, and expenses spent in exploring the viability of the project, especially the market/client identification

exercise. Also included under this item are issues like consultancy fees, legal fees, and recruitment and training costs of personnel.

(vi) Initial Working Capital: US\$1,500,000

Assumptions for working capital requirements have been estimated that it will cost US\$1,500,000. This will involve purchasing raw materials, daily operating costs, etc.

7.1 Financing pattern

The project will be financed by a US\$3,000,000 loan and the remaining 2,000,000 contributions from company shareholders and cash flow from business

8.0 Financial Analysis

8.1 Considerations and Assumptions:

The corporate tax charged is 0% of the profits for 8 years. The capital investment allowance is 50%. The capital assets are exempted from customs duty and

Value Added Tax. The straight-line method to depreciate the project's capital items has been applied. Revenues have been conservatively estimated based on the experience of the promoters and trends in the industry.

8.2 Projected Profit and Loss Statement

The Income and Expenditure Statement shows the projected income for the 5 years period. The position depicted is that the project earns profit throughout its life. Accumulated after profits grow from. US\$1,891,050 in first year to US \$ 10,559,076 in the 5th year

PERMANENT MINERALS CO. LIMITED PROJECTED INCOME & EXPENDITURE STATEMENT (US\$)

	1	2	3	4	5
-					
Revenue	20,000,000.00	21,000,000.00	22,050,000.00	23,152,500.00	24,310,125.00
Operating Expenses:	17,000,000	17,850,000	18,742,500	19,679,625	20,663,606
Gross Profit Before Interest and Depreciation	3,000,000	3,150,000	3,307,500	3,472,875	3,646,519
Interest	240,000	240,000	240,000	240,000	240,000
Depreciation	58,500	58,500	58,500	58,500	58,500
Gross Profit	2,701,500	2,851,500	3,009,000	3,174,375	3,348,019
Tax (30%)	810,450	855,450	902,700	952,313	1,004,406
Profit After Tax	1,891,050	1,996,050	2,106,300	2,222,063	2,343,613
Accumulated Profit	1,891,050	3,887,100	5,993,400	8,215,463	10,559,076

7.5 Projected Cash Flows

This is shown in the financial statements. The project has a positive end-of-year cash flow from year 1st, i.e., US\$ 2,189,550 of operation to the 6th year i.e., US\$ 12,051,575

PERMANENT MINERALS CO. LIMITED PROJECTED CASH FLOW " US\$"

	0	1	2	3	4	5
SOURCES:						
Profit before interest and depreciation	-	3,000,000	3,150,000	3,307,500	3,472,875	3,646,519
Equity	2,000,000					
Loan	3,000,000					
Total Sources	5,000,000	3,000,000	3,150,000	3,307,500	3,472,875	3,646,519
Applications:						
Capital expenditure	3,405,000		-	-	-	-
working Capital & Others	1,595,000					
Cash	-	2,189,550	2,294,550	2,404,800	2,520,562	2,642,113
Tax	-	810,450	855,450	902,700	952,313	1,004,406
Subtotal	5,000,000	3,000,000	3,150,000	3,307,500	3,472,875	3,646,519
Total applications	5,000,000	3,000,000	3,150,000	3,307,500	3,472,875	3,646,519
Accumulated cash		2,189,550	4,484,100	6,888,900	9,409,462	12,051,575

7.6 Projected Balance Sheet Statement

The projected shareholder's equity increases from US\$ 2,000,000 in 1st year to loan US \$12,559,076 in 5th

PERMANENT MINERALS CO. LIMITED PROJECTED BALANCE SHEET " US \$"

Fixed Assets	1	1	2	3	4	5
Opening balance	-	3,405,000	3,346,500	3,288,000	3,229,500	3,171,000
Total Long-term Assets	-	3,405,000	3,346,500	3,288,000	3,229,500	3,171,000
Less depreciation	-	58,500	58,500	58,500	58,500	58,500
Closing balance	-	3,346,500	3,288,000	3,229,500	3,171,000	3,112,500
Working capital	1,595,000	7,550,000	7,550,000	7,550,000	7,550,000	7,550,000
Accumulated cash	-	2,189,550	4,484,100	6,888,900	9,409,462	12,051,575
Total assets	1,595,000	1,595,000	1,595,000	1,595,000	1,595,000	1,595,000
Financed by						
Equity	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Accumulated profit	-	1,891,050	3,887,100	5,993,400	8,215,463	10,559,076
Total equity	2,000,000	3,891,050	5,887,100	7,993,400	10,215,463	12,559,076
Bank Loan	3,000,000	2,500,000	2,000,000	1,500,000	1,000,000	5,000,000
Total debts	3,000,000	2,000,000	2,000,000	1,500,000	1,000,000	5,000,000
Total equity and debts	5,000,000	5,891,050	7,887,100	9,493,400	11,215,463	17,559,076

7.7 Projected payback period

Total investment is US \$ 5,000,000 cash accumulation in 3rd year is US 6,168,900 which is more than the initial investment of US\$1,168,900 the project payback period is within 3 years,

PERMANENT MINERALS CO. LIMITED PAYBACK PERIOD

Year	Profit After Tax	Depreciation	Total Cash Flow	Accumulated Cash Flow
1	1,891,050	58,500	1,949,550	1,949,550
2	1,996,050	58,500	2,054,550	4,004,100
3	2,106,300	58,500	2,164,800	6,168,900
4	2,222,063	58,500	2,280,563	8,449,463
5	2,343,613	58,500	2,402,113	10,851,576

8.0 Economic Aspects

Implementation of this project will have the following social and economic values

- The project is an ideal option for the utilization of the available mineral's mineral resources
- The project will create employment for **80** people on a permanent contract basis as well as on a temporary basis.
- It will create more business opportunities for local suppliers which will also have an economic trickledown.

- It will generate substantial revenue for the government in the form of corporate tax, value-added tax, and pay-as-you-earn.
- The project will have the transfer of knowledge and skills to minerals process management
- Increase in foreign currency

9.0 Implementation

Project implementation is expected to be relatively very short once the project has been approved it is estimated that the project will be completed within one year: -

PERMANENT MINERALS CO. LIMITED IMPLEMENTATION

S/N	ACTIVITY	PERIOD
1	Processing TIC Certificate	April 2023
2	Placing order of machines	June– August 2023
3	Installing machines	September –April 2024
4	Recruitment	April 2024
5	In house training	April- May 20234
4	Testing production	May 2024
6	Commercial operations	June 2024

10.0 Conclusion & Recommendations

The project is technically feasible, financially viable, and economically sound, provided the sponsors will manage it efficiently.

It is recommended that the project be approved by Tanzania Investment Centre and be granted the TIC Certificate of Incentives with its associated privileges and benefits as provided for under the Tanzania Investment Act, 1997.