BOSPHORUS MANUFACTURING LIMITED

FEASIBILITY STUDY

FOR

ESTABLISHMENT OF MANUFACTURING FACILITIES

FOR

MANUFACTURING OF VARIOUS CONSTRUCTION CHEMICALS

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March 2024

1.0 EXECUTIVE SUMMARY

Tanzania has high consumption capacity of various types of construction chemicals of which is being satisfied by imports from neighboring and other mass-producing countries. This needs to be countered by increasing Tanzanian production, improving production process, methods, and quality to supply to construction companies at affordable prices and also have import substitution effect in the economy.

This report presents a full-fledged financial and techno-economic analysis status relevant to the proposed integrated construction Chemical processing plant to be set up / operated in Kerege, Bagamoyo, Coast region.

M/S Bosphorus Manufacturing Limited is now seeking to capitalize on its sustained market growth of which it has already established itself in the industry by constructing a construction chemical factory with an estimated annual production capacity to produce **150,000 bags per month**

1.1 The Project

The main aim of a project is the establishment of construction chemicals factory of which will entails importation of a plant with an installed capacity to manufacture **150,000 bags per month**. Other activities will include importation of trucks, and 4WD cars for administrative and sales supervision operations. The aim is to produce quality construction chemicals products for sale to local and for export to the regional market.

1.2 The Sponsors

The project is sponsored by M/S Bosphorus Manufacturing Limited of coast Region. The establishment programme will be carried by M/S Bosphorus Manufacturing Limited which is a registered company registered under the Tanzania Companies 2002 Ordinance vide Certificate of Incorporation No. **122607** dated 28/12/2015. The shareholders of the company are

Shareholder	**Shares%**
Necmettin Keles	70
Kemal Akan	30

1.3 Financial Profitability

Based on a set of assumptions given here-in the projects demonstrates a profitable trend in its future operations. The project's Income Statement and Cash flow indicate the M/S Bosphorus Manufacturing Limited would be able to recoup the planned investment funds within the first four years. This indicates that the project is financially and economically viable.

1.4 The Implementation Plan

It is planned that the project will take 5 years from the time M/S Bosphorus Manufacturing Limited commences implementation of the project to the time the plant commences commercial services. M/S Bosphorus Manufacturing Limited shall appoint a team comprising of a competent building contractor, and engineers in order to achieve the set implementation time.

1.5 Developmental Linkages

Upon completion of the construction chemicals manufacturing plant the factory will be capable of creating the following:

- Promote increased availability of quality construction chemicals products for the local and foreign markets,
- Generating foreign exchange through import substitution
- Create employment for local indigenous people;
- Promote inter-regional trade through exports to neighbouring Democratic Republic of Congo, Uganda and Burundi just to mention a few.

2.0 THE SPONSORS

2.1 Introduction

The Construction Chemicals Manufacturing Plant is promoted by M/S Bosphorus Manufacturing Limited of Coast region This is a limited liability company that was incorporated and registered in Tanzania under the Companies Act 2002 with Certificate of Incorporation No. **122607** dated 28/12/2015

Shareholder **Shares%**

Shareholder	**Shares%**
Necmettin Keles	70
Kemal Akan	30

The shareholders have a proven performance in managing similar range of products. The YAPFIX under Bosphurus Manufacturing Limited was first established in the TURKEY, with the consensus of offering problem-solving solutions to every day issues within Construction sector. They have over 20 years of experience within the construction chemical industry. Their objective is to become a runner provider of choice in Tanzania's growth by creating value for their customers, business partners, employees, stake holder through the governance policies of Tanzania. Bosphorus Manufacturing Limited is to operate its dedicated assets and capabilities as a safe, reliable and cost-efficient source of quality construction chemicals products to both its corporate and retail customers.

2.3 THE PROJECT

2.3.1 Project Description

The project aims at establishing manufacturing facilities for the establishment of construction chemicals factory with a capacity of **150,000 bags per month** for sale to local market and for export to the regional market. In summary the project entails the following:

- Construction of a factory building;
- Importation of plant
- Importation of trucks, and 4WD motor vehicles for administrative and sales supervision operations.

2.3.2 Location

The project will be located at **Plots 145-152, Kerege – Bagamoyo**, Coast region. The site is well accessed by a Tarmac Road making it reachable throughout the year. The site is served with electricity, water and telephone. It has a large compound that can allow extensive future expansion of factory buildings.

2.3.4 Plant Production Capacity

On completion the project shall be able to produce various construction chemicals products of about **150,000 bags per month**

2.4 THE CONSTRUCTION CHEMICALS INDUSTRY

Construction chemicals industry have advances at an unprecedented rate, particularly in the fields of civil engineering. Cement, waterproofing chemical materials and concrete are examples of chemical engineering marvels that have enabled our urban society to thrive as we know it today.

Construction chemicala are substances added to concrete and mortar to improve their compatibility with building structures. These chemicals will boost industry growth by enhancing durability, surface finish, compressive strength, and resistance to unfavourable working circumstances and climatic conditions. There are several types of construction chemicals and the promoter of this project intends to produce the following among the construction chemicals.

1. Tile adhesive (white and grey
2. Grout
3. Decorative plaster
4. waterproof
5. Wall putty
6. Ant fungus wall putty
7. SurfRepair Mortar
8. Shearing Plaster
9. Self-leveling mortar

2.4.1 TILE ADHESIVE (WHITE AND GREY

These products are used for Interior/Exterior Floor& Wall and in Dry or Wet Conditions. There is excellent adhesion with non-slump and easy to work on. Ready mixed tile adhesives, as the names suggests and are ready to use

straight from the tub. While their ready mixed nature makes them extremely convenient to use, their drying time limits them for use only with small format, ceramic wall tiles in areas like splash backs. The Powdered adhesives are used in tiles bigger than 30 x 30cm or any size porcelain tile on your floors or walls. There are two main types of powdered adhesive available on the market:

Standard set adhesive: is a type of adhesive that comes in powder format. It should be mixed with water for at least 20 mins to produce the correct form. Standard Set Adhesive should be used only for fixing ceramic and porcelain tiles to a solid wall or floor.

Rapid set adhesive: This particular adhesive comes with a latex additive, giving it greater flexibility as well as strength over the Standard Set Adhesive. This makes it ideal for tiling over surfaces that are subject to movement as well as to fix porcelain and natural stone tiles which require more grip.

2.4.2 GROUT

Grout is a dense fluid that hardens and is used to fill gaps or as reinforcement in existing structures. The main function of this material is to act as a filler between tiles once they have been laid. The other function is the expansion of the tiles**.** As temperatures rise the tiles expand, any slight movements is taken up from the grout. Grout is an essential part of the tile installation process**.** It adds rigidity and strength to tiles installation, forming a strong join that alleviates any minor stresses. It also helps protect the tiles for longer by keeping dirt and debris from getting in-between or under the tiles, which may disturb the adhesive and cause the tiles to come loose over time. Many come in infinite colors to match tile types, as well as natural

stone. Floor grouts tend to be more course in nature because they are wearing surfaces and can span over or bridge tile gaps up to 20mm.Wall grouts tend to be smoother, so that they do not scratch tile surfaces during application. The most common types of grouts are epoxy, sanded and unsanded. Epoxy grout is made of resins, silica fillers, pigments and hardener. Sanded and unsanded grouts are cementitious grouts. This means their main component is cement.

2.4.3 DECORATIVE PLASTER

Decorative plaster, which may also be called "plasterwork" or "carved plaster", is a technique used in ornamental finishes for properties, particularly older or grander builds from centuries past, and also possible to apply finishes and features to newer builds as well and these are often applied to offer the same exquisite finish as would be expected of an older property. Decorative plaster is manufactured from a range of material types, including stucco, natural stone plaster, lime plaster, and clay plaster. Other ingredients and materials that feature in the work will vary, depending on the plaster type chosen and the project the property owner or manager wishes to see completed.

Decorative plaster has little structural use beyond ornamental purposes and enhanced aesthetic appeal. Therefore, its primary benefit is that it beautifies the space it is applied to. As such, once it has been professionally installed in the interior or on the exterior of a property, it should offer the sense of majesty, awe, and impressive detail that the property owner is expecting of the project once it has come to its conclusion. If applied in the correct

manner as a final coating, for instance, it may offer a slightly stronger and more durable finish than regular drywall. Studies and inspections have also suggested that plaster is more fire-resistant than other building materials, and offers greater soundproofing abilities.

2.4.4 WATERPROOFING

Waterproofing buildings is the method of forming a barrier over surfaces of foundations, roofs, walls and other structural members of buildings to prevent water penetrations through these surfaces. there are many unique types of waterproofing materials in the market. Some are more effective than others. There are 5 types of waterproofing in construction and are as follows:

i) **Cementitious Waterproofing** – These are the easiest waterproofing materials to use. These are readily available from suppliers of masonry products and are easy to mix and apply. Cementitious waterproofing materials are breathable, seamless coatings used to provide positive and negative side waterproofing protection on concrete and masonry surfaces. These are commonly used to waterproof concrete in internal or external applications as potable & storm water tanks, reservoirs, swimming pools and wet areas to kitchens, showers & bathrooms below screed & tile finishes.

ii) **Bituminous Coating waterproofing** – Bituminous coating is also known as asphalt coating. It is a type of coating used for waterproofing and flexible protective coat in accordance with its

formulation and polymerization grade. The most common applications of bituminous waterproofing include areas that are beneath screed wet.

iii) **Bituminous Membrane Waterproofing** is a popular method used for low-sloped roofs due to their proven performance. Bituminous waterproofing membranes have a torch on the membrane and Self- adhesive water proofing membrane

iv) **Polyurethane Membrane Waterproofing** this method of waterproofing is typically used for the flat roof area and exposed to weathering. This kind of waterproofing material is very sensitive to moisture content present. Therefore, before application, it is vital to be extra careful in evaluating the moisture content of the concrete slab, otherwise peeling or de-bonding of membranes may happen after some time

v) **Liquid Waterproofing Membrane Method** is a thin coating which consists of usually a primer coat and two coats of topcoats which are applied by spray, roller, or trowel. It offers more flexibility than the cementitious types of waterproofing

2.4.5 OTHER VARIOUS CONSTRUCTION CHEMICAL PRODUCTS;

i)Wall Putty & Wall Putty Antifungals'- is typically made with a blend of Portland cement, Lime, bentonite or other additives to create a workable product that can be applied directly over the concrete surface. It provides an inexpensive way for homeowners to patch the whole wall before applying

paint. It Provides a smooth surface and also can be used without painting due to its white colour and its aesthetic and decorative, it gives the building a better look. Other economic benefits are that it reduces paint consumption, covers the imperfections on the surface in Indoor&Outdoor.

ii) SELF LEVELING MORTAR

Self-leveling mortar is used as a coating to create flat and smooth surfaces, correcting any initial defects that it may have had. Adjustments. the self-leveling underlayment will be used in preparation for tile, hardwood, or other finished floor The material comes in bags similar to Portland cement, mortar, and concrete. When mixed with water, self-leveling underlayment reacts chemically, just as cement would and begins to harden. If mixed to the correct consistency, self-leveling underlayment will spread out when poured onto a surface and seek its own level, lessening the labor required for a very thin coat. If the material is mixed too densely, it will not flow easily and will usually require additional troweling.

Self-leveling underlayment contains additional additives like polymers that allow it to flex slightly without breaking. Additional ingredients are added to improve its bonding to surfaces, and still others to keep the material thin so it will flow. Self-leveling underlayment can also improve the bonding characteristics of adhesives, like carpet glue and engineered flooring adhesive. It will also have the following features like - high adhesion strength, resistance to abrasion, develops very high compressive and flexural strength.

2.4.7 WATER INSULATION

Water insulation can be defined as the methods, which are used to protect the structures from water and its negative effects on the structure. This type of insulation is done to keep water outside of the structure. This plastic layer is designed to trap moisture and preserve warm temperatures. As such, this material is best suited for warm water pipes, especially in colder climates. By using fiberglass pipe insulation, you can keep your pipes warm throughout the year. The water insulation also helps with the control of chlorine and it forms water impermeable layer under screeds and ceramics with high adhesive performance and elastic properties.

2.4.8 SHEATHING PLASTER

Sheathing is the supporting structure that acts as a cover for the surfaces of a building. The main function of sheathing is to provide a surface where other materials can be applied to, either on either floors, roofs, or walls of structures. It also provides additional structural integrity to buildings. Five common structural exterior sheathing options include wood-based gypsum, glass mat, cement board, and barricade thermo Brace

Plywood sheathing is made from whole sheets of wood that are cross-laminated, which give the boards strength and stiffness. The sheathing plaster to be produced by Bosphurs manufacturing limited will be for Interior and exterior wall and • Specially designed for thermal insulation systems, and offers high flexibility and bonding strength. It will have • Excellent adhesion to thermal insulation panel and also • Resistant to weather, water and impact

2.4.9 INSULATION BOARD ADHESIVE

Insulation adhesives are designed to fasten and secure a wide range of substrates. They come in a variety of different types and application styles to best suit your project needs, whether you need spray, brush, roller, or palm grade. The products are Specially designed for thermal insulation systems and offers high adhesion strength. Easy-to-apply with its superior application and grounding properties.

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3.0 MARKETING ASPECTS;

M/S Bosphorus Manufacturing Limited considers itself to be in a unique position in that it could service a sizeable proportion of Tanzania's main economic sectors and that of the neighbouring countries. The Tanzania's economic political and social environment is thus of crucial importance to the company.

3.1 The overall Market

Residential construction has the largest market share for construction chemicals, followed by commercial buildings. Because of the rising number of residential projects, residential construction will likely retain its dominance in the worldwide construction chemical industry. The worldwide construction chemical industry is being driven by rising demand for public, commercial, and residential buildings, and a growing urban population. Furthermore, increasing disposable income has resulted in a desire for higher-quality residential structures, functioning as a development driver for the worldwide construction chemical industry. Buildings, roads, bridges, tunnels, and dams also boost the market.

3.2 TANZANIA CONSTRUCTION MARKET ANALYSIS

The Tanzania Construction Market size is estimated at USD 5.62 billion in 2024, and is expected to reach USD 7.07 billion by 2029, growing at a CAGR of 4.67% during the forecast period (2024-2029). In recent years, Tanzania's heavy investment in building infrastructure now is characterized with more infrastructure projects being built around the country. Tanzania's government is working to develop its infrastructure, energy, and agriculture

sectors to grow its economy and expand export opportunities. Tanzania's industrial construction has also played a key role in boosting national self-sufficiency and enhancing the domestic market for agriculture, livestock, fishery, forestry, minerals, and precious raw materials. Industrial construction is also critical for job creation, technological transfer, and increased processed goods exports, in addition to enhancing self-sufficiency and boosting the domestic raw materials market. (Source: Internet .)

3.2.3 Demand for construction chemicals products

The world-class life of consumers with high requirements for residential and commercial structures along with the presence of vastly available raw materials and underpaid markets in the region is anticipated to increase the demand for construction chemicals in these regions.

If Demand for chemical products is not met products the gap will increase tremendously especially if the entire product is imported. Assuming the various activities will continue to increase and supply will increase at the slow rate annually, the demand-supply gap in the next 10 years will not be met. The introduction of construction chemicals facilities will help to bridge the gap.

3.2.4 Distribution

Products will be sold at the factory, where both wholesale and retail customers would be served. The company will also have distribution trucks, which would carry the products to various depots, especially in Dar es Salaam where the market is concentrated. This would be a strategy to increase sales.

3.2.5 Marketing Strategies:

M/S Bosporus Manufacturing Limited Management Team shall take proactive marketing and promotional strategy to ensure that the company achieves high turnover of sales through sales made to corporate customers. In order to achieve optimal business turnover management shall design and implement the following strategies;

i) Distribution of Sales

Distribution of brochures to wholesale agents.

ii) Advertisement

These would include the local media namely; local television, Radio commercials and Newspaper advertisements etc.

4.0 MANAGEMENT

The staff would include a General Manager who will be assisted by 3 departmental managers namely the Finance and Administration Manager Production Manager and Marketing Manager.

4.2 Manpower Requirement

The company will employ 85 persons. The company will need to recruit expatriate personnel for the positions of General Manager, Engineers, Foreman, Maintenance Technician, lubricant Processing Technician, Laboratory Technician etc. Other positions will be allocated to Tanzanian nationals based on skills and experience in the recycling activities.

5.0 CAPITAL INVESTMENT

M/S Bosphorus Manufacturing Limited proposes to invest **US$ 1,425,000** for developing this project. It is planned that some investment cost will be financed by personal shareholders' contribution and the term loan which will be sought from Bank. Furthermore, the sister company's Self-Generated Funds shall be utilized at a later stage for working capital funds. Following is the projects investment plan and sources of financing:

CAPITAL INVESTMENT COSTS USD

Financing

	Foreign	Total
Land & Buildings	305,000	305,000
Plant, Machinery & Equipment	500,000	500,000
Vehicles	100,000	100,000
Furniture & Fittings	20,000	20,000
Others	-	-
Pre operational Expenses	-	-
Initial Working Capital	500,000	500,000
Grand Total	**1,425,000**	**1,425,000**

The total investment cost of the project is planned to be financed by the shareholders equity and if the need arise it will be sought loan from various banks both local or foreign.

	USD Local	**USD Total**
Owners' Equity	**1,425,000**	**1,425,000**
Grand Total	**1,425,000**	**1,425,000**

7.0 PROJECT FINANCIAL VIABILITY

Assumptions and considerations

The financial analysis indicates that the proposed project would be a profitable venture;

7.1 Projected Profit and Loss Accounts

The project is expected to make a post-tax profit of **US$0.06** from the first year of operation rising to **USD 0.294M** at the end of the 5th year.

7.2 Projected Cash flows

The projected cash flows show that the project would be able to honor its financial obligations as they fall due throughout the project's economic life and still remain with reserve of cumulative cash that could be re-invested in the project.

8.0 CONCLUSION AND RECOMMENDATION.

8.1 Conclusion

Results of the analysis of the proposed venture indicate that: -The venture is expected to be commercially viable;

- The venture will create job opportunities.
- The venture will benefit the Government through several taxes both direct.
- The project will have import substitution effect and hence will save the much-needed foreign exchange
- Promote inter-regional trade through exports to neighbouring Democratic Republic of Congo, Uganda and Burundi just to mention a few.

8.2 RECOMMENDATIONS:

We recommend that the government take the following actions to support the manufacturing activities proposed by **M/S Bosphorus Manufacturing Limited** in order to benefit from the positive effects this feasibility study has pointed out.

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M/S BOSPHORUS MANUFACTURING LIMITED

CAPITAL INVESTMENT COST USD

	Foreign	Total
Land & Buildings	305,000	305,000
Plant, Machinery & Equipment	500,000	500,000
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Furniture & Fittings	20,000	20,000
Others	-	-
Pre operational Expenses	-	-
Initial Working Capital	500,000	500,000
Grand Total	**1,425,000**	**1,425,000**

M/S BOSPHORUS MANUFACTURING LIMITED
PROPOSED FINANCING PLAN

USD

	Local	**Total**
Owners' Equity	**1,425,000**	**1,425,000**
Grand Total	**1,425,000**	**1,425,000**

M/S BOSPHORUS MANUFACTURING LIMITED

DEPRECIATION SCHEDULE

SN ITEM	Opening Balance		1	2	3	4	5	6	7	8	9	10
Building and Civil Works	305,000	5%	15,250	15,250	15,250	15,250	15,250	15,250	15,250	15,250	15,250	15,250
Machinery & Equipment	500,000	12.5%	62,500	62,500	62,500	62,500	62,500	62,500	62,500	62,500	-	-
Furniture and Fittings	20,000	12.5%	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	-	-
Motor Vehicles	100,000	25%	25,000	25,000	25,000	25,000	-	-	-	-	-	-
Total			**105,000**	**105,000**	**105,000**	**105,000**	**80,000**	**80,000**	**80,000**	**80,000**	**15,250**	**15,250**

M/S BOSPHORUS MANUFACTURING LIMITED
PROJECTED SALES REVENUE

USD

YEAR	1	2	3	4	5	6	7	8	9	10
	40%	60%	80%	100						
SALES REVENUE	800,000	1,200,000	1,600,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
TOTAL SALES REVENUE	800,000	1,200,000	1,600,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000

M/S BOSPHORUS MANUFACTURING LIMITED

PROJECTED PROFIT AND LOSS STATEMENT

(USD

ITEM/YEAR	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Revenue from Operations	**800,000**	**1,200,000**	**1,600,000**	**2,000,000**	**2,000,000**	**2,000,000**	**2,000,000**	**2,000,000**	**2,000,000**	**2,000,000**
Cost of goods sold	**600,000**	900,000	1,200,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Gross Profit	**200,000**	**300,000**	**400,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**
Operating Profit	**200,000**	**300,000**	**400,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**
Less: Depreciation	**105,000**	**105,000**	**105,000**	**105,000**	**80,000**	**80,000**	**80,000**	**80,000**	**15,250**	**15,250**
Profit Before Tax	**95,000**	**195,000**	**295,000**	**395,000**	**420,000**	**420,000**	**420,000**	**420,000**	**484,750**	**484,750**
Taxable Income	**95,000**	**195,000**	**295,000**	**395,000**	**420,000**	**420,000**	**420,000**	**420,000**	**484,750**	**484,750**
Corporation Tax – 30%	28,500	58,500	88,500	118,500	126,000	126,000	126,000	126,000	145,425	145,425
Net Profit After Tax	**66,500**	**136,500**	**206,500**	**276,500**	**294,000**	**294,000**	**294,000**	**294,000**	**339,325**	**339,325**
Revenue Reserves	**66,500**	**203,000**	**409,500**	**686,000**	**980,000**	**1,274,000**	**1,568,000**	**1,862,000**	**2,201,325**	**2,540,650**

M/S BOSPHORUS MANUFACTURING LIMITED

PROJECTED CASH FLOWS STATEMENT

(USD)

ITEM/YEAR	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
INFLOWS Equity &term loan	**1,425,000**	-	-	-	-	-	-	-	-	-	-
Profit Before Tax& Depreciation		**200,000**	**300,000**	**400,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**
TOTAL INFLOWS	**1,425,000**	**200,000**	**300,000**	**400,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**
OUTFLOWS Investment & Reinvestment Taxation	**1,425,000**	- 28,500	- 58,500	- 88,500	- 118,500	- 126,000	- 126,000	- 126,000	- 126,000	- 145,425	- 145,425
TOTAL OUTFLOW	**1,425,000**	28,500	58,500	88,500	118,500	126,000	126,000	126,000	126,000	145,425	145,425
NET OUTFLOW	-	**171,500**	**241,500**	**311,500**	**381,500**	**374,000**	**374,000**	**374,000**	**374,000**	**354,575**	**354,575**