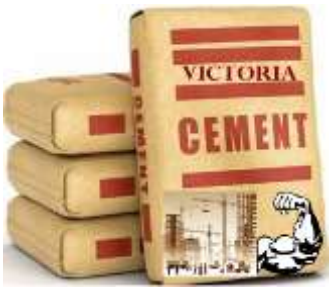
ALOTAIB AND BLAKBIBI CO. LTD

FEASIBILITY STUDY REPORT OF THE PROPOSED CEMENT MANUFACTURING PLANT ON LAND, LEASE (PML104821/CZ, PML 104824/CZ, PML 104830/CZ, PML 104840/CZ, & PML 104844) LOCATED AT MAKALAVATI IN CHAMWINO & KONGWA DISTRICT, IN DODOMA REGION

OUR BRAND



AUGUST, 2021

Table of Contents

LIST OF TABLES:

LIST OF ANNEXIES

1.0 Executive Summary:

This feasibility study report has been prepared following a request made by **ALOTAIB AND BLAKBIB COMPANY LTD** for cement production and plant sites assessment on mineral potential particularly Limestone with a purpose to establish Cement Production Plant according a mineral concessions (PML104821/CZ, PML 104824/CZ, PML 104830/CZ, PML 104840/CZ, & PML 104844, PML104660/CZ, PML104661/CZ, PML104695/CZ, PML10696/CZ, PML104699/CZ, PML104701/CZ, PML104702/CZ), located in Chamwino, Kongwa and Mpwapwa District. The licences were issued on August 2021 and will be valid for a period of seven (7) years from the date of issuance after which shall be subject to renewal for another five (5) years.

The feasibility study and assessment of the proposed project shows that the project is technically and economically feasible as shown by the following key economic feasibility indicators:

Net Present Value: 68.4 Million US$
Internal Rate of Return: 31%
Payback Period: 4 Years

2.0 INTRODUCTION

2.1 Historical Background

The demand for cement in Tanzania was growing in tandem with the construction sector. Growth in the building industry rose to 6.5% in the third quarter of 2012, from a contraction of 5.4% a year earlier, according to the country's National Bureau of Statistics.

New property and infrastructure projects were mushrooming, with government increasing spending on specific projects and private capital flowing into property development. In the 2013/14 financial year, Tanzania's government increased spending on infrastructure to Tsh.2.16-trillion, up from Tsh1.94-trillion in the previous year.

The construction sector had grown at an annual rate of 8% over the past five years and is expected to continue growing, as the country implements its ambitious plan to build excellent infrastructure.

Cement production could increase to about 6.75-million tons by 2017 to cater for local demand and even create surplus for export. It is projected that property development will continue to dominate local cement demand (at around 85%) in the medium-term.

Domestic demand for cement is currently at four million tons and growing at an average annual rate of 10% over the past five years and expecting to reach 12% in the coming years. Tanzania has an estimated production capacity of 3.5 million tons per annum. Its location - surrounded by landlocked countries - provides huge export opportunities for cement manufacturers. The country, which is East Africa's second largest economy, intends to export the surplus cement to Burundi, Rwanda and the Democratic Republic of Congo.

Feedstock for cement factories such as limestone, sand, shale, clay and iron ore, is also available locally.

2.2 Review of the Economy and Industry

Tanzania's economy has grown significantly over the last decade, and GDP growth has exhibited strong resilience to external shocks as evidenced by the country's performance during the Global Financial Crisis (GFC) of 2008. On average, the economy has grown by 7.0 percent per annum over the last ten years. The prompt remedial measures to the GFC through provision of a moderate fiscal stimulus package during the 2008/09 and 2009/10 financial years helped to ease the adverse effects of the crisis. Tanzania economy being less integrated with the global financial architecture also provided a degree of protection from the cascading financial turmoil which was triggered by the collapse in the US housing market and quickly engulfed Europe and several emerging economies. Government effort to address electricity shortage in 2011 also managed to improve performance of the economy. Real GDP in 2012 grew by 6.9 percent compared to 6.4 percent in 2011 and against the target of 6.8 percent for the period following improved power supply and enhanced industrial production.

Sources of growth are rather concentrated in a few sectors. The drivers of growth over the past decade have been to a large extent the growth in the mining sector, telecommunications, tourism, discoveries and the use of natural gas and construction. There are some signs of economic diversification. For example, manufacturing value-added grew at around 8.8% from 2005 to 2010, with exports having grown by 45% annually during the same period, driven by regional exports to the East African Community (EAC) and Southern Africa Development Community (SADC) countries. However, the size of the sector remains small. At the same time, agriculture faces stagnation in its productivity growth.

Table 1: GDP Growth Rate from Construction: 2014 – 2017

2.3 Current Economic Outlook:

Tanzania According to the World Bank, population of Tanzania is estimated at 53 Million people with a growth rate of 3% per annum and experiencing the urbanization rate of 30% per annum. The increase in population triggers aggregate demand for social amenities and infrastructure. Economic growth is expected to average 6.2% between 2017 and 2016. The growth is underpinned by infrastructure development and a growing consumer base, heavy infrastructure investment into Rail (Standard Gauge), Port and Road is expected to be one the main drivers of GDP growth between 2017 and 2026.

2.4 Project concept and Rationale The project entails extraction of establishment of a factory and its related infrastructure, distribute and sell cement and related construction products. The project promoters have identified a gap between supply and demand, both in the local market and in the neighbouring countries which, they believe they could be filled by undertaking the project at hand. Promoters have also discovered an innovative production method and technology that will enable them to produce high quality cement products efficiently and effectively and thus have a competitive advantage in the market.

2.5 Company Profile

The project promoters of this M/S MEIS Industries Company Limited. The Company was dully registered with a Certificate of Incorporation No.3……. dated …..2021. The capital structure is TZS. …….

The shareholding structure is as follows:

3.0 METHODOLOGY

3.1 Data collection

In the course of undertaking this exercise several approaches were employed. The whole exercise was preceded by visiting the site where the investment is proposed. A thorough study was made to the nature of the site. This included examining its specific located in relation to other plots in the area, accessibility to and from the site and within the plot, terrain and slopes. A neighbourhood analysis was also done to capture the general and specific data which directly relates to the proposed development. Reference was made to the proposed development i.e. Cement Manufacturing Plant.

Further the layout and citation of the development had to be analysed to come up with the compatibility of the investment on the said land. Thereafter, some other methods of data collection and analysis were employed. An interview guide was the main method of data collection that was used. The interviews were carried out with key informants including potential customers, industries price indices etc. We also obtained some useful data from government offices, i.e. Dodoma City Council. Some information was also collected from various reports and publications.

We also collected some data from official websites of some key stakeholders in the Construction industry and other institutions such as National Bureau of Statistics, Tanzania Building Agency etc. 3.2 Financial Feasibility Analysis A number of different property investment appraisal methods were employed. This was to ensure that the conclusions were robust enough to facilitate an informed investment decision process. The methods ranged from the simplest conventional viability appraisal technique, namely Payback Period to the relatively more sophisticated methods namely Discounted Cash Flow (DCF) techniques.

Since the preparation of a viability appraisal was intended to determine whether or not the property constitute worthwhile investment, it was considered important to prepare the appraisal along the lines that bankers would be able to readily understand. The preparation of the viability appraisal as if it is intended to produce a ''bankable project" is standard appraisal procedure and it does not matter whether or not the Client is actually going to borrow development funding.

3.3 The Payback Method

The Payback Method (also known as Payback Period, Pay-off Period, Capital Recovery Period, or Cash Recovery Factor), measures how fast an investment's incremental benefits can payback (recoup) the initial capital outlay. The benefits are normally measured in terms of after-tax cash flows. The payback method has proved to be a very popular traditional

method of investment appraisal. The rationale behind the payback method is that the longer it takes to recoup the initial capital outlay, the riskier is the project. The payback method is concerned with determining a project's break-even point i.e. the point in time when the receipts equal the initial capital outlay. The break-even point is of interest to management on account of the hazards associated with forecasting a project's cash flows. The more quickly payback is achieved, the less risky a project would be.

The main advantage of the Payback Method is that once a project's cash flows have been forecast, calculating the payback period can be done with great ease. The Payback Method however suffers from two main drawbacks. The first drawback of the technique is that cash flows which arise outside the payback period are not considered. The second serious limitation of the payback method is that the technique does not take into account the „time value of money". The incremental benefits are added without discounting to reflect the fact that money now is more valuable compared to an equal and certain sum of money receivable in the future.

3.4 Discounted Cash Flow Techniques

Discounted Cash Flow techniques (DCF) are contemporary investment appraisal techniques and are widely understood and acceptable in the financial community. Two variants of DCF are distinguishable, namely Net Present Value (NPV) and Internal Rate of Return (IRR). One strong point of DCF techniques is that they address the main weaknesses of traditional methods of investment appraisal by considering time value of money. Furthermore, DCF techniques evaluate a project over the entire life-span of the project and are flexible enough to deal with differing cash injections and receipts at different time periods. DCF techniques include Net Present Value and Internal Rate of Return.

3.5 Net Present Value

Net Present Value method (NPV) discounts cash inflows (receipts) and cash outflows (cash disbursements or payments) at the investor's required rate of return. A positive NPV or a zero NPV shows that the required rate of return is attainable. Contrariwise, a negative NPV shows that the required rate of return is not achievable. The NPV method is often used in project appraisal to rank investment proposals in terms of their suitability or ability to meet a particular investor's investment criteria. When the NPV method is used in ranking mutually exclusive investment proposals, an investment exhibiting the highest NPV is selected. It is assumed that a uniform discount rate is used on the competing projects.

3.6 Internal Rate of Return

Internal Rate of Return (IRR) is the discount rate that brings the capital costs of an investment into equality with the income flows from the investment. In other words, the IRR is the rate of interest that provides a nil Net Present Value. The importance of equating the cost of an investment with its receipts lies in the fact that the IRR is the break-even point that increases or decreases the value of a firm. A project should therefore be accepted only if its IRR exceeded the weighted cost of capital to the firm. This relationship between the cost of capital and the IRR makes the IRR of special significance. Hence for a project to be

acceptable, it must exhibit an IRR that is equal to or higher than the investor's target rate of return. Furthermore, the IRR must exceed the cost of capital.

4.0 LOCATION AND LOCALITY DESCRIPTION

The Concessions are located in at Kongwa,Chamwino and Mpwapwa(Godegode). At Chamwino ,the area located at Majeleko village ,Latitudes 6° 6' 49" South, Longitude 36° 15' 58" East along Dodoma to Morogoro Highway .It can be reached easily about 61.3 kilometres.

Figure 1: *Location and Accessibility of Limestone deposit at Majeleko,Chamwino*

At Kongwa district, the area located at Sejeli hill Makalavati village, Latitudes 6° 7' 11" South, Longitude 36° 16' 49" East along Dodoma to Morogoro Highway. It can be reached easily about 64.4kilometres.

Figure 2*.Location Sejeli ,Kongwa district*

At Kongwa district ,the area located at near kongwa town ,Latitudes 6° 10' 40" South, Longitude 36° 23' 20" East.It can be reached easily from Dodoma and Morogoro Highway at Mbande turn to Kongwa road about 81.3kilometres from Dodoma((**Figure 3**).

Figure 3.Location of Kongwa Limestone

1.1 Physiography

The property is situated within elevated topography with altitude of about 850metres above sea level.

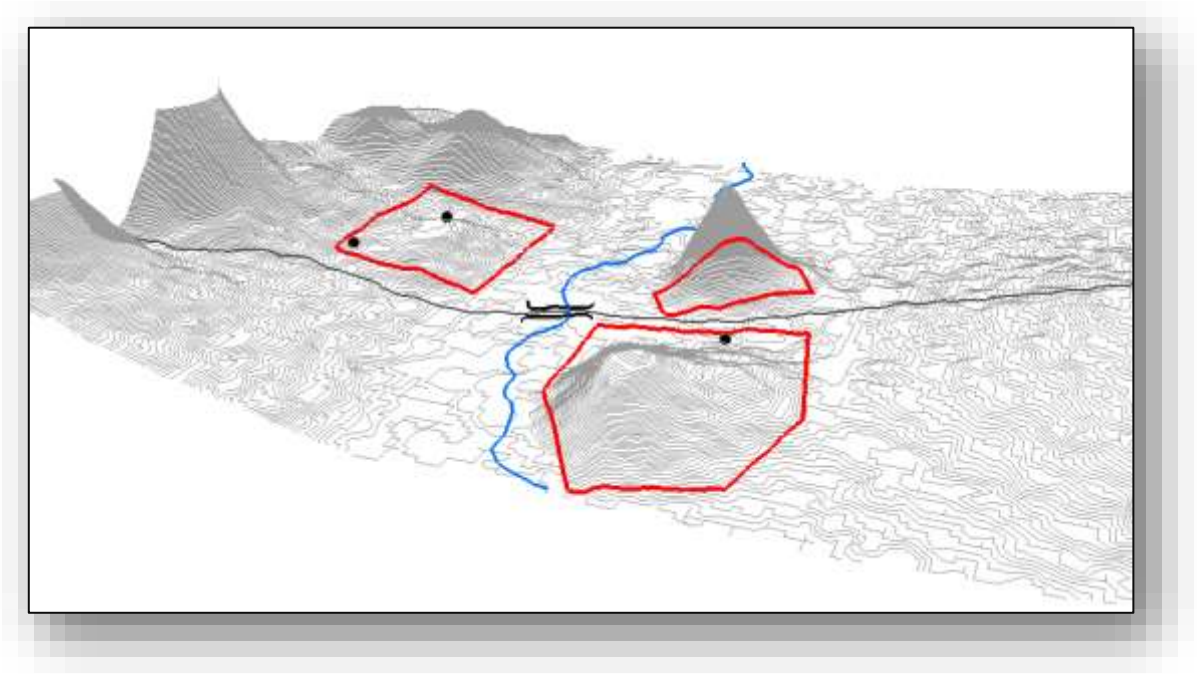


Figure 4. Terrain, Topography of Majeleko, Makalavati, and Sejeli Limestone deposit

6.0 Definition of key terms and phrases

This section provides contextualised definitions of some key terms and phrases which are used frequently in this report.

- Discounted Cash Flow: Is a technique for investment appraisal which converts all cash flows to a standard form for easy comparison. DCF has two approaches, namely Net Present Value (NPV) and Internal Rate of Return (IRR). DCF technique considers both the time value of money and also total profitability of over a project's life.

- Discount Rate: It is the compound interest rate used to convert expected future income stream into a present value estimate. It is the rate that measures return on investment after the recovery of invested capital;

- Gross External Area: Is the area of a building measured externally at each floor level. ¬ Holding Period – the scheduled time frame to operate the investments after their development and recoup the capital and judge the performance for continuing to hold or dispose the investment;

- Internal Rate of Return: The discount rate that equates the present value of the net cash flows of a project with the present value of the capital investment. It is the rate at which the Net Present Value (NPV) equals zero;

- Net Operating Income: Is the actual or anticipated income remaining during a year after deducting operating expenses from Effective Gross Income (EGI) but before any deductions for debt service payment or income taxes;

- Net Present Value: This is the measure of the difference between the discounted revenues or inflows, and the costs or outflows, in a DCF analysis. In other words, NPV is the value obtained by discounting all cash inflows and outflows of a capital investment project by a chosen target rate of return or cost of capital;

- Potential Gross Income: Is the amount of rent the property will produce if it is 100 percent occupied for the entire year and all tenants pay their rent. It is the maximum amount of revenue a property would produce if fully rented at market rent;

- Weighted Cost of Capital: Is the capital cost computed by weighting the cost of each component (assets class) in accordance with the proportion of total capital it comprises.

6.1 Project concept and Rationale

The project entails extraction of establishment of a factory and its related infrastructure, distribute and sell cement and related construction products. The project promoters have identified a gap between supply and demand, both in the local market and in the neighboring countries which, they believe they could be filled by undertaking the project at hand. Promoters have also discovered an innovative production method and technology that will enable them to produce high quality cement products efficiently and effectively and thus have a competitive advantage in the market.

7.0 TECHNICAL ANALYSIS

7.1 Limestone Occurrence in Tanzania.

Digital Elevation Model ,Satellite image More than 5 million tons of limestone are mined in Tanzania every year .The main uses are the production of cement, very important building material.

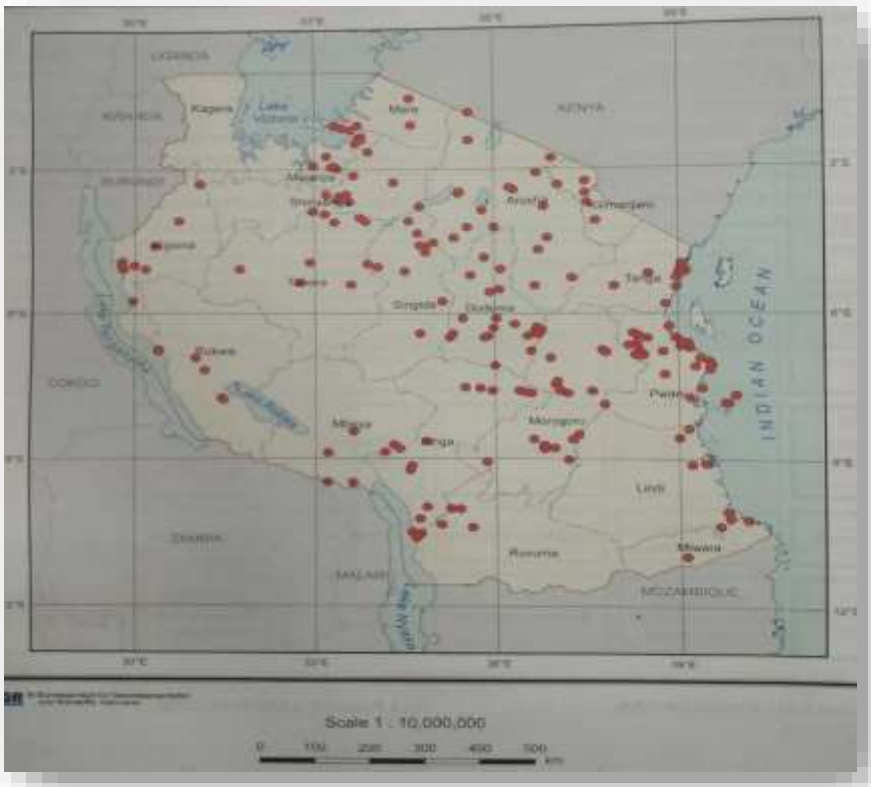


Figure 5. *Limestone Occurrence map Tanzania*

7.2 Occurrence of limestone in Dodoma region

Dodoma region has quite good potential for lime production and source of cement raw material. All Limestone deposits are surficial and bedrock, at various time past limestone occurrence were examined in Dodoma region and assessed for their potential as source of cement raw material. More than 38 areas in Dodoma region has limestone occurrence.

Figure6.*Occurrence of Limestone in Dodoma Region*

Majeleko / Makalavati Limestone

Coverage area of Limestone deposit is 0.573328 Km ^{2}, deposit Highest elevation of Hill is 897m above sea level and lowest point of Hill is 872m above sea level means a difference is 25m . Limestone reserve approximate at 25,000,000 tons of 48.31 – 55% CaO and free MgO (More result refer analytical report ,sample ID 217).

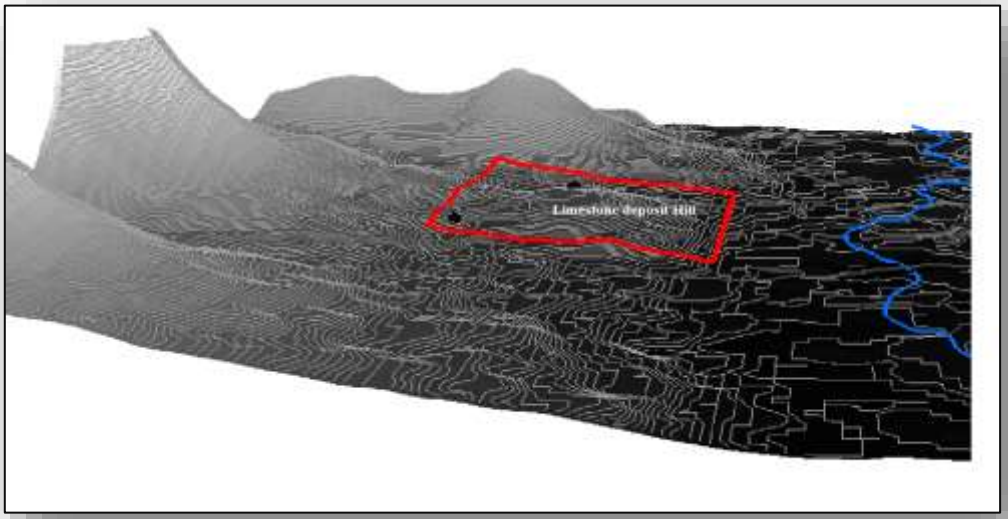


Figure 7: 3D map of showing location of Majeleko/Makalavati Limestone

Figure 8. Satellite image of Limestone deposit at Makalavati

Figure 9.Concession area at Licenses Mining portal

Physical test were performed by 8 pits of average 2m -3m depth at Majeleko or Makavati Limestone deposit to examine limestone depth .All pits shown a limestone from top to bottom at mention depth.

Figure 10. Pit with 2.8 m depth examine physical of limestone deposit at Makalavati

Sejeli Hill Limestone

Crystalline limestone deposit at Sejeli Hill cover about 1.008275 Km ^{2}, Highest elevation of Hill is 917m above sea level and lowest point of Hill is 869m above sea level means a difference is 48m .Limestone reserve approximate at 55,000,000 tons of 46.25 – 53% CaO and free MgO (More result refer analytical report ,sample ID 216)

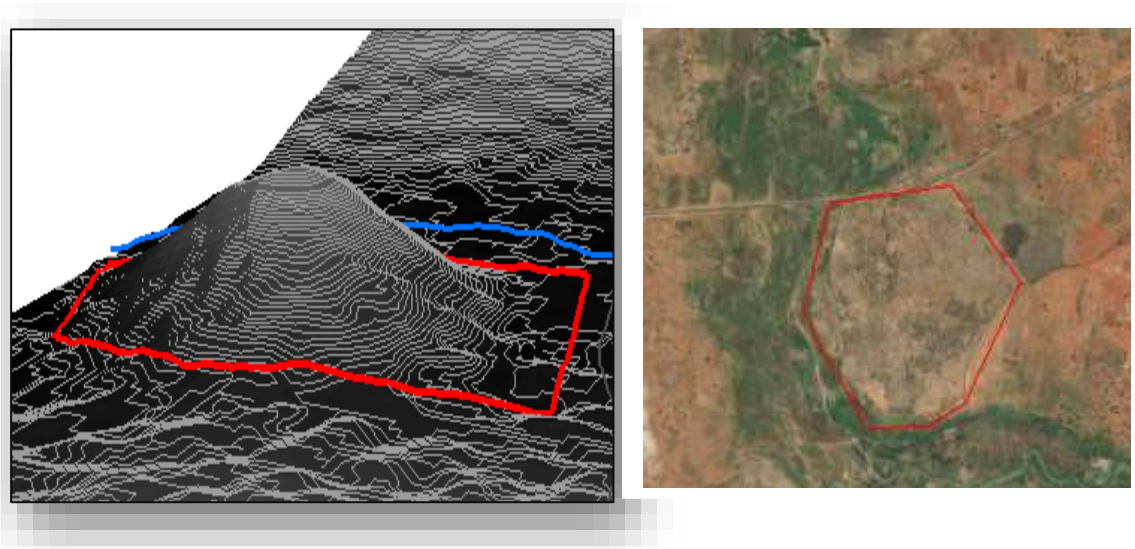


Figure 11: 3D Map of Sejeli Hill and satellite image of Sejeli Hill

Kongwa Limestone

Coverage area of Limestone deposit is 3.1839 Km ^{2}, Limestone is found as coating up to a few meter thick on boulder. The travertine is associated with an occurrence of crystalline limestone . Limestone reserve approximate at 70,000,000 tons of 45.71 – 53% CaO and free MgO (More result refer analytical report, sample ID 213,ID 214 & ID 215).

Figure 12. Satellite image of Kongwa limestone

Since no work has been carried out within the concessions, to be specific the information obtained so far from areas is still insufficient to comment to any significant extent in the area, more geological investigation is important.

Since most of the existing published reports have information that were acquired at regional scale and no investigation have been done yet within the concession, it is

recommended to undertake a systematic geological, geophysical and geochemical investigations to assess the all Limestone occurrence with Dodoma region in the area.

7.2 Design Principles

The design strictly follows state current design norms and standards and it to employ new technology, new materials and latest reliable architectural structure as much as possible. Taking the integrity and locality into consideration, the design is to get rational layout and buildings of nice appearance and harmonious color so as to create a new image of the industry with modern style and local specialty.

7.3 General Concept

To make full use of natural physiognomy and climatic features of construction site and to exert architectural design art skilfully on the basis of general layout, distinguished functional area and other features of this project, it is ought to make every building of good lighting. Similarly, to create a beautiful outdoor environment for employees work and life, a full use of the building space will be adopted by enforcing factory measures and forming three-dimensional green screen.

7.4 Environmental Design

Taking the local temperature and climatic into consideration, light colors adorned with partial vivid warm color tone will be adopted for buildings. Factory area will be laid out associated with general layout, flowered, parterre and green bend will be set by both sides of main road and main entrances and exists for improvement of the factory area environment.

7.5 Architectural Structure and Construction

Methods

i. **Roof** The roof drainage is unsystematic for general production department, in-situ reinforced concrete roof slope is 3% and patterned steel plate roof slope is 10%. Insitu reinforced concrete roof plastered with 20 mm thick 1:2 waterproof mortar is for roof water proofing, while SBS modified bitumen waterproof roll is for auxiliary building roof, its roof thermal insulation using overhead thermal insulation plate and suspended ceiling.

ii. **Floor** C20 concrete ground is for general production department and the floor is reinforced concrete, tamping and towering. Tiles and other materials are for floors in CCR and duty room. The altitude difference between the indoor and outdoor of production department is 150 mm.

iii. **Wall and its Plastering**. Corrugated steel plate wall is for general production department; loaded clays perforated bricks wall is for electrical rooms. The external walls of general departments while their internal walls plastered with lime slurry or emulsion paint, the internal walls of offices, duty rooms and control

rooms are plastered with cement mortar and then painted, tiles or other materials are for buildings of special requirements or high standard. White spraying is for general department ceiling. While light-gage steel joist fire-resistant paper-faced gypsum plate is for ceiling of auxiliary building.

iv. **Doors and Windows.** Outer doors and windows of general department are plastic-steel and internal doors and windows are wooden.

v. **Stairs and Handrails.** Steel stairs will be adopted for general production departments. Platform rails will be steel normally.

vi. Ditch and Pit Normally, C20 class compacted waterproof concrete with the seeping-proof grade not less than S8. Double-course fixed steel plate water-stop band will be adopted for joints. When depth is more than 800 mm or having special waterproof requirement, the steel reinforced concrete will be selected.

7.6 Civil Construction

According to the current available materials, it can be said that, there is no bad geological phenomenon exist and there is need to set anti-quake measures with band VI and the factory site is suitable for the construction of the project.

Structure Type of Common Department

- RC structure is implemented for building departments of raw material crushing. Silo, pit and ditch are also RC structure;
- Pre-blending stockpiles of raw material is of light steel structure roof, column and foundation, grade beam and breast wall are all or RC structure;
- Silo for raw meal homogenization and clinker are all of RC structure;
- Department of raw materials grinding and cooler are all of RC structure;
- RC frame bases will be built for pre-heater system and the up is of steel tower with RC columns;
- Kiln Piers are RC type;
- Bins and Natural gas tank are made by steel;
- Steel structure bridges and RC columns are used in the trestle bridges of material conveying system in the factory; and
- CCR and Central Lab building are RC frame or brick-and-concrete structure.

i) Type of Foundation

Due to lack of geological exploration data, the allowable bearing capacity of sub grade can be assumed at (R) = 300N/m^2, utilizing the nature ground work. Different type of foundation will be designed for different department, e.g. whole RC plate foundation, beam and slab foundation, strip foundation independent foundation. Rigid block stone is used in the strip footing of wall.

ii) Works on Structure Design for Owner to Do

The above is only an assumed foundation design due to lack of geological exploration document and have little understanding of the stability and engineering mechanical

characteristic of the site. A safe, practical, simple and economy foundation will be set through design optimization when acquiring the geological exploration report.

iii) Seism.

The designed seism intensity of the site of this project is band 0.

iv) Ventilation, Air Conditioning and Compressed Air Design specification

- "Code for heating and ventilation and air conditioning" (GBJ 19-87);
- "Code for compressed air station" (GBJ 29-90); and
- "Code for design of small oil deport and filling station" (GB 50156-2001).

v) Ventilation

Making use of natural ventilation of buildings emit excess excessive heat in department. Mechanical ventilation system is used for venting excessive heat or harmful gases in the departments such as distribution station, central laboratory, workshop, heat treatment department, etc.

vi) Air Conditioning

Split type air conditioners will be installed in CCR, computer room, explosive storage and X-ray analyzer room, for those rooms in which the equipment require a certain ambient temperature e.g. Electrical room, split type wall mounted air conditioners will be installed.

Vii) **Compressed Air Station**

It is planned to set a compressed air station to choose 3 pcs of 0.8 MPa and 20 m3/min screw air compressors (2 for use and 1 or standby) and equip with corresponding compressed air drying device. The compressed air is sent to every air point e.g. raw meal silo, pulverized coal bin, pre-heater cyclone and tertiary air dust as well as dust collectors, pneumatic gases, etc. after drying treatment. The pipe network of compressed air will be laid along the wall and pillars of buildings. The size of the compressed air station will be considered spacious enough to accommodate another set of equipment in future to meet the requirement of another production line.

vii) Natural Gas Tank and Kiln and Calciner

A natural gas supply system is designed to meet the requirement of Kiln and Calciner. The system is composed with $500m^3$ natural gas and auxiliaries such as filters, valves, and pressure gauge and relief valves.

Infrastructures

The proposed plant site has been carefully selected after technical surveys are made with respect to infrastructural suitable. The currently earmarked site is well connected to accessible road and utilities such as electricity and water are readily available.

Electricity

The main electrical power for MEIS Industry Company Limited will be planned to be supplied through the overhead power transmission line from the national grid. This can provide enough power supply for the total load of the factory. A general step-down substation will be built in the factory.

1 Set 500 KW diesel power generator will be installed near the pre-heater electric room for safety of the key equipment such as rotary kiln system, cooler system and ID fan during the emergence shutdown. The emergence power will supply power for the kiln auxiliary drive motor, lubrication system of kiln, cooling system, the ID fan auxiliary drive motor, necessary lighting, etc.

Technology and Process

The company will adopt standard industrial process procedure with defined technical tolerances. The raw materials to be used are Clinker (80%), Lime stone (12%), and Gypsum (8%). While clinker and limestone are mixed early during the production process, gypsum is added in the manufacturing process in the final stages. Raw materials such as clinker, limestone and gypsum will be sourced locally. Most of these materials will be obtained in Dodoma region. For this matter, the company has already acquired land measuring 200 acres with leasing period of 5 years with effect from August, 2021. (Annex 2).

The production process consists of quarrying, crushing, pre-blending, raw milling, clinker burning, cement grinding and packing activities. a) Limestone Analysis The results of the laboratory analysis and the conducted physical test of the limestone from Mpwapwa quarry as tabulated hereunder.

a) Limestone Analysis

The results of the laboratory analysis and the conducted physical test of the limestone from Mpwapwa quarry as tabulated hereunder.

Sample ID	*Au	LOI	SiO_2	Fe_2O_3	Al_2O_3	CaO	K_2O	MgO	CuO	TiO_2	Sr
213	-	39.24	8.09	0.79	0.28	47.81	0.33	0.00	0.49	0.06	321
214	-	40.45	9.33	0.55	0.27	46.46	0.25	0.14	0.11	0.09	762
215	-	38.96	9.14	1.60	0.33	45.71	0.37	0.13	0.96	0.08	598
216	-	27.38	13.33	0.87	0.34	46.25	0.16	0.21	0.03	0.10	136
217	-	39.05	10.21	0.62	0.27	48.31	0.16	0.25	0.02	0.12	155
218	-	5.71	75.89	9.42	1.36	4.15	0.92	0.11	0.01	0.78	108
Method Code	*GA01*	*LOI01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*
Units	*g/ton*	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*ppm*
Detection Limit	*0.003*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.1*
METHOD	*BS ISO 10378:*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*

Sample ID	As	Zn	W	Ni	Co	Mn	Cr	V	S	Ba	Pb
213	2	4	64	84	11	215	78	19	288	435	5
214	2	19	49	76	13	226	38	58	235	331	4
215	3	21	64	131	77	251	103	28	667	482	7
216	3	22	52	81	49	347	66	25	2	356	5
217	2	27	18	104	27	286	79	26	5	353	2
218	3	70	11	108	2	1140	303	187	370	363	17
Method Code	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*
Units	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*
Detection Limit	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
METHOD	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*

- : not analysed I.S. : element not determined I.S. : insufficient sample I.N.R. : listed not received *: Accredited

b) Reserve Estimation Taking the specific gravity as 2.0 g/cc, the detailed investigated Mpwapwa deposited indicates that, the total Limestone reserve of Mpwapwa is 700,000 metric tons.

Outcrop	Area (m^2)	Average Thickness (m)	Volume (m^3)	Reserve in ton
Lindi	135,640	7.0	949,480	1,898,960

The analysis carried out showed that, raw material available in the area will be able to feed the proposed factory for more than 50 years.

c) The Meteorological Conditions Around Dodoma

1.	Temperature	Yearly average	25°C
		Max.	35°C (August)
		Min.	16°C (January)
2.	Rainfall	Yearly total quantity	200 mm
		Yearly total days	15 days
3.	Relative humidity	Yearly average	70°C
4.	Wind direction	Prevailing	Dry season NE
			Rain season SW

8.0 Project Costs and Financing Structure

8.1 Project Costs

The total project cost is estimated to be USD 70.5 million as detailed below (Appendix 1);

Assets	Costs
Land (Preliminary studies, Acquisition procedures)	3,000,000
Civil work, site preparations & installation	17,000,000
Electricity Generator & installation	5,000,000
Gas station	3,200,000
Plant & Machinery	16,000,000
Heavy duty Equipment	5,000,000
Motor vehicles	5,000,000
Furniture and Fittings	50,000
	49,750,000
Working Capital (20% Total cost)	**2,301,450**
	52,051,450
NB: Total Cost = 52,051,450 less Land because land acquisition was undertaken; therefore, the required fund to finance the project amounts to	**US$ 49,051,450**

8.2 Financing Structure

The financing of the project costs will be through borrowing of the long-term funds from prospective investors.

Table 3: Proposed Project Financing Plan

Item	Value in USD
Long term Loan	49,051,450
Total	**49,051,450**

Loan Facility

A long-term loan of USD 49.051 million is proposed.

9.0 Project Management

9.1 Organizational Structure

The company will adopt a management structure capable of meeting needs of its operations and recruit additional personnel to accommodate additional operations as the business

expands. The adapted structure follows its reconstitution and its business strategy will comprise of the following;

9.2 Board of Directors

Management of the project will be vested in a Board of Directors who will be the policy making and controlling authority. This will consist of shareholders of the company, the Managing Director (MD) and two outside directors. The Board also will be responsible for approving annual budgets of the project, overseeing the overall direction of the company, setting strategic goals and monitoring management performance.

9.3 Day to Day Management

The day to day management of the project will be vested to the Managing Director (MD) who will be directly, responsible to the Board of Directors. The MD will oversee and co-ordinate the implementation of various Board decisions and business goals. He/she will be in charge of all affairs of the company and reports to the Board. The MD will be assisted by Directors of Finance, Director of Administration, Director of Sales and Marketing, Director of Technical Services and Director of Legal Services.

Director of Finance (DF)

The DF will report to the MD and will be responsible for among others financial management of the company. He/she will ensure adequate controls and timely reporting of management and statutory reports.

Director of Administration and Corporate services (DACS) The DACS will be responsible for among others administrative and corporate services related issues. Human resource, Public relations and related functions will also be under his/her authority. The DACS will report to the MD.

Director of Sales and Marketing (DSM) The DSM will be responsible for among others marketing of the company products and supervision of sales team.

Director of Technical Services and Operations (DTSO)

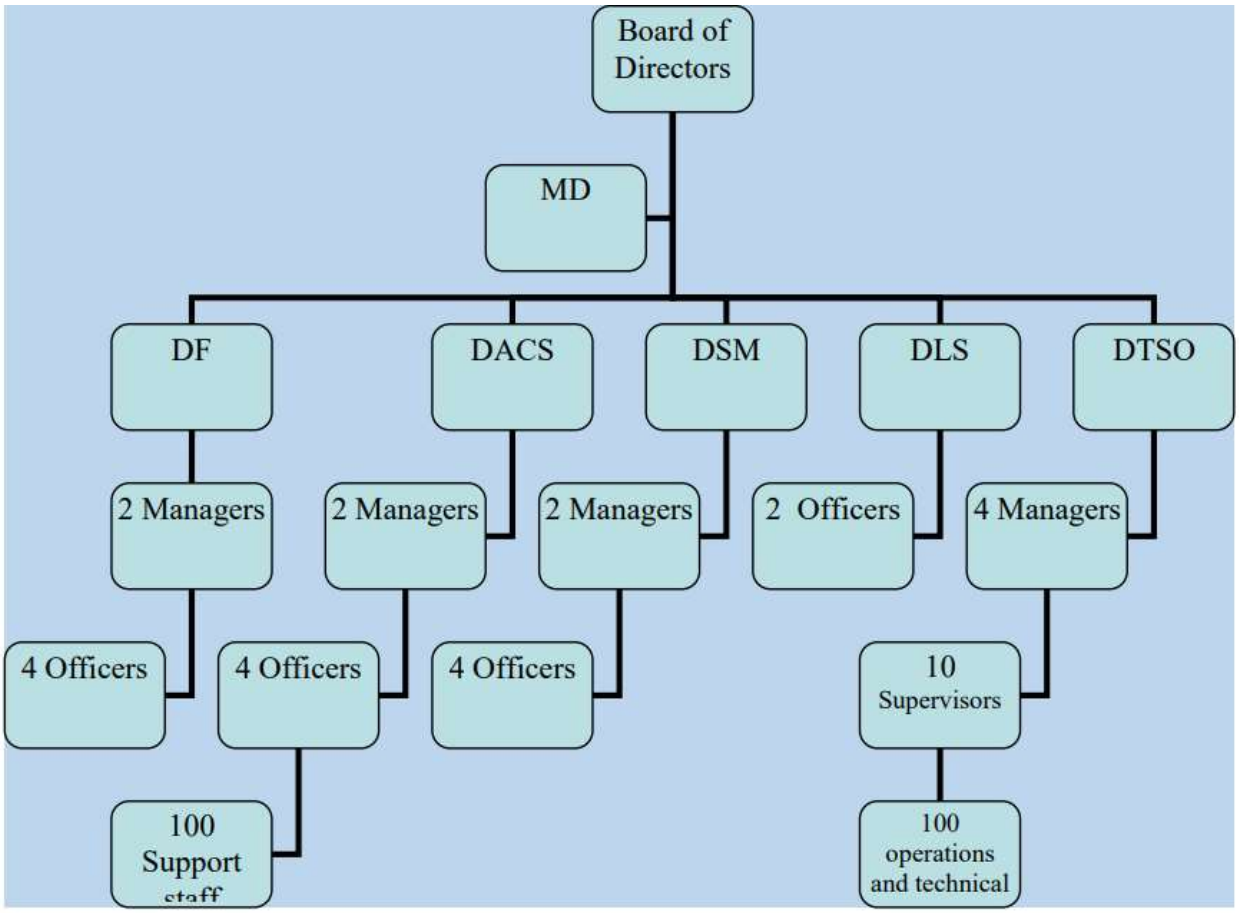
The DTSO will be responsible for management of the cement production process, production materials, warehouse activities, supplies and product quality management. He / She will supervise the plant operators, mechanics and other support staff.

Director of Legal Services (DLS)

The DLS will be responsible for all legal matters related to the company activities. These include among others contracts management, lease arrangements, etc. Each directorate will initially be supported by two-line managers and four officers. However, the directorate of technical services and operations will have four-line managers, eight supervisors and twenty operations, maintenance and related technical services. Similarly, the directorate of legal services will be supported by two legal offices.

Support Staff The company will recruit a number of support staff to support its operations. Among others support staff will include warehousing officers, drivers, security guards, cashiers and others as need may arise.

Organization Structure



8.3. Technical Advisory Services

The company plans to engage external consultants and auditors to provide management advisory services including the initial set-up of accounting and management information system, tax issues and audit of financial statements for external users. Consultants will be engaged on contract terms and would be expected to work closely with the MD. The company‟s use of external consultants is expected to ensure continuous improvements in business strategy and will be a low cost alternative to having a large pool of internal employees.

8.4. Support services and Needs Assessment

The project would require moderate use of support services. Some of these services can be provided in-house, while some can be outsourced. The project management envisages obtaining certain support services in-house. These include among others secretarial, stores, drivers and some security. Correspondingly, services to be outsourced among others will include security and cleaning to credible providers. Market availability of the people for

these positions in Tanzania is favourable as the existing enterprises and the government is unable to fully absorb the labour force. The company may hire other service providers as temporary workers paid on an hourly basis.

8.5. Management Structure and Strategic Positioning

The structure of the organization proposed is expected to afford the management with reasonable degree of flexibility and information flow that is considered critical for its business strategy and its market target. The strategy requires high level of contact and interaction with market players. A need to remove information barriers between top management and operational staff is inevitable. The structure would also allow an efficient and effective production and distribution of cement, leading the company into achieving its objectives of supplying high quality cement to large number of customers and at a competitive price.

8.6. Profile of Company Top Management

The company promoters and directors of the company are experienced business people with significant market networks. The company will employ an experienced person to manage cement manufacturing as a managing director.

10.0 ENVIRONMENTAL IMPACT ASSESSMENT

a) Potential Project Impacts

Cement manufacturing is known for producing pollutants in form of dust. The company would ensure that effluent treatment facilities are installed along with the plant sufficient to comply to environmental and safety standards.

b) Planned Preventive and Internalized

Programs Pollution controls equipment will be installed at the plant alongside with production equipment. The company plans to engage industry experts to undertake periodic technical evaluation on the effectiveness of the facilities.

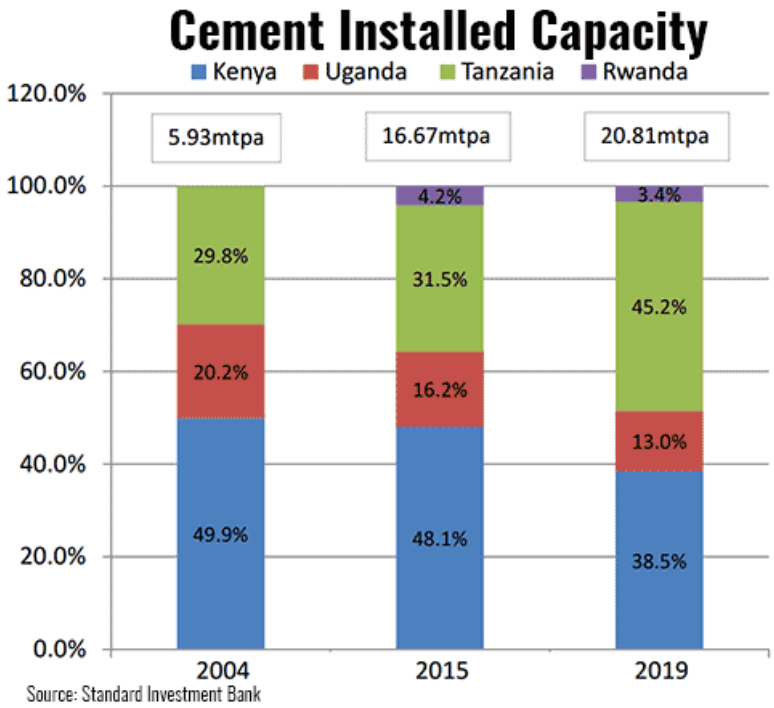
c) Monitoring and Evaluation

The management has full commitment to ensuring good use of the resources, sustainable environment conservation and the well-being of the community with which they do business is maintained. Directors consider environment as an important clause in job functions of management team. On the other hand, managers will be obliged to ensure compliance to safety standards of products and customers they serve.

11.0 MARKETABILITY ANALYSIS

11.1 Size and Character of the Market

With an estimated population of about 53 million, Tanzania's per capita cement consumption stands at about 50 kilograms per annum. This is lower compared to the world or even regional standards as shown in the table below.



11.0 Target Market

The target market for the proposed project consists of local construction industry, and the neighbouring countries of Comoro, Mozambique, Rwanda, Burundi, Malawi, Uganda and the Democratic Republic of Congo.

11.1 Supply Demand Analysis

There are ten cement companies in Tanzania, each of which operates fully integrated cement plant. Tanzania Portland Cement Co. Ltd (TPCC) is located at Wazo Hill, Dar es Salaam, Tanga Cement in Pongwe, Tanga and Mbeya Cement Co. in Songwe, ARM Cement Limited Tanzania in Dar es Salaam, Lee Building Materials Limited in Lindi, Camel Cement Company Mbagala-grinding in Dar es Salaam, Camel Cement Company Mbagala-integrated in Dar es Salaam, Tanzania Portland Cement Company Limited (TPCC) Wazo Hill Dar es Salaam, Lafarge Tanzania (Mbeya Cement Company Limited) Mbeya, Dangote Industries (Tanzania) Limited Mtwara, Lake Cement Limited located at Kimbiji in Dar es Salaam.

The total installed capacity for production in Tanzania amounts to more than 2 Million Tons per year as per the break down below.

Table 5: Installed Capacity for cement production in Tanzania (Selected Sample Companies)

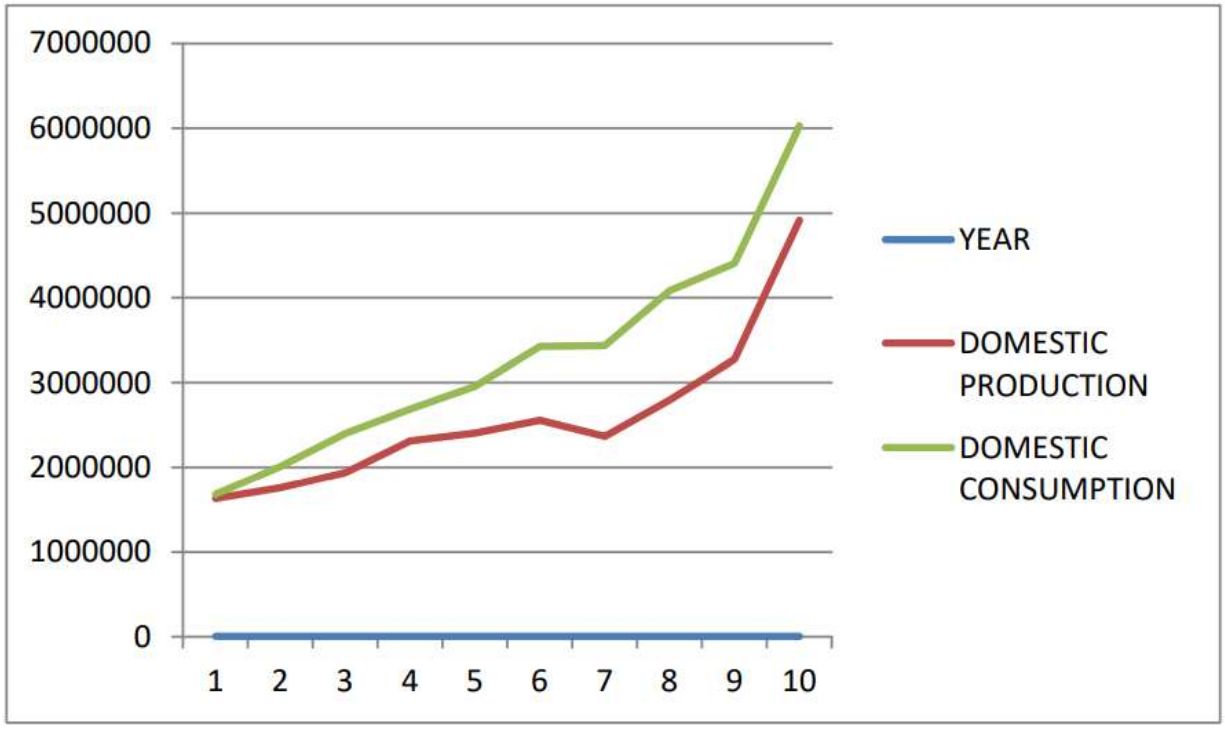
Table 5: Installed Capacity for cement production in Tanzania (Selected Sample Companies)

Company	Installed capacity in Tons/year
Dangote Industries	750,000
Tanga Cement Company Ltd.	500,000
Tanzania Portland Cement Co.	670,000
Mbeya Cement Co. Ltd.	300,000
Rhino Cement Co. Ltd	200,000
Lake Cement Co. Ltd	200,000
Total	**2,620,000**

Table 6: Production and Consumption of Cement for the Past Ten Years (2007 – 2016) Figures in tons

YEAR	IMPORTED	EXPORTED	DOMESTIC PRODUCTION	DOMESTIC CONSUMPTION	DEMAND & SUPPLY GAP	CHANGES
2007	101,827	52,170	1,629,890	1,679,547	49,657	2.96%
2008	356,468	99,688	1,755,862	2,012,642	256,780	12.76%
2009	516,182	57,569	1,940,845	2,399,458	458,613	19.11%
2010	566,828	189,321	2,312,055	2,689,562	377,507	14.04%
2011	768,343	217,944	2,408,765	2,959,164	550,399	18.60%
2012	1,013,986	145,793	2,557,798	3,425,991	868,193	25.34%
2013	1,218,453	154,481	2,369,819	3,433,791	1,063,972	30.99%
2014	1,428,995	142,001	2,795,687	4,082,681	1,286,994	31.52%
2015	1,257,578	126,391	3,273,000	4,404,187	1,131,187	25.68%
2016	1,306,732	194,338	4,916,400	6,028,794	1,112,394	18.45%

12.0 Graphical Representation of Domestic Production and Consumption of cement for the past ten Years in Tanzania (in Million Tons)



The table above demonstrates strong development in cement consumption in Tanzania over the past years. The annual growth has outnumbered the strong growth in the Tanzania economy, in terms of GDP. It is projected that, demand in 2017 will out-way the previous quantity of 4,916,400 in year 2016. On the other hand, the production and consumption of cement in Tanzania for the past 10 years demonstrate potential for more cement production.

The five factors below will drive the demand for cement are:

- Recent decision of the Government to move to Dodoma will likely impact positively the construction industry hence the demand for cement has been increasing tremendously due to construction activities;

- Economic growth: Tanzania's economy is expected to grow at an estimated 7.2% over the next five years, supported by the manufacturing, mining and tourism sectors. The improving performance of the economy has fuelled strong growth in demand for cement and the prospects remain favourable, given the linear relationship between economic growth and cement consumption.

- Favourable retail prices will continue to favour Tanzania's cement producers over competitors in the rest of Africa. The prevailing price per ton is almost two times the cost in West Africa. Prices could continue to fall in the medium- term and translate into higher export levels to the regional markets with higher prices.

- Tanzania's efforts to develop the mortgage industry will likely result to increased housing construction. The expanding middle-class will have disposable income and improved access to credit to purchase property.

- Improvement in energy supply, introduction of new sources of energy, and stabilization of energy prices is a special opportunity for cement producers.

- Abundant resources of quality limestone deposits will continue to provide a competitive advantage for local cement producers over competitors in the region

12.1 Pricing

Pricing of cement and related products from the Company will be competitive to reflect market demand, processing costs, transportation and taxes. A minimum margin of profit will be charged to independent distributors to be appointed by the Company in order to make the prices competitive. The Cement price used in the study is USD 100 (equivalent to USD 5 per Bag or 50 Kgs) per ton at a retail door.

12.2 Competitive analysis

Competition is basically expected from the existing cement manufacturing companies in the domestic market, specifically from the ten local manufactures owned by International cement companies. Currently, there are ten cement manufacturing companies with significant ownership stakes in local cement-producing companies.

- German-based Heidelberg Cement owns 69% of Twiga Cement,
- Swiss company Holcim Cement owns 63% of Simba Cement, and
- France's Lafarge owns 14% of Mbeya Cement. The cement manufacturers have a combined capacity of 3.5-million tons against a total demand of more than 6 million tons. Owing to the current deficit, imported cement holds almost 12% of the market share, with most of it coming from Kenya, India, and Pakistan.

Currently, the main competitor is the Dangote Industries (Tanzania) Limited. However, existing cement manufacturing companies will not pose a serious threat to the proposed project due to the fact that the company intends to invest in quality and standards.

The company has got a 99 years lease to the potential raw material access area worth USD 100.0 million. This will ensure that company gets sufficient quantities of raw materials to run the plant installed capacity. Correspondingly, the company's strategic market entry, quality of its products and its strategic focus and links with markets would likely pre-empt much of the competitive pressure and enable it to initially acquire more than 10% of the market share.

12.3 Promotion Strategy

The company appreciates the existence of both current and potential competition. Similarly, it underscores the need for strategic marketing and promotional activities on a continuous basis. The changing needs of customers for high quality and reliable supply of cement as well as cost considerations will guide the design of marketing and promotion strategies to be adopted by the company.

These will include advertising, special volume discounts, special credits arrangements, etc. Sales will mainly be made through independent distributors. However, direct sales from the factory would be arranged with contractors for specific projects. The company is currently, targeting approximately 0.2% of sales to be used in initial promotional efforts.

13.0 FINANCIAL PLAN AND STRATEGY

13.1 Investment Structure

The total investment costs required to this project is USD 49.051 million. The machinery and equipment to be purchased are as appended in the contract signed between ALOTAIB AND BLAKBIBI Company Limited and the German Mining Equipment Co. Ltd. The heavy vehicle to be purchased is the fifteen 40 – ton trucks and trailers for haulage of raw materials from different sites and from the port, as well as for distributing cement from the factory to various customer points in the country, to the neighbouring countries and to the port. The company will also acquire four 4WD light trucks for factory activities, maintenance of plant facilities and equipment and two 4WD station wagons for the management and marketing activities.

13.2 Implementation Plan

The company plan of activities for manufacture of cement is divided into the following main activities:

- Consultations and approvals from the government;
- Mobilization of resources (including financing);
- Construction, procurement and installation of plant and equipment; and
- Operations (production, marketing, distribution, etc). Implementations of these activities
- have been schematically presented as it appears below:

Table 7: Work Plan

Activity/Time	2021	2022				2023	
Quarters	Q3	Q1	Q2	Q3	Q4	Q1	Q2
Consultations and approvals	xx						
Resource mobilizations	xx	xx					
Procurement and Installations			xx	xx	xx		
Commercial Operations						xx	xx

14.0 FINANCIAL AND ECONOMIC VIABILITY

14.1 Assumptions

- Investment cost is USD 49.051 million;
- The target capacity utilization is assumed to be 75% in year 1, 80% in year 2, 85% in year 3 and 90% in year 4 through year 10;
- Cement sales price per ton has been maintained at USD 100 per ton throughout the project duration;
- The proposed life span of the project assumed to be 50 years. However, the project will go beyond this period;
- Depreciation rate computed on straight line method;
- Corporate tax is levied at the rate of 10% of Profit Before Tax;
- Discount rate of 9.4 % on the projected cash flows; and
- Project implementation assumed to be 24 months. 13.2 Financial Results On the basis of the above assumptions, the profitability indicators of the project are as follows:
- Net present value (NPV) at 9.4% - USD 68.4 million
- Internal rate of return (IRR) - 31 %
- Average Return on Investment (ROI) - 15%
- Payback period – Normal - 3 11/12 approximately 4 Years

13.3 Projected Operating Costs The project operating expenses are projected Annex VI.

14.4 Projected Project Revenue

Working on capacity utilization of 75% and 80% for year 1 and year 2 and 90% for year 3 through year 10 respectively, the resultant annual cement production will increase from 247,500 tons in year 1; 264,000 tons in year 2; 280,500tons in year 3 and 297,000 tones in year 4 through year 10. With a sales price of USD 100 per ton, sales forecast is estimated to increase from USD 26.4 million in year 1 to USD 48 million in year 10 of operation.

13.5 Projected Income Statement

The projected income statement shows a steady increase in net income right from first year of project implementation. Projected income before tax is expected to increase from USD

26.4 million in year 1 to USD 48 million in year 10. The project will be making profit from year 1 of operations. (Annex VI).

14.6 Projected Cash flow

The projected cash flow statement shows a strong cash position, enough to support loan repayment and interest payment on due dates. Net cash flow will increase from USD 15 million in Year 1 to USD 21 million in year 10. (Annex VII).

14.7 Projected Balance Sheet

The project balance sheet projections provide an acceptable cash position for the business. The project net asset is projected to increase from USD 49.051 million in year 1 to USD 187 million in years 10 of operation. Similarly, the projected current assets will remain substantially above current liabilities, thus posing no liquidity problems (Annex V)

14.8 Sensitivity Analysis

Sensitivity analysis has been carried out to show the effect of variability in project turnover and costs. As indicated in the table below, in the first scenario a 10% increase on total project direct costs has been considered while holding other things constant. The second scenario considers a 10% decrease in turnover while holding other things constant. The analysis is as summarized in the table below:

Table 8: Sensitivity Analysis Indicators

		NPV	IRR	PBP Years
NORMAL		68,407,822	31.0%	3 11/12
INCOME Decrease by	10%	50,159,779	25.5%	4 10/12
COST Increase by	10%	61,629,977	29.0%	4 03/12

Break Even analysis:

To break even:

- Price must drop by 25.0%
- Cost must increase by 200.0%

Conclusion: Price is more sensitive than cost.

It is noticed that the project is more sensitive to variations in quantity of cement and price of cement than to cost variations.

15.0 PROJECT BENEFIT

15.1Economic Benefits

- The project will create about 152 new employment on permanent basis and at least 800 casual laborers;
- The project will contribute to increased revenue to the Government by way of taxes.
- The project will serve as additional source of supply of cement and related construction materials to the economy;
- The project will also contribute to the supply of foreign currency, since a significant portion of the product will be exported; and
- The project will result into significant positive multiplier effects that would arise through various points in the value chain of cement manufacturing, distribution and export.

15.2 Social Benefits

The project promoters will participate and engage in the community's joint efforts to improve infrastructure and other social services around their business areas. Similarly, the company will seek partnership with the community groups to engage in community development related issues and resolve amicably, social misunderstanding and/or conflicts of interest that may arise between the company and other parties such as the government, employees, customers, suppliers and other stakeholders. The company understands the importance of the community and the environment in areas where it does business as an important stakeholder to the project. Environmental aspects will be internalized in the manufacturing process as described above.

16.0 CONCLUSION AND RECOMMENDATION

16.1 Overall Project Concept

The overall project concept is sound as it contributes to increase supply of cement for construction. Similarly, the project has great potential in foreign currency generating for the economy.

16.2 Economic and Financial Viability

Based on the parameters and assumptions used in this study, the proposed project has been established to be commercially and financially viable, economically attractive and environmentally friendly.

16.3 Social and Administrative

Sustainability The project is socially acceptable as it contributes directly to the national development objectives and National Strategy for Growth and Reduction of Poverty

(NSGRP). In addition to that, there are no likely social complexities with respect to the project.

16.4 Recommendation

The project is highly recommended for urgent implementation as it has been substantiated succinctly by the economic feasibility indicators above.

17.0 References

sources: Hali ya Uchumi wa Taifa katika mwaka 2016 (Source: www.nbs.go.tz)
BOT Annual Report (Source: www.bot.go.tz)
www.tradingeconomics.com/tanzania
www.delloite.com
Tanzania Economic Outlook 2017 Business Monitor Intelligence (BMI)
www.cia.gov/library/publications/ the World fact book/ geos/tz.html Investment Appraisal and Financing Decisions by Stephen Lumby (Book).
Real Estate Finance and Investment by Prof. Brueggeman and Dr. Jeffrey D. Fisher (Book)

SADCAS

TEST-5 0043

GST/QAF 7.8.2
Effective Date: 25 Jan 2021

ANALYTICAL REPORT

Lab ref: 2021-22EX173
Submitted by: ALOTAIB AND BLAKBIBI CO. LTD
Received date: 02/08/2021
Reported date: 03/08/2021
#Samples: 6
Pages: 2
Type of Samples: ROCK & SOIL
Address: MWANZA

Copy

Notes

Management Signatory

Technical Signatory

ISACK RUKWAKWA
KAMANA CAMILIUS

Results in this analytical report pertain to the samples provided to this laboratory for preparation and/or analysis as requested by the client.
Geological Survey of Tanzania Conditions of Service apply
This report may not be reproduced except in full, without written permission of the Laboratory
These results are in conformity with ISO/IEC 17025:2017 requirement

Geological Survey of Tanzania
Kikuyu Avenue 01, Dodoma, P. O. Box 903, Dodoma, Tanzania
t +255 (0)26 232 3020 f +255 (0) 26 232 3020 www.gst.go.tz
Ministry of Minerals

SADCAS

TEST-5 0043

GST/QAF 7.8.2
Effective Date: 25 Jan 2021

ANALYTICAL REPORT

Lab Ref: 2021-22EK173
Submitted by: ALOTAIB AND BLAKBIBI CO. LTD
Received date: 02/08/2021
Reported date: 03/08/2021
Type of Samples: ROCK & SOIL
Sample condition: ACCEPTABLE
Samples: 6

Sample ID	*Au	LOI	SiO_2	Fe_2O_3	Al_2O_3	CaO	K_2O	MgO	CuO	TiO_2	Sr
213	-	39.24	8.09	0.79	0.28	47.81	0.33	0.00	0.49	0.06	321
214	-	40.45	9.33	0.55	0.27	46.46	0.25	0.14	0.11	0.09	762
215	-	38.96	9.14	1.60	0.33	45.71	0.37	0.13	0.96	0.08	598
216	-	27.38	13.33	0.87	0.34	46.25	0.16	0.21	0.03	0.10	136
217	-	39.05	10.21	0.62	0.27	48.31	0.16	0.25	0.02	0.12	155
218	-	5.71	75.89	9.42	1.36	4.15	0.92	0.11	0.01	0.78	108
Method Code	*GA01*	*LOI01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*
Units	*g/ton*	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*ppm*
Detection Limit	*0.003*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.1*
METHOD	*BS ISO 10378-*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*

Sample ID	As	Zn	W	Ni	Co	Mn	Cr	V	S	Ba	Pb
213	2	4	64	84	11	215	78	19	288	435	5
214	2	19	49	76	13	226	38	58	235	331	4
215	3	21	64	131	77	251	103	28	667	482	7
216	3	22	52	81	49	347	66	25	2	356	5
217	2	27	18	104	27	286	79	26	5	353	2
218	3	70	11	108	2	1140	303	187	370	363	17
Method Code	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*	*XRF01*
Units	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*
Detection Limit	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
METHOD	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*	*GST*

- not analysed | -- element not determined | I.S. insufficient sample | L.N.R. listed not received | * Accredited

Management Signatory

Technical Signatory